

CURRENT LITERATURE

It is intended that the current literature of leprosy 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.

- 6 YOELI, M. A "facies leontina" of leprosy on an ancient Canaanite jar. *J. Hist. Med. & Allied Sci.* **10** (1955) 331-333.

Among the archeological objects discovered during excavations of four Canaanite temples of Beth-shan in Palestine there is a clay jar which has a human head moulded on it. The appearance of this head resembles very closely a leonine face. This kind of earthenware vessel was used for the storage of grain and flour in the Middle East. It was found among sacred cult objects in a section of the Amenophis III temple which dates back to 1411-1314 B.C. The jar is preserved now in the Rockefeller Museum of Antiquities in the Old City of Jerusalem. From comparative mythological studies it might be assumed that the disfigured face of a man was perhaps depicted on a vessel dedicated for the preservation of crops with the thought that he might serve as a protector.

—F. SAGHER

- 6 MCFADZEAN, J. A. and McCOURT, J. F. Leprosy in Gambia, West Africa. *Leprosy Rev.* **26** (1955) 57-64.

Gambia is a 300-mile-long strip of territory in West Africa averaging some 10 miles broad, lying on both sides of the Gambia river. It has a population of 261,564, consisting of 5 main tribes. In the four divisions of the Protectorate leprosy surveys were made in 15 villages, each containing about 400-500 inhabitants. The village prevalence varied from 1 to 3.9%, and the divisional prevalence from 1.4 to 3.1%. From this it is calculated that there are some 6,000 cases in the Protectorate, of which about 1,500 (26.6%) are lepromatous. The total prevalence was 2.4%, approximating the figure of 2.5% found by Ross in 1947. Both surveys showed that the farther one proceeds up the river the higher is the prevalence. Because the frequency of tuberculosis is increasing in the Gambia, it is suggested that BCG might possibly be of use in the control of both diseases, especially as there would be considerable opposition to isolation of infectious patients.—[From abstract in *Trop. Dis. Bull.* **52** (1956) 502.]

- 6 AVILÉS NUGUÉ, F. and BLUM GUTIÉRREZ, E. Acerca de 60 casos de lepra estudiados en el Instituto Nacional de Higiene. [Observations on 60 leprosy cases studied in the National Institute of Hygiene.] *Rev. ecuatoriana Hig. y Med. trop.* **11** (1954) 99-107.

A description is given of 60 patients, 36 lepromatous, 22 tuberculoid and 2 indeterminate, with mention of the parts of Ecuador from which they came. No thorough survey of leprosy in the country has yet been made. The fact that 60% were lepromatous type is considered a cause of alarm and a danger of the spread of infection.—[From abstract in *Trop. Dis. Bull.* **52** (1955) 784.]

- 8 ROGERS, L. Progress towards the eradication of leprosy from the British Commonwealth. *J. Roy. Soc. Arts* **102** (1954) 987-998; *reprinted in Lep. India* **27** (1955) 11-18.

A thorough and well-argued account is given of the progress made toward the eradication of leprosy in the last 30 years or so. The importance of house contact in acquiring the disease is emphasized. Only infectious cases should be isolated.

All contacts, especially children, should be examined at intervals and early treatment instituted. The results of such measures in the Southern Sudan, South Africa, Southeast Nigeria (especially at Uzuakoli), East Africa, Fiji, the West Indies, and India are recounted. The importance is emphasized of prophylaxis of child contacts by treatment during the incubation period and the possible raising of their resistance through BCG vaccination. The author estimates that up to 100,000 children are still becoming infected every year in British and Indian territories, for want of sufficient leprosaria and other accommodations for the separation of infective cases and clinics for treatment of uninfected ones. What is needed is "a modern crusade to provide the means now available to save our Empire's children from the most cruel disease that human flesh is heir to."—[From abstract in *Trop. Dis. Bull.* **52** (1955) 165.]

- 8 ROGERS, L. Eradication of leprosy in British territories. Role of repeated surveys of contacts. *Lancet* **2** (1955) 80-92.

The areas under British administration are divided into four categories: (1) Surveyed areas of East and West Africa, with about 245,000 cases in the former and 400,000 in the latter. (2) Unsurveyed territories with high prevalence per 100 sq. miles, such as Hong Kong with 9,846 cases. (3) Unsurveyed territories with moderate prevalence, such as the Gold Coast (20,000), Sierra Leone (18,000), Malaya, etc. (4) Unsurveyed territories with low prevalence, such as Somaliland, South African Protectorates, British North Borneo, and the Solomon Islands. Rogers reiterates his advice that only highly infective cases should be isolated; the population of controlled areas should be surveyed every 2 years or so for a decade, and all new cases, as well as other noninfective ones, should be treated as outpatients. It is estimated that there are still 750,000 people with leprosy among the 68 million inhabitants of all these territories. With sulfone treatment "it is possible to envisage the steady reduction, and eventual eradication, of the disease—given the necessary staff and funds."—[From abstract in *Trop. Dis. Bull.* **52** (1955) 983.]

- 6 BROWN, J. A. K. Leprosy control in Uganda. *Corona* **6** (1954) 459-462; reprinted in *Leprosy Rev.* **26** (1955) 72-76.

The author, drawing on his experience of leprosy control in Nigeria, set out to plan a campaign in Uganda. The conditions in the two countries were very different, however, and called for different methods. In Nigeria there is a natural tendency for small leprosy communities to spring up, and advantage was taken of this tendency to establish an organized scheme of control based on provincial settlements, using volunteers and expatriates to survey outlying parts and to encourage the formation of similar communities under the guidance of the local chiefs. But Uganda is quite unlike Nigeria in that the houses are widely scattered, a natural barrier to the spread of epidemics but a disadvantage to the provision of rural medical service. It is probably this scattering which makes the prevalence of leprosy less than in Nigeria. However, there is most leprosy where the population is most dense, and it is in these areas that it is most difficult to get land for leprosy settlements. The population of Uganda is more than 5 million, and it is calculated that there are 80,000 people with leprosy, with accommodations for only 2,500 in leprosaria. Advantage was taken of the fact that these leprosaria had attracted squatters into their environment "to link it to a community effort throughout the country to establish nationwide treatment and control." Because patients are not able to travel long distances to appear regularly for treatment, "small treatment villages make continuity possible and secure some measure of segregation." The patients are allowed to go home at intervals, and this ensures that they get food and keep in touch with their families. It is not considered wise under the circumstances to attempt segregation of all patients. Much of the organization of leprosy control is to safeguard "people from their own folly or ignorance, through which they may omit to take the drug regularly, or take overdoses, or

give or sell it to their friends." The article ends with an account of the progress in establishing these village settlements; some 18 have already been begun, and more are on the way.—[From abstract in *Trop. Dis. Bull.* **52** (1955) 904.]

8 BROWN, J. A. K. Observations on the general incidence of blindness and certain other diseases in Uganda. *East African Med. J.* **33** (1956) 19-24.

Leprosy surveys carried out by the author in Uganda between January 1952 and June 1954 covered a total of 55,947 people in 41 surveys, and an average leprosy prevalence of 17 per thousand was found. The opportunity was taken to note other diseases, and these are reported in this paper. Complete blindness was found in 3.6 per thousand of the samples of the survey; out of the 84 completely blind persons seen, only 4 had leprosy. It is not stated if in these cases the blindness was directly due to leprosy, as it was found impossible to assess in them the part played by that disease. On the other hand, among the cases of leprosy found it is not clearly stated what proportion had eye damage of lesser degree. The standard of nutrition is reported as reasonably good in most, and very good in some. Kwashiorkor cases were 35, mostly mild or recovered, and there was a suggestion of a geographical preference in such cases. Moderate incidence of inguinal hernia, elephantiasis, hydrocele, and tropical ulcer was also recorded. A map shows the geographic distribution of leprosy surveys in Uganda. —J. ROSS INNES

6 GOMES, J. M. Vigilância sanitária e estrutura social. [Sanitary vigilance and the social structure.] *Arq. Fac. Hig. e Saúde Públ. Univ. São Paulo* **8** (1954) 139-166.

