

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.

- CHAUSSINAND, R. L'expansion de la lèpre de l'antiquité à nos jours. [The expansion of leprosy from antiquity to today.] *Acta Trop.* **6** (1949) 105-119.

In this erudite paper some of the most ancient supposed references to leprosy in India are rejected, and the first accurate description is considered to be that of the Sushruta Samhita (600 B. C.). This includes the use of oils in the areas where *Hydnocarpus wightiana* trees abound and which were some of the first seats of the disease. The biblical references to leprosy are regarded as not affording indisputable evidence of its prevalence in the time of Moses, but the cruel methods of prophylaxis then used are held to be responsible for the horror of leprosy which still persists. Without accepting the most ancient of alleged Egyptian references, it is held that the disease was known in the time of the Pharaohs. In China, it is admitted, leprosy was known in the fifth century B. C., several centuries before Confucius, whence it was introduced into Japan about the seventh century A. D. The description of the spread of leprosy from Asia over Europe is in accordance with accepted opinion. The causes of the decline in Europe are also in agreement with modern opinion in the rejection of segregation in favor of stopping of imported leprosy after the end of the Crusades, the black death (plague) in 1347-50, and the gradual improvement in sanitation. However, the decline is ascribed in great part to the increase of tuberculosis, the prevalence of which is held to have an influence on that of leprosy. The efforts of men in the past have done little or nothing to influence the incidence of leprosy: "L'étude de l'histoire de la lèpre est une grande leçon d'humilité."—[From abstract in *Trop. Dis. Bull.* **47** (1950) 362.]

- SAINZ DE AJA, E. A. El estado en la lucha contra la lepra. [The state in the fight against leprosy.] *Ser.* **8** (1949) 29 (No. 75).

The author justifies the holding of the next international leprosy congress in Madrid, and points out the necessity of giving it a favorable impression. Regarding the disease in Spain, during the four centuries of the Spanish colonial empire there was a small but continuous importation of cases from endemic areas. The cessation of emigration, however, has reduced the problem to one of autochthonous leprosy, which probably is stable, with the number of new cases being offset by the number of deaths. The antileprosy campaign should be a responsibility of the government and not be left to private initiative, but it is only since the civil war that the government has taken active measures. The program includes the construction of sanatoria with a total capacity of some 1,500 patients, which is held to be sufficient because not all cases need be segregated. Three new institutions are under construction: a large one at Trillo in Guadalajara, on the Tagus river, with a capacity of 500 patients (some 200

already admitted); one at Toen, 20 kilometers from Orense, for 200 inmates; and one at Abona, on the seashore at Santa Cruz de Tenerife, also for 200. All these places have large tracts of land and could be enlarged to double the capacity indicated. Besides them there already are the Las Palmas leprosarium with 120 patients, and small clinics of the teaching services of the leading universities. [Also the Fontilles colony and certain small private establishments.] Furthermore, there are dermatological dispensaries with specialists capable of treating those patients who can be permitted to live at home and continue in their occupations. Special courses for dermatologists are being given, and more elementary ones for practicing physicians. A leprosy census is being carried out by mobile units. Regarding the familial problem in relation to the health problem, when a patient is removed to a sanatorium he leaves a vacuum in the home and the loss of income which is often the only support of the family. It is proposed that all such patients should join the *Seguro de Enfermedad* (sickness insurance), which will grant them policies providing for payment of wages for the entire duration of the disease, and that the inmates who may find work in the leprosaria shall turn over 50% of their modest wages to their families. It is believed that, given this aid and informed of the efficacy of the new drugs, the patients will present themselves. Mention is also made of the aid given by beneficent institutions, and the means by which they should be able to carry on their mission most effectively.—[From abstract in *Fontilles* 2. (1949) 339.]

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 ✓ CORDERO SOROA, A. El Momento actual de la Lucha contra la Lepra en España. [The Status of the Antileprosy Campaign in Spain.] Madrid: Gráficas González, 1950, 30 pp.

This is an authoritative monograph, by the chief of the Sección de Lucha Contra la Lepra, Dermatoses y Enfermedades Sexuales of the Dirección General de Sanidad. Introduction of the disease into the peninsula is ascribed to the Roman soldiers and the Saracen invasion, and it is said that Spain and Portugal were among the countries most affected by the diffusion which occurred during the 11th to 13th centuries. The first Spanish leprosarium was established in Barcelona in the 11th century, although several other reputed ones of that period are mentioned. At the beginning of the 20th century the extent of the problem was quite unknown, and there were no means of combatting the disease other than certain old provincial leprosaria insufficient in size and lamentable with respect to equipment. Government action began in 1872, but it was "purely legislative" until 1917 when, for the first time, an appropriation for leprosy work was made, including an allotment for the Fontilles colony which the Jesuits had established in 1909. The first statistical report, resulting from a royal order issued in 1914, counted 898 cases, and various figures have been published since then. Mention is made of attempts of a Junta Consultativa contra la Lepra y Enfermedades Sexuales (1942), and of a Sección de Lepra of the Consejo Nacional de Sanidad (1944), to obtain statistics; the author was given that responsibility in 1947. The present report, as of 1949, shows a total of 1,879 known cases—1,062 males and 817 females; 698 in sanatoria or hospitals—in the 50 provinces of the country. The bulk of them, apart from those in the four northwestern provinces and the two which constitute the Canary Islands, occur along the eastern coast beginning with Tarragona province (just

south of Barcelona) and across the southern end of the country; Jaén province in the south, with 293, leads the next two (Valencia, central east, and Málaga, far south) by 100. On the other hand there are 8 provinces, all in the central north region, in which no cases are registered, and 17 others with less than 10—6 with only 1 each—in the central part of the country. With a total population of some 28 millions the average prevalence is 0.068 per mil; in the most highly affected provinces it ranges from 0.28 to 0.38 per mil. The national campaign involves (1) a census of cases and contacts; (2) completion of the three national leprosaria at Trillo in Guadalajara, Toen in Orense, and Abona in Tenerife; (3) creation of preventoria, of which one has been established at Chapinería, Madrid province; (4) acquisition and distribution of drugs; (5) courses for leprologists; and (6) creation of mobile units for the investigation and control of families and contacts; also propaganda. Besides the national leprosaria, and the Fontilles colony, there are small regional ones in Barcelona, Santiago, Granada and in the Las Palmas islands, and also a classification center at the San Juan de Dios Hospital in Madrid. Altogether, there will be 2,500 beds. This will suffice even if 6,000 cases should ultimately be found, calculating that 1,000 can be cared for at home and more than 2,000 can be treated as outpatients at the many available dispensaries in the provincial capitals and principal towns (total of 156 mentioned, with 141 physicians concerned with the work). Four *equipos móviles* have now begun to work in the four most heavily affected provinces.

