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.

DE SOUZA ARAUJO, H. C. A anatoxin difterica na lepra. (Diphtheria toxoid in leprosy.) Brazil-Medico. 55 (1941) 750-751.

On June 14th, 1940, the Author received a letter from Dr. Muir informing him of encouraging results reported by Collier in the treatment of leprosy with diphtheria toxoid and requesting him to make a trial of it in Brazil. Some toxoid was obtained therefore from the Oswaldo Cruz and some from the Butantán Institute and sent to Dr. José Marianno at Belo Horizonte. Weekly intramuscular injections were recommended commencing with 0.2 cc. and increasing to 2 cc. In February, 1942, Dr. Marianno reported that three patients who had undergone treatment for six months had improved very much. On August 14th, the day which completed the first year of the experiment, the Author examined, with Dr. Marianno, 11 patients under treatment with toxoid. The majority, after being injected with from 50 to 200 cc. over a period of six to twelve months, were still covered with florid lepromata; one-third felt that they had improved in some way and others showed real amelioration of neuritic pain or nerve enlargement.

Dr. Marianno has another group of 21 patients under treatment with toxoid associated with intradermal injections of chaulmoogra ethyl ester.

During the same period the Author, with the assistance of Dr. R. T. Vautrai, tested the inhibitory action of diphtheria toxoid on growth of five strains of acid-fast bacilli isolated from leprous lesions. The results were negative.—H. C. DE SOUZA-ARAUJO

DE SOUZA-ARAUJO, H. C. Pesquizas leprologicas na colonia de Itanhenga. (Leprological researches made at the colony of Itanhenga.) Arquivos Minerios de Leprologia. 1 (1941) 283-288.

In May 1940 on invitation of the Governor, Major J. P. Bley, the Author studied leprosy in the State of Espirito Santo. One week was spent in the colony of Itanhenga (the State leprosarium) and another visiting the skin clinics in the interior of the State. In Itanhenga he collected in the dormitories 107 mosquitoes of seven different species, 64 being *Anopheles*. Thirty of them, full of blood from leprosy patients, were desiccated and examined. Only three (10 per cent) showed a very rare acid fast bacilli, apparently degenerated. Two fresh placentas were obtained, one from an open case and the other from a closed case. In the sections of the first were seen small necrotic foci and very rare acid fast bacilli; the sections of the second were negative. Twelve samples of sputum were collected from leprosy patients, three of whom were suspected of tuber-

culosis. Microscopical examinations were positive in eight or 66 per cent. Smeared in Loewenstein medium, only three produced (25 per cent) cultures of Koch's bacillus. Juices obtained from the inguinal lymphnodes of 11 patients were smeared in Loewenstein medium. Only one germinated a culture of Koch's bacillus.

The aim of this small paper is to popularize laboratory research in leprosy.—H. C. DE SOUZA-ARAUJO.

PALDROK, A. Results of specific therapy of leprosy in Estonia during last twenty years. Acta Med. Scandinavica, **108** (1941) 374. (Summary taken from Jour. American Med. Assoc. 1942. Jan. 3, Vol. 118. No. 1, 89-90.)

Paldrok observed that the causal organism of leprosy consists of granules that are surrounded by an envelop; five or more are generally in one sheath. The common envelop creates the appearance of a rod which Amauer Hansen had designated as the bacillus of leprosy. Paldrok observed, however, that the multiplication of these rods is not like that of bacilli but that the granules adhere to the wall, then penetrate the envelop and develop into dentritic forms as do fungi. He became convinced that the causal organism of leprosy is not a bacillus but rather a fungus and that this explains why the leprosy organism does not grow in cultures suitable for bacilli. He found also that the granules and the covering differ in their chemical composition. Whereas the granules contain free nucleic acid, the envelop contains nucleoproteins. Searching for a substance that would destroy the covering so that the granules could be reached, he decided to utilize the action of cold in the form of solid carbon dioxide. Rods of solid carbon dioxide are pressed against the leproma for three to four seconds. Lepromas of millet seed size completely disappear about three weeks after the freezing, but with larger ones the freezing must be repeated. At each session fifteen to twenty lepromas are frozen, and the procedure is repeated every two weeks. After four months, the treatment is interrupted for the same length of time. The decomposition products released during freezing are absorbed by the organism and cause the formation of antibodies. There are indications that the solid carbon dioxide treatment is an autoimmunization. The favorable effect of solid carbon dioxide on leprosy has been corroborated by investigators of many different countries. If after two years of treatment with solid carbon dioxide the organism has lost its responsiveness to the substance a new chemotherapeutic stimulus must be employed, and the author found the organic gold preparation solganal effective. In the course of treatment with solganal the organism regains its responsiveness to solid carbon dioxide, so that the two treatments can be used alternately. Good food, a hygienic mode of life, adequate exercise and weekly sweat baths are complementary measures. Those who are apparently cured are kept in the leprosarium for an additional two years. For the first five years after discharge the patients must submit to control examinations every six months. After pointing out that non-specific shock therapy has largely failed in leprosy, the author says that the efficacy of the solid carbon dioxide and gold (solganal) treatment is proved by the fact that, whereas in 1920 the

total number of patients with leprosy in Estonia was 316, by 1940 there were only 113.—[Abstract from *Trop. Dis. Bull.* **39** (1942) 7.]

i. GREVAL, S. D. S., CHANDRA, S. N., and DAS, B. C. A note on complement-fixation test in leprosy and kala-azar with Witebsky, Klingenstein and Kuhn (W. K. K.) antigen. Indian Med. Gaz. **76** (1941) 474-475.

ii. ———. Lesser knowledge of human tubercle bacillus; serological affinity with allergic states, variation in content, etc. *Ibid.* **76** (1941) 610-11. (19 refs.)

iii. LOWE, J. A note on complement-fixation test in leprosy and kala-azar with Witebsky, Klingenstein and Kuhn. (W. K. K.) Antigen. (Correspondence) *Ibid.* 637-638.

——i. The authors have tested the reactions with Witebsky, Klingenstein and Kuhn antigen in leprosy and kala-azar. The antigen used is essentially a solution in benzol of the alcohol-insoluble, pyridin-soluble and acetone-insoluble fraction of the human tubercle bacillus. The residue, after evaporation of the benzol, is suspended in normal saline and standardized.. The essential features are that the dose of the antigen is linked to the haemolytic system and is not complementary and that the reaction is linked to the Wassermann reaction and is put up only when a complement of optimal reaction and titre for the latter reaction is available. The Wassermann reaction is put up at the same time, with the same relationship between the serum dilution, the antigen and the haemolytic system. A 1 in 25 dilution is now used in both leprosy and kala-azar. Positive reactions are clear-cut and are obtained in early cases of nodular leprosy and also in early kala-azar before the formalin test is positive. In neural leprosy the aid given is not of a high order.

—— ii. This paper covers much the same ground as that above. The author emphasizes the point that the test gives stronger reactions in kala-azar than it does in leprosy. The degree of fixation of complement in kala-azar is comparable with that obtained in the Wassermann reaction in secondary syphilis. In preparing the WKK antigen from tubercle bacilli cultivated by A. C. UKIL in India, the fraction obtained appears to be two to three times as great as that obtained from bacilli found in Europe. The author raises various points for further investigations and concludes that the auto-anti-bodies formed in tuberculosis, leprosy, kala-azar and syphilis show associations, close and remote.

—— iii. Lowe disputes the claim made in Greval's earlier paper that the serum test is a better and safer test for kala-azar and leprosy than others in use. Tests made by Lowe and his colleagues of WKK antigen in leprosy gave very different results from those of Greval; they indicate that this antigen is of very little use in the diagnosis, prognosis and epidemiology of leprosy.—[Abstract from *Trop. Dis. Bull.* **39** (1942) 7.]

