

CURRENT LITERATURE

The current literature of leprosy is dealt with in this department as fully as possible. It is a function of the Contributing Editors (see inside of front cover) to provide abstracts of all articles published in their territories, but when necessary abstracts are taken from other sources.

- ✓ LAGOUDAKY, S. Hippocrate et la lèpre. [Hippocrates and leprosy.] Bull. Leprosarie Neshu El Bahari [Behera] 8 (1939) 1301-1305; 1316-1322.

The author has searched the writings of Hippocrates for all references to the condition to which the name of leprosy was given, and quotes these passages. Later writers are also quoted, especially Galen. The extension of the disease in the eastern basin of the Mediterranean in ancient times is also discussed. —H. W. W.

- [U.S.P.H.S.] Annual Report of the Surgeon General of the Public Health Service of the United States for the Fiscal Year 1938. Washington 1938.

Leprosy investigations (a) in the field of epidemiology in the continental United States, and (b) at the investigating station at Honolulu, are reported on [but not the work of the Federal leprosarium at Carville, Louisiana]. (a) The field work has been the collecting of data from the localities in which leprosy appears to be communicable to an extent sufficient to merit consideration from the public health point of view, and from areas in which it does not spread. In general, only in some parts of certain of the states bordering on the Gulf of Mexico does the disease show any notable tendency to spread, and even in them there are striking limitations of areas of communicability. For example, in Florida nearly all the cases come from two foci, one located on the west coast and the other in the extreme south; a third very small focus on the east coast was, until very recently, confined to three members of one family group but another has been infected. Accurate information has been secured with respect to the long-recognized focus of leprosy in Minnesota, where a considerable number of lepers (probably about 150), either in the incubation period or already showing active manifestations, settled in the latter half of the past century and the early part of the present one. Only seven definite cases and one doubtful case developed from this introduction of the disease, chiefly among members of the families in which the infection was brought from abroad; in other words, the disease extinguished itself in two generations. In New York, Philadelphia and Chicago fair numbers of cases have been detected; with but a single exception all are traceable to infection elsewhere. From such facts it would seem that health authorities might properly discriminate in measures to be taken as between cases coming under observation in regions in which the disease is known to spread and cases domiciled in regions where experience has shown that the disease does not tend to spread or does so only very feebly. (b) In Honolulu, among other work, continued attempts have been

made to cultivate the causative organisms of human and rat leprosy, without success, though on one type of medium the rat leprosy bacillus remained alive and infectious for 78 days at 37°C. A study of three strains of rat leprosy showed definite differences in pathogenicity, both clinically and in the histological changes induced. Three strains of acid-fast organisms isolated from lepers and one received from South America were studied intensively and found to be very similar as regards effects in inoculated animals (nonpathogenic), and with complement-fixation and agglutination reactions; the reactions in intradermal tests made with two strains were group phenomena and of little diagnostic value. [The principal features of clinical experimentation with patients at this institution have been published and noted in this department.] —H. W. W.

HASSETTINE, H. E. The U. S. Marine Hospital (National Leprosarium), Carville, La. Review of the more important activities for the fiscal year ended June 30, 1938. *Publ. Health Reports* 53 (1938) 2025-2037.

At the close of the fiscal year, June 30, 1938, there were at the national leprosarium at Carville a smaller number of patients than at any time within the past 7 years. This reduction was partly due to a relatively large number of deaths—35 among active cases, and 1 in a paroled case; 39% in cases of 10 years or more duration. There has also been a continued lowered admission rate—59 admissions, of whom 32 were new patients, the others being absconded patients who returned (17), paroled cases in whom the disease became reactivated (4), and paroled cases returned for observation (6). Only 18 states are now represented in the hospital; 32 cases are from Hawaii, the Philippines and Puerto Rico; 20 new cases came from 7 foreign countries, making a total of 108 patients from 21 such countries. As usual, men outnumber women, 243 to 106. Parole was granted to 20 patients, after failure to find the bacillus in smears every month for a period of one year. Almost all patients are taking treatment of some kind; benzocaine-chaulmoogra oil (3,460 injections, during the year) is much more popular than hydnocarpus esters (1,041 injections). While a certain number of patients abscond for one reason or another, there are many others who regard Carville as their home and wish to return. The complement fixation test of Lleras Acosta is being studied, but a decision as to its value has not been arrived at yet.—[In part from editorial note in *American Jour. Publ. Health* 29 (1939) 65-66.]

[B.E.L.R.A.] Annual Report of the British Empire Leprosy Relief Association for the Year 1938. London, 1939.

The work of the Association has continued to advance and expand in all directions. The Toc H scheme is on the increase and 6 new lay workers were appointed during the year, the total number being 18. The valuable help rendered by these workers is being appreciated more and more by those in charge of leprosy centers, resulting in an increasing demand for their services that cannot entirely be met. There has been a considerable increase in donations and subscriptions (£1,500 over the last year's figure), and also in the grants given by colonial governments; in 1937 the latter item amounted to £195, in 1938 to £690. The total income under both these headings during the year had been £7,076. In re-

sponse to an appeal broadcast by Christopher Stone a big sum of £8,920 was received. Brief descriptions of antileprosy activities throughout the British Empire are included in the report as usual, but most of the space is given to the observations of the medical secretary during a tour of East Africa.—[From summary in *Lep. in India* 11 (1939) 107-108.]

[B.E.L.R.A.] Annual Report of the Indian Council of the British Empire Leprosy Relief Association for the Year 1938. Delhi, 1939.

The work in India has progressed steadily, including that of the provincial branches, which have adopted the new constitution recommended two years ago. The new provincial governments are giving emphasis to the development of public health work, and several of them have increased financial support for antileprosy activities while in others new plans are under consideration. The medical profession as a whole is interested, with increased enrollment in the special leprosy courses given in Calcutta, Bombay, Chingleput and Dichpali. Increasing emphasis is being laid on the segregation of infectious cases, and during the year several new institutions for the purpose have been established. Research work carried on at the Calcutta School of Tropical Medicine has included: (a) a clinical and histological study of the different forms of leprosy (continuation); (b) a study of leprosy in Burmans as compared with that in Indians, the disease in the former being found more often progressive, serious and infectious; (c) a study of the seasonal variation of leprosy in Calcutta, with the finding that increased activity of certain types of lesions is commonly seen in the months of March to September; (d) a thorough study of the complement fixation test with the W.K.K. antigen [see abstracts, p. 112, this issue]; (e) continued attempts to cultivate the bacillus, with negative results; (f) inoculation of Syrian hamsters; (g) biochemical investigation of the blood (continuation). The work of the field investigation center at Bankura has been continued and a survey of a population of 10,000 people in this rural area of West Bengal completed. The propaganda officer, Dr. Santra, toured several provinces and states. The financial situation continues to be satisfactory, with a total income of Rs 1,27,485 and expenditure of Rs 1,38,362, including Rs 69,975 distributed as grants to provincial and state branches for local activities.—[From summary in *Lep. in India* 11 (1939) 108-10.]

[MISSION TO LEPERS] Report of the Sixty-Fourth Year's Work in India and Burma, 1937-1938.

On December 31, 1937, there were 7,544 patients resident in the missions homes, and 813 healthy children were being cared for; in other institutions aided by the missions the numbers were 2,080 and 152, respectively. A new institution was opened near Fyzabad, and the largest one, at Purulia, celebrated its fiftieth anniversary. The expenditures totalled Rs 8,12,209, of which 3,76,563 came from government entities. To an increasing degree the initiative for fresh activities and material support come from within India. With regard to treatment (detailed figures on which are given) it is noteworthy that increasing numbers of institutions are arranging for special training of physicians.

—H. W. W.

[MAURITIUS] Annual Report of the Medical and Health Department, Mauritius, 1937. Port Louis, 1938.

There were 48 patients (35 men and 13 women) remaining in the leper hospital at the end of 1937, one less than a year previously. Four new cases had been admitted during the year, while four were discharged and there was one death (an arrested case). [In 1936, 8 cases were admitted, one of whom was a Jesuit missionary who had contracted the disease in India and had been diagnosed in Paris ten years before.] Of the cases remaining at the end of 1937, 23 were arrested or burnt-out cases, 4 were cured with slight or no disabilities, 11 had made good progress (5 of them bacteriologically negative) 6 had progressed slowly, 1 was cured but blind; 2, both of whom were taking little or no treatment because of complications, had deteriorated. Regarding the organization in Mauritius, there is a Leprosy Board composed of the director of the medical and health department, a district magistrate, and Dr. H. André, who is medical superintendent of the leprosy hospital and also government medical officer of Pamplémousses. —H. W. W.

SOREL, F. Die Leprabekämpfung in den französischen Kolonien, Besitzungen und Mandaten. [The leprosy campaign in the French colonies, possessions and mandates.] *Deutsch. med. Wehnschr.* 65 (1939) 636-639.

[The subject matter of this report is covered exhaustively by the article by Méd. Lt.-Col. H. Delinotte, in the last issue of THE JOURNAL 7 (1939) 517-547.]

FLANDIN, C. Le Pavillon de Malte à l'Hôpital St. Louis. [The Malta pavilion of the Saint Louis Hospital.] *Europe méd.* 3 (1939) 22-23.

The author has the merit of having found, because he has gained their confidence, nearly 200 lepers in the Paris region. —ET. BURNET

SALLES GOMES JR., F. Incidência da lepra no Valle do Parahyba. [Incidence in the Parahyba region.] *Rev. Soc. reg. Med. e Cir. Taubaté* 1 (1937) 3-24.

