CURRENT LITERATURE

One of the most important objectives of the JOURNAL *is to take due notice of the current literature of leprosy, especially for the benefit of readers to whom medical libraries are not readily accessible. The Contributing Editors (see inside front cover) are depended on primarily to provide this material; but when necessary, abstracts are drawn from other sources, though this involves unavoidable delay.*

ROUSSEL, J. N. Leprosy. A report of twenty-seven cases treated with anthrax vaccine. Southern Med. Jour. **28** (1935) 730-735.

The author has treated twenty-seven cases of leprosy with anthrax vaccine since 1919, 17 of the maculo-anesthetic type, 9 of the nodular, and one mixed. Of the maculo-anesthetic, 15 (88 per cent) and the one of the mixed type are apparently well, but none of the nodular cases has been benefited. Treatments were given for about 90 days, then discontinued. Two or three months later about two-thirds of the patients showed gradual fading of the lesions. In the others a multiform erythema developed which was not distinguishable from ordinary erythema nodosum; shortly after the acute symptoms subsided the leprosy lesions disappeared. The vaccine contains attenuated anthrax bacilli, and responsibility for disastrous results following its use is disclaimed by the manufacturer. However, the author claims to have given over 700 injections without any bad results. —J. G. WOOLEY

LAMB, A. R. The effect of malnutrition on the pathogenesis of rat leprosy. American Jour. Hyg. **21** (1935) 438-455.

It appears that with few exceptions leprosy is most prevalent amongst people whose diets are on the borderline of deficiency in nutrients known to be necessary for physical development and resistance to disease. In the work reported, subcutaneous inoculations were made with clean rat-leprosy granulomata, ground in a mortar, suspended in Locke's solution and filtered through gauze. Approximately 1,200 rats, in 126 controlled groups testing 44 diets which embodied deficiencies singly or in combinations, were used for subcutaneous inoculations. The deficiencies were not severe enough to cause high mortality, but growth was only about two-thirds normal and the rats tended to become poorly nourished.

A large number of these rats on different deficient diets yielded generally negative results. An exceptional case was a diet of starchy foods plus boiled taro-root and fish, which repeatedly increased the development of subcutaneous lesions. Upon using intracardiac inoculations, diets deficient in the vitamin B complex and low in protein produced extensive increase in visceral lesions. The liver showed very large confluent lesions, the spleen, lungs and lymph nodes were involved, and the skin contained microscopic lesions. Small lesions occurred in

control rats, but were always limited in size. Increased leprous pathology was found in fourth generation rats with low vitamin B diets. —J. G. WOOLEY

DUNCAN, G. R., VAN WINKLE, C. C., MARIETTE, E. S. and FENGER, E. P. K. The precipitin reaction to phosphatides of tubercle and leprae bacilli. American Rev. Tuber. 31 (1935) 307.

Phosphatides isolated by R. J. Anderson from human, bovine and avian tubercle bacilli and one strain of leprosy bacillus were used as antigens in a series of precipitin tests. The leprosy strain (Hygienic Laboratory No. 370), was isolated in Honolulu in 1909. All the antigens when injected intravenously in rabbits gave definite temperature reactions. Darkfield examination of the avian, bovine and leprae phosphatides showed some definite droplet formation. Tubes containing known weights of antigen and known volumes of diluent through the zone of reaction and through the end point were agitated after antiserum of known strength and volume had been added. The results were read up to 48 hours. It is the custom to suspend antigens in physiological saline, but only that from human tubercle bacillus could be suspended in this strength of salt so less concentrated salt solutions were used with the others.

Two samples of human tubercle phosphatide (made from old cultures) proved to be poor antigens in rabbits, and showed no reaction with sera of tuberculous patients. The report is essentially negative for this reason. One sample each of bovine, avian and leprosy phosphatides were good antigens and reacted well with the sera of tuberculous patients. No type specificity could be demonstrated. The tests did not follow Dean and Webb's rule of optimum proportion. In summary, the antigen made from the leprosy bacillus used acted as an antigen in rabbits and reacted in the precipitin test with tuberculous patients' sera.

—[AUTHORS' ABSTRACT]

WALKER, E. L. and SWEENEY, M. A. Cultivation of facultative acid-fast bacilli from filtrates of leprosy. Proc. Soc. Exper. Biol. and Med. 31 (1934) 1162.

Of 50 filtrates from rat leprosy through tested Seitz, Berkefeld N and W, and Chamberland L_2 and L_3 filters, 16 gave positive cultures, while of two filtrates of human leprosy through Berkefeld N and W candles the one through N gave a positive culture. The organisms found were in every case pleomorphic and facultative acid-fasts, identical with the one cultivable directly from leprous lesions of the rat and man.—[Abstract in *American Rev. Tuberc.* 31 (1935) 21.]

WALKER, E. L. and SWEENEY, M. A. Cultivation of facultative acid-fast bacteria from filtrates of rat leprosy and of human leprosy. Jour. Infect. Dis. 56 (1935) 97-100.

The authors cultivated small coccoid organisms that were acid-sensitive from filtrates of material from leprous rats, and from one human case of maculo-anesthetic leprosy in which repeated examinations had failed to demonstrate acid-fast bacilli. The cultivated organisms later became acid-fast when cultivated on Musgrave and Clegg media. The authors do not believe that the results support the hypothesis of an "ultravirus" stage, but simply show that filters that hold back *B. prodigiosis* are permeable to the acid-fast bacillus of leprosy.—J. G. WOOLEY

FERNANDEZ, J. M. M. and SCHUJMAN, S. Extirpación de una lesión lepromatosa única con recidiva posterior. [Extirpation of a solitary lepromatous lesion with subsequent relapse.] Rev. Argentina Dermatosif. 28 (1934) No. 1.[1]

This article records the case of a patient who had a solitary lepromatous lesion which was extirpated. The lesion reappeared on the cicatrice, because the patient had left off treatment, believing he was cured. The authors conclude that this method, far from being advantageous, is harmful; the patients, free from their lesions, leave off the treatment, while the slow disappearance of the lesions, on the contrary, leads them to persevere with the cure.—B. BASOMBRÍO

FIDANZA, E. P., FERNANDEZ, J. M. M. and SCHUJMAN, S. Vigilancia de los casos de lepra dados de alta (13 casos seguidos durante dos años). [Observations on 13 cases dismissed as cured.] Rev. Argentina Dermatosif. 28 (1934), No. 1.[1]

The authors related that among 13 lepers dismissed as cured who were followed for two years, three relapsed. Of the rest 7 maintain their negativity in spite of rigorous control examinations. They are trying to establish a method by which such cases can be dismissed conditionally or definitely. —G. BASOMBRÍO

HUBER, E., FERNANDEZ, J. M. M. and SCHUJMAN, S. Tratamiento de las complicaciones oculares de la lepra. [Treatment of ocular complications.] Rev. Méd. Rosario 24 (1934) 1258-1263.