In 1924 a leprosy service was created in São Paulo, handed over to the Public Health Department in 1931. For the years 1924 to 1927 there are records of 171 contacts of infectious cases. None of them showed any clinical signs of leprosy, but 124 showed acid-fast bacilli in the nasal mucosa, occasionally but not every time; and they were considered suspicious contacts or latent cases. [It is not said if these bacilli were morphologically like lepra bacilli.] Many had enlarged lymph nodes, and in 28 of them material obtained by puncture of nodes showed acid-fast bacilli. In 1954, 12 had become leprosy, 60 continued healthy, and 90 had been lost sight of. Surprise is expressed that so few developed active disease in spite of malnutrition, poor sanitation and other adverse circumstances.—[From abstract in *Trop. Dis. Bull.* **53** (1956) 322.]

6 PHOTINOPOULOS, H. J. Statistics on the clinical form of leprosy in Greece. *Dermatologica* **109** (1954) 209-217.

This study covers 755 leprosy cases segregated in four leprosaria. It includes: age (48 children under 15 years), civil status (485 married, of whom 255 have children), family statistics (417 patients told of other cases in their families), social conditions (378 indigent, 157 with low income, 171 with good income). Type: lepromatous, 575; tuberculoid, 110; indeterminate, 47; cured cases 23. A long table summarizes the frequency of every clinical manifestation. The Kahn reaction was doubtful in 20, weakly positive in 43, strongly positive in 35; the Wassermann reaction was negative in 102, doubtful in 2, weakly positive in 6, and positive in 8. The Mitsuda reaction was negative in 147 out of 150 cases tested (the majority lepromatous). Results of sulfone treatment: 456 improved, 170 stationary, 45 deteriorated.—[From abstract in *Ann. Dermat. et Syph.* **81** (1954) 697.]

6 BOLGERT, M., MONTEL, L. R. and LÉVY, G. Un cas d'érythème noueux d'origine hansénienne. Rapports de cet érythème avec "erythema nodosum leprosum." [A case of nodular erythema of leprotic origin. Relationship of this erythema with the "erythema nodosum leprosum."] *Bull. Soc. française Derm. et Syph.* **61** (1954) 528-532.

In a previous article the authors reported a case of lepromatous leprosy apparently healed in 22 months of treatment with Disulone and then TB-1. Later the patient had a febrile reaction and lesions of the nodular erythema type appeared. He again became strongly positive for Hansen bacilli in the skin and nasal mucus. The lepromin and tuberculin (1:100) reactions were negative. Treatment was continued with Rimifon (200 mgm. daily) and then with Disulone (100 mgm.) and Thrombyl K. The lesions receded slowly, and 6 months later the patient was given BCG by scarification. Three weeks thereafter new cutaneous elements of the erythema nodosum type appeared, these elements negative for bacilli. The intradermal reaction to tuberculin (50 TU) became positive in 367 days, and the Mitsuda reaction in 425 days, after the BCG vaccination, but the reaction to lepromin did not become positive until 56 days after the test was made. The authors stress the necessity of distinguishing the true nodular erythema of leprosy from erythema nodosum leprosum.

—M. VIETTE

- 8 MONTEL, M. L. R. Erythème nouveau vrai (dermatite contusifforme) d'origine lépreuse. Que faut-il entendre par *erythema nodosum leprosum*? [True erythema nodosum (contusifforme dermatitis) of leprosy origin. What is meant by erythema nodosum leprosum?] Bull. Soc. Path. exot. **48** (1955) 15-19.

This is a description of the occurrence of true nodular erythema in a lepromatous case cleared up by treatment. Search for a primary tuberculosis infection gave negative results, and the nodular erythema seemed to be due to the Hansen bacillus, which was found in great numbers in the lesions and nasal mucus. In 20 days the bacteriological examination was again negative. Some months later new skin lesions appeared which resembled "erythema nodosum leprosum" rather than the true nodular erythema.

—M. VIETTE

- 7 LOWE, J. Leprous affection of the eyes. Proc. Roy. Soc. Med. (Sect. Ophthalm. 1-2) **48** (1955) 107-108.

The author points out that lepromatous infiltration of the eye is a part of the generalized systemic infection, and that even in mild cases some degree of the condition is common although it often does not produce any marked symptom. There are great regional variations in the severity of such lesions. In Chinese, Anglo-Indian, South American and European patients severe eye infections seem to be relatively common, in contrast to patients in the plains of India and in West Africa in whom they are less common. Chemotherapy is of value in the prevention of serious eye lesions, and in his own experience in Eastern Nigeria from 1947 to 1954 there was a striking decrease in the incidence and severity of these lesions. In acute cases cortisone is useful, given either as eye drops or as subconjunctival injections. If all leprosy cases could be promptly diagnosed and thoroughly treated, serious leprosy eye lesions would all be prevented.—[From abstract in *Trop. Dis. Bull.* **52** (1955) 546.]

- 8 LANDAU, J. and GABBAY, A. Ocular leprosy in Israel. Acta Med. Orient. **14** (1955) 129-133.

The clinical findings in the eyes of 59 leprosy patients of the Hansen's Disease Hospital in Jerusalem were presented in a lecture before the Israel Ophthalmological Society. Ocular involvement was present in over 90% of the cases. The youngest patient was 4 years old, and the oldest 60 years. The most frequent sign was the absence of the conjunctival reflex in 59% of the patients. Superficial keratitis was observed in 52%. Other conditions found were alopecia of the eyebrows, madarosis, thickened nerves in the cornea, leprosy involvement of the iris, lagophthalmos, leprotic pannus, leucoma corneae, nodules on the palpebral conjunctiva, and staphyloma of the cornea and sclera. Most of the patients (55%) had normal vision, while two were completely blind; blindness in one eye was found in 16%. There was no case of secondary glaucoma. It seems that the conjunctiva is more immune to secondary

involvement than the rest of the ocular structures. The chemotherapy of leprosy has reduced greatly the number of eye complications, although acute flare-ups of ocular manifestations during lepra reactions are not rare. The flare-up can be successfully controlled by stopping or reducing chemotherapy, local treatment with cortisone, and systematic treatment with antibiotics. —F. SAGHER

- 6 HIBI, H. Slit-lamp microscopic findings of the leprous cornea. *La Lepro* **24** (1955) 98-107 (in Japanese; English abstract).

The cornea was examined with the slit-lamp microscope in 206 leprosy patients, the earlier changes being especially sought. The patients were divided by age into four groups: Group A, 15 years and younger; Group B, 16-20; Group C, 21-30; Group D, older than 30. The author dwells on the first two of these groups. (1) New vascularization in the limbus corneae and leprous infiltrations were seen only in lepromatous leprosy, in 88% of Group A and 100% of Group B. (2) Pannus corneae leprae was also seen only in lepromatous leprosy, 70% in Group A and 83% in Group B. These changes increase as the disease progresses. (3) The beaded corneal nerve effect was found in every type of leprosy. It was most frequent in the lepromatous type, 58% in Group A and 62.5% in Group B; in the neural type, 28% in Group A and 20% in Group B; in the macular type, 33% of all groups. In the 20 control normal eyes a web-like membrane of the physiological findings of nervous corneae was recognized. The beaded corneal effect could not be seen. The slit-lamp microscope findings are useful for a supplementary means of diagnosing lepromatous leprosy, especially in slight cases. The coexistence of all the conditions described can be the significant basis for the early diagnosis of leprosy.—[From abstract.]

