

CURRENT LITERATURE

SUMMARIES OF PAPERS PRESENTED TO THE CAIRO CONGRESS

[This section of the present issue is devoted exclusively to the papers presented to the Cairo Congress. It is complete with regard to titles, based on a compilation of all titles received and papers actually in hand for publication at the close of the meeting. The summaries given are based (often with little or no modification) upon those that appeared in the brochure published before the Congress convened, or upon those of the actual papers as handed in for publication in the transactions of the congress. Papers mentioned by title only are those of which summaries are not available. The titles of the 67 papers actually presented in the scientific sessions are without comment; those read by title are indicated.—EDITOR.]

I. HISTORY AND DISTRIBUTION

LICHTWARDT, H. A. (*Hamadan*). Leprosy in Iran; a brief survey and statistical review of 520 cases.

As in other parts of the Near East, leprosy has been endemic in Iran for many centuries. It was formerly considered a type of cancer and so treated, according to their old medical books. It is not as prevalent as in countries with a higher rainfall, but most of the lepers found come not from the coastal regions, as one might expect, but from the high, sunny plateau region of the interior. Very little leprosy is found among the native Iranians, most of the cases being among the people of Turkish, Kurdish or Berberi tribal origin. There was no definite treatment of any kind until eleven years ago when a treatment center was opened in Meshed, in Khorassan. The government showed no interest in the matter until four years ago, but since then leprosy has been a definite part in the public health program, and a new leprosy center has been constructed in Tabriz, in Azarbaijan province. The government has also indicated that it will erect a leprosarium in Hamadan to take care of the lepers from Kurdistan, who are now receiving no treatment. Inasmuch as it is a comparatively minor problem leprosy, with proper government cooperation, could be eradicated in this land within two decades.

—GUSHUE-TAYLOR, G. (*Taihoku*). A note on leprosy in Formosa, Japan.

SZYMANSKI, J. (*Poland*). Quelques remarques sur la lèpre au Brésil.

Ayant habité et pratiqué une dizaine d'années au Brésil, j'ai eu l'occasion quelquesfois de constater et traiter avec les injections de chaulmoogra les lépreux et j'ai visité deux léproseries au Parana et à São Paulo. Au temps où je ne m'occupais pas spécialement de la lèpre, j'ai remarqué néanmoins l'efficacité de chaulmoogra sur les cas récents et l'amélioration dans les cas avancés. On compte généralement le nombre de lépreux jusqu'à 50.000; de Souza Araujo considère qu'il y a 75 lépreux sur 100.000 habitants. Les lépro-

series sont de deux genres, soit sous l'aspect de divers pavillons soit constituées par un grand hôpital.

SZYMANSKI, J. (*Poland*). La lèpre en Pologne.

Actuellement elle n'existe pas. On a enregistré seulement deux cas. Un cas était isolé dans un hôpital dermatologique à Varsovie; le malade est déjà mort depuis quelques années. L'autre cas est une vieille juive qui est revenue d'Argentine a été transportée dans une ambulance spéciale dans une léproserie en Esthonie.

SZYMANSKI, J. (*Poland*). La lèpre à Kamtchatka en 1898.

La Commission administrative pour l'étude de l'étendue de la lèpre à Kamtchatka, dont je faisais partie, envoyée en 1898 a traversé le Kamtchatka de Petropawlowsk à Klutchewskaia, se dirigeant vers le nord, puis en traversant la péninsule jusqu'à Tiguil, a enregistré 46 malades dont la majorité était établie autour des hautes sources à Avatcha près de Petropawlowsk. J'ai vu parmi eux des cas nerveux aussi bien que nodeux. A six kilomètres de Petropawlowsk existait l'hôpital dirigé par un gardemalade et un infirmier soignant neuf malades. Avant moi visitait la colonie lépreuse le Dr. Slunine, après moi le Dr. Auerbach et le médecin local Tuchoff. Le traitement spécial n'existait pas et par malentendu on traitait les malades avec le mercure, en prenant les lésions lépreuses pour syphilitiques.

BALIÑA, P. L. AND BASOMBRIO, G. (*Buenos Aires*). Constatations et données sur la lèpre en Argentine d'après notre observation personnelle.

STERLING, E. (*Montevideo*). La lepra en el Uruguay. (*Read by title; author not present.*)

REENSTIERNA, J. (*Upsala*). Leprosy in Sweden. (*Read by title.*)

The amount of leprosy in Sweden has diminished to such an extent that there are at present (September, 1937) only 10 cases left, 7 of the anesthetic, and 3 of the nodular form. Most of the patients are very old. Five of them are at the Järvsö Leprosarium, the other five at their homes. The last new case was reported in 1933. Since 1926 the supervision of the lepers in Sweden has been in the hands of a State Inspector, Dr. J. Reenstierna.

CEDERCREUTZ, A. (*Helsingfors*). La lèpre en Finlande diminue. (*Read by title; author not present.*)

Le résultat de mon enquête est que le nombre des lépreux en Finlande est en diminution rapide et constante depuis 1904, passant de 95 à 19. Ce résultat favorable a été atteint sans intervention législative. C'est seulement la possibilité pour les lépreux d'obtenir des soins gratuits et efficaces dans une léproserie et les progrès constants de l'hygiène dans la partie pauvre de la population qui, en connexion avec l'amélioration générale des moyens d'existence dans le pays, ont amené cette diminution de la lèpre en Finlande.

LIE, H. P. (*Bergen*). The history of leprosy in Norway during the Nineteenth Century. (*Read by title; author not present.*)

Leprosy was probably introduced into Norway from the west by the Vikings, and as early as 1,000 A.D. it became a matter of great moment, as the laws from the 11th century contain regulations regarding lepers. It probably reached its maximum in the 13th century or thereabouts, as several hos-

pitals for lepers were erected about that time. The author traces the history of leprosy in Norway down to modern times. Its clinical study was begun by Danielssen in 1839. Since that time we have continuously tried to find a solution of the problem and a scientific remedy, besides carrying on other scientific researches. Here, as elsewhere, chaulmoogra oil preparations have proved to be the most valuable.

The result of the fight against the disease is indicated by the following figures: Whereas the number of lepers was about 2,850 in 1856, declining slowly to 2,607 in 1869, the decrease after that has been both faster and more even and now (December, 1937) only 18 lepers are found in the whole country. The numbers of new cases have declined correspondingly from the terribly high figure of 1,040 during the 5 years 1861-1865, to only two new cases originating in this country and two imported from abroad in the period 1931-1935.

HEITMANN, N. (Oslo). La disparition de la lèpre en Norvège. (*Read by title; author not present.*)

MAGNUS, M. J. (Iceland). The forty-year leprosy campaign in Iceland. (*Read by title; author not present.*)

The campaign against leprosy in Iceland was begun in 1897. In that year a leprosy law was passed and in 1898 a hospital for 60 inmates was built. An enumeration of patients had been made in 1896, and there were found 181 sufferers. The real number was later computed to be 226. Since then the number has steadily been diminishing and now there are only 32 in the country, 19 of them in the hospital. New cases were found almost every year until 1926, but since then only three patients were found in 1933, two in 1934, and one in 1937. Still there will occasionally be found a few cases, but it is expected that in the next decennium leprosy will be completely eradicated in Iceland. The hospital was only fully occupied for the first eight years. The average numbers of inmates have been: 1898-1906, 60; 1907-1918, 51.7; 1919-1924, 43.5; 1925-1928, 35.25; 1929-1931, 24.0; 1932-1937, 19.3. Five patients escaped from the hospital and twenty-four have been discharged as cured. Of those, seven came back with relapses, eight have died, and eight are still living. One emigrated to America.

VAN BREUSEGHEM, R. (Belgian Congo). La lèpre chez les Pygmées. (*Read by title; author not present.*)

Le Centre Antilépreux de la Croix Rouge du Congo est situé dans le bassin du Nepoko à quelque cent kilomètres au N-O de Wamba (Kibali Ituri). Le fort pourcentage de lèpre constaté parmi les indigènes occupant cette région (de 6 à 9%) a conduit, sous l'impulsion de M. le Pr. Dubois, à la création d'un centre d'étude et de lutte contre la lèpre. Sous la rubrique pian III j'ai rangé les hyperkératoses palmaires et plantaires ainsi que les pianides. Quant aux cas de lèpre il s'est toujours agi de lèpre maculeuse sauf dans un cas qui présentait des mutilations de moyenne importance et dans un autre où il s'agissait de lèpre tubéreuse très accusée. La sensibilité n'a pu être étudiée mais les troubles de la sécrétion sudorale ont pu être mis en évidence dans plusieurs cas. On pourra constater d'après l'examen du tableau ci-joint que la lèpre entre immédiatement après le pian dans la pathologie du Pygmée (réserve faite des affections siègeant dans la région

génitale et du parasitisme sanguin et intestinal non étudiés). On constatera aussi que 3 hommes à peu près sont lépreux, alors que 2 femmes le sont. Enfin il m'a semblé que si la lèpre touchait beaucoup d'individus elle ne développait que très rarement, plus rarement que chez les noirs des autres races, des lésions graves mutilantes ou tubéreuses.

MALADIES	HOMMES	FEMMES	FILLES ^a	GARÇONS ^a	TOTAUX
Nombre de Pygmées.....	109	68	45	50	272
Lèpre.....	17 (15,5%)	8 (11,8%)	4 (8,9%)	6 (12,0%)	35 (12,9%)
Pian II.....	3	—	6	6	15
Pian III.....	28	11	1	1	41
Ostéite pianique.....	—	—	—	1	1
Nod.-juxta articulaires....	10	—	—	—	10

^a Jusque 15 ans.

- BERNARD, A. V. (*Malta*). Leprosy in the Maltese Islands. (*Read by title.*)
- KATZENELLENBOGEN, I. (*Jerusalem*). Contribution to the leprosy problem in Palestine; Bir-Ajoub, the unexplored leprosarium. (*Read by title.*)
- BERTACCINI, G. (*Bari, Italy*). La lèpre en Pouille, en Batilicate, en Calabre; données cliniques, statistiques, épidémiologiques. (*Read by title; author not present.*)
- GUSHUE-TAYLOR, G. (*Formosa*). Leprosy in Canada. (*Read by title.*)
- KAMIKAWA, Y. (*Taihoku*). Report on leprosy in Formosa. (*Read by title; author not present.*)
- HUIZENGA, L. S. (*Jukao-ku, China*). Some important incidents and persons.

All through the history of leprosy there is a continuous chain of persons who have interested themselves in this disease. Some were lepers themselves, others were nonlepers who had compassion for those innocent sufferers. Some were rulers and learned men, some were but ordinary men who sprang into prominence because of their relation to leprosy. Most of these were religiously minded, others by their action helped to change almost radically the religious beliefs of their day. No disease has so been influenced by society and by religion and in turn has so influenced society and religion as leprosy. (The text is illustrated with slides showing historic persons or events connected with leprosy.)

BLOOM, A. (*Cairo*). La lèpre existait-elle du temps des Pharaons et est-elle mentionnée dans la Bible? (*Read by title; author not present.*)

(1) Bon nombre d'auteurs affirment l'existence de la lèpre dans l'ancienne Egypte en se basant sur ce que quelques historiens disent que les Hébreux furent chassés de l'Egypte parce qu'ils étaient lépreux. Une analyse complète de ces témoignages montre de façon indubitable que ces historiens n'ont jamais parlé de la lèpre. (2) Un certain nombre d'auteurs affirment l'existence de la lèpre aux temps des Pharaons en se basant sur des descriptions de cette maladie dans les divers manuscrits médicaux. Un examen attentif des traductions de ces manuscrits montre que pareille affirmation n'est pas justifiée. (3) On admet de façon générale que du temps de Moïse la lèpre existait,

que la Bible en donne la description et en prescrit l'isolement; et on conclut que puisque Moïse, qui vécut en Egypte, la connaissait, elle devait donc exister en Egypte à cette époque. Or, une étude objective de la description des symptômes dans la Bible, et des considérations philologiques et étymologiques, montrent qu'il ne peut pas être question de la maladie que nous connaissons comme lèpre.

II. EPIDEMIOLOGY AND CONTROL

DOULL, J. A. (*Cleveland*). The importance of field studies of leprosy, with special reference to the risk of household infection.

Analysis of the records collected in Cordova, Cebu, Philippines, in 1933, suggest the value of the wider application of the principles of the life table to the epidemiology of leprosy, and particularly to the measurement of attack rates for those subjected to household exposure. For retrospective study, only areas with organized health services and fairly good registration of births and deaths should be chosen. For information regarding occurrence of milder types of the disease, and regarding the prognosis in each type, prospective studies with serial examinations at intervals are necessary. Such examinations could be carried out in almost any locality where there is a fairly stable and cooperative population.

RODRIGUEZ, J. N. (*Manila*). Comments on the epidemiological study of leprosy. (*Read by title.*)

Epidemiology is a special science, with its own methodology and particular procedures. Mere collection of data and their presentation in tables and graphs does not necessarily constitute epidemiology. Real advance in the epidemiological study of leprosy will come only when the field work will be actually done by epidemiologists who are also leprologists, aided by staffs of laboratory workers, clinicians, and social workers, the whole working as units in limited areas and over long periods of time. However, other leprosy workers can help by trying to understand the fundamentals of the art and science of epidemiology. With that understanding they may be able to gather, within the means available to them, data which can be used in the real epidemiological study of this difficult disease, and they will avoid adding to the existing confusion reports from which no sound conclusions can be drawn.

RODRIGUEZ, J. N. (*Manila*). A field study of leprosy.

In connection with a survey made by Doull, Rodriguez, Guinto, and Plantilla during 1933, 99.6% of the population of Cordova, a focus of leprosy in the Province of Cebu, Philippines, was examined physically, permitting a proper determination of the incidence and the true age and sex distribution of the disease in the entire population. A detailed sociological and sanitary census of the municipality was also made. Lepers with all shades and advancements of recognizable lesions were found. After a period of two years, Rodriguez and Guinto made a follow-up survey in which the course of the disease among the clinical cases was followed, the histories of recognized cases appearing in this town during the past 50 years were traced, and an epidemiological study of the confirmed house contacts to such cases was made. It was found that most of the six new cutaneous lepers de-

veloped quite suddenly, either having shown no signs at all at the time of the initial survey or presenting only indefinite, atypical symptoms. Of 243 lepers with sufficiently complete histories studied 94 were home infections, 105 were infected from extrafamilial sources, in 34 the source was doubtful, while in only 10 (4.1%) was contact with an antecedent case denied or not proven. Apparently, in Cordova, extrafamilial infections are at least as important as house infections in the spread of the disease.

RODRIGUEZ, J. N. (*Manila*). The examination of house contacts of lepers.

In a group of 2,184 housemates of lepers examined in Cebu, 100 new cases of leprosy were discovered, giving an incidence of 45.8 per 1,000. The rates in the two sexes were not significantly different, being 46.8 per 1,000 among the males and 44.8 per 1,000 among the females. The systematic examination of house contacts needs special personnel to make it worth while, and is not practicable when large areas have to be covered. In the field study of leprosy at Cordova, previous intrafamilial exposure was proven in only 38% of the cases, so that, if the aim is to discover most of the new cases, the examination of house contacts has to be supplemented by other case-finding devices such as examination of school children, etc. In serious epidemiological studies, examination of the entire population of the focus under study is unavoidable.

LOWE, J. (*Calcutta*). Preliminary report of an epidemiological survey of leprosy in a typical rural area of West Bengal.

SITANALA, J. B. (*Semarang*). Die Leprabekämpfung in Niederländisch-Indien.

First we have to ascertain the number of cases of leprosy by the aid of the Civil Service. The second step is to establish examination centers, where the records are checked. For a thorough epidemiological study we not only examine the sick people but all the members of the household as well. The data obtained are put on cards provided. Although we are not convinced that the number obtained is exact, these results nevertheless serve as a starting point for further steps. It is our duty to treat the lepers. Treatment with chaulmoogra pills and injections of chaulmoogra ethyl esters is applied. For control measures: voluntary isolation of indigents in leprosaria and agricultural settlements; dessa (village), compound, or house isolation. Such isolation, with a persistent educational campaign and with polyclinics established in strategic points where patients can receive treatment, constitute a system which is cheap and practical and encourages cooperation of the lepers and healthy people. With a complete register of the members of the households (contacts), and with a follow-up of them for years, there should be obtained valuable scientific material which will throw much light on the spread of human leprosy.

