CURRENT LITERATURE

It is intended that the current literature of leprosy shall be dealt with fully 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.

LARA, M. B. Rare bacterial endocarditis observed among Culion lepers. J. Philippine M.A. **20** (1940) 69-74. With 9 figs. on 4 plates.

This is a well illustrated account of a rare complication of leprosy. In 1927, SOLIS (*Trop. Dis. Bull.*, 1927, Vol. 24, p. 922) described a Gram-negative diplococcobacillus he had regularly cultivated from the blood of certain septicaemic cases. The present author also cultivated it from the blood of five out of ten lepers who had endocarditis of three to four weeks' duration, and in whom large soft vegetations, containing large numbers of the organism, were found after death, usually on the upper surface of the mitral valve a little way from the margin, but sometimes on the tricuspid or the aortic valves. Septic emboli are also found in the spleen and sometimes also in the liver and kidneys. The identity of the organism is still unsettled, but it is aerobic, grows readily on agar after slight initial refractoriness, and is found in the affected valves abundantly in chains of five to ten non-capsulated, non-spore-bearing pairs. The disease runs a more acute course than *Streptococcus viridans* infections, and it is not considered to be related to the organism of leprosy itself. Its mode of entry into the system is unknown as it may occur in patients without ulceration of the skin. The disease begins as a simple influenza-like fever, followed after about a week by septic symptoms and positive blood cultures, together with enlargement of the spleen due to emboli. There are albumin and casts in the urine, weakness of the heart and puffiness of the face with oedema of the legs. The disease is inevitably fatal. No medicinal treatment tried, including prontosil intravenously, had any effect in retarding the progress of the disease, which does not appear to have been reported among leprosy patients except at Culion. The plates give good naked eye and microscopical appearances of the infected valves. [Abstract from *Trop. Dis. Bull.* **40** (1943) 464.]

MANALANG, J. Fate of Culion patients presented to the local negative examining committee from 1922 to 1938. J. Philippine M.A. **20** (1940) 193-202.

This paper gives important information on the Philippines releases of leprosy patients who have become negative bacteriologically, and on their subsequent condition. They include cases both at the Culion leper settlement and at the provincial centres. The author first describes the psychological condition of the patients after first being found negative and during the repeated bacteriological examinations in the period (up to two years) during which continued negative reports must be received before their release is permitted. Previous recorded data on more limited periods are quoted, in the last three of which the relapses and readmissions varied between 9.8 and 6.2 per cent. The data show that from 1922 to December 31st, 1938, 4,627 patients were under observation by the Local Negative Examining Committee, or approximately 17 per cent of the total admissions to Culion. Of these 2,457 or 53.1 per cent, were discharged or released under parole as negative and 28 more, or 0.6 per cent, had been transferred or had escaped observation. Deaths numbered 513, or 11.1 per cent, and the remaining 1,626, or 35.2 per cent, are still under the observation of the Committee.

The length of time the released patients remained under the observation of the Committee before their release is shown in a second table, the percentages of the 2,457 cases respectively being: six months to two years 67.5, two to five years 26.9, five to 10 years 5.5, and more than ten years only 4 cases, or 0.1 per cent. Of the 513 who died during the period of observation, 318 were still positive and 195 negative. Further, 73 patients died after readmission under observation of the Committee, of whom 40 were positive and 27 negative during observation; 4 positive cases became negative and in the remaining two the condition was reversed. Lastly, the bacteriological condition of the 1,626 patients still remaining under the Committee showed that of 1,017 advanced cases 256 were readmitted positive and 1 negative, and of the remaining 575 accounted for, 32 were readmitted positive and 71 negative. Considering the advanced condition of so many of the Culion cases, these results are encouraging.—[Abstract from *Trop. Dis. Bull.* **40** (1943) 465.]

RADNA, R. & LIMBOS, P. Contribution à la question du traitement de la lèpre: L'huile de Caloncoba welwitschii (Gilg.). (Caloncoba oil in the treatment of leprosy.) Ann. Soc. Belge de méd. trop. **20** (1940) 335-344.

The paper records the treatment of a few cases of leprosy with Caloncoba oil. The oil is obtained from the seeds of *Caloncoba welwitschii* and *C. glauca* of the Congo, which belong to the Flacourtiaceae; they are so common that cultivation is not required. They are rich in substances of the chaulmoogric acid series and, after careful washing to remove the pulp, the oil has been extracted from the seeds by boiling in water, extraction with a mixture of alcohol, acetone and chloroform or by petrol ether. It can be injected either subcutaneously, intramuscularly, intradermally or intravenously after drawing up some blood from the vein into the oil in a syringe, and does not produce occlusion of the vessels. Creosote 4 per cent is added to the oil, which can be given in doses of 2 to 5 cc.; as many as 69 intramuscular injections have been given to a patient in the course of seven months; little reaction or induration is produced. In five nerve cases treated in 1935 some of the macules disappeared for long periods, and in a further series of nine cases treated in 1939 good effect on the macules and the healing of ulcers were observed, and in one lepromatous case the lesions became smaller and softer. The authors point out that these promising results require to be confirmed in a much larger series of cases followed up for a considerable time.—[Abstract from *Trop. Dis. Bull.* **40** (1943) 315-316]

AUSTIN, C. J. Central Leper Hospital, Makogai (Annual report for 1940). Fiji, Legislative Council, Suppl. to Council Paper No. 6 (1941) 1-3.

This report shows continued good work in spite of the war. The new patients admitted numbered 141, of whom 57 came from the Cook and Gilbert Islands, and elsewhere outside Fiji. Neural cases in the first or second stage formed 61.7 per cent, but 32 per cent were in the advanced lepromatous stage. The total number of patients was 566, in half of whom the disease was of the lepromatous type. The injection of chaulmoogra preparations remains the most successful treatment. Dyes have been found of some value for local injection into lepromatous lesions, methylene and trypan blue and brilliant green having been thus used. In general reactions fluorescein and mercurochrome proved of value. Dilester (the ethyl esters of Dilo oil) retains its popularity for the relief of nerve pains. Improvement was obtained in 61.8–71.1 per cent, Indians doing best; 23 of a total of 43 patients conditionally discharged were Indians, 35 of whom had neural disease. Of 32 deaths 11 were from tuberculosis, eight from leprosy with exhaustion and five from septicaemia or pyaemia. Much cultivation of vegetables, etc., was carried out by the patients, who are paid for their produce, so the work is popular. The Sisters working in the settlement

continued to do invaluable work, which is fully appreciated by the patients.—[Abstract from *Trop. Dis. Bull.* **40** (1943) 315-316]

BARROS DE SÁ, M. Estudo analitico da reacção de sedimentação do sangue (em 100 leprosos da Leprosaria de Macasana). (Study of blood-corpuscle sedimentation in one hundred lepers at the Macasana Leprosarium.) Arq. Esc. méd.-cir. de Nova Goa. Ser. A. No. 15 (1941) 179-220. (40 refs.)

Just twenty years ago PUXEDDU recorded the rapidity of sedimentation of red cells in leprosy, particularly in the active stages of the disease. He stated that the time varied between 60 and 90 minutes, whereas in normal persons it was 7 hours or more. Varying records have been made since that time and the author has done a useful piece of work in making a study of 50 male and 50 female lepers, in varying stages of neural, nodular, and mixed forms of the disease. He found that the variations between one leper and another were so great that the test was of no real value in diagnosis or prognosis generally, but that *for each individual patient* it might have considerable value, in enabling one to judge of progress and of the results of treatment. This means that there is no *general* rate or formula which will serve as a standard, but that each patient should have a "curve of sedimentation" plotted by frequently repeated tests, and useful information could be gathered from such a chart.—[Abstract from *Trop. Dis. Bull.* **41** (1944) 403]

ROSSAS, T. P. A lepra no Maranhão. (Leprosy in Maranhão.) Arquivos de Higiene. Rio de Janeiro. **11** (1941) 27-51. (12 refs.)

In the decade 1922-32 there were 995 registered lepers in Maranhão, 662 males and 333 females. When a census was taken in 1939-41 there were 176 old cases and 1,035 new; of these 895 were discovered in a medical survey, 114 were in the leprosarium or Capital Dispensary, and 26 at the Health Department posts. Medical men in their survey examined 64,191 persons, 5.8 per cent only of the total population (1,105,788). Tables are given showing the sex distribution of the total; of these 836 (69 per cent) were males, 375 (30.9 per cent) females; 287 were of the lepromatous type, 615 the neural and 214 mixed; 501 were infective and 710 were burnt out cases. Other tables give the incidence in different parts of the municipality, the clinical types in each department and the numbers of infective cases. As regards incidence, the greatest number, 208, were in São Luiz among a population of 84,353, a rate of 2.4 per mille; the highest rate was in Anajatuba, where there were 79 lepers in a population of 13,729, or 5.7 per mille; the second largest number was found in Caxias, 84 among 67,358, which, however, gives an incidence of only 1.2 per mille. Factors favouring the high incidence are that lepers mix freely with the general population, many of the people are very poor and live in dark, damp, thatched huts; they are ill-nourished and in their debilitated state fall ready victims to disease and there is little or no attempt at efficient prophylaxis by removal of these drawbacks, though there is a leprosarium of the colony type at Bonfim on the shore of the island of São Luiz. This was started in 1932 and opened in 1937. In 1938 there were 152 inmates and 18 deaths; in 1939, 163 patients, 9 deaths; in 1940, 194 (18 died). At the end of May, 1941, inmates numbered 183. At the São Luiz dispensary in 1940, 45 new cases received treatment and 31 were sent to the leprosarium.—[Abstract from *Trop. Dis. Bull.* **40** (1943) 150]

BURNET, E. & CABASSO, V. Recherche d'extraits huileux des bacilles acido-résistants (sur le bacille de Stéfansky). (Researches on extracts in oil of Stéfansky's bacillus.) Arch. Inst. Pasteur de Tunis. **31** (1942) 27-30.

The authors report experiments in which the effects of injecting oil extracts of Stéfansky's rat leprosy bacillus into animals have been investigated. The bacilli were

extracted over a period of seventy days in paraffin, chaulmoogra, and olive oils, then the mixtures were filtered through Chamberland L3 bougies at 50°C., and the extracts injected into the testes of guinea pigs and rats, which were killed and examined 60 to 64 days later. The dose of paraffin or olive oil extract was 0.75 cc. for guinea pigs and 0.60 cc. for rats; 0.15 cc. chaulmoogra oil extract was injected into a young rat. No bacilli were found in any of the lesions produced. The lesions noted were: reduction in the size of the inoculated testicle, and hyaline granulations on the surface of the liver and a few also on the spleen, peritoneum or pericardium; they were very slightly adherent to these organs. They showed microscopically no cellular structure but only amorphous material with fatty substance of an acid-fast nature, in circular lacunae. To the naked eye there were small grey granulations of a pseudo-membranous nature.—[Abstract from *Trop. Dis. Bull.* **41** (1944) 1051]

BURNET, E. & CABASSO, V. Action des extraits huileux filtrés de bacilles acido-résistants (huile de paraffine et B. de Stéfansky). Action of oil extracts of Stéfansky's bacillus.) Arch. Inst. Pasteur de Tunis. **31** (1942) 194-6.