The results obtained with several medicaments in the treatment of eye complications in leprosy are reported. These are subconjuntival injections of chaulmoogra oil, local heliotherapy, iontophoresis, and intramuscular and intravenous injections. The aniline dyes, and specially fluorescein, prove to have a good influence in acute iritis of leprous origin. —G. BASOMBRÍO

FERNANDEZ, J. M. M. Por qué cree en el chaulmoogra la escuela de Culión. [Why the Culion school believes in chaulmoogra.] Rev. Argentine Dermatosif. 18 (1934) 171.

The author gives the history of the evolution of the treatment of leprosy with chaulmoogra in Culion. He presents statistics showing the tried remedies with their different derivatives. He comes to the conclusion that chaulmoogra oil, according to these experiences, is the one that has given the best results in the treatment of leprosy up to the present time. —M. B. LARA

CALCAGNO, O. Quimoterapia de la lepra. [Chemotherapy of leprosy.] Rev. Argentine Dermatosif. 18 (1934) 172.

The author begins with the study of how leprosy was treated from the time before and during the Christian era until the present. The enormous multiplicity of plants and herbs with their different varieties and the families to

[1] This reference is to a published abstract of the paper, which was read at the 4th Congreso Nacional de Medicina, in Rosario, September, 1924. So far as can be told from the literature available it has not been published in full.—EDITOR.

which they belong, as well as the different substances obtained from them and the innumerable preparations employed are discussed with minuteness in this work. —M. B. LARA

FERNANDEZ, J. M. M. El matrimonio de los leprosos y los problemas que plantea. [Marriage among lepers and its problems.] Rev. Argentine Dermatosif. 18 (1934) 172.

The author studies the different aspects of this problem: genital lesions of leprosy; sexual activity of the lepers; advantages and disadvantages of marriage. Discussing the grave problem of the offspring from the medical, economic and social view points, he arrives at the following conclusions: marriage cannot be avoided in these colonies of isolation; contraceptive methods including induced abortion and sterilization of cases whose marriage is authorized should be made known to the patients beforehand. —M. B. LARA

BORZONE, R. Hacia la conquista del lázaro; etiología, tratamiento y prevención de la lepra en la provincia de Santa Fé; lepra neuroendocrina y otras formas observadas en Santa Fé; el azufre coloidal en el tratamiento de la lepra. [Conquest of leprosy; etiology, treatment and prevention of leprosy in the province of Santa Fe; neuroendocrine leprosy and other forms observed in Santa Fe; colloidal sulphur in the treatment of leprosy.] Rev. Argentine Dermatosif. 18 (1934) 169.

The author gives consideration to the different forms of leprosy and interpretations of the forms which he calls benign and malignant, as well as the concepts about the prophylaxis and treatment with colloidal sulphur and methylene blue. —M. B. LARA

BALIÑA, P. L. [Leprosy in Argentina.] Semana Méd. 2 (1934) 682-686.

Baliña points out that leprosy in Argentina has been progressively increasing from year to year. Whereas in 1906, at the Buenos Aires National Conference on Leprosy, 724 cases were reported, the last report given by the National Department of Hygiene stated that to the end of July, 1933, there were 2,970 cases. This number applies to the known cases, and the author ventures the opinion that actually there may be from 6,000 to 8,000 in the republic. His experience has convinced him that the disease is directly or indirectly transmissible from one person to another. Half of the cases will show excretion of bacilli (open leprous lesions); the others need not necessarily be quarantined but may be treated in public dispensaries, but always under strict control.—[From abstract in *Urol. and Cutan. Rev.* 38 (1934) 824.]

BASOMBRÍO, G. La neuritis leprosa de la rama auricular del plexo cervical superficial. [Leprous neuritis of the auricular branch of the superficial cervical plexus.] Rev. Argentine Dermatosif. 18 (1934) 113.

This nerve is visible in only 30 per cent of normal subjects, its diameter not exceeding 1 mm., the author comparing it with the first string of a guitar. It cannot be considered enlarged unless it is at least twice that size, about that of the sixth string. The author found it to be enlarged in 18 per cent of cases of leprosy, and of these 40 per cent had sensory disturbances in the corresponding

zone of innervation. Involvement of this nerve is third in frequency, following the cubital and external peroneal. It can be biopsied with less inconvenience than is involved in similar intervention in these other nerves.—[From abstract by J. Margot in *Ann. Derma. et Syph.* 6 (1935) 60.]

DUVAL, C. W. Morphological and tinctorial behavior of *B. leprae* during its adaptation to an *in vitro* habitat. Proc. Soc. Exper. Biol. and Med. 32 (1934) 498-503.

The author studied the variations of morphology of the leprosy bacillus in tissue cultures of leprous material by staining portions in different ways at intervals over a period of six months. The globi first disappear and the bacilli become more rounded at the ends. The granules or beads may be seen at either pole producing a diphtheroid appearance, while others have 4 to 6 granules. Free granules may be seen at times, but not after the bacilli gain the power of saprophytic growth. The acid-fast characters are retained throughout and they are positive to Gram's stain. Loeffer's methylene blue shows the intra- and extracellular granules to be metachromatic. [From abstract by L. R., *Trop. Dis. Bull.* 32 (1935) 550.]

DUVAL, C. W. and HOLT, R. A. An improved method for *in vitro* cultivation of *B. leprae*. Proc. Soc. Exper. Biol. and Med. 31 (1934) 828-831.