SITANALA, J. B. (*Semarang*). Some aspects of the occurrence of leprosy in the explored districts of the N. I. Archipelago. (*Read by title.*)

1. The degree of malignity of an endemic of leprosy has been shown by the percentage of C and N forms (the C index).
2. The male surplus has been indicated by the percent proportion (ratio) of male to female lepers (the male index).
3. The contact proportion has been indicated by the result of the division of the number of cases with ascertained contact (with "source of infection") by the total number of cases expressed percent (contact index).
- 4.

The aspect of endemic leprosy in the Indian Archipelago, in more homogenous as well as in heterogenous districts, differs greatly as to malignity, male surplus and contact. 5. For the island of Ambon an influence of religion on leprosy is thought probable. 6. It is taken that religion is of influence on the sex rate, as it affects the social position of the woman and the individual resistance (the latter in connection with the Mohammedan prohibition to eat pork). 7. Comparison of figures of leprosy in different parts of the Archipelago which are socially more or less alike, shows the importance of many factors in separate aspects of the endemic which aspects show no distinct correlation. *Conclusion:* For the characterization of endemic leprosy, not only the usual figures of clinical forms, sex index, age incidence, contact rate (illness of solitary and of household lepers) etc., are necessary, but also data on sociological factors influencing personal contact and individual resistance are indispensable.

KOESLAN. (*Semarang*). Some information about the epidemiology of leprosy in the Regency Lamongan, Java.

(1) From historical investigations (Stutterheim, MacLaine, Pont) we suppose that during the 8th century close connections existed between Lamongan and the old leprosy foci, China and the Indies; these relations have been much less since the 10th century, when the Asiatic trade was moved to the river Brantas. This period of about one century is accepted as the beginning of the leprosy endemic in Lamongan. (2) With regard to the contact circumstances in the household, the *doekoehs* (*kampongs*), which are a sociological unit, and the *desa*, which is an elementary autonomic unit and can be composed of one or more *doekoehs*, I have divided the population of Lamongan (650,000) into 4 contact-groups: (a) Household contacts: 1,849 persons, with 105 lepers, 88 suspected, and 1,656 not infected; morbidity 104 per mille. (b) Doekoeh contacts: 237,824 persons, with 422 lepers and 237,824 not infected; morbidity 1.78 per mille. (c) Desa contacts: 113,632 persons, with 72 lepers and 113,560 not infected; morbidity 0.63 per mille. (d) Persons for whom contact with lepers was not indicated: 298,126 persons, with 88 lepers and 298,038 not infected; morbidity 0.29 per mille. Sixty-eight lepers whose contacts are known but are not available, are not considered. (3) From this it appears that there is a parallelism between the chances of contact with lepers and morbidity.

LAMPE, P. H. J. (*Batavia*). Selective morbidity and prophylaxis in leprosy. (*Read by title.*)

The larger the number of persons grouped around a source of infection, the greater the chance that conditions will be set up which favor the genesis of new cases of manifest leprosy. This principle—based on the evidence of selective susceptibility—accounts for the frequency of new cases of leprosy among the larger groups of the remote relatives in many (joint) families of lepers, as opposed to the origination of new cases in the relatively small groups of the close relatives, in spite of the greater intimacy of these close relatives with the sources of infection. It accounts also for the predominant occurrence of new cases among the vast group of individuals who belong to the leprosy-free families, as opposed to the origination of new cases among the relatively small groups of the regular members of the lepers' family- and household-circles, in any region with stationary or increasing leprosy.

These consequences are important, especially from the viewpoint of public health, and the underlying principle reveals a line of prophylactic action against the spread of the disease. Moreover, a preventive policy along these lines may be the only method with promise of success of attacking the "stability" of endemic leprosy.

LAMPE, P. H. J. (*Batavia*). The establishment of coincidentals between the various components of the average diet and leprosy rates.

An investigation of the diet in fourteen regions in West, Central and East Java has been made by the Agricultural Department in conjunction with the Institutes for Leprosy and Nutrition Research. These regions are placed in six groups according to the leprosy rates, which varied from less than 0.1 to about 10 per thousand. The investigation covered 175 families chosen at random, comprising about 1,000 individuals (an average of 12 families and 70 individuals per region), and was continued by daily control of the household-menu for fully a year. Details of the data collected are given. The statistical evaluation of these abundant data is being made by Dr. J. Kuipers, statistician of the Public Health Service, this communication being based on his preliminary findings. There is a strong indication of a positive correlation between the leprosy rates and one component of the food, namely, salted, dried, and fermented fish. All the other components of the food, and the valuation of the total food in grams and in calories, show so far negative correlations (reverse correlations) in different degrees, the strongest negative position being held by certain of the legumes, namely, green leaves and young pulses. Vegetable fats (oil seeds and vegetable oils), also show a strong negative correlation. Though many other factors are concerned, a further trial in this line of research seems worth while.

SARDJITO, MOCHTAR, A. AND SOEPARMO, R. (*Java*). Leprosy work by the Government Health Service (D. V. G.) in the Regency of Blora. (*Read by title; authors not present.*)

MALAIHOLLO, J. F. (*Java*). Leprosy investigation in the Dessa Wates (West Java). (*Read by title; author not present.*)

DALGAMOUNI, M. A. K. (*Cairo*). The antileprosy campaign in Egypt.

Introduction: The history of leprosy in Egypt, ancient and recent; papyri and statistics. Present campaign: Educational missions; opening of the first leprosy clinic in Cairo in February, 1929; Zagazig and Souhag clinics, April, 1930; Cairo Leprosy Hospital, June, 1930; Tanta and Minya clinics, 1931; opening of two branches for each of the four clinics, 1932; four motor cars attached to the main clinics to facilitate work between them and the branches, 1933. Hospital of the Abou Zaabal Colony opened temporarily in June, 1933; grants for extension of colony in 1934 and 1935; grant for Alexandria main clinic, with branches and motor car, 1936; grant for Mansoura and Beni Suef main clinics, with branches and cars, 1937. Statistics: Persons examined (Cairo and Abou Zaabal hospitals and four main clinics) 9,194; lepers found, 4,387. Main lines of the campaign: (a) a general survey of the whole country to discover lepers and to study the epidemiology of the disease; (b) extension of the activity of the clinics to cover the whole country, treating the early cases and controlling the contacts; (c) segregation of all infectious cases and burned out cases in agricultural

colonies. Special laws regarding segregation are under consideration.

— ABAZA, BEY, M. S. (*Cairo*). Administrative difficulties in the antileprosy campaign in Egypt.

✓ DUBOIS, A. (*Antwerp*). L'endémicité lépreuse au Congo Belge. Méthodes de lutte envisagées.

La partie statistique de ce travail se prête peu à être résumée. Les rapports du médecin en chef de la Colonie indiquent de plus en plus de lépreux parce que on les recherche davantage; aucune statistique valable n'est possible actuellement pour l'ensemble de la colonie. La répartition paraît fort variable. L'auteur étudie tout particulièrement deux régions où le recensement a été effectué de façon complète, la Bas-Congo et le Nepoko. Ces deux régions diffèrent énormément d'index endémique: 0,35% contre 7 à 8%, soit 1/20. Un essai de comparaison des conditions géographiques est tenté. Les méthodes prophylactiques en usage sont décrites sommairement: c'est essentiellement l'établissement dans les chefferies indigènes mêmes de villages spéciaux où sont logés les lépreux. Le procédé est bon marché et bien accepté mais l'isolement est imparfait. Tel qu'il paraît le seul procédé applicable actuellement.

KELLERSBERGER, E. R. (*Bibanga*). An agricultural colony in the Belgian Congo. ✓

In 1931 a leper colony was opened, under the auspices of Bibanga Station, American Presbyterian Congo Mission, in the Sankaru District of the Belgian Congo. It has grown from 65 to 480 residents at the present time, with twelve well-arranged streets, semipermanent sun-dried brick houses, a dispensary, a ward for inpatients, a school and a church. Most of the construction projects have been made possible by the American Mission to Lepers, and the Belgian government aids in the maintenance of the work. Over 50% of the lepers are self-supporting and every effort is made to keep them so. Those able to work construct their own houses, work their own fields and engage in various trades. An experienced native medical staff, a foreman and assistants, a tribunal of lepers who settle all minor matters of discipline, make the colony practically self-governing. In a period of seven years 850 lepers have been accepted; 53 of these have died, 45 have been expelled, 175 have been paroled as clinically cured; and 31 have left, others live near enough to come to the camp for treatment. All forms of antileprosy drugs have been used. The colony has a large plantation of *H. anthelmintica* trees, and promising samples of oil have already been extracted. This colony is a fine example of practical and scientifically-directed Christian medical work that reaches the whole man and gains the confidence, co-operation, and gratitude of the lepers themselves and of the Colonial Government as well.

GERMOND, R. C. (*Maseru*). Twenty-four years of compulsory segregation in Basutoland. ✓

The history of the antileprosy campaign in Basutoland divides itself into three distinct periods: (a) the initial or abortive stage, 1914-1915; (b) a period of stagnation and slow recovery, 1916-1928; and (c) the present period, 1929 onward. First period: a brilliant beginning is interrupted by a serious riot and wholesale desertion. Second period: recovery is necessarily slow

but "the constant segregation of 400 to 500 lepers must have prevented the occurrence of an enormous number of fresh infections." Third period: the onus of the campaign has hitherto rested on the Chiefs alone. A new factor: the native Leprosy Inspectorate. Immediate increase in admissions, followed by a steady decline; this is held to indicate a great improvement in the situation for the following reasons: (a) simultaneous shortening of duration of disease before admission, (b) corresponding improvement in type of patient admitted, (c) position revealed by a survey of the eastern border districts in 1936, (d) large increase in number of arrested cases, (e) shorter duration of their stay in the asylum.

STRACHAN, P. D. (*South Africa*). Statistical evidence indicating the predominance of abortive, or stationary leprosy in Basutoland. (*Read by title; author not present.*)

During ten years 61% of the untreated N1 cases of leprosy at the asylum appeared to undergo spontaneous arrest. In a very thorough survey of a certain area made at the end of 1936 (Germond) only extremely light cases were found, and these actually exceeded in number the total number from the same area in the asylum in all stages of the disease. If these light cases were all such as become progressively worse in the absence of treatment, we should expect the total number of surviving sufferers today to be from five to seven times as great as it actually is. It is concluded that the majority of early neural cases of leprosy either remain stationary or become spontaneously arrested.

HUIZENGA, L. S. (*Jukao-ku, China*). Leprosy clinics.

This paper traces the development of leprosy clinics in different lands and tries to prove that the proper distribution of well-organized clinics will be a far better way to control the spread of the disease than the compulsory isolation of all afflicted persons. It also treats the subject from the medico-legal point of view and maintains that medical science must first prove that the disease is definitely and seriously contagious before patients can be forcibly carried away from their homes and business for treatment.

SANTRA, I. (*Calcutta*). The P. T. S. method of antileprosy campaign in India.

Propaganda: We preach to the people: (a) Lepers seen on the streets constitute only a small fraction of the total sufferers, are in the last incurable stage and generally are not a public danger. (b) Most of the lepers live in their houses like normal men, hiding the disease till it can not be hidden any more. (c) Leprosy is not due to the sins of past birth; it is contracted by living in close contact with infectious cases. (d) In early stages it can be cured. Therefore, do not delay till it has attained the incurable stage; come and take treatment at the local dispensary. Treatment: (a) Doctors are trained at central places in the methods of diagnosis and treatment of leprosy. (b) Leprosy clinics are attached to the existing hospitals and dispensaries. Arrangements are made to supply pure drugs at a cheap rate. Where money is available model clinics are opened or special officers appointed to organize the campaign. (c) Difficult cases are advised to enter a leprosy hospital. (d) Social workers look to the various needs of the clinic and the patients. Survey: (a) Cases are followed to their houses to trace infection among contacts. Where possible a house-to-

house survey is made. The discovered cases, if their condition so indicates, are advised either to isolate themselves in their own houses outside the village or in a leprosy hospital. (b) A register is maintained showing details of each case. Lesson obtained from work of the past ten years: Leprosy in India is so intimately connected with poor diet, congestion and evil customs that the decrease of the disease will be in proportion to the village uplift work.

DE SIMON, D. S. (Colombo). Leprosy control in the Island of Ceylon. (*Read by title.*)

This report deals with the history, distribution and incidence of leprosy in Ceylon and the methods of control employed there for the last 5 years. The rough estimate is about 4,000 cases in Ceylon; the problem may not seem serious but nevertheless it is an important one. The scheme for the control of leprosy in the island is not an impossible one, and the measures demand the cooperation of the curative and preventive sides of the medical department, and the coordination and correlation of all antileprosy measures.

ROSE, F. G. (Mahaica). Leprosy in British Guiana; an experiment in prophylaxis.

In the British West Indies the leprosy problem is of appreciable importance only in Trinidad and St. Kitts and Nevis, but there is no evidence anywhere of a spontaneous decline. Appropriate treatment at an early stage in neural cases results in the arrest or removal of deformities, and in cutaneous cases often in complete recovery. The death rate among lepers in British Guiana is now very little higher than that of the whole population. The change in the outlook of the leper, the changes in the laws dealing with lepers and the establishment of out-patient clinics are the three features which have induced patients to seek treatment at an early stage. Over 86% of open cases treated from 1926 to 1935 have become closed. The number of new cases admitted to the leprosy hospital has sunk from 2.7-3.1 per 10,000 of the population in the period 1871 to 1922, to 2.2-2.3 per 10,000 in the period 1923 to 1935. The disease affects roughly 2.27 per 1,000, or, if cases of incipient leprosy be excluded, 1.5 per 1,000. It has shown a substantial decrease in the last 13 years, probably because of the antileprosy campaign launched in 1926. Alepol and other sodium salts of hydnocarpus oil must be used with caution but are valuable in the first 6 weeks of treatment. Intramuscular injections of the pure oil have yielded the best results, but some patients do better on the esters. Intradermal injections of esters by the "plancha" method are of great value. External applications of trichloroacetic acid and of solid carbon dioxide, and other subsidiary method of treatment, form important adjuncts to the principal line of treatment.

DE SOUZA ARAUJO, H. C. AND RODRIGUES DE ALBERQUERQUE, A. F. (*Rio de Janeiro*). Some epidemiological aspects of leprosy in Brazil.

The authors, as technicians of the Centro Internacional de Leprologia, are making an epidemiological survey of leprosy in Brazil. Their first paper published concerned 1,110 interned lepers of the Colonia Santa Izabel, Minas Geraes; the second paper referred to 975 inmates of the Hospital des Lazares of Rio de Janeiro. The present paper deals with 528 cases studied at their homes in Rio de Janeiro (Federal District) according to their races, birth-

places, occupations and the ages of onset for native Brazilians, sons of aliens born in Brazil, and alien immigrants. The authors show that adult Europeans in Brazil are as susceptible as are the native children. There are also differences in the progress of the disease among natives.

- SOUZA ARAUJO, H. C. (*Rio de Janeiro*). Brief outline of leprosy control measures.
- AGRICOLA, E. (*Rio de Janeiro*). The program of the Federal Government for the control of leprosy in Brazil.
- SALLES GOMES, F., Jr. (*São Paulo*). The Leprosy Prophylaxis Department of São Paulo. (*Read by title; author not present.*)

To this department, directly subordinate to the Secretary of the State, is committed the study and prophylaxis of leprosy in the whole of the State of São Paulo. Notification is obligatory, both of lepers and of suspects, and a physician selected by the patient may assist in the examination. Vigilance is practiced all over the state by physicians of the department, who examine the contacts every six months. Patients are registered in dispensaries or segregated at the judgment of the director of the department. For the work indicated there are four dispensaries in the city of S. Paulo and thirteen in the country, four colonies, one sanatorium, and two "preventorios" for the healthy children of segregated lepers. In the leprosy hospitals there are special establishments for criminal and refractory patients. Visiting of the patients is permitted, previous examination of the visitors being required. Entrance of lepers into the State is permitted only on authorization of the department. The department manufactures the most efficient agents for treatment. The public authorities and the public health departments cooperate with it. Patients segregated in hospitals have judiciary assistance by the department and social assistance by the private associations, thus increasing their comfort. Patients cooperate in the administration in the hospitals, which have the smallest possible nonleper staffs. Up to September, 1937, there were segregated in hospitals 6,519 patients, under parole 828, under private treatment 320, and under dispensary treatment 1,052. The incidence of cases from 1924 to October, 1937, was 13,252 cases, including those of other states who sought isolation here and were returned to their own states. There have been registered 2,641 deaths of lepers of the state.

