

CURRENT LITERATURE

It is intended that the current literature of leprosy shall be dealt with in this department. It is a function of the Contributing Editors to provide abstracts of all articles published in their territories, but when necessary such material from other sources is used when procurable.

- MONTESTRUC, E. Rapport sur le fonctionnement technique de l'Institut Pasteur de la Martinique en 1946. Lèpre. [Report of the Institut Pasteur, Martinique for 1946; leprosy.] Emprimerie officielle, Fort-de-France, 1947, 183 pp.

The Institut gives close attention to the leprosy situation. The number of cases under treatment totaled 600, with 53 new ones found during the year, 11 of them among the group of old suspects; 27 were classified as lepromatous, and 26 as neural (N, NT and Na). Three cases especially related were in persons aged, resp., 72, 76 and 85 years, in whom the disease appeared abruptly with acute symptoms and evolved rapidly.—[From abstract in *Acta Trop.* 4 (1947) 377.]

- MAUZE, J. Considération sur la lèpre en Guadeloupe. [Leprosy in Guadeloupe.] Report of the Institut Pasteur de la Guadeloupe for 1948, April 1949.

Leprosy remains the great scourge of Guadeloupe, the morbidity rate being 0.75%. In 1948 there were registered 53 new cases, of which 38 were lepromatous. The author emphasizes, as has been done many times before, the fact that the leprosarium on the Ile de la Désirade—which is only an immense barren rock—does not meet actual needs. The construction of a modern sanitary institution is necessary, and a credit of 200 millions of francs has been requested for its construction. —H. FLOCH.

- FLOCH, H. and LAJUDIE, P. Sur la lèpre en Guyane française. II. Incubation; symptôme initial; formes cliniques; diagnostic; évolution et pronostic; syphilis et lèpre; cause des décès. [Leprosy in French Guiana. II.] Institut Pasteur de la Guyane et du Territoire de l'Inini. Publication No. 133, 1946, 10 pp.

In this second article of the series [see *THE JOURNAL* 15 (1947) 496] there are recorded two cases in infants in which the incubation period was short, 9 and 15 months respectively. Cases in children are often discovered soon after the appearance of the first symptoms. The first observed signs in 1,354 cases were single lesions in 484, and two or more in the remainder. The most frequent sites were on face or neck, thighs, buttocks, legs, body or forearms, in that order of frequency. Among the Creole population 74% of the cases were neural, 18% lepromatous, and 6% mixed; but in Europeans and Arabs the respective proportions were 44, 27 and 28%. Among the penal classes lepromatous cases are most common, with 85% of cases positive bacteriologically. Of 20 cases classed as cured, 18 were neural ones. The evolution of the disease was recorded in 358 cases in Creoles who were observed long enough; of 234 maculo-anesthetic ones, 95 improved, 90 were stationary and 49 became worse; of 34 advanced neural cases, no case improved and 18 became worse; of 68 lepromatous cases, 20 improved and 43 became worse; of 22 mixed cases, 7 improved

and 13 became worse. Bacteriological examinations showed, in maculo-anesthetic cases, 7.7% positive at first and 3.8% after treatment. In lepromatous cases all were positive at first, and at the end of the period of observation 51% remained positive. Deaths were due to: cachexia, 161; tuberculosis, 18; dysentery or diarrhea, 19; other causes, 40.—[From abstract in *Trop. Dis. Bull.* 44 (1947) 589.]

IBARRA PEREZ, R. and GONZALEZ PRENDES, M. A. Incidencia de la lepra en Cuba según la raza. [Race incidence of leprosy in Cuba.] *Rev. Sif., Leprol. y Dermat.* 3 (1946) 19-24

In studying the incidence of leprosy in Cuba according to race, the authors have concluded that, although the largest group of leprosy persons are white, the disease manifests itself equally in all the racial elements. The population is composed of whites, Negroes, Orientals and mestizos. Cuba differs from other Latin-American countries in that there is no half-caste population from crossing of the Spanish and of the original indigenous inhabitants, because the latter were exterminated about the middle of the 16th century. Nevertheless the percentage of half-castes from admixture of white and Negro bloods is high. Of a population approaching 5 millions, the whites number 3,553,312 (74.4%), the Negroes 463,226 (9.7%), the half-castes 743,115 (15.5%), and the Chinese 19,929 (0.4%). The leprosy among these groups number: whites 1,649 [0.46 p.m.], Negroes 340 [0.73 p.m.], half-castes 408 [0.54 p.m.], and Chinese 30 [1.50 p.m.]. In the face of these figures [the totals only are given, not the incidence by population] the authors claim that "race is not a predisposing factor because the incidence is the same among the different races composing the population." The "slight increase" among the black and yellow races is due, they say, to economic and hygienic conditions. Those people live in poor, ill-fitted dwellings, devoid of sanitation, and overcrowded; they are badly fed, and are predisposed to disease by the presence of malaria, syphilis, tuberculosis and parasitic infection. The authors next proceed to estimate the race incidence in all of Cuba exclusive of Oriente Province, with 1,757 cases in 3,417,092 population [0.51 p.m.] and in Oriente Province itself, with 670 cases in 1,362,489 population [0.49 p.m.], with conclusions not borne out by the figures. [The figures given in square brackets have been calculated (by abstractor) on the total figures in the text.]—[Largely from abstract in *Trop. Dis. Bull.* 43 (1946) 933.]

IBARRA PEREZ, R. and GONZALEZ PRENDES, M. A. La lepra en "San Luís de Jagua." [Leprosy in the San Luis de Jagua leprosarium.] *Rev. Sif., Leprol. y Dermat.* 3 (1946) 25-37.

On December 31, 1944, there were 123 patients in the San Luís de Jagua leprosarium, Cuba, and another 186 were admitted in 1945, giving a total of 309. During the year, 14 died and 37 escaped, leaving 258 on December 31, 1945. A great majority (90%) were segregated for the first time. A large majority—97%—were lepromatous; the remaining 3% were tuberculoid or indeterminate. The average age was 34 years; the average age at the appearance of the first symptoms was 23 years; the average duration of the disease was 7.7 years. Less than one-half (46%) give a history of contact. These patients reported 1,769 contacts, of whom 213 have been examined; of them, 14 (6.6%) were found to have manifest signs of the infection.—[From abstract in *Bol. Of. San. Panamericana* 26 (1947) 521.]

- ✱ TRESPALACIOS, F. and GONZALEZ PRENDES, M. A. Primeros síntomas y edad probable de contagio en lepra. Estudio de 315 casos asilados en el Hospital San Lázaro de la Habana. [Earliest symptoms and probable age of infection in leprosy, based on 315 cases in the San Lazaro Hospital at Habana.] *Rev. Sif., Leprol. y Dermat.* **3** (1946) 38-48.

Of the 315 patients studied, as of December 31, 1945, 233 were males and 82 were females, [2.8:1]; 200 were whites, 46 were Negroes, 50 were mestizos, and 19 were Chinese; 262 were Cuban born and 53 were from abroad; 80.3% (253) were lepromatous, 15.5% (49) were "incharacteristic," and 2.8% (9) were tuberculoid. The average age was 40.9 years, the average age at onset 23.7 years, the average probable duration 18.7 years. Sometimes the first symptoms had appeared suddenly, as for example a rhinitis with epistaxis; at other times, and more commonly, they appeared insidiously, with cutaneous manifestations. The more common of these were erythematous macules (60), anesthetic macules (23), infiltration of the ears (25), and pigmented macules (17). Another 17 began with systemic symptoms such as headache, fever, and lassitude. In 63% the first symptoms appeared before the age of 25 years, and in 12% within the first 10 years of life; the largest number in any single year was 26, in the 20th. Figures are given for "probable age when infection was contracted;" six are said to have contracted the disease "soon after birth," in the first year of life.—[Mostly from abstract in *Trop. Dis. Bull.* **43** (1946) 934.]

- ✱ COT LESMES, V. La lepra infantil en Santiago de Cuba. (Consideraciones sobre 75 niños enfermos de lepra.) [Childhood leprosy in Santiago de Cuba; study of 75 leprous children.] *Rev. cubana Pediat.* **18** (1946) 790-810.

This study of 75 cases of leprous children below 14 years of age was made between 1939 and 1946. The sex distribution was 46 males and 29 females [61.3-35.6%, or 1.6:1.0]. Regarding race 26.8% were whites, 46.5% were Negroes, and 26.8% were mestizos; regarding type, 22.7% were lepromatous, 37.3% tuberculoid, and 40.0% were nonspecific. The general experience that leprosy predominates among the poorer classes is borne out by the fact that all but 2 come from poor families. Recognizing the susceptibility of children, the author recommends the segregation of all leprous children, whatever the type of their lesions; removal of children of leprous parents as soon as possible after birth, and certainly before the age of six months; and the establishment of preventoria for the care of healthy children of leprous parents.—[From abstract in *Bol. Of. San. Panamericana* **27** (1948) 61.]

- ✱ MUIR, E. Leprosy in the British West Indies. *Lep. Rev.* **19** (1948) 139-142.

This is a short survey of a visit paid by the writer to the British West Indies after an absence of 3 years. Although leprosy is not a major problem in these islands, yet the incidence of 0.3 per mille in Trinidad and British Guiana, and the danger of spread through the movement of laborers in the oil-fields and sugar factories, make its control a matter of importance. The results of the sulfone treatment he had initiated in Trinidad have been most encouraging. Because of the efficacy of this treatment he advocates a radical change in the policy towards leprosy, especially where the

endemicity' is low. In such countries asylums should be closed, and the patients should be encouraged to have treatment at home. While these institutions should still be retained where the incidence is high, they should be made more attractive and all patients should be given useful employment. Noninfective patients should be discharged, as they usually constitute the discontented, unruly element.