The authors point out that concentration of the bacilli in portions of nodules due to autolysis of the tissue has been mistaken for multiplication of the organism; these only multiply as long as some of the tissue material remains. To avoid this factor of error they place the tissue in 1 per cent trypsin for 48 hours, when it has digested to a butter-like consistence, and then spread it on the culture medium. This contains protein-cleavage products, such as amino-acids, including tryptophane, cystine, tryosine and leucine, together with sterile placenta autolysate or leucocyte extract and banana infusion with glycerine. They incubate at 37°C. in paraffin-closed tubes to prevent drying, and admit fresh air every 3 to 5 days. [From abstract by L. R. in *Trop. Dis. Bull.* 31 (1934) 871.]

LANDEIRO, F. La réaction de Rubino-Marchoux chez les lépreux. [The Rubino-Marchoux reaction in leprosy.] Comp. rend. Soc. Biol. 116 (1934) 175; Soc. Biol. Lisbonne (1934), Feb. 27.

The Rubino reaction, modified by Marchoux, was applied to the sera from 55 cases of leprosy (23 nodular, 16 nervous and 16 mixed). In all but one the reaction was positive. It is important to work with unheated sera; with those heated at 56°C., like those from nonleprous subjects, the response is always negative. [From abstract in *Bull. Inst. Pasteur* 32 (1934) 717.]

SÉZARY, A., LEVY, G. and BOLGERT, M. L'action thérapeutique du vaccin antilépreux de Vaudremer. [Therapeutique effect of Vaudremer's vaccine.] Bull. et Mém. Soc. Méd. Hôp. Paris 50 (1934) 1372-1381.

The authors have used the Vaudremer vaccine in four cases, giving two injections a week in series of ten, with intervals between series. The vaccine is prepared by cultivating leprous tissue in a medium prepared with an *Aspergillus*, and subculturing on other media the organisms obtained, which are con-

sidered to be an evolutionary form of the leprosy bacillus. In all of the cases this treatment caused a rapid and marked effect on the allergic manifestations, especially the edemas of the face, hands and feet. Neuralgic pains and iritis were also favorably influenced, as well as the general state of the patients. On the other hand it was without effect on the manifestations of slow evolution, as the leprous nodules and the lesions of the large nerve trunks. It may be that the vaccine determines a shock, but in a more constant manner than ordinary medicaments. The quantity of antigen which it contains is minimal, but it is specific, which explains its action. It is recommended that chaulmoogra be used in the intervals between series, this drug seeming to influence favorably the manifestations which resist the vaccine. [From abstract by Sée in *Rev. Méd. et Hyg. Trop.* 27 (1935) 80.]

SPITZER, Mme. Traitement de la lèpre par le vaccine de Vaudremer. [Treatment with the Vaudremer vaccine.] Bull. et Mém. Soc. Méd. Hôp. Paris 50 (1934) 1390.

A child of 12, from Martinique, with mixed leprosy, was given 26 injections of the Vaudremer vaccine. The color of the skin became more uniform (the pale spots became pigmented and the pigmented ones less pronounced), and a large infiltration over the tibia disappeared completely. The general condition was good. [From abstract in *Bull. Off. Internat. Hyg. Publi.* 27 (1934) 349.]

TISSEUL, J. Quelle est la durée minuma d'incubation de la lèpre? [The minimal incubation period of leprosy.] Bull. Soc. Path. exot. 28 (1935) 60.

From observations on six children from 1 to 8 years of age, in a closed area in which there occurred a small epidemic of leprosy, the author has concluded that the minimum incubation is about three months. This is in accord with observations in the Philippines and the calculation of Rogers. —ET. BURNET

TISSEUL, J. Traitement de la lèpre par injections intraveineuses d'eau distillée. [Treatment with distilled water intravenously.] Bull. Soc. Path. exot. 28 (1935) 169.

Intravenous injections of from 4 to 10 cc. of distilled water, repeated every 2 or 3 days, may give in a month of treatment very important improvement, perhaps through a hemolytic action. Metchnikoff and Besredke, in 1900 [Ann. Inst. Pasteur (1900)], obtained good results in leprosy with a hemolytic serum. The two cases treated by the author were old cases, apparently of slow evolution. —ET. BURNET

MONTEL, M. and TRUONG-VAN-QUE. Essais de traitement de la lèpre par les injections intraveineuses de résorcine. [Treatment by resorcin intravenously.] Bull. Soc. Path. exot. 28 (1935) 167.

A 5 per cent solution of resorcin in distilled water was used. The dose used for a patient in good general condition seems to be 20 cc., or 1 gm. of the drug. Out of a dozen patients treated the drug caused albumenuria in one, who was cachectic. There was no very striking improvement except in one recent case, with marginate erythematous macules that were progressing centrifugally. In the other cases that were improved a little, the effect ceased after some fifteen injections. —ET. BURNET

MARCHOUX and CHORINE. Action du bleu de méthylène sur les lépromes "in vivo." [Effect of methylene blue on lepromas.] Bull. Acad. Méd. 113 (1935) 10.

In man the lepromas are demonstrated by coloration with methylene blue; the anesthetic macules are not colored. Observations on leprous rats show that it is the bacilli which, not reducing the dye, are colored by it. This fixation of the color is a most interesting fact. Methylene blue, and without doubt other dyes, may serve to carry active substances. —ET. BURNET

MILIAN and GARNIER. Le traitement de la lèpre par le bleu de méthylène. [Methylene blue treatment.] Bull. Soc. française Dermat. Syphil. 42 (1935) 323.

Of 6 cases treated, 2 improved with respect to their general condition, but with little or no change of the lesions. The authors suspect the possibility of a toxic nephritis caused by the dye. The coloration revealed lesions that were not previously visible, but one case presented a large lepride of the face that did not take up the color. —ET. BURNET

THIROUX, A. Essais de chimiothérapie de la lèpre du rat. [Chemotherapy of rat leprosy.] Bull. Soc. Path. exot. 28 (1935) 18.

The substances used, prepared by Fourneau and Tréfouel, are: (975), sodium salt of 3-amino-diphene-oxasine-1-sulphonique; (976), disodium salt of the acid 3-nitro-dephene-oxasine-7-arsenique-1-sulphonique; (1,003), sodium nickelothiomalate; (1,004), sodium cobaltothiomalate; (1,005), sodium salt of the acid nitro-resorcyl-arsenique. These substances, in subtoxic doses, only retarded the appearance of the leprous lesions, especially the nickel compound. None could be considered a remedy for leprosy. —ET. BURNET

BERNY, P. Un séjour de 24 h. in vitro dans le bleu de méthylène à 0,5 p. 100 n'atténue pas la virulence du bacille de Stéfansky. [The virulence of the Stefansky bacillus is not affected by 0.5 per cent methylene blue in 24 hours.] Bull. Soc. Path. exot. 28 (1935) 58.

