CURRENT LITERATURE

It is intended that the current literature shall be dealt with in this department. It is a function of the Contributing Editors to provide abstracts of all articles published in their territories, but when necessary such material from other sources is used when procurable.


Of interest to those who have been plagued by the historical misuse of the word leprosy, this article traces the origins of the terminology associated with syphilis, and in doing so presents nearly six pages supporting the thesis that much of the so-called leprosy of history was in fact “endemic and epidemic treponematoses.” The words leprosy, boen, maculasa, and fess are analyzed particularly, with a view to demonstrating that endemic and venereal syphilis have been present for thousands of years in the Middle and Near East, and—since Roman times, at least—in Europe. With numerous quotations from the classics, and medical references in a number of languages, it is emphasized that words and their meanings change with time and place. The author concludes that a number of the ancient and modern terms used in connection with syphilis are cut from the same cloth, and that the origins of syphilis itself must have antecedent recorded history.—J. A. Roméo


The number of persons with leprosy registered in Colombia (11,183) represents 0.78 per 1,000 of the population, the provinces of Santander Sud (3.79 per 1,000) and of Boyaca (3.49 per 1,000) being the most affected. The cases are classified as lepromatous (60.8%), indeterminate (16.4%), and tuberculoid (13.0%). Most of them are treated by IDMS by mouth. In 10 years 4.5% of relapses have occurred, always when the dosage employed was too high, or too rapidly progressive, or when the rest periods were too short. Dosage: from the 1st to the 15th day, 100 mgm. of DDS per day without rest; from the 16th to the 20th day, 300 mgm. per day, rest for one Sunday; after the 3rd month, 300 mgm. per day, rest for two Sundays per month. BCG vaccination is very extensively used as a prophylactic measure. At the beginning, all healthy patients are given ambulatory treatment in the dermatologic dispensaries. All patients in a state of reaction and the invalids are hospitalized.—[From abstract by R. Chaussinand in Bull. Inst. Pasteur 60 (1962) 1596-1597.]


Fifteen new cases of leprosy were recorded in Bulgaria in the period between 1934 and 1946. This brought the total number of registered patients in the country for the last 85 years to 38. The greatest number of patients are in North Bulgaria. In 7 of the cases the epidemiologic investigation showed that the contamination had been transferred from abroad. The most frequent form of leprosy in Bulgaria is lepromatous. The indeterminate form is infrequent, and only 2 cases of tuberculoid leprosy were recorded.—[From authors’ summary, supplied by N. Tosanov.]


The author, a Medical Research Council Scholar, reviews the literature relevant to the problem of genetic mechanisms in the occurrence of leprosy, in the hope of stimulating workers in the field to provide the information needed for the elucidation of these prob-
The frequency of leprosy is not uniform, he points out, but the distribution of leprosy is not random. Social units in which variations occur (i.e., races, tribes, etc.) are genetically rather than politically determined. Data by Steingrüber on the Andernach French community in New Brunswick suggests that susceptibility to leprosy is controlled by a single irregularly dominant gene, i.e., a dominant gene that is not fully penetrant as a heterozygote. Penetrability is calculated from the data on the same community reported by Aycock and McKinley (method of calculation given) and found to be 83.3% (perhaps).

An appeal is made for collaboration in the furtherance of studies on the influence of genetic systems on the epidemiology of leprosy. — H. W. W.


In the examination of a population of 75,550 persons in Bolivar State, Venezuela, in 1956, 322 leprosy patients were found. The observations led to the conclusion that, among relatives living together with leprosy patients, there was 7.8% mortality among children, 3.4% among brothers and sisters, 3.3% conjugal infection, and 1.6% among parents of patients. The chance of acquiring the disease among those living with patients but unrelated to them is about 1 to 6, compared to those who live with them and are related. The probability of finding a leprosy patient rises by 10 times when the population examined consists of those living with leprosy patients.—[From abstract by E. Muir in Trop. Dis. Bull. 59 (1962) 908.]


Nuevo Esparta is a state in the northeast of Venezuela. Up to 1952, when a leprosy division of the Health Service was formed, there were 187 known cases of leprosy, 83 of them of the lepromatous type. In the population examined for leprosy from 1952 to 1956 there was a total of 160 cases out of 65,009 persons examined; of these 26.9% were either lepromatous or dimorphic (borderline). Also, 83 people in contact with these patients were tested with tuberculin and BCG vaccination was given. From the epidemiologic data recorded (8 tables) it is calculated that in the whole state there is a leprosy prevalence of 2.4 per thousand of the population.—[From abstract by E. Muir in Trop. Dis. Bull. 59 (1962) 908.]


In an antileprosy campaign 20,860 people were examined, and 21,488 people were vaccinated with BCG. During the examinations made in the town of Puerto Cabello in December 1959, 68 leprosy patients were discovered; 45 of these were people who had abandoned treatment at dispensaries or special sanatoriums. This is an example of the method of joint control of tuberculosis and leprosy.—[From abstract by E. Muir in Trop. Dis. Bull. 59 (1962) 908-909.]