—G. O. TEICHMANN.

INNES, J. R. Leprosy in Uganda. *East African Med. J.* **25** (1948) 379-381.

This is a report of the results of a survey carried out by the author, in 1947-1948, as interterritorial leprologist, for the three divisions of East Africa, on samples of the population of Uganda. A total of 14,808 persons of all ages and both sexes of the various tribes throughout the territory was examined, and the number of cases found gave a leprosy incidence of 54 per thousand. This figure is regarded only as an indication, for the survey is not complete and is to be continued later. —AUTHOR'S ABSTRACT.

INNES, J. R. Leprosy in Kenya. *East African Med. J.* **26** (1949) (pp. ?) (No. 2, Feb.)

This is a report of a more intensive and complete survey of Kenya than that of Uganda previously reported [see above], one sufficient to give a working knowledge of leprosy there. Samples of the tribal population in 62 different places across the breadth of the country amounted to a total of 53,814 persons, and the number of cases of leprosy found gives an incidence of 10.2 per thousand. This figure indicates, for the entire population of Kenya, a total of 35,210 cases. The province which borders on the great Lake Victoria was found to be the most heavily infected, with an incidence of 31.7 per thousand; the coastal belt near the sea had 7.1 per thousand; and the high central belt had the lowest incidence, with about 1 to 3 per thousand. Existing facilities for treatment and control of leprosy in Kenya are very inadequate, there being only about 60 cases under effective modern treatment. A new large leprosarium is recommended for the area near Lake Victoria, and a smaller one somewhere near the center of the colony, to deal with both coastal and central cases. It was found that the tribes do not segregate leprosy, but allow persons with it to live in home contact with large numbers of children. Attention to this condition is advised as the most useful focus of propaganda. [Certain data on findings in Tanganyika Territory will be found in the News section.]

—AUTHOR'S ABSTRACT.

SEN, P. Leprosy in Calcutta. *Lep. India* **21** (1949) 114-118; *also Internat. Med. Abst. & Rev.* **5** (1949) 20-23.

The author says that the incidence of the disease in Calcutta is estimated to be 0.5%, or about 20,000 cases in a population of 4 millions, distributed over an area of 34 sq. miles. He stresses the seriousness of this problem, considering the present acute shortage of housing, the extreme congestion in transport services, the unawareness of the public concerning the communicability of leprosy, and malnutrition. In his opinion, for reasons which are indicated, Calcutta is eminently suited for the proposed All-India Leprosy Institute. The urgency of the problem calls for comprehensive measures by the authorities for control and treatment. For the large expenditure of money needed for the purpose, suggestion is made for the sharing of responsibility by both central and provincial govern-

ments; and private generosity, properly canalized, should be of great help.
[An All-India Conference paper.] —DHARMENDRA.

X MUIR, E. Control of leprosy. *Lep. India* **21** (1949) 107-110.

This paper deals with some of the important factors responsible for the spread of leprosy and examines the conditions prevalent in India at present in the light of those factors, concluding by mentioning some important steps that should be adopted for controlling the disease in this country. Among the factors responsible for its spread in any particular place are: concentration of cases due to movement of population, conditions of housing, sanitation, personal hygiene, diet, predisposing or complicating diseases, climate, and ideas and attitude towards the disease. So far as India is concerned, none of the factors admits of immediate satisfactory solution except debilitation due to malaria and periodic famine dependent on the climatic factors (floods and draughts). The limitations of control by treatment are discussed. The important step to be taken in India at present is, in the author's opinion, widespread education of the public, especially young men and children, as regards the causation and prevention of this disease, and the formation of societies in every nook and corner for spreading the knowledge and adopting control measures. [An All-India Conference paper.] —DHARMENDRA.

CHATTERJEE, S. N. Control of leprosy in India. *Lep. India* **21** (1949) 76-80.

The author mentions the various antileprosy schemes set up in the past and deplors the lack of practical application of them by either the central or provincial governments. He stresses the need for a thorough change of outlook, and outlines in detail a plan for attacking the disease with sufficient financial assistance. He advocates the formation of a central leprosy committee for formulating general policies, and a Central Institute of Research; also provincial leprosy committees to implement the policies adopted by the central one, and later the formation of district and local committees. The role that voluntary bodies should play is also outlined. [An All-India Conference paper.] —DHARMENDRA.

✓ SEN GUPTA, S. C. A scheme for the control of leprosy. *Lep. India* **21** (1949) 59 (abstract); also, in full *Internat. Med. Abst. & Rev.* **5** (1949) 23-25.

The author states that isolation of the infective cases of leprosy is the main problem, and that it should be done in rural segregation homes and not in patients' homes. For a satisfactory solution coordinated and concerted action by the government, the doctors and the social workers is necessary. He suggests that antileprosy work should commence from villages in connection with the proposed Union Health Centres, and group isolation colonies (rural segregation homes) may start along with it. [An All-India Conference paper.] —DHARMENDRA.

✓ GANGULY, B. B. General principles of control of leprosy and their practical application in a province, especially in U.P. *Lep. India* **21** (1949) 60 (abstract).

From available data the author concludes that the gross incidence of leprosy in the provinces varies from 0.5% to 0.9%, with a lepromatous rate of 23%, a child rate of 6%, and an average male rate of 81%. The incidence is highest in the Himalayan regions, moderate in the sub-Himalayan and

Eastern Indo-Gangetic plains, low in the Central Indo-Gangetic plain, and lowest in the Western Indo-Gangetic plains. He concludes that leprosy is a public health problem in the United Provinces, and he advocates isolation of mild infectious cases in their homes and villages with proper safeguards, isolation of serious infective cases in colonies, a central leprosarium with facilities for training of workers, separate annexes to existing institutions for noninfectious, homeless and disabled patients, the utilization of existing clinics for propaganda and home visiting by social workers, and the creation of antileprosy units for propaganda work. Isolation should be persuasive and voluntary. [An All-India Conference Paper.]

—DHARMENDRA.

BOSE, D. N. Development of anti-leprosy campaign in the Asansol Mining Settlement. *Lep. India* **21** (1949) 73-76.

The successive stages of development of the leprosy work in the Asansol Mining Settlement are described, the organizations now functioning for that purpose, and the measures which are employed in the area, which include survey and enumeration, treatment, and segregation. The Asansol Mining Settlement has an area of 413 sq. miles and a total population of over 500,000 with an incidence of 1.07%. A sample survey was first made by the Bengal Branch of BELRA in 1931; a leprosy officer was appointed and 4 clinics were opened in 1932 under the Asansol Mines Board of Health; and in 1933 the Asansol Leprosy Relief Association was formed. The area was divided into 14 divisions, each under a local executive committee and with a representative on the leprosy board. Altogether 5,299 cases have been detected, of which 1,115 were lepromatous. The Association maintains 16 clinics and a leprosy hospital with accommodations for 18 cases; and for the isolation of infective cases there are 6 divisional camps with 44 beds and a central leprosy settlement with accommodations for 52 patients. The main source of income for carrying out these activities is from local collections, public charity, and donations from industrial concerns. [An All-India Conference paper.]

—DHARMENDRA.

CHANDY, P. J. The problem of the discharged patient. *Lep. India* **18** (1946) 13-14.

This note, by the medical officer of the Fyzabad Leper Home and Hospital, deals with 40 cases discharged during the previous six years. Patients with arrested disease are often unwilling to leave to make room for other patients, because of social prejudices and difficulty in obtaining employment under favorable living conditions. Eight of the 40 discharged cases had relapsed, not a very high rate but enough to make an employer loath to run any risk. Discharged patients may meet with difficulties in returning to live in their own villages, especially those who show any deformity. A few can be employed after recovery in leprosy institutions. "The solution which I propose . . . is to start and maintain near each institution an industrial and agricultural settlement which will ultimately become self-supporting. While we cannot expect a group of leper patients to maintain an institution for themselves, on a completely self-supporting basis, it is not too much to expect a group of able-bodied discharged patients to be able to do so. If suitable land is acquired, and the initial outlay on site development, erection of houses, digging of wells, purchase of bullocks, agricultural and industrial machinery, be raised by the government and

the public, the settlement may be made to support itself."—[In part from abstract in *Trop. Dis. Bull.* **43** (1946) 656.]

✓ RAMAKRISHNAN, N. Welfare work for leprosy patients. *Lep. India* **21** (1949) 110-114; also *Internat. Med. Abst. & Rev.* **5** (1949) 25-28.

The author divides welfare activity broadly into (a) work inside and (b) work outside the sanatorium. Referring to the inside work, he discusses vocation, effective treatment, health, education and social life. The outside work includes care of the family, follow-up, rehabilitation, outpatients, publicity and propaganda. In the sanatorium every patient should be employed in some vocation suitable for his or her capacity and aptitude, and it should have a recreational value. The welfare section should function as a liaison between doctors and patients, and should insure hope in the patient so that he will persevere to combat the disease. It should function effectively in securing proper orthopedic aids for individual patients, and toning up the health of the patient, physical, mental and moral. Basic education of children and illiterate adults is necessary. The welfare section has to run a democratic organization for happy community life. Outside the sanatorium, the section has to take care of the family of the patient; should follow up absconded and quiescent discharged patients; should endeavor to rehabilitate discharged patients in the society or in a separate agricultural colony. Outpatients who do not attend regularly should be visited and taught the importance of regular treatment. Arrangements for home or village isolation of those that were infective have to be made, and proper food and shelter for those who come from distant places have to be arranged for. [An All-India conference paper.]