The nature and result of this investigation is sufficiently indicated by the title. —ET. BURNET

PRUDHOMME, R. Influence du pH sur la conservation du bacille de Stéfansky en bouillon glycériné. [Influence of pH on the rat leprosy bacillus.] Bull. Soc. Path. exot. 28 (1935) 11.

The Stefansky bacillus is well conserved in 5 per cent glycerine bouillon only between 6 and 7 pH, the optimum being about 6.4. —ET. BURNET

BERNY, P. Conservation de la vitalité du bacille de Stéfansky chez le cobaye. [Viability of the Stefansky bacillus in the guinea-pig.] Bull. Soc. Path. exot. 28 (1935) 5.

Injected under the skin of the guinea-pig, the Stefansky bacillus remains alive for 39 days, but after the 40th to the 45th day it is no longer able to multiply in the rat. —ET. BURNET

CHOUCROUN, N. and PELTIER, M. Sur l'ultravirus de la lèpre murine. [The filterable form of the rat leprosy bacillus.] Compt. rend. Acad. Sci. 200 (1935) 785.

For rat leprosy, as for tuberculosis, the idea of an ultravirus or filterable form of the organism is based on the assumption that the filters used necessarily hold back all of the bacilli in a suspension, and only allow ultramicroscopic elements to pass. However, tubercle bacilli have been demonstrated in such filtrates, both by intensive centrifuging (Walker and Sweeney) and by electrophoresis (Plotz and Choucroun). The authors have repeated the experiments of the last-mentioned workers with material from rat leprosy, using suspensions of infected lymph nodes and organs. These were centrifuged for 45 minutes at 9,000 revolutions per minute, the sediment resuspended in distilled water, and after bacteriological control of the filtration (the Danysz virus), filtered through new Chamberland L_2 and L_3 bougies under a negative pressure of 20 cm. of mercury. The filtrate was subjected to electrophoresis for one and a half hours at a temperature not above 15°C. in a field of 40 volts/cm. Out of 6 filtrates, 4 gave positive results at the anode; on two slides 20 and 50 bacilli, respectively, were counted. They were reinoculated, but the result of the reinoculation was not yet known. It is concluded that the Stefansky bacillus can pass Chamberland L_2 and L_3 bougies. —ET BURNET

AFANADOR, A. Evolution de la formule leucocytaire chez le rat lépreux. [Changes in the leucocytes count in rat leprosy.] Bull. Soc. Path. exot. 28 (1935) 67.

The author has repeated in the rat the observations of Peschkowsky in the human. The leucocyte count of the normal rat is distinguished by a large proportion of lymphocytes. As rat leprosy develops the polymorphonuclears and the large mononuclears become proportionately more numerous, and are at a maximum at the time the lesions break down. After the process of elimination, the proportion of lymphocytes goes up again. When the infection is generalized there is a predominance of polymorphonuclears, and large histiocytes appear in the circulation. —ET. BURNET

KISSMEYER, A. [Leprosy in the Scandinavian countries since 1900.] Hospitalst. 77 (1933) 929.

The author shows the decrease in leprosy in the Scandinavian countries since 1900. In Denmark only 5 cases have been recognized in that period, all in persons infected elsewhere. In Iceland there were about 250 cases in 1896, and in 1898 a hospital was built where 60 of them were accommodated; in 1932 the number of cases did not exceed 25, and they were mostly of the benign anesthetic form. In Finland the situation was stationary until 1904, since when there has been a diminution of nodular cases and a preponderance of the nerve form; in 1931 there were only 34 cases, of which 26 were from 50 to 90 years of age, all in the southwestern part of the country. Norway had 58 cases in 1931, 44 of them in the Bergen hospital; from 1926 to 1930 only 3 new cases had been found. In Sweden the number has decreased from 66 in 1911 to not more than 20, and since 1928 only 2 new ones have been diagnosed.—[From abstract in *Trop. Dis. Bull.* 31 (1934) 258.]

WEFRING. Les lépreux en Norvège. [Leprosy in Norway.] Bull. Off. Internat. Hyg. publ. 26 (1934) 1746.

The writer, the Norwegian delegate to the Office International d'Hygiene publique, reported that in Norway there were only 51 cases on record, 38 in hospitals (all but 2 of them in Bergen), and 13 at home living isolated and under the supervision of special local sanitary councils. These last are all slight cases which are supposed to offer little or no danger of contagion if the prescribed rules of prophylaxis are observed. In the five years from 1926-1930 there were only 3 new cases. In 1931 and 1932 three more were found, one of them probably infected in China; these were of the nodular type and were immediately isolated in hospital. —H. W. W.

WRIGHT, E. J. Notes on leprosy in Sierra Leone, with special reference to notes which appeared in the annual report for 1930; elephantiasis or leprosy. Jour. Trop. Med. and Hyg. 36 (1933) 86.

This note deals with a discussion of leprosy in a book by Winterbottom, published in 1803, on the practice of medicine in Sierra Leone. This is of interest not so much because it is so early a record of the disease in that region as because of the discussion of its identity at a time when it was still called elephantiasis. "A just distinction has not yet been made between lepra and elephantiasis, as the description of these diseases by different authors may be mutually mistaken for each other . . ." It appears that the natives of the region distinguished three varieties of leprosy, one in which the skin was merely discolored and insensible; one in which there was also ulceration of the digits and mutilations, with thickened ears, nose, etc.; and one with, in addition, a hoarse and guttural voice due to the involvement of throat and fauces. —H. W. W.

BURGESS, N. Lupus vulgaris. A note on a new method of treatment by intradermal injection of phenylethyl hydnocarpate. British Med. Jour. 2 (1935) 835.