The authors considered that the oily extracts of rat leprosy bacilli used in the experiments recorded in the above paper might not have been completely freed from the bacilli. They therefore repeated them with the following modifications. Only paraffin oil was used, in quantities of four to five times the volume of Stéfansky's bacilli freed as far as possible from tissue. The mixture was kept at 37°C. for only 14 days and then passed through a Chamberland L2 filter candle at a temperature of 50°C. (In another place the L3 candle is referred to in this connection.) Doses of 0.4 cc. to 0.75 cc. were injected into the testes or into the peritoneal cavities of guinea pigs and rats as before, and the animals sacrificed after 6 to 63 days. The oily solutions were stronger than in the earlier experiments and they produced similar lesions on the surface of the peritoneum, the liver and spleen, and occasionally on the lungs, but they were more extensive in the form of loosely attached membranes. Microscopically the lesions contained a fine network of material staining acid-fast as in the former experiment; this was not decolourized even by the prolonged action of 33 per cent nitric acid and of 95 per cent alcohol. The effects were similar to those produced by the injection of dead bacilli in oil. No bacilli were found in the lesions.—[Abstract from *Trop. Dis. Bull.* **41** (1944) 1051-1052]

BURSCHKIES, K. Zur Chemotherapie der Lepra. (The chemotherapy of leprosy.) Ztschr. f. Hyg. u. Infektionskr. **124** (1942) 333-340. (23 refs.)

After some introductory remarks on the incidence and causation of leprosy the author refers to the early work of BARROWCLIFF and POWER and others on the chemistry of chaulmoogra and hydnocarpus oils, and to trials of metallic salts of their fatty acids without beneficial results in leprosy, and to the failure of trials of propyl-butyl and amyl esters, etc. The work of WALKER and SWEENEY and of SCHOBL on the *in vitro* action of preparations of chaulmoogra and hydnocarpus acids in inhibiting the growth of acid-fast bacilli obtained from patients with leprosy is mentioned, and the various suggestions made regarding the possible relationship between the chemical constitution, or optical activity, and therapeutic properties of the chaulmoogra series of fatty acids, such as the closed carbon ring formula, are discussed. The production of the ethyl esters by POWER AND GORNALL and their use by others is also referred to. On the other hand ADAMS and his colleagues attribute the activity, not to the chemical constitution, saturated or unsaturated condition or optical activity, but exclusively to the molecular weight and related physical properties.

To clarify the position animal experimental tests are necessary, but as even hamsters have not proved suitable for regular infection with the human leprosy bacillus

it is necessary to utilize rats infected with the closely allied Stéfansky bacillus in order to test the activity of various organic acids against rat leprosy. White mice infected by injection with the rat leprosy bacillus can be used for testing preparations supplied by the dye industry, such as dihydro-chaulmoogra-acid-cholesterin ester and dihydro-chaulmoogra-acid-benzyl ester etc. The author considers that the optical activity and other special features of the chaulmoogra fatty acids are not related to their activity, so the way is opened up for the trial of other fatty acids of different chemical constitution in the experimental treatment of rat leprosy, and he has especially worked at compounds of cinnamic acid, such as cinnamoyl-glycol-acid-chaulmoogryl ester and other closely related substances of which he gives the formulae, for details of which the original paper should be consulted by those interested in this highly technical subject. Further work on these lines, he hopes, may result in important progress in the treatment of human leprosy. Tests of their action should first be made *in vitro* on acid-fast bacilli to ascertain which of the compounds should be further tried on rat leprosy and eventually on human leprosy.—(See also *Trop. Dis. Bull.*, 1940, Vol. 37, p. 45; 1941, Vol. 38, p. 225).—[Abstract from *Trop. Dis. Bull.* **40** (1943) 610]

DANTAS, M. A lepra no Estado da Paraíba. 1°. Curso realizado entre 25 de Outubro de 1937 a 23 de Junho de 1938. (Leprosy in the State of Paraíba.) Rev. de Combata à Lepra. **7** (1942) 5-17. with 1 map.

The author divides his article into five sections dealing in succession with the origin and spread of leprosy in Brazil, reports of foreign authors, the history of the disease in Paraíba, measures to deal with it, and the results of a leper census in the State. Since all this is treated of in eleven pages the information is perforce sketchy.

Leprosy is believed to have been brought to Brazil by Portuguese colonists. By the end of the 17th century the municipality of Rio de Janeiro was becoming alarmed and asked for a special place to be set apart for dealing with them. Quotations from the writings of foreign authors are given; for example, according to Henri LELOIR, 1886, "Leprosy is especially common in the Provinces of Maranhão, Pará, Rio de Janeiro and Paraná, less in Minas and São Paulo. There are leprosaria in Bahia, Côrte, Minas Geraes, Pernambuco and Rio de Janeiro." Z. PACHA in 1914, "Leprosy is still rife in Brazil, but is lessening." JEANSELME in 1934, "Lepers are found in two main localities, in the northern States of Amazonas, Pará, Ceará and Maranhão, and, in the south, Minas Geraes and São Paulo" and the total number was estimated at 70,000 to 100,000.

In Paraíba, the special subject of this study, in 1911 it was reported that lepers were very rare and one well-known doctor had not seen a single case. There was, however, a focus at Catolé da Rocha in the extreme north. For dealing with patients a leprosarium or better a colony establishment was proposed and a leprosarium of the colony type was erected at Rio de Meio, 8 kilometres from the town of João Pessôa, to house 130 patients, and in 1941 a preventorium for 150 children of lepers. Between October 1937 and June 1938, as a result of four journeys to different districts in the interior, 50 lepers were found: 10 in the first survey occupying 46 days, 14 in the second (35 days), 12 in the third (28 days), 4 in the fourth; ten more were seen in other surveys between the trips to the interior. Of the total of fifty, 34 were males, 16 were females; 28 were white, 15 were half-castes and 7 black; none was under 10 years of age, 12 were in the second decade, 14 betwen 21 and 35 years, 13 between 36 and 50, 10 over 50, and one age unknown; 13 were urban and 37 lived in rural districts. It is thought that if a complete census were taken the total would be about two hundred.—[Abstract from *Trop. Dis. Bull.* **40** (1943) 921]

DEGOTTE, J. Application pratique des troubles de la sudation à l'établissement de l'observation clinique des lépreux. (Investigation of sweating dysfunction in the diagnosis of leprosy.) Rec. Travaux Sci. Méd. Congo Belge. Léopoldville. Jan. (1942) 135-136. With 1 plate.

The author points out that in the Belgian Congo the prophylaxis of leprosy largely depends on early treatment in the macular stage, in the diagnosis of which he finds alteration in sweating to be the most frequent and objective diagnostic sign. To detect and measure this sign he injects pilocarpine to induce sweating, followed by swabbing the surface with an alcoholic solution of iodine and then powdering it with starch to produce blue points at the sites of the sweat glands. In order to be able to preserve records of the changes in the functions of the sweat glands he made use of the fact that sweat contains a notable amount of chlorides, which react with silver nitrate to form silver chloride, which quickly becomes black on exposure to light. He therefore covered transparent paper with 5 per cent silver nitrate in 4 per cent gelatine and applied it to the sweating surface to bring out the activity of the sweat glands, and he preserved the negatives by treating them for a few seconds in a bath of paraffin at 100°-110°.—[Abstract from *Trop. Dis. Bull.*, **40** (1943) 397-398.]

DENECKE, K. Ergebnisse eines statistischen Querschnittes einer westafrikanischen Leproserie und Untersuchungen der Leprosen, deren Verwandten und Kinder. (Statistics of a West African Leprosarium.) Arch. f. Hyg. **128** (1942) 102-111. (11 refs.)

The author reports on a study of leprosy in the Spanish West African Colony of Rio Muni immediately to the south of the Cameroons. The disease is widespread in this moist, hot forest-clad area among the indigenous people, especially in the island of Fernando Po. Two leprosaria near the Cameroon border accommodate a number of cases under a Government doctor; in one of these the present inquiry was made. Employment in brickworks and on agriculture is supplied. The author examined 104 cases and found the highest incidence among men of 30-39 and women of 20-29. He discusses the subject of hereditary transmission in the light of data regarding the number of the children, one or both of whose parents were lepers, who developed the disease, and of other infected relatives. The average number of children in families in which leprosy was present was five, and of these the average number of infected was only 1¼, but in twelve families in which one or both parents were lepers, the proportion of infected children was 1.4, or nearly the same figure; he concludes that all the known data are against hereditary transmission. The author regards infection through wounds as the most common form and considers the incubation period to be long. Unfavourable diet predisposes to infection and the indigenous diet consists chiefly of carbodydrate with very little animal protein. Yams are extensively consumed, but in a reference to the recent suggestion that their consumption predisposes to leprosy he points out that the healthy eat them as much as the infected. He next discusses the marriage of lepers and records that 75 lepers with leper wives had only 27 children, but 72 with healthy women partners had 164 children, so that the greater part of the leper couples, namely 56 out of 75, were sterile, against only 25 out of 72 when one partner only was a leper. Both classes had an equally high child mortality. Miscarriages were comparatively few.

Clinically only nine cases were of the nodular or lepromatous type, so the nerve form predominated. Lepra bacilli were found in the nasal discharge in 18 per cent, in the blood in thick smears in 20 per cent, and in the skin in 24 per cent. Under local treatment is described a native method of cauterizing skin lesions with charcoal or rubbing them with sandpaper; pigmentation may result. Oil of the gorli seed from the forests is also used locally as a salve. Sodium caloncobate made from the gorli

seed, is also used intravenously as well as *Hydnocarpus wightiana* preparations. A large number of the patients suffer from malarial and filarial infections, and in only 11 of 103 examinations were the ova of worms not found in the stools. Sleeping sickness is a not uncommon complication.—[Abstract from *Trop. Dis. Bull.* **40** (1943) 149-150]

DHARMENDRA, LOWE, J. & MUKHERJI, N. Studies of the lepromin test. (7) Variations in the results of the Mitsuda Test observed in cases of leprosy of the neuromacular type. Leprosy in India. **14** (1942) 86-92.

The authors report the results of lepromin tests in 180 neuromacular cases of leprosy to ascertain the results of repeating the test in different circumstances. They found the second reactions weaker than the first in 105, stronger in 20 and similar in 55 cases. They noted a tendency for the reactions to be stronger in the summer than in the winter months, and that subsidence of clinical activity is associated with a diminution in reaction to lepromin, but have not had an opportunity of demonstrating if the reverse is also true. Carefully standardized different lots of lepromin showed but slight variations in the reactions produced by them. Variations in the bacteriological findings could not be assessed separately from those in clinical activity.—[Abstract from *Trop. Dis. Bull.* **40** (1943) 316-317.]

DHARMENDRA, LOWE, J. & MUKHERJI, N. Studies of the lepromin test. (8) Attempts to increase the reaction to lepromin in cases of leprosy by repeated testing. Leprosy in India. **14** (1942) 93-95.

The authors point out that several workers, from BARGEHR (*Trop. Dis. Bull.*, 1927, Vol. 24, p. 559) in 1926 on, have reported that negative reactions to lepromin could be converted into positive by repetitions of the test, but without any increased resistance of the patients being noted. The present report deals with 27 neural cases in which lepromin tests were repeated monthly, usually to a total of five to 15 injections. The initial test had given weak reactions in 13 and negative in 14, and repeated tests showed no change in nine, slightly weaker ones in 10 and slightly stronger ones in eight cases. Similar trials in 62 lepromatous cases, only four of which gave an initial weak reaction and the rest negative ones, showed no change in 47 and slightly stronger reactions in only two. The authors were therefore unable to confirm the reports of previous workers.—[Abstract from *Trop. Dis. Bull.* **40** (1943) 317]

DHARMENDRA. Studies of the lepromin test. (9) A bacillary antigen standarized by weight. Leprosy in India **14** (1942) 122-129.