- 6 COUDERT, J. and COLOMB, D. Lèpre indifférenciée avec aspect curieux des lésions nasales. [Indeterminate leprosy with nasal lesions of unusual aspects.] *Lyon Méd.* **191** (1954) 156-157.

A patient with the indeterminate form of leprosy developed on the nose, in addition to an erythematous lesion, small pea-sized tumefactions which were practically pedunculated. Similar but smaller lesions were also observed on the chin. The leprous nature of these lesions were confirmed by biopsy.—[From abstract in *Bull. Inst. Pasteur* **52** (1954) 1012.]

- 6 MORI, M. Social psychological studies on a mass of leprosy patients. *La Lepro* **24** (1955) 108-117 (in Japanese; English abstract).

It is easily imaginable that leprosy patients should present peculiar psychological traits, when they are segregated and form a semipermanent social mass. The group psychology of the patients was investigated and compared with the results obtained by Shinichi Ikejiri applying the Okabe-Awaji introversion-extroversion test. (1) The introversion and extroversion types of both the male and female leprosy patient groups is in the standard range of the Japanese. (2) The mass psychology of leprosy patients tends outward, although a little (index 6). (3) The female patients exhibiting the disease within 29 years of age present a more inward propensity than those who have the disease later. (4) The males who have been in the leprosarium longer than 21 years become introversive. (5) The males staying at home for 1-2 years are more introversive than those who stay longer at home. The effective Promin treatment, the repletion of the social insurance, and the strict regulations against vagrant persons with leprosy cause them to settle down in the leprosarium. According to this fact the characteristic change has become remarkable, namely, they become less capricious and take care of their own things. The reestablishment of the private property system, such as newly-built houses for married patients, plays a great part in this psychological change. And also a tendency to settling can be seen in their conciliatory attitude without gossiping about others. That the leprosy patients always have

sympathy with others informs us of the latent mass preventive words. The average differences have been calculated statistically.—[From abstract.]

- ✓ BEERMEN, H. Some aspects of dermatology in neurology. *American J. Med. Sci.* **230** (1955) 441-468.

Bizarre neurologic signs and symptoms often occur in conjunction with a variety of changes in the skin. A large list of named diseases and syndromes, including Hansen's disease, of which both cutaneous and neurological symptoms are counterparts, are discussed. The structures and physiological functions of the skin are considered in detail, and then the following subjects: lesions of nerves in the skin; diseases of the skin with neurological manifestations; metabolic diseases; sarcoid; allergy; lupus erythematosus; scleroderma; infections; and miscellaneous cutaneous diseases. Regarding anhidrosis, Arnold has found that intradermal injection of metacholine chloride solution and evaluation of the resulting sweat response is a useful method of demonstrating the presence and extent of peripheral sympathetic nerve damage. Normal response is rarely met with even in very early lesions of tuberculoid or indeterminate macular leprosy. Abnormal response probably precedes the onset of demonstrable sensory changes. There are five references to leprosy among the 144 given in this interesting review.

—SR. HILARY ROSS

- ✓ CAVER, C. V. The history of tuberculosis at Kalaupapa Settlement. *Hawaii Med. J.* **15** (1955) 27-29.

Statistical exigencies make it very difficult to determine the part played by tuberculosis in causing deaths of patients in a leprosy settlement. Tuberculosis played some part in 10% to nearly 50% of all deaths at the Kalaupapa Settlement from 1932 (5%) to 1950 (48%); from 1938 to 1950 the proportion associated with tuberculosis increased slowly and irregularly. However, in 1950, for the first time, tuberculosis was not the leading cause of death. In 1951, for the first time, no deaths were attributed to tuberculosis, and in the 4 following years, only 1 death resulted from that infection. The author does not ascribe this change to sulfone therapy, but to general measures aimed toward adequate investigation, isolation, treatment and follow-up of all cases of tuberculosis.

—H. L. ARNOLD, JR.

- ✓ DAVISON, A. R. Treatment of leprosy. *Acta Med. Scandinavica* **152** (1955) Suppl. No. 306, pp. 20-25.

In a short historical survey tribute is paid to Rogers for introducing injectable chaulmoogra oil (1916), to Faget for introducing Promin (1943), and to Lowe for the use of DDS (1950). The induction of DDS should be gradual, 50 mgm. daily for 6 days a week for the first month, then 100 mgm. daily for the second month, the maximum dose of 200 mgm. being reached in the third month. A rest period of 1 month per year is advised, when induction again should be gradual. The results in tuberculoid cases is rapid, and greatly expedited by intradermal injections of iodized chaulmoogra ethyl esters, even though the latter may have only a cosmetic effect. In lepromatous leprosy the bacilli persist into the 4th and 5th years, and it is necessary to determine the degree of positivity when attempting to evaluate the effects of treatment. The author's technique for obtaining a bacterial index is described. Attention is drawn to the fact that from 10,000 to 100,000 bacilli per cc. must be present before one single bacillus may be found on a slide. Hemolytic anemia and peripheral neuritis may develop under DDS treatment, and the frequency of erythema nodosum leprosum is increased. Even after all tests for bacilli are negative, maintenance doses of DDS are recommended. All other treatments that have been tried in recent years may be condemned by faint praise.

—AUTHOR'S ABSTRACT

- ✓ LIPPI, M. and TUCCI, A. Ulteriori osservazioni sulla terapia della lepra con l'idrazide

dell'acido isonicotinico. [Further observations on the treatment of leprosy with isoniazid.] Arch. italiano Sci. Med. Trop. y Parasit. **35** (1954) 567-606.

The authors describe their treatment in Yemen of 27 patients with isonicotinic acid hydrazide (isoniazid) and its calcium methane sulfonate (Neotibazide), the treatment periods varying from 77 to 365 days. Sixteen of the patients were of the *nervosa* type, and the rest were mixed. All improved clinically, and 23 became bacteriologically negative. The bacteriological examination was of smears from the nasal mucosa and inguinal gland punctures; none of the former, and 14 of the latter were positive on the 20th day of treatment.—[From abstract in *Trop. Dis. Bull.* **52** (1955) 548.]

- 6 FIOL, H. Tratamiento de la lepra con la hidracida del ácido isonicotínico. [Treatment of leprosy with isonicotinic acid hydrazide.] Prensa Méd. Argentina **42** (1955) 1929-1936.

The author reports the results obtained in a group of 22 leprosy patients (21 lepromatous and 1 reactional tuberculoid) treated with isonicotinic acid hydrazide (Nicotibina) for periods varying from 35 to 407 days. The drug was given in doses of 4-7 mgm./kgm. Its therapeutic effect in leprosy is materially less than that of sulfone. The latter is, from all aspects, more active than the hydrazide in the usual therapeutically effective doses. In principle the author is an advocate of drug combinations, such as hydrazide-sulfone or hydrazide-thiosemicarbazone, for potentiation of the action of the individual drugs as well as greater tolerance to the sulfone medicaments.—[From author's summary, supplied by G. Basombrio.]

- ✓ SCRAGG, R. F. R. Isoniazide in leprosy. Trans. Roy. Soc. Trop. Med. & Hyg. **49** (1955) 548-554.