A report of local interest on the incidence of leprosy in an area comprising 29 municipalities, in which it is apparently decreasing. —H. W. W.

FONTENELLE, J. P. A lepra no Rio de Janeiro. [Leprosy in Rio de Janeiro.] *Folha méd.* 9 (1938) 10-12.

The present article is a part of a report relative to the years 1935 and 1936 made by the author as director of public health for the Federal District. It is illustrated by many tables showing the mortality due to leprosy and its annual variations since 1920, its variations by districts during 1935-36, the discovery of cases by the twelve health centers, and an analysis of the cases by age, sex, clinical form and infectiousness. Once more is shown the role filled by the health centers in the examination and periodical reexamination of confirmed and suspected cases, out-patient treatment, etc. The final part deals with hospitalization, at the Curupaity colony.—[From abstract in *An. Brasileira Dermat. e Sifil.* 13 (1938) 181.]

DINIZ, O. AND SALAMAO, A. Organização da luta antileprosa em Minas Gerais (Brasil). [Organization of the leprosy campaign in the State of Minas Gerais.] *Rev. Brasileira Leprol.* 7 (1939) 49-62.

The author publishes Moura Campos' schema, presented at the Cairo Congress, for the campaign against leprosy in the state of Minas Gerais,

to be carried out in three years. Under the health service the work is divided into (a) the prophylaxis service and (b) research activities. For the former there are five colonies and hospitals—Santa Isabel (1,750 patients at the end of 1938), and S. Francisco de Assis (1,500 patients); also, unfinished, Santa Cruz, Padre Damiao and Sabará; a central dispensary at Belo Horizonte, 14 dispensaries scattered over the state, and the Society for Protection of Lepers and Defense against Leprosy, which collaborates with the health service. For research there is an office in Belo Horizonte, the Gaspar Viana research institute in the Santa Isabel colony, and leprosy classes held with the collaboration of the faculty of medicine.

—H. C. DE SOUZA-ARAÚJO

- ACARDI, C. B. Consideraciones sobre la lepra en Misiones. [Leprosy in Misiones.] *Rev. Argentina Dermatosisifil.* 23 (1939) 454-463.

Misiones, a territory in the extreme northeastern part of Argentina, has an area of 29,822 sq. km. and a population of 177,000, a majority of whom are of the white race. The climate is subtropical, the altitude varies from 50 to 500 meters, the soil is fertile. The number of cases, according to a census of June, 1939, is 343, which gives an index of 1.92 per thousand. The sex ratio is 6 males to 4 females; 24% of the cases are children between 0 and 14 years; the highest incidence is in the 20-24 year group (33%). There is in this territory a hospital-colony with 140 beds and 84 cases which began to function in the middle of 1938.

—G. BASOMBRIO

- CORRADI, C. La léproserie de Gore. [The Gore leprosarium.] *Policlinico* 45 (1938) 1689-1693.

This leprosarium, organized since the conquest of Ethiopia, is in a healthy and pleasant location about 1 km. from any habitation, and is surrounded by a quadrilateral barrier. It comprises 22 habitations, of which 4 constitute a "preleprosarium"; 2 are occupied by the personnel or by patients who require isolation. The buildings are cylindrical and thatched, and each accommodates six persons. At the time of writing there were 60 inmates, mostly cutaneous cases, nodular and mutilated, but it is believed that it can take care of the majority of the lepers of the region. Satisfactory results are being obtained from treatment, by mouth and by external application, with chaulmoogra oil, which is supplied by the American mission.—[From abstract in *Bull. Off. Internat. Hyg. publ.* 31 (1939) 127.]

- MANALANG, C. Intergovernmental conference of Far Eastern countries on rural hygiene, with particular reference to leprosy. *Jour. Philippine Islands Med. Assoc.* 18 (1938) 125-134.

[This is a report the substance of which has already been dealt with adequately in *THE JOURNAL* 6 (1939) 106-107, in the form of a report of the conference, and in an abstract of the author's presentation at the conference (*ibid.*, p. 124), which are restated in this paper.]

- MANALANG, C. Draft of a plan for the liberalization of leprosy control. *Month. Bull. Bur. Health (Manila)* 18 (1938) 541-544.

The author recommends further liberalization of leprosy control measures in the Philippines for the following reasons: (a) that leprosy is

acquired chiefly, if not entirely, during infancy and early childhood; (b) that in the present method of compulsory segregation there is no effective means of protecting infants born in leprous environments; (c) that, while segregated lepers do not spread the disease, transmission of the disease before isolation of the patient is not prevented, which explains in part the continuous appearance of new cases and is one of the causes of the apparent failure of segregation; (d) that isolation of lepers who in their ordinary life do not have contact with infants is unjustified. He suggests that those who will or must have contact with infants should be made to realize the danger and that leprous parents who have not the means to prevent such contact should be extended some help for the care of the infants up to the age of 4 or 5 years, when they are no longer carried in the arms. Realizing the difficulties of educating the people and enlisting their cooperation, he recommends two stages before changing the present method: (1) a stage of preparation or education, for 5 to 10 years or longer, and (2) a liberalization stage, permitting the leper to stay in his home under conditions to be prescribed.

—J. O. NOLASCO

- [PHILIPPINES] Report of the Council of Hygiene on the present status of leprosy, based on Dr. Manalang's plan of leprosy control. *Month. Bull. Bur. Health (Manila)* 18 (1938) 545-551.

The Council of Hygiene, an advisory body to the director of health, dealing with the proposals of Manalang gives a historical narrative of the progress of leprosy control in the Philippines since the establishment of the Culion Leper Colony in 1906, as follows: (a) isolation, (b) improvement in treatment, (c) paroling of negatives, (d) voluntary presentation of patients following the parole of negatives, (e) privileges granted patients to be paroled, (f) establishment of regional treatment stations and (g) a follow-up system. These efforts of the government are considered to be giving satisfactory results, and the time may come when a more liberal system of segregation may be adopted—when some of the obscure points of the disease are solved. The proposals mentioned are discussed from four points of view: (1) Scientific: the contention that leprosy is acquired in infancy and early childhood and that adults are immune must as yet be accepted with certain reservations. The release of active or positive lepers with the requirement that they shall not come in contact with children is considered a very delicate step, as it would result in scattering the sources of infection and probable further spread of the disease. (2) Administrative: the plan to release the lepers and allow them to stay in their homes would involve a difficult administrative problem. A large personnel would be required for the follow-up work and supervision, and that would consume any savings that could be effected from the discontinuance of segregation, and even so contact with healthy persons and children might not be prevented. (3) Economic: possible adverse effects on commercial relations with foreign countries and on the tourist trade have to be considered. (4) Social: the objection to the liberalization of leprosy control from this point of view is that it may be the source of complaints from the poor class of lepers who cannot comply with regulations regarding home isolation. If only the well-to-do patients were allowed that privilege, others would complain of discrimination. The moral suffering of a patient isolated in his home, including his relatives, is also mentioned. The resolutions

of the Cairo congress are quoted, and it is observed that the present system in the Philippines conforms to the principles of prevention and control of leprosy as laid down therein.

—J. O. NOLASCO

- RAI, S. AND MAJIMA, S. Leprosy survey in Formosa. Report III. Lepers in prefecture of Takao. Trans. 10th Meet. Japanese Lep. Assoc., *La Lepro* 9 (1938) suppl. 19-20 (abstract).

This third leprosy survey in Formosa (the first was of Goketsu-sho, in Taihoku prefecture, and the second of the island of Boko-to), was of (a) Shajo-sho, an out-of-the-way village on the seacoast and a well-known center of leprosy, the people of which are mostly farmers; and (b) the town of Kigo—a part of the city of Takao—most of the people of which are seamen, fishermen, boat carpenters, etc. In the former place 2,513 of the 2,826 inhabitants were examined, not including children under 3 years of age; new cases plus old known ones totalled 20, or 7.7 per thousand. In the latter place 11,534 out of the 11,561 inhabitants were examined; the cases totalled 27, or 2.3 per thousand.—[From abstract.]

- KAMIKAWA, Y., SATO, T. AND ICHIKAWA, S. Leprosy survey in Formosa. Report IV. The lepers in prefecture of Tainan. Trans. 10th Meet. Japanese Lep. Assoc., *La Lepro* 9 (1938) suppl. 20-21 (abstract).

In this survey two contrasting areas were investigated, (a) Yamagamisho, an interior village the principal occupation in which is farming, and (b) Anpin, a fishing town on the coast near Tainan. Over 97% of the 11,907 people in these areas were examined. Cases were found only in the Yamagamisho district; the total number of cases, newly found (5) and old, is 13 in a population of 6,456, or 2 per thousand. An interesting observation is that all of them came from three villages which are located close together; the other villages are entirely free. Furthermore, the severe cases came from a single village. In Anpin, from which there are 3 old cases, no new ones were found.—[From abstract.]

- TAKASHIMA, S. Analytical studies in lepra statistics on the life table of lepra. Trans. 10th Meet. Japanese Lep. Assoc., *La Lepro* 9 (1938) suppl. 22-23 (abstract).

This is a brief but highly technical statement on the subject of the longevity of lepers, with a table giving statistics of the time between the onset of the disease and death, and a curve showing "D(x) plotted on a logarithmic scale." It will presumably be intelligible to the statistician.

—H. W. W.

- TODA, H. On the relation between lepers and lineage. Trans. 10th Meet. Japanese Lep. Assoc., *La Lepro* 9 (1938) suppl. 14-18 (abstract).