BIER, O., and TRAPP, E. Dissociation of the aggregates obtained on adding beef-heart lipoid to Wassermann-positive sera. Jour. of Immunol. **40** (1941) 465-470.

The authors report the dissociation of the beef-heart lipoid-syphilitic-

serum complex by a strong sodium-chloride solution, used by Heidelberger and Kendall to separate pneumococal anticarbohydrate from a specific precipitate.

The method might permit differentiation in the group of Wassermann positive sera between specific and non-specific reactions. "Results obtained with leprous sera strongly support the thesis that the Wassermann reaction in leprosy depends on the presence of an antibody and not on simple colloidal ability of the leprous sera proteins." (Sera from four cutaneous cases were used.)—J. A. DOULL

FAGET, G. H., and JOHANSEN, F. A. Diphtheria toxoid treatment of leprosy. A preliminary report. Public Health Reports. 57 (1942) 249-253.

Between October, 1940, and February, 1941, twelve patients who had been having acute leprotic reactions with evanescent tubercles and fever were treated with toxoid following the technique advocated by Collier. Seven patients who had not had recent leprotic reactions commenced treatment in February 1941. Of the total, eleven continued treatment to the date of report. One improved slightly, three remained stationary, and eight became worse.

In March, 1941, seventy-one patients volunteered for a more extensive experiment. All were examined thoroughly and classified; 36 patients were given the diphtheria toxoid as recommended by Collier; 35 were given like dosages of the broth from which diphtheria toxoid is produced. After ten months of treatment a complete reexamination was performed.

Statistical tables are given showing that the results were better in the control group than in that given toxoid. Likewise the results of sedimentation tests were more favorable for the control group. While the study had not been completed at the time of the report, "no conclusive beneficial effects from diphtheria toxoid therapy" had been observed.—J. A. DOULL.

LIVINGOOD, CAPT. C. S., Medical Corps, PATTON, CAPT. T. E., Medical Corps, HECKER, CAPT. A. O., Medical Corps of the United States Army. Tuberculoid leprosy—Report of a case in a soldier. The Military Surgeon. 91 (1942) 341-345.

1. A case of tuberculoid leprosy, occurring in a soldier, and of particular interest because the early manifestations simulated a sub-acute cellulitis (the best clinical diagnosis on admission was erysipeloid of Rosenbach), is reported from the Medical Department of the United States Army.

2. Histologic examination was one of the essential factors in making the correct diagnosis.

3. Sensory changes in the lesions, cutaneous and muscular atrophy, and muscle weakness, manifest only on repeated serial examinations were the other findings in the differential diagnosis. Early hyperesthesia was also noted in our case.

4. Complex dermatologic problems as well as the more common cutaneous diseases are relatively frequent among our soldiers.

5. Authors feel that each Army hospital should have a medical officer especially trained in dermatology.—FROM AUTHOR'S SUMMARY.

BECHELLI, L. M., and BERTI, A. Lesões leproticos da mucosa bucal: estudo clinico. (Leprotic lesions of buccal mucosa: clinical study.). Rev. Bras. de Leprol. 7 (Spec. no.) (1939) 187-199.

Of the 456 patients of lepromatous or mixed types examined by the authors, oral leprotic lesions were found in the following proportions: lips, 21%; tongue, 1.4%; hard palate, 11.7%; soft palate, 5.9% and uvula, 3.2%. Lesions were absent in cheeks, gum and mouth pavement. Palatal perforations were observed in two patients. The sense of taste was present in all cases but was diminished occasionally for certain substances. Sensation was altered.

Evolution of mouth lesions is slow. In mucosa apparently free from involvement on hard and soft palates Hansen's bacillus was frequently found.—FROM AUTHOR'S SUMMARY.

KOLMER, J. A., KAST, C. C., LYNCH, E. R. Studies on the role of *Spirochaeta pallida* in the Wassermann reaction. I. Complement-fixation in syphilis, leprosy and malaria with spirochetal antigens. American Jour. Syphilis. 25 (1941) 300-318. (refs.)

Investigations are reported on antigens prepared by different methods from alleged cultures of *Spirochaeta pallida* (Nichols-Hough, Noguchi, Kroó and Reiter strains), and antigens of *S. macrodentium*, and *S. microdentium* and *B. diphtheriae* as controls in complement-fixation tests with normal and syphilitic human sera, leprosy and malaria.

They examined the sera of 25 lepers from Carville, Louisiana. Two of these patients were not used, as coincident syphilis in one was questionable, and was present in the second. Of the remaining 23, nine gave positive Kolmer reactions, and 14 positive Kahn and Kline reactions.

With Nichols-Hough and Noguchi spirochetal antigens, five gave positive reactions; nine with the Kroó strain antigen; four with antigen of *S. macrodentium*, and 22 with antigen of *S. microdentium*. The authors consider that the positive reactions were due to group spirochetal complement-fixation antibody found in normal non-syphilitic individuals.

Conclusions:

1. A large percentage of normal non-syphilic sera contain a natural spirocheta complement-fixation antibody, especially for *S. microdentium*.
2. In syphilis, leprosy and malaria there is apparently produced some increase of spirochetal complement-fixation antibody.
3. This is a group of antibody capable of fixing complement with antigens of alleged culture of *S. pallida*.
4. But the presence of the natural antibody results in such a large percentage of non-specific complement-fixation reactions with antigens of *S. pallida* as to render it probable that spirochetal antigens are inferior to alcoholic tissue re-enforced with cholesterol as antigen for the Wassermann test.—J. A. DOULL.

DE MORAIS, Jr., J. As sulfanidas no tratamento da reação leprotica. (Sulfanilamide in the treatment of leprotic reaction.) Revista Bras. de Leprol. 8 (Spec. No.) (1940) 61-67.

Two preparations were used, stopton 5% and aneseptil 10%.

1. The effect of sulfanilamide drugs on the leprotic reaction is nil, but on the other hand they do not cause violent eruptive action.

2. In case of erysipelas or erysipeloid reactions, sulfanilamide acts at once and rapidly with complete regression of the symptoms, especially when large doses of the drug are given.

3. In suppurative infection the drug acted quickly and effectively.

4. Higher doses by the parenteral route were well tolerated and results were more prompt and constant.—J. A. DOULL

ARAUJO, D. G., and BERTI, A. Enxerto livra dos supercilios. (Living graft of eyebrows.) Revista Bras. de Leprol. 8 (Spec. No.) (1940) 7-13. 7 photos.

The authors operated on four cases, using a method somewhat similar to that of P. Mauré in Practica Cirugica Ilustrada, fasc. XV. The graft is taken from the occipital region.

In one case—satisfactory results in both eyebrows; 2nd case, part of the graft retained, and in the 3rd and 4th, mediocre results.—J. A. DOULL

SOARES, J. A. Mal perforante plantar. (Perforating plantar ulcer.) Revista Bras. de Leprol. **9** (1941) 165-170. 3 plates.

Beneficial results in 16 patients with plantar ulcer are stated to follow intraarterial injection (femoral) of Padutina and Padutina with Bhering antipyogenic vaccine.

Plantar ulcer was found to be relatively common in adult leprosy patients between 21 and 40 years of age.—J. A. DOULL

MOTA, J., and DE MOURA COSTA, H. Anatoção e estudo sobre a distribuição da lepra no Rio de Janeiro. (Distribution of leprosy in Rio de Janeiro.) Revista Med. Municipal. **2** (1941) 49-57.

The Federal District shows an increase of 50 per cent in the number of cases registered in the last 10 years.

Open (contagious) cases comprise 65 per cent of the total.

Of those of known birthplace, 44 per cent were from the Federal District, 35.5 per cent from other states of Brazil and 20.5 per cent from other countries.

