

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.

Clinical Course

Languillon, J. La lèpre borderline et la lèpre tuberculoïde réactionnelle. Leur réunion dans un groupe intermédiaire. [Borderline and reactional tuberculoid leprosy: their juxtaposition in an inter-polar group.] *Méd. Trop.* **27** (1967) 183-192.

After a brief historical resume of borderline leprosy, the author advances the thesis that reactional tuberculoid leprosy has more affinities—clinical, immunologic and bacteriologic—with borderline leprosy than with tuberculoid leprosy, and should therefore be considered as falling into the broad intermediate or inter-polar group. The article provides a summary of the clinical and pathologic features of this unstable form of leprosy, which is characterized by a variable immunologic pattern and an unpredictable prognosis. (From abstract by S. G. Browne, *Trop. Dis. Bull.* **65** (1968) 263).

Herrera, G. Contribución al estudio de las formas de transición de la lepra. [Study of the transition forms of leprosy.] *Rev. Dominicana Dermat.* **1** (1967) 111-114.

The author reports a case of combined lepromatous, tuberculoid and indeterminate forms of leprosy. The patient was a man aged 37 years who was seen at the Dermatologic Clinic in Santo Domingo. He had had a lesion in the skin of the left buttock for 5 years; 1 year later leprotic foci in the eyebrows and gluteal and lumbar regions appeared, and subsequently nodules on the lobe of the left ear and on the left cheek. Large numbers of *M. leprae* were seen in histologic sections, which showed appearances characteristic of all three forms of leprosy. (Abstract by W. K. Dunscombe, *Trop. Dis. Bull.* **65** (1968) 432).

Moschella, S. L. Hansen's disease: tuberculoid leprosy. *Arch. Dermat.* **97** (1968) 594-595.

Case report of 29 year old Filipino man born in Luzon, unaware of any previous contact with leprosy. Localized cutaneous anesthesia, dermatologic examination, and laboratory data established the diagnosis of tuberculoid leprosy, although acid-fast organisms were not demonstrable by Fite-Faraco stain. Treatment was commenced with DDS and triamcinolone acetate.—E. R. LONG

Baréty, Migozzi and Salvadori (no initials given). Maladie de Hansen à manifestations bulleuses [Leprosy with bullous manifestations.] *Bull. Soc. Dermat. et Syphilig.* **74** (1967) 578-580.

Case report of 75-year old man from Tonkin, with extensive psoriasis of long-standing and vesiculo-bullous lesions of the feet and hands, with an accompanying plantar ulcer. Leprosy was suspected, and *M. leprae* was found in one of the bullae. Examination disclosed coffee-colored nodular lesions developing alongside the lesions of psoriasis. Other manifestations of leprosy of lepromatous type were noted. The Mitsuda reaction was negative. Sulfone had a favorable effect on the bullous lesions. In this case apparently the psoriasis and the leprosy evolved independently.—E. R. LONG

Témine, P., Rollier, R., Laviron, P., Privat, Y. Bonne M. and Stahl A. Lèpre réactionnelle (type Lucio?). [Reactional leprosy (Lucio type?).] *Bull. Soc. Dermat. et Syphilig.* **73** (1966) 505-506.

Case report of 48 year old woman in

whom indeterminate leprosy developed in 1948, which was aggravated by disulone, with bouts of ENL, in ulcerative form of the Lucio type, and rhythmic with the menstrual cycle. Hysterectomy led to amelioration of symptoms. Diabetes developed later. When seen in 1965 the patient was in the course of severe widespread cutaneous involvement, with leprosy bacilli in nasal smears and ear lobe specimens. Thalidomide brought about some improvement. Later DDS was administered cautiously, with insulin for the diabetes.—E. R. LONG

Browne S. G. Poststeroid nodular panniculitis and the erythema nodosum of leprosy. *Dermat. Internat.* 4 (1965) 215-218.

Precipitate reduction in the dose of corticosteroid drugs being given to patients with rheumatism may cause a form of panniculitis which resolves on increasing the dose of the steroid. The author sees close parallels between poststeroid nodular panniculitis and the erythema nodosum of leprosy, e.g., the typical symptomatology, especially polymorphism, the typical histologic picture and the recurrence of symptoms on the over-rapid reduction of the dose of steroids. (From abstract by P. J. Hare, *Trop. Dis. Bull.* 65 (1968) 433.)

Moschella, S. L. Primary diffuse lepromatous leprosy with erythema necroticans (Lucio phenomenon). *Arch. Dermat.* 97 (1968) 593-594.

Case report of 46 year old white man, born in Cuba, who lived there 29 years before migrating to the United States. Medical examination disclosed lepromatous leprosy. Microscopic study disclosed intense vasculitis of vessels of all types, with numerous bacteria with the characteristics of *M. leprae*.—E. R. LONG.

Rollier, M. R. and Rollier, M. Érythème noueux lépreux et typhus historique [Erythema nodosum leprosum and typhus.] *Bull. Soc. Dermat. & Syphilig.* 74 (1967) 610-612.

In their long experience with leprosy

patients the authors have established that the hyperergic state manifested by erythema nodosum leprosum is commonly precipitated by an intercurrent illness. A case report is presented of a 36-year old man with lepromatous leprosy under treatment with DDS since 1962 who developed ENL with widespread manifestations in the course of an attack of typhus fever.—E. R. LONG

Desmoulins, G. and Zeldine, G. Syndromes paraplégiques en milieu lépreux. A propos de 12 cas observés en Nouvelle-Calédonie. [Paraplegic syndromes in a leprosy environment in the light of 12 cases observed in New Caledonia. *Bull. Soc. Path. exot.* 60 (1968) 482-497.

From New Caledonia, the authors report 12 observations of paraplegic syndromes, spasmodic at the very first, in a leprosy population belonging to the Melanesian race. A certain relationship seems to exist between these pathologic observations and the neurologic syndrome "kuru" described in the highlands of eastern New Guinea. The hypothesis of a genetic factor in the appearance of these accidents is put forward, because the genetic patrimony of Melanesians seems to be similar to that of New Guinea Papuans.—AUTHORS' SUMMARY

Bazex, A., Salvador, R., Dupré, A., Christol, B. and Vitasse M. P. Sarcoidose por grains de poivre chez une malade porteur d'une lèpre tuberculoïde mineure micronodulaire [Sarcoidosis due to pepper grains in a patient with minor micronodular tuberculoid leprosy.] *Bull. Soc. Dermat. et Syphilig.* 74 (1967) 684-685.

Case report of 35-year old patient from Central Africa, with minor micro-nodular tuberculoid leprosy of several years' duration, who developed sarcoidal lesions in regions of scarification in which grains of red pepper had been introduced. The custom of inoculating red pepper grains in scarified skin is common in parts of Africa as a tribal ritual or therapeutic procedure for many ailments.—E. R. LONG

Chemotherapy

Browne S. G. Advances in the treatment of leprosy. *Practitioner* **199** (1967) 525-531.

Noting that all the leprosy patients in Great Britain contracted the disease abroad, the author reviews the measures employed in treatment of the disease, calling attention to the fact, however, that the most noteworthy advances in the field of leprosy in recent years have been in experimental pathology rather than therapeutics. Trials of new drugs, however, supplementing the sheet anchor of therapy, DDS, have proceeded with enthusiasm. Advances in this general field include the use of suspensions of injectable sulfone and the employment of long-acting sulfonamides; e.g., sulfamethoxypyridazine, sulforthomidine, and sulfamethodiazine. The diphenylthiourea derivative thiambutosine has established itself as a good second line drug, useful in patients intolerant to DDS. The thiosemicarbazone thiacetazone has been widely used, but has fallen into some disfavor. Its use merits reinvestigation however. Perhaps the most promising drug studied in recent years is the phenazine dye B.663. Further trials on a large scale should be undertaken. Antibiotics in general have not proved very effective in leprosy, although they may be of aid in combination with more potent drugs. On the whole, however, the use of combinations of drugs in leprosy has been disappointing. Certain drugs once of apparent promise have been superseded by those listed above. Corticosteroids are recognized as invaluable in the treatment of acute exacerbations, and numerous favorable reports have been made on the use of thalidomide in controlling acute leprosy reactions. Orthopedic techniques are indispensable in the treatment of the deformities of leprosy. It is a fact, however, that proper early care might prevent many of the deformities for which surgery is ultimately required.—E. R. LONG.