This paper records a further advance in obtaining a standardized lepromin for the Mitsuda test. The suspensions hitherto made from leprosy nodules contained some tissue elements as well as the lepra bacilli. The latter have now been obtained in a pure form by the following method: Material from a leproma (usually from the ear) is sterilized in the autoclave and then ground in a mortar in chloroform, using 50 cc. to 2 Grammes of lepromatous tissue. The chloroform is pipetted off and the process is repeated until a smear of the remaining tissue is almost free from bacilli and on evaporating the chloroform on a water bath only bacilli and lipoids remain. This residue is then suspended in ether and centrifuged to remove the lipoids and the deposited bacilli are separated and dried in a vacuum. They will be found to have retained their antigenic property. This is strongest when the powdered bacilli are further treated with chloroform for four days in a refrigerator. Standard lepromin is prepared by suspending 1 mgm. of the dried bacterial powder in 10 cc. of carbol-saline and the routine dose for the test is 0.1 cc. of this (containing 0.01 mgm. of the bacterial powder) which can be conveniently kept in 1 mgm. or 0.1 mgm. quantities in sealed ampoules from which fresh suspensions can be made.

With this antigen the early reactions are stronger and the late ones considerably weaker than with ordinary lepromin, which are advantages. In the vast majority of neural cases reactions are obtained and in the vast majority of lepromatous ones no early or late reactions are produced.—[Abstract from *Trop. Dis. Bull.* **40** (1943) 548]

FAGET, G. H., JOHANSEN, F. A. & ROSS, HILARY. Sulfanilamide in the treatment of leprosy. Pub. Health Rep. **57** (1942, No. 50, 1892-1899.

This is a report on a carefully controlled trial of the drug, mainly in lepromatous cases, after examinations of the blood and of the renal functions. Eight patients with lepromatous lesions and one with neural lesions were first treated with doses producing an average blood concentration of 9.0 mgm. per cent; in seven of these febrile reactions occurred and the course had to be stopped. In six of the above, given a second course, and in 11 other patients the average blood concentration of the drug was 5.0 mgm., but in six high fever necessitated stopping the drug. Two patients were dangerously ill but recovered. Some degree of anaemia occurred in all and leucocytosis in many. The authors conclude that the drug is useful for secondary infections, but not as a curative remedy for leprous lesions.—[Abstract from *Trop. Dis. Bull.* **40** (1943) 610-611]

INDIAN RESEARCH FUND ASSOCIATION. REP. SCIENT. ADVISORY BOARD FOR YEAR 1st JAN. to DEC. 31st (1942) 46-53. Leprosy inquiry under Dr. R. G. Cochrane at the Lady Willingdon Leprosy Sanatorium, Chingleput, Madras.

Some of the work recorded in this report has already been abstracted in the *Trop. Dis. Bull.*, 1943, **40**, 151. The following additional points are of interest. Special attention has been paid by the author to leprosy in children, a vitally important subject from the epidemiological standpoint. A fresh survey was made in areas of Saidapet, Madras, mainly inhabited by weavers, and in four out of five areas the child rates were 40 per cent or more. House or familial contact appeared to be the most important single factor in the acquirement of leprosy, as 69.7 per cent of the diseased children had been in contact with an open case; there was room contact in the majority of these. Further inquiry revealed that 70 open cases had infected 141 children, and 143, or 55.12 per cent, of 259 children of 99 families in varying contact with the disease had contracted leprosy. Of 43 children showing multiple contact with cases 30 (69.75 per cent) contracted the disease.

Re-surveys of villages to study the new cases that had arisen brought out the fact that they were fewest where night segregation of the former infective cases was highest, so this measure will be watched with interest. Lepromin tests have also been done with similar results to those of other workers. Animal experiments have yielded the usual negative results.—[Abstract from *Trop. Dis. Bull.* **41** (1944) 47-48.

LOWE, J. Separation of children from infectious parents and others. Leprosy in India. **14** (1942) 98-100.

The separation of children from leper parents at birth is the ideal policy, but in the tropics the difficulties of artificial feeding may preclude this. The author reports on a visit to a leper institution in India where children were not separated from their parents and other leprosy patients until after the age of 18 months, with the result that 25 of them developed symptoms of the disease when 3 to 10 years of age. Of these 10 were 3-4 years old, 10 were 5-7 years and five were 8-10 years. It is not known how many children escaped infection. The author advises separation as early as possible, but not later than six months (although elsewhere in some reported cases even that short time permitted of infections taking place). Contact with any infective patients should be reduced to a minimum during the few months' residence. Adoption of the children from birth by relatives affords a still better method of avoiding

such lamentable infections, and marriages of lepers of child-producing ages should be prohibited in leper institutions.—[Abstract from *Trop. Dis. Bull.* **40** (1943) 317]

MARTINEZ BAEZ, M. Nota preliminar sobre la histopatologia de las manifectaciones cutaneas de la "forma de Lucio" de la lepra. (Histopathology of the skin in the Lucio form of leprosy.) Rev. Facul. de Med., Bogota. **10** (1942) 610-622. With 8 figs. on 1 plate.

Nearly a century ago, in 1851, a Mexican doctor, Rafael Lucio, described a special form of leprosy, a macular form, which has since been known as the "Lucio leprosy." Lucio himself said that the pathological histology needed description and the usual text-books omit details of the microscopic pathology of this form. In the present paper the author has rectified this omission, basing his remarks on biopsy specimens of five patients, taking tissue through the maculae. He finds in the dermis accumulations of "inflammatory cells" around the blood-vessels, dilatation of the vessels themselves, changes in the arteriole walls and, in some cases, foci of necrosis in the cell accumulations. The vessels appear as if wrapped round by these inflammatory cell masses. The capillaries are swollen by endothelial cells and peri-vascular proliferation. In appropriately stained sections the endothelial cells are seen to contain Hansen's bacilli, few or in globi. The perithelial aggregations consist of lymphoid elements, relatively large histiocytes, irregular in contour, but with homogeneous protoplasm. The sweat glands of the areas involved present narrowing of their ducts with almost complete obstruction by what looks like a mass of coagulated albuminoid substance and heaped-up small epithelial cells. In one of the preparations examined there was necrosis of the secretory part of the gland extending to the excretory duct and the recticular tissue of the dermis. Similar exudate may be seen around the nerve twigs in the deeper parts of the dermis. In the arterioles the lumen is narrowed and the inner surface is irregular from salients of endothelial cell proliferation, and the wall may be thickened to many times that of the diameter of the lumen.—[Abstract from *Trop. Dis. Bull.* **40** (1943) 922]

MCCOY, G. W. Chaulmoogra oil in the treatment of leprosy. Pub. Health Rep. **57** (1942) No. 46, 1727-1733. (13 refs.)

In this short note, the author quotes LARA (1930), HANSEN and LOOFT (1895), and WAYSON (1929) in Hawaii in support of his belief that chaulmoogra preparations have not been definitely proved to be of value in leprosy. Lara, however, stated that it is of value in suitable cases, but may do harm in others (and the Norwegian authorities use only the old oral method of administration).—[Abstract from *Trop. Dis. Bull.* **40** (1943) 465]

PAN, C. S. A clinical evaluation of the lepromin test. Arch. Dermat. & Syph. **46** (1942) 792-795.

The author first refers to the original work of MITSUDA in introducing the test now known by his name or more commonly as the lepromin test, and he mentions some later observations, but these do not include those of LOWE and his colleagues in Calcutta. He goes on to report on his own studies in Shanghai among different types of leprosy, and in 10 contacts and 24 controls; 9 of the 10 contacts and 20 of the 24 controls gave positive results. On the other hand only 1 of 37 (2.5 per cent) of cutaneous cases, and none of 11 mixed ones gave a positive reaction; 17 of 21 neural and all 7 tuberculoid ones reacted. In 27 leprosy cases, as well as in all the contacts and controls, the Mantoux tuberculin test was also carried out, but the two reactions were only in agreement in five of the leprosy cases. Histological investigations showed giant-cell formation such as results from reactions to a foreign body.

The author concludes that he is in agreement with other observers that the lep-

romin test does not serve well as a diagnostic procedure in leprosy.—[Abstract from *Trop. Dis. Bull.* **40** (1943) 548-549]

PERVES. Application de l'infiltration du ganglion étoilé au traitement des troubles trophiques du membre supérieur dans la lépre. (Ganglion infiltration in the treatment of nerve leprosy.) Rev. Sci. Méd. Pharm. et Vét. de l'Afrique Française Libre. Brazzaville. 1 (1942) 76-80.

The results of infiltration of novocaine in the region of the inferior cervical, or stellate, nucleus of the sympathetic in the treatment of leprous nerve lesions of the upper extremity are recorded. The method is based on the proved value of such treatment of trophic and sympathetic lesions in general. A strong needle is inserted 4 centimetres from the middle line on the affected side, and on striking the first rib the needle is directed under its inferior border to a depth of 2 centimetres. After aspirating to make sure a vein has not been entered, 3 to 4 cc. of a freshly prepared 2 per cent solution of novocaine is injected. At the end of an hour congestion of the corresponding limb is observed, and if it lasts at least two or three days, good results may be hoped for. No dangerous reactions occurred in the cases treated, but operations on the left side were sometimes followed by anginal pain. Within a few hours recovery of the functions of the fingers is obtained, oedema is absorbed within two days and ulcers heal within a week. Attempts at lumbar infiltrations were not successful. Notes of ten cases illustrate the results obtained.—[Abstract from *Trop. Dis. Bull.* **40** (1943) 154-155]

SCHNEIDER, K. Einiges über das Memeler Lepraheim und die Lepraendemie im Kriese Memel. (Leprosy in the Memel Region.) Deutsche Med. Wchnschr. **68** (1942) 615-617.

The author deals with the prevalence of leprosy in the Memel region. The early history of infection through a Lithuanian servant girl in 1848 is referred to. The disease was still endemic in 1899, when a leper home was opened for the isolation of 16 patients, who, since 1893, had been isolated in cottages. In 1909 the beds were increased to 22, and later the number rose to 28; since 1920 no new cases have occurred. Details are given regarding five infected areas which are of local interest, but show that the disease largely died out leaving a few old cases still in the leper home. Recently these numbered seven; four from the Memel area, two Lithuanians, and one from Brazil. Isolation of the infective patients is enforced, but bacteriologically negative ones may be allowed to reside in hygienic houses. Various remedies have been tried, and chaulmoogra oil has some beneficial effect, but x-rays were found to be harmful. No benefits were observed from the use of vitamin B_1 in nerve cases.—[Abstract from *Trop. Dis. Bull.* **40** (1943) 245]

ARGUELLO PITT, L. Estudio electrocardiográfico en cincuenta enfermos de lepra. (Electrocardiographic examinations in fifty leprosy patients.) Rev. argent. dermatosif. **27** (1943) 258-268.

Electrocardiographic examination in fifty cases of different clinical forms of leprosy (30 tuberculoid, 12 non-characteristic, 8 lepromatous) did not reveal any change. —AUTHOR'S SUMMARY.

BASOMBRIO, G., MOM, A. N., NOUSSITOU, F. & LEON, R. C. Estudios sobre reactibilidad cutanea experimental en lepra. (Comunicacion preliminar.) (On skin reactions in leprosy.) Rev. argent. dermatosif. **27** (1943) 406-11. With 1 chart. English summary.