The similarities between leprosy and tuberculosis have led to the use of leprosy remedies in lupus vulgaris. Rogers has reported success with sodium morrhuate and creosoted moogrol used intradermally, and Muende has used the latter but found it to cause pain and local reaction. At Cochrane's suggestion a pharmaceutical firm, after experimentation, produced phenylethyl esters of hydnocarpus oil, which proved much less irritating than and as easily absorbed as any other esters. The author reports results with 11 cases of lupus vulgaris, in 7 of which clinical cure had been effected while the others were making satisfactory progress. —H. W. W.

NAKAMURA, K. and KOBASHI, S. Inokulationsversuche der Menschenlepra aus auf Hausratten. I. Mitteilung. [Inoculation of human leprosy into house rats.] Jour. Chosen Med. Assoc. 24 (1934) suppl. 76 (summary in German).

In their experiments the authors used young, normal house rats (*M. norvegicus*), the inoculations being into the nose after injury of the mucosa by sulphuric acid, and into the testis after extirpation of the thyroid. The criteria of infection were definite evidence of multiplication of the bacilli (many globi

and lepra cells) in smear preparations from the various lymph glands and inner organs, and clear-cut histological changes with foci of foamy cells, Langhans giant cells, etc. Positive results were obtained, and the authors believe that "typical experimental leprosy" can be obtained by their methods. They also find that infection can be produced in the white rat by subcutaneous inoculation after removal of the thyroid and parathyroid glands. H. W. W.

BOYÉ. Sur une maladie de la sarigue de la Guyane présentant de grandes analogies avec la lèpre humaine. [A disease of the opossum presenting analogies with leprosy.] Bull. Soc. Path. exot. 24 (1931) 637-639.

Boyé records the capture of an animal, a kind of opossum (*Philander cancrivor?*) which was obviously sick—thin and anemic—with large disseminated plaques of alopecia and lesions suggestive of leprosy. One leg, hairless, showed an extensive infiltration of the skin and two of the toes were lost, the stumps having the appearance of the "spontaneous amputations" of human leprosy; two inguinal lymph nodes were enlarged. On another foot one digit was gone. Numerous visceral lymph nodes were enlarged, one lung had a tuberculosis-like lesion, and other viscera were abnormal. Smears from the inguinal nodes showed fairly abundant acid-fast bacilli, usually single, occasionally in globi of 4 to 8 elements, once seen intracellularly together with other organisms of similar morphology but blue-staining. Smears from the skin contained some acid-fast bacilli, but those from the viscera had only a large putrefactive organism. The possibility of a relationship of this condition to human leprosy is discussed briefly, and certain possibilities that this observation suggests in connection with the study of that disease are pointed out. —H. W. W.

JORDAN, P. Notas preliminares sobre o "gambá" como animal de experiência para a lepra. Pesquisa dos bacilos ácido-resistentes nos animais sãos. [The opossum as an experimental animal. Search for acid-fast bacilli in healthy animals.] Folia Clin. et Biol. São Paulo (1934) 85-88.

Boyé in Cayenne found an opossum with toes mutilated as in leprosy, and acid-fast rods were found in the inguinal glands and an infiltration of the bones. The author had an opportunity to dissect a number of opossums, but no bacilli were found in the nasal mucus, glands, brain, spinal cord or internal organs. Fifty fleas caught on the animals were also negative. Opossums were inoculated with human leprous material, with negative results.—[From abstract by L. R. in *Trop. Dis. Bull.* 32 (1935) 339.]

BADGER, L. F. and SEBRELL, W. H. Leprosy. The effect of vitamin B_1 deficient diet on the incubation period of rat leprosy. Pub. Health Rep. 50 (1935) 855-863.

Four experiments were carried out with white rats, in groups of 24 to 100 animals, inoculated subcutaneously with rat leproma emulsion. In two experiments, part of the animals were put on a diet deficient in vitamin B_1, the rest being kept on control diet. In the other two experiments the test animals were put on the deficient diet two weeks or more before inoculation. All groups developed the infection, but the incubation period in the deficient groups was appreciably shorter than in the others.

Subsequently, experiments were made with human leprosy material in rats that had been maintained on deficient diet for ten days or more. Two groups were inoculated with leproma emulsions from different cases. Within a few weeks the great majority had developed local lesions which the authors consider grossly identical with rat leprosy, and these continued to increase in size up to the time of the report, 11 weeks after the inoculation. The authors point out the necessity of carrying the human leprosy through several generations of rats before it can be said that a strain of human leprosy has been established in the rat. —MARIANO B. LARA

CIPOLLARO, A. Leprosy. (A case.) Arch. Derm. and Syph. 31 (1935) 909.

The patient, a Greek born in Turkey, resident in the United States for 25 years, had had the disease for five years. The type is not specified, but apparently it was cutaneous or tuberculoid. In six weeks he was given 6 X-ray treatments, each of ¼ skin unit, with no definite changes. In 1933 a biopsy (from the back) was reported as "suggestive of mycosis fungoides"; another in 1934 (from the forehead and leg) was reported "suggestive of leprosy."

—MARIANO B. LARA

[UNION OF SOUTH AFRICA.] (Leprosy in South Africa.) Annual Report, Department of Health, Year ending June 30, 1934.

At the time of this report there was a total of 2,155 cases, including 95 pure Europeans, segregated in the leprosy institutions of the Union, all of which have been converted into well-staffed hospitals. In addition 1,542 cases have been discharged on probation, still under surveillance, and 889 others released from surveillance. Compulsory segregation is still considered the only sound method of dealing with the disease in this country. In the year under report the expenditure had fallen from £204,000 fourteen years ago, and £154,000 in 1924 when the health department took over the work, to £97,428, but this is still nearly one fourth of the cost of the whole public health work. Treatment remains voluntary and the ethyl esters and sodium salts are the most popular preparations.

A study of the incidence of leprosy from 1900 to 1930 has been made by Dr. J. F. Wood, and an interesting spot-map [reproduced in the source of this abstract] which locates all cases discovered during that period shows a remarkable concentration in the southeastern areas and near Capetown. The data for the individual provinces are: Orange Free State 855 cases, 1.9 per mille, mostly from the northern and middle districts; Transvaal 2,860 cases, 2.4 per mille, most on the Vaal River; Natal 1,424 cases, 1.2 per mille, mostly along the Basutoland border; Cape Province 2,488 cases, 1.5 per mille. The four smaller native areas show rates of from 2.6 to 3.7 per mille.—[From abstract by L. R. in *Trop. Dis. Bull.* 32 (1935) 332.]