The author gives brief information of the geographic spread of leprosy and statistical data on the numbers of registered patients in various countries, and notes the great value of BCG prophylaxis. The following are the important measures to be taken for leprosy
control: finding of leprosy patients as early as possible; surveillance of the people in contact with them; preventive treatment; BCG vaccination of all of the population in endemic regions; and sanitary education. Among 256 children born of leprosy patients and vaccinated with BCG during a 6-year period, no cases of leprosy were found, while among the same number of nonvaccinated children 21 developed leprosy. A leprosarium has been functioning in Kazakhstan since 1929. In the city of Aralsk the inter-district antileprosy dispensary began operating in 1938, and 10 special antileprosy units in rural territories of the Aralk and Kuzdinsk regions. In these regions 90,000 persons were examined in 1957, 90,000 persons in 1960, and more than 90,000 in 1961. The number of patients found during these years was decreased to 42%. All kinds of hospitals, as well as specialized establishments (antituberculosis, sanitary, epidemiologic, etc.), are required to take part in the leprosy control work. These measures, together with the improved sanitary and hygienic conditions of life and material well-being, are the basis for the position that in the next 10-15 years leprosy in Kazakhstan will be eliminated.—N. Tomsky


This paper gives the leprosy statistics in the island of Martinique (population about 250,000) for the last 10 years up to 1960. In that year, in spite of the vigorous antileprosy campaign that had been carried on, 54 new cases were found, 13 of them lepromatous. The following findings are given: (1) The percentage of lepromin-positive and tuberulin-negative subjects is more than twice as much among contacts with leprosy as among noncontacts; (2) the number of subjects positive to both reactions is much higher among noncontacts (36.5%) than among contacts (4.7%); (3) the total percentage of lepromin-positive subjects is a little more in noncontacts than in contacts, and this shows the undoubted effect of tuberculoid impregnation on the Mitsuda reaction; (4) leprosy infection in lepromatous contacts, although less than in lepromatous contacts (4.3% as compared with 54.8%), is of the same importance. The conclusion is arrived at that: (1) all children should be vaccinated at birth with BCG; (2) all school children should be examined; (3) all open cases should be isolated, arrangements being made for help and rehabilitation; (4) material help should be given to all ambulatory patients; (5) there should be periodic, careful examination of contacts.—[From abstract by E. Mair in Trop. Dis. Rev. 59 (1962) 882.]


The reprint of this article bears, on the back page, a letter to recipient which says, in part: “Since lepra bacilli are similar to tubercle bacilli, this [article] has been designed on the accepted conception of tuberculosis as far as practicable. It explains not only the majority of clinical, bacteriological, immunological, histo-pathological, therapeutic and prophylactic observations in leprosy but clarifies certain aspects of tuberculosis also. . . . No doubt that there may be some difficulties in understanding this conception, but the writer will be glad to clarify his views whenever asked for.” This reviewer, experiencing the predicted difficulties, ventures to remark that it would have been well had the author made that clarification in the article itself, preferably in the form of a proper summary. His concept appears to be that there is a sequence of: (a) primary infection of the skin “in subinfective dose”; (b) followed by a lag phase in the growth of the bacilli, during which there may develop “in certain degree of allergy and immunity with increase of resistance of the histiocytes”; and (c) latent infection or manifest disease according to the degree of resistance of the histiocytes. Of growth phases there are, besides lag and
logarithmic phases, also a "stationary phase (growth)" and a "declining phase (death)."
The commonly observed clinical manifestations of leprosy are, it is said, due to develop-
ment of either (1) allergic reaction against the accumulated bacterial protein, or (2)
immunity reaction against the eliminated bacterial lipoid; or (3) lepromatous reaction
against the eliminated active bacilli. Furthermore, there are two forms of allergic reac-
tions, "productive" and "obstructive"; two types of immunity reactions according to
whether the case is bacteriologically positive or negative; and also two types of leproma-
tous reaction, one "from allergic reaction" and the other "from immunity reaction."
[Presumably from this range of conditions the several forms of clinical leprosy evolve.
There are four detailed, full-page tabulations from which, with time, one might be able to figure out the causes of events in that respect.]—H. W. W.

MARTINEZ DOMÍNGUEZ, V. Early diagnosis of leprosy by study of the sweat response to

AFTER listing the advantages of early diagnosis of leprosy cases, and discussing the
difficulties of making such diagnosis, the author points out that the histamine test is not
applicable with dark-skinned persons. The pilocarpin test of alteration of sweating is
rather complicated, and the results not very satisfactory. Use of the lepromatous appa-
ratus with acetylepilidone, demonstrated at the Tokyo Congress by G. Pirozzi [Int.
Jour. Leprosy, 28 (1960) 336], is described. The results were definitely positive in 34 of 45
cases with tuberculoid or indeterminate lesions, but doubtful (in 6) or negative (in 5) in
11 cases. It was observed that in some subjects the sweat response to the lepromatous
test is very poor, and that in approximately 10% of leprosy cases no disturbance of
sweat secretion can be detected by this method. [The source and cost of the apparatus are
not stated in this article.]—H. W. W.