These findings, if confirmed, will have a considerable bearing on the value and interpretation of the lepromin reaction. The authors have tested the effects of epider-

mal contact and intradermal injection of 2-4 dinitrochlorobenzene in acetone, in cases of tuberculoid leprosy and of leproma and in non-leprous subjects; for contact they used dilutions of 1/1000, 1/100, 1/50, and 1/20, while for the intradermal test the 1/1000 solution was diluted to 1/2000 with physiological saline and 0.2 cc. injected. The results were compared with those obtained with whole lepromin prepared by Hayashi's method. A chart shows the reactivity of the skin, as erythema or vesication. In the lepromatous patients the reaction is more marked, is apparent earlier and evolves more rapidly than in cases of tuberculoid leprosy and non-leprous controls, but the characters differ little from those in the skin of a subject on a diet in which alkalis and chlorides are a prominent feature. In intensity and time of evolution the effects were the same as those with lepromin. It is inferred, therefore, that the so-called specific lepromin reaction can be simulated by a non-protein, non-specific irritant or excitant, dinitrochlorobenzene. (This is a preliminary communication; further work will be awaited with interest.—[Abstract from *Trop. Dis. Bull.* **41** (1944) 404]

BOSQ, P. Eliminación de los bacilos de Hansen a través de la epidermis de los enfermos de lepra. (Discharge of bacilli by the skin in leprosy.) Rev. argent. dermatosif. **27** (1943) 423-5. With 3 figs.

The presence of Hansen's bacilli in the deeper parts of the skin is well known, but examination of the superficial layers is usually barren of results. FOOTE in 1941 found none positive among 63 examined and ABERASTURY found only one among 163, but in that case they were present in large numbers in macrophages and in isolated groups. The present author, however, has recorded finding them at times in large numbers in macrophages and sparsely within the epidermal scales. He scrapes gently the upper layers of squamous epithelium without injuring the healthy epidermis and mixes the powdery product with a drop of Meyer's albumin on a slide. Before staining he waits for 24 hours because he finds that immediate staining results in incomplete decolorization of the smear and some of the horny scales retain the red of the carbolfuchsin. He is of opinion that the "stage of epidermic elimination" is transient, but the cause of the intermittency calls for further investigation. On the other hand it may be constant for certain patients, and if that is the case there is need for more investigation as to why one should eliminate the bacilli and others do not.—[Abstract from *Trop. Dis. Bull.* **41** (1944) 405]

CASTANE DECAUD, A. Una objeción más a la classificación de la lepra del Cairo. (Another objection to the Cairo classification of leprosy.) Rev. argent. dermatosif. **27** (1943) 500.

Histopathological study revealed constant involvement of nerves in the lepromatous type of leprosy.—G. BASOMBRIO.

DAVEY, T. F. Leprosy control in the Owerri Province. Fourth annual report on control work undertaken by the staff of the native administration leprosy settlement, Uzuakoli. Leprosy Rev. **14** (1943) 54-64.

This report gives an encouraging account of anti-leprosy work in a Nigerian leprosy settlement. During 1942, 15 out-patient clinics were opened, bringing the number around the central colony up to 44; over 11,000 patients were treated every week with the help of educated leprosy inspectors and male nurses trained at the headquarters. In addition 14 model leprosy villages have been constructed on land provided by the native chiefs, and 20 more are under construction at the cost of the people. In these the infectious cases are voluntarily isolated and treated; those requiring hospital attendance are sent to the central settlement, where over 35,000 dressings were supplied during the year. That work is the basis of the systematic control of lep-

rosy in the province, which includes house-to-house surveys to detect and isolate the infectious persons and to treat regularly the earlier cases at the clinics, from which several hundred patients have already been discharged recovered. For example, in one such area the third survey revealed only 40 new cases among 7,000 people, all of them in an early amenable stage of the disease; the highly infective patients are isolated in the model villages and the disease is thus under considerable control and should very greatly decrease within a few years. The success of these measures is thus demonstrated, but unfortunately the staff, of two missionary doctors with several Toc H and other lay workers, is too small to enable many urgent requests of the people for extensions of the work to be undertaken until increases are made in the post-war period, when sufficient staff and funds should enable the most serious leprosy problem of the British Empire, outside India, to be tackled with every hope of success.—[Abstract from *Trop. Dis. Bull.* **41** (1944) 53]

DE CAIRES, P. F. Iron therapy in severe cutaneous leprosy. British Guiana Med. Ann. **27** (1943) 132-6. With 1 chart.

The author has been making routine estimations of the haemoglobin in the blood of patients with leprosy at the Mahaica Leprosy Hospital, British Guiana. In lepromatous cases in an advanced stage it averaged only 50.75 per cent, against 85.24 per cent in a control group of healthy non-leper attendants. In able-bodied patients of all types it averaged 62.85 per cent, in children with active symptoms, 62.55 per cent, and in recovered cases it was from 68.69 per cent to 72.55 per cent. Cases with septic complications were excluded from the estimations and hookworm infestation was also absent. These observations led to the administration of Ferri et Ammon. Citras in 30 gr. doses three times a day with beneficial results, in addition to the routine anti-leprosy treatment by injections of hydnocarpus esters.—[Abstract from *Trop. Dis. Bull.* **41** (1944) 405-496]

DE SOUZA-ARAUJO, H. C. O exame da linfa cutanea podera' servir para os diagnostico e prognostico da lepra, e mesmo para a sua classificação clinica. (Método Lleras.) (Examination of cutaneous lymph in leprosy.) Acta Med. Rio de Janeiro. **11** (1943) 58-62. With 7 figs. on 2 plates. English summary.

Examination of the lymph withdrawn by puncture of a gland has been used commonly in the diagnosis of leprosy. The method here described is of more recent date. Professor F. LLERAS ACOSTA initiated it in Colombia in 1937 and it goes, therefore, by the name of the "Lleras Method."

A clamp, 24 cm. in length, has the terminal 7.5 cm. curved and toothed, with 63 grooves, for compressing without bruising the tissues. After the skin is cleaned compression of a fold of it, 5 cm. in diameter, at the edge of the suspected lesion is made up to the first notch in the handle and in five minutes the requisite degree of ischaemia is obtained. Then at three points in the fold, puncture with a thick needle is made and in a minute there exudes a small drop of lymph at each puncture; this is collected and spread on a slide for bacterial examination. In patients undergoing treatment and who are progressing well the number of organisms in the lymph diminishes and so may afford evidence of success in treatment and be of prognostic as well as of diagnostic value.—[Abstract from *Trop. Dis. Bull.* **41** (1944) 220-221]

DHARMENDRA. Immunological skin tests in leprosy. Part IV. The isolation of three different protein fractions from *Mycobacterium leprae*. Indian J. M. Research. **31** (1943) 125-7.

In Part I of this series of papers the author recorded having isolated a protein antigen from *Myco. leprae* which alone was definitely antigenic (See *Trop. Dis. Bull.*,

1942, v. 39,228). By further work on the extraction of ground bacilli with weak acid, weak alkali, and 80 per cent alcohol respectively, three different proteins were isolated. The antigenic activity of these fractions is considered in the present paper. It was hoped that one would be found specific for *Myco. leprae* and would give negative results in the vast majority of non-contacts, such as people living in Punjab villages without any leprosy cases. This hope has not been fulfilled, but the incidence of positive reactions on intradermal injection of the different protein fractions was 75 per cent with nucleo-protein (extracted with alkali and phosphate buffer at pH 6.5), 60 per cent with acid-soluble and only 30 per cent with alcohol-soluble protein. The incidence of positive results in non-contacts has thus been markedly reduced and it is hoped that further work may yield a specific antigen.—[Abstract from *Trop. Dis. Bull.* **41** (1944) 584-585]

DHARMENDRA. Immunological skin tests in leprosy. Part V. A bacillary antigen standardized by weight. Indian J. M. Research. **31** (1943) 129-32.

In view of the failure recorded in the foregoing paper to isolate a specific protein fraction of *Myco. leprae*, further studies have been made of more simply obtained standardized antigens from the whole bacilli, starting with partly defatted bacilli which produce both early and late reactions in neural leprosy cases. The bacilli are obtained by extracting leprous nodules with chloroform, storing for four days in a refrigerator, evaporating and suspending the residue in ether and centrifuging the ethereal suspension in a refrigerator. For standardization 1 mgm. of the powder is suspended in 10 cc. of 0.5 per cent carbolic saline, and 0.1 cc. of this suspension is used for the test. It produces both early and late reactions, the early ones are the stronger in neural cases, but there were no reactions in lepromatous cases. This antigen is considered to retain most of the advantages of the protein fraction of the bacilli and to be easy to prepare. With the chloroform method the yield of bacilli is three times as great, and weight for weight it is more potent, than the one obtained by centrifuging a suspension in water of leprous tissue at different densities.—[Abstract from *Trop. Dis. Bull.* **41** (1944) 585]

DHARMENDRA & BOSE, R. Bactericidal action *in vitro* of sulphanilamide and sulphapyridine on *Mycobacterium leprae muris*. Indian J. M. Research. **31** (1943) 133-6.

The action *in vitro* of sulphapyridine and of sulphanilamide on suspensions of Stéfansky bacillus from leprous lesions of rats during 48 hours at a temperature of 37° C., and for 96 hours at 4°C., has been tested by injecting the material so treated into rats. Control experiments with similar treated suspension without the addition of the drugs produced generalized rat leprosy in those which survived for four months or more, but the addition of 1-1,000 of either drug at 37°C., and of sulphapyridine in a dilution of 1-10,000 prohibited the development of the disease. The results with sulphanilamide in a dilution of 1-10,000 at 37°C. were inconclusive owing to early death of the injected animals; the suspensions were not free from microorganisms other than that of rat leprosy. On the other hand, in suspensions kept at 4°C. the drugs failed to prohibit the infective action of the rat leprosy organisms. Five per cent sulphuric acid, subsequently neutralized with caustic soda before injection, also failed to kill rat leprosy bacilli.—[Abstract from *Trop. Dis. Bull.* **41** (1944) 588]

DHARMENDRA & JAIKARIA, S. S. Studies of the lepromin test. Results of the test with various antigens in non-contacts. Leprosy in India. **15** (1943) 40-45.

This article reports further attempts to find a diagnostic allergic skin test for leprosy, through the use of a specific antigen of the leprosy bacillus, on the lines of the

lepromin reaction. What is wanted is an antigen which will give no reactions in persons who have always lived in an area free, or practically so, from leprosy, but which gives positive reactions in mild early neural leprosy, in which there is most need of differentiation. The various fractions of lepra bacilli separated by the Calcutta workers were therefore tested in places in the Punjab plains where leprosy incidence is extremely low. Although none of them proved to be specific for leprosy, yet the nucleoprotein extracted from the bacilli by the phosphate-buffer method gave the fewest reactions in Punjab subjects; only 5 per cent were positive when the dose injected was limited to 0.002 mgm., a dose that gives positive results in most neural leprosy cases. The investigation is therefore being continued.—[Abstract from *Trop. Dis. Bull.* **41** (1944) 50-51]

FAGET, G. H. Chronicity of leprosy. New Orleans M. & S. J. **96** (1943) 138.

Faget found among 380 inmates at the National Leprosarium in Carville, La., 5 with the neural type of leprosy who have had the disease for 53, 51, 48, 46 and 41 years respectively. Eighteen others, 14 with neural and 4 with mixed leprosy, have survived 30 to 40 years of leprosy, and 32 (19 neural and 13 mixed cases) have suffered from leprosy for 20 to 30 years. Thus a total of 55 patients, over 14 per cent of the entire population of the National Leprosarium, show a chronicity of leprosy of over 20 years' duration. This chronicity is found chiefly in the neural type, for although neural leprosy exists in less than 30 per cent of the total number of patients at the Carville leprosarium, 38 of the 55 patients (nearly 70 per cent) who had survived leprosy for more than 20 years had the neural type.—[Abstract from *J.A.M.A.* **123** (1943) 998]

FAGET, G. H. Control of tuberculosis in a leprosarium. Am. Rev. Tuberc. **47** (1943) 603-7.