—DHARMENDRA.

✓ MARTINEZ NAVARRO, A. Transfiguración del leproso. [Transfiguration of the leprosy patient.] *Actas dermo-sif.* **40** (1948) 212.

The author, a prominent dermatologist with a big heart, has written a poem (*canto*) for the leprosy brother. It is time, he says, to banish from society the false and inhuman myth which has surrounded the person with leprosy since the most remote times. This legend is based on the popular belief of the contagiousity and incurability of leprosy. Actually, the infectiousness is minimal, and the disease is curable. It is high time now to banish the name of leprosarium, a harsh term, in favor of sanatorium devoted to the health of the patients.—[From abstract in *Fontilles* **2** (1949) 286, supplied by F. CONTRERAS DUEÑAS.]

✓ SOARES, J. A. Os dispensários na profilaxia da lepra. (Considerações referentes ao serviço de profilaxia da lepra, no estado do Espírito Santo, de 1927 a 1945.) [Dispensaries in the control of leprosy, with reference to the leprosy control service in the state of Espírito Santo from 1927 to 1945.] *Rev. brasileira Leprol.* **16** (1948) 35-51.

This review shows: (a) that the control of leprosy in the state of Espírito Santo has been exercised especially in family or household foci through close surveillance of patients and their contacts; (b) that the experience in the examination of groups of individuals has not been satisfactory, and the collaboration of other sections of the public health service has been sought for an extension of the dermatological examinations for the detection of leprosy; (c) that improvement of the control of household foci accomplishes an epidemiological survey by groups of

individuals; (d) that the leprosy prophylaxis service of the state is employing a proper antileprosy technique—increasing the activities of the dispensaries and at the same time isolating the infectious cases.—[From the author's summary.]

✓ CONTRERAS DUEÑAS, F. Criterio actual en la concesión de permisos, transferencias, alta condicional y alta definitiva a los enfermos aislados por su infección hanseniana. [Present criteria for the granting of permits, transfers, and discharges to segregated leprosy patients.] *Actas dermo-sif.* **39** (1948) 853.

Having obtained from national and foreign literature information regarding legislative measures for granting permits, transfers and conditional and definitive discharges to leprosy patients, the author proposes to submit anew to the Permanent Board of Leprosy, Dermatoses and Social Prophylaxis a draft of regulations in which the particular conditions of the country are considered. He reasserts his enthusiastic belief in full knowledge concerning social care of persons with leprosy.—[From abstract in *Fontilles* **2** (1949) 280, supplied by the author.]

✓ [EDITORIAL.] Super-infection in leprosy. *Lep. India* **18** (1946) 1-2.

A correspondent asked, "If in an institution there are both lepromatous and neural cases, are the neural cases likely to get a more massive infection by close and prolonged contact with the lepromatous ones?" The reply states that "there is some evidence that after re-infection, fresh lesions may result in some cases of leprosy of both the types." De Langen (1930) recorded that reinoculation caused fresh lesions at the site in only a small proportion of cases, and then only if the inoculation material was taken from reacting cases. Rao (1932) obtained 2 positive results in 50 cases reinoculated, with no difference with respect to the state of the donor case. Tisseuil (1939) transplanted by grafts into tuberculoid cases. But, in actual practice, superinfection must be rare since the patients are not likely to get such massive doses of infection as are given by injections or transplantations. Therefore, "although the question of superinfection in neural cases by close contact with lepromatous cases cannot be ruled out, it is not of much practical importance, since it is not a common occurrence." As for the possibility of change of type as a result of superinfection, there is no evidence that that may result. Commenting on this reply, the editor of *Leprosy Review* (**17** (1946) 67) agreed with this verdict "in the particular case quoted," but pointed out that the question of superinfection of a child by living in close contact with, say, an infectious mother is a very different one. In that case the "possibility of resistance" may be overcome before it has time to develop. Also, "great care should be taken in institutions to prevent close and frequent contact between severe infectious cases and young children with slight lesions."

—H. W. W.

✓ COCHRANE, R. G. Some brief comments on the classification of leprosy. *Lep. India* **21** (1949) 89-90; also *Internat. Med. Abst. & Rev.* **5** (1949) 2-5.

Dealing first with the histopathological background, the author then suggests a tentative classification of leprosy into 4 main types, viz.: (1) *lepra maculo-anaesthetica* (lepride), (2) *lepra lepromatosus* (leproma), (3) *lepra dimorphosus* ("dimorphic" lesions), (4) *lepra anaesthetica* (anesthetic lesions). Not a type are lesions called by the South Americans

"uncharacteristic," here referred to as "lepra incipiens." He proposes that the terms "neural," "tuberculoid," and "intermediate" be not used in classification. The first of them is not distinctive of any one type of leprosy alone; and much "tuberculoid" leprosy, viewed immunologically, is not tuberculoid at all and certainly not polar in developments. In outlining the development of leprosy lesions he describes the earliest changes as located at the junction of pars papillaris and pars reticularis of the corium, initially an increased vascularity with the mobilization of round cells and a few macrophages, and the presence of bacilli although they are often not demonstrable. From this point there appear to be three distinct methods by which the body deals with the bacillus: (1) focalization of the process by anchoring them in the epithelioid and giant cell foci; (2) multiplication of bacilli with inability of the tissue to check this process and their spread downward and outward through the whole corium; (3) bacilli in a few cases appear to ascend, possibly through the lymphatics, the nerve bundles in the skin and remain in these bundles. It is in this light that the writer would divide leprosy into four main types according to the kind of lesions presented. Discussing them in greater detail: (1) The *leprides* include the present tuberculoids, lesions with few or no bacilli and satisfactory tissue response, and also the maculo-anesthetic lesions of the older leprologists; they might be subdivided into maculo-anesthetic leprides, maculo-papular leprides, squamous leprides, nodular leprides, etc.; and the term "major" and "minor" might be retained in connection with these lesions. (2) Leproma applies to the lesions of the present "lepomatous leprosy," the characteristics of which are well-known, with minimal tissue response. Lepromatous leprosy has been further divided into macular, infiltrative, diffuse and nodular. The term "dimorphic" lesion is suggested to replace "intermediate," "doubtful," "borderline" and "transitional," because these lesions, histologically and clinically, show characteristics of both the lepridal and lepomatous types. They include those with succulent, somewhat ill-defined edges; and several clinical subvarieties are mentioned—papulo-squamous, squamous, nodular, ulcerative, etc. The anesthetic type is essentially due to ascending neural infection, and it is truly neural for it shows affection of the nerves and not the skin. The predominant sign is anesthesia alone. Regarding the "uncharacteristic" lesions the author holds that, if it is to be retained, it should refer to the very early hypopigmented lesions which clinically cannot be placed definitely in any standard classification. He is in favor of including the residual leprides under the general category of residual lesions and not in this group. [An All-India Conference paper.]

—DHARMENDRA.

✓ DHARMENDRA. Some comments on the classification of leprosy recommended by the Havana Congress. *Lep. India* 21 (1949) 96-102; also *Internat. Med. Abst. & Rev.* 5 (1949) 8-13.

This paper deals with the classification adopted by the Havana congress and the clinical subdivisions recommended by its committee on classification but rejected by the plenary session. The recommendations of the committee, it is believed, marked an improvement in certain respects over both the Cairo and the Pan-American classifications, but in certain other respects they introduced features which created more difficulties. Nevertheless, they merit serious consideration of all workers, and if it is possible to remedy the defects they can form the basis of a uniform classi-

fication. Regarding the main classification, the conception of two types and a "group" seems to be acceptable to all, the only difference of opinion being about the term "tuberculoid" used to designate one of the types. A more suitable and less objectionable term is needed, but it appears to be difficult to find one likely to meet with general approval. To the writer, "maculoanesthetic" seems less objectionable; the term "macule" in general dermatology refers only to a flat patch, but leprosy workers are familiar with its use in a wider sense to include both the flat and thick patches of the neural type. If that term or some equivalent one is acceptable, then the cases with purely polyneuritic changes without any skin lesions will have to be taken from this type and placed in the "indeterminate" group. This arrangement has much to be said for it; for one thing, the prognosis in purely polyneuritic cases is uncertain, and secondly it would do away with the difficulty of splitting up such cases into tuberculoid, lepromatous and indeterminate. Regarding the clinical subdivision of the two types, the main changes which seem necessary to the writer would be to find a place in the "indeterminate" group for cases with the thick borderline, intermediate or unclassified lesions, and to do away with terms like "tuberculoid-polyneuritic," "lepromatous-polyneuritic," and "intermediate-polyneuritic." According to the above suggestions the three main classes (2 types and 1 group) would be maculo-anesthetic, lepromatous, and indeterminate. In the maculo-anesthetic type there would be included flat and thick patches of the present neuro-macular variety; in the lepromatous, the various clinical varieties in this type; and in the indeterminate, the flat, and thick patches (not covered by the maculo-anesthetic or lepromatous types), and the purely polyneuritic cases. (If the purely polyneuritic cases were to be placed in a separate class, "neural," the number of classes would be 4.) [An All-India Conference paper.]

—AUTHOR'S ABSTRACT.