—H. W. W.

CONTRERAS, F. & GUILLÉN, J. Memoria del año 1950. [Report of the Colonia-Sanatoria Fontilles, 1950.] Fontilles 2 (1950-1951) 563-584.

In this institution, whose capacity is 400 patients, there were 301 at the end of the year (169 males and 132 females), increased from 240 in 1943; there had been 64 admissions (only 10 below 21 years of age), 10 discharges under conditional parole (23 other patients given parole during the year remaining in the institution), 30 deaths and 12 other exits. The 33 paroles compared with only 13 in 1949, and an average of 8 from 1943 to 1949 inclusive. All suitable patients (237) were under sulfone treatment, promine, "tolena" and "sulfona P" given by injection, and diasone and sulphetrone given by mouth. Trials of DDS and TB-1 had recently been initiated. Among other information are summary reports of the laboratory service (Dr. Torrella), and the sections of pathologic anatomy (Prof. Llombart), surgery (Dr. Mut), ear, nose and throat (Dr. Medramany), ophthalmology (Dr. Jijon), and the pharmacy. The numbers of urinalyses, blood counts and hemoglobin determinations made (ranging from 2,620 to 3,350) suggest that monthly examinations of the patients under sulfone treatment had been made; furthermore, 1,800 erythrocyte sedimentation tests had been made. Of a total of 3,778 bacteriological examinations, no less than 2,950 were of the nasal mucus (*moco*); only 60 were of the skin, and 56 were of ulcers. The sanitarium has a blood bank, and 57 transfusions of whole blood or plasma were made. Nine autopsies were performed, and 101 biopsy specimens were examined.

—H. W. W.

IRANZO PRIETO, V. La lepra en la comarca de Algeciras. [Leprosy in the district of Algeciras.] *Actas Dermo-Sif.* **41** (1950) 729-733.

The epidemiological study of this region is interesting because of its proximity to North Africa and Gibraltar, it being the port of call for all the steamship lines between Atlantic Europe and the Near and Far East. There are 9 known cases from these regions who are actually hospitalized in the national leprosaria, but the author has discovered 6 more cases, 5 of them tuberculoid and 1 lepromatous, which were not previously known. There are 36 contacts of these 15 cases who have never been investigated.

—F. CONTRERAS DUEÑAS

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 BELTRÁN, A. Contribución al estudio de la exploración de convivientes y enfermos lazarinis. [Contribution to the study of contacts and leprosy patients.] *Actas Dermo-Sif.* **42** (1950) 287-295.

This is an account of the work done by the *equipo móvil* of Jaén, where 120 cases were known before. In approximately one year 173 more patients have been detected, raising the number to 293. There were 137 family records of contacts, with a total of 677 individuals who should have been under surveillance; these numbers have been increased to 316 families with 1,362 contacts, of whom 1,106 have already been examined, clinically, bacteriologically and biologically. These were the investigations which led to the detection of the 173 new cases mentioned. In this way patients of younger age are found, and also higher proportions of tuberculoid and indeterminate forms.

—F. CONTRERAS DUEÑAS

DAUDÉN VALLAS, F. & DAUDÉN SALA, C. Los seis primeros meses de labor dermatológica en el preventorio infantil del Patronato de Señoras "Niño del Remedio" en Chapinería (Madrid). [The first six months of dermatological work in the preventorium of the Patronato de Señoras "Niño del Remedio" in Chapinería, Madrid.] *Actas Dermo-Sif.* **42** (1950) 273-286.

This report gives an account of the important work realized in the starting of this first Spanish preventorium. The data on each child include the dermatological manifestations which may be related to the disease, results of tests for specific and tuberculosis allergy, also with BCG. In some cases biopsies were made, and the description of the results of all these investigations are accompanied by excellent photographs and several microphotographs. The 56 children examined are grouped as follows: with skin lesions and positive lepromin reactions, 26; with skin lesions and negative or doubtful lepromin reactions, 10; without skin lesions and lepromin positive, 17; without skin lesions and lepromin negative or doubtful, 3; with lepromatous structure, discharged from the preventorium, 1; tuberculoid structure but positive for bacilli, also discharged from the preventorium, 1; with tuberculoid structure, bacilli negative, 3; and with indeterminate structure, bacilli negative, 20. —F. CONTRERAS DUEÑAS

[BELGIAN CONGO] Rapport Annuel, 1949. Direction Générale des Services Médicaux Congo Belge. Ministère des Colonies, Direction Générale, rue de Namur, 20, Bruxelles; 96 pp., mimeographed.

The number of cases of leprosy treated during the year by the various medical institutions and organizations, including the leprosaria, are as follows:

INSTITUTIONS	P R O V I N C E S						Totals
	Léopold-ville	Kasai	Equateur	Orientale	Kivu	Katanga	
Government							
Hospital dispensaries . . .	201	286	1,325	112	108	672	2,704
Itinerant services	3,900	12,485	21,194	10,825	3,463	952	61,819
Rural dispensaries . . . . .	....	309	1,355	1,930	1,445	820	5,859
Other							
Catholic missions	75	2,020	2,992	....	8	375	5,470
Protestant missions	113	1,850	1,498	244	819	1,773	6,301
Philanthropic	281	....	....	2,433	15	....	2,729
Private enterprises	44	55	107	1,706	402	114	2,428
Foréami . . . . .	....	....	....	....	....	....	166
Totals	4,614	17,009	28,471	26,250	6,260	4,706	87,476

Segregation in the Belgian Congo, except for certain particularly dangerous cases, is in actuality voluntary segregation, with more or less insistent persuasion. This is a compromise between the ideal measure, strict or compulsory isolation, and the natural state of affairs found in native custom. In the application of this measure of voluntary segregation, instituted long ago, there at first arose a multitude of small leprosaria, and later more important collections of affected persons in agricultural villages. The data on these leprosaria and villages as of the end of 1949 are as follows:

Province	Total Cases	New Cases	Deaths
Léopoldville	767	256	59
Kasai	3,466	654	115
Equateur	4,821	1,091	175
Orientale	7,032	1,752	419
Kivu	2,515	480	207
Katanga	982	442	20
Totals	19,583	4,675	1,095

—[From information supplied by A. Dubois.]