This is an interestingly unusual attempt to ascertain whether or not, in the large, there is any tendency for leprosy to run in families. Such an inquiry would be of no avail in Japan if it were possible, the author points out, because the extraordinary attention to the question of leprosy in the families of prospective mates results in a turning of leprous families to each other, and because the numbers of family groups is very large. In Korea the situation is very different. The number of family names is limited to 200 or so, and a few family groups or clans account for the greater part of the whole population. Only one of these clans permits

marriage between parties with the same patronymic, though only in families originally from different districts. In the past the people have paid little attention to the matter of leprosy in this connection. The investigation is based on an analysis of 3,835 cases in the government leprosarium, all but 85% of whom come from three prefectures, the other ten accounting for only 15%. Tables give the percentages of the principal patronymics among these patients and among 24,987 persons in the three provinces from which most of the patients came, plus one other district taken as representative of the rest of the country. No significant difference in frequency is found between the two groups; for instance, the percentages for the most common patronymic, Kin, are 22.7 and 21.7, respectively; and those of the second most common, Ri, are 12.6 and 14.4. It is concluded that leprosy may be found in any clan and that the number of cases from a given clan is proportional to its size. —H. W. W.

- TOLENTINO, J. G. The role of heredity in the transmission of leprosy. *Month. Bull. Bur. Health (Manila)* 18 (1938) 261-272.

Basing his line of reasoning on Mendel's law of heredity, the author tries to illustrate its application by analyzing the occurrence of leprosy in ten families. In the tenth family of the series the application of the law required some stretching of the imagination to make the case conform with it. The following conclusions are set forth: (a) there are individuals who are naturally resistant and others who are naturally susceptible to leprosy infection; (b) no amount of exposure can infect a resistant individual, while a slight, often unnoticed, exposure may infect a susceptible; (c) not all children are susceptible, not even all children of leprosy parentage; (d) adult infection is possible, and does occur; (e) susceptibility or resistance is very likely hereditary. —J. O. NOLASCO

- ROUSSEAU, P. De la probabilité de la contagion de la lèpre par la voie digestive. [Probability of contagion by the digestive tract.] *Sci. med.* (1938) 306-309; also *Monde méd.* (1938) 711-715.

This paper [which was sent to the Cairo conference, without author's summary; see *THE JOURNAL* 6 (1938) 440] calls attention to the working hypothesis that contagion may take place by way of the digestive tract. If it can be said that leprosy is a disease of dirty hands, it is probable that it is contracted from food contaminated through the means of the hands with nasal mucus rich in bacilli. The rarity of leprotic lesions in the gastro-intestinal tract does not necessarily invalidate this hypothesis, for the bacilli may well pass through the intestinal wall without causing lesions of it. The author offers suggestions for the study of this matter. —[From abstract in *Bull. mens. Off. internat. Hyg. publ.* 31 (1939) 126.]

- TISSEUIL, J. Essai d'inoculation de la lèpre humaine aux lépreux par greffe hétéroplastique dermo-épidermique. [Attempts to inoculate lepers with human leprosy by heteroplastic dermo-epidermal grafts.] *Bull. Soc. Path. exot.* 32 (1939) 382-385.

A small dermo-epidermal graft taken from an active tuberculous macule was inserted in the place of a small piece of skin removed from a healthy region of a patient presenting a leprosy macule at a distant point. The graft retracted, dried and fell off, but after some months a tuberculous leprotic lesion appeared at the place. —ET. BURNET

- TISSEUIL, J. Essais d'inoculation de la lèpre humaine au rat d'élevage. Première note. [Attempts to inoculate laboratory rats with human leprosy; first note.] Bull. Soc. Path. exot. 32 (1939) 542-545.

— Idem. Deuxième note. [Second note.] *Ibid.* 546-553.

The author reports the results of numerous attempts to inoculate rats with human leprosy, either with simple suspensions of the bacilli from lepromas, or with suspensions to which various substances had been added. Some of these substances (beef bile, the Grassberger bacillus and the B.C.G. bacillus) seemed favorable for the implantation of the bacilli; the others (gelatin, olive oil, glycerin and coal tar) were indifferent. It cannot be concluded that all of these attempts were entirely negative. To say nothing of the prolonged conservation of the bacilli in situ, they were found in some instances in the inguinal and axillary lymph nodes. In situ there were sometimes found granules and even larger masses where the bacilli seemed to have proliferated, infected cells and globi. Nevertheless, there was no generalized infection. —ET. BURNET

- FUJITA, K. Ein Ueberblick über die Sektionsprotokolle des Zensei-Hospitals. [Review of the autopsy protocols of Zensei hospital.] Trans. 10th Meet. Japanese Lep. Assoc., *La Lepro* 9 (1938) suppl. 39-42 (abstract).

In the 28 years since the first autopsy was done at Zensei in 1910, a total of 1,200 protocols have been written, not including those of cases under 15 years of age. The author has reviewed these records with regard to the causes of death and the kinds and frequencies of the pathological changes found in the different organs. Nodular cases constituted 83% of the total, neural 16%, macular 1%. The frequencies of the principal causes of death were: tuberculosis, 38%; kidney diseases, 20%; lung diseases other than tuberculosis, 11%; laryngeal stenosis, 3.6%; sepsis, 8.2%; intestinal diseases, 5.2%; leprous cachexia, 4.4%; circulatory diseases, 2.7%; erysipelas, 2.2%; malignant tumors, 1.2%; other causes, 3.7%. Numerous interesting items are included in the long list of pathological conditions recorded, for example leprous changes of the cranial bones (found 39 times), of the adrenal (640 times), of the spleen (754 times), of the liver (811 times), of the testes (582 times), of the epididymis (103 times), thickening of the vagus (left, 101 times, right 215 times) and gray degeneration of the posterior columns of the cord (280 times). —H. W. W.

- MITSUDA, K. Demonstration von Leprageweben. [Demonstration of leprous tissues.] Trans. 10th Meet. Japanese Lep. Assoc., *La Lepro* 9 (1938) suppl. 11-13.

This presentation would seem to be the full notes of a demonstration made by Mitsuda of certain particularities of the pathology of leprosy, very condensed and difficult to summarize further. There are three main topics: leprous arteritis and endarteritis, changes in the testicle in children with nodular leprosy ("lepra tuberosa juvenilis"), and the genesis of the so-called globi. The last subject is dealt with in detail, under ten sub-heads, all referring to conditions found in the testes. —H. W. W.

- + MITSUDA, K. AND ZINGU, R. Aortitis leprosa. [Leprotic aortitis.] *Japanese Jour. Dermat. & Urol.* 45 (1939) 35 (abstract).

The authors discuss the changes in the arteries in 18 cases of severe nodular leprosy. Though the larger arteries showed only slight abnormalities, the peripheral arteries on the other hand were markedly affected and showed many bacilli in their intima.—[Translation of abstract.]

- INABA, T. Ueber die Russelchen Körperchen in den Inguinallymphdrüsen der Leichen Lepröser. [Russell's bodies in the inguinal lymph nodes in leprosy.] Trans. 10th Meet. Japanese Lep. Assoc., La Lepro 9 (1938) suppl. 49-50 (abstract).

These bodies were found in the lymph nodes, both within and outside of cells, usually isolated but sometimes in small groups, usually in the leprosy infiltrations.—[From abstract.]

- MORIYA, M. Ueber leprose Veränderung des Condyloma acuminatum bei einer Leprösen. [Leprous changes in condyloma acuminatum in a leper.] Japanese Jour. Dermat. & Urol. 44 (1938) 192 (abstract).

A woman aged 24 years with nodular leprosy had several small papillary nodules around the anus. The histological picture indicated that the condition was a mixture of a condyloma with lepra cells and bacilli.—[Translation of abstract.]

- MINAMI, K. Pathohistologische Studien über die Nerven im Augengebiet bei verschiedenartigen Krankheiten. 1. Mitteilung. Pathohistologische Beobachtungen über die Nerven im Augengebiet bei Lepra. VI. Teil. Ueber die pathohistologischen Veränderungen der Aderhautnerven von Leprakranken. [Histopathological studies of the nerves in the ophthalmic region in various diseases. 1. In leprosy. VI. The histopathological changes of the choroid nerves in lepers.] Act. s. O. Jap. 42 (1938) 16.

Studying the histological changes of the nerves of the choroid in nodular leprosy, the author found that in general the cellular infiltration and bacilli were mostly in the anterior half. Various changes were found in these nerves—swelling or shrinkage, separation of the fibers and loosening of the fibrils, and segmentation and twisting; finally, there were seen vacuolation and breaking up of the fibrils to form granular or drop-like decomposition or degeneration forms. These changes were found mixed with each other, more marked in the anterior part than posteriorly, but secondary degenerative changes were found in the latter portion. Bacilli were found in numbers in the nerve bundles or around them, and the degeneration of the nerves and irregularity of the fibers was most marked where the bacilli were most numerous.—[From abstract in *Kumamoto Med. Jour.* 1 (1938) 44.]

- TAKABASHI, T. Histopathologische Untersuchung des Sehnerven bei Leprakranken. [Histological investigation of the optic nerves in leprosy cases.] Trans. 10th Meet. Japanese Lep. Assoc., La Lepro 9 (1938) suppl. 45-46 (abstract).

The optic nerves of 100 cases were examined, 79 nodular and 21 neural. Only in the former group were important changes found. In one case numerous foci of bacilli were found in both nerves. Cellular infiltration of slight degree was found in five cases, in both nerves in three and in only one nerve in the other two. Connective tissue increase was present especially in the nodular cases.—[From abstract.]