- DA SILVA CAMPOS, M. A. (*Minas Geraes*). The problem of leprosy; its present situation in Minas Geraes. (*Read by title; author not present.*)

Among the public health problems of Brazil that of leprosy is distinguished by the special attention devoted to it by the Federal and State Governments and also by that part of the population which has a sanitary antileprosy mentality. The author surveys the situation and the sanitary measures employed. Efforts have been made, by the Government and by private initiative, to put into effect those measures known to be most efficient—isolation and treatment of those able to transmit the disease, ambulatory treatment and observation of noncontagious cases, periodical examination and observation of contacts, moral and material help to the families of patients, especially to children isolated in preventorios. The necessity of early diagnosis is referred to. The function and organization of colonies are

discussed. Reference is made to the dispensary, a living and mobile organ, the antenna of the complex organism which discovers and selects the cases of leprosy, sending to hospitals those which should be isolated, treating those from which there is no danger of contagion, examining periodically those contacts who are most liable to contract the disease, and carrying on educational work. The present situation of the problem, statistics, geographical distribution, isolated cases and other data are presented. Projects under way: three new colonies are under construction, and new work is being carried out in the existing hospitals. A synthesis of the plan of combat against leprosy is presented. The organs of execution are as follows: Santa Isabel, Santa Fe, Padre Damiao, and Sao Francisco de Assis colonies; preventorium, Sabara Hospital; central dispensary; 14 dispensaries in the 14 zones into which the state has been divided; societies for protection of lepers and defense against leprosy, which work in collaboration with the public health department; course in leprology.

DA SILVA CAMPOS, M. A. AND DINIZ, O. (*Minas Geraes*). Division of the State of Minas Geraes into zones for the carrying out of a leprosy census. (*Read by title; author not present.*)

In order to carry out a census of the lepers in the State of Minas Geraes, which has an area of nearly 600,000 sq. km. and a population of 8,000,000, the authors have divided the area into 14 zones, taking into consideration the incidence of leprosy, the facilities of transport, the neighborhood of other states of Brazil where the disease is most intensely disseminated, and other factors of local interest. They survey the conditions in each of these zones, study the difficulties to be overcome in carrying out a census of lepers, establish the orientation to be followed and make numerous comments on the subject. They emphasize the necessity of intensifying the examination of contacts, both those who live with lepers in the same home and others, and refer to the statistics already collected and other data. The first part of the census will be carried out in two years, and the beginning of the third year will coincide with the commencement of the first revision of the census, which will be much less arduous than the first census and will be endowed with new sources of energy, among them the inauguration of observation of patients discharged from asylums and the intensification of antileprosy treatment of noncontagious cases. Such cases should by no means be isolated in leper asylums, in order to avoid useless expense and because their isolation seems to be a veritable attack on the liberty of the individual.

DA SILVA CAMPOS, M. A. AND DINIZ, O. (*Minas Geraes*). Instructions to the personnel of travelling dispensaries for the treatment of skin diseases in Minas Geraes. (*Read by title; author not present.*)

The authors have issued instructions for the personnel of the travelling dispensaries for skin diseases, whose functions are: (1) Census of lepers: This is the first duty of a dispensary at the beginning of a prophylactic campaign. Instructions are given regarding the criteria to be followed, clinical data, laboratory examinations, classification of cases, isolation of lepers in hospitals, isolation at home, etc. (2) Examination of contacts: The necessity of examining all persons in contact with lepers is pointed out, also the need of inspection and careful search among the public and of attracting

to the dispensaries persons suffering from skin diseases. (3) Epidemiologic inquiry in foci of the disease: Instructions for making such studies are given. (4) Therapeutics of leprosy: Criteria for the treatment in travelling dispensaries of both noncontagious cases and contagious patients awaiting a vacancy in an asylum are established. (5) Observation of patients discharged from asylums: Rules for the observation to which all discharged patients should be subjected are given. (6) Sanitary education: Emphasis is laid on the great importance of the sanitary education of the general population, with instruction as to the program to be adopted. Other remarks about the functioning of dispensaries are made.

DINIZ, O. (*Minas Geraes*). Technical and administrative data of the Santa Isabel Leper Colony. (*Read by title; author not present.*)

This report shows the general plan of the Santa Isabel Leper Colony, of which the author has been in charge since its inauguration six years ago and which can hold 1,800 patients. The organization of the clinical and laboratory work and study centers is described and a list of the scientific investigations carried out and other information, including epidemiologic and statistical data, is given.

DINIZ, O. (*Minas Geraes*). Organization of the S. Tarcisio Preventorium. (*Read by title; author not present.*)

The author describes the technical organization of the "Sao Tarcisio Preventorium," an establishment for receiving the healthy offspring of lepers. Nearly two hundred such children are there at present.

SALAMAO, A. (*Brazil*). Social problems arising from the isolation of lepers. (*Read by title; author not present.*)

The author presents the social problems arising from the isolation of lepers as a polygon, with many sides each with a grave moral or material aspect which should be foreseen so that for the solution of this important problem there may be put into effect measures which are just and practicable. Some of the sides of this polygon present insuperable difficulties which never can be overcome but only attenuated by constant efforts on the part of the authorities and the community. The author thinks it difficult to abolish leprosy from the world without due attention to the problems resulting from the isolation of lepers, and mentions several factors which mitigate against the isolation of lepers and their seclusion in leper asylums. Some of these factors are: longing to be with his family, business to settle, support of his family, family difficulties, education of the children, sexual questions of the isolated and healthy partners, conjugal infidelity, alimentation, etc. The author indicates the means for resolving certain problems but is doubtful with respect to others, which seem to him insoluble because of the impossibility of finding, within the bounds of morality and the Christian religion, any safe road leading to a satisfactory and humane solution.

GONZALEZ URUEÑA, J. (*Mexico City*). Etat actuel de la prophylaxie de la lèpre au Mexique. (*Read by title; author not present.*)

The author enumerates the lepers found in different states between the years of 1930 and 1937, which total 4,301. These cases are classified according to social and economic conditions. It is mentioned that 3,133 children live with these lepers in miserable one-room houses. The amounts assigned for

the prophylaxis of leprosy vary from 27,360 dollars in 1930, to 134,400 in 1937. There are two leprosaria, one at Zoquiapan, 30 kilometers from Mexico City, and one near Penjamo in the state of Guanajuato.

— WILSON, R. M. (*Korea*). A farm and home leper colony. (*Read by title; author not present.*)

KIRSCHÉ. (*Indo-China*). La lèpre de Phnom-Penh. (*Read by title; author not present.*)

L'Hôpital Mixte de Phnom-Penh sert de centre de dépistage pour la lèpre. C'est donc surtout le diagnostic qui y est étudié. Le diagnostic clinique est parfois très difficilement étayé par le laboratoire, même dans des cas très nets et après examen multiple: mains en griffe, amputations, maux perforants, etc. La recherche du bacille de Hansen dans le mucus nasal est bien souvent négative et actuellement les deux méthodes qui donnent les meilleurs résultats sont le prélèvement au niveau des lésions et la goutte épuisée, cette dernière étant très inférieure à la première comme pourcentage. Bientôt on aura recours aux biopsies et à l'examen anatomo-pathologique. Une question serait à reviser—c'est la question sociale. Il semble que la lèpre soit contagieuse, mais, elle est loin d'avoir le caractère semi-épidémique de certaines autres maladies telles que la tuberculose, dont la propagation en pays Khmer paraît prendre une allure dangereuse pour le pays. L'isolement des lépreux est d'ordre moral et sentimental, car le lépreux fait peur.

VIGNE, P. ET TIVOLLIER, M. (*Marseilles*). La lèpre et sa prophylaxie aux Iles Loyalty. (*Read by title; authors not present.*)

In the Loyalty Islands, the madrepore islands lying 65 miles from New Caledonia, the proportion of lepers was 34 per 1,000 in 1937. The process of discovery of cases and prophylaxis of the disease has become much improved since there has been a resident doctor in these islands. Cases are uniformly distributed, though there are a few more important centers on the coast. Contagion almost always runs in families, being fostered by the promiscuous conditions of native life, together with poverty and the lack of bodily hygiene. In Lifu Island, the most important of all, the following cases were observed in 1936-1937: nodular, 47; mutilatory neural, 32; mixed, 75; anesthetic neural, 31; macular, 4 and tuberculoid, 11; total 200. After many attempts at prophylaxis a special village has been established. Each patient has his or her private cabin and undertakes various occupations (gardening, fishing, etc). The food is chiefly provided by the authorities. The expense is 0 fr. 55 per patient per day. Of 328 lepers that have been admitted 3% have left cured, 49% have died, and 48% are still there.

HAKIM, A. (*Syria*). L'oeuvre antihansénienne du Haut-Commissariat français en Syrie. (*Read by title; author not present.*)

LUTZ, A. (*Rio de Janeiro*). No control of leprosy without antimosquito campaign. (*Read by title; author not present.*)

Once the transmission of leprosy by mosquitoes is accepted or at least allowed for, prophylaxis must be reorganized. This can be done only by a regular and general antimosquito campaign. All leprosy-infested countries should consider this as a major method, much more promising of results than the treatment of already established cases. Rules: (1) The local fauna

of blood-sucking diptera should be carefully studied in all leprosy foci. (2) Lepers, whether in their own homes or in institutions, should be protected from mosquitoes. (3) Patients with fever, and rapidly developing cases, should be isolated in screened wards. (4) Every leprosy institution should have on its staff a specially trained medical person or entomologist responsible for the suppression of mosquitoes and other blood-sucking parasites. (5) The conditions as regards mosquitoes in the places where incoming patients probably contracted the disease should be investigated. (6) No human habitation should be allowed in the neighborhood of leper hospitals or settlements within the distance attainable by the flight of mosquitoes. If such habitations already exist and cannot be abandoned, they should be included in the mosquito prophylaxis. (7) Facts observed and results obtained should be published periodically. Owing to the long period of incubation, leprosy will naturally not vanish as quickly as yellow fever did. Gradually, however, results will appear and finally lead to the suppression of this dread plague wherever antimosquito prophylaxis is carefully maintained.

GEORGES, E. (*Indo-China*). Notes sur quelques cas de cohabitation de longue durée de femmes, indemnes cliniquement et bactériologiquement de lèpre, avec leur mari lépreux. (*Read by title; author not present.*)

Au camp sanitaire de Troeung, dans la Province de Kompong-Cham au Cambodge (Indochine française), vivent relativement isolés et groupés en communauté autonome, 270 lépreux. Avec ces malades cohabitent depuis des années quelques femmes de lépreux, qui sont à ce jour encore indemne de lèpre cliniquement et bactériologiquement. Chez toutes ces femmes, au nombre de quatorze, nous avons pratiqué en même temps qu'un examen clinique complet, des prises de sang en goutte épuissée et des frottis de mucus nasal, pour essayer de décoller soit dans le sang, soit dans le mucus nasal la présence des bacilles de Hansen. Tous ces examens, pratiqués au Laboratoire de Bactériologie de Phnom-Penh, ont été négatifs. La facilité avec laquelle ces femmes indigènes acceptent de vivre avec leurs maris lépreux dans le camp sanitaire ou dans ses environs immédiats est certainement due en partie à la croyance cambodgienne de la non-contagiosité de la lèpre. De pareils faits montrent de toute évidence le peu de contagiosité réelle et la longue période d'incubation de la lèpre.

ROUSSEAU, P. (*Paris*). De la probabilité de la contagion de la lèpre par la voie digestive. (*Read by title; author not present.*)

WEAVER, E. (*Rio de Janeiro*). How private beneficent organizations can help lepers and cooperate in the effort to eradicate leprosy.

The principal activities of the societies to help lepers and combat leprosy, as outlined and recommended by a special committee of distinguished physicians and leprologists at the conference for the unification of the campaign against leprosy, held in Rio de Janeiro, in 1933, are: (a) Protection for the healthy children of leprous parentage. (b) Assistance for the families of interned lepers. (c) social aid for the victims of leprosy. (d) When internment is temporarily impossible, assistance, in cooperation with health authorities, for the leprous and their families. (e) Cooperation with the public health authorities in sanitary education. (f) Help for those who have been dismissed from hospitals and refuge homes. Thus the Federation, with its

seventy-two Societies, is working in Brazil, always with technical guidance. For protecting the children of lepers (from birth to twenty years, or till the period of greatest susceptibility is passed): to build in each state at least one model refuge-home with a day nursery, school, manual training, and agriculture. At present there are five refuge-homes, three of which are day nurseries. Six others are being constructed through direct efforts of the Federation. The societies furnish to the needy families of lepers necessary clothing, food, shelter, and medical attention; and to all lepers, interned or not interned, any needed assistance, material or social. By use of published articles, talks, radio, and the general distribution of literature, members of the societies cooperate with public health service in sanitary education.

- BURGESS, P. (*New York City*). Remarks on isolation in leprosy.
- ANDERSON, W. H. P. (*London*). The present outlook in mission work among lepers. (*Read by title*.)

III. CLINICAL ASPECTS

DUBOIS, A. (*Antwerp*). Possibilités et limites du diagnostic histologique de la lèpre incipiente.

L'occasion d'un Congrès qui permet de comparer l'expérience de léprologues de tant de pays paraît favorable pour essayer de résoudre cette question qui a tant d'intérêt pratique et scientifique. Il semble à l'auteur que l'histologie fournirait une réponse adéquate dans les deux conditions suivantes: (1) S'il était toujours possible de trouver des bacilles (ainsi que Lie l'affirme). (2) Si les lésions lépreuses présentaient toujours une structure spécifique ou en tout cas assez caractéristique pour supporter une confirmation importante au diagnostic (par exemple structure lépromateuse ou structure tuberculoïde). Cette deuxième vue paraît soutenue par Wade. Se basant sur son matériel congolais l'auteur ne croit pas que aucune de ces conditions soit toujours réalisée chez des lépreux authentiques. Selon lui, la biopsie, si utile qu'elle soit, laisse encore assez bien de cas débutants en suspens.

- DES ESSARTS, J. Q. ET LEFROU, G. (*France*). L'histo-diagnostic dans le dépistage de la lèpre en milieu endémique. (*Read by title; authors not present*.)

WADE, H. W. (*Culion*). The skin lesions of neural leprosy.

This presentation is of the nature of a summarized lantern slide demonstration of the clinical and histological features of the leprides, based on a large number of cases of all varieties studied in several countries in the Far East. With regard to the lesions which are definitely recognizable by clinical observation as tuberculoid, the morphological features that characterize them, and those which distinguish what the author calls the "major" and "minor" varieties of them, are illustrated, as well as the histological changes which are found in them. It is a disputed question whether or not the flat or "simple" macular leprides, which lack the morphological peculiarities of the frankly tuberculoid leprides, are related to them; some authors hold that cases with such macules should be classified separately, and that the tuberculoid cases should be recognized as a new, third type. Photomicrographs are shown to illustrate the findings which have led the author and other workers to conclude that the simple leprides, *provided*

they are active, are also tuberculoid in nature, though the degree of this change is relatively slight as a rule. Much retrogressed or residual macules may show only banal chronic inflammatory changes, but such lesions do not reveal the nature of the active process and cannot properly be used as a basis of classification of leprosy. Infrequently, early lesions are encountered which do not show typical microscopic changes, but such lesions are similarly indeterminate clinically; continued observation is required to determine the real nature of such cases. Considering all factors, it is concluded that there is no essential difference of nature in the entire series of lesions which can be classed definitely as leprides, notwithstanding the marked differences in the degrees of tissue reaction or the coincidental differences in immunological reactions or in amenability to treatment. It is, therefore, held that there is no sound basis for dividing the neural type of leprosy into two types, though there definitely is value in recognizing its subtypes, or varieties.

RABELLO, JR. (*Rio de Janeiro*). Etiologie générale et pathogénie de la lèpre tuberculoïde.