LAURET, L. L'activité du S.G.H.M.P. dans la lutte contre l'endémie lépreuse au cours des quatre dernières années. [The fight against endemic leprosy during the last four years in French West Africa.] Bull. Méd. A.O.F. (Dakar), (1949), Spec. No. pp. 99-106.

Since 1946 the detection of leprosy in French West Africa has been carried out on an increasingly large scale. In 1946, 31,000 cases were counted and 4,000 treated; and, notwithstanding the difficulties involved, the investigation is being continued. There are now 35 centers for hospitalization, where 1,299 patients were treated (120,327 nursing-days) with chaulmoogra derivatives.—[From abstract in *Excerpta Med.* 4 (1950) 400.]

FERNANDEZ BAQUERO, G. Estado actual de la lepra en Guantánamo. [Status of leprosy in Guantánamo.] Bol. Soc. cubana Dermat. y Sif. 6 (1949) 144.

The last leprosy survey of the city of Guantánamo shows, in a population of 91,737 inhabitants, 227 cases of leprosy, i.e. 2.4 cases per 1,000. Nearly 46% of them were of the lepromatous type, and 70% were between 11 and 40 years of age. The numbers of males and females were practi-

cally the same. The standard of living was decidedly low in 31%, and high in 11%. Only 46% were under treatment.

—F. R. TIANT

6 [B.E.L.R.A., INDIAN COUNCIL] Annual report for 1949 of the Indian Council of the British Empire Leprosy Relief Association. *Lep. India* **22** (1950) 150-161.

This report is the last one of the Association, the work of the Council having been taken over by a new organization known as the Hind Kust Nivaran Sangh or the Indian Leprosy Association. The report consists of four parts and an appendix. Part I is the report of the chairman, Part II deals with the research activities, Part III gives the headquarters accounts, and Part IV includes abstracts from reports of the provincial branches. The appendix consists of the memorandum and rules and regulations of the new association. The main research work during the year consisted of therapeutic studies, although the work on other lines had been continued. The therapeutic studies had mostly been concerned with the parenteral administration of sulphetrone with the object of reducing the cost of treatment with this drug. It was concluded that the quantity of sulphetrone needed by the intramuscular route would be about one-fourth of that required for oral administration. From a study of sulphetrone concentration in the blood, urine and skin, and other pathological tests, after the administration of different preparations of the drug, it was found that a watery solution was best for intramuscular injection, in doses of 1 gm. given every day or 2 gm. twice a week. Para-amino salicylic acid (PAS) was tried in two cases of lepromatous type in divided doses of 15 gm. per day. There was some clinical improvement, but no appreciable change in the bacteriological condition. Teaching consisted of a special course of training for medical men and lecture demonstrations to the students of the School of Tropical Medicine, Calcutta. Routine clinical work consisted of examination of 2,616 new patients, of which 2,205 were diagnosed as cases of leprosy, 1,690 of them of neural and 515 of lepromatous type.

—DHARMENDRA

6 [B.E.L.R.A., MADRAS] British Empire Leprosy Relief Association (Madras City Branch), Annual Report for 1949. *Lep. India* **22** (1950) 224-225 (abstract).

This report includes the work done by the Association during the past 17 years. It has run an outpatient clinic at Cholai, with an average attendance of about 40 on each treatment day. Another special clinic for children has been maintained at Triplicane. In 1947-48, 251 children were treated in these two clinics; 239 were definite cases and 12 suspicious ones; 94 were below 10 years of age and 157 were older. It is concluded that the prevalence among all children in the city probably does not exceed 1%, which on the basis of a total child population of 450,000 would not exceed 4,500 cases. There are not more than 15,000 cases of leprosy in the city, the estimated population of which was 1,300,000 in 1949. Of the total cases about 13% are considered to be infectious, so that the number of infectious cases in adults would be about 2,000. The total number of infectious cases, including adults and children, would be about 5,000.

—DHARMENDRA

6 [INDIA, HYDERABAD] Victoria Leprosy Hospital, Dichpali. Annual report for 1949. *Lep. India* **22** (1950) 223-224 (abstract).

The usual activities of this hospital were carried out. During the year there were 211 new admissions and 286 patients were discharged; the total number at the end of the year was 575. The farm and gardens supplied 60,000 lbs. of fruits and vegetables, and the yield of rice was 30,000 lbs.

—DHARMENDRA

BEHELLI, L. M. A importância das causas predisponentes na epidemiologia da lepra. [The importance of predisposing causes in leprosy.] *Rev. brasileira Leprol.* **17** (1949) 175-185 (summary in English).

The importance of predisposing causes, such as debilitating diseases, malnutrition, certain physiological conditions and climate, has been very differently appreciated since the discovery of the Hansen bacillus, and they are still inaccurately considered by most authors in spite of advances in knowledge especially with respect to immunology. It being evident, from experience with the Mitsuda reaction in different countries, that the inherent factor of resistance is more or less constant, it follows that the predisposing causes will be decisive in the spread of leprosy, and that it will attain its highest prevalence where they act most strongly. This is evidenced by the distribution of the disease throughout the world. Consideration of the importance of these causes will permit the explanation of many epidemiological facts which have been only partially and imprecisely considered.—[From author's summary.]

TOLENTINO, J. G. A proposed modification of the segregation of leprosy cases in the Philippines. *J. Philippine Med. Assoc.* **27** (1951) 21-26.

The author reviews the history of segregation of leprosy patients in the Philippines since 1906, and claims that the government is spending large sums of money on a system that does not work. Due to hiding, advanced cases are segregated only after they have infected others, and these advanced cases when they come voluntarily for segregation can no longer infect anybody because they are already shunned and avoided. The early and moderate cases, the real sources of infection, are unrecognized and consequently are allowed to mix freely with their families and the public. He proposes the removal of the compulsory provision of the law, the leprosaria to be maintained for whoever wants to be treated, in the same manner as sanatoria are being maintained for the tuberculous.

—J. O. NOLASCO

J.P.B. + S.C.

[EDITORIAL] La aurora de una política progresiva contra la lepra. [The dawn of a progressive policy against leprosy.] *J. Philippine Med. Assoc.* **27** (1951) 27-28.