MONTESMEU, E. A propos des rentumes chez les malades atteints de bˆtre lepromatose
residuelle. [Relapse in patients with residual lepromatous leprosy.] Bull Soc.
Path. exot. 55 (1962) 566-582.
Under certain circumstances lepromatous relapses, which may sometimes be very
severe, were observed in patients in whom residual leprosy seemed to have cleared up since
several years, but who were still under treatment. Relapse occurred especially after BCG
administration, and after gestal diseases in women (particularly after repeated preg-
nancies). These findings show that great caution should be observed before the treatment
of a lepromatous patient is stopped. Clinical, and especially immunological, supervision
should never slacken. Women should be informed of the hazards of too frequent preg-
nancies. Although no sulfone resistance was demonstrated in such cases, it would be im-
portant to know whether other antileprosy agents (thiocolchicin, thiourea deriv-
atives) might not be used in them.—[From author's summary.]

GAMUS, Y. I. [Ocular leprosy and modern antileprosy therapy.] Vestnik Ophthalmologii
75 (1962) 52-60.
Among leprosy patients hospitalized in the past decade, ocular lesions were recorded
in 31.8%, e.g., 2.5 times less [sic] frequently than among all other persons examined.
Since the application of modern antileprosy agents, no fresh ocular lesions have been seen
to appear, while those already present run, as a rule, a benign course, with regression of
specific changes and increased vision acuity in more than one-half of the cases. Predomi-
nant were lesions of the cornea and iris (72.6 and 70.0%, respectively in patients with
ocular lesions). Alterations in the eye ground were met with in 5.4% of them. Exacerbations
of the leprosy process in the eye, which in the past usually led to deterioration of
the visual power and, eventually, to blindness, have become more infrequent and less
severe. Ocular exacerbations are of an allergic nature and amenable to treatment. Since
the use of sulphones has become current; no fresh or progressively developing nodular lesions of the face have been recorded. Successful treatment of ocular leprosy can be achieved by applying long-term, complex and regular general and local antileprosy therapy, initiated as early in the disease as possible.—[From author’s summary, supplied by N. Torres.]


Seventy-three per cent of male patients with leprosy had some degree of proteinuria in the early morning urine specimens when admitted to the leprosy settlement. In the great majority of patients the proteinuria was intermittent. Examinations of the urine of these patients after they had been within the settlement on a first-class diet for a period of 3-4 months showed a decrease in the incidence and intensity of the proteinuria. It is suggested that the proteinuria could have been the result of a deficiency of protein in the diet before admission.—[From author’s summary.]

Brown, S. G. The liver in leprosy. [Abstract of article read before the Association of Physicians of West Africa, Ibadan, Nigeria, December 7, 1962.]

The liver may be involved in all varieties of leprosy, and its functions impaired or modified both by direct bacillary invasion and by toxemia affecting the liver cells. In lepromatous leprosy, milky lepromatous foci occur in the cells of the reticuloendothelial system and of Glisson’s capsule; typical lepra cells, with numerous bacilli in globi, are surrounded by histiocytes and lymphocytes. The serum protein level is in general raised, the albumin-globulin ratio reversed, the gamma globulin fraction increased, and the hepatic function is impaired, as indicated by liver function tests. When lepromatous leprosy is advanced, or progressing, or in a reactionary phase, the erythrocyte sedimentation rate is raised, as is also the level of C-reactive protein. Amyloid disease of the liver is common in long-standing leprosy, especially in America and Japan. Seen from lepromatous patients frequently give false positive reactions for syphilis, and the Middlebrook-Dubos test for tuberculosis is positive in the majority of patients with active multibacillary leprosy. In active paucibacillary leprosy, multiple tubercoid foci are frequently present, but the pathological changes are minimal and there are no clinical manifestations of hepatic dysfunction. Injudicious dopamine treatment, particularly when there is impairment of liver function, or when excessive doses are given, or when the maximum dose is attained too rapidly, may result in severe or even fatal toxic hepatitis, often accompanied by exfoliative dermatitis.—[From summary supplied by the author.]

Mercadal-Peyri, J., Ordo, J. and Mercadal-Peyri, J. El viraje de las formas indetermi-

nadas a lepromatosas (a propósito de un caso recién visible). (The change of indeterminate forms to lepromatosus concerning a case recently studied.) Leprologia 7 (1962) 4-8.

A Mitsuda-negative case of indeterminate leprosy was submitted to treatment with isoniad for two years, with apparent clinical cure. After a year without treatment he became lepromatosus.—K. D. L. Joaquimbis.


The author has studied mycotic diseases in 635 leprosy patients in different parts of the USSR, and has found them to be more frequent in leprosy patients than in persons without leprosy. Often they occur in the “forme fruste.” Epidermophytophytes of the feet are often of the “fruste” and squamous-hyperkeratotic forms. Trychophytoesis has a chronic character and often affects the palms and soles. Primary separated fungous lesions were seen in 55.2% of all cases with syngenysoses. Mycoses in leprosy patients
develop mainly in the innervation zone of affected nerves. Filamentous and yeasts fungi often grow in these patients, but Beretti rarely. Hypersensitivity to the fungus antigen is observed most frequently in leprosy patients. The author regards symbiosis as present between some kinds of fungi and M. leprae.—N. Tombev


Diphenylthiourea was tested, for periods ranging from 2 to 16 months, in 21 leprosy patients (15 lepromatous, 4 dimorphous, 2 tuberculoid). Except for a lepra reaction in 1 patient at the beginning of treatment, there were no side effects and the drug was tolerated well. Although the trial was not long enough for an exhaustive estimate to be made, the clinical and bacteriologic results were excellent. It is believed that this drug has now passed from the experimental stage and may be safely used in a mass campaign against leprosy.—[From abstract by E. Muir in Trop. Doc. Bull. 59 (1962) 984.]