Ramanujam, K. Sulforthomidine (Ro 4-4393) in the treatment of lepromatous leprosy. *Leprosy in India* **39** (1967) 95-99.

After reviewing the literature on long-acting sulfonamides in the treatment of leprosy, the author describes his experience with Sulforthomidine—better known as sulphormethoxine or Fanasil—given in a single oral dose once a week to 17 patients, and concludes that it is not as effective as standard DDS (dapsone) treatment. Two-thirds of the patients underwent reactional episodes. (*Abstract* by W. H. Jopling, *Trop. Dis. Bull.* **65** (1968) 267).

Floch, H., Rist, N. and Jacobi, J-C. Intérêt de l'ethionamide en thérapeutique antilépreuse [Interest in ethionamide in antileprosy therapy.] *Bull. soc. path. exot.* **59** (1966) 715-724.

Ethionamide, a derivative of isonicotinic thionamide, active against tubercle bacilli, also has antileprosy activity when used in a dosage of 0.25 gm./day, as proved by observation of treatment of 19 cases of leprosy. (*From authors' summary*)

Merklen, F. P., Cottenot, F. and Moulias, R. Epuisement d'action de la sulfaméthoxypyridazine: reprise cutanée dans une lèpre lépromateuse anciennement blanchie. [Waning of action of sulfamethoxypyridazine: cutaneous recurrence in a lepromatous leprosy patient previously arrested.] *Bull. Soc. Dermat. et Syphilig.* **73** (1966) 473 (only).

Case report of 44-year-old woman, resident in Indochina in 1947, treated, in 1952, for lepromatous leprosy by chaulmoogra oil and sulfones, and considered clinically and bacteriologically arrested in 1954. She developed pulmonary tuberculosis in 1956, which was treated by streptomycin and isoniazid, with apparent cure by 1962. She was then subjected to antileprosy treatment with sulfamethoxypyridazine (sulfatienotherapy). In 1966, however, in spite of this treatment, widespread cutaneous leprotic lesions with numerous acid-fast bacilli developed.—E. R. LONG

Warren, A. G. A preliminary report on the use of B.663 in the treatment of Chi-

nese leprosy patients with chronic reaction. *Leprosy Rev.* 39 (1968) 61-66.

The author reports in detail the results of a 6 month trial of B.663 in 30 patients in the Hay Ling Chau Leprosarium, Hong Kong. All had been under inpatient treatment for at least 2 years with reaction. They fitted into 5 main groups: (a) 4 patients on prednisolone, (b) 16 patients with generalized chronic reaction, skin lesions, ENL and generalized reaction, iritis, bone pain and fever, (c) 7 patients whose reaction was mainly neuritis, (d) 2 patients with diabetes as a precipitating cause of reaction, (e) 1 with a relapse. Two tables list details of condition, treatment and progress, and 6 color photographs show the progress and development of pigmentation in 3 patients. The author comments that progress in the 6 months on B.663 has been extraordinary. Some patients rapidly became reaction-free and remained so. A few developed reaction in the first few weeks until the dosage was raised. Subjectively the patients are much improved; they seem happier, more cheerful and more inclined to activity. Skin discoloration is not, it seems, a disadvantage to patients who know of the complications and disappointments of other drugs and who wish to recover their health as soon as possible.—N. D. FRASER

Watson, B. M. and Smyth, J. T. B.663 and ethambutol in the treatment of Battey disease. *Med. J. Australia* 1 (1968) 261-263.

Pulmonary disease due to infection with Battey mycobacteria is prevalent in Western Australia, and there, as elsewhere, has proved resistant to standard antituberculosis drug therapy. The authors tested B.663 and ethambutol on patients with Battey disease diagnosed by (1) radiologic changes consistent with mycobacterial infection, (2) persistent isolation of Battey organisms from the sputum, and (3) persistent failure to isolate *M. tuberculosis* from the sputum. Eleven patients were treated, 6 of them with B.663 alone and 5 with a combination of B.663 and ethambutol. B.663 alone proved ineffective, but the

combination of B.663 and ethambutol achieved good results, as indicated by disappearance of offending mycobacteria from the sputum and radiologic improvement in a majority of the patients. The authors attribute the good effects to ethambutol.—E. R. LONG

Miranda, R. N., Pereira, L. C., São Marcus, A. and Tarlé, S. F. Attempt at treating leprosy with a sulfone in conjunction with iodine. *Publ. Cent. Estud. Leprol. (Parana)* 6 (1966) 18-19.

The authors, from the Federal University of Parana, Brazil, tested the value of a combination of dapsone and potassium iodide (KI) in 11 patients with leprosy. The drugs were used in the following dosage: tablets of dapsone, 100 mgm.; KI, 50% solution, each drop of the solution containing 0.03 gm. KI. The drugs were given orally in doses of 0.025 gm. dapsone and 0.03 gm. KI per week; the dose was increased slowly to 300 mgm. dapsone and 1.2 gm. KI by the 15th week. Eleven patients who had never received any antileprosy treatment were selected; 8 had the lepromatous form of leprosy, 2 the tuberculoid and 1 the indeterminate form. All tolerated the treatment well and showed definite clinical improvement during the first 5 months. Later 4 of the patients with lepromatous leprosy showed reactivation and acute manifestations of symptoms. The condition of one patient with lepromatous leprosy deteriorated and that of another showed no improvement. The remainder of the patients showed clinical, bacteriologic and histologic improvement. The authors state that although only a few patients were treated the scheme seemed to be effective when the doses were small, i.e., not more than 200 mgm. dapsone and 300 mgm. KI per week. (*Abstract* by W. K. Dunscombe, *Trop Dis. Bull.* 65 (1968) 266-267)

Thiers, H., Rousset, J., Coudert, J., Battesti, M.-R. and M. Lu Hunh Than. Indométhacin dans les états réactionnels lépreux. [Indomethacin in leprosy reactional states.] *Lyon Med. No.* 12 (1967) 899-901.

In severe reactional states in leprosy requiring corticoids in high dosage for prolonged periods, indomethacin is of great interest in that it leads to weaning from the corticoid or reduction to very small doses. The dose of indomethacin seems to be of the order of 150-200 mgm. In early or moderately severe reactional states indomethacin permits reduction of corticoid dosage, with sufficient rapidity without interruption of specific treatment. Treatment by indomethacin should, nevertheless, be carried out long enough to avoid evolutive relapses. In inflammatory neuritic states in the course of reactional episodes, the action of indomethacin seems limited and only relatively effective. In the case of patients not receiving antileprosy treatment, modification of the reaction of the human organism toward the leprosy bacillus seems to thwart the effect of the treatment. Ultimately the effectiveness of the treatment by sulfones reappears after the suppression by indomethacin. (*From authors' abstract*)

Yeats, R. O. Preliminary test using DMSO as a vehicle for drugs in leprosy. *Ann. N. Y. Acad. Sci.* **141** (1967) 668-669.

Dimethyl sulfoxide as a skin wash in 70% strength was used as a vehicle to test the effect of dapsone (8 patients), isoniazid (7 patients), and para-amino-salicylic acid (8 patients) in dosage of 10 mgm./ml. applied in solution with cotton applicators to the skin of leprosy patients with tuberculoid markings. All patients were on dapsone orally. Improvement noted in the amelioration or disappearance of tuberculoid markings, in all three groups, was

rapid and marked, but about equal. No control with DMSO alone was tested, but it was believed that improvement in each group was due to the DMSO rather than the drug in solution.—E. R. LONG

Arai, M. Behavior pattern of leprosy ocular changes under chemotherapy. *Japanese J. Plast. & Reconstruct. Surg.* **10** (1967) Supplement pp. 7-9. (In Japanese, English abstract.)

During the 12 years 1954-1965 inclusive 349 previously untreated leprosy cases were admitted to the National Leprosarium Tama Zensho-en. Of the lepromatous cases in the group 225 were treated by chemotherapy. General and ocular cases were followed carefully. Up to the time of the report 7 eyes in 5 cases developed uveitis and became blind. The value of chemotherapy in preventing blindness is stressed. **AUTHOR'S SUMMARY**

Ganpati, R. and Naik, S.S. Urinary excretory pattern of DDS in leprosy patients. *Leprosy Rev.* **39** (1968) 87-90.