This paper deals with the difficult subject of the frequent tuberculosis complications among leprosy patients at Carville, U.S.A. Data are quoted to show the proportion of deaths due to complicating pulmonary tuberculosis among lepers in various countries; they found from 24 to 32 per cent of deaths at the Culion Leper Colony and 18 per cent at the U.S.A. leprosarium in Louisiana. In controlling this loss the most important step is the early diagnosis of the lung complication by means of x-rays and the isolation of these patients to prevent their spreading the infection to others. Finding acid-fast bacilli in the sputum is not diagnostic, as they may come from throat or air-tube infections with lepra bacilli, so inoculation into animals or cultivation of the tubercle bacillus is also necessary. Leprotic lesions of the lung tissue are very rare and are too small to be seen by x-rays. At Carville, radiographs are taken of the lungs of all patients on admission, and the fact that in that well-financed institution each patient has a separate room further diminishes the chances of the occurrence of tuberculosis infections. When that complicating disease is found, all active antileprosy treatment is stopped and artificial pneumothorax and other remedial measures used, with as good results as in uncomplicated phthisis. Among 32 patients studied for ½ to 2½ years at Carville, 10 with advanced disease had died, and two others are doing fairly well; in several with slightly or moderately advanced disease the lesions have become quiescent. The prognosis, therefore, as far as tuberculosis is concerned, is fairly good.—[Abstract from *Trop. Dis. Bull.* **40** (1943) 847]

FERNANDEZ, J. M. M. Influencia del factor tuberculosis sobre la reacción a la lepromina. (Influence of tuberculosis on the reaction to lepromin.) Rev. argent-norteam. cien. méd. **1** (1943) 592-600.

The author studied the reaction to lepromin in a group of non-leprous individuals suffering from cutaneous tuberculosis or treated intensively with B.C.G., for the pur-

pose of determining the possible influence of the bacillus of Koch in this reaction. He used lepromin-integral (Mitsuda-Hayashi), lepromin-filtered (Fernandez-Olmos Castro), and tuberculin in dilutions of 1:1000 and 1:10. Of 26 cases of different forms of cutaneous tuberculosis, 16 showed early (48 hours) and late (third week) lepromin reactions, as well as positive Mantoux reactions. In three cases, all of these reactions were negative; in five, the early lepromin reaction was negative while the late and the Mantoux were positive; in one, both lepromin reactions were positive and the Mantoux negative. In four patients (two suffering from psoriasis, one from acne rosacea, and one from asthma), all of whom had received numerous injections of B.C.G. several months before, he found that both early and late lepromin reactions and also the Mantoux were frankly positive. The author maintains on the basis of previous investigations that the early lepromin reaction reflects a state of previous hypersensitivity, and concludes that in all the cases which have shown this positive reaction in these experiments the sensitizing factor has been the bacillus of Koch. This organism can therefore produce, under certain circumstances, a state of allergy toward the leprosy antigen (lepromin).—AUTHOR'S SUMMARY

FERNANDEZ BLANCO, M. & PAROLA, J. Labor desarrollada por la sección dermatovenereológica durante el año 1942 en la profilaxis de la lepra. (Prophylaxis against leprosy during 1942 by the dermatological and venereal section.) Rev. argent. dermatosif. **27** (1943) 443-446.

The number of patients included in the Argentine census of 1942 was 4,917. Of this total, 959 patients have been hospitalized.—G. BASOMBRIO

FIOL, H. Consideraciones sobre el tratamiento de la lepra y resultados obtenidos después de un año de observación en el Sanatorio-Colonia "Buenos Aires." (Results of treatment of leprosy following one year of observation in the Sanatorio-Colonia Buenos Aires.) Rev. argent. dermatosif. **27** (1943) 434-438.

This paper describes the results of treatment with chaulmoogra oil and its derivatives, supplementary medication, local medication, and the treatment of associated illnesses. A study of 369 patients revealed: 5 conditionally discharged, 205 improved, 93 stationary, and 29 who showed signs of regression. Thirty-seven patients died.—G. BASOMBRIO

FIOL, H. & CALCAGNO, O. Ensayo del tratamiento de la lepra con un derivado coloidal y timolado del acido chaulmoogrico: el timolhidrochaulmoogricosol. (Treatment of leprosy with "thymolhydrochaulmoogricosol," a colloid derivative of chaulmoogra.) Rev. argent. darmatosif. **27** (1943) 426-8.

This preparation is a combination of thymol with the active principles of chaulmoogra and is obtained by treating a colloidal solution of the acid with thymol, the final product containing 0.012 Gm. thymol and 0.002-0.006 Gm. of chaulmoogric acid in 2 cc. It may be administered intravenously in doses of 2-6 cc., intramuscularly 6 cc., or intradermally in doses up to 10 cc., each thrice weekly. So far 28 patients with the lepromatous form have been treated; of these 10 have improved, 18 have remained unaffected, none was made worse. Of six with tuberculoid leprosy, five have improved, the other remaining stationery. Two of the mixed form have been thus treated, but so far without change. Some patients had had to cease treatment by the chaulmoogra oil and the ethylic esters owing to ocular complications or leprous reactions, but they tolerated the new preparation well. As the authors acknowledge, they have used it for four months only, far too short a time to judge of permanent results.—[Abstract from *Trop. Dis. Bull.* **41** (1944) 406-407]

FIOL, H. & BLANCO, J. F. Lupus eritematoso generalizado y atipico en un enfermo de lepra. [Generalized and atypical lupus erythematosis in a leprosy patient.] Rev. argent. dermatosif. **27** (1943) 559-567.

Study of one case of lepromatous leprosy and lupus erythematosis suggests that the latter may have had a beneficial effect on the evolution of leprosy.—G. BASOMBRIO

FIOL, H. & ZAMBRANO, J. La vitamina B_1 en el tratamiento de las complicaciones oculares de la lepra. (Vitamin B_1 in the treatment of ocular complications of leprosy.) Rev. argent. dermatosif. **27** (1943) 439-42. (14 refs.)

Others have reported benefit from the use of vitamin B_1 in patients with trigeminal neuralgia, in keratitis, and corneal ulceration associated with avitaminoses, so the authors have tried the same treatment in the eye complications of leprosy; with iridocyclitis (5 cases), with nodular keratitis (2), with these two conditions combined (2), and nodular iritis and conjunctivitis with episcleritis (1 each). They have used hydrochloride of aneurin or thiamin in doses of 25-50 mgm. daily, or on alternate days in some cases, injected intramuscularly or (better) intravenously, for a course of 5-10 injections. Relapse occurs some months after the treatment is stopped but this clears up on renewal of the treatment. Smaller doses given continuously act prophylactically (then why cease treatment and allow relapses to occur?) The authors do not claim that the vitamin treatment is curative, but that it diminishes the intensity and duration of the lesions and so delays the onset of loss of vision.—[Abstract from *Trop. Dis. Bull.* **41** (1944) 406]

FITE, G. L. Leprosy from the histologic point of view. Arch. Path. **35** (1943) 611-644. (Bibliography.)

This is itself a very comprehensive review of the histological lesions of leprosy described from the time of DANIELSSEN and BOECK in 1847; it contains a very comprehensive bibliography which will be most useful to research workers for reference. The following are the author's most important conclusions: He agrees with Wade's classification of tuberculoid lesions into major and minor, noting that there are rather more bacilli in the former, and he considers that transitions from one to the other must not be altogether rare. The giant cells rarely show the crescentic arrangement of the nuclei seen in lesions due to the tubercle bacillus, and caseation is usually absent. Tuberculoid leprosy represents the natural development to its highest point of immunity to the disease. If, as was suggested by UNNA, the infection is conveyed by the lymphatic channels it soon spreads beyond them, and demonstration in the lymphatics themselves is usually impossible. The reactions of leprosy are a form of allergy, with a hyperergic inflammation which makes old lesions become apparent as new ones.

The remainder of the paper describes in detail the changes in the skin, nerves, respiratory tract and the internal organs, for which the original should be consulted.—[Abstract from *Trop. Dis. Bull.* **40** (1943) 787]

GARZON, R. & PITT, L. A. Neuritis leprosa tuberculoide a forma de abscesos caseosos multiples (3 observaciones). (Multiple caseating abscesses of the nerves in tuberculoid leprosy.) Rev. argent. dermatosif. **27** (1943) 247-57. With 4 figs. (10 refs.)

The local lesions in the condition here described are fundamentally leprous neurogranulomata and the changes are on the same lines as those of tuberculosis — giant cells, epithelioid cells and lymphocytes, caseation and cold abscesses. Reports on the presence or, rather, the finding of bacilli vary. J. LOWE found them in half his cases,

SCHUJMAN in one out of three, N. DE SOUSA CAMPOS in none of fifteen cases, and the present authors did not find them in any of their three patients. Pathologically, the necrosis and liquefaction take place in the nerve sheath and the pressure accounts for the pain. The cutaneous branches of the median, radial, auricular, external popliteal and other nerves are usually involved rather than the main trunks. Histologically, three zones may be seen: a central caseous mass; outside this the epithelioid cells, lymphocytes and a few plasmocytes, and outside that a zone of monocytic infiltration with dilated and congested capillaries. Treatment is surgical.—[Abstract from *Trop Dis. Bull.* **41** (1944) 135-136]

HAYTHORNTHWAITE, H. M. Lactoflavine for bullae, and closed plaster for trophic ulcers. Leprosy in India. **15** (1943) 20-22. With 2 figs.

This note deals with two points of practical importance in the treatment of leprosy. Crops of bullae leading to the formation of painful ulcers may cause much distress. In view of lactoflavine having been recommended in the treatment of pemphigus the author has used it in 24 cases of bulla formation with success in every case. Injections of 2 cc. lactoflavine (B.D.H.) four or five times in the course of a year were effective in keeping five long-standing cases free from these lesions; three others cleared up after one to three injections. The condition is not associated with other signs of vitamin B_2 deficiency.

His other point is that, in the absence of hospital accommodation, great relief was afforded, in cases of perforating ulcers of the foot without bone disease, by a light plaster support.—[Abstract from *Trop. Dis. Bull.* **40** (1943) 702]

KRAKOWER, C., MORALES- OTERO, P. &. AXTMAYER, J. H. The effect of sulfanilamide on experimental leprosy. J. Infect. Dis. **72** (1943) 1-10. With 3 figs.

This paper describes carefully controlled experiments on rats and mice, injected with either living or dead emulsions of a virulent mouse strain of lepra bacilli, to determine the effect of simultaneously feeding the animals on a diet which included 1 per cent of sulphanilamide, and on one occasion of sulphathiazole. Sixty-three young albino rats were used in the first experiment. In animals treated with the former drug, during the whole of the experimental period of one year only very small lepromata developed, and the regional lymph glands became very mildly leprous without any other distant metastases; as opposed to large lepromatous masses, local ulceration and extensive metastases in the glands and internal organs in the control, untreated, animals. Intermediate lesions occurred in animals in which the treatment was left off after the first five to seven months. In animals treated only during the last seven months of the experimental period, when the infection had already obtained a good hold, the lesions were greater than in those treated only during the first five months, but less than in untreated animals.