The authors have observed 14 leprosy patients [type not stated], most of whom had been treated without entire success by DDS, who were treated by Ciba 1906. One-half of them were old treated cases with neuritic sequelae, a few of whom could not endure DDS treatment, and the others were new cases. The drug was well tolerated after either oral or intramuscular administration. It is believed that the use of Ciba 1906 at the beginning of treatment, with the progressive introduction of DDS after some weeks, is advisable. It cannot be said whether or not Ciba 1906 will prove better than other drugs in the prevention or limitation of neural sequelae.—[In part from authors' summary.]


The authors treated 68 patients with leprosy with DPT (diphenylthiourea), for periods ranging from 6 to 46 months. The patients tolerated 12 gm. of DPT without signs of toxicity, but 32% of them developed lepra reaction during the treatment. In the first months the improvement was similar to that obtained with sulfones, but those treated for 4 years were still strongly positive bacteriologically. The authors recommend use of DPT in patients intolerant of, or resistant to, sulfones.—[From abstract by E. Muir in Trop. Doc. Bull. 59 (1962) 969.]


Ciba-1906 (diphenylthiourea), in weekly doses of 1 gm., injected in an oily suspension, was associated with 1 gm. daily of sulfadimetoxine. Five lepromatous patients treated for a year were improved, although the authors do not find advantages in the association of the two drugs tested since the improvement found was not superior to that obtained with either of those drugs used separately. Tolerance was excellent. No changes were found in hemat or renal picture.—E. D. L. Juncures


Diamino-diphenyl sulphide is effective in the treatment of human leprosy, although it
does not surpass the beneficial effect of diaminodiphenyl sulphone in this respect.—Authors' summary.


A brief report of four months' treatment of 20 lepromatas and 2 tuberculous cases, all previously untreated. There had been pronounced improvement in the lesions in all cases, and slight improvement of the hotellen indices of the lepromatas cases.—H. W. W. WILKINSON, P. F. and FISHER, J., Antipaludics of diteres and other antiparasitics en e treatment da la reacción lepromatoide, tipo reumatoide. [Synthetic antimalarials and other antiparasitic agents in the treatment of lepromatous lepra reaction, erythema nodosum type.] Leprologia 7 (1962) 72-76.

The synthetic antimalarials 7-ethyl-1-(diethyllamino-1-methylbutylamino)quinolinediphosphate (Reserchon) and 7-metoxi-3-chloro-9-(4-dietilamino-1-metilhidrazino)acetin (Mebuquina, Winthrop) and the antiparasitic and intestinal antiptic 47 trimetadino-5,6 quinoa (Etohex, Ciba) were used in the treatment of lepromatous lepra reaction, erythema nodosum type. Forty-four patients were treated. All of them gave favorable and comparable results in the symptomatic action against erythema nodosum, fever, and other general phenomena. Relapses were seen after discontinuation of the drug, but they were of lesser intensity. As there is no chemical relation between the antimalarial drugs and the antiparasitic drug, further investigations are needed to explain the results.—E. D. L. JACQUEMIN


Interesting results were obtained in the treatment of lepromatous ulcers with a papain compound. Of 24 ulcers, 6 healed and the rest were improved.—E. D. L. JACQUEMIN


During a 5-year period the author performed 100 operations on 60 patients with acute leprosy neuritis. Neurolysis of the ulnar nerve at the elbow, the median nerve, the great auricular nerve, and the posterior and thoracic nerves was done with simultaneous transfer of the nerves to new muscular beds; the nerve was transposed to the anterior position. In patients operated on in the acute period of neuritis, quick cessation of pains was marked, and in a fortnight infiltrations disappeared along the course of nerve trunks. In patients with parasthesia, atrophies and restriction in the mobility of joints, further development of these phenomena was discontinued. Various surgical interventions, the author holds, can cause lasting improvement of irreversible changes in nerve fibers. This is the best method of prophylaxis of paralysis and deformity.—X. TORSKEY


The importance of preventing recurrence of ulceration is stated. The mechanical factors of weight, impact, thrust and shear are outlined in relation to ulceration and means suggested of overcoming them. Certain traumatic causes of ulceration are given. Two types of shoe are described, the sandal to prevent initial ulceration and a rigid sole shoe to prevent recurrence. Hazards of shoe wearing are given and suggestions for future advances made.—[Author's summary.]


4,4'-Diaminodiphenyl sulphone: binding to serum albumin. Ibid., 420-424.
1. The solubility of 4,4'-diaminodiphenyl sulfone [DDS] in water is 38 mg/ml/100 g at 37°C and decreases by a factor of two with a 12°C decrease in temperature. Equilibrium between human blood cells and plasma with respect to the drug is established within 5 minutes. The amount of the sulfone contained in, or in other ways attached to, the blood cells is four times an estimated free concentration inside the cells. The drug forms complexes with a component in human blood plasma.