- SANTONASTASO, A. Considerazioni generali sulle manifestazioni cliniche oculari e sulle alterazioni istologiche della lebbra. [General considerations of the clinical ocular manifestations and histological changes in leprosy.] *Gior. italiana Mal. exot. Trop. Ig. colon.* 15 (1937) 81-84.

Consideration of some of the problems of the pathology of leprosy may be aided by facts observed in the study of the lesions of the eye. After a description of the principal types of lesions encountered in the various parts of the ocular apparatus, the author states—in connection with the participation of the reticulo-endothelial system in the leprosy processes—that in the eye as elsewhere the disease affects by preference the tissues rich in reticulo-endothelium. The alterations in the distribution of the pigment seems to corroborate, in his opinion, the views of those who ascribe leprosy depigmentation to a direct effect of the bacilli and its toxins on the pigment, causing its lysis and migration.—[From abstract in *Rev. Brasileira Leprol.* 6 (1938) 381.]

- BOSCO, I. AND BERNA, P. Sistema reticulo istiocitario e lepra. [The reticulo-histiocytic system in leprosy.] *Boll. Sez. reg. Soc. italiana Dermat. e Sifil.* 16 (1937) 158-159.

Previous experience has led the authors to doubt that the fixation of methylene blue in leprosy lesions is due to vital staining of the bacilli. The hypotheses that remain are: a special fixation activity of the reticulo-endothelial system, or a modification of the oxido-reduction process by the dye, or perhaps an action of the histogenous lipids. In connection with the first of these hypotheses they investigated the granulopexic index of the system in leprosy by the test of Adler and Reimann and found that it is lowered, proportionately to the severity of the disease. When Congo red is injected into the lesions they are not colored, but on the contrary seem to repel the dye to the periphery in the form of an areola, which confirms the weak fixing power of the leprosy tissue.—[From abstract in *Rev. Brasileira Leprol.* 6 (1938) 379.]

- CIACCIO, I. Studio citologico di essudati cutanei aspecifici ed artificialmente provocati nella lepra. [Cytological study of the cutaneous exudate provoked nonspecifically and aseptically in leprosy.] *Patologica* 29 (1937) 496-501.

Allergic reactivity, specific or nonspecific, of the skin is obviously related to the local histogenic modifications, to which the activity of the reticulo-endothelial system contributes. This matter was investigated experimentally by blistering with cantharides and examining the exudate so obtained. In 6 cases of leprosy of various forms, in healthy and affected skin areas, there was found in general an increased percentage of eosinophilic and histiocytic elements in the cases with evident organic defense, and a predominance of granulocytes in those with diminished resistance, which is in accord with the concepts of Kauffmann.—[From abstract in *Rev. Brasileira Leprol.* 6 (1938) 380.]

- TANIMURA, T. AND YAMAMOTO, M. Ueber das Röntgenbild der Brust bei Leprosen. [The x-ray picture of the chest in leprosy.] *Trans. 10th Meet. Japanese Lep. Assoc., La Lepro* 9 (1938) suppl. 34-35 (abstract).

The findings in 100 cases of leprosy of various kinds in persons of

various ages are reported in detail. The condition taken to be most significant (seen in 2 cases of the macular and one of the neural form) was the presence in both lungs of numerous, disseminated, small-spotty shadows which usually were sharply outlined but seemed clear and for the most part ascinous, seldom peribronchial.—[From authors' abstract.]

TANIMURA, T. AND YAMAMOTO, M. Histologische Untersuchungen der Veränderungen der Lungen an den Leichen Lepröser. [Histological study of lung lesions.] Trans. 10th Meet. Japanese Lep. Assoc., *La Lepro* 9 (1938) suppl. 48-49 (abstract).

This report is essentially, if not actually, identical with one published by Yamamoto alone [see *THE JOURNAL* 6 (1938) 584]. —H. W. W.

TANIMURA, T. AND YAMAMOTO, M. Ueber Lungenveränderungen durch intratracheale Einspritzungen von Lepra- und diesen ähnlichen säurefesten Bazillen. [On the lung changes produced by intratracheal injection of leprosy and similar acid-fast bacilli.] Trans. 10th Meet. Japanese Lep. Assoc., *La Lepro* 9 (1938) suppl. 53 (abstract).

Leprosy and similar acid-fast bacilli [referring evidently to cultures] were injected intratracheally into guinea-pigs one or more times and the changes studied histologically. The findings are summarized briefly.

—H. W. W.

YAMAMOTO, M. Klinische und experimentelle Untersuchungen ueber die Veränderungen der Lungen bei Lepra. II. Ueber das Roentgenbild der Lunge bei Leptosen. [II. X-ray findings in the lungs.] *La Lepro* 9 (1938) suppl. 9-10 (abstract).

This summary is identical with that presented at the 1937 meeting of the Japanese Leprosy Association by Tanimura and Yamamoto (see above). —H. W. W.

YAMAMOTO, M. Klinische und experimentelle Untersuchungen über die Veränderungen der Lungen bei Lepra. III. Ueber Lungenveränderungen durch intratracheale Einspritzungen von Lepra- und diesen ähnlichen säurefesten Bazillen. [III. The lung changes induced by intratracheal injection of leprosy and similar acid-fast bacilli.] *La Lepro* 9 (1938) suppl. 87 (abstract).

This summary is practically identical with that presented at the 1937 meeting of the Japanese Leprosy Association by Tanimura and Yamamoto (see above). —H. W. W.

TORRES, O. AND FIGUEIREDO, J. Formula leucocytaria na lepra. [The leucocyte formula in leprosy.] *Trab. I Congr. Reg. Med. Bahia*, 1937, pp. 262-264.

Another report that shows that leprosy does not have a characteristic leucocyte formula. Eosinophilia, which is common, is associated with intestinal parasites.—[From abstract in *Rev. Brasileira Leprol.* 5 (1937) 563.]

RIBEIRO ARANTES, F. Contribuição ao estudo de pathologia e terapeutica da lepra. Eritrosedimentação e evolução da doença; ideias sobre terapeutica baseada nas funções do reticulo-endotelio. [Contribution to the study of the pathology and therapy of leprosy. Eryth-

rocyte sedimentation and evolution of the disease, and therapy with relation to function of the reticulo-endothelial system.] *Rev. Brasileira Leprol.* 6 (1938) 113-133.

The first part of this article is a brief review of ideas concerning the reticulo-endothelial system, and a consideration of it in the three great chronic infections, tuberculosis, syphilis and leprosy. It is concluded that if leprosy is not a reticulo-endotheliosis, it at least affects that system. Since the elements of that system are the natural means of defence of the organism, it is necessary to utilize them in treatment, and in that connection the author discusses critically the therapeutics of leprosy with suspensoids and colloids, and also functional tests of the reticulo-endothelial system. His personal contribution is in connection with the erythrocyte sedimentation test, of which he has made nearly 50,000 on 300 patients, 150 of whom (12,000 tests) have gone home and 150 of whom (35,000 tests) have had to remain in the hospital because of the state of the disease. He has established certain curves from the variations of the sedimentation rate over the time of observation, which curves he believes are related to the state of the reticulo-endothelial system—normal, hypofunctioning or hyperefunctioning. Determination of the functional state of the system should be a part of the procedure in connection with treatment, concerning other features of which he offers suggestions.—[From abstract in *An. Brasileira Dermat. Sifilog.* 13 (1938) 176.]

SCADAFERRI, N. Hemosedimentação das hemátias na lepra. [The red-cell sedimentation rate in leprosy.] *Folha méd.* 19 (1938) 238.

The author, from a study of 21 cases by the technique of Muir, concluded that the sedimentation rate is lowest in the tuberculoid form of the disease, increased in the neural form, and greatest in the lepromatous or nodular form.—[From abstract in *An. Brasileira Dermat. Sifil.* 13 (1938) 181.]

SAI, K. The blood pressure of lepers. *Trans. 10th Meet. Japanese Lep. Assoc., La Lepro* 9 (1938) suppl. 31 (abstract).

In a majority of the 680 cases studied (441 male, 239 female), the blood pressure was lower than normal, somewhat more so in nodular than in neural cases.—[From abstract.]

HASEGAWA, K. Studien über den Blutdruck der Leprösen. [Study of the blood pressure in lepers.] *Trans. 10th Meet. Japanese Lep. Assoc., La Lepro* 9 (1938) suppl. 42-43 (abstract).

On the basis of examinations of 1,223 cases at the Zensei hospital the author reported (1937) that in general lepers are hypotonic, the blood pressure being about 15-25 mm. Hg lower than in healthy Japanese. Further investigations have shown that the red-cell sedimentation rate, which is usually increased and in general parallels the clinical condition, has no definite relation to blood pressure (401 cases tested). On the other hand viscosity of the blood (determined in 27 cases and found usually lower than normal) in general shows a parallel with blood pressure. Blood pressure in leprosy children (423 cases) has also been measured.—[From abstract.]

DE GODOY CREMER, S. Contribuição ao estudo dos reflexos na lepra. [Contribution to the study of reflexes in leprosy.] *Rev. Brasileira Leprol.* 7 (1939) 63-74.