There is a serious lack of isolation facilities. It is estimated that there are 500 contagious cases unsegregated. — FROM AUTHOR'S SUMMARY.

PATRICK, D. W., and WOLFE, D. M. Leprosy: Complement-fixation with Gaehtgen's spirochete antigen compared with standard Wassermann and Kahn tests.—Public Health Rep. **56** (1941) 1757-1759.

The authors have examined the statement of CAPELLI that complement-fixation tests in leprous patients with the use of Gaehtgen's phenolized cultures of *Spirochaeta pallida* (palligen) give no positive 4 or 3 plus reactions in non-syphilitic patients, in contrast to those obtained with the Wassermann method. They conclude that lepers do show a tendency to falsely positive results with Gaehtgen's antigen, although to a lesser degree than with Wassermann and Kahn tests.—[Abstract from *Trop. Dis. Bull.* **39** (1942) 4.]

AYCOCK, W. L., and HAWKINS, J. W. Regional, racial, and familial relationships in leprosy in the United States.—Public Health Rep. **56** (1941) 1324-1336. 4 figs.

The data in this paper are based on information concerning 927 admissions to the Carville settlement. Foreign-born leprosy patients numbered 430, introduced by immigration from fourteen countries. The American-born numbered 497, of whom 370 belonged to southern states of California, Texas, Louisiana and Florida. Out of 396 stationary patients only 4 failed to give history of contact with a local or foreign focus of leprosy and 491 of 497 native-born persons can be allocated to known areas of prevalence of the disease. In Texas there is a concentration of cases of German stock.—[Abstract from *Trop. Dis. Bull.* **39** (1942) 4.]

FITE, G. L. Development of a leprous process in rats at the site of inoculation with material from human leprosy.—Public Health Rep. **56** (1941) 1919-1922.

The author records that 6 out of 154 rats inoculated with emulsions of human leprosy nodules developed, after an incubation period of about 18 months, nodules at the site of the inoculation resembling those of rat leprosy, but in which the bacilli tended steadily to decrease. Mucin suspensions of the inoculated material gave a much larger proportion of positive results with more numerous bacilli.—[Abstract from *Trop. Dis. Bull.* **39** (1942) 4.]

RAI, S. Leprosy in Canton. A survey. Taiwan Igakkai Zassi (Jour. Med. Assoc. Formosa.) **40** (1941). (In Japanese 1133-1162. 5 figs. and 1 chart. [19 refs.] English summary. 1162-1163.)

In the whole of China it has hitherto been thought that there were about one million lepers, with particularly heavy incidence in the province of Canton. The author has examined 52,000 persons in the city of Canton; these belonged to four groups:—The Tammins, living entirely in boats; the passengers in boats on the river; people found in the streets; and villagers. Of these, leprosy was found in 84, representing an incidence of 1.6 per 1,000, a rate lower than has been estimated by others. It is pointed out that eczema and scabies are common in Canton, especially in the boat dwellers, and may be mistaken for leprosy. The neural type of disease is more common than the nodular.—[Abstract from *Trop. Dis. Bull.* **39** (1942) 4.]

REVIRIEGO, A. J. Contribución al estudio de la lepra en Entre Riós. (Leprosy in Entre Riós.)—Semana Méd. **48** (1941) 231-235. 2 figs.

According to PUENTE in 1938 Entre Riós came sixth among the Argentine provinces as regards prevalence of leprosy. Misiones had 2.433, Formosa 1.509, Corriente 0.691, Santa Fé 0.639, Chaco 0.489, and Entre Riós 0.353 per thousand inhabitants; by 1940 there were, in the last named, 364 among a population of 812,645, or 0.423 per mille. Of seventy patients studied, 21 were between 20 and 30 years of age, and 13 between 50 and 60 years. Of these seventy the author states "in 60 per cent the course was severe and the condition infective; hygienically, the conditions of 78.6 per cent were bad, medical aid was inadequate in 68 per cent, the

economic status of 84.2 per cent was bad, and the subjects lived together in close contact; a ready soil for propagation of the *Mycobacterium leprae.*" —[Abstract from *Trop. Dis. Bull.* **39** (1942) 4.]

COT LESMES, V. La lepra en Santiago de Cuba. (Reporte de 105 casos.) (Leprosy in Santiago de Cuba.) Rev. Méd.-Quirúrg. de Oriente. Santiago de Cuba. **2** (1941). 168-171.

In the 9 months, May 1939 - January 1940, the author reported on 30 cases of leprosy which he had seen and he stated that since several of these presented open and infectious lesions, the incidence was likely to go up. Between February 1940 and May 1941 he has seen another 75 cases and he now comments on the total 105. Forty-two were of the nodular type, 50 of the neural and 13 mixed, or 40, 47.6 and 12.4 per cent respectively. Sixty-one were females, 44 were males. As regards age, none was under five years, 7 (6.6 per cent) were between 5 and 10 years, 16 (15.2) between 10 and 15 years, 14 (13.3) between 15 and 20 years, 33 (31.4) between 20 and 30 years, and in succeeding decades 13 (12.4), 9 (8.6), 8 (7.6) and over 60 years 5 (4.8). He estimates that there are "2,000 to 4,000 lepers in Cuba" (a wide margin). It is far from uncommon to find more than one affected in a family, and the disease would seem to cause little fear since lepers were found in such occupations as hairdressers, cooks, a restaurant chef, butler, servant-maids, dressmakers, laundresses, tobacconist, tramway conductor, students, etc.—[Abstract from *Trop. Dis. Bull.* **9** (1942) 4.]

DHARMENDRA. Complement-fixation by leprous sera after absorption by various acid-fast bacilli. Indian Jour. Med. Res. **29** (1941) 523-525.

This note deals with the complement-fixing power of leprous sera before and after absorption with different acid-fast bacilli. Absorption of the sera was carried out by mixing them with thick bacillary suspensions, allowing the mixture to stand over night, and then filtering through a candle. The bacilli of Lleras, Duval, Bayon, *Myco. phlei* and one from a leprous nodule were used. An unabsorbed portion of the serum and portions absorbed by each of the five bacilli were tested for their complement-fixing power in the presence of all six antigens (four from leprous material, one from *Myco. tuberculosis;* one from *Myco. phlei*) in dilutions of from 1-5 up to 1-200, sera from twelve lepromatous cases being used. In dilutions of 1-25 and upwards the complement-fixing power of the absorbed sera was less than that of the unabsorbed, all the bacillary emulsions acting in a similar manner. Control staphylococcus cultures gave variable results. The author concludes that the experiments afford no proof of the specificity of any of the bacilli and that such complement-fixation tests are unlikely to furnish any evidence for or against the genuineness of such acid-fast cultures.—[Abstract from *Trop. Dis. Bull.* **39** (1942) 4.]

DE SOUZA CAMPOS, N., and RIBEIRO, E. B. Nevrite e caseose de nervo na lepra tuberculoide. (Neuritis and caseation of nerves in tuberculoid leprosy.) Ann. Paulist. Med. e Cirurg. **6** (1941) 527-529.

A child of five years of age was apparently healthy till the age of four years. She then developed a small reddish nodule, the size of a pin's

head with a pale surround in the right temporal region. This disappeared with treatment, leaving a scar. A few months later a thickening of the ulnar nerve of the right arm was noticed, but caused no pain. Mitsuda reaction was +++, but no bacilli were found and there was wasting of the muscles of the hand. Some 18 months or so after this, operation was undertaken and creamy pus was found coming from the nerve.