In this note it is held that the efforts to control leprosy in the Philippines, based on ideas previously held to be scientific, have been completely unsuccessful. There is now a trend, it is stated, to give emphasis to public education and the establishment of preventoria or nurseries for children of leprosy parents. In that connection it has been arranged that at the Welfareville institution, children of parents with leprosy background and removed at birth shall be maintained separate from children from Culion who were not removed at birth and who—it can only be gathered—are all regarded as infected and showing clinical manifestations, confirmed by histological examination, although in the majority of them the symptoms are ill-defined.

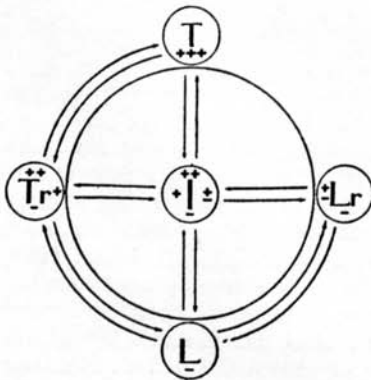
—J. O. NOLASCO

[EX-LEPROSY PATIENT] The contraction of leprosy. The humanitarian and Christian aspect. *Lep. Rev.* **22** (1951) 6-13.

This article is by a leprosy worker who found after several years that he had developed the disease. After treatment he has now been symptom-free for three years. He describes his first desire to "get into one's shell," the kindness he received from the people he lived with, the relief he felt when he was admitted into the colony where no further subterfuge was necessary. He tells of the many opportunities for service that occurred to him as a Christian, for he could get nearer to his fellow-sufferers than ever before. He describes the treatment given in the colony, and pays tribute to the new attitude to leprosy in Madras due to the strenuous efforts of Cochrane. Finally he speaks of the difficulty experienced by ex-patients in readjusting themselves to a normal life outside a leprosy colony. —G. O. TEICHMANN

DE AGUIAR PUPO, J. Evolução da leprose. [Evolution of leprosy.] *Rev. brasileira Leprol.* **17** (1949) 157-174.

This article, by an eminent dermatologist who has repeatedly contributed theoretical discussions of certain features of leprosy, especially with respect to classification, understandably lacks a summary, it being a summary treatment of the subject. Having briefly pointed out the three fundamental evolutive stages, represented by the three clinical forms of the South American classification, the author discusses at length the reactional forms of the disease, with special emphasis on those of the tuberculoid type and their consequences, and then the nonreactional clinical mutations, referring to the changes of the undifferentiated group to either lepromatous or tuberculoid. The appearance of reaction in tuberculoid leprosy is connected with infectious waves in consequence of autogenous infection of glandular origin, or with inundations from without which accelerate the evolution of the disease. These reactional waves in this type prepare the organism for a cure, or if they are sufficiently severe there follows transformation from tuberculoid to lepromatous due to breakdown of the specific defense. A graph presents, in lines which parallel each other precisely, a concept of the immunological variations and the related immunological status, with respect to both the normal phases of the three clinical forms of the disease and the reactional phases of the lepromatous and tuberculoid types. Another graph, reproduced below, shows his concept of the evolution of the disease.



Symbols: T = the quiescent tuberculoid type; Tr = reactional tuberculoid leprosy; I = the indeterminate group; L = the lepromatous type; and Lr = lepra reaction in that type. The plus and minus signs refer to the Mitsuda reaction. —H. W. W.

DE SOUZA LIMA, L. Conceito atual de reação leprotica. [Present concept of lepra reaction.] Rev. brasileira Leprol. 17 (1949) 151-156.

The chaotic situation with respect to views of lepra reaction prior to the establishment of the South American classification is such, it is stated, that it would be best to discard all previous concepts and re-examine the matter on the basis of the criteria of that classification. In the multiplicity and polymorphism of the phenomena which are conventionally called lepra reaction there is one common feature, namely, that they are all of acute nature appearing in the chronic evolution of the disease. Lepra reaction continues, in its present concept, to be synonymous with "acute outbreak" [*surto*], or "acute phase." Thanks, however, to recent acquisitions in the immunobiological and clinical fields, which permit us to differentiate the fundamental clinical forms of the disease, we can now distinguish in a common and generic denomination various distinct aspects in the phenomena conditioned by the terrain upon which they occur. On this basis the author discusses succinctly the reactional phenomena which occur in the different types of the disease and arranges them in two tabulations, according to the characteristics of the phenomena and according to the disease type in which they occur. The former is as follows:

(A) Type T.	{	(a) In the course of chronic evolution	{ Exacerbation of pre-existing lesions and appearance of new ones, structurally identical	{ Tuberculoid lepra reaction
		(b) As the first manifestation of the disease		{ Reactional tuberculoid leprosy
(B) Type L.	{	(a) In the course of chronic evolution	1. Exacerbation of pre-existing lesions and appearance of new ones, structurally identical	{ Lepromatous lepra reaction (acute lepromatization)
			2. Superimposed new elements structurally different; apparent quiescence of the specific lesions	{ Erythema nodosum or multi-forme of leprosy
	{	(b) As the first manifestation of the disease		{ Lepromatous lepra reaction
				{ Erythema nodosum or multi-forme
(C) Group I.	{	In the course of chronic evolution		{ Reactional tuberculoid leprosy Acute lepromatization Erythema nodosum or multi-forme

Apart from reactions which occur as the first manifestations of the disease, and the changes indicated in the undifferentiated form, (1) in

tuberculoid leprosy there is a flaring-up of the skin lesions which then become part of the chronic condition or initiate a process which is no longer inactive, in either case with change for the worse; and (2) in lepromatous leprosy there are (a) an acute flare-up of the pre-existing disease ("acute lepromatization"), with change for the worse, and (b) appearance of a new kind of element, followed by striking clinical improvement. —H. W. W.

RYRIE, G. A. The psychology of leprosy. *Lep. Rev.* **22** (1951) 13-24.