- ✓ LOWE, J. (& OTHERS). The evolution of leprosy and leprosy control. *Lep. Rev.* 19 (1948) 143-152 (correspondence).

This interesting symposium on the evolution of leprosy consists of a letter by Lowe followed by comments by four other workers. Lowe states that some time ago the view was generally held in India that lepromatous leprosy frequently developed from the tuberculoid type. Later experience had taught him, however, that this change is very uncommon. Lepromatous cases either start as such, or become such after a short period during which the signs are of indeterminate nature. On subsidence, also, they do not develop tuberculoid lesions. Tuberculoid cases remain tuberculoid. A group of cases seen in Calcutta which appeared to support the view of change from tuberculoid to lepromatous showed numerous thick, "succulent" lesions resembling major tuberculoid clinically, but their edges were less clear, their surfaces were smooth, the nerves were less involved and the loss of sensation was slight, the lepromin reaction was weakly positive or negative, and bacilli were often numerous. Histologically, giant cells and foamy cells were seen in adjacent fields. He called these "mixed cases" and held they were more allied to lepromatous than tuberculoid leprosy.

✓ R. G. COCHRANE (of India) in his comment expressed disappointment that the Havana Congress did not make an authoritative statement on this subject. Much confusion has resulted from the use of the word tuberculoid to cover true tuberculoid lesions and the borderline, intermediate, doubtful lesions described by Wade, Dharmendra, Lowe and himself. These latter have a definite tendency to change over to leproma.

✓ G. L. FITE (of Carville, La.) holds that there is a basis for believing that both the tuberculoid and the lepromatous appearance begin together in these so-called "mixed" cases. He feels that when lepromatous leprosy is properly examined in its early stage such changes will be found to be not unusual, and that only in its later stages does leprosy become fixed as to type.

✓ E. P. FIDANZA [sic] believes that leprosy always starts as a simple inflammatory lesion of the undifferentiated type and later, according to the resistance of the body, becomes either lepromatous or tuberculoid after which—in the majority of cases—its type does not change. He held, however, that change is possible and that it may become more probable with the new sulfone treatment. [Since Prof. Fidanza died in April 1940, this comment was presumably supplied by either Dr. J. M. M. Fernandez or Dr. S. Schujman, both of whom write on letterheads of the Prof. E. P. Fidanza Leprosy Service of the Carrasco Hospital in Rosario, Argentina. —EDITOR.]

✓ DHARMENDRA, in a lengthy contribution, expressed general agreement with Lowe. Apart from clearly defined cases which remained true to type, there are certain cases in both groups which remain "unclassified" even after prolonged study. In these cases clinical, bacteriological, and histological features all appear to be in an unstable state. Histologically both tuberculoid and lepromatous elements are present, and the results of the lepromin test vary. He believes that confusion has been caused by the use of the term "tuberculoid" in two senses. Some workers speak of "tuberculoid" cases where the clinical, bacteriological, immunological and prognostic aspects of the disease are taken together. Such cases rarely change in type. Others use the term to indicate the structure of the granuloma as originally described by Jadassohn. Such lesions do change in structure from tuberculoid to leproma. —G. O. TEICHMANN.

✓ OBERMAYER, M. E., BONAR, S. C. and ROSENQUIST, R. Diffuse lepra. J. Investig. Dermat. 12 (1949) 243-248.

Preliminary to the report of an actual case in a 21-year-old man, born in California but of Mexican parentage, this article restates the essential features of the form of leprosy which Lucio and Alvarado described in 1852 as "spotted" or "lazarine" leprosy, and which Latapí has rediscovered in recent years, the description being essentially like that which the senior author had previously published. [See a copied abstract in THE JOURNAL 16 (1948) 409, in which it is erroneously stated that Obermayer was actually working in the part of Mexico (Sinaloa) where this condition is most common.] Two features characterize this form of leprosy, it is stated, (1) diffuse infiltration of the skin of the entire body, and (2) a peculiar reaction, "Lucio's phenomenon," or erythema necroticans. The disease usually starts with anhidrosis, skin anesthesia of the extremities, and gradual loss of eyebrows, eyelashes and body hair. Lepromatous nodules are not seen, and the diffuse skin infiltration is difficult to perceive without careful inspection. Skin smears, however, are positive. There may be swelling of hands, feet and face. Small telangiectases are seen. After 3 to 4 years there appear tender, erythematous patches, usually first on the legs, later on the arms, and even the trunk. They develop rapidly, become purpuric, form an eschar, and leave an atrophic scar, the cycle taking about 2 weeks. Lesions in various stages are often seen simultane-

ously. Fever and gastrointestinal disturbances are often encountered at this time. Nasal obstruction and ulceration and laryngeal involvement progress, but gross ocular involvement does not occur. The Mitsuda reaction is negative; there is a false positive serology. The patient becomes progressively weaker, anemic and malnourished. Death occurs, on the average, within 8 years without treatment. However, sulfone therapy is proving effective. The authors stress the ease with which this form may be missed before the ulcerations occur, especially in Mexican migrant farm laborers being examined on entrance to the United States.

—F. A. JOHANSEN.

✓ RODRIGO ABAD, M. Contribución al estudio de la leprareacción y su tratamiento. [Contribution to the study of lepra reaction and its treatment.] Fontilles (1945) 117-124. No. 2.

In his discussion of lepra reaction the author considers its pathogenesis and indicates the treatment to be used. He regards the condition probably not of allergic nature, because "the tegumentary tissues cannot react allergically against the accumulated bacillary mass, as is demonstrated by the negative allergic (Mitsuda) reactions and the greatly decreased immunity. . . ." He believes that this condition is due to the reduced defensive properties of the organism on account of the weakening of the reticuloendothelial system. Consequently, he attempted to treat lepra reaction by reactivation of that system by means of exciting injections of nonspecific polyvaccines. To aid the organism in its antitoxic function he also gave intravenous injections of various iodized compounds of hexamethylenetetramine. Fever is usually not treated except in cases in which its intensity might endanger the heart, in order to avoid the inhibitory action of the antipyretics on the leucocytic activity (quinine) and leucocytosis (pyramidon).—[From abstract in *Rev. brasileira Leprol.* 15 (1947) 274.]

✓ GAY PRIETO, J. Algunos casos de lepra tuberculoide reaccional. [Cases of reactional tuberculoid leprosy.] *Actas dermo-sif.* 39 (1948) 1036.

The author presented two patients, with reference to the results obtained with the use of rongalite to which he attributed action of "presencia."—[From abstract in *Fontilles* 2 (1949) 281, supplied by F. CONTRERAS DUEÑAS.]

✓ RODRIGUEZ DE SOUZA, A. Lupus eritematoso na lepra. [Lupus erythematosus in leprosy.] *Rev. brasileira Leprol.* 15 (1947) 243-250.

The author presents a case of lepromatous leprosy in which there was also lupus erythematosus of the cretaceous herpes type of Devergie. The lesions were on the dorsum of the nose, the face and the right ear. The patient ceased having lepra reactions two years before the appearance of this complication, and the leprosy itself was in frank involution.—[From author's summary.]

✓ SILVEIRA, L. M. O mal perfurante plantar na lepra. [Perforating ulcer in leprosy.] *Rev. brasileira Leprol.* 16 (1948) 7-32; *Mem. V Congr. Internat. Lepra*, 1948; Havana, 1949, pp. 320.

This article illustrated with 40 photographs, several of them roentgenographs, is the precursor of and to some considerable extent identical with, one presented at the Havana Congress, with a selection (18) of the

pictures but with no abstract available for the Congress number of THE JOURNAL. Nor is the article itself readily susceptible to abstracting, but it ends with a tabulation of the considerable numbers of corrective surgical operations performed by the author at the Pirapitingui leprosarium in São Paulo state from 1938 to 1944: Disarticulation of toes, 303; of toes and the corresponding metatarsals, 120; of phalanges, 132; resections of metatarsals alone, 56; extirpation of sesamoids with osteitis, 5; partial resection of the calcaneus, 4; amputations of Lisfranc, 27; of Syme, 34; of Orr (leg), 9; of Gritti-Stockes, 2; of the thigh 1. [The article in the *Memoria* of the Congress is erroneously ascribed primarily to Orsini de Castro and associates, who are of Minas Gerais state, whereas actually they were the authors of the preceding article in that volume.] —H. W. W.

FLANDIN, C. Dangers de la sulfamide thérapie dans la lèpre. [Dangers of sulfonamide therapy in leprosy.] Bull. Soc. Méd. Hop. Paris (1945) 251-252.

When the sulfonamides are used locally for complicating staphylococcal and streptococcal infections of the skin lesions of leprosy, the result is excellent at first; but too long continuance of the treatment produces a state of atony which hinders healing. These drugs appear to be without effect on the evolution of the leprosy lesions themselves, and prolonged general treatment of the disease with them is not harmless but causes diminution of the leucocytes, especially the polymorphonuclears. This explains why the author observed, in cases treated by Chorine with sulfonamides, reappearance of the bacillema and of monocytes loaded with bacilli coinciding with febrile attacks and complications of pulmonary tuberculosis. A fatal case of acute leprosy septicemia following sulfonamide therapy is cited.—[From abstract in *Excerpta Medica* 3 (1949) 31.]

SOUZA LIMA, L. Resultados atuais da sulfonoterapia no sanatório Padre Bento. [Present status of sulfone therapy at the Padre Bento sanatorium.] Rev. brasileira Leprol. 16 (1948) 75-85.