The author states that caseation, which is the last stage in the tuberculoid process, starts always in the centre of the nerve, extends axially, destroying the central fibres, forming necrotic foci at short intervals, then passing, hernia-like, through the epineurium, forming small swellings along these nerves of small calibre, and pedunculated swellings in the trunks of the larger nerves. According to their intensity they remain deep or open to the exterior. In the latter case, cicatrization occurs with adhesion of the skin to the nerve below and the formation of a characteristic retractile scar.—[Abstract from *Trop. Dis. Bull.* **39** (1942) 4.]

VENKATASUBRAMANIAM, C. S. Investigations on the biochemistry of leprosy (Part 1). Leprosy in India. **13** (1941) 104-108.

In this note the author records observations to show that in leprosy cases both calcium and phosphorus in the blood are within normal limits, but phosphatase shows a definite but slight increase, which is attributed to the bone changes. This is confirmed by a note by the editor pointing out that the phosphatase increase shows a higher average in the nerve than in the lepromatous type of case. A slight reduction in the total protein may be due to malnutrition.—[Abstract from *Trop. Dis. Bull.* **39** (1942) 4]

ARNOLD, H. L., Jr. Differential diagnosis in leprosy. Arch. Dermat. & Syph. **44** (1941) 911-912.

Negative results to examinations of nasal smears or to tests of sensitivity to light touch or pinprick are not enough to exclude leprosy. The principal diagnostic criteria are: Almost any form of skin lesion—or none at all; thermal anaesthesia, even in apparently normal skin; muscular weakness or paralysis, most easily noted in the facial muscles; irregularly thickened nerve trunks; acid-fast bacilli in smears from skin or scraped nasal septum; histological changes. Of these criteria the most important is thermal anaesthesia, which is almost invariably present in leprosy—this is by no means true of anaesthesia to light touch or to pinprick. Thermal anaesthesia can easily be tested by hot and cold test tubes. In leprosy, as in other diseases, bacterioscopic examinations are valuable when positive but inconclusive when negative.—[Abstract from *Trop. Dis. Bull.* **39** (1942) 4].

SCHUJMAN, S. Sarcoides dermicos, hipodermicos e intramusculares de origen leproso. (Sarcoid lesions of leprous origin.) Rev. Argentina de Dermatosifilologia. **25** (1941) 447-460. 10 figs. English summary.

"A case of leprosy is described in which cutaneous, subcutaneous and intramuscular sarcoid lesions were found. Its leprous aetiology was established by the anaesthetic changes of the skin and nasal mucosal lesions; by the histopathological examination which showed characteristic leprous neuritis and by the improvement observed with chaulmoogra treatment.

"The typical changes of the lymph nodes, lungs and bones described in Schaumann-Besnier-Boeck disease were not observed in this case.

"The author maintains that this case shows that cutaneous and subcutaneous sarcoids can coexist; therefore their separation is not always justified. Also that cutaneous sarcoids may exist without the lesions in bone, lymph nodes and lungs described in the Besnier-Boeck-Schaumann disease."—[Abstract from *Trop. Dis. Bull.* **39** (1942) 4.]

COWDRY, E. V., and RUANGSIRI, C. Influence of promin, starch and heptaldehyde on experimental leprosy in rats. Arch. Pathology. **32** (1941) 632-640. 1 chart. (15 refs.)

The authors report on chemotherapeutic experiments in rat leprosy. Promin has been reported in the case of tuberculous guinea pigs to lengthen life and reduce the lesions. Trials carried out in rat leprosy, with careful measurement of the lesions, showed that from about 60 to 140 days' treatment caused material diminution in the size of the leprous nodules, together with a united survival time increase of 1,258 to 1,583 days, but no material difference in the microscopical characters of the lesions. The injection of starch was followed by temporary healing in some nodules in controls as well. Injections of heptaldehyde into nodules had no beneficial effect.—[Abstract from *Trop. Dis. Bull.* **39** (1942) 4.]

DAVIDSON, A. R., and GRASSET, E. Diphtheria toxoid in the treatment of leprosy, clinical and immunological investigations. Leprosy Review. **12** (1941) 68-79.

This is a careful record of a trial of diphtheria formol toxoid in South Africa by experienced workers. One hundred cases were treated with doses of 0.5 cc. increased to 10 cc. over a period of seven months, in accordance with the suggestions of COLLIER of Thailand, and the results were assessed nine months from the beginning. The diphtheria formol toxoid used was prepared in the South African Institute for Medical Research. In 16 of the patients the Schick test was carried out before immunization and their blood antitoxin titrated before and after treatment, with satisfactory immunization response in a majority, as shown in a table. No relation could be found between the antitoxin titre after the toxoid treatment and the clinical changes in the treated patients. In one group diphtheria toxoid alone was used and in three other groups this was supplemented respectively by an emulsion of the whole diphtheria bacillus, tubercle bacillus endotoxoid or a killed emulsion of a culture of a tubercle bacillus which had lost its acid-fast properties.

Tables are given of the results in all four series of cases. In Group I of 48 cases treated with diphtheria toxoid alone, four only showed marked improvement; all were neural cases which would have responded equally well to intradermal hydnocarpus ethyl esters. In Group II of 11 cases treated with toxoid and *C. diphtheria* emulsion the disease was not favorably influenced. Nor were satisfactory results obtained in smaller series of the other two groups. The treatment was voluntary, and only 71 of the 100 were willing to complete the full course, although leprosy patients will persevere with any treatment when they can observe any improvement. No improvement occurred in either body weight or the sedimentation test.

Only five cases became negative bacteriologically, but six previously negative cases became positive while under the treatment. The results are summarized in the statement that out of 72 (?71) who completed the course of diphtheria toxoid treatment, 12 became worse, 34 showed no appreciable clinical change, 21 showed slight improvement and 5 only a marked improvement, or 6.94 per cent compared with 50 per cent or more claimed by Collier in Thailand.

The authors' remark that Collier's theory that suprarenal inefficiency was a necessary predisposing cause of leprosy seemed strange to them in view of the fact that not one case of such gross deficiency could be traced among the nearly 5,000 leprosy cases that had passed through their hands. They therefore recorded the blood pressures in 100 unselected cases and found them to be entirely within the normal limits. Further, in eight successive post-mortems in non-treated cases, no anatomical degeneration of the suprarenals could be discovered. They are unable to give any explanation for the very limited therapeutic results as compared with those claimed by Collier.—[Abstract from *Trop. Dis. Bull.* **39** (1942) 4.]

WENGER, F. Leprosy with widespread tumor-like tuberculosis. Arch. Pathology. **32** (1941) 112-16. 1 fig.

This is a brief illustrated account of an unusual case of lepromatous disease in an Indian aged 44, who died after suffering from cough and aphonia. At an autopsy typical dermal and the respiratory tract leprosy was found together with very large tuberculous lesions in the liver and spleen, but the variety of tubercle bacillus was not ascertained. The author advises the use of Sudan III for staining the leprosy bacilli.—[Abstract from *Trop. Dis. Bull.* **39** (1942) 4.]

LOWE, J., and DHARMENDRA. Studies of the lepromin test. (1) A review of the literature and a discussion of the lines of future work. Leprosy in India. **12** (1940) 121-137. (55 refs.)

This is a useful review of the literature of the Mitsuda or lepromin test with numerous references which will be useful to other workers. They suggest further work to standardize the substances used, and to study the nature of the resulting reactions and the significance of positive and negative reactions.—[Abstract from *Trop. Dis. Bull.* **38** (1941) 8.]

DHARMENDRA and JAIKARIA, S. S. Studies of the lepromin test. (2) Results of the test in healthy persons in endemic and non-endemic areas. Leprosy in India. **13** (1941) 40-47. With 2 graphs.