In this article the writer attempts to probe into the psychology of all —laymen, doctors and patients—who have to deal with leprosy. He says that this psychology is abnormal and is based on an irrational fear which is activated by an inherent sense of guilt. As in the animal world, there is a tendency to isolate and destroy any of the same species that is abnormal in morphology or color, so in human history is seen the impulse to destroy any who deviate from physical, mental or spiritual orthodoxy. This impulse has to be rationalized and dogmatized. In the case of leprosy this takes the form: leprosy is dirty, it is venereal, it is highly infectious. Considering first the layman who has to deal with leprosy, this dogma gets built up into one manifestation or another of the death wish. In olden days this took the form of a ritual death ceremony, but now sufferers are isolated in colonies where they cannot be seen and so are potentially dead to the world. Along with this is the handwashing mania ceremony, a symbol like Pilate's of the wish to wash off a sense of guilt. This guilt complex is seen in the extreme unwillingness of governments to tackle the leprosy problem seriously and rationally, and in the public by the instinct to humiliate the sufferers by giving them standards of nutrition, hygiene, buildings and general amenities in the average leprosy settlement far below those which appertain to the analogous general hospital. It also tends to produce a sense of guilty pride in which we say that leprosy is a disease of dirt and sin, but as we are a civilized people with high standards of living therefore leprosy cannot happen to us. Turning next to doctors and other leprosy workers he says that there is far too much irrational leprophobia, aroused and inflamed by the guilt complex. Elaborate and unnecessary precautions are taken. Only a tiny proportion of the leprosy patients undergo the full and adequate physical examination considered necessary in any first-rate hospital. It is quite impossible for the doctor to conduct an adequate examination if he is primarily worried about himself and not the patient. This fear is rationalized and the time is spent examining slides, discussing classification, etc., that should be spent on the patient; and so the doctor's ego is boosted. If a leprosy worker is to do first-rate work he must be trained in the psychological understanding of this guilt punishment complex. Finally turning to the patient himself, one sees the guilt complex manifest in the immediate and overwhelming sense of fear and dismay which occurs when he finds he has leprosy. This is not only in Christian lands where the Bible is known, but also in many other countries. His reactions later when in a colony will largely depend on the attitude of the staff. In badly neglected colonies there may be much resentment and viciousness. Resentment will also be caused by crippling and a sense of frustration. Leprosy patients are usually very grateful where there is real understanding. This gratitude, however, often disappears after they are cured, due largely to an intense desire to get away

from all unpleasant memories. As a result of modern treatment a remarkable change is already taking place in the leprosy patient, and with the ultimate abolishment of the cruel system of segregation and the adoption of a more humane outlook an article on the leprosy complex may no longer be necessary.

—G. O. TEICHMANN

ARNOLD, H. L., JR. & SIMONS, R. D. G. PH. Over het thans niet meer gebruikte begrip lepra mixta. [The abandoned term lepra mixta.] *Nederlandsch Tijdschr. v. Geneesk.* **1** (1949) 259-261.

The history of the terminology of leprosy is reviewed, showing how the expression "lepra mixta" originated and how, with a return to Hansen's dual biologic classification at the Havana Congress in 1948, it came to be entirely abandoned.

—AUTHORS' SUMMARY

ARGÜELLO PITT, L. & ALBERTO CONSIGLI, C. Manifestaciones iniciales de la lepra observadas en convivientes. [Initial lesions of leprosy seen in contacts.] *Actas Dermo-Sif.* **42** (1950) 3-11.

The authors report on the results of their experiences in the investigation of 596 contacts examined in their dispensary, of whom 67 (11.2%) were found to have leprosy, 11 (1.8%) to be suspicious, and 518 (86.8%) healthy. Among the 67 patients, 41 had initial lesions. These included 16 who had previously been examined and considered healthy, and therefore the appearance of the lesions was seen in them; the other 25 cases had come to the dispensary because of the recent appearance of lesions.

—F. CONTRERAS DUEÑAS

DAUDÉN VALLS, F. Lesión liquenoide anular como manifestación inicial de lepra tuberculoides. [Annular lichenoid lesion as the initial symptom of tuberculoid leprosy.] *Actas Dermo-Sif.* **41** (1950) 724-728.

This is a clinical history of a 9-year-old boy of a lepromatous father with a single lesion of about 2 years duration which has remained unchanged since the onset. The lesion is round, smaller than a 5-centimos piece, and surrounded by a halo of small lichenoid papules. The histological examination revealed epithelioid cells and a few giant cells, but no bacilli. The Fernandez and Mitsuda reactions were positive. This initial lesion of tuberculoid leprosy has been described in other countries, but it is believed to be the first case of the kind seen in Spain, where achromic lesions known as "macula alba" are much more frequent.

—F. CONTRERAS DUEÑAS

BASSET, A. & ALBAHARY, C. Sur un cas de lèpre cutanéoganglionnaire. [A case of cutaneo-ganglionar leprosy.] *Bull. Soc. française Derm. et Syph.* **57** (1950) 172-174.

A report of a young adult who contracted leprosy in Palestine and in whom the intensity of the reaction of the lymph nodes and spleen gave rise to the question of the coexistence of Hodgkin's disease. The disease was shortened by a grave hemorrhagic-leucopenic syndrome in the genesis of which the sulfones and radiotherapy must have played a determining role.

—R. CHAUSSINAND

DASSEN, R. & DE STEFANO, R. Lepra subaguda simulando mononucleosis infecciosa aguda. [Subacute leprosy simulating acute infectious mononucleosis.] *Rev. Asoc. Méd. argentina* **64** (1950) 465-467.

Leprosy may give rise to cutaneous, septicemic, ganglionic, respiratory and other syndromes, the etiology of which may be overlooked if one

does not bear this fact in mind. A case of Libmansacks' syndrome with deforming rheumatism and a picture of infectious mononucleosis is reported. The several attending clinicians could not give the authentic cause. Attention is called to the fact that in Argentina one must bear leprosy in mind when confronted with similar pictures. —G. BASOMBRÍO

GUILLÉN PRATS, J. Estudio fotográfico comparativo entre la lepra y otras dermatosis. [Comparative photographic study of leprosy and other dermatoses.] *Fontilles* 2 (1949) 237-240.

Photographs—without explanations—of several dermatoses: eruptive tuberculous xanthoma, tertiary syphilids, premycotic eruption and scleroderma, which morphologically could be confused with some of the lesions of leprosy. With these pictures are presented similar ones of specific leprosy lesions. —F. CONTRERAS DUEÑAS

RUSSELL, B. Lepra, psoriasis of the Willan-Plumbe syndrome. *British J. Derm. & Syph.* 62 (1950) 358-361.