Five lepromatous and 1 tuberculoid patients, who had responded poorly to sulfones or had suffered from repeated reactions under sulfone treatment, were placed on isoniazid alone for 17 to 26 months. The daily dosage ranged from 3.9 to 9 mgm./kgm. of body weight. In 4 of the 5 lepromatous cases there was clinical improvement, but none in the tuberculoid case. There was improvement in the bacteriological findings of the lepromatous cases, the mean index diminishing from 6.4 to 0.5. Two of the patients developed lepra reactions during treatment, and 2 of them had severe neuritis. The results differ from those of other workers who have noted no improvement. The author attributes this to the larger doses used. [As there were no controls there is nothing to indicate to what extent the good results were attributable to delayed action of the sulfones given previously.]—E. MUIR

- ✓ RIST, N., BOYER, F., SAVIARD, M. and HAMON, V. Sur le mode d'action d'une sulfone thymolée argentine. [On the mode of action of a sulfone containing thymol and silver.] Rev. Tuberc. (Paris) **18** (1954) 179-188.

Rist and his colleagues studied the properties of a new disubstituted sulfone, claimed by certain workers in leprosy and tuberculosis to be as active as DDS but less toxic. It consists of equal parts by weight of two compounds which they call D and A, respectively. The former is diphenylsulfone-4,4'-bisazo-paraisopropylmetacresol, and the latter is the silver derivative of the same sulfone. *In vitro* tests with compound D (compound A being too insoluble for such tests) indicated that it is virtually inactive, and that any action *in vivo* must depend on its breakdown in the body to DDS. *In vivo* tests on human beings and on mice and rats showed that compound A was completely inactive, but that compound D liberated 1/10th to 1/20th of its weight of DDS when optimal doses were administered by mouth. They demonstrated that the antistreptococcus activity of 5 mgm. of compound D in mice is equal to that of 0.5 mgm. DDS, and that, owing to its poor solubility, increasing the dose of compound D does not liberate more DDS and therefore does not increase its activity. This is in sharp contrast with the soluble disubstituted sulfones and with DDS, and

explains why the new sulfone is nontoxic. Compound D had no action against tubercle bacilli in mice, as it did not liberate enough DDS to be effective. It is concluded that the small amount of DDS liberated after ingestion of compound D accounts for the latter's activity against streptococci in mice and leprosy bacilli in man, but they doubt if it can prove as effective in human tuberculosis as the less stable sulfones or DDS.—[From abstract in *Trop. Dis. Bull.* **52** (1955) 164.]

FLOCH, H. and GÉLARD, A. M. La sulfone J.51 en thérapeutique antilépreuse. (Note préliminaire.) [J.51 sulfone in antileprosy therapy; preliminary note.] *Bull. Soc. Path. exot.* **48** (1955) 133-137.

——— La sulfone J.51 dans le traitement de la lèpre. Son mode d'action. [J.51 sulfone in the treatment of leprosy; its mechanism of action.] *Thérapie* **10** (1955) 579-587.

——— Mode d'action des sulfones dans la lèpre. (IX). Comment agissent les sulfones thymolées (argentique ou non) administrées par la voie buccale. [Mechanism of action of sulfones in leprosy. IX. Mechanism of action of thymol derivatives of sulfone (with or without silver) administered orally.] *Arch. Inst. Pasteur Guyane et Inini*, Publ. No. 357, March 1955.

Determinations of sulfonemia and sulfonuria were made in a group of 50 patients given either a disubstituted thymolized sulfone or the same product containing silver in its formula, or the combination of both drugs (silver Diatox). Identical determinations were also made of patients given DDS. It was found that 200 mgm. of the thymolized sulfone (the dose advised by the manufacturer) gave very low sulfone levels, equivalent to those produced by 50 mgm. of DDS, or a reduction to one-fourth. When the dose of the thymolized sulfone is increased, the levels in the blood and urine remain practically unchanged, so that for a dose of 500 mgm. a day the reduction drops to one-tenth (as before, in comparison with about 50 mgm. of DDS). The authors hold that the clinical results obtained by other authors with thymolized sulfones are due to the liberation of small doses of DDS, 50 mgm. of which released by 200 mgm. of thymolized sulfone corresponds exactly to the minimal dose employed in the treatment of leprosy. The thymolized sulfones, in addition, are more costly than DDS, the superiority of which the authors regard as beyond question from all points of view. —M. VIETTE

DESTOMBES, P. and CHAMBON, L. Traitement des réaction lépreuses par la phenylbutazone. [Treatment of lepra reaction with phenylbutazone.] *Bull. Soc. Path. exot.* **48** (1955) 454-458.

Following the work of Ravina and Pastel in acute inflammatory conditions in tuberculosis, the authors tried derivatives of pyrazolidine in cases of lepra reaction. Five patients were each given 6 intramuscular injections of 5 cc. of a 20% solution of phenylbutazone, 1 every 3 days for 3 patients, and 2 courses of 3 daily doses with an interval of 2 days between the two courses for 2 of them. Five other patients were given the drug orally in tablet form, 300-400 mgm. daily for 7-9 days. The results were at least as good as those obtained with ACTH, and more lasting. First of all, pain disappeared generally within 24 hours, and this was followed by subsidence of the fever and reduction of inflammation in the skin and nerve lesions. One of the patients was of the tuberculoid type, although the histological picture was at first obscured by the reaction and appeared to be lepromatous. However, 12 days after the 4th injection the histological picture had changed to typical tuberculoid. Swelling of the nerves was quickly reduced. Slight traces of albumen were found in the urine, but these were transient and not considered contraindications. There was also retention of water and edema occasionally, but this quickly passed off. In only one case was there a return of reaction after the treatment was finished.

and this quickly subsided when it was renewed. Phenylbutazone has another advantage over ACTH in that it is much less expensive. —E. MUIR

- 6 SARMIENTO, S. A., TEMPORINI, S. and CASTOLDI, F. La reacción leprótica y sus modificaciones por el B. C. G. [Lepra reaction and its modification by means of BCG.] *O Hospital* **45** (1954) 403-411.

To produce immunity the authors administered oral BCG to a series of leprosy patients in 0.30 gm. dose for 60-70 days every 3 or 4 years, increasing the dose to 6 gm. after which it was given once a week for one year. Ten patients treated in this manner, practically all lepromatous, developed lepra reactions but all had improved. Pain had decreased in at least 90% of the cases, and disappeared in 50%; fever disappeared in 80%; weight increased in 60%. A particular fact seen was that tolerance to antileprosy drugs had increased in 60%. This vaccination is harmless regardless of the immunobiological state of the patients with respect to tuberculosis or leprosy, and the authors recommend it without distinction for the prevention of both diseases.—[From abstract in *Ann. Dermat. et Syph.* **81** (1954) 695.]

- 7 LAGRANGE, J. and VIETTE, M. Le traitement chirurgical des griffes digitales de la lèpre. [Surgical treatment of clawed fingers in leprosy.] *Semaine Hop. (Paris)* **30** (1954) 2984-2990.

Clawing of the fingers in leprosy is the result of paralysis of the interosseus and lumbricalis muscles. The authors studied the action of the muscles and the physiological effects of their paralysis. Chemotherapy gives use to clinical and bacteriological improvement of cutaneous lesions but is ineffective against nerve involvement, especially of the cubitals. Decompression of the nerve by operating on the connective sheath or by physiotherapy treatments such as ultrawave have no chance of success unless it be done before the deterioration of the nerve fibers. Surgical treatment is the method of choice in already formed clawed fingers, and for this the authors have employed transplantation of the superficial common flexor according to the technique of St. Brunel and of Fowler, by using the extensor of the index and the little fingers and interphalangeal arthrodesis. Appreciable functional and esthetic results have been obtained in all cases.—[From abstract in *Ann. Dermat. et Syph.* **81** (1954) 711.]