The authors report on the reactions to the lepromin test in healthy subjects in endemic and non-endemic areas respectively. The endemic area was a highly infected part of West Bengal with an incidence of over 4 per cent. The non-endemic area was in the Punjab where a survey had not revealed a single case of leprosy. The readings were made weekly for six weeks. Tests in 296 healthy persons in the endemic area gave positive reactions in 59 per cent with increasing incidence at higher ages until 100 per cent was reached. In the Punjab non-endemic area only 36 per cent of positive reactions were met with; a rise was noted up to 30 years of age, followed by a decrease. In the Bengal endemic area 22 per cent of the positive reactions were followed by ulceration, but not in any of the

Estudios sobre el Lepromin Test

3. Preparación y standardización de la Lepromina

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Leprosy in India. Vol. XIII, 1941,
pág. 77

INTRODUCCION

En el artículo primero de esta serie (2) se describieron suscintamente los métodos empleados por diterentes investigadores para la preparación de lepromina. Todos los métodos, en esencia, consisten en moler nódulos lepromatosos hervidos, suspendiendo el material molido en solución salina fenolada al 0,5 % y eliminando las partículas grandes de tejido, etc. por filtración o sedimentación. El flúido resultante es la lepromina, la cual es empleada después de ser esterilizada en autoclaves. La única precaución que se toma para asegurar alguna uniformidad consiste en mantener una proporción constante entre el peso del material lepromatoso y la solución salina empleada para suspenderlo.

Muir (4) ensayó una standardización "grosera", haciendo la comparación de la concentración bacilar en material recién preparado y material que ya había dado resultados satisfactorios en el "test". Para este propósito preparó "frotis" con un ansa standard de ambas preparaciones y los difundió sobre áreas iguales en porta-objetos. Ambos "frotis" fueron colorados por el método de Ziehl-Neelsen, comparando la concentración bacilar. Muir declara: "No se trata de contar los bacilos, pero es posible decir si su número es aproximadamente igual".

En nuestra publicación anterior, señalamos que, "la mayoría de los

investigadores ha encontrado que el grado de reacción, no es marcadamente afectado por las variaciones moderadas en el número de bacilos inyectados, pero es necesaria una standardización". En la misma publicación sugerimos que para poder dilucidar la naturaleza de la reacción parece necesario "que los estudios del lepromin-test realizado con lepromina standardizada y los resultados leídos por métodos uniformes, sean efectuados en distintos países y en razas diferentes".

PREPARACION DE LA LEPROMINA

La lepromina preparada por métodos comunes no es adecuada para los métodos de standardización por medio del recuento bacterial, por cuanto, el material contiene mucho tejido, y los bacilos se presentan, en su mayoría, en grandes "globi". Procuramos eliminar estas dos dificultades al máximo mediante dos métodos diferentes: a) digestión con papaina, del nódulo leproso o de la lepromina, y b) centrifugación fraccional de la lepromina. Se adoptó finalmente el método de centrifugación fraccional.

Se extrae asépticamente el exceso de tejido de los lóbulos infiltrados de la oreja en enfermos que padecen el tipo lepromatoso de la enfermedad. Se obtuvo una cantidad de cortes de lóbulos de oreja y se pusieron en autoclave. Se extrae la epidermis, y los trozos de tejido se cortan en pequeños fragmentos. Estos se muelen en un mortero de vidrio, añadiendo gradualmente pequeñas porciones de solución salina fenolada. Una vez molido perfectamente el material, se agrega más solución y la mezcla se agita continuamente. El material sólido restante se deja depositar pipeteando el líquido sobrenadante. Esta operación de molido, sedimentación y extracción del líquido sobrenadante puede repetirse tres o cuatro veces. El residuo final del mortero se tira. Todos los lotes de flúido sobrenadante se reunen centrifugando a escasa velocidad (cerca de 3.000 r. p. m.). El flúido sobrenadante se pipetea y el proceso se repite con el residuo. Se rechaza el residuo final. El flúido obtenido por este proceso se centrifuga a gran velocidad (cerca de 6.000 r. p. m.) durante media hora o más. El líquido sobrenadante se pipetea y el depósito vuelve a molerse centrifugando luego a alta velocidad. Este proceso puede repetirse dos o tres veces. Todas las porciones de flúido sobrenadante así obtenido se combinan.

Un frotis hecho de esta preparación y teñido por Ziehl-Neelsen, debe mostrar en general bacilos libres (suele haber pequeños "globi") y debe contener solamente pequeña cantidad de partículas muy finas. Si el frotis muestra la presencia de grandes "globi" o más trazas de tejido, el líquido sobrenadante combinado se centrifuga a alta velocidad.

STANDARDIZACION

Originariamente quisimos standardizar el producto arriba descripto eliminando todos o casi todos los bacilos por centrifugación prolongada y luego preparando la lepromina standardizada mediante pesadas del depósito bacilar desecado. Sin embargo, se halló que con la centrífuga de que disponíamos (velocidad máxima 6.000 r. p. m.) no era posible conseguir ésto, pues debido a ciertas razones físicas, la mayor parte de los bacilos libres permanecen en suspensión, aun a esa velocidad. Por lo tanto, se decidió emplear el líquido sobrenadante, después de centrifugación a alta velocidad, como producto final, y standardizarlo haciendo el recuento bacterial.

Se hace un recuento directo bajo microscopio distribuyendo una cantidad conocida de lepromina sobre un área también conocida del porta, colorando el frotis mediante el método de Ziehl-Neelsen, y contando el número de bacilos en una cantidad de campos. El área del, campo microscópico con cierta combinación del ocular, objetivo y longitud del tubo puede ser determinada con la ayuda de un portaobjetos con micrómetro. Conociendo el área del campo microscópico y el promedio de bacilos por campo, se puede calcular fácilmente el número de bacilos por cc. de preparación. No ignoramos las limitaciones de ese método de recuento bacterial, pero es el único aplicable en el caso.

También se aplicó el método de Breed para el recuento de bacterias en la leche con las modificaciones consiguientes. Al efectuar el recuento de 0.01 cc. de lepromina depositada en el portaobjetos por medio de una pipeta especial (pipeta capilar de Breed y Brew) y diseminada sobre una superficie de 1 cm^2 con la ayuda de una aguja rígida limpia. La superficie requerida se marca en el porta mediante un lápiz de diamante, o el porta se coloca sobre un cartón en el que se ha cortado un cuadrado del tamaño deseado. La película se seca en una estufa y no directamente sobre la llama, pues un exceso de temperatura puede quebrarla. El film desecado se colora por el método de Ziehl-Neelsen y se examina. Se ajusta el campo visual a 0.205 mm de diámetro con la ayuda del micrómetro del portaobjetos. Esto puede hacerse empleando lentes de inmersión en aceite, y un ocular x6 y ajustando la longitud del tubo hasta obtener un campo con el diámetro deseado. (Con el microscopio de Zeiss empleado por nosotros, este campo se obtuvo con una combinación de objetivo de inmersión ocular, x6 y una longitud de tubo de 170). Se cuentan bacilos en 100 de esos campos. El número de bacilos por cc. se calcula bajo la fórmula siguiente:

$$\frac{\textit{Número de bacterias}}{\text{Número de campos contados.}} \times 300.000 = \text{Número de bacterias por cc.}$$

Después de calcular el número de bacilos por cc. se diluye la lepromina hasta una concentración de 15 millones de bacilos por cc., pues se ha encontrado por experiencias, que 0.1 cc. de lepromina de esta concentración da resultados muy satisfactorios en enfermos de lepra (*). Se puede obtener aproximadamente 300 cc. de lepromina standardizada; se coloca en ampollas o frascos para vacuna, dejándola en autoclave durante media hora.