YU, K. Y. Leprosy among natives of Manchuria. Jour. Oriental Med. 21 (1934) 67-71.

This is a brief account of four cases of leprosy among the indigenous inhabitants of Manchuria, who were probably infected during long residence in Mukden villages of Shangtung mining and artisan immigrants.—[Abstract by L. R. R. in *Trop. Dis. Bull.* 32 (1935) 333.]

JORDAN, P. Befunde bei Lepra. I-III Gleiche Hautverän-derung bei Vater und Sohn. "Positive" Blutkultur. Antigen in Urin. [Similar skin changes in father and son; positive blood culture; antigen in the urine.] Arch. f. Dermat. u. Syph. 170 (1934) 365-377.

The author describes an instance of father and son in whom there were lesions (depigmentation and changes of sensibility) on the abdomen that were of the same form and extension. He considers this evidence of a hereditary local organic predisposition to the development of the disease. From blood taken during lepra reaction he obtained yellow colonies of an acid-fast bacillus. Using the method of F. Klopstock he obtained a complement-binding substance in an alcoholic extract of the urine of a patient.—[From abstracts.]

TAJIRI, I. Ueber die leprösen Perforation des Septum nasi. [Perforation of the nasal septum.] Japanese Jour. Derm. Urol. 37 (1934); suppl., 42 (summary in German).

Leprous perforation of the nasal septum occurs more frequently in cutaneous leprosy than in the macular or nervous forms. It is not always accompanied by falling of the nose, while on the other hand the latter may occur alone. The author discusses the condition from both clinical and histological viewpoints. —[From author's summary.]

MUIR, E. and CHATTERJI, S. N. Bernhardt's syndrome. Indian Med. Gaz. 60 (1935) 192.

This condition is observed not infrequently in Calcutta, no less than 12 cases having been diagnosed at the leprosy clinic during 1934. The lateral cutaneous nerve of the thigh is liable to constriction where it passes through the sartorius muscle, especially if there is fibrositis of that muscle. In consequence of this, sensory symptoms appear in the skin of the lateral surface of the thigh—a sense of heaviness and an area of anesthesia to light touch and sometimes to pain. In India by far the commonest cause of such symptoms is leprosy, and in consequence, patients suffering from Bernhardt's syndrome may be, and frequently are, suspected to be suffering from leprosy. In leprous lesions of the neural type there are in addition to the anesthesia, almost invariably other local signs such as keratosis, hyperpigmentation, depilation, anhydrosis and sometimes palpable thickening of adjacent nerve branches; there may or may not be a visibly raised erythematous margin to the affected skin area. All these are absent in Bernhardt's syndrome; moreover, in the latter condition the anesthetic area is round or oval in shape, confined to the lateral area of the thigh, whereas the leprotic lesion is irregular in shape and not confined to this area. Treatment of such conditions as syphilis, gonorrhoea and sepsis may result in a cure of the syndrome. Protein shock therapy and diathermy have also been found useful.—[Abstract in *Med. Press* (1935) Aug. 21.]

MOUTOUSSIS, K. Ueber die Bazillämia bei Lepra und sonstige Befunde in im Blute bei Leprakranken. Vorläufige Mitteilung. [Bacillemia in leprosy.] Arch. f. Schiffs u. Tropen-Hyg. 38 (1934) 487-494.

Because of difficulty in finding bacilli in the blood by the usual technique of laking and centrifuging, most authors hold that they occur there only rarely,

during febrile reaction. Moutoussis has found them in 72 out of 79 specimens prepared by a different technique: 4 or 5 cc. of blood (taken from a place where there is no skin lesion) are mixed with 3 cc. of 10 per cent sodium citrate and refrigerated in a test tube for several hours. When the cells have settled the leucocyte layer is taken up with a pipette and smears made, heated and stained as usual. Of the 79 cases 46 were nodular, 15 macular, 9 nervous and 9 mixed; most of them were apyretic and had received no treatment. The bacilli were usually in masses, outside of leucocytes, and of characteristic appearance. Quite frequently there were also other acid-fast forms, including granules. Some of the bacilli and other forms were in leucocytes, especially lymphocytes; some of these leucocytes contained up to 30, 40 or 50 bacilli, suggesting that they multiply in the leucocytes and that the free masses may have come from them. Also in the cells were seen other products, cocciform and acid-fast, sometimes so small and numerous that the whole cytoplasm seemed acid-fast. This was seen only in lepers, but it is impossible to say what relation it may have with the disease. The author concludes that the presence of bacilli in the blood is not dependent upon febrile reaction, and further that they may be found there even in recent cases.—[From abstract in *Bull. Off. Internat. Hyg. publ.* 27 (1935) 1399.]

PISCANE, C. Le atrofie lebbrose. [The atrophy of leprosy.] Giorn. italiano Derm. e Sifil. 75 (1934) 1261-1282.

This article considers in detail the confused problem of cutaneous atrophies. It is pointed out that, though the etiological factors of some of them are known (tuberculosis, leprosy, treponematosis, etc.), little or nothing is known of the mechanism of their development. The clinical syndromes that permit of speaking of primary and secondary atrophies do not have characters, clinical or histological, that can throw light on this problem, and often the ultimate anatomopathological substratum (i.e., the atrophy) is identical in the two. The author believes that investigations should bear on the factors which knowledge of the physiopathology of the skin shows to be the most important in the regulation of cutaneous trophism: the nervous factor, sensory and vegetative; the vascular factor, regulator of the vital requirements of the tissues in relation with the strictly histioid elements and the hormonic and nervous factors which enter into the tonal regulation of the vessels; and the histopathological features (granulomatous formations and various degenerations) which play a role especially in secondary atrophies but which cannot *a priori* be completely excluded in certain kinds of primary atrophy.