The authors, having noticed that some patients responded only to a high dose treatment with DDS (150-200 mgm. daily) studied the rate of excretion and blood concentration of DDS in different subjects after a test dose. The results are shown in 4 tables and 2 graphs. Attention is focused on the side variations in the urinary excretion pattern of DDS in leprosy patients, the probable immutability of the pattern in individuals, and the apparent correlation of the excretory pattern with improvement and reactions.—N. D. FRASER

Surgical Treatment and Surgical Specialties

Wong, G. S. C. Plastic surgery for facial nerve palsy with lagophthalmos. *Singapore Med. J.* **8** (1967) 143-146.

The clinical picture of facial palsy with lagophthalmos is described. Temporalis muscle transfer is recommended as the operation of choice. The good results and

its superiority over the other methods are confirmed by the author on a preliminary series of 15 cases carried out in Singapore.—**AUTHOR'S SUMMARY**

Jordy, C. F., Belda, W. and Manzolli, S. Trastornos neurológicos asociados ao mal perfurante plantar leprotico [Neurologic

disturbances associated with leprotic perforating plantar ulcer.] *Rev. brasileira Leprol.* 34 (1966) 45-51.

The authors analyze the neurologic sensory motor and trophic disturbances in 100 leprosy patients, 32 of whom suffered from perforating plantar ulcer. The latter is considered a late complication of the pathologic process in leprosy, which is manifested in each case by profound sensory, motor and trophic modifications, due principally to disturbances in the deep innervation of the foot or distal segments of the inferior limbs.—AUTHORS' SUMMARY

Karat, S. Preventive rehabilitation in leprosy. Part 3. Principles of practical application. *Leprosy Rev.* 39 (1968) 75-78.

This third paper deals with the principles of practical application of preventive rehabilitation in leprosy. "Living with anesthetic limbs" is the chief disability in lepro-

sy. The life-long discipline and constant vigilance needed to live with anesthetic limbs requires, first, the patient's intelligent understanding of the problem. The second requirement includes both the practice and discipline necessary to translate this knowledge into daily activities. The emphasis in the past has been on adaptations and modifications of handles and tools. Large numbers of patients have returned to full employment with no further incidence of trophic ulceration. What is significant is that many of them do not use adaptations and modifications as recommended and supplied to them once they leave the hospital and return to their usual places of work. Often a simple device, like a piece of cloth, was used and found adequate to protect the hand from injury by heat or pressure. It is important to shift the emphasis from adaptations and modifications to the education and training of the patient.—N. D. FRASER

Pathology

Kramarsky, B., Edmondson, H. A., Peters, R. L. and Reynolds, T. B. Lepromatous leprosy in reaction. A study of the liver and skin lesions. *Arch. Path.* 85 (1968) 516-531.

The inclusion of leprosy in the differential diagnosis of hepatic granulomas seen on biopsy is often neglected in the United States. In the parts of the world where leprosy is endemic, the possibility is more likely to be considered, although the frequency of hepatic involvement in the early stages of leprosy is not known. It seems reasonable to assume that the Kupffer cells swollen by phagocytic vacuoles represent the foamy lepra cells (Virchow's cells) of light microscopy. The recognition of lepra cells with vesicular cytoplasm, tendency to form syncytial clumps, lack of necrosis, and their frequent location near the central veins all taken together should alert the pathologist to the possibility of leprosy. Acute episodes that occur in the course of lepromatous leprosy may bring the patient

to the hospital. Fever, malaise, and skin nodules accompanied by hepatomegaly were the chief findings in our two patients. Peripheral nerve manifestations when present are helpful in clinical diagnosis, but they may be absent, as in one of our cases. Biopsies of the skin and liver were obtained from one patient with Lucio's type of leprosy and from one with erythema nodosum leprosum. Vasculitis, a dense inflammatory exudate, and necrosis of the skin characterized the Lucio type of leprosy; in erythema nodosum leprosum the vasculitis was not so severe and necrosis did not occur. Large numbers of organisms in the endothelial cells of the vessels in the skin could have given rise to bacteremia and development of the disease in the liver. The liver in the patient with Lucio's phenomenon contained tuberculoid lesions, whereas necrosis of sinusoidal walls and many Virchow's cells were noted in the other patient. Leprosy bacilli in Kupffer cells were easily demonstrated with electron microscopy. The presence of the bacteria within mem-

brane-bound phagocytic vacuoles and the fusion of lysosomes with the vacuoles were seen.—(From author's summary)

Hastings, R. C., Brand, P. W., Mansfield, R. E. and Ebner, J. D. Bacterial density in the skin in lepromatous leprosy as related to temperature. *Leprosy Rev.* 39 (1968) 71-74.

The present paper deals with an effort to demonstrate that at least one of the "immune areas" in lepromatous leprosy is indeed warmer and furthermore contains fewer bacilli than a more heavily involved area. Five untreated patients with "pure" lepromatous leprosy were studied by determining the skin temperature at 4 sites on the lumbar back, 2 in the mid-line and 2 laterally, followed by a skin biopsy in each area. The mid-line sites were significantly warmer and contained fewer organisms than the cooler, more heavily infected sites. It would appear that the clinically "immune" areas in lepromatous leprosy represent warmer skin areas in which *M. leprae* would prefer not to grow. —(From authors' summary)

Pedley, J. C. Presence of *M. leprae* in the nipple secretion and lumina of the hypertrophied mammary gland. *Leprosy Rev.* 39 (1968) 67-70.

The finding of *M. leprae* in the secretion expressed from the enlarged nipple of a man with gynecomastia and highly active untreated lepromatous leprosy led to the removal of his hypertrophied mammary gland and the demonstration of the presence of *M. leprae* in the lumina and gland ducts. It is suggested that the same histopathologic picture would obtain in the mammary gland of a lactating woman suffering from lepromatous leprosy. —
AUTHOR'S SUMMARY

Bergel, M. Histobacteriología de la almohadilla plantar del raton inoculado con *M. leprae*. [Histologic and bacteriologic study of the footpads of mice inoculated with *M. leprae*.] *Publ. Cent. Estud. Leprol. (Parana)* 6 (1966) 5-12.

The author made a histologic and bacteriologic study of the footpads of mice which had been inoculated with 0.03 to 0.05 cc. of recent leproma suspension taken from patients with untreated lepromatous or borderline leprosy. The animals were divided into two groups, one of which had normal food and the other a pro-oxidant diet; it was found that the experimental leprosy developed much better in the footpads of the animals that had been fed on the pro-oxidant diet. Two types of granuloma were found. In one type the granuloma was large and found in a deep part of the skin with damage to vascular and nerve elements and even muscular tissue. The bacilli in these granulomata were either "globi" or isolated and were large and acid-fast, which indicated a state of great vitality. In the other type, the granuloma was found in the dermis and was small and contained only isolated bacilli. This confirms the findings of Palmer *et al.* concerning the presence of bacillary groups in striated muscular tissue in the footpads of mice with the bacilli showing characteristics which indicated a great degree of vitality. [Abstract by J. R. Innes, *Trop. Dis. Bull.* 65 (1968) 268-269.]

Falchi, Q. and Giuntini, C. La tomografia nelle manifestazioni cranio-facciali della lebbra. [Tomography in cranio-facial manifestations of leprosy.] *La Radiologia Medica* 52 (1966) 549-560.

The authors report the results of radiotomographic study of 28 leprosy patients in Genoa. Leprotic cranio-facial lesions appear later now than in the classic descriptions, probably because of more effective medical treatment today. Atrophy of nasal bones, nasal spina, and the maxillary alveolar process, with loss of the upper incisors, may no longer be considered as among the early signs of leprosy. Tomography has permitted a better estimation of the degree of atrophy, osteolysis, and osteoporosis of the cranio-facial bones than was possible previously. In more advanced cases it has revealed destruction of the turbinate bones (not visible in standard radiography), which, together with atrophy of the nasal

mucosa, causes a characteristic sign designated by the authors as "retronasal vacuum."—[From author's summary]

Bechelli, L. M., Valeri, V., Pimenta, W. P. and Uthida Tanaka, A. M. Anétodermie de Schweninger-Buzzi chez des femmes de lèpre lépromateuse et chez des femmes non-atteintes. [Schweninger-Buzzi anetoderma in women affected and not affected with lepromatous leprosy.] *Dermatologica* 135 (1967) 329-336.