El producto final se somete a una "grosera" standardización biológica: Se inyecta intradérmicamente 0.1 cc. de esta lepromina en una cantidad determinada de casos de ambos tipos. En los casos lepromatosos la inyección no debe producir reacción, o por lo menos, tan leve que no se tenga en cuenta; pero en casos tuberculoides bacteriológicamente negativos, debe producir un nódulo definido, por lo menos de 5 mm. La actividad de la preparación bajo ensayo, puede ser controlada en un grupo de pacientes, (si se dispone de él), del que se sabe que ha dado resultados satisfactorios anteriormente. La dosis de la preparación bajo ensayo puede ser aumentada o dismiduída levemente, si fuera necesario.

Desde que se efectuó este trabajo fué posible por un método completamente diferente, obtener bacilos libres de tejidos. El principio activo responsable de la reacción cutánea ha sido aislado de esos bacilos, y ahora, proponemos el empleo de este principio activo para preparar un antígeno standardizado para realizar "tests" cutáneos en la lepra. En el artículo Nº 5 de esta serie se presenta un informe preliminar sobre esta preparación.

(*) Mendes y De Castro Cerqueira (3) standardizan su lepromina para un contenide de 300.000 por cc. Emplean el "método de recuento comparativo" cuyos detalles no poseemos.

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3. — MENDES, E. and De CASTRO CERQUEIRA, G. "Experimental studies on lepromin". Revista Brasileira de Leprología, Vol. *VII*, 1939, p. 245.
4. — MUIR, E. 1933. "Lepromin test" Leprosy in India, Vol. *5*, 1933.

endemic area people. Tuberculin tests by the Mantoux method were also carried out; these showed increased positive reactions with increasing age, and except up to five years of age they were more frequently positive than the lepromin reactions. The authors therefore consider the lepromin test to be one of non-specific allergy and the findings are not incompatible with the theory that increased positive reactions with increasing age are dependent on the resistance of the tissues, although they do not prove it to be so. Exposure to infection, as well as increasing age, are factors in increasing the number of positive reactions.—[Abstract from *Trop. Dis. Bull.* **39** (1942) 4.]

DHARMENDRA. Studies of the lepromin test. (3) Preparation and standardization of lepromin. Leprosy in India. **13** (1941) 77-80.

The author describes a method of separating leprosy bacilli from tissues and nodules and of standardizing the bacillary content. Nodules from the ear lobes were autoclaved, ground in a pestle and mortar with carbol saline and the supernatant fluid after settlement repeatedly centrifuged to remove tissue cells. The bacilli in the collected supernatant fluid were counted and the fluid was diluted to leave 15 million bacilli per cc. The injection of 0.1 cc. of the resulting lepromin gave good results.—[Abstract from *Trop. Dis. Bull.* **39** (1942) 4.]

LOWE, J., and DHARMENDRA. Studies of the lepromin test. (4) The early reaction to lepromin, its nature and its relation to the classical Mitsuda reaction. Leprosy in India. **13** (1941) 81-88. (11 refs.)

The authors have studied the relations of early and late reactions to lepromin prepared as described above. They concur in the earlier finding of FERNANDEZ that cases giving the typical late reaction after three to four weeks also gave an early reaction of a less marked nature. Thus among 300 tests 85 per cent gave both early and late reactions and in only 6.7 per cent did the early and late reactions differ. The early reaction is characterized by erythema half an inch or more in diameter, accompanied by an appreciable degree of edema and thickening of the skin of the whole area. They proceeded to carry out tests with their lepromin after breaking down the bacillary content by grinding, and found the early local reaction to be accelerated from 84 to 24 hours and to be increased in extent, and the degrees of the late lepromin reaction to be considerably diminished. They therefore disagree with Fernandez's suggestion that lepromin contains two antigens, responsible respectively for the early and late reactions; they regard the late reaction as being due to the gradual breaking up of the lepra bacilli at the seat of injection, and the early one to the same antigen set free from the bacilli by grinding, and to be of an allergic nature. Positive results have also been obtained in healthy non-contacts. —[Abstract from *Trop. Dis. Bull.* **39** (1942) 4.]

DHARMENDRA. Studies of the lepromin test. (5) The active principle of lepromin is a protein antigen of the bacillus. Leprosy in India. **13** (1941) 89-103. (13 refs.)

This paper records promising results regarding the fractionation of lepromin in order to obtain the antigen in a soluble form. The conclusion reached, that the antigen of lepromin is contained solely in the lepra bacilli,

and not in the tissues of a nodule, and that it can be obtained in a soluble form by breaking up the separated lepra bacilli to produce an early local reaction on injection, led to attempts to fractionate the dried bacillary powder separated from leprous nodules. These observations led to the conclusions; (1) that no isolated fraction gives a late reaction, (2) that only the protein content, and not the lipoid fractions, gives rise to a definite early reaction. A comparison between the late reactions with ordinary lepromin, and early ones with the ground-up material, gave agreement in 88.8 per cent of 90 cases. The early reaction with a pure antigen is easy to perform and to read and is as sensitive as the former test without the disadvantage of a long wait and undesirable late reactions.—[Abstract from *Trop. Dis. Bull.* **39** (1942) 4.]

SOETOPO, M. Een atypisch beloop der lepra-reactie. (Atypical leprous reactions.) — Geneesk. Tijdschr. V. Nederl.-Indië. 8 (1940) 2801-2808. 1 chart and 2 figs. on 1 plate. English summary.

The patient was an Indo-European, 28 years of age, who developed unusual types of leprous reaction. His disease had started some 13 years earlier. He showed from time to time a leprous reaction which varied. Thus, in June 1938, it showed itself as engorgement of the nodules present. In September, it was evidenced by a generalized rash, painful and resembling erythema nodosum, each spot being topped by a vesicle. In the following July, he had another attack; this time bullae becoming pustular, like impetigo contagiosa and bullosa, and abscess formation occurred. In the leucocytes and lepra cells acid-fast bacilli were present, but attempts at cultivation proved negative. The author states that this case confirms the belief of STEIN and KYRLE that the *Myco. leprae* can, in certain circumstances, cause suppuration. (The first and third of these are mentioned by ROGERS and MUIR in their book on leprosy; the second must be more rare.)—[Abstract from *Trop. Dis. Bull.* **38** (1941) 8.]

DAVISON, A. R. Leprosy treatment with Grasset's tubercle endotoxoid. Interim Report. Leprosy Review. **12** (1941) 18-24.

On the supposition that there may be a group antigen for the organisms of leprosy and tuberculosis, the author tried the effect of Grasset's tubercles endotoxoid (see *Bulletin of Hygiene*, 1939. Vol. **14**, 861) in 11 cases of leprosy. He concludes that the improvement obtained in all the neural cases of tuberculoid type indicated some beneficial result from the treatment.—[Abstract from *Trop. Dis. Bull.* **38** (1941) 8.]

WADE, H. W. Relapsed and borderline cases of tuberculoid leprosy. Leprosy Review. **12** (1941) 3-17. 10 figs. (24 refs.)

This illustrated paper discusses relapses and transformations in the tuberculoid form of leprosy. Of 12 bacteriologically positive cases followed up in the Philippines seven relapsed, and brief details of these are recorded. Similar occurrences have been reported from Calcutta and elsewhere. It is, however, rare for this type to be transformed into the lepromatous form and this did not occur in any of the Philippine cases cited, although in two of them activity persisted for three years. The more numerous lepra bacilli during a relapse may cause the lepromatous stage to be suspected. The author concludes that the transformation of a tuber-

culoid case is not readily accomplished and caution must be exercised in diagnosing it.—[Abstract from *Trop. Dis. Bull.* **38** (1941) 8.]

MANALANG, J. Influence of climatic changes on "interruptions" and "relapses" in leprosy. Jour. Philippine Med. Assoc. **21** (1941) 121-126. 1 fig.