On connaît très imparfaitement encore les conditions étiologiques générales de la lèpre tuberculoïde. Il n'y a pas là rien qui puisse nous étonner puisque c'est un fait qui nous échappe, encore, beaucoup du déterminisme de l'infection léprotique prise dans l'ensemble. Au point de vue de l'induction épidémiologique, nous connaissons certains faits qui semblent pouvoir éclairer tout ce sujet si compliqué. Ainsi la distribution par les âges de cas de lèpre tuberculoïde (plus de 150 cas étudiés) peut s'adapter aux faits déjà connus pour les autres formes de la lèpre: large incidence dans les deux premières décades de la vie; cependant, le plus gros pourcentage de cas tombe entre les 30 et 40 ans. Ce fait nous l'avons rapproché d'une élévation de la résistance de l'organisme adulte; peut être, aussi, d'indices plus répandus, à ces âges, de l'allergie à la tuberculine. Cette supposée élévation de la résistance peut s'appuyer sur les faits suivants: on ne rencontre pas, en général, des lésions tuberculoïdes internes à l'activité chez les rares cas de lèpre tuberculoïde qui ont pu avoir été examinés à l'autopsie (seulement les 20% selon Mitsuda et Ogawa); la réaction de Witebsky, Klingenstein et Kuhn est négative dans près de 70%; l'allergie tuberculinique peut être masquée (anergie positive) comme dans les cas de tuberculose atténuée; les lésions tuberculoïdes coïncident bien rarement avec les lésions lépromateuses; la réaction de Mitsuda est positive en plus de 95% des cas, fréquemment avec nécrobiose (analogie avec le phénomène de Koch). Au point de vue pathogénique, les conditions sont très rapprochées de celles qu'on rencontre dans les tuberculoses hémato-géniques: les caractéristiques de l'allergie spécifique se traduisant par le petit nombre de bacilles et par la structure tissulaire; les caractères d'une réaction à système, exactement comme dans les autres formes de lèpre, marquée surtout au niveau de la peau, ganglion lymphatique, moelle osseuse et nerfs. Les analogies vont vers les tuberculides et tuberculoses cutanées, en opposition aux formes toxigènes de la tuberculose pulmonaire: allergie tuberculinique (ou anergie positive), Witebsky négative, rareté de micro-organismes, structure tuberculoïde, systématisation (syndrome lympho-granulomateux de J. Schaumann). Dans ces conditions, il serait très important de déterminer les fractions antigéniques du bacille lépreux, étant connues les belles recherches de Anderson et Sabin sur le bacille de Koch.

De l'étude pathogénique il découle, très nettement, la nécessité de faire une position à part pour les cas de lèpre tuberculoïde dans le schéma général de la maladie.

MOTTA, J. (*Rio de Janeiro*). Lèpre tuberculoïde; manifestations cliniques. *(Read by title; author not present.)*

L'auteur signale dès le début que la conception de la lèpre tuberculoïde a été d'abord fondamentalement histologique, c'est-à-dire, la structure particulière de la réaction tissulaire, qui s'éloigne entièrement de celle qui caractérise d'une manière classique les lésions lépromateuses, ce qui lui donne un aspect propre et détermine que de semblables cas soient placés dans une classe à part. Du côté de cette particularité structurale et de la manière dont les malades porteurs de lésions de ce type se conduisent envers les réactions immunologiques, permet ainsi à la clinique de l'éloigner des formes classiques de la lèpre non seulement par l'aspect morphologique des lésions, mais encore par la bénignité de son évolution, par l'obéissance avec laquelle cède à l'action de la médication spécifique et par le fait de la non co-existence sinon à titre exceptionnel de semblables lésions avec celles de la structure lépromateuse. L'auteur passe en revue les premiers cas enregistrés dans la littérature, pour signaler l'aspect dermatologique des lésions cutanées décrites, et démontre que ce n'est pas toujours à une structure tuberculoïde, pre-tuberculoïde ou sarcoïde que correspondent des éléments éruptifs d'aspect particulier, de tels éléments pouvant même se présenter comme des taches érythémateuses ou pigmentaires d'aspect banal. Dans un grand nombre de cas, cependant, l'élément éruptif se montre avec un aspect propre et bien caractérisé de façon à permettre de prévoir à simple observation clinique, la constitution histologique correspondante. L'on observe alors les divers aspects cliniques de ces lésions, démontrant qu'il n'est pas possible de les superposer exactement aux types cliniques de tuberculides ou tuberculoïdes connus et admis d'une manière classique comme les plus souvent relationnés à une origine tuberculeuse. En outre, il est nécessaire de noter qu'aussi dans ce groupe de dermatoses, malgré l'effort des auteurs, il n'est pas possible d'individualiser parfaitement les types cliniques, et l'on voit fréquemment les formes de caractérisation difficile et d'autres, non plus rares qui se montrent comme formes de passage entre l'un et l'autre type. L'auteur s'occupe encore de réactions tuberculoïdes de localisation nerveuse et décrit l'aspect clinique des abcès des nerfs.

PORTUGAL, H. (*Rio de Janeiro*). Histologie pathologique de la lèpre tuberculoïde. *(Read by title; author not present.)*

Ce sujet doit être envisagé en rapport avec les localisations du processus tuberculoïde, et sous ce point de vue on doit distinguer: (1) lésions cutanées (in sensu anatomic), (2) lésions des nerfs, (3) lésions viscérales. L'expérience personnelle de l'auteur est restreinte aux lésions observées dans la peau. Ces lésions cutanées présentent trois aspects principaux: (a) folliculaire, où on rencontre les éléments et l'arrangement du follicule tuberculeux; (b) sarcoïde, constitué par des cellules épithélioïdes, avec ou sans cellules géantes, et disposées en forme de boyaux ou bandes, directement au contact du tissu collagène; (c) pre-tuberculoïde, infiltration très réduite au point de vue quantitatif mais tuberculoïde par la nature de ses éléments. Il est impossible de faire une distinction entre le granulome de la lèpre tuberculoïde et le granulome

tuberculoïde d'autres dermatoses, principalement de la syphilis et de la tuberculose. Les dermatoses végétantes présentant éventuellement de la structure tuberculoïde, ne se confondent pas avec la lèpre tuberculoïde parce qu'il existe des lésions épithéliales d'ailleurs d'ordre secondaire. On doit maintenir la distinction entre léprides simples et léprides tuberculoïdes, puisqu'il y a une différence substantielle entre les deux types, au point de vue histopathologique. L'examen histo-pathologique constitue l'unique critérium scientifique pour le diagnostic de la lèpre tuberculoïde, ainsi que la bacterioscopie pour celui de la lèpre tubéreuse. Toutefois, l'examen clinico-morphologique permet d'établir le diagnostic dans un très grand nombre de cas. De tout ce qui a été dit, il en découle que la lèpre tuberculoïde doit être envisagée comme une forme à part.

ERMAKOVA, N. I. (Moscow). The pathologic changes in the neural tissue in tuberculoid leprosy. (Read by title; author not present.)

This report is based on a histological investigation of a series of 13 cases of tuberculoid leprosy, 11 biopsies and 2 autopsies. Biopsy material was taken from: (a) flat erythematous macules, (b) annular lesions, (c) diffusely thickened plaques, (d) residual lesions with hypo and hyperpigmentation. Histologically all of them had the tuberculoid structure with the exception of the "residual" forms, in which there was simple inflammatory infiltration; in the hyperpigmented spots were found a great number of hemosiderin granules. In eight instances single acid-fast rods were found, while the Much staining revealed a great number of organisms (the Much forms). In the residual lesions a careful search for organisms failed to reveal any. In the peripheral nerves (medianus, ulnaris, radialis; cutaneous brachii and antibrachii), changes started with round-cell infiltrations, then epithelioid foci appeared, with Langhan's giant cells. Later on in the granulation tissue there appeared small foci which, uniting, formed large necrotic lesions. Investigations of the neural tissue by Ziehl's stain revealed single rods, but in sections stained by the Much's method the number of bacilli was considerably increased. There have also been found groups of granular rods. Vacuolization of the ganglion cells and destruction of some of them was seen in the intervertebral ganglia. In the internal organs (liver, testes, adrenals) plain inflammatory infiltrations have been found. Investigations by Ziehl and Much stains gave negative results. Single acid-fast rods were found in the small nerves of the nasal mucous tissue, which apparently was not involved. The Much staining revealed more numerous granular forms.

FERNANDEZ, J. M. M. (Rosario, Argentina). Bactériologie de la réaction lépreuse tuberculoïde.

L'auteur a réalisé l'étude bactériologique de 14 cas de lèpre tuberculoïde en état de réaction, et a fait dans tous les cas la recherche du *M. leprae* dans les lésions cutanées, dans le sang et dans les ganglions lymphatiques. Il a observé: (1) Le *M. leprae* est trouvé à niveau des lésions cutanées dans la plupart des cas. Le bacille paraît au bord extérieur des lésions pendant l'étape initiale de la réaction; il y persiste un temps variable pendant la période de l'état, et il disparaît toujours à la période de régression. Le nombre de bacilles peut devenir considérable, et l'on peut même observer des "globis." La morphologie prédominante est celle du bâtonnet homogène, bien coloré, au commencement de la réaction, et les formes granulaires, moins acido-

résistantes (formes de désintégration) à la période de déclin. (2) Le *M. leprae* a été cherché dans le sang de 4 de ces malades dès le commencement de la réaction. L'un d'eux est clairement positif, tous les autres sont négatifs. (On a vu, cependant, des formes très suspectes dans deux cas.) A titre de contrôle on a fait la même investigation dans le sang: (a) de malades de lèpre tuberculoïde sans réaction, (b) de personnes saines et (c) de malades de lèpre nodulaire. Dans (a) et (b) les examens sont toujours négatifs; dans (c) ils sont positifs. (3) Dans les ganglions lymphatiques la ponction pût être pratiquée seulement en 2 cas. Les examens ont été négatifs.

— BALIÑA, P. L. AND BASOMBRI, G. (Buenos Aires). Classification des formes cliniques de lèpre.

RABELLO, ED. ET RABELLO, JR. (Rio de Janeiro). Une classification clinico-épidémiologique des formes de la lèpre. (Read by title.)

(1) Pour les recherches sur la lèpre et l'application à la prophylaxie qui en découle, il y a tout avantage à établir une classification clinique et épidémiologique. (2) Dans ce but, la classification de Manille, par la portée de ses résultats et son caractère international, a été un progrès. Il est incontestable aussi que les acquisitions nouvelles ont conduit à la nécessité de modifications plus ou moins profondes selon l'avis des chercheurs. (3) Une forme clinique est ordinairement définie comme un état ou phase d'une maladie caractérisée par un ensemble symptomatique qui peut demeurer pendant un certain temps, sans subir de changements fondamentaux. Cette conception permet la compréhension de l'unité morbide, à côté des avantages, surtout d'ordre diagnostique, apportés par la connaissance des mutations subies par l'organisme sous l'action du germe. (4) Une classification des formes clinique de la lèpre doit avoir une portée pratique de façon à la faire accessible à tout ceux qui travaillent à l'hôpital, aux dispensaires, et au champ épidémiologique. Elle doit se baser surtout sur des données cliniques ou autant que possible objectives, d'une compréhension facile, en dehors le plus possible de tout ce qui est subjectif ou soumis à l'interprétation personnelle. (5) Une telle classification doit être basée sur des fondements taxinomiques déjà internationalement connus comme ceux qui proviennent de la sémiologie générale, bien comprises par tous les médecins. L'on évité ainsi qu'à chaque proposition de classification l'on soit forcé de présenter un nouveau *syllabus* avec de nouvelles définitions, conventions ou compromis. (6) Une classification clinique et épidémiologique doit être, tant que possible, établie sur une base scientifique, pourvu que ses fondements puissent avoir une expression pratique qui facilite un groupement convenient des cas. (7) Pour la lèpre, on peut admettre comme base scientifique d'une telle classification, l'aspect clinico-morphologique des lésions, la teneur en bacilles, la structure histologique et le degré de reactivité accusé par le malade devant des antigènes déterminés. (8) Dans ce travail, nous avons cherché à démontrer que la base doctrinale de la classification des formes de la lèpre, étant établie selon le cadre ci-dessus, il est possible, dans la pratique, de faire une discrimination des cas en utilisant seulement les éléments suivants: reconnaissance clinico-morphologique des lésions et la présence de bacilles. (9) D'accord avec la méthode ci-dessus un de nous a déjà proposé un essai de classification en quatre formes principales. En prenant note d'une part, des anciennes opinions de Hansen et Looft, des recherches nouvelles, surtout dans ces derniers

temps, des opinions émises par le divers léprologistes, nous nous sommes maintenant décidés par une modification de ce schème, que tout en tenant compte de ces opinions, reste fondamentalement dans le plan de nos idées antérieures. Ce schème peut être résumé comme ceci: trois formes cliniques principales, lépromateuse, maculo-anesthésique, et tuberculoïde, avec une sous-division de la deuxième en maculeuse, tropho-anesthésique et maculo-anesthésique proprement dite.

CHATTERJI, S. N. (*Calcutta*). The international classification of leprosy. (*Read by title; author not present.*)

There are practical difficulties in the application of the classification "neural" and "cutaneous," as these terms do not cover all the different types of lesions which are met with in leprosy and the definitions are not definite enough. Any attempt to define and bring all the lesions of leprosy under two headings is likely to create confusion and misunderstanding. Instead of defining them, it will be better to describe all the different types of lesions which are found in different countries and then sort them into groups and types. The description should be based on the (a) sensory changes, (b) skin changes and (c) bacillary concentration in the skin lesions. It should be called the International Classification because the term clinical may be misunderstood. Leprous lesions may be placed under three groups.

COCHRANE, R. G. AND PAUL RAJ, M. (*Madras*). A preliminary note on a clinical study of leprosy in South India, with special reference to children.

The cases which present themselves at the Lady Willingdon Leper Settlement and the Saidapet Children's Clinic (Madras) are sufficiently varied to form the basis of a clinical study. Particular note has been taken of the incidence of major tuberculoid cases because, until recently, it was stated that this variety of neural leprosy was rarely seen in South India; they constituted 4.5% of the 745 cases that sought admission into the Settlement during the first ten months of 1937. These represent cases in the reactive stage, for only cases of clinical interest have been recorded; they confirm Lowe's opinion that these lesions are not uncommon in South India. Clinical notes and, where possible, histological findings are given of a selection of these cases. Of particular interest are the scaly tuberculoid lesions, which we feel are related to the ulcerative variety described by Ryrie in Malaya. In one of our cases, a child, the lesions definitely ulcerated. A clinical analysis of over 200 children is made, and particular emphasis is laid on the indefinite hypopigmented lesion in children with a history of close contact with an open case. It has been suggested that such cases should be placed in the cutaneous rather than the neural category because: (a) they show none of the cardinal signs of neural leprosy, (b) the lesions are more akin to cutaneous than neural leprosy (e.g., fading of the periphery into the normal skin and slight shininess in texture), and (c) the leprolin test is consistently negative. For the sake of comparison clinical notes on three diffuse cutaneous cases in adults are given. It is thought probable that the indefinite hypopigmented lesions of children are often precursors of the diffuse cutaneous variety in adults, and therefore these lesions have been provisionally called precutaneous.

FLANDIN, CH. AND RAGU, J. (*Paris*). La période prédermatologique de la lèpre.

Nous avons recherché par l'anamnèse ou par l'observation à déterminer les accidents non spécifiques, mais cependant dus à l'infection lépreuse, se développant entre la période de contagion et l'apparition de symptômes spécifiquement lépreux. La fièvre, l'adynamie, les algies sont les symptômes essentiels de cette période d'invasion. Suivant leur association ou la prédominance de l'un d'eux on peut décrire une *forme hectique*, simulant la tuberculose ou une septicémie, une *forme arthralgique*, simulant le rhumatisme, et une *forme pseudopalustre* contre laquelle échoue la quinine. L'évolution est aiguë, subaiguë ou chronique. Le plus souvent il s'agit de poussées isolées, plus ou moins prolongées, séparées par des intervalles où se notent seulement l'asthénie, l'anxiété et des algies diverses. En l'absence de la notion d'un contagion lépreux dans les antécédents ces phénomènes sont rarement attribués à la lèpre. Ayant soupçonné l'étiologie hansénienne, nous avons dans plusieurs cas appliqué le traitement par le complexe de chaulmoogra-cholestérol intraveineux avec un succès complet.