[Essentially the same article was read at the Havana Congress (without available abstract for the Congress Number), was published in translation in THE JOURNAL 16 (1948) 127-137, and appears in the Memorial del V Congreso Internacional de la Lepra, Havana, 1948; Havana, 1949, pp. 120-127.]

LOWE, J. Sulphone-treatment of leprosy. Lep. Rev. 19 (1948) 129-138.

Admitting that the mode of action of the sulfones is uncertain, the writer believes it acts on the bacilli themselves. To explain why treatment has to be persisted in for so long a time, if the drug is bactericidal, he points out the enormous numbers of bacilli present in lepromatous cases and the persistence of dead ones. Bacilli may be found in the dermis more than a year after the lepromin test has been performed. This fact makes it very difficult to tell when the disease has been arrested. The possibility of the development of sulfone-resistant bacilli is also mentioned. The writer is hopeful that the better results being obtained with the present drugs will encourage infective cases to come for treatment earlier, and to be willing to undergo isolation for a period when there is a good chance of recovery. It is also to be hoped that more medical men will be attracted to leprosy investigation.

—G. O. TEICHMANN.

COCHRANE, R. G., RAMANIYAM, K., PAUL, H. and RUSSEL, D. Two-and-a-half years' experimental work on the sulphone group of drugs. *Lep. Rev.* **20** (1949) 4-64.

The authors here report at length, with summaries of 54 case records, on work begun in 1945 and touched on briefly by the senior author in reports read in 1948 at meetings held in Havana [*THE JOURNAL* **16** (1948) 139] and in Washington [see *THE JOURNAL* **17** (1949), 283, reprinted]. The drug used first was promin, but because of its toxicity it was soon dropped in favor of the sulfones which can be given by mouth, diasone and sulphetrone, and of experimentation with the parent substance (diaminodiphenyl sulfone) and sulphetrone given by injection. Combining certain of the data in two tables gives the following:

Treatment group	No. of Cases	Negative (Clin. & Bact.)	Improved Clin. Bact.		Stationary Clin. Bact.	
Diasone (by mouth)	25	4	19	14	2	7
Sulphetrone, by mouth	9	4	5	4	..	1
DDS, by injection	11	2	8	7	1	2
Sulphetrone, injected	6	..	6	5	..	1
Totals	51	10	38	30	3	11

No case became worse. The lag in bacteriological improvement shown by these figures was determined by Cochrane's bacteriological index [see the Havana article cited]. No adult under diasone treatment had become negative, only children receiving adult doses; so the writers recommend pushing dosage to the limit of tolerance. The results with sulphetrone shown had been attained within a period of two years, with proportionately much fewer reactions (severe in 1 case only) than had been caused by diasone (in 30% of the cases). The injection work—subcutaneous after a preliminary trial of the intradermal route—was mainly with a 25% DDS suspension in peanut oil, partly with a 25% sulphetrone emulsion in peanut oil with 0.5% beeswax, and partly with 25% and 50% aqueous solutions of sulphetrone. The latter preparations were given in doses up to 7 cc., twice a week. The maximum dose of the DDS suspension was 5 cc. twice a week, or 2.5 gm. of the substance, with which the blood levels was usually under 2 mgm.%. With sulphetrone in oil there was frequently lack of absorption, but not with DDS in oil. The opinion is expressed that "injection of sulphone remedies is the method of choice." As for the drug to be used in that way, DDS is the one "which has the most rapid effect;" also, the DDS preparation "is probably the most potent antileprosy remedy we have;" but its general use cannot be recommended until a dosage is arrived at which will not cause the toxic symptoms which were seen (anemia, giddiness, nausea and vomiting, hepatic disturbance—pain and jaundice—and peripheral neuritis). For that reason, preference at present is given 50% sulphetrone in water. However, the editor quotes Cochrane as saying that patients put on a dosage of 3 cc. of DDS suspension twice a week (i.e., 1.5 gm. a week) were standing the injections better than those given the larger dose (2.5 gm. a week). One of the advantages claimed for the injection method is that it requires only 1/10th to 1/20th as much drug as does treatment by mouth. [See report in this issue by B. D. Molesworth, whose experiment was instigated by Cochrane, and also the editorial by the latter.]

—H. W. W.

- ✓ COCHRANE, R. G. General principles in the treatment of leprosy with particular reference to the sulphones. *Lep. India* 21 (1949) 83-86.

This presentation starts with a discussion of general principles of treatment of leprosy. There are three kinds: (a) amelioratory, (b) symptomatic, and (c) specific. Under ameliorative treatment are included all measures taken to prevent or reduce deformities or disfigurements. By symptomatic treatment is meant that type of therapy which hastens the resolution of the disease or alleviates the more acute symptoms. In specific treatment is included treatment with hydnocarpus remedies and sulfones, the main discussion centering around the use of the latter. They have won an established place in the treatment of lepromatous leprosy, and it is not now a question whether that form of leprosy should be treated with them, but, in view of their cost and the difficulties of oral administration, of what cases are likely to benefit most by that treatment. Regarding dosage, small doses should not be used. "No case showing neural macules, tuberculoid or neural anesthetic lesions" should be given sulfones, there being evidence that these drugs may cause exacerbation of the disease in which case there is a potential liability that neuromacular cases may pass into the lepromatous stage, and that reaction damage of the nerves may occur in tuberculoid cases. Practically every case put under sulfone medication passes through a stage of reaction, but the administration of the drug should not be interrupted except in serious reactions, such as those in nerve tissue resulting in serious nerve damage, high persistent fever with serious weakening of the patient's condition, persistent occipital headaches, severe nerve pains, and alteration in the blood picture. Because of the difficulty of administering large doses by mouth for long periods, or the impracticability of organizing for daily intravenous medication on a large scale, the author suggests the use of subcutaneous injections of a 50% watery solution of sulphetrone in a dose of 10cc. twice a week. [An All-India Conference paper.]

—DHARMENDRA.

- ✓ DHARMENDRA. Some observations on the treatment of leprosy with the sulphone drugs. *Lep. India* 21 (1949) 102-104.

It is now generally recognized by leprosy workers of experience that the sulfones mark a decisive advance in the treatment of lepromatous leprosy. In this note attention is drawn especially to two important matters in this connection: (1) the sulfone treatment of patients in leprosy institutions, and (2) the question of combined sulfone-hydnocarpus therapy. Referring to the first question, in India sulfone treatment is as yet available to only a very limited number of cases in a small number of institutions; and a plea is made for increasing its availability. If, because of the high cost, it is not possible to give the treatment over prolonged periods, it should at least be given to cases with marked ulcerations and eye symptoms for a period of not less than 6 months. The cost of the treatment may be reduced by administration of these drugs by injections instead of by mouth. Regarding the second question, it is highly desirable that the advantages of combined sulfone-hydnocarpus therapy be investigated. Both kinds of drugs are of value in the treatment of leprosy, but both have their limitations, and it is not improbable that a combination of the two may be more efficacious than either alone. [An All-India Conference paper.]

—AUTHOR'S ABSTRACT.

- ✓ CHATTERJEE, S. N. Injection of sulphetrone and diasone in leprosy (a preliminary study). *Lep. India* **21** (1949) 81-82.

The author reports the results of injecting watery solutions of sulphetrone and diasone in small doses, to a maximum of 5 cc. of 3.5% solutions. These small doses, which did not produce any appreciable blood levels of the drugs, nevertheless produced clinical improvement without giving rise to anemia. This method is therefore considered economical and safe, and it is suggested that a more extensive trial should be undertaken to find out the minimum dose which will give satisfactory results without producing anemia or any other toxic symptoms. [An All-India Conference paper.]

—DHARMENDRA.

- ✓ SMITH, M. I., JACKSON, E. L., CHANG, Y. T. and LONGENECKER, W. H. Metabolic fate of 4,4'-diaminodiphenyl sulfone (DDS) in the rabbit and its isolation from urine. *Proc. Soc. Exper. Biol. & Med.* **71** (1949) 23-25.

Of the various types of derivatives of 4,4'-diaminodiphenyl sulfone (DDS), indirect evidence has indicated that certain disubstituted derivatives like promin, diasone and possibly sulphetrone are metabolized to the toxic parent substance, while the monosubstituted alkyl and hydroxyalkyl derivatives do not appear to undergo such transformation in the body to an appreciable extent [see reprinted article in this issue, p. 283]. Indirect evidence has also indicated that DDS itself does not change in the body to any significant degree. Obviously, direct evidence on these points can be obtained only by the actual isolation of DDS from the urine, and this report describes a method for doing that. The procedure is based on the solubility in water of its hydrochloride, the relative insolubility of the base, and the relative solubility of the latter in ethyl acetate. By the method described, up to 70% of the total diazotizable material excreted in the urine after oral administration of DDS to rabbits has been isolated as unchanged DDS. Not more than 5% of the diazotizable material may be in an altered form, and that probably as conjugated DDS. —H. W. W.

- ✓ FLOCH, H. and LAJUDIE, P. Sur la lèpre en Guyane française. III. Influence du traitement par l'huile de chaulmoogra. [Leprosy in French Guiana. III. The results of treatment with chaulmoogra oil.] Institut Pasteur de la Guyane et du Territoire de l'Inini. Publication No. 135, 1946, 11 pp.