Tests of the viability of the lepra bacilli after the full development of the lesions had been inhibited by a year's treatment showed that they had retained their virulence unimpaired, and the bacilli had not been rendered sulphanilamide-fast. Histologically the lesions in the treated animals showed no important differences except that there were fewer bacilli and giant cells and no fibrous encapsulation; these lesions therefore resembled those caused by heat-killed bacilli. Experiments with albino mice showed very similar results. The single trial of sulphathiazole produced effects similar to those of the other drug. With neither was their any evidence of the lepra bacilli being killed, but only retardation of their effects during the continuance of the drug.—[Abstract from *Trop. Dis. Bull.* **40** (1943) 789-790]

LOVING, W. L. The cultivation in vitro of *B. leprae* with thiamin (vitamin B_1) culture medium. Am. J. Trop. Med. **23** (1943) 593-6. (10 refs.)

The growth-promoting action of vitamin B_1 (thiamin) in culture media is well known, and attempts to cultivate *Mycobacterium leprae* on a thiamin medium are here recorded. "The medium consisted of alkaline nutrient agar as a base to which was added 1.0 per cent aqueous solutions of cysteine, cholesterol, and 0.1 per cent tryptophan. Sterile unheated rabbit serum was also incorporated in the medium. To this pabulum after melting and cooling to 40°C., sterile vitamin B_1 (thiamin) was added as a contributing growth-promoting substance. This stimulating factor was supplied in concentrations of 0.1 to 1.0 per cent."

A freshly excised human leprous nodule was crushed in a mortar with saline; 2 cc. of this emulsion was inoculated subcutaneously and intraperitoneally into each of six rabbits, and the inoculations were repeated after three weeks. Three of the rabbits also had small pieces of leprosy nodules implanted subcutaneously into the abdominal wall. One rabbit died three months after injection and implantation, and the other five were killed 1½, 2½, 3½, 5, and 5 months, respectively, after the last injection. Cultures from the lesions found in the organs of the rabbits were made on the special medium and incubated at 37.5°C.; concurrently, the juice of a human leprosy nodule was also inoculated on this medium. The cultures were sealed to prevent drying. Growth of a chromogenic acid-fast bacillus was obtained in the rabbit tissue cultures after 2½ months', and from the human leprosy cultures after 2 months' incubation. The bacilli were identical morphologically, culturally, and in staining reactions ('tinctorial') with the acid-fast chromogenic leprosy culture of DUVAL (*J. Exper. Med.*, 1910, v. 12, 649; see also *Trop. Dis. Bull.*, 1913, v. 2, 504).

Anaerobic cultures from the affected organs of the rabbits and from human leprosy nodules remained sterile after incubation at 37.5°C. for over three months.

The author concludes that *Myco. leprae* can be cultivated *in vitro* under special nutritive conditions. He showed previously (*Trop. Dis. Bull.*, 1941, v. 38, 700) that a chronic infection could be established in rabbits.—[Abstract from *Trop. Dis. Bull.* **41** (1944) 580]

MOM, A. & BASOMBRIO, G. Estudio comparativo entre la lepromino-reacción y la intradermorreacción por el 2-4 dinitrochlorobenceno, en enfermos de lepra, convivientes y controles sanos. (A comparative study of the reactions to lepromin and dinitrochlorobenzene in leprosy patients, contacts, and healthy controls.) Rev. argent. dermatosif. **28** (1943) 165-169.

In 147 individuals comparison was made between the intradermal reaction produced by lepromin-bacillar (Fernandez-Olmos Castro), and standard lepromin (Muir), and a solution in acetone of 2-4 dinitrochlorobenzene 1-1000. (1) Both reactions had an identical course in 91.8 per cent of the cases showing an early reaction, and in 96.4 per cent of those showing a late reaction. (2) In 61 lepromatous patients, the agreement was complete in all instances. (3) In 38 tuberculoid cases, agreement was 84.2 per cent for the early reaction, and 97.4 per cent for the late. (4) In 9 cases of characteristic leprosy, agreement was 88.8 per cent for both reactions. (5) In 13 household associates of lepromatous patients, agreement was observed in 92.3 per cent in both reactions. (6) In 26 healthy persons not in contact with leprosy, the early reactions agreed in 84.6 per cent and the late in 91.7 per cent.—AUTHORS' CONCLUSIONS

MUIR, E. Report on leprosy in Jamaica. Leprosy Rev. **14** (1943) 4-17. With 2 maps.

This is a report on a visit made at the request of the Medical Adviser to the Comptroller for Development and Welfare in the West Indies. The Leper Asylum at Spanish Town is of the old prison-like type with little land; it is overcrowded and

there is no segregation of lepromatous from early neural cases. The only modern feature in the institution is the provision of six members of a religious sisterhood two years ago at Muir's suggestion. All the 172 inmates had been compulsorily isolated and they included 105 lepromatous and mixed cases, 38 neural, and 29 with disease arrested. The latter might be released, to live near their relations with some financial assistance, with advantage. Inquiries into the history of infection showed that some had contracted the disease abroad. A spot map shows that in rural areas leprosy is a focal disease. The unrevised leprosy law of 1896 requires amendment as some of the provisions are at variance with the Public Health Law of 1942. Recommendations for the introduction of more modern methods of leprosy control are made.—[Abstract from *Trop. Dis. Bull.* **40** (1943) 462-463]

MUIR, E. Treatment of perforating ulcer of the foot. Leprosy Rev. **14** (1943) 51-3.

This paper records recent experience of the author in treatment of both superficial and deep perforating ulcers of the foot; the latter being complicated by necrosis, usually of a metatarsal bone. In the superficial ulcers, in addition to antiseptic dressings, infiltration of 1 to 2 cc. of hydnocarpus oil into the surrounding subcutaneous tissue may be of use. When bone necrosis is present operative measures, which should not be too conservative, are necessary to ensure permanent healing. Metatarsectomy is indicated through an incision in the sole beginning at the ulcer and extending the whole length of the affected bone. After removal of the bone the sides of the ulcer should be dissected out, the wound trimmed and the edges undercut to enable them to be brought together, and deep sutures applied. The wound usually takes three or four weeks to heal, and crutches should be used for four more weeks to keep the foot off the ground until the fibrous tissue has consolidated. Improvement in the general health follows when exercise can be taken.—[Abstract from *Trop. Dis. Bull.* **41** (1944) 52]

PRUDHOMME, R. O. Acide ascorbique et lepre murine. (Ascorbic acid and rat leprosy.) Ann. Inst. Pasteur. **69** (1943) 215-18.

This note records an experiment in which 10 rats were infected with rat leprosy. Five of them were given, a month afterwards, injections of 0.03 gm. of ascorbic acid every three days over a period of 45 days, repeated two months later up to a total of 32 injections. The experiment was based on previous analyses of the number of milligrammes of ascorbic acid found in the organs and lepromata of leprosy-infected rats; next to the suprarenals the largest amount was in the lepromatous tissues. Autopsies on the infected rats at different intervals showed that after four to five months the local lepromata at the sites of infection were considerably larger in the five rats which had received the injections of ascorbic acid than in the control animals. This they attribute to increased cellular reaction at the sites of infection in those animals receiving the injections of vitamin C. On the other hand, little difference was found in the generalization of the infection, or in the number of rat leprosy bacilli in the internal organs in treated and in the control rats respectively.—[Abstract from *Trop. Dis. Bull.* **41** (1944) 588-9]

SCHUJMAN, S. Evolución y pronóstico de la lepra. (Evolution and prognosis in leprosy.) Prensa méd. argent. **30** (1943) 2280-2287.

The evolution of tuberculoid leprosy is favorable. Its prognosis is good and it never leads to the lepromatous type. There are three different types of reaction: (1) single tuberculoid; (2) periodical tuberculoid; (3) persistent tuberculoid. The evolution of the lepromatous type is grave. In this form, two factors contribute to alle-

viate the gravity of the prognosis: the lepromatous reaction, and early intensive treatment with chaulmoogra.—G. BASOMBRIO

SOTO, M. C. Consideraciones clinicas sobre las complicaciones oculares de la lepra. (Clinical consideration on ocular complications in leprosy.) Rev. argent. dermatosif. **27** (1943) 412-422.

(1) The ocular manifestations of leprosy are secondary and appear several years after onset of the disease. (2) Tuberculoid leprosy does not affect the ocular globe itself. It involves the skin of the eyelid and adjacent structures. From the point of view of function this form is benign. Except for keratitis due to lagophthalmos the author has not observed any lesions due to tuberculoid leprosy. This keratitis is secondary and mechanical, due to ectropion, paralytic or cicatricial. (3) The lepromatous type affects, in a high percentage, the ocular globe as well as its adnexa. From the functional point of view the prognosis is always grave, and in spite of treatment total blindness frequently results.—AUTHOR'S SUMMARY

SOTO, M. C. Algunas consideraciones sobre el tratamiento de las complicaciones oculares de la lepra. (Treatment of ocular complications in leprosy.) Rev. argent. dermatosif. **27** (1943) 429-433.

The treatment of ocular lesions in leprosy does not differ in principle from that which is used for other secondary ocular manifestations regardless of the etiology. It is necessary to eliminate any foci of infection proximal to the eyeball. The treatment should be instituted in all cases, and it is reasonable to suppose that improvement in general treatment will prevent such complications.—AUTHOR'S SUMMARY

VEGAS, M. & ESPIN, J. Aspectos microscopicos de la lepra. I. Coloración del bacilo de Hansen. Proceder combinado de Baumgarten-Biot. (Leprosy. I. Staining of *Mycobacterium leprae*.) Rev. Sanidad y Asistencia Social. Caracas. **8** (1943) 627-34. With 3 figs. on 1 plate.

Demonstration of Hansen's bacillus in the tissues is easy in theory, but often difficult in practice. The bacilli are not all equally resistant to acid-alcohol; the young are thought not to have acquired this property, the old are too resistant. The method here detailed is based on that of Baumgarten. The tissue is fixed in formol rendered neutral by powdered chalk — 10 cc. of commercial formalin to 90 cc. distilled water. The length of time they are in this is not important; tissues have stained well after being immersed for a year. If a decision is urgent, small fragments may be placed in boiling formol for 2-3 minutes or at 56°C. for 15 minutes. Sections by the freezing microtome are better than those in paraffin. The sections are then impregnated by placing them for 5-6 minutes in the following:

Freshly prepared 5 per cent carbonate of soda	30 cc.
Solution of silver nitrate, 10 per cent	10 cc.
Ammonia added drop by drop till the precipitate is dissolved	
Distilled water	100 cc.

This solution will keep indefinitely in a dark yellow non-actinic bottle, well stoppered. Without washing, the sections are transferred to a small vessel containing 20 cc. of 1 per cent formalin in distilled water, gently agitating to obtain uniform reduction to a yellow colour. They are then treated with 1:500 chloride of gold till they become a uniform grey (1-2 minutes) and fixed for ½ minute in 5 per cent hyposulphite of sodium, and thoroughly washed. Next they are stained in Ziehl's carbol-fuchsin for 10-15 minutes at room temperature and rapidly washed. For differentiation the sections are transferred one by one into acid-alcohol (9 cc. of 96 per cent

alcohol and 1 cc. nitric acid, sp. gr. 1.4) gently moving to secure uniform decolorization. When they become pale in colour they are removed and quickly but thoroughly washed in water. Next follows a process which the author regards as particularly important, and calls *viro-fixation*, substituting, for methylene blue, formol to reinforce the staining of the acid-fast bacilli. BIOT used commercial formol, GALLEGO used 1 per cent, the authors prefer 10 per cent as for fixing the issues. It is left in contact for at least 5 minutes; longer does no harm. Then wash thoroughly, dehydrate, clear and mount.—[Abstract from *Trop. Dis. Bull.* **41** (1944) 581]

VEGAS, M. & ESPIN, J. Aspectos microscopicos de la lepra. II. Nota sobre una observación de "Globis" intraepiteliales. (Leprosy. II. Intra-epithelial globi.) Rev. Sanidad y Asistencia Social. Caracas. **8** (1943) 635-40. With 2 figs. on 1 plate.