The authors examined two groups of females. In one, consisting of 245 lepromatous patients, 23 cases of Schweninger-Buzzi anetoderma were found, while in the other, comprising 255 women without leprosy, only one case of anetoderma was detected. The anetoderma tended to appear more often in the 20-29 year age group. The frequency was practically the same in whites and Negroes. The majority of patients had only one or two lesions, located chiefly on the proximal part of the limbs. In 10 cases a histopathologic study showed pronounced reduction and fragmentation of elastic tissue. The anetodermal lesions were commonly located in the areas more affected by lepromatous leprosy. This usually causes specific lesions in the viscera (liver, spleen and other organs); the ovaries are rarely involved, but sclerosis seems more frequent. The importance of these factors in causing higher frequency of anetoderma in leprosy could not be conclusively determined. — **AUTHORS' SUMMARY**

Metlizky, N I. [The content and the distribution of sulfur combinations of protein nature in the skin structural elements of leprosy patients and in the zone of specific inflammation.] *Voprosy patogen- i terap. vagenj. dermat. (Kharkhov)* (1967) 155-162.

While studying the materials of 113 skin biopsies in patients with different types of leprosy, the author established among the principal variants, how the relative frequency of the different intensity reactions depends on the sulfur combinations of protein. The frequency is associated, first of all, with the type, stage, remoteness of the disease, and character of therapy. The intensity of the reaction becomes weaker, especially at the later periods of treatment, though differently, on the sulfhydryl and disulfide groups. The reaction depends on the reduction of sulfur-protein complexes. The most distinct reaction upon the sulfur combinations of the protein is marked by lipoids, fibroblasts, plasma cells and histiocytes. Epithelioid cells react feebly, but the lepra cells of Virchow often do not give the reaction at all (especially in the case of the disulfide groups). Both sulfhydryl and disulfide groups in cells are concentrated chiefly in the nuclei, in chromatin granules, in the limiting membrane of the nuclei, in mitochondria, and in the ectoplasm. The proteins that are present in the complex with the sulfur groups more often have globular and more rarely fibrillar structure; the author associates this with the extent of protein denaturation in the zone of specific inflammation.—**N. TORSUEV**

Torsuev, N. A. [The pathogenesis of rat leprosy.] *Materialy jubilejnoj nauchnoj konferenzii. Donetsk* (1967) 178-179.

A literature review. *M. lepraemurium* was found for the first time by V. K. Stefansky in Odessa, and described in 1902 in the journal "Russky Vrach" ("Russian Physician"), No. 47, p. 1726; i.e., a year earlier than the report by G. Dean (1903). The author of the review considers *M. leprae hominis* (Hansen) and *M. lepraemurium* to be undoubtedly different microorganisms, though related. —**N. TORSUEV**

Bacteriology and Immunology

Cummins, C. S., Atfield, G., Rees, R. J. W. and Valentine, R. C. Cell wall composition in *Mycobacterium lepraemurium* J. Gen. Microbiol. 49 (1967) 377-384.

Cell-wall fractions from *M. lepraemurium* were examined chemically and immunologically. The major sugar and amino acid components detected were arabinose and galactose, alanine, glutamic acid, α,ϵ -diaminopimelic acid (DAP) and hexosamine, but substantial amounts of aspartic acid, glycine, valine, serine, threonine, leucine and isoleucine were also present in preparations not extracted with neutral lipid solvents and alkaline ethanol. However, after such extraction and treatment with proteolytic enzymes, alanine, glutamic acid and DAP (1.5:1.0:1.0) were present in much larger amounts than any other amino acids (not more than 0.15), indicating that these three are the mucopolysaccharide constituents. Cell-wall agglutination tests indicated the presence of an antigen shared with other mycobacteria. AUTHORS' SUMMARY

Calderón Manes S., Salazar Mallén, M. and Estrada-Parra, S. Nuevos datos en relación con la composición antigénica de *Mycobacterium leprae*. [New data on the antigenic composition of *M. leprae*.] Rev. Invest. Salud. Públ. 27 (1967) 117-24.

Two extracts were obtained from a leproma rich in *M. leprae*. The crude one consisted of pepsin-digested material; the purified one contained only polysaccharides. Agar precipitation, using sera from tuberculous and lepromatous patients, as well as from rabbits immunized with *Nocardia brasiliensis*, showed that the crude extract gave five precipitation bands with the lepromatous serum, one of them being identical with that using *M. tuberculosis* var *hominis* as antigen. The purified extracts precipitated with the serum from a tuberculous patient giving a band identical with that produced with PolyINb obtained from *N. brasiliensis*, and this precipitation could be inhibited through absorption with

PolyINb. Two lepromatous sera precipitated with the purified extract and with PolyINb, giving a band of identity and also one and two extra bands, suggesting the presence in this fraction of other species-specific polysaccharide antigens. No precipitation was observed with the sera from 3 other lepromatous patients, from one of the tuberculoid type, and from 6 healthy donors.—AUTHORS' SUMMARY

(Editorial) Transfer factor and leprosy. New England J. Med. 278 (1968) 333-334.

There is increasing interest in granulomatous disease characterized by suppression or abolition of delayed hypersensitivity. Boeck's sarcoid and Hodgkin's disease are notable examples. If normal persons are injected with transfer factor, i.e., a dialyzable moiety prepared from extracts of blood leucocytes from sensitive donors, the systemic delayed sensitivity displayed by the donor, i.e., tuberculin type sensitivity, develops in the recipient. This induced hypersensitivity persists as long as two years. Patients with sarcoidosis or Hodgkin's disease, however, when injected with transfer factor, prove incapable of developing tuberculin type delayed hypersensitivity. This lack of response suggests the existence of a central immunologic deficit due to a still not understood aberration of immunocompetent cells that may either cause or result from the disease itself. Thus patients with depressed delayed hypersensitivity are expressing an impairment of the cell populations normally engaged in the synthesis, replication or transport of transfer factor. Bullock's study (see abstract IJL 36 (1968) 246) furnished evidence of the extent of impoverished delayed hypersensitivity in leprosy in terms of a loss of established immunologic memories and a diminished capacity for active sensitization, and raises the query if the aberrant processing of transfer factor in the granulomatous diseases named above has relevance to the immunologic predicament of patients with lepromatous leprosy. In the latter dis-

ease intracellular infection, resulting in reticuloendothelial blockade, may lead to failure of transfer factor production, with general impairment of the mechanism for delayed hypersensitivity. The loss of delayed hypersensitivity to lepromin may result from such infection. The lepromatous type of disease goes virtually unchecked by the host whose macrophages are laden with *M. leprae*, in contrast with the conditions holding for the tuberculoid type. In other diseases, including tuberculosis, acquisition of specific hypersensitivity is associated with good prognosis and ultimate recovery. It is possible that preparations of transfer factor from lepromin-sensitive human donors would also function as a rapidly acting therapeutic immunizing agent, and convert the progressive lepromatous type of leprosy to the more benign tuberculoid type. Transfer factor might prove of benefit in chronic granulomatous disease in which antimicrobial therapy alone is inadequate.—E. R. LONG

Kerby, G. R. Correlation of tuberculin skin reaction with *in vitro* lymphocyte transformation. *Am. Rev. Resp. Dis.* **97** (1968) 904-908.

An attempt at demonstrating a quantitative relationship between *in vitro* lymphocyte transformation and *in vivo* skin reaction in response to tuberculin has shown that, despite a rather wide variation in the *in vitro* results, a definite relationship appears to exist. Possible sources of this variation and attempts to improve the precision of the test are discussed. Lymphocyte transformation continues to show some promise as a tool for the study of the complex phenomenon of delayed hypersensitivity of tissues to tuberculin.—AUTHOR'S SUMMARY

Salazar Mallén, M., Amezcua Chavarria, E. and Escobar Gutiérrez, A. Estudios de inmunoprecipitación en la lepra. [Immunoprecipitation studies in leprosy.] *Rev. Invest. Salud. Publ.* **27** (1967) 3-14.