DE SOUZA CAMPOS, N. AND DE SOUZA LIMA, L. (*São Paulo*). Clinical aspects and evolution of the early manifestations of leprosy. (*Read by title.*)

The authors study the early manifestations of leprosy in S. Paulo, pointing out the regional aspects; consideration is given to its (a) neurological and (b) cutaneous aspects. Among the cases are some with anesthesia without visible lesions, typical amyotrophies, and infrequent ones of atypical amyotrophies of the thenar and tibiotarsal muscles. Among the skin manifestations are studied the lesions with tuberculoid structure, the erythematohypochromic ones, and the achromic ones; the authors regard them as representing different evolutive periods. Particular attention is given the lesions of tuberculoid structure observed in children, whose characteristics are different from the lesions in adults. They are classified as: (a) nodular, (b) papulated (c) micropapulated, and (d) atypical. These lesions have a regressive tendency, either spontaneous or through treatment. The authors also discuss several common manifestations, such as the follicular reaction, marked xerodermia, and ichthyosiform aspects of the legs of the early cases. The main histopathological characteristics of the lesions are studied.

DE SOUZA CAMPOS, N. (*São Paulo*). Aspects cliniques de la lèpre tuberculoïde chez l'enfant. (*Read by title; author not present.*)

The author has studied the clinical features of tuberculoid leprosy in childhood, the morphology of which he considers different from what is observed in adults. The cases observed in the "preventorios" and "ambulatorios" are classified: (a) nodular type, (b) papulate type, (c) lichenoid type with small papules, (d) Boeck's sarcoid type. It is concluded that this type of leprosy is very benign, almost always spontaneously retrogressive; the author has never seen these cases becoming worse. They are very frequent among the contacts of cutaneous cases, which indicates the great contagiousness of these cases, and also the high immunity of children, demonstrated by the great resistance to infection. Attention is drawn to the scars left by these lesions; their peculiar features permit a retrospective diagnosis when the cases give a strongly positive leprolin reaction.

HASSELLTINE, H. E. (*Carville*). Leprosy in children and adolescents in the United States.

The prevalence of leprosy in children and adolescents in the United States shows little excess over the normally expected number. In recent years the number of cases in children in the first ten years of life has been lower than formerly. It is difficult to get accurate histories from many patients, for numerous reasons. Instances of transmission of the disease to children are cited in detail, showing the danger of transmission from one member of the family to another; also an instance of accidental discovery of a latent case of leprosy is reported. As a prophylactic measure applicable to children in the United States, the author favors the building of an institution for the care of children of lepers, somewhat upon the lines of those maintained in Hawaii. General education of the public, including the medical profession, as to the truth about leprosy is essential to the handling of any problem connected with the disease in the United States.

GIFFEN, H. K. (*Assiut*). Leprosy at the American Mission Hospital, Assiut, Egypt.

For many years the American Mission Hospital at Assiut has been giving some leprosy treatments in the out-patient department. Early records are unsatisfactory for study, but recent studies and data are more complete. Our work has been assisted by the American Mission to Lepers. Our report to date will include study of 63 lepers, 40 of which have been classified as neural and 22 as cutaneous. Study has also included 23 close contacts, some of which must be considered as incipient and are kept under observation and even some treatment. Twenty-seven of the cases have shown *M. leprae* one or more times, some from several sources. Our youngest proven case is 11 years old, with the average age about 36 years. Photographs of sixty-five of these lepers or contacts are available for study. Sixty or more biopsies will be included in the analysis, with some photomicrographs of illustrative material. Forty-six x-ray studies of both upper and lower extremities have been made. Type cases will be presented in detail, illustrated with lantern slides.

MACDOWELL, F. AND DA MOURA COSTA, H. (*Rio de Janeiro*). Exclusive motor manifestations in neural leprosy. (*Read by title.*)

The authors present and discuss two observations of neural leprosy, with amyotrophy of the extremities and without the least disturbance of sensibility.

TISSEUIL, J. (*Bamako, A.O.F.*). Contribution à l'étude de la réaction lépreuse. (*Read by title; author not present.*)

Nous observons fréquemment une réaction qui se traduit par la fièvre et une rapide éruption nodulaire. Les nodules néoformés sont composés presque entièrement par un afflux local de polynucléaires. Le nombre de polynucléaires dans le sang monte jusqu'à 80% quand la suppuration doit se produire. La disposition des nodules s'accompagne d'une desquamation de la peau autour de la place qu'ils occupaient. La persistance d'un mauvais état général annonce une issue fâcheuse, mais en général la crise a une évolution favorable, et elle est le prélude d'une amélioration locale et générale.

FERREIRA DA ROSA, A. (*Rio de Janeiro*). Lepra reaction. (*Read by title; author not present.*)

Ermakova, N. I. (*Moscow*). Histopathology of the leprous process in the reactive phase of lepra cutanea. (*Read by title; author not present.*)

One case was autopsied, death having been caused by severe leprous fever, and of eight biopsy specimens of reactive elements. At autopsy we found in the skin extreme hyperemia of the vessels with diapedesis and hemorrhages; in the connective tissue and vessels fibrinoid necrosis. Near the small vessels, where there were distributed groups of leprous cells, there were concentrated thick accumulations of round and plasma cells. In the larger lepromas there were marked accumulations of round cells and wide muffs of plasma cells surrounding the small vessels. There was a smaller or larger admixture of erythrocytes among the cells. Single lepromas had undergone complete necrosis with simultaneous destruction of the bacilli. In the places of lesions, the nerve trunks and their small branches were infiltrated with large numbers of plasma cells distributed either diffusely or in small islets. Some nerve fibers were separated by large round-cell clumps. In the lymphatic glands, bone marrow, spleen and liver were large clumps of the same plasma cells, while in the liver a number of round-cell islets were also observed. Large numbers of plasma cells were found deep in the mucous membrane of the upper respiratory tract, especially the trachea. In all the vessels were found leprosy bacilli, caught in large quantities by the endothelium. They formed whole "thrombi" in the capillaries of the lungs. The same changes, but not so marked, were found in six of the biopsy specimens. In the remaining two the leprous granulomas were infiltrated by small and large clumps of polynuclear cells. The walls of some vessels and the connective tissue fibers were in a condition of fibrinoid necrosis. The bacilli in these two instances had undergone considerable change; i.e., they had lost their acid-fastness and were mostly broken into fragments and granules.

— BECHELLI, L. M. ET DA COSTA VALENTE, E. (*São Paulo*). L'influence de la réaction léprotique sur la marche des lésions cutanées lépreuses. (*Read by title; authors not present.*)

BECHELLI, L. M. et DA SILVA GUIMARÃES, J. (*São Paulo*). L'influence de la tuberculose pulmonaire sur l'évolution des lésions cutanées lépreuses. (*Read by title; authors not present.*)

La tuberculose pulmonaire étant fréquente parmi les lépreux, les auteurs ont voulu observer l'influence qu'elle pourrait avoir sur l'évolution des lésions cutanées lépreuses. Ils ont pu réunir 18 cas qui avaient au moins un an et demi d'observation, remarquant que chez 13 patients les lésions cutanées se sont aggravées tandis que chez 4 autres elles restèrent stationnaires et qu'un seul malade présentait des améliorations de ses lésions. Ils pensent qu'ils ne peuvent pas dégager des conclusions définitives parce que leurs observations ne portent que sur un nombre réduit de cas. Ils sont d'avis que la tuberculose pulmonaire, quand elle se manifeste chez un malade lépreux, doit contribuer à l'aggravation de la lèpre car l'organisme aura besoin de mobiliser ses défenses contre plus d'une affection. Ils étudient quel est le mécanisme défensif qui s'établit quand les lésions cutanées lépreuses sont bénéficiées par la tuberculose pulmonaire. Ensuite ils considèrent la possibilité que la tuberculose aurait d'altérer l'évolution de la lèpre de façon à déterminer l'apparition des lésions tuberculoïdes. Ils n'ont vérifié

des lésions tuberculoïdes que chez un seul des 18 malades de lèpre et de tuberculose; ils attirent toutefois l'attention sur le fait que ces lésions ont précédées, ou plus ou moins coïncidées avec l'apparition des premiers signes de tuberculose. Ils cherchent à vérifier si les malades porteurs de lésions tuberculoïdes avaient de la tuberculose pulmonaire: l'examen de l'appareil respiratoire de 39 malades n'a pas révélé de processus pulmonaire actif. Basés sur leurs propres données cliniques et sur les données nécroscopiques de Mitsuda et Ogawa, ils concluent que l'on observe très rarement des cas cliniques qui confirment que la tuberculose peut exalter la capacité réactive de l'organisme du lépreux contre les bacilles de Hansen, de façon à déterminer l'apparition des lésions tuberculoïdes.

RIAD BEY, M. (Cairo) Clinical observations on ocular leprosy in Egypt.

About 110 cases have been examined. Leprosy attacks every part of the eye except the fundus oculi. Each part was discussed separately as regards the nodular, anesthetic and mixed types. A few microscopic slides were shown.

SZYMANSKI, J. (Poland). Quelques manifestations oculaires de la lèpre. (Read by title.)

Entre neuf cas observés à Petropawlowsk (Sibérie-Kametchatka) j'ai trouvé un cas d'atrophie du nerf optique avec les fibres myélinnes, et en un autre un foyer dans la choroïdite ressemblant à un foyer tuberculeux. Au Brésil j'ai observé une fois une lépromie au limbe cornéen avec irritation du corps ciliaire placé dans mon atlas (*synopsis tabularum ophthalmicarum*) que je reproduit. En outre on rencontre des lépromes de l'iris, madarosis et alopecie des sourcils avec les noeux lépreux sur la peau des paupières.

BRANDA, A. M. (Minas Geraes). On the frequency of ocular lesions in leprosy. (Read by title; author not present.)

DO VALLE, S. (São Paulo). Exposé relatif à la "choroïdite lépreuse précoce" de Hoffmann. (Read by title; author not present.)

HUIZENGA, L. S. (Jukao-Ku, China). Eye diseases complicating leprosy. (Read by title.)

The article is a study of some 500 cases of leprosy, with special reference to the common eye affections found. The author seeks to prove that by far the greatest proportion of eye symptoms are superficial in character and that the serious eye complications are rather secondary than primary leprotic in origin.

BERTACCINI, G. (Bari, Italy). Patogenesi della alopecia sopraccigliare della lebbrosi. (Read by title; author not present.)

(1) La constatazione più importante è certo quella che in tutti i casi osservati la regione sopraccigliare è sede di infiltrati più o meno cospicui, spesso molto notevoli e diffusi e caratteristici, in soggetti in cui la pelle della regione si presenta all'esame clinico normale. Gli infiltrati circondano i follicoli nella loro parte più profonda, e ne invadono le pareti, e la papilla del pelo. (2) Questi infiltrati hanno quasi ovunque l'aspetto tipico del leproma, e contengono quasi in tutti i casi bacilli di Hansen più o meno numerosi, che invadono la papilla e le cellule anche epiteliali del follicolo,

inducendovi fatti degenerativi. (3) La presenza di infiltrazione caratteristica e di bacilli nella regione sopraccigliare è talvolta precocissima, ed è notevole il riscontro di bacilli in questa regione in casi in cui non se ne trovano nel muco nasale e nel secreto ghiandolare, nè in altri punti della cute, pur colpiti da manifestazioni eritematose. (4) Nelle forme maculo-anestetiche le alterazioni istologiche in genere molto meno cospicue sono in armonia con una tendenza molto minore alla alopecia. (5) Le alterazioni degli elementi nervosi sembrano secondarie agli infiltrati cutanei, ciò che è del resto in armonia con l'opinione di diversi autori (Danielssen e Boeck, Dehio e Gerlach) sulla patogenesi della neurite lebbrosa. (6) Tutto quanto precede autorizza a pensare che l'alopecia lebbrosa sia sempre conseguenza di un infiltrato specifico perifollicolare, anche quando apparentemente la pelle della regione non è infiltrata. L'ipotesi del meccanismo neurotrofico non regge di fronte alla accurata indagine istologica della regione.

COELHO, J. T. (Brazil). Infantilism in leprosy. (*Read by title; author not present.*)

After certain general remarks about infantilism, a review is made of the infrequent references in the literature to infantilism in lepers. Several definitions of endocrinologists are given, and reference is made to the divergencies which exist as regard not only the symptomatology but also the causes of infantilism. Reference is made not only to those authors who attribute the arrested development to certain endocrine disturbances, but also to those who connect the condition with certain affections of early childhood; attention is given especially to Timme's work, and to the classification of Strauch who mentions the part so often played by leprosy in the etiology of infantilism. The author's observations are based on six cases, three males and three females, chosen from among 84 patients of the Santa Isabel Leper Colony; all of them were at the age of puberty, between 13 and 17 years of age. Among other examinations, various general pharmacological tests were made as well as several tests designed to verify the share taken by the ductless glands in the production of the condition. In accord with the opinion of various workers who allege the influence of contagious diseases (tuberculosis, abdominal typhoid, etc.) in the causation of infantilism, the author thinks that when leprosy is contracted at puberty or just before, or during infancy, it frequently causes serious organic disturbances which, in their turn, bring about arrested development.

MARTINS DE CASTRO, SR. AND JR. (São Paulo). Leprosy and malignant tumors. (*Read by title; authors not present.*)

The question of the coexistence of leprosy and malignancy has been only partially cleared because the cases in the literature are few in number, and the opinions of the leprosy and cancer observers are varied, and some even opposed. After reviewing the literature the authors report observations of their own patients, studying them with regard to both leprosy and malignant tumors. There are 38 cases among patients of the leprosaria of S. Paulo during a period of 3 years (1934-1937), 23 of them male and 15 female. The tumors were located as follows: skin, 24 cases; mucous membrane, 8 cases; breast, 3 cases; uterus, 2 cases; liver, 1 case. The

clinical diagnoses were confirmed by postmortem and histological studies. Tumors were most frequent in cases of the nodular and mixed types, least frequent in those of the pure nervous type. Histologically, some lesions developed in regions free from leprosy while in other instances both diseases are associated in the same area. The latter cases are studied in detail. The authors record their observations, especially from the dermatological point of view, on the relation of syphilis, tuberculosis and leprosy with cancer.

SILVEIRO, L. M. (*São Paulo*). Lèpre et amputations. (*Read by title; author not present.*)

VIGNE, P. ET TIVOLLIER, M. (*Marseilles*). Considérations statistiques, cliniques et thérapeutiques sur les cas de lèpre observés à Marseilles (Services Hospitaliers) depuis la dernière conférence. (*Read by title; authors not present.*)

During the last ten years 50 fresh cases have been discovered, mostly natives of the French colonies or foreign workers, which accounts for their being adults and chiefly men. However, three patients have never been out of France. The nodular and mixed forms were most frequently seen; two were tuberculoid, one of them lichenoid (*lichen leprosum*). The Rubino reaction, practiced on 25 patients, was positive only 11 times. The treatments utilized were iodized chaulmoogra ethers and methylene blue. The latter should be confined to painful and acute forms. Locally cryotherapy is applied to lepromata. Leprosy is greatly diminishing at Marseilles, because of the stopping of foreign immigration and the falling off in the arrival of colonial workers.

GOUGEROT, H. ET DEGOS, R. (*Paris*). Etude histo-bacteriologique des lépromes invisibles. Leur évolution au cours de la chromothérapie. Leur reactivation par la tuberculine. (*Read by title; authors not present.*)

GOUGEROT, H. ET BLUM, P. (*Paris*). Résorption du bleu des lépromes visibles et invisibles par l'injection dermique local d'histamine. (*Read by title, authors not present.*)

On sait que les injections intra-veineuses de bleu de méthylène (Montel) colorent en bleu les lépromes visibles et invisibles. L'action "vasculaire" de l'histamine nous a incités à expérimenter ce produit en intradermo-réactions dans des lépromes bleues, au centre de taches bleues et à la dose d'un milligramme par injection. La décoloration commença dès la 48ème heure par la partie centrale de l'injection; puis elle s'est étendue excentriquement en 4 jours. Si bien que dès la 3ème. injection, faite le 7ème jour, une tache bleue de léprôme de 37 mm. se trouvait constituée d'un centre clair de 27 mm. avec une couronne bleue large de 5 mm. Il semble que cette décoloration ne se produise nettement que par l'injection intradermique d'histamine, car l'ionisation des plaques à l'histamine, l'application de sinapisme, des vésications et cryantérisations, n'ont amené aucune décoloration nette. Une intradermo-réaction tuberculinique faite à cheval sur le centre blanchi et la couronne bleue en cocarde de la lésion de la face nettement positive, n'a pas amené de décoloration. Les bacilles sont moins nombreux dans la zone blanchie que dans les zones restées bleues (qui se décolorent spontanément et où cependant l'infiltrat est bourré de bacilles). Mais

la zone blanchie n'est pas guérie, puisqu'il reste de nombreux bacilles. Les injections dermiques d'histamine serviront donc au traitement anti-lépreux en corrigeant l'ennui anesthésique du bleuissement persistant des lésions et en aidant, sans doute par l'action vasculaire, à l'action des traitements anti-lépreux.