2. DDS forms complexes with bovine serum albumin. From a comparative study of those and of the complexes formed in human blood plasma it is inferred that, in human blood plasma, plasma albumin is the active component. The data are compatible with the existence of three identical and independent binding sites (K₁: K₂: K₃ = 9:3:1) available to the drug on each albumin molecule. The first complexity constant for the sulfone and human plasma albumin at 32°C is 2.4 × 10⁶ 1/mole; for bovine serum albumin at 25°C, it is 6.0 × 10⁶ 1/mole; and at 37°C, it is 4.5 × 10⁶ 1/mole.—[From abstract in Trop. Dis. Bull. 59 (1962) 504.]


The results of the determination indicated, in 20 lepromatous and 19 tuberculoid cases attending the Calcutta clinic, are shown in a table but not stated. In the lepromatous cases, cholesterol was significantly lowered in both red cells and plasma, but in the tuberculoid cases only in the red cells. Only in the tuberculoid cases was the phospholipid significantly lowered.—H. W. W.


The author, addressing herself to the study of the blood serum in 32 patients with different types of leprosy, 6 atherosclerotic patients, and 12 normal people (controls), has found that the serum albumin content in leprosy patients is lower than in those with atherosclerosis. The highest α₁-globulin fraction content is in lepromatous cases. The α₂-globulin fraction is especially increased in lepromatous cases, while in those with atherosclerosis it is decreased. The β-globulin content is increased in lepromatous cases as compared with normal people, but lower in patients with atherosclerosis. The amount of γ-globulin in leprosy patients is higher than in either normal persons or atherosclerotic patients.—N. TORSUEVA


The authors describe the variations of copper in the course of leprosy. There is a very marked increase of copper in the serum. This increase is accompanied by anemic conditions and hepatic insufficiency.—[From authors' summary.]


Primarily concerned with drug screening methods for protozoal infections, the authors describe the biological activities of a number of sulfone compounds. One of them, p-ethylamin-p'-aminodiphenyl sulfone, reported to possess antituberculous and antileprosy qualities, is shown to have antimalarial properties. The value to leprosy patients in malaria areas of a compound that is active against both malaria and leprosy, is briefly discussed. The authors believe this compound and others they have tested merit more detailed study, since they feel there is still a need for a cheap, dependable, nontoxic sulfone.—J. A. ROBERTSON
This paper describes the biologic techniques which are useful in predicting the appearance of inflammatory conditions in leprosy, and may also be used in following the course of the condition. The simplest and most reliable method is a combination of the crythrocyte sedimentation and the C-reactive protein tests. The authors also found that 3 other techniques correspond with the above in the reactional conditions of leprosy. These are the blood levels of uric acid and fibrinogen, and the Wassel-Rose reaction which shows the blood level of abnormal globulin of high molecular weight. The close correlation of these 5 techniques is shown in tabular form in reaction lepromatous, nonreaction lepromatous, nonreacting tuberculoid, and reacting tuberculoid forms of leprosy.—[From abstract by E. Muir in Trop. Dis. Bull. 59 (1962) 192.]


This is a report, condensed and without summary, of a study of skin biopsy specimens from 15 untreated, active cases of lepromatous leprosy. Tests made included those for lipids, carbohydrates and enzymes. In the discussion it is stated that empty spaces found in the dermis (after H.E. staining), possibly lymph spaces, were more or less filled with acid-fast bacilli, "which were probably multiplying rapidly." Vascularized (lepra) cells contained neutral fat in proportion to the number of bacilli they contained, and phospholipids and fatty acids were also present. These substances were present in the bacilli but not in the cytoplasm of the host cell apart from the bacilli, which findings do not support the view that the invasion of the bacilli causes fatty degeneration or metamorphosis of the cell proteins. PAS-positive material (i.e., neutral mucopolysaccharide) was found in the bacilli, whether they were intra- or extracellular. On staining sections with toluidine blue, large numbers of mast cells were demonstrated.—H. W. W.


This is a three-part article, dealing briefly with findings in the skin (biopsy specimens), and in the peripheral nerves and spinal cord (autopsy specimens) of both lepromatous and tuberculoid cases. (1) Dermal nerve branches [spoken of as "fibers"] were absent or few in tuberculoid lesions as compared with lepromatous lesions, and those found showed a greater degree of cellular infiltration than fewer bacilli. [The bacilli shown in a photomicrograph of skin (apart from the tuberculoid infiltrate), and also many of these in nerve lesions, are located in strands of connective tissue, or apparently quite free, rather than within phagocytes.] (2) Peripheral nerve trunks from 3 tuberculoid and 3 lepromatous cases were dissected out for their entire length and sampled at intervals for microscopic examination. In the lepromatous cases the nerves showed gross thickening only at certain points, whereas in the tuberculoid cases they were uniformly thickened throughout. Microscopically, the latter showed the more marked thickening of the perineurium and endoneurium, with diffuse round-cell infiltration together with epithelioid-cell reaction. In one of the tuberculoid cases a few microscopic nerve abscesses were found; in another there were occasional feet in which bacilli were especially numerous, and bacilli could be traced into the brachial plexus and nerve roots. Also in the tuberculoid cases, the degenerative changes of the myelin sheaths and axons were the more marked, and in places they had completely disappeared as did not happen in the lepromatous nerves. In general, bacilli were found in diminishing numbers as the nerves were traced upward toward the spinal cord. (3) In the spinal cords (3 tuberculoid cases) there were very few microscopic changes, and no bacilli were found even after trypan
digestion of the entire corde. Emphasis is laid on the superiority of Zenker over formalin fixation for the demonstration of the leprosy bacilli, and on the usefulness of Fite's (first, 1938) stain.—H. W. W.