The author considers that leprosy offers a specially favorable material to study this matter, since in many cases there occur primary and secondary atrophies that may dominate and characterize the picture of the disease. He has studied five cases with regard to: (1) the innervation of the affected areas; (2) the circulatory function of these areas (effects of histamine and urea); (3) reactivity of the tissue, specific and nonspecific, to antigens (suspensions of leprosy bacilli, tuberculin and trichophytin); and (4) the histology, in comparison with that of the nodular lesions. [One abstractor points out that the author seems not to be aware of work done with "leprolin" and histamin.] The author's discussion of his findings are said to be "complex," and the conclusion given most attention is that there are no essential differences in the histology of the

skin lesions in the neural and nodular forms of the disease; the differences are quantitative rather than qualitative. Stress is apparently laid on the rôle of the nervous factor in influencing the reactions of vessels and tissues, which are "precisely and essentially those which determine the physiognomy of the morbid manifestations in the skin."—[From several abstracts, especially one by Belgodere in *Ann. Dermat. et Syph.* 7 (1934) 976.]

LOEWENSTEIN, E. Ueber die Züchtung des Leprabazillus. [The cultivation of the leprosy bacillus.] Wiener Med. Wchnschr. (1934) 623, No. 23.

In 1931 Lie, of Bergen, in the author's laboratory and using his technique, attempted to cultivate the leprosy bacillus from the blood. Microscopic colonies were obtained, but they did not grow in subcultures. Loewenstein has taken the matter up, using bloods sent to him from the Philippines by Soule, which he treated by his usual method except that he applied 15 per cent H_2SO_4 for only 3 minutes, and employed a special liquid medium made from fish. Two flasks out of five gave pure culture of acid-fast bacilli, the others impure cultures. The former, planted on a solid fish medium, gave both white colonies (*My. tuberculosis*) and yellow ones which the author thinks are of the leprosy bacillus. Subcultures were sparse, the bacilli granular, at first not acid-fast but becoming so later, larger than tubercle bacilli and less close to each other, as if there were an interposed substance that did not stain. They would only grow on the media containing the fish decoction. In these cultures there were also nonacid-fast organisms that morphologically resembled the leprosy bacillus.—[From abstract in *Bull. Inst. Pasteur* 33 (1935) 685.]

MAXWELL, J. L. The treatment of leprosy from a public health viewpoint. China Med. Jour. 49 (1935) 313-314.

This is a general discussion, in which it is held probable that in leprous countries the prevalence of leprosy is as great as in tuberculosis. Though leprosy is contagious, it is not highly so, and about the only thing we can say about it is that contact with a leper or with objects from his surrounding can cause infection. Natural resistance is relatively high, and many years may elapse before the disease really develops; this depends upon many conditions, as in tuberculosis. With regard to the practical fight against leprosy, there is no vaccination against it, as in smallpox, and in countries such as China segregation cannot be carried out because of the cost. Consequently, the author recommends the establishment of as many treatment centers in accessible places as possible, only those patients who become incapable of working to be put into appropriate institutions. Instruction of the public is of great value, and this must begin in the schools. Investigations of the sources of infection are of importance. In China infection seems to take place principally in the country, and the accumulation of lepers in the cities is caused by their wandering to them to work or to beg. The experiences of Fraser, in Swatow, has shown that patients come gladly to treatment-centers in the country, and such centers are inexpensive. Work along these lines is recommended for China; the missions, the local physicians, and other officers should organize on a common front. It would possibly be useful to assign nurses in many villages, to take care of the treatment and care

of the patients, and also to carry out prophylactic measures in the families, especially with regard to the children. [From a translation by Dr. A. C. Santos of abstract by Klingmüller in *Zentralbl. f. ges. Tuberculosef.* 43 (1935) 423.]

LOEWENSTEIN, E. Die Bekämpfung der Lepra auf Grund der neuesten Forschung. [Fight against leprosy on the basis of the newest investigation.]. Wien. klin. Wschr. 1 (1935) 519-523.

The sero-reaction of Rubino, modified by Marchoux, seems to be useful in the diagnosis of leprosy. The nonreactivity of the leper's serum seems to depend upon the fact that his organism is incapable of allergy production. This is supported by the long incubation time, and the lack of reaction to exuberant growth of the bacilli, from which it may be assumed that they do not form a toxin. People immune to leprosy are perhaps euergysts, in contradistinction to lepers who are dysergists.

The author describes the cultivation of the leprosy bacillus in a new nutrient medium containing fish flesh and egg yolk, to which malachite green is added as inhibiting agent and especially as an indicator. The organism develops very slowly, but by further improvement of the medium the rate of growth was increased so that now it can be seen macroscopically after 4 weeks.

The bacillus is a decided acid-former, whereas the tubercle bacillus and other known acid-fast bacilli are alkali-formers. [From a translation by Dr. A. C. Santos of an abstract by Klingmüller in *Zentralbl. f. ges. Tuberkulosef.* 43 (1935) 423.]

PUBLICATIONS RECEIVED

DUBOIS, A., WESTERLINCK, H. and DEGOTTE, J.—Essais thérapeutiques dans la lèpre le manganyl. Reprint from *Ann. Soc. Belge. Méd. trop.* 15 (1935) No. 1.

DUBOIS, A., WESTERLINCK, H. and DEGOTTE, J.—Essais thérapeutiques dans la lèpre le sulfate de cuivre. *Ann. Soc. Belge Méd. trop.* 15 (1935) No. 1.

GAY, F. P.—The unsolved problems of leprosy. Reprint from *Science* 81 (1935) 283-285.

GUILLINY, R. and MONTESTRUC, E.—Étude sur la lèpre oculaire murine. Reprint from *Bull. Soc. Path. exot.* 26 (1933) 901-905.

GERBINIS, P.—Essais de culture du bacille de Stéfansky. Reprint from *Bull. Soc. Path exot.* 26 (1933) 1135-1137.

JORDAN, P.—Befunde bein Lepra. I-III. Gleiche Hautveränderung bei Vater und Sohn. "Positive" Blutkultur. Antigen im Urin. Reprint from *Arch. f. Dermat. u. Syph.* 170 (1934) 365-377.

JORDAN, P.—Notas preliminares sobre o "gamba" como animal de experiência para a lepra. Pesquisa dos bacilos acido-resistentes nos animais sãos. Reprint from *Fol. clin. and biol.* 6 (1934) 85-88.

JORDAN, P.—Estudo sobre a sôro leproso. Experincias com estractos de actiromicetos como antigenos na reacção do desvio do complemento. Reprint from *Fol. clin. and biol.* 6 (1934) 81-84.