— ALEIXO, A. (Brazil). Pathological dactyloscopy. (*Read by title; author not present.*)

— LOPES RODRIGUES, H. (Brazil). Mental disturbances of lepers. (*Read by title; author not present.*)

IV. TREATMENT

FLANDIN, CH., RAGU, J. ^{Baranger, P. and} ~~ET TURIAE, J.~~ (Paris). Le traitement de la lèpre par un nouveau complexe de cholestérol et d'extraits de l'huile de chaulmoogra.

En application de la découverte de Baranger permettant la fixation sur le cholestérol de composés à longue chaîne, il a été possible de constituer un complexe stable de cholestérol et d'extraits de l'huile de chaulmoogra. Ce produit permet l'injection intraveineuse de doses élevées d'extrait chaulmoogrique (0,04 à 0,20 centigrammes) sans réaction générale dangereuse et sans altération des veines. Il peut être employé à doses concentrées localement sur les ulcérations. Notre expérience, commencée en mai 1936, permet d'affirmer la tolérance au produit même employé pendant plusieurs mois de suite; nous avons observé l'arrêt rapide des accidents évolutifs, la diminution des douleurs, la rétrocession des zones d'anesthésie, la désinfiltration des téguments, la cicatrisation des ulcérations, la disparition des névromes, la diminution de l'hypertrophie des nerfs, une amélioration marquée et l'état général. Deux faits sont particulièrement remarquables: (1) L'action sur les poussées aiguës fébriles, qui sont rapidement enrayerées par quelques injections; jusqu'ici la fièvre contreindiquait tout traitement et on devait laisser évoluer l'accès. (2) La disparition des bacilles dans les sécrétions tant que la malade est sous l'influence du traitement. Notre traitement paraît donc constituer un réel progrès.

FLANDIN, CH., ^{J.} RAGU, J. ~~ET TURIAE, J.~~ (Paris). Etude clinique de l'intradermoréaction à l'huile de chaulmoogra neutralisée.

L'injection intradermique à la dose de 1/10 à 3/10 de centimètre cube de diverses substances (solutions salines diverses iso-, hypo- ou hypertoniques, huiles des diverses provenances, protéines, etc.) amène la production d'une papule qui disparaît dans un temps variable suivant la substance, mais toujours rapidement chez un sujet normal. La même épreuve chez le lépreux amène la production d'une papule plus étalée, plus infiltrée et beaucoup plus persistante (plusieurs jours au lieu de quelques heures) que chez le nonlépreux. De plus, si l'injection est faite au voisinage d'une tache ou d'un léprome, elle est souvent le siège d'un afflux de bacilles faciles à prélever par scarification ou à vérifier par biopsie. Ce double phénomène: (1) persistance de la réaction, et (2) afflux local des bacilles de Hansen, peut aider au diagnostic de la lèpre.

VEGAS, M. (Caracas). The treatment of leprosy at Cabo Blanco (Venezuela).

Our experience is based on twelve years work at the Cabo Blanco leprosarium, where we attended about nine hundred lepers. They were under very regular and continuous treatment, which permits a comparison of the effects of esters and the plain *H. wightiana* oil, both locally and generally. In the first years we used esters of exceptionally good local tolerance which allowed administering higher doses than usual. Later we began to use the *wightiana* oil, purified by special process, injecting it at high doses with perfect local and general tolerance. Nine years' experience with this oil justifies drawing conclusions. Its efficiency, posology and ways of administration are discussed. Details are given about the method of purifying it. Comment is made on the necessity of rules allowing leprologists to compare results with leprosy drugs, based on strict classification of the patients, the type of leprosy, age, race, etc. and other conditions of epidemiological character.

DE MOURA COSTA, H. (Rio de Janeiro). Large doses of chaulmoogra in the treatment of leprosy. (Read by title.)

The author used, during two years, a method of treatment of leprosy with large doses of iodized chaulmoogra esters, in injections of 10 cc., three times a week. Local and general tolerance perfect. Very good clinical results, superior to the usual treatment. Bacteriological negativity in 56% of the cases. Better sedimentation and considerable increase of weight in 75% of the patients. In children the author used a higher dosage, nearly double the one used in adults, with more satisfactory clinical results, and bacteriological negativity in 82% of the cases. Better improvement occurred in patients without former treatment, which is attributed to the absence of chaulmoogra-resistant forms.

JOLLY, A. M. D., ADVIER, M., LEFROU, G. ET AUFFRET, L. (Guadeloupe).

Trois ans d'expérimentation de l'huile de chaulmoogra totale, préparée selon la méthode de Lefrou et Auffret, dans le traitement de la lèpre à l'Institut de Prophylaxie de Pointe-à-Pitre. (Read by title; authors not present.)

Le Laboratoire d'Hygiène et de Bactériologie de Pointe-à-Pitre a mis au point une technique de préparation de l'huile de chaulmoogra totale par élimination de l'acidité libre de l'huile au moyen de lavages successifs à l'alcool, qui abaisse le taux d'acidité aux environ de 2% en ac. oléique, sans entraîner de modifications des autres caractères de l'huile. L'huile utilisé est celle de l'*Hydnocarpus wightiana* préparée avec des graines fraîches par la pharmacie du Gouvernement de Pondichéry, et dont la composition est très stable. La tolérance de l'huile ainsi préparée est parfaite. L'innocuité des injections est absolue et ne nécessite l'adjonction d'aucun anesthésique. Le traitement peut être poursuivi sans interruption pendant des années. L'expérimentation de cette huile poursuivie à la Guadeloupe depuis trois ans sur une centaine de lépreux a donné des résultats thérapeutiques nettement supérieurs à ceux obtenus avec les divers dérivés de l'huile de chaulmoogra expérimentés comparativement. Plusieurs cas de disparition complète et persistante des lésions avec disparition des bacilles ont pu être observés.

SALOMAO, A. AND COELHO, J. T. (Brazil). Treatment of leprosy by creosoted and iodized esters of chaulmoogra. (Read by title; authors not present.)

Sixty cases were chosen, including early and advanced ones under treatment for 12 months. They were divided into three groups: (1) Cases treated only by intradermal infiltrations. (2) Cases treated by intramuscular injections. (3) Combined treatment, injections and infiltrations. The index of cases improved by the treatment was found to be high, there being, however, one case in which the results were absolutely negative. The patients given intradermal infiltrations derived greater benefit. The lesions chosen by preference were tubercles and plaques, and the infiltrations were carried out according to the position of the lesion, sometimes with creosoted, sometimes with iodized esters. Few instances of leprotic reaction were noticed, the local and general tolerance being good. Some patients with nervous manifestations accompanied by painful symptoms (neuritis, joint pains, etc.) presented evident improvement. There was marked improvement in the general condition, with an increase in weight in nearly every case. Some lesions of certain patients showed a return of sensibility, and in others even a reappearance of hair. This is a treatment from which appreciable and beneficent results can be expected.

MONTEL, M. L. R. (Saigon). Quelques exemples choisis de l'action du bleu de méthylène dans la lèpre. (Read by title; author not present.)

Nous nous proposons dans cette communication de montrer par quelques exemples choisis quelle peut être, dans la lèpre, l'action du bleu de méthylène employé seul ou combiné avec le traitement chaulmoogrique. Bleu de méthylène seul: photographies montrent la régression de lésions lépromateuses après 52 jours de traitement (620 cm³ de la solution), et l'action du bleu dans un cas de poussée fébrile. Bleu de méthylène-chaulmoogra: photographies montrent ce que l'on a pu obtenir par le traitement mixte bleu-chaulmoogra dans un cas de lèpre cutanée tubéreuse généralisée avec infantilisme lépreux en deux ans de traitement. La malade âgée de 20 ans qui au début du traitement mesurait 1 m. 32 cm. de taille et pesait 22 kgs. 300 avait en fin du traitement une taille de 1 m. 45 et pesait 30 kgs. Les symptômes d'infantilisme montraient une régression très marquée. Autres photographies mettent en évidence les résultats que peut obtenir le traitement mixte bleu-chaulmoogra dans un cas ancien de lèpre cutanée tubéreuse généralisée à toute la surface du tégument. Enfin, des photographies font ressortir certaines modifications morphologiques et numériques amenées par le traitement dans la structure histologique des lésions et des bacilles eux-mêmes. Ces modifications sont parallèles à l'amélioration des lésions cliniques. Nous les considérons comme une traduction microscopique d'un processus de cicatrisation dû à une résistance et à une défense accrues de l'organisme contre le *Mycobacterium leprae* sous l'influence du traitement. Le bleu de méthylène ne guérit pas la lèpre, il ne prévient pas les récidives, il n'est pas actif dans tous les cas, mais il doit, à notre avis, être considéré comme un adjuvant très utile du traitement chaulmoogrique et entrer dans la thérapeutique anti-lépreuse courante.

OZORIO DE ALMEIDA, A. AND RABELLO, ED. (Rio de Janeiro). Essai de traite-

ment de la lèpre par l'oxygène sous pression. (*Read by title; authors not present.*)

(1) Chez trois malades traités exclusivement par l'oxygène pendant quelques mois, des améliorations cliniques accentuées ont été notées. (2) Ces améliorations cliniques se poursuivent et deviennent accentuées même après quatre mois de la date de la dernière application d'oxygène. (3) Avec les améliorations cliniques on observe certaines altérations morphologiques du bacille de la lèpre, généralement interprétées comme indice d'une activité diminuée du germe, en même temps que, parfois, on constate la diminution quantitative des éléments acido-résistants. (4) Dans le cas unique, simultanément traité par le chaulmoogra et l'oxygène, on n'a pas observé aucun inconvénient de cette association pendant qu'on pouvait vérifier une rapide regression de l'exanthème léprotique. (5) On a pu observer une plus grande sensibilité des malades de lèpre à l'oxygène, indépendamment d'une action remanescence, éventuelle, de la médication antérieurement employée, par les esters iodés de chaulmoogra. Ce fait a été spécialement vérifié dans un cas, soumis à un traitement simultané avec l'ester de chaulmoogra iodé et l'oxygène, sous pression. (6) L'observation a montré qu'il y a une chute plus rapide du nombre des bacilles, chute qui devient progressivement plus accentuée.

OZORIO DE ALMEIDA, A. AND DE MOURA COSTA, H. (*Rio de Janeiro*).

Treatment of leprosy by oxygen under pressure associated with methylene blue.

Following previous studies on the action of oxygen on cancer (Ozorio) and on leprosy (Ozorio and E. Rabello) the authors have investigated the combined action of oxygen and methylene blue in leprosy. The association of these two agents is logically justified by the following facts: (a) oxygen acts favorably on leprosy; (b) methylene blue greatly increases the toxicity of oxygen under pressure; (c) the leprosy bacillus becomes impregnated with and firmly fixes the methylene blue. On the basis of these facts the authors have treated, by means of oxygen under pressure, lepers previously submitted to injection of methylene blue until their lesions became impregnated with the dye, after their urine had become free from it, indicating elimination of the excess. The authors describe the techniques employed in detail and the results, both clinical and bacteriological, so far obtained.

DE SOUZA ARAUJO, H. C. (*Rio de Janeiro*). My eclectic method of the treatment of leprosy.

Since 1927 the author has been combining different physico-chemical agents in the treatment of leprosy, with very good results. Since 1931 he has used also diathermo-coagulation of the active lesions, nasal fulgurations and peri- or intraneural injections of heated ethyl esters of chaulmoogra. This combined method of treatment produces in six months more than chaulmoogra derivatives do alone in two or three years. Since 1838 (Besnier) electro-galvano-cauterization has been considered to be the best means of stopping leprotic tuberculization, irrespective of where the lesions occur. The combination, according to the cases of minor surgery, electro-galvanic cauterizations, diathermo-coagulations and fulgurations, sub- and intradermal and intraneural injections of chaulmoogra derivatives, and

painting of the active skin lesions with trichloricetic acid (Goodhue, 1903), is the author's so-called eclectic method of treatment of leprosy.

PALDROCK, A. (*Tartu*). A specific treatment heals leprosy.

Investigating the problem of specific leprosy treatment, I have ascertained that the causative organism is not a real bacillus but a filamentous fungus. Microchemical dissolution proved that nucleo-, caryo-, lipo- and plasteoproteids, free nuclein and lipoidacid and gram-positive lipoproteid, peculiar to this organism, united with basic albumen, composed the fundamental substance. The reproduction centers (grains) and their surrounding walls are of different composition. The effect of carbon dioxide snow kills the bacillus and destroys the leproma and the protecting grain, and makes them available to chemotherapeutic agents that have affinity for them. The destroyed products are absorbed and distributed throughout the body, serving as antigens to cause antibody formation. Lesions that have not been treated also disappear through distant action, auto-immunization having been caused, as biological reactions show. When the body becomes benumbed to the action of the carbon dioxide snow, I use as an irritator the organic gold preparation solganal, which has affinity with the leprosy organism and dissolves gram-positive lipoproteids, destroying their remnants and making the organism again susceptible to the irritating reaction of the carbon dioxide snow. Both treatments (autoimmunization by means of the snow, and solganal as a chemotherapeutic agent) supplement each other and are applied alternately until cure is achieved. Twenty-one of the lepers treated by me have been free of leprosy lesions for eight years and have remained so microscopically. My specific treatment cures leprosy.

GASS, H. H. (*India*). A study of the results of certain surgical procedures in leprosy.

(a) *Lepra* reaction: discussion of two types of reaction most frequently seen in the Chandkhuri Leprosy Hospital, and the relative value of potassium antimony tartrate and mercurochrome intravenously in the treatment of these types. (b) Eye complications: trypan blue given subconjunctively in persistent iritis, with no pupillary response to atropine. Invasion of the cornea by nodule, lagophthalmos following seventh nerve paralysis. (c) Leprous neuritis: discussion of varieties and results of treatment with cobra venom, diathermy and milk injections. Remarks on nerve decapsulation. (d) Necrosis of bone: observations on the results after various operations on bone. Discussion of the probable operation of choice in necrosis of the bones of the foot. Medical treatment of trophic ulcers.

MUIR, E. (*London*). The main essentials of leprosy treatment. (*Read by title.*)

The author realizes the puzzling counter-statements found in medical literature, and has tried to summarize the main principles in the treatment of leprosy. We have no specific remedy and therefore the principal emphasis should always be placed on general treatment and on rendering the patient as healthy as possible through physical training. It is only when this has been accomplished that favorable results through drug treatment can be hoped for. Excessive injections of chaulmoogra and other drugs may lead to fallacious appearances of clinical improvement.

The use of heavy metals and aniline dyes, by desensitizing the patient, leads to clinical improvement up to a point without influencing the degree of infection.

MUIR, E. (London). Iodides in the treatment of leprosy. Iodides produce a specific reaction in leprosy.

Iodides have been discarded in leprosy treatment because of the danger to the patient of this reaction. A method is described of using them with safety in certain cases; illustrated by means of a typical case.

VILLELA, G. G. AND ROCHA, H. (Rio de Janeiro). Influence of aneurine (vitamin B₁) and ascorbic acid (vitamin C) on leprosy. (Read by title; author not present.)

The influence of pure crystallized B₁ and C vitamins has been observed in 15 selected cases of leprosy. Neural cases treated with aneurine showed slight increase of body weight associated with general improvement (cessation of pains, normal sleep, well being). Blood analysis showed decrease of glycemia and cholesterolemia and increase of the hemoglobin content. Cutaneous cases injected with ascorbic acid presented irregular results (slight changes in body weight, stationary glycemia and decrease of cholesterolemia). The results suggest that the administration of vitamin B₁ is beneficial in the treatment of nervous symptoms of leprosy, principally when acute neuritis is present. Vitamin C is also useful in helping the specific treatment.

— RODRIGUEZ-CIFUENTES, E. (Bogota). Le traitement de la lèpre par un nouveau complexe de vitamines, substances colorantes et éthers éthyliques de l'huile de chaulmoogra. (Read by title; author not present.)

— LABERNADIE, V. ET ANDRE, Z. (Pondicherry). Injections intraveineuses d'huile et eosinophilie. (Read by title; authors not present.)