Discovery of the permanent "dunning up" of the substance of nerve fibers in front of chronic constrictions, and of the downward advance of the bulge upon deconstriction, has led to the concept that sensuous are not static fixtures but streams of substances moving continuously from central production sites in the nucleated cell body into the periphery at rates of the order of 1 millimeter per day, carrying both replacements for major macromolecular components of the axon and "secretions" destined for peripheral discharge. Later data on enzyme and isotope gradients in nerve added circumstantial evidence to this concept, yet the mechanism of convection had remained obscure. Time-lapse motion pictures, under the phase-contrast microscope, of myelinated sensory nerve fibers of young mice and chicks, explained with their central ganglia into nutrient solution, have now revealed true peristaltic waves into the surface of nerve fibers and the actual centripetal movement thereby produced of the cicatricial column at the predicated rate. Moreover, electronmicroscopic studies of the "dunning" phenomenon in chronically constricted nerves, besides confirming the earlier microscopic findings, have shown that, proximally to a partial block, (a) the larger "neurofibrils," which are definitely tubular, become greatly distended to vesicles, and (b) mitochondria accumulate in dense piles, in which many then disintegrate. These facts demonstrate (1) that there is a constant movement of fluid distally inside the tubules, and (2) that mitochondria likewise travel distally in the axonal stream. These new findings have brought not only more direct confirmation of the axonal flow but methods for its more detailed study.—[Abstract from Science 136 (1962) 330, of paper from the Rockefeller Institute presented at the 1962 annual meeting of the National Academy of Sciences, Washington, D. C.]

Bong, J. P. and Sachetti, R. F. Localización del bacilo de Hansen en la mucosa nasal intacta y su eliminación al exterior. [Presence of the leprosy bacillus in the intact nasal mucosa and its elimination to the exterior.] Leprología 7 (1962) 63-64.

The authors find that in certain lepromatous cases M. leprae is eliminated through the intact nasal mucosa included in macrophages, or are passed by the intercellular spaces mixed with mucus. Then cells and bacilli are eliminated element by element, which explains why intranasal lepromata—at least large ones—are not formed in that location.—E. D. L. Jaquez


Biopsy specimens of the distal pad of the fingers of 39 leprosy patients (20 lepromatous and 10 tuberculoid) were studied by cytologic nerve staining methods. It was found that the papillary ridges of the digital skin in lepromatous leprosy are very distinct. In early cases the intermediate ridges descend more in length into the corium than in the advanced disease. Extensive nerve fibers are seen embedded in these papillary ridges. In tuberculoid leprosy, on the other hand, the intermediate papillary ridges do not descend into the corium and the ascending nerve fibers are mostly destroyed, resulting in severe sensory impairment. The papillary ridges in lepromatous leprosy continue to act as an essential part of the tactile sense organ.—[From authors' summary.]


The principal points recommended are as follows: If biopsy specimens are not more
than 3 mm. thick they can be fixed in 3 or 4 hours, and dehydrated in the course of 1 day.

The fixative found most satisfactory is 40% formaldehyde 10 cc., mercuric chloride 2 gm.,
acetic acid 1 cc., water 100 cc. Dehydration in 70% alcohol overnight is followed by 2
hours each in 70%, 90%, 95% alcohol and then in absolute alcohol twice repeated. After
dehydration sink in cedar oil overnight, followed by benzene for one-half hour. There
should be 2 changes of wax at 56°C. In paraffinizing, use fresh xylene from a drop
bottle, giving 6 changes of 2 minutes each. Rinse in alcohol, wash, remove mercury de-
posit with iodine followed by thiosulphate, and wash. Add saturated aqueous lithium
carbonate solution and wash. After staining with carbol-fuchsin (unheated) for 20 min-
utes, wash, dry, apply pinene followed by 25% acetic acid, and wash, repeating this
sequence as necessary to differentiate as observed under the low-power objective. Counter-
stain with 0.02% toluidine or methylene blue for 1 minute, wash and dry. Rinse in xylene

SHANKLIN, D. R. The influence of fixation on the histopathology of hyaline membrane

A reported frequency of 100% pulmonary edema fluid in hyaline membrane disease
has been disputed. All the tissues studied for the former report were fixed in Zenker-
formol. Finding edema fluid in all of 30 cases in a different hospital in which tissues
were also fixed in Zenker-formol, and similar findings in Bouin-fixed experimental hyaline
membranes, prompted a study of the effects of different fixatives on the lungs of human
newborns. In 27 cases, various formalin fixatives were compared by alternating lung
blocks with Zenker-formol; in 4, both were compared with Bouin's fixation. Zenker-
formol and Blain's fluid routinely preserved a loose, floccular network of proteinaceous
material interpretable as edema (average 2.1+), while in only 5 of 27 formalin-fixed tis-
ues was edema seen, and then only in trace amounts. A review of illustrations in recent
papers showed only 3 with expression mention of the type of fixative used; in all it was
formalin. None of the photographs showed edema fluid. It is concluded that formalin
fixation is not appropriate for the proper study of the lesion in hyaline membrane disease.
The difference may lie in the failure of polymerization by formalin of the protein before
further processing.—[From abstract.]