- 6 LAVIRON, P. and KERBASTARD, M. Note préliminaire sur le traitement des maux perforants et ulcères lépreux par le déhydrocholate de sodium. [Preliminary note on the treatment of perforating ulcers and leprotic ulcers by sodium dehydrocholate.] *Bull. Soc. Path. exot.* **48** (1955) 129-133; also *Méd. trop. (Marseille)* **15** (1955) 217-221.

Following the studies of Lemaire and Housset on the treatment of vascular and trophic affections, 11 patients with perforating sores or leprotic ulcers were treated by daily intravenous injections of 20% sodium dihydrocholate (a bile acid salt). Each patient was given 55-420 cc. of the drug in one or two series. Of the 13 perforating sores, 5 healed, 7 improved markedly, and 1 improved slightly; and of 4 ulcers, 3 healed and 1 improved. The authors point out, however, that when there is bone necrosis excision of the sequestrum is necessary. —M. VIETTE

- 6 ROSS, SR. HILARY, DE SIMIO, J. and BYERS, J. Creatinine coefficient and its relation to muscular function in leprosy. *Phys. Therapy Rev.* **35** (1955) 484-487.

The creatinine coefficient and its relation to muscle function was determined in 73 cases of leprosy, 55 lepromatous and 18 tuberculoid. The evaluation of muscle power was based upon the testing of 222 muscles composing the upper extremities, trunk, lower extremities and face. Eleven cases (15%) showed normal creatinine coefficients with no loss of muscle function. Normal creatinine coefficients were also found in 15 patients (20.5%), 8 women and 7 men, whose loss of muscle function varied between 2 and 28%. The coefficient was below the normal range in 47 cases,

all of which exhibited loss of muscle function in varying degrees. In general, creatinine excretion is somewhat diminished in leprosy patients with muscle atrophy. Although there is no definite correlation between the degree of muscle atrophy and the diminution in creatinine output, the lower values for the creatinine coefficient occurred in patients with most impairment of muscular function. —AUTHORS' SUMMARY

- 6 SHORT, E. I. The effect of PAS on the distribution of sulphetrone after simultaneous administration of the drugs. *British J. Pharmacol. & Chemother.* **9** (1954) 271-279.

Concentrations of sulphetrone and PAS were estimated in the presence of each other by determining the total concentration in terms of sulphetrone by the diazonium reaction, and the amount of PAS by the reaction with *p*-dimethylaminobenzaldehyde. Groups of 18 mice were each given 0.625 gm./kgm. doses of the drugs (together or separately) by stomach tube or 0.25 gm./kgm. parenterally, and blood concentrations were estimated from pooled tail blood at frequent intervals. The simultaneous administration of PAS led to a 3- to 4-fold increase in sulphetrone concentration within half to one hour, after which it fell gradually and at 6 hours differed little from that produced by the same dose of sulphetrone alone. This increase closely paralleled the PAS blood concentration. Similar results were obtained in rabbits and dogs. When the drugs were administered parenterally the effect of PAS on sulphetrone blood concentration was still noted but was less marked. In mice the blood concentration of sulphetrone in the presence of PAS was 1-1/2 to 2 times that without PAS; in rabbits a 15-30% and in dogs a 20-40% increase was obtained. *In vitro*, sulphetrone and PAS are bound to plasma proteins to about the same extent, namely 87.1 and 85.6%, respectively, these figures differing when both drugs were present. Studies of tissue distribution in mice showed that the concentration of sulphetrone in all tissues was considerably reduced by the simultaneous administration of PAS. It was thus concluded that there is competition between PAS and sulphetrone for a limited number of protein receptors, and thus PAS inhibits tissue storage of sulphetrone. The simultaneous administration of PAS did not inhibit or increase the side effects of sulphetrone on CO₂ combining power of plasma and methemoglobinaemia. —[From abstract in *Trop. Dis. Bull.* **52** (1955) 373.]

- 6 KATSUMI, H. Studies on leprosy. Part 1. Studies on vital physiology of leprosy. I. Skin temperature. (1) The change of skin temperature caused by thermic stimulation. *La Lepro* **24** (1955) 78-84 (in Japanese; English abstract).

In 19 cases of leprosy—8 lepromatous, 8 macular, and 3 neural—the skin temperature was measured on the forehead after both legs had been heated or cooled. The notable differences from normal observed in the curves are of three types. The first type reveals an instability of the adjustment of skin temperature which can be seen in exhausted normal people and in cases of Basedow's disease; a marked decrease takes place on heating both legs. This change was seen in the severe lepromatous patients. The second type shows almost no change of the skin temperature on the forehead, observe in moderate cases of macular and neural leprosy. The third type is not very different from the normal, but the rise or fall of the temperature is more or less prolonged. These above results indicate a very unstable condition of leprosy patients in thermostimulation.—[From abstract.]

- 6 KATSUMI, H. Studies on leprosy. Part 1. Studies on vital physiology of leprosy. I. Skin temperature. (2) The change of skin temperature caused by autonomic nervous toxins. *La Lepro* **24** (1955) 86-96 (in Japanese; English abstract).

Subcutaneous injection of 0.1% adrenalin, 0.1% atropin, and 1.0% pilocarpin (1 cc. in the male and 0.7 cc. in the female) was done in 9 cases of lepromatous, 3 of macular, and 1 of neural leprosy, and 4 nonleprosy patients undifferentiated from leprosy. Over 90 minutes after the injection the temperatures on the fore-

head, on the lesions of the forearms and legs, and in the buccal cavity were taken, and the function of the autonomic nervous system was determined and compared with normal people. The difference was found to be more marked in the lepromatous than the macular cases, and in serious old cases than in slight ones. In severe cases there exists no parallel relationship between the change of skin lesions and the functions of the autonomic nerves. This change is produced by the disturbance of peripheral sensory nerves and persists after the skin eruptions have clinically disappeared. The measurement of skin temperature enables one to differentiate to some degree nonleprosy patients who have sensory disturbances from leprosy patients.—[From abstract.]

JONQUIERES, E. D. L. and BERAMENDI, J. M. Coloración de las grasas con Sudán III en el diagnóstico diferencial histológico de los tipos de lepra. [Fat staining with Sudan III in histological differential diagnosis of leprosy types.] *Rev. argentina Dermatosis*. 39 (1955) 143-152.

A study of fat in the lesions of 98 patients at the Sanatorio Sommer gave positive results in all but two of the lepromatous cases, in all of the borderlines, in many reactional tuberculoids, and in a few cases with minor and major tuberculoids. All of the residual lepromatous cases were positive, while the residual tuberculoids were all negative. This method, then, is useful for the retrospect diagnosis of type in residual cases. In lepromatous cases the fat was present as droplets which grow bigger as the case becomes older. In borderline and reactional tuberculoid cases the fat, present as a diffuse infiltration, seems to indicate an active immunological phenomenon. However, from the fact that some young lepromata also show diffuse fat it must be concluded that the method is not always definitive in the differential diagnosis between the lepromatous and the borderline or reactional tuberculoid cases. In these cases the examination for fat in lepromatous macules or diffuse infiltrations (with a lesser cell density than lepromata) will show droplets instead of diffuse fat, while borderline and reactional tuberculoids will show as a rule the diffuse character. Follow-up examinations will show increased droplets in lepromatous cases as they become older, whereas in borderline and reactional tuberculoid cases the fat gradually disappears.—[From authors' summary, supplied by G. Basombrio.]

OGITA, K. Some histochemical aspects of cutaneous lesions of tuberculosis, leprosy and murine leprosy. Part I. On the distribution of glycogen granules. *La Leprosy* 24 (1955) 72-77 (in Japanese; English abstract).