The authors state that, macrophages being absent from the epithelial layers and there being no blood to irrigate them, the presence of the bacilli of leprosy in these layers is due to tropism of these bacilli for the nerves. This, they maintain, is supported by the longitudinal direction of the organism in the skin; the globi result from these bacilli lying free and proliferating in the interior of the epithelial cells. They present diagrams and photomicrographs in support of their views. —[Abstract from *Trop. Dis. Bull.* **41** (1944) 581]

ALEXANDER, V. P. Treatment of the neural symptoms in leprosy. Leprosy in India. **16** (1944) 10-11.

This brief note advocates the following treatment in neural leprosy; (1) 1-2 oz. of wheatgerm flour ("bemax") and 1-3 oz. of ground nuts taken by mouth daily; (2) the injection of 1 to 2 cc. of sterile 25 per cent solution of magnesium sulphate into a nerve sheath, or 2 to 5 cc. or more around the nerve, for pains; and (3) 60 gr. of sodium bicarbonate dissolved in 50 cc. of sterilized saline intravenously in the treatment of neuritis due to lepra reaction.—[Abstract from *Trop. Dis. Bull.* **41** (1944) 1046]

BASOMBRIO, G. & MOM, A. M. Triple reacción cutánea por el 2-4 dinitroclorobenceno. (Triple skin-reaction to 2-4 dinitrochlorobenzene.) Rev. argent. dermatosif. **28** (1944) 162-4. With 1 fig.

During an investigation of certain skin reactions the authors observed a curious phenomenon. Two men, healthy controls, received, intradermally in the abdomen, injections, one of them injections of lepromin and of a 1:1,000 acetone solution of 2-4 dinitrochlorobenzene, the other of the latter only. In 48 hours a reaction like the early tuberculin reaction appeared at the injection sites; on the fourth day there was a localized erythema at the site of the withdrawal (some distance from the actual injection) where a drop of the dinitrochlorobenzene had come into contact with the skin. In another 24 hours these last were vesicular. A week later in various places on the abdomen and the forearms there were erythemato-squamous spots, of the size of a lentil to that of a copper two-centavo piece, becoming larger and resembling a papular syphilide and by the tenth day a nodule (like that of the delayed Mitsuda reaction) with a tuberculoid structure, not clearing up until three weeks had elapsed.—[Abstract from *Trop. Dis. Bull.* **41** (1944) 1050]

BOSE, D. N. Treatment of leprosy complicated by syphilis. Leprosy in India. **16** (1944) 6-9.

This paper is based on trials in the Asansol Mining Settlement, where syphilis is very common and from 16 per cent to 20 per cent of leprosy cases under treatment give positive Kahn reactions, with or without any history or clinical evidence of

syphilis. Owing to the poverty of the people arsenical preparations were too expensive and Avenyl (Burroughs, Wellcome & Co.), a mercury preparation dissolved in hydnocarpus oil, gave discouraging results, so the following bismuth preparations were used. Bismuth salicylate or bismuth oxysalicylate (Howard's) were used as 3 per cent suspensions of the powder in 4 per cent creosoted hydnocarpus oil or its esters, made up by mixing in a sterile pestle and mortar, putting into a clean stoppered phial and sterilizing in an oil bath kept at 130°C. for half an hour. This preparation was injected intramuscularly in an initial dose of ½ cc. increased weekly by ½ cc. to a maximum of 4 cc. up to a maximum total course of about 4 Gm. A table of twelve cases indicates that in nine of them a positive Kahn test was converted into a negative one, and in the other three, 3+ and 4+ reactions were reduced to 1+ or 2+. It is noteworthy that none of the twelve cases showed any clinical signs of syphilis and only four gave a history of the disease.—[Abstract from *Trop. Dis. Bull.* **41** (1944) 1046]

CORNEJO, A. Método de la pinza Pean para diagnóstico bacterioscópico de la lepra. (Use of Pean's forceps in bacteriological diagnosis of leprosy.) Rev. argent. dermatosif. **28** (1944) 345-346.

The author proposes to name the following the "method of Maza": A fold is held by Pean's forceps, and excoriation of the skin is made. In the lymph obtained, the bacilli are readily identified. The same method is useful in making a biopsy.—G. BASOMBRIO

CRAWFORD, W. An introduction to the study of the incidence of leprosy in West China. Leprosy in India. **16** (1944) 3-5.

Little definite information is available regarding the incidence of leprosy in West China with the exception of the report of a short trip by Dr. MAXWELL in 1935 in collaboration with whom the present writer sent maps to missionaries in these parts with the request that they would enter on them the known cases of the disease; the results are now reported for an area bounded by 102 to 105 degrees east longitude and 27 to 38 degrees north latitude. It includes many races but the evidence available shows almost equal incidence in different tribes. Altitude seems to have little effect as cases were met in both high altitudes and in low-lying plains. Nor did humidity or diet appear to play any great part in this area, so climatic conditions have little influence. He agrees with Maxwell that leprosy is a rural disease as most of the cases met with in towns had originated in the country, so, in order to eradicate the disease, it must be attacked in the leper villages. The quality, but not the kind, of houses has some influence.—[Abstract from *Trop. Dis. Bull.* **41** (1944) 1041]

DHARMENDRA. Intradermal tests with antigens prepared from the urine of cases of leprosy. Leprosy in India. **16** (1944) 58-61.

In 1940, BERNY and MAUZE described an intradermal reaction in leprosy cases following the injection of an antigen prepared from the urines of bacteriologically positive cases of the disease; they claimed 100 per cent positive results in cases of all types of leprosy and negative ones in all controls. The antigen was extracted from the urine, free from albumin, by adding three times the volume of 95 per cent alcohol. The present paper records an attempt to verify their conclusions, but with negative results. The substance extracted from urines of positive leprosy cases was found to be of the nature of secondary proteoses giving a positive Biuret reaction, but whether extracted from the urines of leprous or of healthy persons, they produced no reactions on intradermal injection in either lepromatous or neural cases of leprosy. Similar substances were extracted from the urines of reacting lepromatous cases of the dis-

ease; the extract from one patient produced reactions in both neural and lepromatous but that from another reacting case produced positive results in only a few of the neural cases tested and in none of the lepromatous ones. The results of Berny and Mauzé therefore were not confirmed.—[Abstract from *Trop. Dis. Bull.* **41** (1944) 1050]

DHARMENDRA & SANTRA, I. The use of iodized hydnocarpus oil in the treatment of leprosy. Leprosy in India. **16** (1944) 54-7.

It has long been customary to add creosote as an antiseptic to hydnocarpus oil and its esters for use in the injection treatment of leprosy. Owing to the wartime difficulty in obtaining creosote a search has been made for a substitute. The addition of 1 per cent thymol to the oil has been found satisfactory, and the following study of the addition of iodine has also been made in view of the long use of iodized esters in the Philippines, where it was found to reduce considerably the irritation caused by injection of the esters. A modification of the method of adding iodine to the oil which was used by COLE in the Philippines has been found satisfactory. A weighed amount of pure iodine is reduced to a fine powder with a glass pestle and mortar, a small amount of the oil added and grinding continued and the mixture transferred to a flask with the addition of more oil. The corked flask, with a thermometer through the cork, is put in an oil bath and heated gradually to 120°C. and more slowly to 140°C. and maintained for 30 minutes at this temperature. When cool, the iodized oil is filtered, tested to exclude the presence of free iodine and then sterilized in ampoules in an autoclave. The mixture is not more viscid than plain hydnocarpus oil and is suitable for injection. It has been used by the subcutaneous, intramuscular, and intradermal methods twice a week in doses of from 2 to 5 or even 10 cc. up to 10 doses, with but little pain and a moderate degree of induration on intradermal injection, and no pain after intramuscular or subcutaneous injection. No abscess or ulceration has followed its use and only slight hyperpigmentation after its intradermal use. A rise of temperature and other reactions have been carefully watched for, but nothing beyond a slight rise of temperature and itching has been noted. The authors conclude that the iodized oil is quite suitable for injection in leprosy and the iodine appears to have some antiseptic action.—[Abstract from *Trop. Dis. Bull.* **41** (1944) 1045]

FERNANDEZ, J. M. M. Tratamiento de la lepra con ésteres Bencílicos del Aceite de chaulmoogra por el Metodo Gota a Gota Intravenoso. (Treatment of leprosy with benzylic esters of chaulmoogra by intravenous continuous drip.) Semana méd. Año LI (1944) 1167-1178.

Chaulmoogra oil has not been used in sufficiently large doses because of local irritation produced by subcutaneous or intramuscular injection. The intravenous route has been limited by the amount which can be injected without producing fat embolism. In this series, benzylic esters of chaulmoogra oil (neochaulmestrol) were given intravenously by continuous drip. An apparatus is described which permits slow injection at a variable rate of from 2 cc. per hour up. Tolerance was studied in 13 dogs. With high rates of injection (10-12 cc. per hour) dyspnea, coughing, and general unrest were frequently observed; these symptoms did not occur at lower rates. The small number of experiments does not permit any definite conclusions as to dosage. Some animals died within a few days of having received one dose of 4 to 5 cc. per Kg.; autopsy showed fatty degeneration of the liver and kidney, and inflammatory reactions in the lung. Others tolerated, without symptoms, doses of 2 cc. per Kg. repeated once with an interval of ten days. Eleven cases of leprosy, mostly of the advanced lepromatous type, were treated by this method. Neochaulmestrol was injected at rates of 4 cc. per hour, giving 10 to 20 cc. in one session. A total of as much as 300 cc. given in the course of six months was well tolerated. Dyspnea, coughing, retroster-

nal oppression, and anxiety were frequently seen, especially when rate of injection was high; these symptoms disappeared spontaneously when the injections were discontinued. In all cases, temperature rose to 38° and 39° C., 4 to 6 hours after finishing the injection. Asthenia, occasional slight headache, anorexia, nausea, and vomiting were sometimes seen on the day of the injection and on the following day; 48 hours later, all symptoms had disappeared. Therapeutic results will be reported later.—AUTHOR'S SUMMARY

FIELDING, J. W. The lepromin test in laboratory animals. M. J. Australia. **1** (1944) 439-41. (12 refs.)

The author reports on lepromin tests in rabbits, guinea pigs, dogs, cats and rats. He used human and rat leprotic tissues, which are mixed cellular-bacillary suspensions, and also extracts of the acid-fast bacilli prepared by the method of DHARMENDRA, and he confirmed the findings of that worker that bacillary extracts produce earlier reactions than do emulsions of leprotic tissues. In the case of rats all the reactions were negative and in the remaining animals used the results were variable. Emulsions of fresh and of alkaline-fixed tissues showed only slight differences. Two tables of results are given but are not easy to follow, but his general conclusion is that there appears to be some evidence of resistance in different animals, although this is uncertain and it is not always revealed by the lepromin test.—[Abstract from *Trop. Dis. Bull.* **41** (1944) 1049]

GOMEZ, F. M. El impedimento de lepra ante el derecho natural y la Constitución. (The conflict in leprosy control between natural and constitutional right.) La Ley **36** (1944) 1-2.