MELAMED, A. J. Desensibilization experimental de las reacciones lepromínicas y lepro-
nínicas. [Experimental desensitization of the lepromin and lepromin reactions.]
Leprologia 7 (1962) 12.

An attempt was made to desensitize three tuberculoid patients with repeated daily
injections of integral lepromin (Mitsuda-Hayashi), in doses ranging from 0.1 to 1 cc.
Tests with "total protein lepromin" (LPT of Ohnos Castro) and with integral lepromin
performed after this experience, which in two cases lasted a month and in the third case
three months, demonstrated that diminution in the intensity of the Fernandez reaction was
in accord with the slower formation of the later nodule, which was smaller in size and
had a lesser tendency to ulceration. Nevertheless, these changes had no influence on the
histologic structure of the Mitsuda-reaction nodule, which in all cases was follicular or
tuberculoid. Thus there was failure to obtain suppression of the sensitization phenomena
in leprosy, in contrast with the results obtained by Brownlee in tuberculosis. The author
is of the opinion that increase of sensitization to M. leprae induced by BCG or other
means would not necessarily indicate increase of resistance or immunity against the
bacillus.—R. D. L. JONQUIERES

MERCAY, A. R., DEPAOLO, R. A. and CULASSO, R. H. Hipersensibilizacion específica, tera-
peutica y diagnostica. [Therapeutic and diagnostic specific hypersensitization.]

In 50 tuberculoid patients with neuritis, therapeutic hypersensitization with bacillary
antigen had an effective action in 76% of the cases, in which acute neuritis was controlled.
In contacts suspected of infection because of neuritis without cutaneous lesions, intradermal injection of lepromin or lepuling is suggested as a means of diagnosis. By extension of what occurs in leprosy patients, it is assumed that in those contacts in which neuritis appears with the intradermal reaction a suspicion of infection must be considered.—E. D. L. JONQUIERES


Biopsies were performed of 48-hour and 21-day reactions obtained in tuberculoid patients with total proteic lepuling (LPT, Olmos Castro) and with integral lepuling (Mituda-Hayashi). In the 48-hour reactions, the picture was similar with both antigens, with absence of exocytosis. In the late reactions, exocytosis was observed in both reactions, as well as the typical tuberculoid picture. The late reaction to LPT is explained if there existed in that antigen, even in small amounts, complex bacillary fractions including the lipids. With certain reserves it is assumed that hypersensitivity pictures provoked by either antigen will have characteristics attributed by Waksman to hypersensitivity of the delayed or tuberculoid type. The presence in the reactions of perifascial and, possibly, intramuscular infiltrations, might suggest the affinity of the antigens with neural tissue, and the intervention of the latter as a shock organ.—E. D. L. JONQUIERES


Forty-eight leprosy patients were injected intradermally with lepuling, tuberculin, and antigens prepared from BCG, M. fortuitum, M. rhodochrous, M. marinum, M. phlei, and M. morganii. There was no correlation between the reactions to lepuling and those to any other antigen. The reactions to tuberculin were significantly correlated with the reactions to M. marinum, both at 72 hours, and with the reactions at 21 days to M. wernicke. [From author's summary.]


This work was undertaken for the purpose of finding "the active constituent in normal liver which produced the lepromin pattern of reaction," and for reasons connected with the hypotheses of Koop and Gerritsen that the Mituda reaction to lepuling is "a kind of foreign body reaction." Details of the technique of making a liver suspension by the Dharmendra method are given. The results are summarized essentially as follows: The results obtained by Koop and Gerritsen [of skin reactions to normal tissue preparations] were confirmed, but such strong reactions as reported by them were not produced. This deficiency may be due to factors such as age, etc. An attempt to amassulate the tissue particles by ultrasonic waves was unsuccessful, such preparations as well as an absolutely lipid-free suspension, and also the residue after 6N H2SO4 hydrolysis, still allowed the lepromin pattern of reaction. By means of tryptic an inactive preparation was obtained which failed to produce the lepromin pattern of reaction. It is therefore assumed that the particulate state is of importance, if not essential. A lipid substance, sphingomycocin, was isolated from normal liver preparations which was able to produce epithelioid cell reactions but not the typical lepromin pattern of reaction. This finding is not in favor of the view that the Kroin antigen contains an antigen specific for sarcoidosis. It is possible that the particles and the isolated lipid fraction cooperate in producing the lepromin pattern of reaction evolved by normal liver suspensions.—[From authors' summary.]

Regarding the theory of the antagonism between tuberculosis and leprosy, the author wishes to rectify some erroneous interpretations in an article by Chesebrough and Rollier. He suggests different clinical and epidemiologic investigations that may likely demonstrate that this antagonism is largely responsible for the progressive eradication of leprosy. The new epidemiologic ideas that these investigations may bring out will make it possible to conduct a more reasonable fight against leprosy infection, especially with respect to prophylaxis and to the order of priority of the campaigns to be undertaken.—[From author's summary.]