— GOUGEROT, H. ET BLUM, P. (Paris). Nécessité des cures associées et alternées dans le traitement de la lèpre. (Read by title; authors not present.)

— DE GOLDFEIM, J. S. (Paris). Le traitement chlorophyllien de la lèpre. (Read by title; author not present.)

La chlorophylle; exposé résumant les propriétés physicochimiques. Comparaison entre la chlorophylle et les autres corps pyrroliques (pigment sanguin, etc.), vitamine A, etc. Action physiologique de la chlorophylle chez la plante normale (résumé). Action physiologique de la chlorophylle chez la plante malade (résumé). Action physiologique de la chlorophylle chez l'animal et l'homme sains. Action thérapeutique générale de la chlorophylle. Action particulière de la chlorophylle dans la lèpre. Observation cliniques. Méthode de l'auteur. Conclusions. Vues d'avenir.

— LAUDARES, O. (Brazil). Treatment of localized leprosy in the upper respiratory passages. (Read by title; author not present.)

The author describes the leprosy lesions found in the upper respiratory passages and the mouth, and the treatment of them which he employs. At first he applied 30% chaulmoogra oil, especially in the nose, after removal of crusts, without satisfactory results. Later, 50% trichloroacetic acid was added to the chaulmoogra oil and the results obtained

were better. However, this process has been adopted only recently and so no noteworthy results can be presented. The efficiency of extirpation of lepromas followed by galvano-cautery of the region operated on is discussed. Some cases are being treated by submucous injection of a mixture of chaulmoogra esters with ethyl morrhuate, but no definite conclusions have been arrived at. Finally are presented twelve cases of leprosy laryngitis, in a deplorable condition, the majority severely cachectic, on which tracheotomy was performed to relieve intense dyspnoea; some of these cases are worthy of note.

- SALIBA, N. (Brazil). Physiotherapy in the modern treatment of leprosy. (Read by title; author not present.)
- FERREIRA DA ROSA, A. (Rio de Janeiro). A new intravenous treatment of leprosy. (Read by title; author not present.)
- ROLFS, P. H. (Brazil). Antilepridic orchards in Brazil. (Read by title; author not present.)
- SOEPARMO. (Java). The results of treatment of the leprosy field work at Blora. (Read by title; author not present.)
- BOENJAMIN, R. (Java). Treatment of lepra reaction by injections of omnadin. (Read by title; author not present.)

V. CHEMISTRY

- COLE, H. I. AND CARDOSO, H. T. (Rio de Janeiro) A method for the quantitative analysis of chaulmoogra oils.

A description of a successful method for the estimation of the various constituents of these oils, including as an example an analysis of *Carpetreche brasiliensis* oil.

- COLE, H. I. AND CARDOSO, H. T. (Rio de Janeiro). Purification and properties of a liquid, optically active, fatty acid from *C. brasiliensis* and *O. echinata* oils.

The method of purification and the properties of this acid and its ethyl and methyl esters are given.

- ✓ COLE, H. I., ^{Cardoso, H.T.} (Rio de Janeiro). A discussion of the causes and prevention of irritation in ethyl esters of chaulmoogra oil.

The irritation of leprosy drugs is shown to be due mainly to decomposition products of chaulmoogric, hydnocarpic and gorlic acids. Chaulmoogric compounds are the most stable and gorlic the least. The decomposition is an oxidation process and takes place much more rapidly in the seeds than in the oil, hence it is necessary to use only oils from fresh, selected seeds. Several antioxidants have been tried without noticeable effect on irritation. Drugs should be put up only in sealed ampules and will then keep indefinitely. Ethyl esters should be iodized or creosoted immediately after purification and then filtered, placed in ampules and sealed as soon as possible. In a continuous distillation at 10 mm. of 20 liters of ethyl esters in a 3-liter still, the first liter of ethyl esters, when immediately filtered and sealed in ampules, was comparable to our standard iodized esters in irritant quality. Later fractions were more irritant. These early fraction esters will

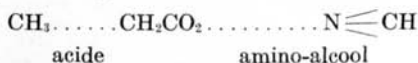
find their greatest usefulness in out-patient clinics, where iodine discoloration is objectionable.

LE QUERREC. (*Indo-China*). L'insaponifiable de l'huile de chaulmoogra. (*Read by title; author not present.*)

En 1929, Stévenel déclarait que l'extrait éthéré obtenu en épuisant le tégument dur, réduit en poudre fine, des graines de chaulmoogra, s'était montré actif dans le traitement de la lèpre. Il émettait ensuite l'hypothèse que l'insaponifiable de cet extrait, surtout composé d'acides gras, contenait peut-être le principe actif. Cette explication est une erreur; les acides gras ne peuvent provenir du tégument qui n'en contient pas, mais bien de débris d'amande adhérant aux coques. Il nous a paru intéressant de voir si l'insaponifiable d'huile de krabao du Cambodge obtenue par pression à froid des amandes seules se montrait actif vis à vis du bacille de Hansen. Nous avons employé la méthode des chimistes Vizern et Guillet de Marseille. Le rendement, très faible, a été de 0 gr. 10 pour 100 grs. d'huile mise en oeuvre. L'insaponifiable obtenue était ensuite dissoute dans de l'huile d'olive neutralisée et celle-ci répartie en ampoules de 5 cc³ contenant chacune 0 gr. 05 d'insaponifiable. Une ampoule était utilisée en injection intramusculaire tous les trois jours. Nous pouvons conclure après un an d'essais, à l'inactivité totale de l'insaponifiable d'huile de chaulmoogra et par conséquent à l'inactivité de produits tels que phytostérine existant en faible quantité dans cet insaponifiable.

BARANGER, P. (*Paris*). Pouvoir d'association du cholestérol et des édifices animés à caractère lipodique. Application aux dérivés chaulmoogriques. Utilisation thérapeutique. (*Read by title; author not present.*)

Les acides gras à longue chaîne sous la forme des éthers d'amino-alcool



contractent avec le cholestérol des associations que l'on peut en général obtenir cristallisées. Ces complexes jouissant de la propriété remarquable de donner avec l'eau des suspensions ultra-microscopiques très stables, stérilisables. La stabilité de ces suspensions dépend de plusieurs facteurs, notamment la longueur des chaînes hydrocarbonnées, la proportion des deux constituants et la nature de l'amino-alcool. Grâce à l'existence de ces complexes on possède un moyen général de préparer des huiles médicament euses sous forme de dérivés aminés, chimiquement définis, associables au cholestérol et susceptibles d'être mis en suspension aqueuse injectable dans les veines. En application de ces propriétés générales, les acides des huiles antilépreuses peuvent être mis facilement sous cette condition et acquérir des propriétés thérapeutiques nouvelles.

DE SOUZA LIMA, M. (*São Paulo*). Proteinic equilibrium of blood serum in leprosy.

The author studied the protein equilibrium of the blood serum in 250 leper patients, and found that the albumin is always diminished or normal and the globulins are always increased; there is an inversion of the formula $\frac{\text{albumin}}{\text{globulins}}$, which is called the protein index. He concludes: (1) Patients of all

forms of leprosy, whose disease is active, always present an inversion of the protein index. (2) The inversion of the protein index is an early one. (3) The inversion decreases as the patient improves. (4) The protein index becomes normal as the patients reach quiescence. As a consequence of the two first conclusions the determination of the protein index is a good help in the early diagnosis of leprosy; as a consequence of the last it is a test of prognosis. The possibilities of error do not reach 6%.

IVANOVA, N. A. (*Moscow*). The nature and source of the lipoids in the leprosy cells. (*Read by title; author not present.*)

Virchow (1865) first called attention to "lipoid degeneration" in leprosy cells, but we are indebted to Cedercreutz (1921), Herzheimer (1923) and Stein (1929) for a detailed study of the source and nature of these lipoids. There is no unanimity among these authors with regard to the quality of these lipoids: Cedercreutz considers them a mixture of isotropic (singly-refractive) and anisotropic (doubly-refractive) lipoids; Herzheimer and Stein found no isotropic lipoids. Herzheimer considers the deposition of lipoids as a degenerative process, regarding the lipoids as a mixture of cholesterol-glycerin fatty acid esters and fatty acids, while Stein regards it as an infiltrative process, which may perhaps stand in relation with chaulmoogra oil treatment. On investigation of the material from 13 cases of cutaneous leprosy by polarized light, the author found in only 6 cases crystals characteristic of mixtures of cholesterol with their doubly refractive power. In the remaining 7 cases no anisotropical substances have been observed in the leprosy cells. On studying the same material by special so-called lipid reactions (staining with Sharlach red, Sudan III, and osmic acid by the methods of Lorain-Smith, Fischler and Marchi), and employing also various combinations and variants of the same, the author has come to the conclusion that the main source of the lipoids in the cells is the leprosy bacilli which on disintegration free a certain amount of fatty substances. On comparing results obtained from the study of material in polarized light with those found after histological-chemical investigation of sections, the chemical composition of the lipoids in leprosy cells is not everywhere uniform and always the same. In the young leprosy cells phosphatids prevail; in the more mature cells, in parallel with the increasing disintegration and dissolution of the bacilli, there is an increase of the cholesterol and fatty acid combinations. The amount of the fatty acids varies to a considerable degree; evidently they play only a secondary role.

VI. IMMUNOLOGY AND SEROLOGY*

— MARIANI, G. (*Italy*). Fenomeni allergici e immunitari nella lebbra.

FERNANDEZ, J. M. M. (*Rosario*). L'injection de "leprolin" chez les lépreux.

The author has studied the reactions produced by the subcutaneous injection of leprolin in patients of nodular, neuro-macular and tuberculoid leprosy. (1) In nodular leprosy the injection of 1.5 cc. does not produce any reaction; 4 cc. produces a distinct, temporary general reaction (general

*One article, by Dr. F. Lleras-Acosta, of Colombia, submitted posthumously, is not included here, the title not having been communicated to us.

pains, hyperthermia). (2) In the neuro-macular cases 1.5 cc. always produces a moderate general reaction (general pains, arthralgia, temperature) within 24 hours; also sometimes a slight local reaction (induration). (3) In cases of active tuberculoid leprosy the injection (subcutaneous or intramuscular) of 1.5 cc. always produces a triple reaction: (a) general, during the first 24 hours—general pains, rigors and temperature; (b) focal, beginning 5 or 6 hours after the injection and lasting for 48 hours, consisting of erythema and local increase of temperature at the site of all pre-existent lesions and of the old intradermal reactions of L.T.; (c) local, at the site of injection, of slow evolution and usually resulting in an ulcerating abscess within 3 or 4 weeks. Injections of milk and staphylococci anatoxine given to the patients who reacted with the leprolin did not produce the least reaction.

VILLELA, G. G. (*Rio de Janeiro*). Studies on the Mitsuda skin test. The antigenic properties of a nonlipid fraction obtained from lepromata. (*Read by title; author not present.*)

The author has prepared an antigenic solution from lepromatous tissues that has the same active properties of the antigen used in Mitsuda's skin test. He has been able to isolate an active nonlipid fraction, probably of protein nature, which can be employed in different concentrations. A more accurate study of the chemical properties of this fraction is in progress.

RABELLO, JR., THIERS-PINTO, J. ET VILLELA, G. (*Rio de Janeiro*). Activité biologique d'une fraction non lipidique du tissu lepromateux selon les formes de la lèpre, avec des remarques sur la nature de l'allergie dans cette maladie.

The authors, utilizing a nonlipid fraction extracted from lepromatous tissues, observed biological activity at least equal to that with Mitsuda's antigen. Patients tested with this antigenic fraction showed the following reaction: strong reactions in the tuberculoid and macular forms, weak or negative reactions in the lepromatous form.

MELSON, R. S. (*Bergen*). Tuberculin hypersensitiveness in guinea-pigs inoculated intradermally with human leprosy nodules. (*Read by title; author not present.*)

Normal guinea-pigs inoculated intradermally with macerated leprosy nodules in physiological saline very often develop tuberculin hypersensitiveness. The tuberculin allergy persists over one year. The inflammatory reaction following the intradermal injection of 10 mg. of old tuberculin is occasionally so severe that it produces marked central necrosis. The inoculated material has always contained huge masses of *M. leprae*. Attempts to obtain macroscopic colonies of acid-fast bacilli, either *M. leprae* or *M. tuberculosis*, have failed completely when the leprosy material was seeded onto such suitable media as those of Loewenstein, Besredka, Petroff, as well as on oyster-egg and glycerinated and nonglycerinated agar media. These cultures have been observed for over one year and are found to contain an abundance of the acid-fast bacilli originally seeded thereon. The guinea-pigs which died failed to show either macroscopic or microscopic tuberculous lesions.

ROTBERG, A. (*Brazil*). Some aspects of immunity in leprosy and their importance in the epidemiology, pathogeny and classification of forms of the disease. (*Read by title; author not present.*)

The author has performed leprolin tests in 1,529 lepers and healthy people, in S. Paulo, Brazil; he studies his results in connection with immunological aspects of trichophycea and tuberculosis and gives his opinion about the nature of the test. Generally, the healthy individual is contaminated as soon as he is put in contact with a leper, as in tuberculosis, but reacts with immunity. A small percentage of individuals do not develop immunity and leprosy remains quiescent, awaiting an opportunity to appear. When there is a change of environment or weakness, these cases tend to be of the positive bacillary form. Tuberculoid leprosy on the contrary, is due to an endogenous or exogenous superinfection of an allergic individual. Tables are given relating natural anergy to sex, age, race, nationality and general weakness, but it seems to the author that it is a question connected with more or less delay of immunization depending on inherited predisposition. Cutaneous manifestations of leprosy are in close relation to skin allergy, from the anergic leproma to hyperergic tuberculoid leprosy. An intermediate group (erythematodyschromic-nonbacillary macule) is indifferent to actual allergy and its evolution depends in one way or another upon later allergy, and changed conditions. The histology and Jadassohn-Lewandowsky's law are considered. The author proposes slight changes in the classification of Rabello Jr.:

Cutaneous (C)	{	Leproma (l)	anergic
		Macule-leproma (m)	
		Diffuse-erythema (ed)	
		Erythema-dyschromic (mac) (dy)	anergic allergic
Neurotrophic (N)	{	Pretuberculoid (pt)	allergic
		Tuberculoid (t)	
		Atrophic-macule (a)	

Complex cases. *Bhagwat, K.*

Row, R. AND DALAL, N. P. (*Bombay*). Complement fixation test in leprosy and its significance in the pathogenesis and treatment of the disease.

In addition to confirming the previous findings by the senior author that the tubercle bacillary autolysate prepared by him gives a strong positive complement fixation reaction with sera of nodular leprosy, upon which observation was based the application of the antigen in therapy, this report gives support to the clinical classification of the disease by leprologists into three types, viz., cutaneous, tuberculoid and nerve leprosy, in accordance with the reaction depending on the richness or otherwise of the bacilli found in the lesion. The autolysate is prepared by self-digestion of a suspension of a tubercle bacillary culture originally isolated from a lung lesion of human tuberculosis but now morphologically altered and avirulent. The culture is grown on a glycerinated brain agar medium, suspended in normal saline, killed with chloroform or toluene and is allowed to autolyse for several months in the dark, after which the cheesy deposit is collected, dried and standardized. This material in particular strengths is used as an antigen for complement fixation and also for therapeutic use.

RABELLO, JR., MACHADO, J. C. ET THIERS-PINTO, J. (*Rio de Janeiro*). La

séro-réaction de Witebsky, Klingenstein et Kuhn étudiée dans les différents syndromes réunis sous la dénomination de "lèpre nerveuse."

The authors, studying the Witebsky-Klingenstein-Kuhn (W.K.K.) test in some cases of the neural forms of leprosy, observed marked serological differences between pure neural cases, simple macular and tuberculoid ones: (a) pure neural, 68% positive, (b) simple macular, 60% positive and (c) tuberculoid 25% positive. These results show that tuberculoid cases give a different serological reaction from other neural cases. The figures given are not yet definite, more complete work being in course.