Lesions of three cases of lupus vulgaris, 11 of tuberculosis verrucosa, 3 of lupus miliaris disseminatus faciei, 54 of erythema induratum, 9 of tuberculosis papulo-necrotica, and 4 of Boeck's sarcoid, were examined for glycogen granules with Best's carmin and the Hotchkiss-McManus' method. These methods were also applied to 10 cases of lepromatous and 18 of tuberculoid leprosy, and to murine leprosy lesions 3, 5 and 7 weeks after inoculation. Saliva-digested preparations were also examined as controls. The results revealed that in lesions which are undergoing necrosis many and various-sized granules can be found, and that they have a close relation with the disintegration of nuclei. In erythema induratum, cases of which could be obtained in a significant number, the appearance of glycogen granules can be traced in accordance with the development of the lesions. In tuberculosis verrucosa, which involves no necrosis of the dermis, no glycogen granules were found. Neither type of leprosy ordinarily has glycogen granules in the lesions, in which there is no necrosis of the dermis. Exceptionally, granules were found in 2 lepromatous cases, one in a circumscribed subcutaneous lesion undergoing softening and absorption, the other in an ordinary lepromatous infiltration. In the course of the development of murine leprosy, glycogen granules appear at first in the dermis destroyed because of the bacillus inoculation, then they decrease; and finally they appear in

small quantities in the centers of small tubercles. In a lesions which attains a certain degree of development, glycogen granules take a ring-formed arrangement. —[From abstract.]

- *6 POWELL, C. S. and SWAN, L. L. Leprosy: Pathologic changes observed in fifty consecutive necropsies. *American J. Path.* **31** (1955) 1131-1147.

This is a report of the gross and microscopic findings in 50 consecutive autopsies performed at the national leprosarium at Carville over a 5-1/2 year period, representing 92.6% of all deaths occurring during that time. The type was lepromatous in 48, while 2 were tuberculoid. The average age at the time of death was 58.8 years. Routine sections were made of heart, lung, spleen, kidney, liver, adrenal, testis, epididymis, skin, peripheral nerves, gastrointestinal tract, lymph node, thyroid, pituitary, bone, bone marrow, eye, brain and spinal cord, all fixed in 10% formalin. The routine hematoxylin and eosin stain as well as acid-fast stains were applied to all tissues. Acid-fast bacilli were demonstrated in at least 1 tissue in 34 of the cases, organisms being demonstrated in 6 of 10 patients believed to be clinically arrested. A striking feature secondary to leprosy was the frequency of amyloid changes, found in 23 of the cases. Renal insufficiency secondary to the amyloid change was the most frequent cause of death (38%). —SR. HILARY ROSS

- 6 PISACANE, C. and CRAXI, P. Morfologia e patogenesi delle lesioni del connettivo nella lebbra. [Morphology and pathogenesis of lesions of the connective tissue in leprosy.] *Ann. italiano Dermat. e Sif.* **9** (1954) 1-48.

In this long article the authors try to interpret the histological lesions of the connective tissue in leprosy as allergic-hyperergic and disprotidemic. They point out that, (1) leprosy is always an allergizing disease (the histological pictures following lepromin injection are similar in the lepromatous form, Mitsuda negative, and in the tubercuoid form, Mitsuda positive); and (2) the proteins in the blood, studied electrophoretically, are changed as in all chronic infectious diseases (increase in the globulins, with gamma-globulin prevalence). An excellent, detailed description follows of the connective tissue modifications in leprosy, with many microphotographs. The article is hard to summarize. —M. TERNI

- 6 DINIZ, O. A vacinação pelo BCG na lepra. [BCG vaccination in leprosy.] *Arq. mineiros Leprol.* **15** (1955) 9-17.

The author gives the reasons for belief in the protective value of Mitsuda positivity induced by BCG. He points out chiefly the antagonism between tuberculosis and leprosy and the influence of tuberculosis in the decline of leprosy, according to the ideas of Chaussinand, and he also deals with the mechanism and significance of the change of the Mitsuda reaction induced by BCG. In the western region of Minas Gerais, under the head of the dispensaries, Josefino Aleixo, vaccination of the whole population is being carried out in 14 municipalities with a population of 179,704. Before undertaking this field work a study of the prevalence of leprosy in the region was made, and the number of contacts of registered patients was determined. The number vaccinated already exceeds 30,000, and the educational value has been great. By continuing this experiment, which is to include periodic revaccination and systematic determination of the indices of the disease, it is hoped that in a few years it will be possible to obtain data of great and conclusive value. —[From summary.]

- 6 MARIANO, J. and NETO, H. A. Influencia do BCG em Mitsuda de hansenianos e em testes específicos e outras infecções. [The influence of BCG on the Mitsuda reaction in leprosy patients and on specific tests of other infections.] *Arq. mineiros Leprol.* **15** (1955) 87-91.

The authors studied the results of BCG vaccination of 48 leprosy patients,

bacteriologically positive and lepromin negative, who were tested before and after vaccination with the following antigens: Mitsuda, Montenegro, Frei, brucellosis, tuberculin and histoplasmin. It was found that in these patients, especially in those improving clinically under sulfone treatment, there was a change of the immunological state expressed by greater Mitsuda positivity, nothing being observed as regards the other antigens. This observation convinced the authors of the real value of BCG in the phenomenon of immunity, which is modified by calmetization. —[From the authors' summary.]

COELHO, J. T. Considerações sobre a positividade da reação de Mitsuda após a administração oral de BCG em coletividade sadia. [Conversion of the Mitsuda reaction to positive after oral administration of BCG in healthy people.] *Arq. mineiros Leprol.* **15** (1955) 92-94.

The author reports the results obtained in retesting with lepromin 34 originally negative cases which had been vaccinated with BCG 16 months before. He comments on the high frequency of positivity so obtained, particularly in the subjects aged from 2 to 25 years (89%). In spite of the small number of cases (29 of the original 65 could not be retested), this observation in nuclei of the population indicates the possibility of detecting and diagnosing cases of leprosy in the incipient stage, in which treatment gives the most promising results, since such cases are possible sources of contagion.—[From the author's summary.]

BECHELLI, L. M., PAULA SOUZA, R., QUAGLIATO, R. and FERRAZ, N. T. BCG por via oral e positividade remota do teste lepromínico con escolares saôs. [Oral BCG vaccination and late conversion of the lepromin test among school children.] *Rev. paulista tisiol. e Tórax* **16** (1955) 63-73.

The lepromin test was applied to 650 children and read after 30 days. Those negative or weakly positive (1+) were divided into four groups, treated as follows: (1) given fresh BCG; (2) given BCG kept at room temperature for 15 days; (3) given BCG killed by heat; and (4) kept untreated for control. About 75 days after the injection of these antigens the test was read again (delayed reaction). Among the lepromin negatives, the reaction became positive in the following rates: (1), 73.0%; (2), 38.7%; (3), 35.5%; and (4), 35.9%. Here there was a definite effect of the fresh BCG. On the other hand, in the children who had already been weakly positive, intensification of the reaction was practically the same in all four groups. This result was unexpected, for it was thought that if BCG changes negative cases to positive it should make weakly positive cases more strongly reacting. This discordance of results is taken to indicate that BCG does not have a constant effect on the late lepromin reaction.—[From the authors' summary, supplied by N. de Souza Campos.]

COMPA, F. and FERNANDEZ, J. M. M. B. C. G. en la profilaxis de la lepra. Evolución de dos niños convivientes calmetizados. [BCG in leprosy prophylaxis. Course of the disease in two children vaccinated with BCG.] *Rev. argentina Dermatosisif.* **39** (1955) 126-128.