From a study of 189 patients the author draws the following conclusions: (a) leprosy, being a disease that affects the peripheral nervous system almost systematically, produces serious alterations in the reflexes in the great majority of cases; (b) all the superficial or tendon reflexes may be altered; (c) in the pure neural form the degree to which the reflexes may be altered parallels the degree of advancement of the disease; (d) in the mixed forms the reflexes are most changed in those cases in which the neural element predominates; (e) in the pure cutaneous forms (nodular) the reflexes are not altered; (f) when clinical "cure" is obtained the abolished or diminished reflexes do not become normal; (g) with the occurrence of neuritis during the evolution of the disease the normal reflexes may become altered but the abolished reflexes are not influenced. These conclusions constitute the general rule, though a few exceptions have been noted. Examples are a case of 4 or 5 years duration whose reflexes were all normal, and on the other hand one of only 5 or 6 months duration and with few symptoms but showing serious alterations of the reflexes. The author asks if the first case denotes special benignity of the disease, and the second one a tendency to a rapid aggravation. A study of this matter, he thinks, may show that the study of the reflexes is of practical value in prognosis.

—H. C. DE SOUZA-ARAÚJO

RYRIE, G. A. Pregnancy and leprosy. *British Med. Jour.* 2 (1938) 39-40 (correspondence).

In the interaction of pregnancy and leprosy the action is totally one-sided; the disease does not have the slightest effect on the course of pregnancy but is markedly affected by pregnancy. A slow but progressive spread of the disease is usual, first noticeable in the later months of pregnancy and going on long after delivery. A pregnant woman with mild symptoms of leprosy may become an advanced case in a year's time. The primary factor is probably mineral depletion, as an improved diet with increased calcium intake appears to check the tendency to leprosy aggravation. Metabolic disturbances of various kinds frequently precipitate lepra fever, the author states, but he has never seen it caused by the strain of pregnancy or parturition, though he has seen very severe attacks after much less marked disturbances—dietary indiscretions or a few days' constipation, for instance. The aggravation of the disease caused by pregnancy is insidious and chronic. Routine examination of placenta, cord, and baby are constantly negative for *Mycobacterium leprae*, and the child, if removed from the mother at or shortly after birth, remains free from leprosy.—[From abstract in *Lep. Rev.* 10 (1939) 134.]

PLANTILLA, F. C. Leprosy manifestations. I. The early lesions. *Month. Bull. Bur. Health (Manila)* 18 (1938) 21-26.

The following are the different early manifestations or diagnostic features of leprosy as observed in Cebu, which are liable to be met with in making a leprosy survey among school children, contacts and inhabitants of a leprous district: localized anesthesia, the whitish patch, the hazy patch, the flat patch, the keratotic patch, the coarse whitish patch, and the papulate area. Each is objectively described. Other early lesions mentioned are the reddish patch, papules, nodules, infiltrations and scars, which are also described in some detail.

—J. O. NOLASCO

- LARA, C. B. Early leprosy in children of lepers. Further observations on the early, definitely identifiable, leprotic lesions. *Month. Bull. Bur. Health (Manila)* 18 (1938) 325-350.

This paper is a lengthy report on periodic examinations in the search for early leprotic lesions in 629 children born in the Culion colony and living with their leprous parents. Thirty-five cases with definite or probable leprotic lesions of the skin have been discovered, 26 of which occurred among a group of 61 who were given the lepromin test from one to four times. Lesions resembling minute wheals, which are described in some detail, have been observed in a number of instances. A type of leprotic skin manifestation which is scar-like, slightly thickened and distinctly indurated, not previously recorded by other students of early leprosy, is also described. Of the 35 cases the earliest identifiable manifestations consisted of: single or multiple wheal-like lesions (14 cases), papular lesions (10 cases), a mixture of these two (2 cases), pale areas (2 cases), lichenoid or goose-flesh areas (2 cases), scar-like, indurated lesions (2 cases), a combination of papules and the scar-like condition (1 case), a depigmented scar-like spot (1 case) and an indeterminate type (1 case). Because of the very small size of the lesions the author insists on the necessity of painstaking examination, aided by a hand lens without which some of the cases would have been missed.

—J. O. NOLASCO

- TAKEDA, M., OBAYASHI, T., NAKAYAMA, T. AND YASUHARA, Y. Mental and physical examination of unstained children of lepers of Unosawa, the village of lepers, Kusatsu District, Japan. *Trans. 10th Meet. Japanese Lep. Assoc., La Lepro* 9 (1938) suppl. 22 (abstract).

A comparison of the mental and physical findings in nonleprous children of school age, born of leprous parents, with those in children of healthy parentage, reveals no noteworthy differences.—[From abstract.]

- SAENZ, B. AND PALOMINO, J. C. Tuberculoid leprosy. *Arch. Dermat. & Syph.* 39 (1939) 456-470.

This paper discusses largely the histopathologic picture of tuberculoid leprosy and its differentiation from other skin affections. Seven cases observed in Cuba, five of them in females, are reported in some detail. The authors insist that the term "tuberculoid" is used solely to describe the histological picture, and that claims that such lesions can be recognized clinically are erroneous; the condition is diagnosed primarily from the histopathologic findings, supported by clinical or other observations. Stress is laid on the difficulty of finding acid-fast organisms either in smear preparations or tissue sections. Referring to sarcoid, it is stated that in some cases leprosy "affects the reticuloendothelial system of the skin, lymphatic glands, bone marrow and spleen and produces with significant frequency cutaneous lesions of a marked sarcoid appearance." In one of the six cases of which roentgenograms of the hands, feet and chest were made there were bone changes described as of the early period of Jüngling's cystoid type, and lesions of the glands at the hili; a guinea pig inoculation was negative, and sections of the skin showed sarcoid-like changes. In the other five cases examined similarly by x-ray the findings were negative. The Mitsuda reaction was positive in only

3 of 5 cases tested. The histological changes are classed as (a) pretuberculoid or subtuberculoid, (b) sarcoid-like, and (c) follicular. Of the lesions examined only one was major tuberculoid; one was a flat ("simple") macule, and it is stated that the common belief that the simpler forms of the leprids are not tuberculoid may be due to failure to recognize the true nature of the lesser degrees of the tuberculoid picture. —H. E. HASSELTINE

- RABELLO, JR. *Lepra tuberculoide infantil*. [Infantile tuberculoid leprosy.] *An. Brasileira Dermat. e Sifil.* 13 (1938) 164 (abstract).

The author reports on three cases of a frustrate form of leprosy encountered in children, in which the diagnosis of tuberculoid leprosy could be made on clinical grounds, by which means the condition can be recognized in its slightest forms. The Mitsuda reaction was positive in all; in one, in which the lesion was of pretuberculoid structure, the reaction lesion measured 6 mm., while in the other two, of frankly tuberculoid structure, it was 3 and 6 mm., respectively.—[Translation of abstract.]

- PEREIRA CASSIANO, T. *Reação leprotica erisipelatoide*. [Erysipelatoid lepra reaction.] *Rev. Brasileira Leprol.* 5 (1937) Spec. No. pp. 321-327.

Lepra reaction may at times (the author gives notes of sixteen examples) take on characters resembling true erysipelas and may cause confusion in diagnosis. Citations on the subject from Leloir, Gaucher and Bensaude, and Zambacho Pacha are made. General systemic upset is evidenced by fever (38°-40°C.), anorexia, occasionally nausea and vomiting, and prostration. Locally there is an erythematous, swollen, edematous patch with pain, greatly aggravated by pressure and heat; in 6-12 days desquamation occurs. Differences from true erysipelas are that, though commonly found on the legs and face and rarely on the arms, the condition occurs only where there are cutaneous lesions of leprosy, it is never infective, often mild, never fatal, and not associated with a streptococcus. The reaction lesions almost never have the sharp border that is seen in true erysipelas. They clear up readily under treatment with prontosil which is given by intra-arterial and intramuscular injections.—[From abstracts.]

- FERNANDEZ, J. M. M. *La réaction lépreuse et l'érythème noueux*. [Lepra reaction and erythema nodosum.] *Bull. Soc. française Dermat. Syph.* (1938) 1271-1274.

Of the many manifestations of lepra reaction in lepromatous cases, two are mentioned particularly—those resembling erythema multiforme and erythema nodosum. The latter, which the author speaks of as a special form of the condition, is discussed in some detail. The role of the Hansen bacillus in its production is held to be uncertain. The Mitsuda reaction continues negative. Mentioning briefly the many conditions that may give rise to lepra reaction and the various views as to its nature, the author points out that the real mechanism of the process and its relations in that respect to erythema nodosum are yet to be determined. —H. W. W.

- LATAPI, F. *Manifestaciones agudas de la lepra*. [Acute manifestations of leprosy.] *Medicina* 18 (1938) 526-538.

This is a discussion of lepra reaction, the symptoms of which, it is pointed out, are extraordinarily variable with regard to onset, localization,

morphology of the cutaneous lesions, evolution and duration. The onset may be very brusque but there is usually a prodromal phase of short duration (less than a week) similar to that of other infectious diseases (fever, chills, etc.). Regarding the cutaneous symptoms, existing lepromas almost always become congested and increase in size, the erythematous leprids deepen in color, and around the tuberculoid lesions there appear new papules of a more inflammatory aspect. New lesions developing on previously apparently healthy skin—macules, papules and nodules—are always congestive and fundamentally resemble three dermatoses: erysipelas, polymorphous erythema and erythema nodosum. Acute pseudo-erysipelatos leprosy is very similar to true erysipelas and occurs by preference on the face, almost always on both maxillae, another site of election being the leg; the lesions are intensely inflammatory infiltrated plaques without clearly defined borders. The leprosy polymorphous erythema is entirely identical with that of leprosy itself, and the same applies to the acute nodosities. In addition to the three kinds of cutaneous lesions mentioned, other manifestations may occur—articular, orchitic, ocular and pleural; the condition also produces certain nervous symptoms which are very disturbing to the patient, particularly neuritis.—[From abstract in *Urol. & Cutan. Rev.* 43 (1939) 429.]