In human tuberculosis as in experimental tuberculosis, there exist in the sera of patients three different kinds of antibodies completely distinct from each other. The first two antibodies are produced whenever tuberculosis infection takes place or exists, and they persist for a long period even though tuberculous disease be arrested. On the contrary, the production of the antiphosphatid seems to be mainly conditioned by the outbreak of tuberculous disease following infection, because none of the tuberculin-positive healthy persons tested gave a positive phosphatid hemagglutination test. The antiphosphatid hemagglutination test furnishes useful information about the extent or the activity of tuberculous disease. No correlation was noticed between the degree of tuberculin skin hypersensitivity and the amount of any of the three antibodies. The usefulness of the phosphatid hemagglutination test in the diagnosis of tuberculosis is discussed. [The "phosphatid hemagglutination test" may possibly be of use in other mycobacterial diseases. For trial of the test the original article must be examined in detail, especially for the reagents required.—J. A. Roebbens]


The mode and the level of production of the three different kinds of antibodies were found to differ considerably with the mode of infection and the virulence of tubercle bacilli. Evidence is given that production of the antipoly saccharide and antiprotein is stimulated without regard to the mode of infection and the virulence of bacilli, while the antiphosphatid is produced chiefly under conditions where in vivo bacilli might have undergone destruction. Of the three antibodies, the level of antiphosphatid was shown to reflect most faithfully the progression of experimental tuberculous infection. The amounts of the three circulating antibodies were found to have no direct relationship to the degree of tuberculin skin hypersensitivity.—J. A. Roebbens


Sera from patients with lepromatous leprosy were subjected to a battery of serological tests, including flocculation, agglutination, and complement fixation. A correlation was found between the content of antileprosy antibody and the reactivity with "cardiolip" antigen, but not with Trypanosoma cruzi antigen, cardiolipin or the Rohan antigen. The reactivity of leprosy sera with tubercle bacillus antigen in the quantitative complement-fixation tests decreased in three patients with lepromatous leprosy during sulfone treatment. When syphilis was present in a lepromatous case, it was possible to follow the
effect of specific treatment of the two infections, with sulfone and with penicillin, by
drawing two serological curves, one for each of the infections.—[From author's summary.]

Korneh, M. G., Melly, M. A., and Rogers, D. E. Factors relating to the virulence of

The relative importance of "antibacterial" or "antitoxic" immunity in resistance to
staphylocoecal disease has been a subject of prolonged debate based on conflicting
evidence. Recent studies of the authors have shown that mice immunized intravenously with
heat-killed staphylococci are protected against lethal intraperitoneal doses of several
mouse-virulent strains. The present study was undertaken to further delineate the import-
ance of antibacterial and antitoxic immunity in this experimental system. These studies
show that although deaths produced by ordinarily lethal doses of alpha hemolysin can be
prevented by immunization with crude alpha hemolysin toxins, only heat-killed staphylo-
coecal vaccine protects mice against death following infection with viable, replicating
staphylococci.—[From authors' introduction.]

Duker, I. C. Three similar strains of pleomorphic acid-fast organisms isolated from rat

During the course of a long-term study of microorganisms in connection with tumor
growth, particular attention has been given certain pleomorphic, intermittently acid-fast
organisms that were cultured much more frequently from the blood of mice with high
tumor rates than from the blood of mice with low tumor rates. One of the three strains
particularly studied was obtained from the blood of a human patient with lymphatic leu-
kenia. Details are given, but it will suffice here to quote the statement that, in mor-
phology, the "essential features of the life cycle are those described by Alexander-Jackson
from malignant tissues [and other acid-fast organisms; see THE JOURNAL 19 (1951) 373-
186] and by Brigger and Glaubert for Myobacterium avium. These features include
variable acid-fastness, the development of motile organelles, and growth in a mycelial
phase. Thanks are expressed for aid from, among others, Drs. Eleanor Alexander-Jackson
and V. Orthodox-Cuspe, who have collaborated with the author through the years, and also
to Dr. Florence H. Sabin in connection with serologic work reported.—H. W. W.

Hart, P. D., Rees, R. J. W. and Valentine, R. C. The length of Mycobacterium leprae
recovered from different animal species and tissues after an experimental
infection. J. Path. & Bact. 82 (1962) 153-158.

Electron microscope measurements were made of M. leprae marieum from lesions in
the livers of mice, both untreated and treated with suramin (a trypanosidal agent which
increases the rate of progression of the infection), and in the livers, testes, subcutis and
peritoneum of rats. In the livers of the untreated mice there was elongation in the early
months of infection but not later, but very little in the suramin-treated mice; at the end
the averages were 1.81 μ and 1.67 μ, respectively. In the rats (not treated with suramin),
the bacilli from the livers and the peritoneal lepromas were significantly longer, averaging
2.0 μ or more—over 2.5 μ in 3 of the animals. The results are discussed in relation to
host and organ susceptibility and the stage of the infection.—H. W. W.

NOTE

List of Sustaining Members are not carried in this issue due to lack of space. The
list will appear in following issues of this volume.