It is very difficult to determine objectively the influence of treatments in leprosy. The evolution of the disease has been followed in 358 cases treated more or less regularly by chaulmoogra oil for periods varying from 3 to 12 years—the average more than 7 years—considered in different categories according to age, form of disease, and the duration of treatment. Spontaneous amelioration occurred in one-third of the untreated cases. Neither the actual duration of treatment nor the total number of injections received had a marked influence on the results; the regularity of treatment is a more important factor. The efficacy of regular treatment was seen especially in the maculoanesthetic forms. The percentages of improved cases were 28 in those which had received less than 30 injections annually, 37 in those having 30-40, and 55 in those having had more than that. The lepromatous form is on the whole little affected by the treatment, and the nervous form is still more resistant. —AUTHOR'S ABSTRACT.

- ✓ FLOCH, H. Influence du traitement par l'huile de chaulmoogra sur l'évolution de la lèpre. [Chaulmoogra treatment and the evolution of leprosy.] II Conf. Panamericana Lep. Rio de Janeiro, II, 1946 (Arq. Serv. nac. Lep. 4 (1946) No. 3), 257-269.

[This article is essentially, if not precisely, the same as the one dealt with in the preceding item. A somewhat more detailed abstract is to be found in *Trop. Dis. Bull.* 46 (1949) 371.]

- ✓ ROUSSET, J. L'huile de chaulmoogra hydrogénée dans la lèpre. [Hydrogenated chaulmoogra oil in leprosy.] Bull. Soc. française Dermat. Syph. 54 (1947) 134-135.

The leprosy hospital in Lyons with which the author is concerned (la Léproserie lyonnaise de la Propagation de la Foi), received a gift of chaulmoogra oil which was too acid to use, and it was turned over to Prof. Chambon, a part of whose report is quoted. Considering the neutralizing and iodizing treatments to which chaulmoogra had been submitted by others, which he regarded as a partial saturation of the *liaison éthylénique* of the specific acids, he was led to try hydrogenation in different degrees of saturation. The author tells of the use of one lot, supplied by Chambon, which proved to be well tolerated and of "remarkable diffusibility," the absorption of 10 cc. doses—given twice a week—being remarkably rapid and completely painless, much better than an iodized preparation used comparatively. Its therapeutic activity also seemed superior. —H. W. W.

- ✓ TEICHMANN, G. O. A review of patients treated with large doses and small doses of hydnocarpus oil for nine years. Lep. India 21 (1949) 55 (abstract).

There is presented an analysis of the results of hydnocarpus oil treatment of 105 cases of leprosy, almost all of lepromatous type, at the Purulia Leprosy Hospital, the period of observation being nine years commencing 1939. The patients were Indian males of Bihar, 40 below 20 years of age, 48 between 20 and 30 years, and 17 between 30 and 40 years. The "small dose" group consisted of 39 patients, the "large dose" group of 66. The small-dose treatment consisted of doses of from 1 to 10 cc. of the oil once weekly, and the large-dose treatment of doses of from 1 to 15 cc. twice weekly, with an average of 550 to 650 cc. during a year. At the end of the period only eight cases had become disease-arrested and only one of them was of the small-dose group. In 18 (i.e., 27%) of the large-dose group the disease had become arrested for a time, whereas in the other group that occurred in only 7 (i.e., 18%). The former, however, occurred among the higher age-groups and the latter among the younger patients. In the large-dose group, 9 patients (14%) developed deformities, whereas in the other group 12 (31%) developed such changes. Of the 25 who became disease-arrested, 17 had relapsed; of these 6 were in the small-dose group and 11 in the large-dose group. The author concludes that the results of this prolonged treatment were distressingly poor, and that the answer to the question about large and small doses is not unequivocal. Although the rate of cure with hydnocarpus oil is small, the larger doses very definitely seem to reduce the incidence of deformity. Lepromatous cases can be divided into two categories, one which can stand large doses of oil, and the other which react even to small doses. He stresses the advisability of careful examination of cases of prolonged lepra reaction

to exclude complicating tuberculosis, and the importance of continuing treatment for a considerable time after the disease becomes arrested to prevent relapse and a subsequent oil-resistant stage. Unless tissue immunity can be produced in disease-arrested cases, he holds, there is the possibility of a relapse and reinfection. [An All-India Conference paper.]

—DHARMENDRA.

- ✓ ROY, A. T. Triumph of hydnocarpus oil; a study. *Lep. India* **21** (1949) 55 (abstract).

This paper is a report of the beneficial results of treatment with hydnocarpus oil in 16 lepromatous cases, consisting of equal numbers of males and females, mostly children and young persons, 6 classified as L1, 7 as L2, and 3 as L3. As a result of the treatment all of them became bacteriologically negative after an average period of 5 years 5 months, the longest being 9 years 6 months and the shortest 1 year 6 months. Eight cases, mostly females, who continued treatment even after becoming negative for an average period of 3 years 6 months did not relapse even after long periods, while the other 8, mostly males, who continued treatment after becoming negative for an average period of only 1 year 9 months, returned with bad relapse. The disadvantages of sulfone treatment are mentioned, and a case is spoken of in which such treatment caused brain symptoms. [An All-India Conference paper.]

—DHARMENDRA.

- ✓ JAGADISAN, T. N. If tomorrow we were sure of a specific for leprosy? *Lep. India* **21** (1949) 104-106; *also Internat. Med. Abst. & Rev.* **5** (1949) 28-30.

Mr. Jagadisan stresses the limitations of the sulfone drugs in solving the various problems arising out of leprosy, in that they are too costly for the treatment of patients in the outpatient clinics of villages, that they would not remove the whole complex of physical and social environments, habits and customs, etc., which are responsible for the spread of ill-health in general and diseases in particular, and that they will leave the 80% of neural cases and the residual deformity of leprosy patients unaffected. The problem of this disease, he holds, is not merely the killing of the leprosy bacillus, but of preventing and correcting deformity and rehabilitating patients physically, psychologically and socially. [An All-India Conference paper.]

—DHARMENDRA.

- ✓ ALDERSON, S. Physical therapy in leprosy. *Lep. Rev.* **19** (1948) 120-129.

This paper deals with the efforts made in four leprosy settlements in Nigeria to prevent and treat by means of physiotherapy the crippling deformities which occur so often in leprosy. It had been found that the onset of deformities as the disease itself improves has a bad mental effect on the patients. Because of these deformities disease-arrested cases were unwilling to leave the settlements, and if they did leave they were looked upon as useless members of the community. Various exercises for the hands and fingers were devised by which these deformities could be prevented and treated, and in addition massage and heat treatment were employed. As a result, considerable physical and mental improvement was found in the majority of patients.

—G. O. TEICHMANN.

- ✓ SAGHER, F. and MITERSTEIN, B. Effect of grenz rays on leprosy infiltrations. III. Response of lesions of the anterior portions of eyeball. *Arch. Ophthalm.* **38** (1947) 78-88.

Grenz rays of half value layer 0.021-0.031 mm. A1 were used on eyes of six patients with lepromatous leprosy. Individual doses of 1,200 r or less produced little or no reaction, 1,500 r or more caused violent reaction. Studies showed clearly that the reaction of the eye to grenz radiation is far less intense than is that of the skin. No definite therapeutic conclusions were drawn. Some distinctly favorable results were seen, such as arrest and flattening of lepromata. No lenticular changes were seen during a period of close observation of four years.—[Abstract from *Excerpta Medica* 3 (1949) 73.]

- ✓ SOUZA-ARAUJO, H. C. Novo agente terapêutico de lepra: As leprolinas "Souza-Araujo." Os resultados de cinco anos de experiências: 1943 a 1948. [New therapeutic agent of leprosy: the leprolins of Souza-Araujo; results of 5 years experiments, 1943-1948.] Mem. Inst. Oswaldo Cruz 46 (1948) 233-254.

In this first part of the paper, which deals with the preparation of the author's leprolins and the experiences with them in the years 1943 to 1948, there are given 14 bibliographic references and the clinical records of 16 patients treated by him (15 lepromatous and one tuberculoid, all bacillus-positive in skin and nose). The time of treatment varied from 1-2/3 to 14 months, with an average of 4.9 months per patient. The total amount of leprolin injected was 903 cc., averaging 56 cc. per patient—15cc. intravenously, 54 intradermally and 7 cc. intramuscularly. There was good general improvement in all cases but the author says that, with his 30 years experience of leprosy treatment, he has not the right to be extremely optimistic. Regarding the "hansenlisado" of Dr. A. Arriagada Valenzuela (a derivative of the bacillus used for the preparation of lepromin with lytic products of *Penicillium notatum* and *B. subtilis*), and the "leprolisina" of H. Cardoso, it is stated neither has any therapeutic action. The best product is the natural "leprolin total," sterilized but not autoclaved.

—AUTHOR'S ABSTRACT.

- ✓ SOUZA-ARAUJO, H. C. As leprolinas "Souza-Araujo" e a sua rápida ação terapêutica nos males perfurantes plantares lepróticos. [Souza-Araujo's leprolins and their rapid curative action on perforating leprotic ulcers.] Mem. Inst. Oswaldo Cruz 46 (1948) 255-267; Mem. V. Cong. Internac. Lepra, 1948; Havana, 1949, pp. 1289-1297.

The author reviews the history of his leprosy culture (strain José, 1941) and the method of preparing his leprolin. Reports of its general action in leprosy which have been published must be revised, but an extensive experience has proved its rapid action upon perforating ulcers. He, himself, has cured, in a relatively short time, such ulcers in five cases. Cassiano, of the Aimores Colony at Baurú in São Paulo, treated 21 such cases. The average time of treatment was 23 days, and the average amount of leprolin injected was 7.7 cc. All lesions were healed, and after 18 months of observation only three cases had relapsed (i.e., 86% cured). Caldeira, of the Père Damien Colony at Ubá in Minas Gerais, treated 50 cases and obtained cure in 46 (92%). This experiment is being continued in various Brazilian leprosy colonies, and the author offers to send his antigen to be tried in foreign countries.