The authors relate the history of a girl and a boy, children of a lepromatous mother with whom they had contact up to the age of 4 years and 18 months, respectively, at which time they were placed in a preventorium. The lepromin reactions were negative. The authors attempted to reverse the reaction by means of 9 intradermal injections of 0.1 cc. of lepromin, but failed. BCG vaccine, 100 mgm., was given by mouth. Two years later the girl was still free from the disease, but the boy showed tuberculoid lesions; the lepromin reaction was then positive in both children. Four years after the first examination the girl continued unaffected, and the lesions of the boy were in frank regression without treatment. The lepromin

reactions continued positive. The authors attribute the favorable immunological change to the BCG vaccination.—[From authors' summary supplied by G. Basombrio.]

- ✓ MERKLEN, F. P. and RIOU, M. Passage relativement rapide à la positivité de la lépromino-réaction dans quatre lèpres lépromateuses. [Relatively rapid conversion to positivity of the lepromin reaction in four lepromatous cases.] Bull. Soc. française Derm. et Syph. **62** (1955) 45-48.

Four Mitsuda-negative lepromatous patients were treated with sulfone, 2 cases for 1 year, the other 2 for 3½ and 4 years. In one patient this treatment was preceded by, and in the others it was followed by or combined with, series of daily intravenous injections of 50 mgm. of vitamin K for 20-30 days. Between injection series the patients were given the vitamin by mouth. All 4 patients became bacteriologically negative and lepromin positive. The authors emphasize the fact that in the 3 patients given vitamin K after the sulfones, the conversion of the lepromin reaction occurred only after the administration of the vitamin. In the patient given vitamin K before the sulfone, the recovery was particularly rapid. —M. VIETTE

- ✓ FERNANDEZ, J. M. M. and CABANILLAS, L. Sensitization to tuberculin induced by lepromin. Leprosy Rev. **26** (1955) 163-167.

Eighteen children, 2-8 years of age, who were living in a home and had had no known contact with leprosy, and whose Mantoux reaction (OT 1:10) was negative, were given injections of 0.1 to 0.2 cc. of either extracted (Dharmendra) or whole lepromin. Of these, 44.4% became Mantoux positive in 6-7 weeks; but most of them were only weakly so, and they became negative again in a few weeks.—[From abstract in *Trop. Dis. Bull.* **53** (1956) 201.]

- ✓ LOPES DE FARIA, J. Revisão dos estudos experimentais sobre a reação a lepromina relacionados com a natureza desta reação. [Review of experimental studies on the lepromin reaction related to its nature.] Rev. brasileira Leprol. **22** (1954) 145-156.

This is a critical review of the literature on experimental results obtained in the last two decades which have contributed to the knowledge of the nature and mechanism of the Mitsuda reaction, with a list of problems which require investigation. Also discussed are the substances held responsible for the Mitsuda reaction, its histopathology, and its nature and mechanism. The writer's studies with dogs have shown that in this animal the reaction is due to a natural resistance and is caused by the lipidic fraction of lepromin. It is not possible to say if the Mitsuda reaction in tuberculoid leprosy cases is due to a natural or acquired (specific or nonspecific) resistance. The writer believes that, in the majority of tuberculoid patients, the resistance is independent of the leprosy infection and is present before it.—[From author's summary in English.]

- ✓ PEPYS, J. The relationship of nonspecific and specific factors in the tuberculin reaction; a review. American Rev. Tuberc. & Pulmon. Dis. **71** (1955) 49-73.

This review, contributed from the Wright-Fleming Institute of Microbiology in London, is eminently worth reading as contributory to an appreciation of the tuberculin reaction so far as it is understood, and for suggestions of things that might be tried in connection with the lepromin reaction. For example, it is said that if a dose of histamine is injected into a Mantoux test site immediately after the tuberculin is injected, there may be a complete suppression of the reaction because of the accelerated escape of the antigen from the site. It would be interesting to see if the early reaction to lepromin could be similarly suppressed, and if so whether there would be any effect on the late reaction. Another question is whether the early reactivity to a lepromin filtrate or bacillary extract could be transferred passively by

lymphocytes from reactive individuals, as tuberculin reactivity can be transferred. Incidentally, the "nonspecific" factors discussed have nothing to do with those concerned in large-dose tuberculin reactivity without infection by tuberculosis (see book review in this issue).

—H. W. W.

- 6 RUGE, H. Serological findings in leprosy and tuberculosis with the Wassermann, Meinicke, and VDRL tests. *Bull. World Hlth. Org.* **13** (1955) 861-886.

In the course of a survey of venereal diseases in Egypt, 820 cases of leprosy and 720 of tuberculosis were examined serologically with the Wassermann, Meinicke (MKR II), and VDRL tests. On serological and anamnestic evidence, 31 cases of syphilis were discovered among the former group and 37 among the latter. Apparently false positive reactions were obtained in 203 cases of leprosy (25%) and in 38 of tuberculosis (5%). The probability is discussed that a fairly high proportion of these reactions were in fact caused by otherwise undetected syphilis or were nonspecific. The Meinicke test proved the most specific of the three, followed in order by the Wassermann and the VDRL tests. Syphilis proved more frequent among males with tuberculosis than among those with leprosy; this is attributed to the fact that leprosy patients are kept in greater isolation. Less easily explained is the fact that more females than males with leprosy were found to have syphilis, whereas in tuberculous persons the difference in syphilis incidence between male and female patients was not very great.—[From the synopsis.]

- 7 MONTESTRUC, E. and BERDONNEAU, R. La place de la lèpre dans les fausses réactions de la syphilis. [The place of leprosy in false syphilis reactions.] *Arch. Inst. Pasteur Martinique* **8** (1955) 39-43.

Serological tests for syphilis (Vernes, Kahn, Kline, V. D. R. L.) were performed in 96 leprosy patients. Of the 64 lepromatous cases, 42 (65.6%) were completely negative, 13 completely positive, while 9 showed dissociated reactions; the most frequently positive was the VDRL, the least frequently positive was the Vernes perethynol. Of the 32 tuberculoid and indeterminate cases, in 26 (81.2%) the reactions were all negative, and in 6 they were all positive. The Nelson test, performed in 20 cases, was positive in 1 tuberculoid and 2 lepromatous cases in which all the other reactions were equally positive, and also in 1 lepromatous case in which only the Vernes test was negative. The authors believe that leprosy plays a role in the occurrence of false syphilis reactions, and that the Nelson test is no more reliable than the classical serological tests. In particular, it does not follow the drop of the Vernes perethynol test in treated yaws patients.

—M. VIETTE

- 8 FLOCH, H. and ANDRE, J. Réaction d'hémagglutination dans la lèpre a l'aide d'hématies "sensibilisées," par un antigène lépreux. [The hemagglutination reaction in leprosy with cells sensitized by a leprosy antigen.] *Arch. Inst. Pasteur Guyane et Inini*, Publ. No. 375, September 1955.

The authors, who had studied the hemagglutination reaction in leprosy using various tubercle antigens, have made tests with cells treated with a leprosy antigen consisting of the supernatant of a heat-sterilized leproma suspension without phenol; sheep cells were used, and Group O human cells. For the test the sensitized cells were suspended in 100 times their volume of saline. Using the technique of Sohler (0.3 cc. of each serum dilution with 0.05 cc. of the sensitized cell suspension) it was possible to make 10 tests with 5 cc. of a 1% suspension. Sera from 6 leprosy patients and 2 normal sera tested in this manner gave only one antigen-antibody reaction. In other words, the hemagglutination reaction in leprosy using cells sensitized by this leprosy antigen gave deceptive results. The authors plan to continue their study using a lepromin lysed by ultrawaves.