This article indicates the great confusion that existed about a number of skin diseases until the middle of the 19th century, and demonstrates the caution needed in estimating the prevalence of leprosy in Europe during the Middle Ages. The writer states that the term "lepra" (scaly) was long applied to a number of "scaly tetter," including macular leprosy, psoriasis, dry eczema, etc., whereas "psora" (the itch) was applied to scabies, impetigo, and various forms of pityriasis. In 1808 Robert Willan described psoriasis and discarded the name "lepra vulgaris" by which it had been previously known, because "lepra" had been used by translators of the Arabian physicians to denote elephantiasis graecorum, now known as lepromatous leprosy. He adopted the word psoriasis and thus created worse confusion than before, so that in Green's Diseases of the Skin published in 1837 lepra was synonymous with alphas, vitiligo, morphea, lepra alphoides and also Greek elephantiasis; and psoriasis was given as including lepra melas, psora leprosa, pityriasis and scabies, and so "confusion now has made its masterpiece." —G. O. TEICHMANN

DHARMENDRA & CHATTERJI, S. N. Lesions simulating leprosy caused by a stab wound in the thigh. *Lep. India* 22 (1950) 162-163.

The authors report a case presenting anesthesia of the lateral and posterior aspects of lower part of the leg and of the heel and sole of the foot but not over the medial side of the arch of the foot, perforating ulcer of the heel, drop-foot, and a scar on the outer aspect of the upper part of the thigh, all on the left side. There was no thickening of cutaneous nerves or nerve-trunks of the affected limb and no visible macule, and no leprosy bacilli were found in smears. Thus there was nothing definite on which to diagnose the case as leprosy, although it simulated closely the trophic lesions of the disease. From the history of a deep stab injury over the thigh which occurred 5 months previously it was concluded that the condition was caused by incomplete division of the sciatic nerve.

—AUTHORS' ABSTRACT

LASTRA SOUBRIER, J. Distribución y epidemiología de la lepra. Estudio particular de la endemia española. [Distribution and epidemiology of leprosy, with a special study of the disease in Spain.] *Fontilles* 2 (1950) 357-366.

- LASTRA SOUBRIER, J. Bacteriología de la infección leprosa. [Bacteriology of leprosy.] Fontilles **2** (1950) 367-374.
- CONTRERAS DUEÑAS, F. Patología general, formas clínicas. Historia de las clasificaciones. [General pathology and clinical forms. A survey of classification.] Fontilles **2** (1950) 375-386.
- LLOMBART, A. Histopatología de la lepra y de sus formas clínicas en particular. [Histopathology of leprosy with special reference to its clinical forms.] Fontilles **2** (1950) 387-399.
- GUILLÉN PRATS, J. Lepra incaracterística; sintomatología y evolución clínica. [Indeterminate leprosy; symptoms and clinical evolution.] Fontilles **2** (1950) 400-424.

These five items consist of the lectures of the second course for the certificate of leprologist, held at Fontilles in September 1949. The titles of the first two suffice to indicate the nature of the presentations.

The third lecture (Contreras) covered the subjects of general pathology, modes of transmission, penetration of bacilli, period of incubation, spread of the infection, clinical subdivisions, reactional stages, history of classification, and control.

The fourth lecture (Llombart), by the head of the Department of Histology and Pathological Anatomy of the University of Valencia and pathologist of Fontilles, discusses in broad outlines the pathological anatomy of leprosy, describing the lepromatous and tuberculoid polar types and the undifferentiated form, and dwells on the different varieties of nerve lesions found in those forms. This review has the significance of being given by an eminent teacher who since 1926 has dedicated himself to the study of the origin of the lepra cells.

The fifth lecture (Guillén) discusses the symptoms of the indeterminate form of leprosy, its progressive and regressive development, and its mutations and transformations to the two polar forms. At the end the author expressed doubts which he still has about this variety, and gives his personal views of the matter.

—F. CONTRERAS DUEÑAS

- DHARMENDRA, CHATTERJEE, K. R. & BOSE, R. Diamino-diphenyl-sulphone (DDS) in the treatment of leprosy: Pharmacological aspects. *Lep. India* **22** (1950) 174-201.

The investigations here reported were undertaken to answer the two outstanding questions regarding the use of DDS, i.e., the most suitable dose and the best method of administration. The study, made in 68 advanced lepromatous cases treated for varying periods with various doses given by mouth and by intramuscular injection (suspension in arachis oil with wax), included the absorption of the drug, the resulting blood concentration and its maintenance, excretion in the urine, concentration in the skin, sweat, saliva and tears, and blood examinations for anemia and tests for liver damage. It was found that appreciable amounts of the drug appeared in the blood as soon as 5 minutes after the administration of even the small dose of 10 mgm. by either route, the highest concentrations being reached after from 4 to 8 hours, varying with the daily dose; it was 1.5 mgm.% on a dosage of 300 mgm. a day. The concentration after intramuscular administration was slightly lower than after oral administration. When the treatment was given on alternate days or twice

a week, the blood concentrations at all hours were considerably lower than after daily administration of the same dose, whichever route was used. The average range of blood concentration with the oral route for a dose of 200 mgm. daily was between 1.4 and 1.0 mgm.%; with the intramuscular route the 12-hourly variations were less marked. With a dose of 100 mgm. given twice daily, the blood concentration at 12 and 24 hours was about 1 mgm.%. With a dosage of 100 to 200 mgm., even a single dose gave traces of the drug in the blood and urine for about 8 to 12 days, and after repeated administration this period was much longer, up to 35 days. This period was slightly longer after intramuscular injection than after oral administration. Regarding excretion, the drug appeared in the urine 20 to 30 minutes after oral or parenteral administration of even as small a dose as 10 mgm. When the treatment had been continued for some time, 60% to 75% of the daily intake could be accounted for in the urine. The urine concentrations were always higher (about 10 times) than those of the blood, and after cessation of treatment the drug could be found longer in the urine than in the blood. This relationship between the blood and urine concentrations holds good for both routes of administration. No evidence was found of concentration of the drug by the skin; the concentrations in blood, skin, sweat, saliva and tears were of the same order. Regarding toxicity, with a dose of 50 mgm. given once or twice daily no febrile or eye reactions were seen, but they were frequent on doses of from 100 to 300 mgm., the incidence rising with the dose. The dose of 300 mgm. a day was discarded after a short trial because of toxicity. Other toxic symptoms included a feeling of weakness and a burning sensation in hands and feet, especially in the early part of the treatment. In a few patients signs of mental depression were evident. It is concluded that oral administration of DDS is the method of choice. It is best to give the total daily quantity in two equal divided doses. The maximum daily dose should not exceed 200 mgm. Treatment should be started with 50 mgm. daily, the dose gradually increased to 50 mgm. twice daily, and worked up to 100 mgm. twice daily in about 4 weeks.

—AUTHORS' ABSTRACT

GATÉ, J. & ROUSSET, J. Limite d'utilisation de la sulfone dans le traitement de la lèpre. [Limits to the use of sulfone in the treatment of leprosy.] Bull. Derm. Syph. **57** (1950) 228-229.