The authors used an immunologically active polysaccharide designated Poly I Nb, which occurs in *Nocardia brasiliensis*,

M. tuberculosis, *M. lepraemurium* and *M. leprae*. Their present sample was prepared from *N. brasiliensis*. This was tested by Ouchterlony plates and by paper chromatography against sera of patients with leprosy and other infections. Of 71 sera from patients with lepromatous leprosy, 6 were positive by the agar method and 35 by paper; of 13 patients with tuberculoid leprosy, 6 were positive by paper; one patient with dimorphous leprosy was positive; of 9 patients with indeterminate form, 3 were positive by paper; with the exception of 6 of the patients with lepromatous leprosy, all were negative by agar plates. Sixty-nine healthy control subjects were negative by both tests. The amount of antibody in the lepromatous sera was higher than that in tuberculoid sera (not statistically significant). In 2 cured patients the reaction was negative. Six positive sera were treated with 2-mercaptoethanol, and the titer of precipitation was much diminished; from that it is concluded that the antibody in the serum belongs to the IgM class. With sera from patients with pulmonary tuberculosis, 4 out of 18 were positive by paper chromatography, and so were 3 out of 6 from persons with *N. brasiliensis* infection. [Abstract by F. Hawking, *Trop. Dis. Bull.* **65** (1968) 264-265]

Goodwin, C. S., Tyrrell, D. A. J., Head, B. and Rees, R. J. W. Inhibition of haemaggregation by lepromin and other mycobacterial substances. *Nature (London)* **216** (1967) 1019-1022.

Human erythrocytes suspended in glucose at pH 5.8 may aggregate and precipitate as a deposit in a tube or other container. This hemaggregation can be inhibited by a variety of substances, including viruses, acids and tuberculin in either its old or purified form. The inhibition caused by tuberculin is correlated with skin sensitizing activity, and in turn is inhibited by specific antibody. The authors studied a corresponding phenomenon in the case of *M. leprae* and lepromin. The following materials were tested as inhibitors: (1) integral lepromin from patients with lepromatous leprosy, prepared by Wade's modification of the Hayashi-Mitsuda method,

(2) washed *M. lepraemurium* and *M. tuberculosis*, (3) cytoplasmic fractions of *M. leprae*, *M. lepraemurium* and *M. tuberculosis*, prepared by cell rupture procedures, (4) washed cell walls of these 3 strains of mycobacteria, and (5) normal skin. Fresh human Group A erythrocytes were used. Borax-succinic acid buffers with serum albumin in phosphate buffer, were used as suspending media. The results indicated that at the optimum pH of 5.6 the cytoplasmic fraction of *M. leprae* had a high inhibitory titer (1/3,200). The cytoplasmic fraction of *M. tuberculosis* was much more inhibitory to hemaggregation than cell wall preparations; the difference in the case of *M. lepraemurium* was not so great. Lepromin, in several dilutions tested, inhibited hemaggregation; the highest titer was found in preparations with the most alkaline buffer. Because hemaggregation was inhibited by both crude skin extracts and highly purified bacilli and their products, it seems probable that the activity of lepromin preparations is due to a component of the leprosy bacillus.—E. R. Long

Bonomo, L. and Dammacco, F. Characterization studies of thyroglobulin anti-

bodies in leprosy. An immunological study of diethylaminoethylcellulose chromatographic fractions. *Immunology* 13 (1967) 565-576.

The thyroglobulin antibodies present in the sera of 13 leprosy patients were shown to be exclusively or predominantly macroglobulin in character when studied by diethylaminoethylcellulose chromatography and preparative ultracentrifugation. This was confirmed by immunoelectrophoresis and analytic ultracentrifugation of the fractions containing thyroglobulin antibodies, as well as by tests with 2-mercaptoethanol. The antithyroglobulin specificity of the antibodies showing macroglobulin character was ascertained by absorption experiments with human thyroglobulin; it was ruled out by absorption with FII that the 19S character might result from the formation of complexes with anti- γ -globulin factors. The conditions are discussed which may affect the 7S or 19S character of antibodies, in particular the antibody titer, the amount of antigenic stimulation and the vigor of the subject's immune response.—[From authors' summary]

Epidemiology and Prevention

Aguiar Pupo, J. Importância dos focos lepromatosos no controle da endemia de lepra. Prevenção da lepromatose pela cura da lepra indeterminada. [Importance of lepromatous foci for the control of leprosy. Prevention of lepromatous leprosy by cure of indeterminate leprosy.] *Rev. brasileira Leprol.* 34 (1966) 19-30.

A system of prophylaxis is suggested with the following procedures: (a) periodic inspection of domestic foci by mobile sanitary units, (b) intensive treatment of indeterminate cases so as to break the cycle of contagion and avoid their development into the lepromatous type, (c) greater efficiency of sulfone therapy of early cases, obviating highly infective open lesions by

intensive treatment, (d) ending of compulsory isolation and thereby stopping the hiding of cases, with maintenance of open door policy in existing sanatoria as advocated by the VIIIth International Leprosy Congress (Tokyo, 1958), (e) transformation of preventoria into suitable educational institutions and facilities for general child care for offspring of leprosy patients, and (f) integration of leprosy prophylaxis within the Public Health Service, and coordination with official and private agencies and the practicing medical profession — [From author's summary]

Machado, P. A. Contribuição para a conceituação e avaliação da dinâmica dispensarial. [Contribution to the concept

and evaluation of the dynamics of dispensaries.] *Rev. brasileira Leprol.* 34 (1966) 31-38.

The author describes the leprosy control system in the State of São Paulo, Brazil in the light of results in 1962-1966 in the Department of Leprosy Prophylaxis. Particular attention is given to the control of contacts and home foci of contagion. A monthly evaluation based on the "yield index" is advocated, indicating the minimum percentage of examinations in the dispensary, which should equal one-sixth of the known contacts, since each contact must be revisited every 6 months. A "coverage index" indicates the "dynamic action" and proves the effective presence of a physician in areas of the zone for which he has responsibility. Correspondingly a "matriculation index of contacts" is suggested, giving the number of contacts in each home, calculated according to the mean number registered in the State of São Paulo, which is 6.2. These several indices are quantitative. A "qualitative index" is also desirable, calculated according to the percentage of indeterminate forms among the new cases registered. All of these indices are calculated for the 53 dispensaries of the State of São Paulo during a five-year period. The sum of the 4 indices named above, counting the qualitative index as 2, provides the "dynamic index," which furnishes significant information when compared with the incidence of initial forms.—[From author's summary]

Brown, R. E. Prevention of leprosy. New ideas out of Africa. *Clin. Pediat.* 6 (1967) 446-450.

Review article, noting a special significance of leprosy in Africa, where 20% of all known leprosy cases are found. In Africa, where the tuberculoid form predominates, more females than males are affected. Leprosy is more common among certain tribal groups than others—a fact possibly indicating individual susceptibility. The question of cross immunity between tuberculosis and leprosy is discussed, and the well known results of J. A. Kinnear Brown and M. M. Stone on BCG vaccination in the prophylaxis

of leprosy are cited. Present results suggest that it is safe and desirable to introduce the measure in programs for leprosy control.—E. R. LONG

Leiker, D. L., Otsyula, Y. and Ziedses des Plantes, M. Leprosy and tuberculosis in Kenya. *Leprosy Rev.* 39 (1968) 79-83.

Regional differences in prevalence of leprosy in Kenya, varying from 0.1% to more than 3% have previously been explained by differences in prevalence of tuberculosis. The validity of these studies, based on numbers of registered tuberculosis and leprosy patients, is doubted. In this study the tuberculin reaction in large numbers of children in areas with a definitely high prevalence of leprosy in compared with that in areas with a definitely low prevalence of the disease. No correlation was found between the leprosy index and the tuberculosis index. It is concluded that in West Kenya the distribution of tuberculosis alone does not offer a satisfactory explanation for the distribution of leprosy. It is likely that tuberculosis has had some influence on the epidemiology of leprosy, but the effect is obscured by other factors. The distribution of leprosy may be related to the history of the disease in Africa and in the country itself. Leprosy probably did not originate in Africa, but was first introduced in North Africa. The main direction of spreading has been from north to south. In West Kenya leprosy was probably introduced by people who migrated from the Nile Valley via Uganda into West Kenya. The disease is still spreading from west to east.—AUTHORS' SUMMARY

Leiker, D. L., Otsyula, Y. and Ziedses des Plantes, M. Effect of BCG vaccination on leprosy in Kenya. *Leprosy Rev.* 39 (1968) 84-86.