- OKUMURA, M. Statistische Untersuchungen über die Lepra der Mundhöhle. [Statistical investigation of leprotic affection of the buccal cavity.] Trans. 10th Meet. Japanese Lep. Assoc., La Lepro 9 (1938) suppl. 25 (abstract).

This report gives figures regarding leprosy changes in 700 cases of nodular leprosy (49% affected), with relation to sex, age and duration of the disease. Nothing is said in this abstract about the nature of the lesions, but percentages for the regions affected are: lip 53%, uvula 43%, palatine arch 33%, soft palate 32%, hard palate 29% and tongue 18%.

—H. W. W.

- SERRA, A. Localizzazioni non comuni di lepra genitale. [Uncommon localization of genital leprosy.] Boll. Sez. reg. Soc. italiana Dermat. Sifil. 16 (1937) 375-379.

Among 200 cases examined, 13% had lesions of the vulva, 10% of the prepuce, 5% of the balanic sulcus and 3% of the glands; these lesions were found especially in the nodular and mixed types. Lesions of the testes and epididymis were the most frequent, in 97 and 29% respectively in the two types [presumably lepromatous and neural]. One of the cases merits special note because of the clearly venereal history and the clinical aspect, which necessitated differential diagnosis from syphilitic chancre. After sexual relations with a woman who was later interned for leprosy, the patient presented a hard nodular lesion at the balano-prepuce sulcus accompanied by enlargement of the inguino-crural lymph nodes. Serological reactions and an examination for treponemata were negative, but numerous Hansen bacilli were found in the gland juice.—[From abstract in *Rev. Brasileira Leprol.* 6 (1938) 381.]

- BOENJAMIN, R. Differentieele diagnose tusschen lepra en syringomyelia. [Differential diagnosis between leprosy and syringomyelia.] Geneesk. Tijdschr. Nederlandsch-Indië 78 (1938) 1807-1816.

Nerve leprosy must occasionally give difficulty in diagnosis, as in the present case which might have been confused with syringomyelia, especially in favor of that diagnosis was atrophy of the shoulder muscles, the arm and hand muscles remaining unaffected. On the other hand the disturbances of sensation did not show segmental cord distribution, and there was nodular thickening of the peripheral nerves, most significant being that of the great auricular. Repeated examinations of nasal mucus, blister fluid and thick blood drop for bacilli were negative, but they were found in a smear from the great auricular nerve, a portion of which showed the histological features of leprosy, including extensive central necrosis and peripheral granulation tissue. Such examinations of nerves is recommended in doubtful cases.—[From abstract in *Trop. Dis. Bull.* 36 (1939) 244.]

HOPKINS, R., BLACK, S. H. AND ROSS, H. Xanthelasma and leprosy. *Arch. Dermat. & Syph.* 39 (1939) 239-252.

For many years Hopkins has observed xanthelasma in patients of the Carville leprosarium, and in 1937 a survey was made to determine its frequency. It was found in 27 of 243 patients examined. All were over 30 years of age, a majority of them 40 or more. Sex influence seemed slight. In 235 tuberculous patients in the Charity Hospital, New Orleans, the condition was found in none, and in 200 persons attending the Tulane University clinic it was found in 2. The condition is noted most frequently on or about the eyelids and orbital regions, thus differing from the location of leprosy lesions. Biopsy was made in 6 individuals. Xanthomatous tissue could be differentiated from leprosy tissue with the aid of Sudan III, but not with the haematoxylin-eosin stain. Acid-fast organisms were found in scrapings from xanthelasma tissue in 10 out of 14 individuals. Biochemical determinations of total blood lipoids, fatty acids, neutral phosphatides and cholesterol were made in 21 cases, also with 41 leprosy individuals not showing xanthelasma and with 10 presumably normal non-lepers. The greatest variation from normal was found in the blood lipoid and cholesterol figures of the patients with xanthelasmic lesions. It is possible that changes in the ratio of fat emulsifying agents in the serum may be an etiologic factor in the condition. —H. E. HASSELTINE

RODRIGUEZ DE SOUZA, A. Coexistencia de lepra e lipomatose simétrica. [Coexistence of leprosy and symmetrical lipomatosis.] *Rev. Brasileira Leprol.* 7 (1939) 91-93.

The author relates observations of a leper showing a symmetrical lipomatosis. The patient had lepra reaction, and the symmetrical lipomatosis was localized on the chest. The importance of the differential diagnosis between lepra reaction, von Recklinghausen's disease and the Darier-Roussy sarcoid is pointed out. —H. C. DE SOUZA ARACUJO

RAI, S. Tuberkulose Infektion Leprakranker im Lichte der Mantoux'schen Reaktion. [Tuberculous infection in leprosy patients in the light of the Mantoux reaction.] *Trans. 10th Meet. Japanese Lep. Assoc., La Lepro* 9 (1938) suppl. 35 (abstract).

Among leprosy patients in Japan (ages 21 to 45 years) the Mantoux reaction is positive in 81%; in Formosa in 84%. Males give higher rates than females. Neural cases give the highest percentages, nodular cases less, macular much lower. However, there are numerous cases with nega-

tive reactions in which tuberculosis is easily demonstrable. The failure of these cases to react positively is ascribed to their weakened condition.—
[From abstract.]

- ABE, H. Erysipel als Komplikation der Lepra (Klinische Beobachtungen). [Erysipelas as a complication of leprosy; clinical observations.] Trans. 10th Meet. Japanese Lep., Assoc. La Lepro 9 (1938) suppl. 24 (abstract).

Erysipelas is stated to be an important complication in leprosy, at least in Japanese leprosaria. At the Zensei hospital Tokyo [1,200 inmates in 1937], 117 cases had been observed during quite recent years. The report records the observations made on these cases. [A report by Otsuka and Yoshinaga, noted elsewhere, gives 2.2% as the death rate from erysipelas in this institution since 1910.]—[From abstract.]

- BUTTERWORTH, T. Leprosy. [A case report.] Arch. Dermat. & Syph. 35 (1937) 346.

Report of a case, of little interest except in that administration of potassium iodide had not caused the nasal smears to become positive, and that material obtained by puncture of the ulnar nerve was also negative.

—H. E. HASSELTINE

- JACOBSON, H. P. Leprosy. [A case report.] Arch. Dermat. & Syph. 36 (1937) 1310-1311.

This case, in a woman born in Mexico and resident in Los Angeles, California, for 15 years, is of interest because of the onset. The patient injured her left hand and a roentgenogram of the wrist was taken a few days later. An eruption appeared three days after that examination was made. A few weeks later (about two months after the injury) numbness of the index and middle fingers was noticed. Treatment, said to have consisted of application of ointments and diathermy, was given for several months by an osteopath, but "blisters" developed at intervals and the numbness became steadily worse. At the time of the report the skin lesions were confined to the affected hand and fingers, but smears from the nose contained numerous acid-fast rods.

—H. W. W.

- EBERT, M. H. AND SLEYPAN, A. Familial leprosy in an American-born patient. Arch. Dermat. & Syph. 39 (1939) 916-918.

This is a report of a case in an American-born woman, aged 54, a native of Virginia, who had always lived in the states of Virginia, Kansas and Illinois, all three of which are north of the area in which leprosy prevails in the United States. The patient has 6 children, one of whom developed leprosy in 1932. This girl was born in Kansas and had lived only in that state and Illinois. It appears probable that the mother received her infection from the daughter. The source of infection in the latter cannot be located.

—H. E. HASSELTINE

- SALAMAO, A. AND COELHO, J. T. Tratamento de lepra pelos esteres creosotados e iodados de chaulmoogra. [Treatment by creosoted and iodized esters of chaulmoogra.] Rev. Med. Minas 5 (1938) 37-49.

This is a report of the results of treatment of 47 cases during a period of 12 months, with more or less marked benefit in a large majority of them.

—H. W. W.

- SCHUJMAN, S. AND VACCARO, A. Tratamiento de las formas bacilíferas de lepra (cutáneas de Manila, lepromatosas de El Cairo) por las altas dosis de los derivados de chaulmoogra. [Treatment of lepromatous leprosy with large doses of chaulmoogra derivatives.] *Semana Méd.* 46 (1939) 428-437.

Chaulmoogra in high dosage (30 cc. weekly) is beneficial even in the intensely bacilliferous forms of leprosy. During a period of from 7 to 10 months, however, during which time from 500 to 900 cc. of esters were administered, neither clinical nor bacteriological negativity was obtained in the cases treated. Discrepancies in the evaluation of the effects of chaulmoogra is due to lack of uniformity in the selection of cases and of a definite method of evaluating the effects of medication. —G. BASOMBRIO

- BUTAVAND, A. Le traitement de la lèpre par le chaulmoogra. [Treatment of leprosy by chaulmoogra.] *Europe méd.* 3 (1939) 12-14.

A brief review, without new facts.

—ET. BURNET

- LEVY, G. Les traitements modernes de la lèpre. [Modern treatment of leprosy.] *Europe méd.* 3 (1939) 16-21.

A brief review, containing nothing new.

—ET. BURNET

- HUIZENGA, L. S. Trial of antileprosy serum treatment. *Jour. Clin. Med. (Shanghai)* 4 (1939) 102-105.

In this article are given the results of a trial of Reenstierna's leprosy serum on 10 patients in the Shanghai leprosarium. The method by which the trial was made was approved by Reenstierna during a recent visit. It has been found that the treatment does all that has been claimed for it; it is not specific, but is a valuable adjunct and may open the way to a better serum therapy.