From the results obtained in 7 cases, the authors conclude that the parent sulfone, a remarkably active drug, should be reserved only for young patients without any organic disturbance other than leprosy. It should not be used for aged subjects, or for those presenting any type whatever of organic deficiency, especially anemia. Furthermore, its administration by series with quite long rest intervals—from one to several months—is preferable to virtually continuous administration.

—R. CHAUSSINAND

SCHNEIDER, J. & RAYROUX, J. Traitement de la lèpre par les sulfones. Concentration sanguine et élimination urinaire de la diamino-diphényl-sulfone et d'un de ses dérivés après injections espacées de suspensions huileuses. [Treatment of leprosy by sulfones; blood concentration and urinary elimination of DDS and one of its derivatives after injections of oily suspensions with rest intervals.] Bull. Soc. Path. exot. **43** (1950) 452-462.

Diaminodiphenyl sulfone, in a 25% suspension in chaulmoogra ethyl esters, permits the maintaining of a constant sulfone concentration for a week when injected in weekly doses of 0.625 to 1.0 gm., or 1.25 gm. given every 15 days.

—R. CHAUSSINAND

SCHNEIDER, J. Etat actuel de l'expérimentation de nouvelles thérapeutiques de la lèpre. (Thiosémicarbazone—suspensions huileuses de D.D.S.). [Experimentation with new drugs in leprosy. (Thiosemicarbazone; oily suspensions of DDS.] *Rev. brasileira Leprol.* **18** (1950) 186-205.

One of the present problems is to find a medicament which has a more radical effect on the leprosy bacilli than the sulfones have. A second problem is to obtain a drug or method suitable for mass treatment under conditions such as exist in places like Africa, where dependence must be placed largely on mobile units; and, because not all patients can be entrusted with supplies to be used as directed, that should be an injectible drug which is absorbed slowly and can be given weekly or, better, twice a month. In connection with the first problem, the author has been using a thiosemicarbazone (TB-1). In Paris one case, resistant to all other treatments, showed remarkable results, and so 11 others were put under this treatment at Bamako. Clinical results almost as good as those obtained with sulfones were seen in a matter of months (photographs of 3 cases), although as with the sulfones the bacteriological results were less marked. The dosage used was 0.1 to 0.2 gm. per day, with which few side effects appeared. In connection with the second problem, DDS suspended in chaulmoogra ethyl esters have been used. A study made in Paris [see preceding abstract] showed that a sulfone blood level of 0.2 mgm.% (expressed as DDS) is sufficient to obtain satisfactory clinical effects. After injection of oily suspensions, cimédone (sulphetrone) was eliminated very rapidly and completely, but DDS only slowly and incompletely, and a blood level was obtained which remained constant for a week when the dose injected was sufficient. In an experiment commenced 6 months before the time of this report, 35 patients were being given 1.25 gm. of DDS in 5 cc. of ethyl chaulmoogra—the effect which itself in leprosy is not negligible—given intramuscularly twice a month (2.5 gm. of DDS per month). Tolerance has been perfect, although one lepromatous case has had lepra reaction, and no rest periods have been necessary. Clinical changes were observed within two months, in lepromatous and tuberculoid cases alike (photographs of 3 cases treated for 6 months). This has been comparable, it is stated, with those obtained with 200 mgm. of DDS or 3 gm. of cimédone given daily by mouth. If these early results are confirmed, there will be an incontestible advantage in being able to administer treatments only twice a month.

—H. W. W.

FLOCH, H., DESTOMBES, P. & LECULLER, A. Sur l'emploi de la diamino-diphényl-sulfone en suspension huileuse. [On the use of DDS in oil suspension.] *Inst. Pasteur Guyane et Terr. Inini, Publ. No. 215*, September 1950. *Also, Bull. Soc. Path. exot.* **44** (1951) 103-110.

The DDS levels in the blood and the urine of patients treated for several months by weekly injections of 1.2 gm. of DDS suspended in oil (10 cc. of peanut or chaulmoogra oil), and also the findings in patients receiving similar injections at intervals of two weeks, do not permit recommending either of these techniques, although clinical accidents have

not been observed. With weekly injections the blood concentrations are very irregular, due to the irregularity of the absorption of the oil added to the delayed absorption of the drug itself, the findings ranging from mere traces to 25 mgm. of DDS in 100 cc. of blood; and this cannot be said to be without danger. With fortnightly injections the dosage is clearly insufficient, and there may be a risk in the long run of causing sulfone resistance on the part of the bacillus. Twice weekly injections of 600 mgm. of DDS suspended in physiological saline is unquestionably preferable to either of these methods. —AUTHORS' ABSTRACT.

- MAUZÉ, J. A propos du traitement de la maladie de Hansen par le dérivé 4,4 de la diaminodiphényl sulfone. [Treatment of leprosy by diasone.] *Bull. Soc. Path. exot.* **43** (1950) 253-254.

The original title may be misleading; in a footnote it is explained that the drug employed is known in the United States as diasone. After the Havana Congress a number of cases at the Désirade leprosarium were put under that drug, one of them the subject of this brief report. The patient was a Negro who had been almost completely blind for 2½ years, and who also suffered from an extensive and severe rheumatoid condition. Both sight and the rheumatoid pains began to improve by the third week of treatment, and in the seventh week the patient could read without glasses. In the fourth month this improvement still persisted, and the pains were absent except during occasional reactions. Painful rheumatoid attacks are not infrequent in patients under diasone, but they subside on suspending the drug and administering large doses of alkalines.

—R. CHAUSSINAND

- LAVIRON, P., LAURET, L. & SCHNEIDER, J. Résultats d'un an d'essais de traitement de la lèpre à l'Institut Marchoux de Bamako, par un sulfone: le p-di(aminophényl) di(y-phényl N-propylamino)phényltétrasilfonate de sodium (3.668 R.P. ou Cimédone). [Treatment of leprosy with sulphetrone.] *Bull. Soc. française Derm. et Syph.* **56** (1949) 181-186.

Cimédone [equivalent to sulphetrone], used in 27 cases at Bamako in 1948, proved to be little toxic and very active. Daily intravenous injections were given in 16 cases, but 7 patients had to quit because of sclerosis of veins and other troubles. It was better borne when given by mouth; the maximum daily dosage was 5 gm., although 3 gm. usually sufficed. Sickness was prevented by sodium bicarbonate; anemia was slight and easily controlled. In 5 cases reactions occurred, followed by regression of symptoms. Improvement was similar to that after other sulfones. There was always a notable diminution but not complete elimination of bacilli, together with morphological changes.—[From abstract in *Trop. Dis. Bull.* **47** (1950) 549.]