The author has studied the seasonal incidence of leprosy in the Philippines, in relation to climatic conditions, on very similar lines to the work of LOWE and CHATTERJI in Calcutta (*Trop. Dis. Bull.* 1939. Vol. 36. 1015). He classes the changes in his cases as "interruptions" when lepra bacilli reappear in the tissues and "relapses" when clinical signs also recur. "Interruptions" were slightly more numerous in the cool period, as were "relapses" to a still less degree, but he thinks the seasonal differences too slight to be other than accidental in nature, for the temperature variations ranged over only 5° centigrade against 13° in Calcutta.—[Abstract from *Trop. Dis. Bull.* **38** (1941) 12.]

OTA, M., and NITTO, S. Ueber Mitsudasche Reaktion, angestellt mit einem Antigen aus Leprösem Gewebe von mit menschlicher Lepra infizierten Hühnern. (The Mitsuda reaction with infected fowl tissue as antigen.) Japanese Jour. Exper. Med. **18** (1940) 345-351. 4 figs. on 1 plate.

The authors record results with the Mitsuda reaction, using as antigens the tissues of hens infected by the method described in a foregoing abstract (*Trop. Dis. Bull.* **38** (1941) 8). In Table I they record the results of using ordinary leprous nodule emulsion (L. A.) in comparison with extracts of the diseased muscle containing numerous acid-fast bacilli (AI) and of the liver with few or no such bacilli (AII) obtained from one of their second passage infected hens. Another set of antigens was prepared from a fifth passage hen, with the addition of one from the spleen tissue. The tests were carried out in various types of leprosy, and in controls, with results almost equal to those of the original Mitsuda reactions. The tests with the fifth passage animal tissues were the stronger of the two series, including that prepared from the hen's spleen.—[Abstract from *Trop. Dis. Bull.* **38** (1941) 8.]

ITAKURA, T. The histo-pathological studies on the teeth of the lepers, especially on its pulp-tissue. Acta Japonica Med. Trop. Formosa. **2** (1940) 105-166. 14 figs. (2 coloured). (24 refs.)

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——— The histo-pathological studies on teeth of the lepers, especially in its gingiva and other supporting tissues. Japanese Jour. Med. Sci. Pt. V. Pathology. **5** (1940) 201-220. 11 figs.

[Abstract from *Trop. Dis. Bull.* **38** (1941) 12.]

These papers record the results of three years of study of the histology and pathology of the teeth in leprosy. In the case of the gums no macro-

scopical lesions were noted, but microscopically typical leprous lesions were observed in the mucous membrane in 66.67 per cent of lepromatous and in 12.26 per cent of nerve cases, and in 38.89 of the whole *Myco. leprae* were found, most frequently in the lepromatous type. In the dental pulp typical leprous affections were found in 32.58 per cent, including teeth presenting no abnormal naked eye appearances. The lesions were most frequent in lepromatous cases and in the frontal group of teeth, especially the central incisors. Colored teeth were not especially frequently involved. The pericementum was diseased in as many as 50 per cent, most often in lepromatous cases. The dental alveoli, especially the medulla, were involved in 50.85 per cent including 61.36 per cent of lepromatous, but only 2 per cent of the neural type. It was mostly slight or medium in extent with no special incidence.—[Abstract from *Trop. Dis. Bull.* **38** (1941) 4.]

FONTE, J. A. A lepra no Hawaii. Quinza anos de atividade do centro de leprologia de Honolulu (Hawaii) — (1925-1939). (Leprosy in Hawaii. Fifteen years' work of the Honolulu Center.) Acta. Med. Rio de Janeiro. **7** (1941) 236-244. English summary (8 lines).

After discussion by the Health Authorities of Hawaii there was inaugurated in November 1865 the Kalihi Hospital and a Detention Station for lepers in the suburb of Honolulu. In 1905 a leprosy Investigation Station was opened and two years later a crêche was founded in Molokai; in 1908 a Kahili Boys' Home was established for children of lepers and in 1909 the leprosarium of Kalawau.

This paper gives brief notes of statistical returns and clinical forms of cases seen in the fifteen years 1925-1939; the former for 1925 and 1927, which have little, if any, interest now, the latter for the earlier years of the fourth decade of the century. Most of the figures refer to conditions of ten years or more ago and are not worth quoting here. Future papers will deal with laboratory, epidemiological, and bacteriological studies, the treatment of the disease and with murine leprosy.—[Abstract from *Trop. Dis. Bull.* **38** (1941) 12.]

SARDJITO. Bacterioscopische lepra diagnose met daarmede samenhangende beschouwingen. (Bacterioscopic diagnosis of leprosy.) Geneesk. Tijdschr. v. Nederl-Indië. **81** (1941) 739-746.

[Abstract from *Trop. Dis. Bull.* **38** (1941) 12].

EAGLE, H., HOGAN, R. B., MOHR, C. F., and BLACK, S. H. On the reactivity of the serum and spinal fluid of leprous patients with spirochetal suspensions. American Jour. Syph. **25** (1941) 397-405.

The authors confirm and extend the observation of CAPELLI that leprous cases give negative complement-fixation tests for syphilis with a suspension of cultured spirochaetes (*Spirochaeta pallida*, Reiter strain) as an antigen instead of a mammalian tissue extract. The frequent positive Wassermann tests in non-syphilitic leprosy patients can thus be differentiated from true syphilitic reactions in which there is response to both antigens. Thus, of 37 lepers giving positive flocculation tests, 25 of whom were also positive to the Wassermann test, all but six were negative to complement-fixation tests. Moreover, the serological reactivity of Wasser-

mann-positive syphilitic and leprous sera differed in that the latter tended to give a disproportionately high titre in a Wassermann as compared with a flocculation test. This was found to be the case in three of six positive spirochaetal reactions in leprosy patients, so only the remaining three were probably syphilitic. The spinal fluids, obtained from nine leprous patients were completely negative to all the tests used.—[Abstract from *Trop. Dis. Bull.* 38 1941) 12].

MOISER, B. Report on trial treatment of leprosy with diphtheria Anatoxine Ramon.—Leprosy Review. **12** (1941) 54-56.

This experienced worker reports on 19 cases of leprosy treated with diphtheria anatoxin in Southern Rhodesia. He began with 1 cc. weekly, and increased by 1 cc. to a maximum of 4 cc. weekly, each increase being made on the average at the end of six weeks. All the patients complained of "pains all over the body" and particularly in the knees and ankles. The experiment was finally stopped at the request of the patients and because the majority did not show any improvement. An analysis of the 19 cases shows that six were worse, and 11 showed no improvement or no change. Of the remaining two one showed ulceration and disappearance of a few of the nodules, but the general mass of the lesions remained unaffected and there was no improvement in the neural signs, so that any improvement was slight. The remaining case showed only a few small lepromata, which disappeared, so definite improvement took place, but the author observes that she was the type of case that improves rapidly under moogrol. (The reviewer has received unpublished reports from Dr. E. Muir and others in which the results were uniformly unsatisfactory and completely failed to confirm the claims of the Thailand (Siam) workers, whose last report only claims 50 per cent of recoveries in early cases, or much fewer than Moiser and others have recorded from the use of chaulmoogra preparations in that class of case.)—[Abstract from *Trop. Dis. Bull.* 38 (1941) 12].

LOVING, W. L. Experimental infection of the rabbit with Duval's chromogenic *B. leprae* culture. Proc. Soc. Exper. Biol. and Med. **46** (1941) 293-295.

———. The experimental infection of rabbits with Duval's chromogenic acid-fast bacillus from human leprosy. Jour. Infect. Dis. **68** (1941) 193-206. 8 figs. (10 refs.)