KEIL, E.—Zur Behandlung der Lepra mit Jod-Antileprol. Reprint from *Arch. Schiffs- u. Tropen-Hyg.* 39 (1935) 188-199.

LOMBARDO, C.—(Presentazione di malati.) Reprint from *Dermosifilografo* 10 (1935) No. 3.

LOMBARDO, C.—Sui corpi asteroidi di elastina. Reprint from *Sperimentale* 68 (1914) 329-356.

LOMBARDO, C.—Singolari formazioni di elastina entro cellule giganti in casi di lepra. Reprint from *Giorn. Italiano Mal. Vener. e Pelle* (1913) No. 1.

LOMBARDO, C.—Ricerche sulle modificazioni del tessuto elastico della cute nella lepra. Reprint from *Dermosifilografo* 10 (1935), No. 6.

LOMBARDO, C.—Colorazione in vivo dei bacilli della lepra. Reprint from *Bull. Soc. Italiano Biol. Sper.* 10 (1935) 255-257.

LOMBARDO, C.—Di alcuni nuovi metodi di terapia della lepra. Reprint from *Giorn. Italiano Dermat. e Sifilol.* 12 (1934) No. 3.

LAMPE, P. H. J. and MOOR, C. E. DE—Ratten-lepra. Reprint from *Geneesk. Tijdschr. v. Nederlandsch-Indië* 75 (1935) 634-654.

LOEWENSTEIN, E.—Die Bakämpfung der Lepra auf Grund der neuesten Forschung. Reprint from *Wien. klin. Wchnschr.* 48 (1935) 519-523.

MARCHOUX, E.—La lèpre des rats. Reprint from *Rev. Franc. Dermat. and Vénéréol.* 9 (1933) 323-330.

MARCHOUX, E.—La lèpre est contagieuse. Reprint from *Bull. Soc. Path. exot.* 27 (1934) 103-105.

MARCHOUX, E. and CHORINE, V.—Action du bleu de méthylène sur les lepromes "in vivo." Reprint from *Bull. Acad. Méd.* 113 (1935) 10-12.

MARCHOUX, E. and CARO, J.—Méthode de diagnostic sérologique de la lèpre. Reprint from *Ann. Inst. Pasteur* 42 (1928) 542-552.

MARCHOUX, E. and CHORINE, V.—Cultures du bacille de la lèpre. Reprint from *Rev. Franc. Dermat. and Vener.* 9 (1933) 358-363.

MONTEL, M. L. R. and TRUONG-VAN-QUÉ.—Un cas de lèpre généralisée (forme mixte) associée au paludisme et traité uniquement par le bleu de méthylène combiné au rouge neutre de toluène en solution à 1/100. Observation et bilan après 7 mois 10 jours de traitement.

Un cas de lèpre généralisée (forme mixte cutanéo-nerveuse et tuberculo-maculeuse) traitè par le ruge neutre associé au bleu de méthylène. Observation et bilan après 5 mois de traitement. Reprint from *Bull. Soc. Méd. Chir. Indochine* (1935), No. 2.

MONTEL, M. L. R., LE-VAN-PHUNG, ET ALS.—Observations résumées de vingt cas de lèpre chez des jeunes. Traitement par le bleu de méthylène seul op associé au chaulmoogra. Reprint from *Bull. Soc. Méd. Chir. Indochine* (1935), No. 4.

NODENOT, L. and BERNY, P. —Inoculation du bacille de Hansen dans le péritoine de rats après blocage. Reprint from *Bull. Soc. Path. exot.* 26 (1933) 289-290.

PEREIRA, P. C. R.—Contribuição au estudo da reacção de Bargehr—allergia e immunidade activa contra a lepra. Reprint from *Brasil Med.* 49 (1935) 576.

POOLE, G. McD. VAN—Leprosy and tuberculosis of the eye. Reprint from *Tr. Am. Ophth. Soc.* 32 (1934) 596-626.

PRUDHOMME, R. O.—Résistance des bacilles de Stéfansky aux rayons ultra-violets. Reprint from *Compt. rend. Soc. Biol.* 119 (1935) 1328.

PRUDHOMME, R. O.—Fixation in vivo du bleu de méthylène par les bacilles lépreux. Reprint from *Compt. rend. Soc. Biol.* 119 (1935) 1326-1328.

PRUDHOMME, R.—Influence du pH sur la conservation du bacille de Stéfansky en bouillon glycériné. Reprint from *Bull. Soc. Path. exot.* 28 (1935) 11-14.

PRUDHOMME, R.—Action des rayons X sur les lépromes des rats. Reprint from *Bull. Soc. Path exot.* 27 (1934) 917-920.

SPINDLER, A.—Versuche mit Psorimanganbehandlung der Lepra. Reprint from (Eraldine ārātomme ajakirjast Eesti Arst 1932, lisa: II Eesti Arstide Kongressi protokollid).

SPINDLER, A.—Über den Ursprung der Lepra in Estland. Reprint from (Eraldine ārātomme ajarkirjast Eesti Arst 1932, lisa: II Eesti Arstide Kongressi protokollid).

SPINDLER, A.—Bemerkungen über den Komplementgehalt und die Wassermannshe Reaktion des Blutes Lepröser. Reprint from *Dermatol. Centralbl.* 16 No. 3.

TRUONG-VAN-QUE.—Un cas d'infantilisme lépreux traité par la méthode de M. L. R. Montel (bleu de méthylène intraveineux). Observation et bilan après cinq mois et onze jours de traitement. Reprint from *Bull. Soc. Méd. Chir. Indochine* (1935) No. 3.

TISSEUIL, J. and CHORINE, V.—La coloration par la fuchsine ne tue pas le bacille de Stéfansky. Reprint from *Bull. Soc. Path. exot.* 27 (1934) 224-225.

TISSEUIL, J. and GILLIER, R.—Inoculation testiculaire de la lèpre humaine au rat. Reprint from *Bull. Soc. Path. exot.* 26 (1933) 1134-1135.

THIROUX, A.—Essais de chimiothérapie de la lèpre du rat. Reprint from *Bull. Soc. Path. exot.* 28 (1935) 18-21.

TISSEUIL, J. and BERNY, P.—Inoculation du bacille de Hansen directement dans la foie des rats. Reprint from *Bull. Soc. Path. exot.* 26 (1933) 990.