—AUTHOR'S ABSTRACT

- SALIBA, N. Lepra e physiotherapia. [Leprosy and physiotherapy.] *Brasil-med.* 52 (1938) 430-435.

After a brief review of the physiotherapy of leprosy in general, the author reports five observations of plantar trophic ulcers (mal perforans) in cases at the Colonia Santa Izabel, in which the lesions have been cured by ultraviolet irradiation. Treatments given: minimum 6 applications, maximum 80, every day or second day, each of 10 to 20 minutes duration, distance 30 to 40 cm.—[From abstract in *An. Brasileira Dermat. Sifil.* 13 (1938) 174. This title was sent to the Cairo congress; see *THE JOURNAL* 6 (1938) 459.]

- KUCZYNSKI-GODARD, M. H. Inmunidad fisiologica. La terapia fisiologica de la verruga peruana y su posible importancia para los problemas profilatico-terapeuticos de la lepra. [Physiological immunity; physiological therapeutics in verruga peruviana and its possible importance with respect to the prophylactic and therapeutic problems of leprosy.] *Reforma Med.* 23 (1937) 905.

Intensive administration of vitamin B₁ causes considerable improvement in the evolution and prognosis of verruga peruviana, according to the author's investigations with autoinoculation of that infection. There are theoretical grounds (greater incidence and morbidity in males) for believing that in other diseases as leprosy and poliomyelitis, there is a

direct relation with deficiency of this vitamin. "Physiological therapeutics" with it should be associated with the chemical medication at present used in leprosy.—[From abstract in *Rev. Brasileira Leprol.* 6 (1938) 85.]

FLORIANI, C. El aspidosperma en el tratamiento de las manifestaciones oculares externas de la lepra. [*Aspidosperma* in the treatment of external ocular manifestations of leprosy.] Prensa Méd. Argentina 26 (1939) 832-836.

This article is a note to make known the value of a 2% aqueous solution of *Aspidosperma polyneuron* (between 3 and 10 drops) as an eye-wash for the treatment of the external ocular manifestations of leprosy. This drug, which is absolutely harmless, has been tried in five cases, all of which were benefited. —G. BASOMBRIO

— OBERDOERFFER, M. AND COLLIER, D. R. Prevention and treatment of ulcers and deformities in leprosy. *Lep. Rev.* 10 (1939) 151-163.

Muscular paralysis secondary to nerve lesions is given the principal role in the pathogenesis of trophic ulcers of the foot. The semiparalysed muscles of the sole become thinner and offer less resistance to the bones, which pierce the skin or produce such local pressure on it as to interfere with the blood supply. This area of thin, ischemic skin sooner or later gives way to local injuries; secondary infection may produce sequestra or destruction of subcutaneous tissue. No reason is seen for giving undue importance to trophic disturbances. Care and patience are required in the prevention and treatment of secondary deformities and ulcers. Stress is laid on the preventive power of active exercise of the particular muscle-groups concerned in cases still free from deformity. A detailed list is given of exercises for face, eyes, hands and feet, of breathing and general body movements, and it is claimed that 70% of neural cases with deformities have been considerably improved by such exercises. Also important, it is held, is the destruction by caustics or other methods of reservoir foci in the nose; cases which are bacteriologically positive in the nose, as a rule, show much more advanced deformities than the negative ones. —J. W. LINDSAY

— OTSUKA, R. AND YOSHINAGA, T. Ueber die Metallsalze im Blut von Lep-rakranken. [The metallic (calcium) salts in the blood of lepers.] *Trans. 10th Meet. Japanese Lep. Assoc., La Lepro* 9 (1938) suppl. 32 (abstract).

The calcium content of the blood was determined. In the macular form it was nearly as high as in the healthy, in the nodular form it was less, and in neural cases it was still less.—[Translation of abstract.]

— OSAKA, M. Ueber den gesamten Kohlendioxidgehalt im Blutplasma von Lep-rösen. [The total carbon dioxide in the blood plasma of lepers.] *Trans. 10th Meet. Japanese Lep. Assoc., La Lepro* 9 (1938) suppl. 31-32 (abstract).

With the van Slyke manometric apparatus the author has determined the plasma CO₂ of 40 patients with leprosy and 20 healthy people. In the former it was in general higher than normal. Between cases of the nodular and neural forms of the disease there was no noteworthy difference.—[Translation of abstract.]

- TANGUY, Y. La réaction au benjoin colloïdal dans le liquide céphalo-rachidien des lépreux. [The colloïdal benzoin reaction in the cerebro-spinal fluid of lepers.] Bull. Soc. Path. exot. 32 (1939) 278-280.

In 9 cases, 6 of the cutaneous and 3 of the neural form, examination of the cerebro-spinal fluid showed an absence of acid-fast bacilli or of any important cellular reaction, negative Bordet-Wassermann and Weischbrodt reactions, and broadening of the normal zone of precipitation in the colloïdal benzoin test.

—ET. BURNET

- VILLELA, G. Aspectos da bioquímica da lepra. [Aspects of the biochemistry in leprosy.] Rev. Brasileira Leprol. 7 (1939) 28-48.

The author points out the importance that the biochemistry of leprosy may have with regard to treatment, lepra reaction and even the classification of the forms of leprosy. His study is divided into three parts: the chemistry of the bacillus, in which is shown the similarity of composition of Hansen's and Koch's bacilli; the chemical variations of the blood and other fluids; and the relation of metabolism and nutrition to the disease, with special reference to the employment of vitamins. [See the author's review of this subject, THE JOURNAL 6 (1938) 61-72; 223-232.]

—H. C. DE SOUZA-ARAÚJO

- NAGAI, K. Histopathologische Befunde nach Anstellung der Mitsudaschen Reaktion. [Histological findings at the sites of the Mitsuda reaction.] Trans. 10th Meet. Japanese Lep. Assoc., La Lepro 9 (1938) suppl. 26 (abstract).

The author considers a positive Mitsuda reaction as one in which there is a 3 mm. induration after one week; in negative reactions the induration measures less than 2 mm. In a healthy person there was pus formation in the reaction lesion on the 18th day, excised on the 22nd day it showed epithelioid cells surrounded by a marked zone of small round-cell infiltration, and some giant cells; in the pus there were numerous polymorphonuclear leucocytes. In neural cases the injection sites were excised on the 3rd, 5th and 8th days; these specimens showed bacilli and massive epithelioid-cell infiltration surrounded by small round-cell zones, the whole most marked in the oldest lesions. In the nodular cases the excisions were made at intervals from the 3rd to the 34th days. Here there was no reaction whatever on the part of the tissue. With the exception of a few histiocytes that had phagocytized injected bacilli there was practically no cellular infiltration.—[From abstract.]

- NAGAI, K. Lecithin und Mitsuda'sche Reaktion. [Lecithin and the Mitsuda reaction.] Trans. 10th Meet. Japanese Lep. Assoc., La Lepro 9 (1938) suppl. 25-26 (abstract).

Leprous nodules were placed in: (a) 10% lecithin in 80% alcohol. (b) 10% gynocardia oil in 80% alcohol, and (c) 80% alcohol. After a half year the tissues in the last two lots remained unchanged and abundant bacilli could be demonstrated. In the lecithin solution, on the other hand, the bacilli showed degeneration, granulation and loss of acid-fastness. Boiling a nodule for an hour in a 5% lecithin emulsion caused similar degeneration and change of staining characteristics, whereas boiling in a 5% cholestrin solution did not. Skin reactions with an emulsion boiled in lecithin were nearly the same as with the Mitsuda antigen. Certain non-

acid-fast bacilli (coli, proteus and a water vibrio) in 1% lecithin gave weak reactions similar to that of Mitsuda.—[From abstract.]

DE SOUZA LIMA, M. Estudo critico do test lepromina. [A critical study of the lepromin test.] *Rev. Brasileira Leprol.* 6 (1938) 443-449.

The Mitsuda reaction the author looks upon as one of allergy, not of immunity. With regard to the results of it, he shows himself to be a little sceptical, particularly the positive reactions, which to him seem almost void of practical value. On the other hand negative reactions have an importance of the first order with respect to prognosis. In negative reactions the two principal causes of error, namely, nonspecific reactions and group reactions, disappear. Aside from the lepromatous cases on the one hand and the tuberculoid ones on the other, the principle can be established that all cases with negative reactions are of bad prognosis. Negative reactions are highly significant in cases that clinically are apparently cured, for in such cases there is every reason to expect that the disease may suffer relapse, an event that Fernandez has found to occur in 43% of cases followed for only a year.—[From abstracts. This note complements the one published in *THE JOURNAL* 7 (1939) 303.]

FERNANDEZ, J. M. M. Estudio comparativo de la reacción de Mitsuda con las reacciones tuberculínicas. [Comparative study of the Mitsuda and tuberculin reactions.] *Rev. Argentina Dermatosifil.* 23 (1939) 425-453.