These two papers deal with the same work, the second one in greater detail and with histological illustrations. The author reports the successful infection of rabbits by 2 cc. doses of a heavy suspension of cultures of Duval's chromogenic bacillus of human leprosy, but negative ones with two other acid-fast bacilli *Myco. phlei* and *Myco. smegmatis*. The injections were made subcutaneously, intraperitoneally or intravenously, and repeated twice at weekly intervals. The animals were killed and examined at varying intervals and it was found that cultures were increasingly difficult to obtain in direct proportion to the length of the sojourn of the organism in the animal's tissue. While the gross lesions in the rabbits were not typical of human lesions, the tissue microscopical changes were identical, with lymphoid, epithelioid and lepra or foamy cells. The infection was progressive

over six to eight months, during which the micro-organisms steadily increased in numbers.—[Abstract from *Trop. Dis. Bull.* **38** (1941) 12].

DHARMENDRA and BOSE, R. Complement-fixation in leprosy with antigens prepared from various acid-fast bacilli. Indian Jour. Med. Res. **29** (1941) 7-21.

"1. The work was undertaken to find out whether complement-fixation tests done with sera from cases of leprosy and with antigen prepared by modern methods from the so-called cultures of leprosy would give any evidence regarding the relation of these isolated organisms to the disease.

"2. Complement-fixation tests have been performed in 112 cases of leprosy and 58 cases of other diseases in presence of antigens prepared from six different acid-fast bacilli including the so-called leprosy bacilli of Duval, Bayon, Kedrowsky and Lleras. All the antigens were prepared by the method by Witebsky, Klingenstein and Kuhn.

"3. Sera diluted 1 in 5 fixed complement in presence of all the six antigens, in 84 per cent of the 19 cases of the 'lepromatous' type, 61.5 per cent of the 13 bacteriologically positive cases of the 'neural' type and 22.5 per cent of the 80 bacteriologically negative cases of the 'neural' type and all the eight cases of leishmania infection.

"4. In 1 in 5 solution 21 per cent of the 14 Wassermann positive sera and 30 per cent of the 20 sera from cases of leucoderma fixed complement in presence of one or more but not all the antigens.

"5. With sera diluted 1 in 25, complement-fixation is practically limited to cases of leprosy and kala-azar. In this dilution, however, the number of reacting sera of the 'neural' type of leprosy is reduced markedly.

"6. All the six antigens appear to behave in a similar way but the antigen prepared from the Lleras' bacillus appears to be slightly more sensitive. A slightly higher number of sera fix complement in its presence and dilution does not reduce complement-fixation with this antigen to the same extent as with the other antigens.

"7. This greater sensitivity of the antigen prepared from Lleras' bacillus does not appear to be caused by any specificity as it is seen both in leprosy and non-leprosy cases.

"8. It is concluded that complement-fixation tests have not given and are unlikely to give, any evidence regarding the genuineness of cultures of organisms isolated from leprous lesions."—[Abstract from *Trop. Dis. Bull.* **38** (1941) 12].

ROGERS, L. The problem of children born in leprosy colonies and villages. Leprosy Review. **12** (1941) 50-53.

The author points out that among backward races of Africa and Korea male leprosy patients will refuse to enter colonies unless accompanied by their wives. This results in children being born to them, who are gravely exposed to infection from their parents, thus maintaining the incidence of the disease. He draws attention to the successful solution of this problem in the Korea settlement under Dr. R. M. Wilson through voluntary sterilization of the male partner and suggests its more general adoption under such circumstances.—(See *Trop. Dis. Bull.*, 1935. Vol. 32. 858, and 1937, Vol. 34, 602.) [Abstract from *Trop. Dis. Bull.* **38** (1941) 12.]

OLMOS CASTRO, N., and SHEREIR, J. Profilaxis de la lepra en Tucumán. Exámen de convivientes. (Leprosy prophylaxis in Tucumán. Contact examination). 12 page pamphlet. Iberia printing works. Tucumán. 1942.

The author describes the work of an antileprosy out-patient dispensary, with emphasis on methods of handling contacts.—G. BASOMBRIO

DUMONT, A. Formas clinicas de la reacción leprosa. (Clinical aspects of leprosy reaction.) Iatría, Revista del Consorcio de Médicos Católicos. Buenos Aires. **11** (1941) 12-16.

After describing one case of leprosy reaction, the author discusses the following clinical forms; typhic, erysipeloid, bacillar or "endocarditis lenta" type. He emphasizes the importance of leprosy reaction to physicians.—G. BASOMBRIO

BARLETA, J. L. Tratamiento de la histamina intradérmica en un caso de irítis y conjunctivitis leprosa. (Treatment with histamine by intradermal injection in one case of leprous iritis and conjunctivitis.) Iatría. Revista del Consorcio de Médicos Católicos. Buenos Aires. **11** (1941) 17-19.

Intradermal injection of histamine in the temple of the side of the affected eye was used in one case.—G. BASOMBRIO

FONSO GANDOLFO, C., STEINBERG, I. R., and CHARCOSKY, L. Lepra a iniciación aguda. (Leprosy with acute onset.) La Semana Médica. **49**, No. 16, 741-746.

Two cases of leprosy which began with acute reaction are reported. One seems to have been cutaneous, the other tuberculoid.—G. BASOMBRIO

C. A. B. Un proyecto de ley. (A project of law.) Iatría. Revista del Consorcio de Médicos Católicos. Buenes Aires. **11** (1941) 39-43.

The writer praises the proposal of Deputy Senor Lillia, who urges that the same salary earned by the patient before the disease began should continue to be paid to him for the maintenance of his family.—G. BASOMBRIO

OLMOS CASTRO, N., and CAMAL FEIJOO, E. Algunas consideraciones sobre profilaxis antileprosa en Santiago del Estero. (Comments on antileprous prophylaxis in Santiago del Estero.) 19-page pamphlet. Amoroso printing works. Santiago del Estero. Oct. 1941.

The author reports the usual clinical forms; lepromatous, tuberculoid and uncharacteristic. He indicates the precautionary measures to be taken and holds that in spite of the small number of cases in Santiago del Estero an institution for the contagious forms must be created.—G. BASOMBRIO

DE SOUZA-ARAUJO, H. C. Lepra e Tuberculose. Isolamento, de escarro de leprosos, de varias amostras de *Mycobacterium tuberculosis*. (Leprosy and tuberculosis. Isolation from sputa of leprosy patients, various samples of Mycobacterium tuberculosis.) Preliminary note. Memorias Inst. Oswaldo Cruz. **36** (1941) 225-236. 2 plates.

The Author started a series of experiments with sputa of leprosy patients suspected of tuberculosis, on February 11, 1941. Until the date of sending his paper to print he worked with 41 samples of leprous sputa. This preliminary note considers only 29 sputa from leprosy patients of Rio de Janeiro city. The other 12 are from patients of the State of Espirito Santo and the results will be published later.

Sputum was treated by the method of Petroff and inoculated into guinea pigs and in Loewenstein culture medium. Microscopic examination of the sediments showed 45.4 per cent positive for acid-fast bacilli, both Koch and Hansen bacilli judging from their morphology. Out of 29 cultured sputa, nine, or 31 per cent gave pure cultures of acid-fast bacilli. Eight of these cultures are characteristic of the eugonic type of Koch bacillus culture and one of the smooth.

Various lots of guinea-pigs and white rats were infected with some of these cultures, and acid-fast bacilli were cultured on three occasions from caseous lymph nodes. Histopathological examination of these animals made by Dr. C. Magarinos Torres gave positive results for tuberculosis. Samples of some cultures were sent to various Institutes for medical research in foreign countries and also given to Drs. A. Machado and G. Pacheco of the Instituto Oswaldo Cruz. The experiment is being continued.—H. C. DE SOUZA-ARAUJO