Following up work initiated by Dr. C. M. Ross in 1962 the authors undertook a resurvey of children in the same schools at Buhole, Central Byanza. In 1962, 237 children were examined, 36 of whom were found to be suffering from nonlepromatous leprosy. Following vaccination with BCG in 1964, the resurvey in 1966 revealed 2

patients suffering from tuberculoid leprosy among 596 examined. Of the 37 patients registered by Dr. Ross in 1962, 15 children were reexamined in 1966. The lesions were found to have resolved completely, in many of them without treatment. Thus, resurveys of school children in a highly endemic area in Kenya, 2 years after BCG vaccination, showed a marked decrease in the incidence of mild, nonlepromatous leprosy. No conclusion could be drawn as to the preventive effect of BCG vaccination against progressive forms of leprosy. Such an effect is not expected.—N. D. FRASER

Brubaker, M. L. and Johnwick, E. B. Ten-year review of hospital admissions of patients with leprosy. *Pub. Hlth. Rep.* 83 (1968) 155-160.

From 1 July 1955, through 30 June 1965, there were 362 admissions to the Public Health Service Hospital at Carville, Louisiana. Of these, 25 persons were eliminated from this study because of inadequate or unsatisfactory data. Among the 337 patients remaining in the study were approximately twice as many males as females. The average age at the time of admission was 38.2 years. The youngest patient was a girl 8 years old, and the oldest was a man of 83. Of the cases studied, 244, or 72.3%, were lepromatous; 44, or 13%, were dimorphous; 46, or 13.6%, were tuberculoid; and three, or 1%, were indeterminate. Patients born in the continental United States included 81 from Texas, 23 from Louisiana, 11 from Florida, and 41 from 23 other States. Of 181 patients from outside the contiguous States 60 were born in Mexico, 27 in Puerto Rico, 16 in the Philippines, 13 in various Pacific Islands, 12 in Hawaii, 7 each in Cuba, India or Pakistan, and Europe, 6 in the Caribbean area, 3 in Africa, and one in the Near East. Half the patients born in continental United States denied knowledge of the source of their infection. Among the patients born elsewhere, 27.6% reported that they had contracted the disease from other patients. Of these, 72.4% came from areas where leprosy is endemic. The source of their disease was unknown by 23% of the entire study group. Among the 337 first admissions, 46% patients were

veterans, 13 of whom were born outside the United States in areas where leprosy is endemic. Most veterans born in the United States served in the Far East. The racial distribution of the 46 veterans was 35 white, 6 Asian, and 5 Negro. The distribution for all patients admitted during the period was 271 white, 35 Asian, and 31 Negro. More than 50% of the patients sought medical advice because they had neurologic symptoms denoting anesthesia or paresthesia. Macular lesions, present in 34.6% of the patients, were the type most frequently observed. The average delay was 14.5 months from the onset of a symptom until the patient visited a physician. An average of 17.4 months elapsed from the time a physician was consulted until the diagnosis was established. The period from diagnosis to admission to the Public Health Service Hospital at Carville averaged 19.4 months. In differential diagnosis prompt consideration of leprosy is imperative to effect early treatment. When it is diagnosed early and treated appropriately, leprosy can be cured, deformity prevented, the source of infection eliminated, and the reservoir reduced.—AUTHORS' SUMMARY.

Jiménez Monge, R. & Ramírez Castro, E. Análisis epidemiológico de la lepra en Costa Rica. [The epidemiology of leprosy in Costa Rica.] *Acta Méd. Costarric.* 1 (1967) 59-70.

The authors made an epidemiologic analysis of leprosy in Costa Rica and found that the disease is prevalent in all parts of the country. The incidence and prevalence rates remained constant during the quinquennium under survey (1961-1965), and the provinces of Limón and Puntarenas had the highest incidence while Heredia had the lowest. Thirty-eight new cases were notified in Costa Rica in 1965, an incidence of 2.6 per 100,000. The disease predominates in males and most of the patients are aged over 50. In all Latin American countries the control of leprosy contacts is inadequate, but in Costa Rica it is better than in the other Central American countries, as general practitioners are sufficiently interested to report suspected cases. However,

more opportunities for training in the early diagnosis of leprosy are necessary. [From abstract by J. R. Innes, *Trop. Dis. Bull.* 65 (1968) 262.]

Hindle, W. H. The Ryukyu Islands: medical problems and programs. *Hawaii Med. J.* 27 (1968) 307-312.

The medical activities of the Ryukyu Islands are reviewed in this article at length. Leprosy is a continuing problem. Two large leprosaria have been constructed with U.S. funds. These are presently poorly staffed. A general educational program is needed for leprosy, as cases are difficult to find. Crowding in single room dwellings fosters spread of the disease, and concealment is common. Patients are known to have avoided discovery for as much as 10 years. Active cases are treated in the leprosaria. Unfortunately prejudice continues after return home in arrested cases.—E. R. LONG

Bhattathiripad, T. N. N. Health education in leprosy—Kerala's efforts in the field. *Leprosy in India* 39 (1967) 110-117.

This paper gives a factual account of the success achieved in overcoming prejudice,

inertia and fear in relation to leprosy in the state of Kerala, S. India. Thanks to a leadership that combined imagination and enthusiasm, knowledge and a practical outlook, and thanks also to a wise use of all possible methods of mass education, longstanding prejudice against the leprosy patient was broken down and much misunderstanding about leprosy was removed. Doctors and paramedical workers were given special courses of instruction in leprosy. Leprosy figured in school textbooks, in dramatic performances, in cinema films, in newspaper articles and radio talks; special pamphlets written in the vernacular were distributed widely; camps for social workers were organized, and essay competitions for schoolchildren arranged. Much of the success of the campaign is attributed to the work of local Leprosy Welfare Committees, which ensured the informed cooperation of people of good will in even the most outlying districts. By means of educating the patient and his family and the general public, the attendance rate of patients under treatment for leprosy has shown a gratifying increase and a high degree of confidence has been gained. [Abstract by S. G. Browne, *Trop. Dis. Bull.* 65 (1968) 261-262]

Genetics

Beiguelman, B. Leprosy and genetics. A review of past research with remarks concerning future investigations. *Bull. WHO* 37 (1967) 461-476.

It has long been believed that an hereditary factor is concerned in susceptibility to leprosy. Pedigree analysis supports the general concept. In recent years geneticists have approached the problem by studying the association between leprosy and certain genetic markers, such as ABO and Rh blood groups, glucose-6-phosphate dehydrogenase deficiency, haptoglobins, transferins, Australian antigen, and taste sensitivity for phenylthiourea. No firm relation, however, has as yet been established between susceptibility to leprosy and these

markers. The relatively low fertility of leprosy patients as compared with that of healthy people has been considered as of possible genetic association, but the frequent pathologic-anatomic genital involvement in the male, which is more frequent than that in the female, may account for the total low fertility of leprosy patients. The author considers a phenomenon brought to attention recently, viz., the lysing capacity of macrophages for *M. leprae*, as of more moment (See Beiguelman, B. and Quagliato, R. Nature and familial character of the lepromin reactions. *THE JOURNAL* 33 (1965) 800-807). He believes that investigation of healthy persons, by the technic of differentiation of blood monocytes into macrophages, should be under-

taken to determine if a dimorphism in lysing capacity truly does exist, and if heterogeneity in lysing capacity for *M. leprae* can be related to sex and age.—E. R. LONG

Beiguelman, B., Pinto, Jr., W., Dall'aglio, F. F., Da Silva E. and Vozza, J. A. G-6PD deficiency among lepers and healthy people in Brazil. *Acta genet. et statist. med.* 18 (1968) 159-162.

The frequency of G-6PD deficiency was investigated among 323 white and 83 Negro lepromatous patients and 234 normal white people by means of the Motulsky and Campbell-Kraut decolorization technique (*Proc. Conf. Genet. Polymorphisms and Geographic Variations in Disease* 23, 24 & 25 (1960) 258-292). No significant difference between healthy and lepromatous individuals in the frequency of this trait was apparent.—AUTHORS' SUMMARY

Salzano F. M., Suñé, M. V. and Ferlauto, M. New studies on the relationship between blood groups and leprosy. *Acta. genet. et statist. med.* 17 (1967) 530-544.