PEREIRA, P. C. R. (*Brazil*). The value of the reaction of Witebsky-Klingenstein-Kuhn in leprosy. (*Read by title; author not present.*)

In 1935 the author carried out this reaction more than 200 times, obtaining 100% positive results in cutaneous and mixed leprosy and 84% in nervous leprosy. Of 84 contacts, consisting of children of lepers separated from their parents and living in a preventorium, 27 gave positive reactions. Of these 27, 13 did not show any lesions to justify the reaction, while 14 showed lesions which can be attributed to incipient leprosy. Between March, 1935, and November, 1937, two patients who unfortunately had not been examined from this point of view left the preventorium with the diagnosis of leprosy and were isolated at the Santa Isabel Leper Colony; the results verified at that time still hold good but await confirmation. Since November, 1937, about 100 other reactions have been carried out; these the author studies, making some comments and terminating with the opinion that this reaction is worthy of the attention of leprologists since it is of real value in the diagnosis of leprosy in its different stages.

MARCHOUX, E., MACHEBOEUF, M., CHORINE, V. ET LEVY, G. (*Paris*). Tentatives d'isolement d'un haptène spécifique.

Les lépromes de rats et les lépromes humains contiennent des haptènes fixateurs de divers types: (1) Des haptènes non spécifiques réagissant non seulement avec les sérums de lépreux, mais avec les sérums de tuberculeux (ou même parfois de syphilitiques). Ces haptènes semblent devoir être rapprochés du point de vue chimique de ceux qui, dans les bacilles tuberculeux, sont des haptènes de fixation si actifs et qui sont, on le sait, des acides phosphatidiques. (2) Des haptènes spécifiques qui ne réagissent pas avec les anticorps contenus dans les sérums de tuberculeux ni de syphilitiques, mais qui réagissent avec tous les sérums de malades atteints de lèpre tubéreuse et avec une faible proportion des sérums de malades atteints de lèpre nerveuse. L'obtention de ces haptènes spécifiques à un état de pureté suffisant pour que les préparations soient très actives et utilisables pour le diagnostic sérologique de la lèpre n'est pas encore possible; des essais sont en cours.

FICKER, M. (*Rio de Janeiro*). Eine neue Flockungsreaction bei Lepra. (*Read by title; author not present.*)

Es gelingt aus bestimmten Kulturen säurefester Bacillen nach Entfernung der Neutralfette und ungebundenen Lipide sowie nach Hydrolyse mit verdünnten Säuren schliesslich durch Anwendung von Leissem Alcohol im Extract zu gewinnen, das bei Komplementbindungs Reactionen mit dem Serum Lepröser eine hohe Specificität aufweist. Als Kulturen dienen besonders 2 Stamme. (1) Stamm 1225, der als Rattenleprabacillus in der Kulturensammlung

verschiedener Instituten Brasiliens geführt wird, ferner, (2) Stamm L₃ Tro, das ist die trockenwachsende Komponente meines L₃-Stammes, der aus menschlichem Leprom gezüchtet wurde und sich leicht in einer feucht und einen trockenwachsenden Stamm zerlegen lässt. Aus diesem Extract lässt sich durch Zugabe einer geeigneten Toluolsorte ein für eine Lepra Flockungs-Reaction geeignetes Antigen herstellen. Diese Flockungs-Reaction leistete mir sehr gute Dienste als Ergänzung der Komplementbindung, mit der sie nicht immer zusammengeht.

FICKER, M. (Rio de Janeiro). Ueber Verstärkung von Antigenen bei serologischen Lepra Reaktionen. (Read by title; author not present.)

Nach Prüfung einer Reihe von Verstärkungsmitteln gelang es, die Komplementbindungsreaction bei Lepra unter Anwendung meines Antigens durch Hinzufügen von bestimmten Quantitäten Calmestrol (ester benzilico do oleo de chaulmoogra) so zu verschärfen, dass ein grösserer Prozentsatz von positiven Resultaten erhalten werden kann ohne Beeinträchtigung der Specificität.

SARDJITO. (Java). Complement fixation tests in leprosy. (Read by title; author not present.)

VII. BACTERIOLOGY, INOCULATION AND ANIMAL LEPROSY

BIRKHAUG, K. (Bergen). Comparative *in vitro* and *in vivo* investigations of so-called cultures of *Mycobacterium leprae* and of leprosy nodules.

I. Biochemical reactions of so-called leprosy cultures. Biochemical and serological reactions of various so-called cultures of *M. leprae* establish a striking similarity and antigenic relationship between these cultures and the saprophytic paratuberculosis strains, which deviate completely from a strain of *M. tuberculosis* H-37. Growth of *M. leprae* continues in the human leprosy tissues transferred to artificial media, irrespective of the composition of the media. No macroscopic colonies of *M. leprae* have appeared in artificial cultures of nodular leprosy lesions. II. Inoculation experiments with so-called *M. leprae* cultures in comparison with inoculation of nodular leprosy lesions. Multiplication of *M. leprae* takes place in the guinea pig organism indefinitely, and the dissemination of the leprosy bacilli in the animal organism renders the animal constantly tuberculin sensitive, long after the localized skin lesions have disappeared. The so-called *M. leprae* cultures on artificial media fail to render the guinea pig organism persistently tuberculin sensitive. Animal passage experiments with human leprosy lesions fail to enhance the virulence of the leprosy bacilli. In spite of the constant production of tuberculin hypersensitiveness in guinea pigs inoculated intracutaneously with nodular leprosy material, no generalized infection has been produced which resembles the infection in man. Since the human nodular leprosy material which is rich in acid-fast bacilli, constantly renders the normal guinea pig organism tuberculin sensitive, a necessary criterion for a genuine culture of *M. leprae* should be its ability to do this.

SOULE, M. H. (Ann Arbor). The cultivation of Hansen's bacillus.

It was concluded in a preliminary announcement in 1934 that: "The isolation and serial cultivation of a slow growing, non-chromogenic acid-fast organism from human leprosy tissue has been confirmed. The limited multiplication of the germs indicated that the ideal media and environment for

their saprophytic existence have not been provided." This is our belief to-day.

DE SOUZA ARAUJO, H. C. (*Rio de Janeiro*). The differences between the globi (Neisser) and the globies (Marchoux).

The author proves that "globi" and "globies" are two different things, and that they are repeatedly confused in modern papers upon leprosy from the best sources. Globi are histopathological elements, and globies are bacteriological ones, also described as zoogloas. It is time to put each one in its right place.

LOMBARDO, C. (*Pisa*). Sulla colorazione in vivo dei bacilli della lepra. (*Read by title; author not present.*)

Come l'A. segnalato per primo, la colorazione specifica, che le lesioni leprose assumono con le iniezioni di bleu di metilene, è dovuta essenzialmente alla fissazione del colore nei bacilli, con intensità in diretto rapporto quantità, della cura fatta, ma specialmente dei bacilli presenti nelle lesioni, e della loro fase evolutiva. Le lesioni leprose senza bacilli non si colorano, mentre ciò accade per altre lesioni, clinicamente non o appena apprezzabili, ma contenenti bacilli. Questi, sia perché incapaci di ridurre o elaborare ed eliminare il bleu di metilene, sia perché il colore, unito tenacemente alle parti bleu-affini del corpo bacillare resiste alle stesse azioni decoloranti che il tessuto possiede, restano a lungo coloriti, come si può facilmente controllare esaminando, di questi lepromi, gli strisci e le sezioni al congelatore, asciugati con carta bibula e rischiarati con olio di cedro. Finora unica applicazione pratica di questo fenomeno, biologicamente interessante, appare quella a scopo diagnostico, specie quando si proceda iniettando il colore direttamente nelle lesioni sospette, come l'A. ha indicato.

LEGENDRE, F. M. A. (*Indo-China*). Communication sur la recherche des bacilles dans les gouttes épuisées. (*Read by title; author not present.*)

L'examen de 344 lépreux ou suspects, dont, 107 présenterent des bacilles de Hansen, prouva l'excellence de la méthode des gouttes épuisées (en l'absence d'examen histo-pathologique préférable, mais délicat), prises non pas comme le préconisent Sardjito et Sitanala à la pulpe du doigt, mais au niveau des lésions suspectées de la peau. La goutte prise, après scarification au vaccinostyle, comprend, en même temps que les éléments du sang, le suc cellulaire, et on ne doit pas de cette façon retrouver uniquement les bacilles de Hansen cantonnés dans les artères capillaires mais aussi ceux qui sont passés cette barrière franchie, dans les tissus suspectés d'infection Hansénienne.

BALIÑA, P. L. (*Buenos Aires*). Sur la presence des bacilles acido-résistants pseudo-lépreux dans la peau apparemment saine.

La recherche systématique de bacilles acido-résistants dans la peau de malades avec lèpre nerveuse (non bacillifère) et de malades non lèpreux, à permis à l'auteur de constater l'existence dans sept cas (deux lèpreux, et cinq non lèpreux) de bacilles acido-alcool résistants dans les frottis faits avec le matériel obtenu par incision jusqu'au derme et petit râclage de la peau apparemment saine du menton. La même investigation répétée dans tous les endroits du reste de la peau du corps chez ces mêmes sujets fut suivi d'un résultat négatif. Dans les frottis faits avec le matériel ainsi obtenu on voit des bacilles qui ressemblent à s'y méprendre au bacille de Hansen

provenant d'authentiques lésions lépromateuses. Les bacilles acido-résistants hansenoides de l'infection asymptomatique du menton se montrent souvent très abondants sur les frottis, parfois aussi polymorphes que le *Mycobacterium leprae*, et comme lui groupés en amas, fascicules et même en globies. Ces bacilles n'ont pu être cultivés jusqu'ici, et l'inoculation aux animaux de laboratoire est restée négative. La connaissance du fait qu'il existe une infection asymptomatique du menton révélée par la présence de bacilles acido-résistants hansenoides, et que ce fait, selon notre expérience, est loin d'être rare, présente un grand intérêt, non seulement scientifique, mais aussi pratique. A ce double point de vue, la méconnaissance de l'infection bacillaire acido-résistante asymptomatique du menton peut avoir aussi, par suite d'un faux diagnostic de lèpre, les plus regrettables conséquences.

SABRY, BEY, I. (*Alexandria*). The Hansen bacillus in a dead body. (*Read by title.*)

ADLER, S. (*Jerusalem*). Human leprosy in the Syrian hamster.

Splenectomized Syrian hamsters were inoculated with human leprosy by embedding fragments of nodules subcutaneously in the abdominal wall. There was definite multiplication of bacteria at the site of inoculation. The connective tissue of the abdominal wall was infected, the bacteria being mainly intracellular, and in several instances bacteria were found in the liver. Bacteria were found in the skin in sites subjected to trauma and in one case in the mucosa of the mouth in an animal with an injury of the lower lip.

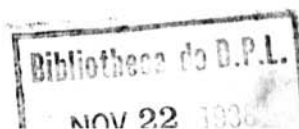
OTA, M. AND SATO, S. (*Tokyo*). Inoculation of human and rat leprosy in fowl. (*Read by title; authors not present.*)

The authors inoculated into eight fowl, suspensions of rat leprosy bacilli obtained from skin nodules and from the liver and spleen of leprous white rats. They also made similar experiments with human leprosy bacilli. They describe the macroscopic and microscopic changes which took place in the various organs. They discuss the value of fowl as experimental animals for at least the first generation of passage of both types of organisms.

LAGOUDAKY, S. (*Alexandria*). De l'inoculation expérimentale de la lèpre à l'homme.

MARCHOUX, E. ET CHORINE, V. (*Paris*). Voies de pénétration des germes de la lèpre dans l'organisme.

Un certain nombre de léprologues ont été disposés à considérer que le bacille de Hansen pouvait pénétrer par les voies digestives. Le rat nous fournit encore le moyen de résoudre la question. Nous savions qu'il suffit d'arracher quelques poils et de beurrer la région épilée avec de la pulpe infectée pour que les bacilles s'introduisent par la voie de cette blessure apparemment insignifiante. D'autre part l'observation malheureusement trop souvent faite de la contamination des institutrices nous a conduits à supposer que les mouches pouvaient servir d'agents de transport du jetage infantile à l'angle de l'œil que recherchent les mouches sur le visage. Dans les colonies où les mouches abondent cette étiologie semble vraisemblable. Nous avons vu que quelques bacilles déposés sur la conjonctive suffisent à provoquer une infection qui s'étend rapidement au ganglion orbitaire interne, à la glande de Harder et aux ganglions sous maxillaires. La contamination



se fait sans doute par deux processus. L'un nous avons saisi en observant un leucocyte chargé de bacilles dans la zone épithéliale du repli conjonctival. L'autre se produit sans doute par écoulement des bacilles le long du canal lacrymal jusqu'aux amygdales. Il suffit en effet de toucher l'amygdale avec un tampon enduit de germes pour amener une infection des ganglions sous maxillaires. Nous avons vérifié de même qu'en portant les germes jusque dans l'estomac, on provoque une multiplication des bacilles de Stefansky dans tout l'organisme et en particulier dans les ganglions mésentériques. De même la muqueuse génitale permet la pénétration comme les autres. Nous pouvons donc conclure que le bacille de la lèpre peut traverser les muqueuses intactes sans doute en raison du pouvoir chimiotactique éminent que possède ce germe vis à vis des cellules migratrices.

MARCHOUX, E. ET CHORINE, V. (*Paris*). Le phénomène de Koch ne se produit pas par reinoculation du bacille de Stefansky.

Nous savons qu'une inoculation de bacilles de Koch à un cobaye tuberculeux provoque la formation rapide d'un abcès et l'élimination avec le pus des germes nouvellement introduits. Il était intéressant de voir si le même phénomène se produisait en inoculant des bacilles de Stefansky à un rat lépreux. La recherche d'une immunité acquise par une première inoculation présentait également un puissant intérêt. Contrairement à ce que nous escomptions, nous avons constaté que chaque inoculation, même si on la fait 10 mois après la première, entraîne la formation d'un foyer d'infection *in situ*, et toujours par le même processus: accumulation d'histiocytes chargés de germes. De sorte que dans l'une et l'autre des deux hypothèses nous nous sommes trouvés en face d'un résultat négatif.

Row, R. (*Bombay*). Lantern demonstration of some lesions induced experimentally in rats with *B. stefanski*.

A strain of the Stefanski bacillus obtained from the pelvic glands of one of the many domestic rats examined for plague at the Haffkine Institute is used. Animals inoculated intraperitoneally or subcutaneously always develop lesions, but these differ in size and distribution, without any regularity. Sometimes the liver and spleen are grossly infected, far more than the regions of inoculation, the lesions resembling malignant secondary neoplasms; sometimes the lepromata are confined to the regions inoculated, the visera showing only microscopic changes. In the severe cases, in which the animals succumb to the disease, lepromata are found extensively in the lymphatic glands, peritoneum, the skin and even in the lungs and the peribronchial tissues. In no case is caseation noticed. Details of the gross and microscopic changes are illustrated.

DE SOUZA ARAUJO, H. C. (*Rio de Janeiro*). The morphology of Stefansky's bacillus (*Mycobacterium leprae murium*) according to experimental researches carried out with material from England, France and Germany. (*Read by title.*)

Marchoux and Sorel (1912) said that Stefansky's bacillus does not form "globies," and most research workers on murine leprosy have repeated this statement, which is not true. The author proves that Stefansky's bacillus, like that of Hansen, forms the "globies" of Marchoux and the "globi" of Neisser. Drawings and microphotographs show "globies" in smears and

sections of tumors, kidneys, spleens, livers, testes, etc. of rats infected experimentally with Stefansky's bacillus from three European sources; they were also found in feces. Such findings make Stefansky's bacillus approach more nearly in identity to Hansen's bacillus. Researches are being continued to clear up other aspects of both infections.

LOBEL, L. W. W. AND LAMPE, P. H. J. (*Batavia*). Buffalo leprosy.

Buffalo leprosy is a chronic disease of the water buffalo caused by an acid-fast micro-organism. About 120 cases have been found in Netherlands India. The most conspicuous phenomenon is the presence of skin nodules, 5 to 60 mm. in diameter. The course is extremely slow, bacilli are never found in the internal organs, and the lymph glands are usually negative. Microscopically the bacilli are similar to those of human leprosy. Attempts at cultivation, and inoculation into buffaloes and other animals, have given negative results. Histologically there are important points of agreement with human leprosy, the most important being the vacuolization of the granuloma through globus formation, and the development of fatty material both in the bacillus-containing vacuoles and in the granuloma cells. The globi, embedded in fatty masses, agree entirely with those of the human leprosy bacilli except that their dimensions are often greater and that granular forms are more marked. The multivacuolate form of Virchow's lepra cell, however, is not formed. On account of the close agreement between human nodular leprosy and this buffalo disease, the latter seems of interest in connection with the study of the former.