—AUTHOR'S ABSTRACT.

- ✓ CALDEIRA, R. G. Contribuição a terapêutica do mal perfurante plantar. Tratamento pela leprolina "Souza-Araujo" em injeções intra-ulce-

rosas: [Treatment of leprotic perforating ulcers by injections of Souza-Araujo's leprolin into the ulcers.] *Mem. Inst. Oswaldo Cruz* **46** (1948) 315-353.

The writer, as medical director of Père Damien Leper Colony (Ubá, Minas Gerais), treated 50 cases with perforating ulcers of duration ranging from 2 to 40 years, using the antigen prepared by Dr. H. C. de Souza-Araujo from cultures of acid-fast bacilli obtained from leprous material. The dosage used varied from 0.12 to 39.3 cc. injected inside the ulcers, intramuscularly, every 2 to 4 days, depending on the reactions of the patients some of whom presented fever up to 41°C. The result was cicatrization of the ulcers in 46 out of the 50 cases (92%). The majority of the patients tolerated the treatment perfectly, the author concluded, and its effect was very efficient.—[From author's summary; H. C. DE SOUZA-ARAÚJO.]

- ✓ DHARMENDRA. A note on the histopathology of leprosy. *Lep. India* **21** (1949) 92-96; also *Internat. Med. Abst. & Rev.* **5** (1949) 5-8.

A plea is made for interest in histological studies of leprosy on a wider scale in India, though of course priority has to be given to studies of treatment and control of the disease. Descriptions are given of typical findings in (a) the "simple" or "uncharacteristic," (b) the tuberculoid, (c) the lepromatous, and (d) the borderline, intermediate or doubtful cases. The point is stressed that a particular histological picture, with perhaps the exception of the lepromatous one, is not confined to one particular clinical variety of the disease, and it is therefore wrong to use histological terms as synonyms to indicate the various clinical types of the disease. In the opinion of the writer, the use of histological terms to indicate clinical types often results in confusion. Another point stressed is that, in the tuberculoid and lepromatous histology, certain features may sometimes be seen which are not typical of the respective type; but the subsequent course of the disease in a long-term study of selected cases has shown that these variations are not of any special significance. [An All-India Conference paper.] —AUTHOR'S ABSTRACT.

- ✓ RODRIGO ABAD, M. Morfología de la sangre en los leprosos. [Morphology of the blood in leprosy patients.] *Actas Dermo-sif.* **35** (1944) 718; also Fontilles (1944) 31-38.

Studying the blood of 200 leprosy patients, the author found: (1) In the red-cell series: (a) oligocytemia in 56.5%, normal counts in 36.5%, and increase in 7.0%; anemia is related to the advanced form of the disease, and is hypochromic in 30% of the cases, normochromic in 6% and hyperchromic in 44%; no relation between the type of anemia and the clinical form of the disease was seen; (b) these anemias regress with treatment, and are not produced by leprosy. (2) In the white-cell series: (a) leucopenia in 70.9% of the cases, normal counts in 13.3% and leucocytosis in 15.7%, leucopenia being most frequent in advanced cases; (b) neutrophilia in cases where there is leucopenia; (c) absence of marked eosinophilia which could be considered specific for the disease; (d) lymphocyte and monocyte levels within normal. Separately studying the blood in lepra reaction, he observed leucocytosis with neutrophilia, and sometimes a shift to the left.—[From abstract in *Rev. brasileira Leprol.* **16** (1948) 247.]

- ✓ RODRIGO ABAD, M. Investigación del bacilo "leprae" en sangre periférica. [The leprosy bacillus in the peripheral blood.] *Actas Dermo-sif.* **36** (1944) 114-115.

The author made a search for bacilli in the peripheral blood of leprosy patients by dehemoglobinizing and staining by usual methods. Of specimens from afebrile patients, 31.4% revealed bacilli. In lepra reaction 90.7% were positive, which proves a leprosy bacillemia demonstrable by vein puncture. The author suggests the search for bacilli in the peripheral blood for early diagnosis in endemic areas where there frequently occur infections such as malaria and brucellosis which are manifested by intermittent fevers. He has not observed bacillemia in leprosy patients with nonspecific fever, but he only has data referring to 3 isolated cases.—[From abstract in *Rev. brasileira Leprol.* **16** (1948) 246.]

- ✓ MONTEL, R. Bacillémie lépreuse. Affinités tinctoriales du bacille de Hansen. [Bacillemia of leprosy. Staining characters of Hansen's bacillus.] *Bull. Acad. Méd.* **130** (1946) 165-168.

In leprosy the presence of bacilli in the blood is determined by puncturing a vein through unaffected skin, withdrawing 2 to 3 cc. in sodium citrate solution, and centrifuging. Smears should be made from the layer of leucocytes, because the bacilli are nearly always found in bundles in monocytes, although a few may be extracellular. By this method the author has nearly always obtained positive results in generalized lepromatous cases, especially during febrile reactions, but never in tuberculoid or trophoneurotic cases. On staining the blood preparations by Macchiavello's method, faggots of bacilli may be seen unstained, in contrast to a few of a deep red color in the cells [see *THE JOURNAL* **16** (1948) 510]; the stained ones are very short. On staining with heated Giemsa for half an hour, the few short bacilli stain to a mallow or mauve color.—[From abstract in *Trop. Dis. Bull.* **43** (1946) 1152.]

- ✓ GAMBINI, G. and SERVINO, V. Considerazioni sulla reazione Takata. [On the Takata reaction.] *Arch. italiana Sci. Med. Col. e Parassit.* **26** (1945) 15.

The authors have observed positive Takata reactions in leprosy. The liver involvement varies from a simple hepatomegaly without clinical or functional disturbances to atropic cirrhosis and even parenchymatous disturbances with or without icterus. During the evolution of the disease there may be seen various liver manifestations, mono- or polysymptomatic, or on the other hand the liver may be absolutely normal. Usually there are changes in the protein fractions of the serum which, however, do not induce modifications in the Takata reaction. During treatment with chaulmoogra oil one observes progressive return to normal values, while the Takata reaction retains its positivity.—[From abstract in *Rev. brasileira Leprol.* **16** (1948) 246.]

- ✓ FENNEL, E. A. Thymol turbidity test. A new indicator of liver dysfunction. *Staff Meet., The Clinic, Honolulu* **13** (1947) 76-85.

Remarking that "there are even more liver function or dysfunction tests than there are known functions of the liver," the author first discusses the Hanger cephalin-cholesterol test and then, with details of technique, the thymol turbidity test of Maclagan. Applying the Hanger test in kala azar, "essentially a disease of the reticulo-endothelial system," Makari

had concluded that that test "is an index of selective reticulo-endothelial activity, rather than a test of liver function, *per se*;" and that conclusion is in line with the author's findings with both tests in leprosy. Lepromatous leprosy, he points out, "is a most active involvement of the reticulo-endothelial system," whereas in tuberculoid leprosy the lymphocyte [*sic*] is the predominant cell. High thymol values occur in the former type, and low values in the latter type, in which the histiocyte "is relatively dormant;" and this test may become a trustworthy adjunct to clinical observation in the measure of progress in modern therapy. A graph shows the results of the two tests and other data in 13 cases of leprosy, 10 of them lepromatous, and one of the tables showing the effects of certain technical factors on the thymol turbidity test is based on sera from leprosy patients.

—H. W. W.

FLOCH, H. and LAJUDIE, P. Cuti-réaction a la tuberculine. Vaccination sous-cutanée par le B.C.G. chez des Lépreux. [The cuti-reaction with tuberculin and subcutaneous inoculation with BCG in leprosy patients.] Inst. Pasteur Guyane et Terr. Inini, Publication No. 44, 1942, pp. 3.

The tuberculin reaction in 101 cases gave the following results: positive in 26, or 32%, of 79 patients aged 5-15 years, against 26% for the same age group in the healthy population; and in 12, or 54%, of 22 patients aged 15 or more, against 33% in the healthy population (of which, in total, 1,373 were tested). In many instances two tests were made, one in an area of healthy skin and the other in a lesion area—anesthetic macule, tuberculoid lesion, or lepromatous infiltration. When the reaction in the normal skin was negative, that in the lesions was also negative. In some positive reactors (14 of 20) the reaction to the test in the lesion was more intense than to the one in healthy skin. To 46 of the 53 negatively reacting children, subcutaneous injections of BCG ("B.C.G.S.C." from the Institut Pasteur of Martinique) were given. Three months later 15 of them (33%) gave positive skin tests, and some of those found nonreactive at that time became positive later. The vaccination had no perceptible effect on the course of the disease.

—AUTHORS' ABSTRACT.

FLOCH, H. and LAJUDIE, P. Sur la lèpre et les intradermo-réactions à la lépromine (Mitsuda et a la léproline (Souza-Araujo) en Guyane française. [Intradermal reactions with lepromin (Mitsuda) and leprolin (Souza-Araujo) in leprosy in French Guiana.] Inst. Pasteur Guyane et Terr. Inini, Publication No. 97, 1945. 15 pp.