Studies on the A₁A₂BO, MN, and Rh (tests with 5 sera) blood groups of 936 white and 74 negroid leprosy patients are compared with those of 572 white and 384

healthy negroid patients. The subjects were living at the time of the investigation in 3 southern Brazilian cities. No significant differences were observed in the distribution of these systems in patients and normals. Attempts at establishing significant relationships between deviations in phenotype distributions in the systems and the type of leprosy or severity of the disease were also unsuccessful.—AUTHORS' SUMMARY

Vogel, F. and Chakravartti, M. R. ABO blood groups and the type of leprosy in an Indian population. *Humangenetik* 3 (1966) 186-188.

The relationship between ABO blood groups and the immunologic type of leprosy, i.e., lepromatous vs. nonlepromatous, was examined in 931 leprosy patients from Bankura, West Bengal, India. Among 472 lepromatous patients there was a slight excess of blood groups A, AB, and B, as compared with the nonlepromatous group. The excess, however, was not statistically significant. Combination of the authors' data, however, with data published by Beiguelman in Brazil and Yankah in Ghana revealed a significantly higher evidence of group A (and probably B and AB) in lepromatous patients.—AUTHORS' SUMMARY

General and Historical

[Scientific-practical conference for the campaign against leprosy in Tersky Leprosy Hospital, U.S.S.R.] Torsuev, N. Nauchno-prakticheskaja konferentsia po voprosam borby s leproy. Rostov-on-Don, 1967.

In autumn of 1967 in the Tersky Leprosy Hospital in the North Caucasus, there was a conference of USSR leprologists at which more than 100 physicians were present and 74 reports were made. V. Shubin dealt with the role of the Astrakhan Institute for studying leprosy in the development of Soviet leprology. The Institute was established in 1948. During the 19 years of its existence the Institute organized 11 conferences on leprology and published a few

collections of scientific papers and "transactions." During that time the scientific workers of the Institute published 520 scientific papers and a number of theses. P. Grebennikov and K. Kharabadjakhov reviewed and summed up the campaign against leprosy in the Rostov region, where, from 1769 and 1869, there was one of the first hospitals for leprosy patients in Russia. In 1946 the Rostov experimental-clinical leprosy hospital of the Ministry of Public Health of the RSFSR was opened. From 1947 to 1951, 23 new leprosy patients, on the average, were registered annually, and from 1962 to 1966 only 3. V. Sim reported that in Kazakhstan a new leprosy hospital

had been built, in Aralsk an antileprosy dispensary had been opened, and 10 antileprosy medical stations had been set up. The vaccine BCG was given to 70,000 persons, including 2,000 persons who had been in contact with leprosy patients. According to data given by O. Tryasuchev and I. Timofayev, within 5 years in the Astrakhan region, at mass-prophylactic examination of a population consisting of 91,516 persons, 32 leprosy patients were discovered, among them 10 with lepromatous leprosy. N. Kadantzev recommended a 5-10 year period of observation for the persons who had received prophylactic BCG vaccination. I. Striggin believed that patients with tuberculoid leprosy can be treated successfully in a polyclinic. N. Ivanova, G. Chuchelin and V. Saifutdinova reported that from 1955 to 1966 in Uzbekistan 800 patients were treated in the polyclinic as outpatients; relapses were observed in only 5%. V. Snitko reported that a number of patients displayed increasing psychologic personality changes with resulting chronic progressing asthenia from the influence of numerous somatogenic and psychogenic factors upon the higher nervous activity. This asthenia hampers the possibility of adaption to life outside the leprosy hospital. The rehabilitation of a leprosy patient must begin from the very moment of the diagnosis, and must include a complex of psychotherapeutic measures and adequate antiasthenia measures. V. Shubin, after studying different aspects of leprosy epidemiology, reached conclusions on decreasing mechanisms in the transfer of leprosy infection. In Kazakhstan, from 1951 to 1956, there were, on the average, 184 patients each year, from 1956-1960 197 patients, and from 1960 to 1965 74 patients. During that time the per cent of lepromatous patients diminished from 88 to 36%; 687 patients were infected within their families (A. Jogleva). V. Pogorelov and F. Davlekamova, on the basis of experiment in the Karakalpak republic and the Astrakhan zone, confirmed the prophylactic importance of BCG vaccination. According to F. Davlekamova and Z. L. Semitchenko contact with the infection source up to one year led to illness in 3.36%, from 1 year to 3

years, in 9.4%, and more than 3 years, in 16.2%. F. Davelkomova and T. Naumova believe that persons with a positive Mitsuda reaction in some cases can acquire lepromatous leprosy. N. Rizhova and T. Bogush found that Solusulfone penetrated a child's organism with mother's milk if the mother had received an intramuscular injection of from 2.0 to 3.5 ml. of the 50% solution for 3 days. Thus the child gets up to 5 mgm. of the preparation for 1 kgm. of his weight per week. V. Bondareva reported that in Primorya (the Far East) during the last 10 years the disease had declined two-fold. N. Torsuev and V. Loginov considered it necessary to distinguish skin, skin-nerve and nerve types in the dimorphous group of leprosy. L. Demina and A. Yakupova stated that 22 patients out of 35 had initial manifestations of the disease in the form of hypochromic and hypochromerythematous ephemeral markings. G. Zhuravleva, on examining 116 patients in the residual stage, found that functional tests permitted judgment of the degree of regressive change. She used samples obtained with the intravenous injection of nicotinic acid solution, and placement of mustard plasters; tests with histamine and chlorethyl were less convincing. R. Usmanov described the clinical picture of intensification of lepromatous leprosy. This proceeds in the nose as a vasomotor rhinitis, in the pharynx as a catarrhal tonsillitis and acute pharyngitis, and in the larynx as acute edematous laryngitis. According to J. I. Garus' data from 301 patients (85% lepromatous) who were in the Tersky leprosy hospital from 1952 to 1966, 58.8% had a specific eye disease and 2.7% were blind (45.7% of them from affections of the cornea, and 44.1% of the iris). Exacerbation of iridocyclitis was noted in 40.7%. Affections of the eyeball were rare, and observed only during progressive course of the disease. Of 201 patients with lepromatous leprosy who were discharged from the hospital, 133 had various regressing specific affections of the eyeball. Among 48 lepromatous patients with relapse of the disease 14 were found to have activation of former eye affections or development of new ones. T. Sviridov observed a female patient with bilateral

neuritis of the second branch of the trigeminal and at the same time with hyperemia of the sclera, edema, keratitis, and severe photophobia. G. Maksudov ascertained roentgenologically that 98 patients out of 120 (81.6%) had bone changes. Osteologic processes are always accompanied by changes in distal parts of the arterio-vascular net, in the form of decreased diameter or dilation, or even obliteration of ultimate arteries. According to data presented by V. Telegin caries is of greater intensity in the teeth of leprosy patients than in healthy persons. Some 95% of leprosy patients had parodontosis.—N. TORSUEV

Browne, S. G. The current medical treatment of leprosy. *Indian Practitioner* 20 (1967) 427-432.

Review article "written not for the expert leprologist, but for the ordinary practitioner or the hospital medical officer who will have from time to time to treat patients with leprosy." It covers basic facts in the natural history of leprosy, where and how it should be treated, the drugs to be given and the dosages employed, the duration of treatment with different types of drugs, and, finally, the surgical procedures used in the prevention of deformity, and treatment of complications of leprosy.—E. R. LONG

[Homes for healthy children of unhealthy patients (Leprosy).] *J. Rehabil. in Asia* 9 (1968) 13.

This short communication based on "information by R. V. Wardekar," notes his opinion that the establishment of special homes for this purpose represents a retrograde step. In 1958 Brazil, after an experience of 25 years operating such homes, abandoned the practice, and proposed their conversion into institutions for general child care. In the same year the VIIth Congress of Leprology recommended placing the apparently healthy children of leprous patients with relatives or friends. If general child care. The Panel on Epidemiology at the VIIIth Congress stated that there is no need for special institutions for malaria, kala azar, bacillary and amebic dysentery, amebic abscesses, cholera, and

children of leprous parents, and that if institutional care is necessary they should be admitted to institutions for child care. In 1965 Dr. Dharmendra reiterated these views, emphasizing the psychologic trauma of existence in the specialized home for children of leprosy patients. The writer of this unsigned article noted that since the above cited recommendations were made much work has been carried out, indicating the value of DDS as a prophylactic. The three recommended solutions to the problem are (1) place the child of a leprosy patient with a relative or friend with DDS prophylaxis, (2) if that is not possible, place the child in a home for general child care, giving DDS prophylaxis, and, finally (3) if (1) and (2) are impossible, leave the child with the parents, treating the child prophylactically and the parents therapeutically with DDS.—E. R. LONG

Klingmüller, G. Sarkoidose und Lepra (Sarcoidosis and leprosy). *Archiv. f. klin. u. exper. Dermatol.* 227 (1966) 132-135.