—AUTHORS' ABSTRACT

- SCHUJMAN, S. Estudio bacteriológico comparativo de piel, ganglios y nervios en los enfermos lepromatosos. [Comparative bacteriological study of the skin,

lymph nodes and nerves in lepromatous patients.] *Rev. argentina Dermatosis.* **39** (1955) 228 (resumen).

This study was made in 40 patients, with the following findings. Active lepromatous cases: skin, 100% positive; lymph nodes, 70%; nerves, 50%. Lepromatous cases improved by treatment: skin, 50% positive; lymph nodes, 10%; nerves, 10%. Clinically and bacteriologically arrested cases (clinical form not indicated): skin, negative in all; lymph nodes, 10% positive; nerves, 10%. In 3 cases of the pure neural form puncture of the affected nerves gave 1+ findings in 1 case and 2+ in 2 cases. The nerve puncture was not followed by ill effects. —G. BASOMBRIO

DE SOUZA-ARAÚJO, H. C. Estudo bacteriológico e experimental de um caso de lepra lepromatosa. Nota prévia. [Bacteriological and experimental study of a case of lepromatous leprosy; preliminary note.] *An. brasileiros Dermat. e Sif.* **30** (1955) 13-20.

From a confirmed lepromatous (L3) case the author isolated and cultured two strains of acid-fast bacilli. One, chromogenic (golden yellow), producing a pellicle in glycerin broth, was obtained from cutaneous lymph. The other, creamy-white, of eugonic type, was obtained from a suspension of a lepromin treated by soda. These cultures have been inoculated into murines and hamsters. On three occasions tens of *Triatoma infestans* larvae were applied to the skin lesions of the patient. A majority of them always sucked, but only three of them were strongly positive for acid-fast bacilli. This fact is regarded as paradoxical, because in previous experiments the great majority of such hematophagi became infested with Hansen bacilli. Nevertheless, triturates of such insects were inoculated into suitable media and injected into laboratory animals. After intravenous injections of 63 cc. of Promin (25 gm. DDS) the patient had a severe attack of lepra fever and was interned in the Iguá Colony, Rio de Janeiro. —AUTHOR'S ABSTRACT

CHAUSSINAND, R. and VIETTE, M. Etude de la coloration des bacilles acido-alcoolorésistants par le Noir Sudan. [A study of the staining of acid-fast bacilli by Sudan Black.] *Ann. Inst. Pasteur* **89** (1955) 280-289.

It was demonstrated by Sheehan and Whitwell, then by Bermann, that acid-fast bacilli can be stained with Sudan Black in 0.5% solution in 70% alcohol, heated on the slide. The slides are decolorized by acetone and counterstained by 1% aqueous safranin. Bacilli unstained by Sudan Black generally stain pink with safranin, with the exception of the Hansen and Stefansky bacilli. The Stefansky bacillus is stained weakly with Sudan Black, but the Hansen bacillus is not. New trials are here reported. Besides the above technique, the Sudan Black was used by immersing the slides, or by covering them with a diluted solution and heating them. The Hansen bacillus, alone among the acid-fast bacilli studied, is practically unstainable; the others studied were 38 strains of paratubercle bacilli, 10 of the Koch bacillus, the Johne bacillus, *M. marianum*, *M. ulcerans*, and BCG. These different strains are classified according to their capacity to take the stain. The results have no relation with acid-fastness in the Ziehl-Neelsen staining, or with the rate of growth of the bacilli. Sudan Black is not an absolutely accurate test in the diagnosis between the Koch and the Hansen bacilli, but in practice one can always distinguish the latter from the other acid-fast bacilli. —M. VIETTE

CROSHAW, B. The chemotherapy of rat leprosy. *J. Applied Bact.* **17** (1954) 171-174.

The author describes experiments involving five different methods of inoculation and treatment of rat leprosy. A suspension of a nodule was injected: (1) into developing chick embryos; (2) into rats subcutaneously; (3) into rats intraperitoneally; (4) into mice subcutaneously; and (5) into mice intraperitoneally. The drugs tested were sulphethrone, DDS, TB-1, TB-3, PAS, INH (isoniazid), and isonicotinylnyl hydrazone. Various controls were used. Only isoniazid and isonicotinylnyl hydrazone

zone had any marked effect, the latter undoubtedly acting by virtue of its breakdown to INH as shown by paper strip chromatography. However, the effect of isoniazid against *M. leprae murium* infection in mice is not so great as in experimental *M. tuberculosis* infections. It is believed that the results of further clinical trials with isoniazid in human leprosy should be awaited before attempting to assess the final value of experimental *M. leprae murium* infections in selecting possible drugs.—[From abstract in *Trop. Dis. Bull.* **52** (1955) 166.]

- 6 HOBBY, G. L. and DONIKIAN, M. A. The intermittent use of streptomycin and isoniazid singly and together in murine leprosy. *American Rev. Tuberc.* **72** (1955) 846-850.

Prolonged administration of streptomycin and isoniazid, singly and together, in clinical trials with human leprosy has aroused interest in the possible effectiveness of the intermittent administration of these two drugs. The satisfactory results achieved in the treatment of tuberculosis with streptomycin administered twice weekly has suggested that this same regimen might be adequate also in the treatment of leprosy. Mice were infected intraperitoneally with *M. leprae murium* and treatment initiated on the 14th day. Seven drug regimens were used for the evaluation. Although this was a single experiment, the findings are based on more than 1,000 animals. The authors admit that the results may or may not be applicable to human leprosy. If any analogy can be drawn from experiments with murine leprosy, however, it seems probable that more effective results may be achieved with isoniazid than with streptomycin, and that the combined use of the two drugs may offer no advantage over the use of isoniazid alone. Isoniazid therapy may be interrupted for periods as long as 2 to 4 weeks without loss of effectiveness. However, evidence suggests that isoniazid may be ineffective when large numbers of organisms are present at the start of therapy.

—SR. HILARY ROSS

- 6 KAWAGUCHI, Y. The immunological correlation of tuberculosis to leprosy. Part 1. The influence of tuberculous infection upon the onset of murine leprosy. *La Lepro* **24** (1955) 64-71 (in Japanese; English abstract).

After the animals were infected with the tubercle bacillus (dd strain) the murine bacillus was inoculated subcutaneously, and the development of the lepromas was observed to ascertain the influence of the previous tuberculous infection upon the development of the murine infection. The results obtained are as follows: (1) Inoculation of the virulent H strain inhibited to a considerable degree the onset of the lepromas, and the weights they attained were less than in the controls. Thus, tuberculous infection appears to increase the resistance against murine leprosy. (2) The mice infected with the nonvirulent R strain and with BCG gained a little resistance to murine leprosy. It may therefore be expected that BCG vaccination may be effective in the prophylaxis of leprosy. (3) Inoculation of a nonpathogenic acid-fast bacillus had no effect, the animals not differing from the controls.—[From abstract.]

- 6 NAKAMURA, M. Attempts to approach to the clarification of chemical composition of *Mycobacterium lepraemurium*. I. Separation of the bacilli from the subcutaneous tissue of rat infected with *Myc. lepraemurium*, and some properties of the bacilli. *Kurume Med. J.* **2** (1955) 110-116.

Attempts to separate *M. leprae murium* in the pure state from infected subcutaneous tissue are reported. The results indicate that chloroform and toluol separation and Hanks' method are useful for the purpose. Some of the chemical properties of the bacterial cells obtained by the chloroform separation were investigated. *M. leprae murium* contains approximately the same amount of nitrogen as other acid-fast bacilli, and twice as much phosphorus. The amino acid contents are similar to those of other acid-fasts. The bacilli obtained with chloroform possess no infectivity in the white rat.—[From author's summary.]