These two skin tests were applied simultaneously to 71 leprosy persons and 15 healthy subjects. The Mitsuda reaction was most frequently positive in tuberculoid and neural cases (90% and 51%, resp.), improved or stationary cases (50% and 57%), those in which bacilli had not been found in the skin or the nasal mucus (65% and 57%), and in slight cases (65%); also in healthy people above the age of 10 years (50%). It was negative in lepromatous and mixed cases, advanced cases and those which were or had been bacteriologically positive, and in healthy children under 10 years of age. The leprolin reaction, in gross, paralleled the other but with much lower percentages of positives; e.g., only 23% and 27% in neural and tuberculoid cases. The two agreed well in those kinds of cases which were Mitsuda negative. The concord was poor, however, in slight, neural and tuberculoid cases, in those with few or no bacilli, in those which were

improved or stationary, and in the younger children. Results analogous to those of Mariano were obtained in the lepromatous and mixed forms but not in the neural one, in which the authors got much fewer positives—a difference perhaps due to a partial loss of the properties of the antigen because of aging. The leprolin does not behave like the suspensions of the Stefansky bacillus which is often utilized in skin reactions, especially in that it does not provoke reactions in lepromatous cases. The Mitsuda reaction seems indeed to be one of allergy and of partial immunity, and the tuberculoid form to be a minor one of leprosy in relation with at least a relative resistance of the organism. —AUTHORS' ABSTRACT.

- ✓ FLOCH, H. and CAMAIN, R. Réaction de Mitsuda, immunité anti-lépreuse et vaccination par le B.C.G. [The Mitsuda reaction, antileprosy immunity, and BCG vaccination.] Inst. Pasteur Guyane et Terr. Inini, Publication No. 172, 1948 (May), 4 pp.

The authors have studied the problem of the positive Mitsuda reaction, partly in an endemic country—in both patients and healthy persons—and partly in a nonendemic country. They have repeatedly pointed out the high frequency of benign forms in the Creoles of [i.e., persons born in] French Guiana, and the contrary frequency of the severe forms in people from elsewhere and particularly from Europe, which fact indicates a relative immunity in the natives of an endemic region. The lepromin reaction as an indicator of energy is concerned in this matter. The authors believe that positive reactions in persons in countries where leprosy is absent, which occur in 50% or more of persons tested are not ascribed to an irritant action of the bodies of the killed bacilli, but to a group reactivity, or parallergy, the responsibility for which certainly lies with the Koch bacillus. Since the leprosy patients who give a positive Mitsuda reaction generally present benign forms of the disease, the authors suggest BCG vaccination in leprosy-endemic countries to induce at the same time cutaneous sensitivity to tuberculin and to lepromin, in order to increase the defenses of the organism against the Hansen bacillus.—AUTHORS' ABSTRACT.

- ✓ DHARMENDRA and MUKHERJI, N. Prognostic value of the lepromin test. *Lep. India* 18 (1946) 80-87.

This report deals with three groups of cases of leprosy, totaling 160, which had first been tested six years previously. (1) Of the 109 neural cases, 92 had been positive, the other 17 negative or doubtful. Of the positive group, 84% had shown improvement, against only 53% in the others. The one case which had transformed to lepromatous had been negative. The degree of positivity also influenced the prognosis; of the strongly, moderately and weakly positive groups 100%, 83%, and 68%, resp., had improved to some extent. (2) Regarding the lepromatous cases (of which there were 46 in the lot), it is simply said that some had given weakly positive reactions, and the prognosis for them was better than that for the negative majority. (3) In cases of "doubtful" classification (5 in the lot), the test is of great value in clearing up that question, for a strongly positive reaction rules out the possibility that the case is lepromatous, and even a weak reaction reduces that possibility. The study, therefore, "lends support to the previous work on the subject," which is reviewed briefly.—[From authors' summary.]

- ✓ DHARMENDRA and MUKHERJI, N. Lepromin reaction in subsided lepromatous cases. *Lep. India* **19** (1947) 5-10.

After summarizing previous observations, the authors record their experience with 17 out of 125 active cases of leprosy in which a weakly positive lepromin reaction developed. In 8 of these cases the subsidence of symptoms had persisted for 2 to 5 years; in the other 9 slight or marked relapse had occurred, with lesions becoming bacteriologically positive in one-half. In 6 of the first 8 cases, the reaction changed to doubtful or weakly positive. Of the 9 relapsed cases 7 had been negative and 2 weakly positive in the active stage; after subsidence of the disease, in 5 the reaction remained negative and of the remaining 4 a decrease of reaction was noted in 2 and an increase in the other 2. Relapses are therefore less frequent in subsided cases giving increased reactions.—[From abstract in *Trop. Dis. Bull.* **46** (1949) 368.]

- ✓ DHARMENDRA and JAİKARIA, S. S. Failure to sensitize presumably non-leprous individuals to lepromin. *Lep. India* **19** (1947) 16-17.

In a village in the Punjab plains, a region with a very low leprosy incidence, the authors applied the lepromin test in 50 normal persons from 18 to 50 years of age who in all probability had never had contact with leprosy. Two antigens were used, Dharmendra's separated-bacillus suspension and a Fernandez-type filtrate. Only 36 of the people returned for the reading of the tests. After 24 hours 9 of them were positive, 5 with both the lepromin and the filtrate, and 4 with the lepromin only. Of the 27 who were negative with both preparations, 20 were retested eight weeks later with the filtrate. None of them showed a positive early reaction to that substance. In conclusion the authors state: "We have, therefore, failed to confirm the findings of Fernandez that an injection of lepromin sensitizes lepromin-negative non-leprous persons so that they become lepromin-positive."—[In part from abstract in *Rev. brasileira Leprol.* **17** (1949) 58.]

- ✓ DHARMENDRA. The lepromin test; a review. *Lep. Review* **18** (1947) 92-126.

This article is a comprehensive review of the subject tracing the origin and history of the test from the first work of Mitsuda through the improvements made by Hayashi, and on, including observation by Fernandez of the early reaction and his suggestion that it and the classical late reaction may be due to different antigens, which explanation Dharmendra, himself, has supplanted with the one that protein constituents account for both reactions, the delayed one being due to slow breaking up of the injected whole dead bacilli in the tissues. The author's method of separating the bacilli and preparing a lepromin standardized by weight is described. Findings in leprosy cases, in contacts, and in noncontacts are discussed, and also the influence of the factors in children of heredity, age, and exposure to infection; and it is pointed out that the test is of considerable value in classification of cases and in prognosis, but of little value in diagnosis and treatment. About the factors giving rise to variations in the results of the test in the same case, it is concluded that the most important are the variations in clinical activity of the lesion, the presence or absence of leprosy bacilli in them, and the time of the year when the test is done. Among matters regarding which there are still differences of opinion are: the significance of occasional reactions in

healthy subjects and in contacts of infected cases; claims that repeated tests may increase the resisting powers of children to infection; stronger reactions in summer than in winter; variations in reactions in different skin areas; and the effect of debilitating conditions in reducing reactions. A careful discussion of the nature of the reaction leads the author to the conclusion that a positive lepromin reaction is an allergic phenomenon, although the allergy is not always specific but may be dependent in some persons on sensitization with other acid-fast bacilli, the most important being the tubercle bacillus.—[From abstracts, chiefly from *Trop. Dis. Bull.* **45** (1948) 612.]

- ✓ SOUZA CAMPOS, N. O emprego das sulfonas nos comunicantes Mitsuda-negativos. Interpretação imuno-biológica de sua ação positivante. [Use of the sulfones in Mitsuda-negative contacts; immuno-biological interpretation of its effect of producing positive reactions.] *Rev. brasileira Leprol.* **16** (1948) 89-106.

[This article, under a slightly different title, was read at the Havana Congress, and the author's abstract of it appeared in *THE JOURNAL* **16** (1948) 301. It has appeared in the *Memoria del V Congreso Internacional de la Lepra*, Havana, 1948; Havana, 1949, pp. 598-608.]

- ✓ CHORINE, V., MAUZE, J. and GRABAR, P. Pouvoir toxique comparatif des extraits obtenus après l'action des ultra-sons sur les bacilles de Koch et de Stefansky. [Comparative toxicity of extracts of the Koch and Stefansky bacilli prepared by the action of ultrasonic vibration.] *Bull. Soc. Path. exot.* **40** (1947) 428-429.

Unlike the tubercle bacilli, the authors state, those of leprosy cannot be regarded as factors of toxic phenomena, but as having a predominantly mechanical effect. For this reason they undertook a comparison of the products of the Koch and Stefansky bacilli obtained by ultrasonic disintegration. The rat leproma material, ground with sand, was suspended in saline, centrifuged slowly for 2 minutes to separate the sand, and then washed and centrifuged at high speed for 30 minutes four times; and the final suspension was treated for 3 hours with a (previously described) supersonic apparatus and technique. The extract was centrifuged again and filtered through collodion membranes. Tubercle bacillus extracts were prepared similarly. Nitrogen determinations were made on three lots of each kind. In normal and "leprosy" rats neither kind of extract caused any reaction, nor did they have any effect on guinea-pigs treated with Stefansky bacilli to sensitize them; and in tuberculous guinea-pigs only the tubercle bacillus extract had any effect (death in 12-24 hours after subcutaneous injection). It is concluded that that tubercle-bacillus extract "contains an endotoxin capable of killing a tuberculous guinea-pig," but that the Stefansky-bacillus extract has no such toxic power; and that the Stefansky bacillus itself sensitizes neither the rat nor the guinea-pig to the tubercle bacillus. This difference of toxicity [*sic*] differentiates the two microorganisms.

—H. W. W.