Ever since the first descriptions of sarcoidosis its differential diagnosis has involved leprosy as well as tuberculosis. Clinical differentiation from leprosy is often difficult, if all possible criteria are not used. Misdiagnosis in each direction must always be taken into account. Recognition of sarcoidosis on an etiologic basis has thus far proven unattainable. Many leprologists offer the concept of a leprotic etiology for sarcoidosis, but others are included to admit the concept on clinical grounds. Today, however, leprosy and sarcoidosis must be considered as separate entities.—E. R. LONG

Boyd, J. Sir Leonard Rogers, F. R. S. (1868-1962). An appreciation. *Trans. Roy. Soc. Trop. Med. & Hyg.* 62 (1968) 161-163.

This brief memoir marked the 100th anniversary of Leonard Rogers' birth. Rogers, looked upon as one of the most illustrious Fellows of the Royal Society of Tropical Medicine and Hygiene, had a great deal to do with the understanding and treatment of leprosy. He was of the opinion that if it could be proved that they be placed in institutions for this proved impractical it was recommend-

leprosy. He was responsible in large measure for refinement in the treatment of leprosy patients with the purified fatty acids of *Hydnocarpus* and chaulmoogra oil.

He was active in medical education in India. He founded the British Empire Leprosy Relief Association (BELRA, now LEPRO).—E. R. LONG

Other Mycobacterial Diseases

Tsukamura, M. Identification of mycobacteria. *Tubercle (London)* **48** (1967) 311-338.

An identification system for the genus *Mycobacterium* is presented, based on data from 637 strains. The identification process consists of two steps: first, preliminary grouping, by which test strains are grouped into either the subgenus *Mycobacterium* (slowly growing mycobacteria) or the subgenus *Mycobacterium* (rapidly growing mycobacteria); and second, identification by maximum similarity with characters of reference for strains of various species, which are shown in identification tables. The table for the preliminary grouping has 8 characteristics (tests). The identification table for the "slowly growing mycobacteria" consists of 29 characteristics. The table for the "rapidly growing mycobacteria" consists of 34 characteristics. The total number of characteristics to be used for identification is 59, as 12 characteristics are used in two tables. The characteristics were selected from 95 studied.—AUTHOR'S SUMMARY

Pattyn, S. R., Van Ermengem, J. and Gatti, F. Mycobacteria other than *M. tuberculosis* isolated from clinical material in Kinshasa (Congo). *Ann. Soc. Belg. Med. Trop.* **47** (1967) 435-442.

This paper reports the results on identification of mycobacterial strains isolated from patients and sent to the Institute of Tropical Medicine in Antwerp and studied at Lovanium University during two years. From a series of 1953 cultures in Kinshasa, of which 174 were positive for mycobacteria, 18 strains of nonhuman type mycobacteria were isolated. Identified were one intermediate strain (*M. bovis*), 7 strains of scotochromogens, 3 strains of *M. terrae*, 5

strains of Battey group organisms, and 2 strains of *M. fortuitum*. Except for the bovine strain no one of these strains was recognized as an etiologic agent of disease. [From authors' abstract]

Altire-Werber, E., O'Hare, D. and Louria, D. B. Infections caused by *Mycobacterium rhodochrous* and scotochromogens. *Amer. Rev. Resp. Dis.* **97** (1968) 694-698.

Infections caused by mycobacteria other than *M. tuberculosis* are being reported with increasing frequency. The causative organisms have included photochromogens, nonchromogens, and the ordinarily saprophytic scotochromogens, and *M. fortuitum*. Two cases are presented of severe systemic disease in which secondary invasion was caused by *M. rhodochrous*, an acid-fast organism in which the genus classification is unclear and which is rarely associated with human disease. In each case, routine cultures failed to show the organism, but growth occurred in highly enriched media. In 2 other cases scotochromogenic mycobacteria were recovered from blood specimens, using enriched media.—AUTHORS' SUMMARY

Camilang, B. and Armstrong, D. Subcutaneous abscesses due to *Mycobacterium fortuitum*. *American Rev. Resp. Dis.* **97** (1968) 451-454.

A case is presented of a patient with diabetes and subcutaneous abscesses caused by *M. fortuitum* at insulin injection sites. The organism was broadly resistant to antimicrobial drugs. Treatment with drainage and hot soaks resulted in resolution of the infection. *M. fortuitum* may produce a variety of infections in man, rang-

ing from mild subcutaneous abscesses to progressive pulmonary disease.—AUTHORS' SUMMARY

Yamaguchi, T. and Toyohara, M. [Discharge of atypical mycobacteria from ambulatory patients and treatment of pulmonary disease caused by them.] (In Japanese) *Kekkaku* 42 (1967) 245-250.

Atypical mycobacteria were isolated from 116 of 37,202 specimens during a period of 3-1/2 years, viz., from 78 of 7,098 sputum specimens, 38 of 30,087 throat swabs, and none of 17 gastric lavage specimens. These atypical mycobacteria were isolated from 61 patients, twice from 4 patients, and 4, 13, and 35 times from one patient each, respectively. Detailed bacteriologic and clinical studies were made on 3 male patients who expectorated atypical mycobacteria more than 4 times. *M. avium* and saprophytic acid-fast bacilli were isolated from 2 patients; in the third patient, *M. avium* and a scotochromogen were isolated. The patients were 53, 49 and 35 years of age, respectively. All had had cavities before treatment. Chemotherapy with streptomycin, isoniazid, and PAS was unsatisfactory in each patient, and bacteriologic clearance occurred when 1 gm. of ethambutal combined with isoniazid was administered daily to the first patient and cycloserine and isoniazid were administered to the second and third patients, respectively.—[Abstract by I. T. Ebisawa, *American Rev. Resp. Dis.* 97 (1968) 993-994]

Doyle, W. M., Evander, L. C. and Gruft, H. Pulmonary disease caused by *Mycobacterium xenopei*. *American Rev. Resp. Dis.* 97 (1968) 919-922.

Case report of a 72-year-old male patient with progressive pulmonary disease characterized by extensive patchy infiltration, as seen in x-ray films, of both upper lobes with some honeycombing of the remaining parenchyma. *M. xenopei* was isolated 6 weeks after the patient was admitted to hospital, and proved to be identical with a microorganism isolated from this patient previously

at another hospital. Its growth characteristics are described. It was chromogenic, niacin-negative and sensitive to erythromycin. The origin of the infection was unknown. The patient left the hospital against medical advice and was not followed.—E. R. LONG

Tison, F., Devulder, B., Roos, P. and Tacquet, A. [Technics and results of a search for mycobacteria in meat.] *Ann. Inst. Pasteur Lille* 17 (1966) 155-160.

The writers have described a technic for discovering and identifying mycobacteria in butchers' meat. They observed the usual absence of contamination by tubercle bacilli of pickling brines, whose bactericidal properties are increased by the presence of nitrites. In the glands and muscular flesh of suspect animals, so-called atypical mycobacteria as well as the usual bovine bacilli were frequently isolated. The systematic analysis of 84 deposits of industrial centrifugation of cow's milk and that of 196 glands and tonsils of supposedly healthy pigs permitted the isolation of numerous strains of *M. kansasii*, *M. aquae*, and, especially, *M. avium*. Consequently, cows and especially pigs could take part in the epidemiologic relationship of human mycobacterioses.—Abstract by Ch. Gernez-Rieux, *American Rev. Resp. Dis.* 97 (1968) 991.

Hobby, G. L. and Lenert, T. F. The antimycobacterial activity of Rifampin. *American Rev. Resp. Dis.* 97 (1968) 713-714.

A series of experiments were performed to compare the *in vitro* and *in vivo* activity of Rifampin (3-4-methyl-piperazinyl-aminomethyl) rifampin SV) with that of isoniazid against mycobacteria. The data obtained suggest that on a weight basis Rifampin is approximately one-half as active as isoniazid against isoniazid-susceptible strains, both *in vitro* and *in vivo*, but is active at least *in vitro* against isoniazid-resistant strains of *M. tuberculosis*.—AUTHORS' SUMMARY