The Mitsuda and the tuberculin reactions (von Pirquet, Mantoux and epicutaneous) were studied comparatively in 1,228 individuals, comprising: (a) cases of leprosy, (b) persons living with lepers, (c) supposedly non-leprosy persons from countries where the disease is unknown, and (d) supposedly nonleprosy persons from endemic countries. In groups (a) and (b) the two tests frequently gave divergent results, the Mitsuda being negative and the tuberculin positive or vice versa. In group (c), on the contrary, the results agreed in 97% of the cases: the Mitsuda reaction was positive in 78%. In group (d) the results agreed in 88%: the Mitsuda reaction was positive in 70%. Of 193 healthy children, inmates of an orphanage, 54 gave positive Mantoux reactions and 139 were negative, the Mitsuda reaction was positive in 45 cases of the former group and in only 5 cases of the latter one. Later 123 children with negative reactions to both tests were inoculated with the B.C.G. antituberculosis vaccine. One month later the tuberculin reaction was positive in 99% and the Mitsuda in 92%. It is concluded that the Mitsuda reaction is specific in lepers and in contacts, and that tuberculosis has no influence on it. On the other hand in persons uncontaminated by the Hansen bacillus the Mitsuda reaction is not specific and shows cosensitization with tuberculosis. The practical importance of disassociating the two reactions in a suspect is emphasized. The advisability of inoculating with B.C.G. persons in contact with lepers who do not react to leprolin is suggested. [See the original article by this author in this issue.] —G. BASOMBRI

MARCHOUX, E. AND PRUDHOMME, R. O. Le bacille de Hansen meurt en moins de trente minutes à la température de 60° et par desiccation. [The Hansen bacillus dies in less than 30 minutes at 60°C. and after desiccation.] *Bull. Acad. méd.* 120 (1938) 174-176.

Experiments here reported were designed to get around the difficulty that animal experiments with the leprosy bacilli are not possible. Staphylococci die when heated in capillary tubes to 60°C. for 10 minutes; dried, they give a fertile culture; put in the presence of an oxygen-reduction color test, they reduce it after five minutes' heating at 60° but not after ten minutes; they reduce it after two days drying and also grow in an artificial medium. When the bacilli of Hansen and of Stefansky are put in the presence of the same color test under the same conditions, they reduce it slightly after 15 minutes of heating at 60° but not at all after 30 minutes. After being desiccated and washed in normal saline, the bacilli no longer reduce the color test, but the wash water contains a substance which does. This substance the authors plan to study further.—[Abstract from *Urol. & Cutan. Rev.* 43 (1939) 221.]

VAUDREMER, A. AND BRUN, C. Etude bactériologique de la lèpre. [Bacteriological study of leprosy.] *Europe méd.* 3 (1939) 4-11.

The authors again relate their thesis regarding the cycle of development of the Hansen bacilli in cultures: young granular forms (in contact with filtered, unheated aspergillus fluid), blue-staining bacilli (seeded on agar), and acid-fast bacilli (on glycerinated media). Inoculation of the cultures into animals, among others *Macacus rhesus*, produces either a benign cutaneous infection resembling human leprosy, or a fatal septicemia. These cultures, pathogenic for animals, are agglutinated and lysed by the sera of lepers but not by those from nonlepers, and when killed by chemical means are said to have shown a favorable therapeutic effect.

—Er. BURNET

- MANALANG, J. Non-acid fast forms of *My. leprae* in leprotic lesions. Preliminary report. *Jour. Philippine Islands Med. Assoc.* 18 (1938) 135-140.

The author sought for nonacid-fast forms of the leprosy bacilli in 62 locally-treated leprotic lesions, and in 7 untreated lesions, using four different staining methods. Such forms were found in both classes of lesions, which leads to the belief that possibly there is a nonacid-fast phase in the life cycle of the causal organism of leprosy.

—J. O. NOLASCO

- MANALANG, J. Non-acid fast forms of *My. leprae* in leprotic lesions. Second report. *Jour. Philippine Islands Med. Assoc.* 18 (1938) 617-623.

In an attempt to determine the effect of iodized *H. wightiana* ethyl esters and the whole oil on the occurrence of nonacid-fast forms of the leprosy bacilli in leprotic lesions, four lepromatous cases were given local intradermal injections in a selected lesion at irregular weekly intervals for a period varying from 14 to 17 weeks. Similar, symmetrically placed lesions were used as controls. Smears from both groups of lesions were made at intervals during the period of treatment and for 16 to 18 weeks after the last injection. A definite increase of nonacid-fast forms was found in the treated lesions in three cases, but not in the fourth; in that case the lack of tinctorial response on the part of the microorganism is attributed to ulcerations which occurred several times during the experiment. In one case there was also marked increase of nonacid-fast forms in the control lesion, attributed to the occurrence of repeated mild attacks

of lepra reaction. The increase of nonacid-fast forms in the treated lesions is believed probably due to degeneration induced by the action of the drug, which view is apparently corroborated by the accompanying clinical improvement of the injected lesions. —J. O. NOLASCO

SAKURANE, Y. AND KINOSHITA, J. Ueber die Argentophilie der Leprabazillen im Schnittpräparat. [Silver-impregnation of leprosy bacilli in sections.] Japanese Jour. Dermat. Urol. 41 (1937) 48 (abstract).

In the course of a study of nerve fibers in the genital organs of lepers, by a silver impregnation method, the authors found that the bacilli took up the silver and were conspicuous, black or almost black. The individual bacillary bodies were demonstrated much more distinctly separate than in Ziehl preparations.—[From abstract.]

SUZUKI, S. Kulturversuch der Leprabazillen III. Mitteilung. [Attempts to cultivate the leprosy bacillus. III.] Japanese Jour. Dermat. Urol. 44 (1938) S2 (abstract).

From the findings in section-preparations of a milk-egg-potato medium that had been inoculated with pieces of leprosy granuloma, the author states that, besides the colonies of bacilli obtained, the polymorphous bacilli cultivated by him show a certain characteristic indication regarding the relationship between them and tissue that is not observed in several other saprophytic germs.—[Translation of abstract.]

NANBA, M. Eine neue Nachweismethode der Leprabazillen im strömenden Blut. [A new method of demonstrating leprosy bacilli in the circulating blood.] Japanese Jour. Dermat. Urol. 44 (1938) 192 (abstract).

A mixture of 4 parts of the patient's blood and 1 of 3.8% sodium citrate is drawn up in a fine capillary tube and allowed to sediment for 24 hours. After that time there are three layers, an upper one of serum, a bottom one of red cells, and an intermediate one of white cells. These layers are separated at the borderline and smear preparations are made of each. Bacilli are found only in the white-cell layer, especially in the neutrophiles and monocytes.—[From abstract.]

MARCHOUX, E. AND CHORINE, V. Transmission de la lèpre par les poux et par les laelaps. [Transmission of leprosy by lice and by laelaps.] Bull. Soc. Path. exot. 32 (1939) 477.

Lice and laelaps (*Haematopinus spinulosus* and *Laelaps echidninus*) taken from leprosy rats do not transmit the infection by biting. But, when taken from a leprosy rat and passed on to one and then a second new rat, then freed of external particles which might be infective, and finally ground up and inoculated, they give rise to the infection. Acaridae from normal rats are not infective. —ET. BURNET

BERNY, P. AND CHABAUD, A. Essais de traitement de la lèpre murine. [Treatment of rat leprosy.] Bull. Soc. Path. exot. 32 (1939) 316-322.

Among the products of vegetable origin that the authors used in therapeutic experiments in rat leprosy, terebinth increased the mortality in the beginning of the infection and did not retard the evolution of the disease. Oil of pine of Lettonie, which is toxic for the rat, was without effect on the infection. Borneol, of which 4 gms. was given in 64 injec-

tions over a period of 8½ months, slowed the evolution of the disease. Of eight selenium compounds prepared in the laboratory of Forneau, two (given in oily emulsion) had favorable effect in the beginning of the disease. These were phenyl selenate (No. 1424) and the seleniate of para-acetylaminobenzine (No. 1443). The others were ineffectual or aggravated the condition; many were found to be toxic. —ET. BURNET

LAMPE, P. H. J. AND LOBEL, L. W. M. Rattenlepra. Zesde mededeeling: Experimenteele contact- en voedingsinfectie van witte ratten. [Rat leprosy, sixth report; experimental contact and feeding infection.] *Geneesk. Tijdschr. Nederlandsch-Indië* 78 (1938) 179-190.

In experiments concerning contact infection of rat leprosy, young white rats became infected on close contact with others that had leprosy skin lesions. The contact included clawing, biting and cannibalism, ectoparasites were excluded. Infected food caused infection of all of three young animals. On the other hand contact with the glandular form of the disease did not cause infection, so the method of transmission in this common form of the disease is uncertain. In the rats that were infected (first experiment above) the cervical and axillary lymph nodes were most frequently and most extensively involved, whereas in the natural infection in wild rats the inguinal group is most affected.—[From abstracts.]

LAMPE, P. H. J., DE MOOR, C. E. AND VAN VEEN, A. G. Rattenlepra. Zevende mededeeling: "Modderlepra" van witte ratten. Herhaling van het experiment, met negatief resultaat. [Rat leprosy, seventh report; "soil leprosy"; repetition of experiment, with negative results.] *Geneesk. Tijdschr. Nederlandsch-Indië* 78 (1938) 523-526.

The high incidence of the "closed," glandular form of rat leprosy in special house-complexes and the practical absence of rats with "open" skin lesions, led to the surmise that infection might occur without direct contact with diseased animals and to an experiment to determine if laboratory rats, on either normal or vitamine-deficient diet might be infected by contact with mud, etc., from such house-complexes. Some of the animals developed the infection, with severe lesions only in deficient-diet rats [see *THE JOURNAL* 5 (1937) 241]. The authors here report a repetition of the experiment, in which 500 young white rats were used. None of them developed lesions. The earlier, erroneous results may perhaps be explained, they think, on the ground of infection of the earth by the "leavings" of dead rats, and an investigation of the viability of the organisms under such circumstances is being undertaken. —H. W. W.