The author proposes suppression of Article no. 17 of the Argentine Leprosy Law which prohibits matrimony between patients. He considers it inhuman and unconstitutional.—G. BASOMBRIO

HOPKINS, R. and FAGET, G. H. Recent trends of leprosy in the United States. J.A.M.A. **126** (1944) 937-943.

This is a statistical report on 723 patients admitted to the National Leprosarium, Carville, La., from July 1928 to January 1944. It supplements a previous analysis by Hopkins and Denny [J.A.M.A. **92** (1929) 191]. Of the present series 303 were foreign born and 420 native born. The following gives the nativity of the native born: Louisiana 176; Texas 125; Florida 34; California 23; Ohio 8; Georgia 7; Alabama 5; Mississippi, South Carolina, Kentucky, and Pennsylvania 4 each; Arizona and Missouri 3 each; New York, Virginia, Indiana, and Oregon 2 each; Arkansas, Maryland, Oklahoma, North Carolina, North Dakota, Colorado, Kansas, Iowa, Massachusetts, Michigan, New Jersey, and Wisconsin 1 each.

The average age at onset was computed at 30.4 years. (This is influenced by the fact that the group includes such a large proportion of foreign born patients, for the most part adults. It is not to be compared with figures for indigenous cases. Ed.)

For Louisiana, the white population suffered approximately twice as heavily as the Negro, taking the population of each race into consideration.

Approximately two males were admitted for each female. It is noted however that of the native born Negro patients admitted, 25 were men and 27 women [cf. Saunders and Guinto, the Journal **10** (1942) 20].

The clinical types observed were: mixed, 45.5 per cent; lepromatous, 28.6 per cent; neural, 21.5 per cent, and tuberculoid, 4.3 per cent.

There were 147 patients with a family history of leprosy. Of these, 74 had only one other member of the family afflicted, 42 had two, 17 had three, 11 had four, 2 had five, and 1 had eight other members of his family with leprosy.

The first manifestation was recalled as a macule or macules by 259 patients. The location was on the face in 52 patients, neck in 4, body in 29, arms in 27, elbows in 2, wrists or hands in 5, legs in 47, buttocks or hips in 9, knees in 14, ankles or feet in 7, face and body in 5, face and buttocks in 10, body and limbs in 16, upper and lower limbs in 21, and more or less generalized in 11 patients.

Nodules were remembered as primary lesions by 193 patients. The face was first affected in 90, ear lobes in 4, body in 7, buttocks in 1, legs in 18, knee in 1, ankles or feet in 4, arms in 9, elbows in 5, wrists or hands in 8, face and body in 4, face and limbs in 18, upper and lower limbs in 15, body and limbs in 1, and more or less generalized areas in 8.

Nephritis and tuberculosis were the most common causes of death, accounting for 92 of 189 deaths.

Of the 723 patients, 145 or 20 per cent have been paroled. Criteria for parole at Carville are twelve consecutive negative bacterioscopic examinations at monthly intervals. Nine per cent of those with the neural type relapsed, 12.5 with the lepromatous type, and 26 per cent with the mixed type.

The following comments on trend are taken from the Author's summary:

"From Texas the average yearly admissions are 12.2, nearly three times as many as formerly and greater than from any other state.

"From Louisiana the average yearly admissions are 11.53, a little less than formerly but greater than from any other state except Texas. Formerly the admissions from Louisiana exceeded those from Texas.

"From California and Florida there are enough admissions of native born to argue for an endemic origin, but there are also evidences of imported cases.

"From New York and Illinois there are not enough natives of these states admitted to establish evidence of an endemic origin. Almost all cases are probably imported.

"From Minnesota and Massachusetts the decline in admission warrants the belief that leprosy is not indigenous in those states and the foci established by immigration have disappeared or are rapidly disappearing.

"Thirty-two Spanish-American War veterans have been admitted, all of whom presumably contracted the disease in foreign countries in which leprosy is endemic.

"Fifty-one veterans of World War I have been admitted who probably were infected before their induction into the Army.

"Ten veterans of World War II have been admitted who were enlisted from endemic areas in the United States or were born in the Philippines, Mexico or Puerto Rico and presumably contracted the disease before their induction.

"It is safe to predict from the experience of the Spanish-American War that a small number of those who serve in the armed forces in foreign countries where leprosy is prevalent will become its victims."—J. A. DOULL

MARIANO, J. Lepra conjugal (estudo epidemiologico). (Marital leprosy: epidemiological study.) Brasil-med. **58** (1944) 105-9.

Among the many lepers in the Santa Fé Colony are 33 married couples. Seventeen of these were leprous on admission, the remaining 16 form the subject of this article. The history is given of each of these; the date when the first sign was noticed

in husband or wife, and how long afterwards signs appeared in the other. The percentage of conjugal lepers in relation to the total interned at the colony is 2.75 which is close to the figures recorded by others (2.5–5.0. MONTOYA & FLORES; 1–5 ROGERS & MUIR), but there are exceptions, such as Hawaiians 8.8, Filipinos 1-8. All sixteen of these couples came from rural districts; all the women were engaged in domestic work; of the men 13 were agricultural workers; 27 of the 32 were white, 5 were coloured. As regards ages: between 20 and 30 years there were four men and seven women; between 30 and 40 years seven men, four women; between 40 and 50 years three and four respectively, and between 50 and 60 years two and one. The length of cohabitation ranged between three and 34 years.—[Abstract from *Trop. Dis. Bull.* **41** (1944) 1044]

PARDO CASTELLO, V. & TIANT, F. R. La prueba de histamina. Con particular referencia al diagnóstico de la lepra. (The histamine test in the diagnosis of leprosy.) Rev. Leprologia, Dermatologia y Sifilografia. Marianao, Cuba **1** (1944) 19-23. With 1 fig.

The so-called "triple reaction of Lewis" when histamine, 1/1,000, is injected intradermally comprises a purpuric spot at the site of inoculation with an erythema of several centimetres in diameter, in the centre of which a wheal forms. It is said to be due to direct neurovascular stimulation, and a normal reaction implies integrity of the sensory fibres of the peripheral nerves. The test is useful, therefore, in determining nerve degeneration after injury, in differentiating hysterical from organic anaesthesia, or feigned from true; it is also an aid in localizing spinal lesions and in distinguishing nerve-root lesions from those of the spinal medulla.

The details of procedure in a suspected case of leprosy are as follows: A drop of 1/1,000 phosphate of histamine is placed on the suspect area, a second at the junction of this with normal skin, and a third on normal skin, and a puncture, not enough to draw blood, is made with a hypodermic needle through each. In the case of the normal skin, in 25-45 seconds an erythema arises from 3-5 cm. in diameter; in 68-100 seconds a wheal, 2-5 mm. in diameter, appears in the centre of this erythematous area and in three minutes a haemorrhagic spot at the site of puncture. After 20 minutes or so (occasionally as long as 45 minutes) these signs fade. In a leprous part of the skin the wheal appears but the erythema does not, so that, at the site of the second drop (see above) the erythema ends abruptly where the normal and affected parts meet. The authors prefer the puncture to the scarification method; they think it gives more precise results.

With saline or distilled water there is a slight reddening with a minute wheal which rapidly passes off. The authors have made the test on some 300 lepers in Havana and on 50 controls suffering from non-leprous skin conditions; all the latter reacted normally. It is interesting to note that the reaction was normal also after local anaesthetization with procaine, and in a case of polyneuritis of ten years' duration with muscular atrophy, the reaction being, however, delayed; also in a case of polyneuritis due to avitaminosis B_1, in another with tabes dorsalis and in a patient with generalized scleroderma. The authors have not yet had an opportunity of making the test on a patient with syringomyelia, but SCHUJMAN in 1939 did so and reported that the reaction was normal (see *Trop. Dis. Bull.*, 1940, v. 37, 377, where other references are given).—[Abstract from *Trop. Dis. Bull.* **41** (1944) 585-586]

SANTRA, I. Epidemiological leprosy surveys in the Central Provinces. Leprosy in India. **16** (1944) 36-40.

In this survey the data in two different areas are contrasted. The Kurud area is inhabited by depressed or aboriginal rice-eating Hindus in East Central Provinces. In

the westernly Kashikhed the people are better-to-do Juar (millet)-eating and Maharatti-speaking with a better diet. The main data are shown in the following table:

	Kurud Per cent	Kashikhed Per cent
Gross incidence	1.2	4.8
Percentage of lepromatous cases	20.0	8.0
Percentage of males	59.0	64.0
Percentage of cases in children up to 14	14.0	24.0

Among the Kurud people the proportion of lepromatous cases is higher, the incidence in children lower and the total incidence lower. These data do not support the commonly held view that a high proportion of lepromatous cases indicates that leprosy is on the increase, but rather indicate that a high proportion of cases in children suggests that the disease is on the increase, as held by others. The author considers that the disease in the Kurud area is of old standing, but not very serious; whereas in the Kashikhed one leprosy is more common and probably on the increase; therefore there is more need for anti-leprosy work in the westernly Berar division than the easternly Chattisgarh one.—[Abstract from *Trop. Dis. Bull.* **41** (1944) 1043-1044]

SANTRA, I. A report on an epidemiological leprosy survey in Bombay Presidency. Leprosy in India. **16** (1944) 80-85.

In continuation of previous intensive leprosy surveys in small selected areas in various parts of India, to obtain more accurate ideas of the incidence and epidemiology of the disease, the author now reports an inquiry in East Khandesh, Bombay Presidency, where rough surveys of eight districts by the provincial leprosy officer had shown the disease to have the high incidence of 0.5 per cent. The village of Hingona had 3,580 inhabitants, 51 of whom, 1.42 per cent were found to be infected; 19.7 per cent of the cases were of the more serious lepromatous type. The frequency of the disease increased with age and only 16 per cent were in children below 15 years of age, all being of the neural type; an unusual feature was a higher incidence in male than in female children; in adults there was the usual higher rate in males of 60 per cent of the cases. It is of interest to note that any person suspected of having a patch of leprosy is advised to bathe in the local Tapti river on religious grounds. There is also a local custom of isolating cases of leprosy in their homes in a separate room or outside the village, whatever the type of the disease, and 7 out of the 51 detected cases, 3 of them infectious ones, had been so isolated outside their homes, and 10 of the 17 previously known cases had been living in separate rooms in their own houses. It may prove practicable to isolate all the infective cases in view of this custom.—[Abstract from *Trop. Dis. Bull.* **41** (1944) 1043]

SLOAN, NORMAN R. Early diagnosis of leprosy as seen in Hawaii. Hawaii Medical Journal. Jan.-Feb. (1944).

The number of cases of leprosy in Hawaii in 1890 (the peak year) was 1,175; on June 30, 1943 it was 390. The reasons for this decline may be manifold, but that early diagnosis is important will be admitted by all.

In Hawaii male patients outnumber female about three to two. The disease is recognized usually in later childhood, adolescence, and early adult life. Prompt diagnosis would have lowered the average age by as much as two years. Allowing for the incubation period it is evident that most cases are contracted in infancy and childhood.

For 743 cases in which records were complete, the presenting symptom, which in most cases is the complaint which takes the patient to the doctor, was noted. The

most frequent were the following: macules, 46 per cent; nodules, 13 per cent; anesthesia, 9 per cent; ulcers, 9 per cent; swelling of the skin, 6 per cent; muscle weakness, 4 per cent; contracture of the fingers, 4 per cent; erythema, 2 per cent; swelling of foot or leg, 2 per cent; other, 5 per cent. The author gives in detail the methods used in conducting physical examination for the detection of early leprosy.—J. A. DOULL