- LAVIRON, P. & LAURET, L. L'action du Cimédone ou 3.668 RP: le p-di(aminophényl diphenyl N propylamino) phényltétrasilfonate de sodium dans le traitement de la lèpre; deuxième note. [The action of sulphetrone in treatment; second note.] *Bull. Soc. française Derm. et Syph.* **56** (1949) 466-470.

The results with cimédone [sulphetrone] previously reported [see preceding abstract] were confirmed by the continuation of the treatment

of patients who had been given it for 20 months and in other patients, the total now 52, of whom 96% have improved. Oral administration is the method of choice. Anemia has never made it necessary to interrupt treatment. Emetine can be given with the cimédone during lepra reactions. Apart from its effects on the cutaneous lesions and the bacilli, cimédone unquestionably acts on certain trophic disturbances, the alopecia and the disturbances of sensation.—[From abstract in *Excerpta Med.* 4 (1950) 397.]

- GATÉ, J. & ROUSSET, J. Traitement de la lèpre par le 3.668 RP (*Cimédone*). [Treatment of leprosy with 3.668 RP (*cimédone*).] Bull. Soc. française Derm. et Syph. 56 (1949) 397-398.

Fifteen cases were treated with this sulfone [sulphetrone] in dosage given in detail. Striking results were obtained in all forms of the disease. Tolerance proved satisfactory, provided iron or protein hydrolysates were administered simultaneously and the blood count and hemoglobin level were watched.—[From abstract in *Excerpta Med.* 4 (1950) 396.]

- CONTRERAS DUEÑAS, F., GUILLÉN PRATS, J. & TORRELLA, E. Nuestra experiencia sobre el tratamiento de la lepra con sulphetrone. [Experience in the treatment of leprosy with sulphetrone.] Fontilles 2 (1949) 305-311.

From a trial of this sulfone product, the authors believe that it is somewhat less toxic than the promin or diasone, which they had used earlier, but on the other hand it is less efficacious. Sometimes they have found it advisable to use this drug alone in cases where the other better known sulfones are not well tolerated. —AUTHORS' ABSTRACT

- HERRERA, G. Seis meses de tratamiento de la lepra con propiosulfona. [Six months of treatment with propiosulfone.] Rev. med. Dominicana 5 (1950) No. 3.

Illustrating this short-term report of the treatment of 11 cases are photographs which show distinct retrogression of lesions, more marked in the 3 reactional tuberculoid cases treated than in the 7 lepromatous ones or in one with torpid tuberculoid lesions. [A later report of this work will appear in the next issue of THE JOURNAL.] —H. W. W.

- FLOCH, H. & DESTOMBES, P. Traitement de la lèpre par les associations sulfonées. [Treatment of leprosy by combined sulfones.] Inst. Pasteur Guyane et Terr. Inini, Publ. No. 214, September 1950.

The question of combinations of sulfonamides has been much studied for some years, and it has been possible in that way to overcome the limits of tolerance and thereby obtain high blood levels of those drugs while reducing the risks of toxic side-effects. Along this line of thought the authors have studied the effects of combining two sulfones: the parent substance (DDS) and 1500F (succinyl DDS). This combination can be defended theoretically on ground that, *in vivo*, DDS is a directly active product while 1500F acts at least chiefly as the whole (monosubstituted) molecule. On the other hand, the use of DDS and a disubstituted sulfone, or combinations of the latter, seems less defensible since these drugs probably act only by the DDS base. The experiments with the combination have been carried out in both animals and patients. In mice, the combination in corresponding doses proved less toxic than the double dose of either

one of the two drugs alone. Although it is often difficult to interpret clinically such an experiment in man in a disease like leprosy, the authors believe that the combination employed is less toxic than either of the drugs would be when used alone in equivalent doses; the patient can be given a larger dose of sulfones within a given limit of toxicity. This is important, for the patients should be given the maximum nontoxic dose. The combination is also of much interest in connection with the treatment of cases with a tendency to lepra reaction. In them it is necessary to remain below a threshold dose, and with the combination at that level they will be more certain to receive an active dose. —AUTHORS' ABSTRACT

322 ✓
FLOCH, H. & DESTOMBES, P. Traitement des formes indifférenciées et tuberculoides de la lèpre par les produits sulfonés. [Treatment of indeterminate and tuberculoid leprosy with sulfone drugs.] Inst. Pasteur Guyane et Terr. Inini, Publ. No. 204, February 1950. Also Bull. Soc. Path. exot. **43** (1950) 294-303.

In three years the authors have treated a total of 109 cases of indeterminate and tuberculoid leprosy with promin, diasone and disulone [DDS]. Of 72 cases of the former class, 24 improved (5 of them were prelepromatous, of which 4 improved and only 1 became lepromatous); of 30 minor tuberculoid cases, 15 improved; and of 7 reactional tuberculoids, 4 improved. Chaulmoogra treatment has given nearly as good results, except that it has not prevented reacting tuberculoid cases from becoming lepromatous. It is regarded as proved that sulfone treatment is favorable for such cases and that such treatment should have definitely significant effects in antileprosy control. —AUTHORS' ABSTRACT

✓ BOLGERT, M., MONTEL, L. S. & MOLLINADO, R. Essais de traitement de la lèpre par le P. A. S. Note préliminaire. [Trial of PAS in the treatment of leprosy; preliminary note.] Bull. Soc. Path. exot. **43** (1950) 390-391.

A preliminary note on the favorable results obtained with PAS after treatment for a maximum of 2 months in a case of tuberculoid leprosy, a case with plantar perforating ulcer, and a case of trophoneurotic type.

—R. CHAUSSINAND

610 ✓ TORRELLA, E. Desaparición del bacilo de Hansen por la acción de las sulfonas. [Disappearance of Hansen bacilli due to effect of sulfones.] Fontilles **2** (1949) 315.

A short clinical note on a case of urethritis that was originally gonococcal. The gonococcus disappeared with the use of penicillin, but the urethral discharge did not stop. It was then found to contain *M. leprae*. Under sulfone treatment the bacilli disappeared and the long persistent urethritis healed. —F. CONTRERAS DUEÑAS

✓ ROMERO JORDAN, O. & GRAU TRIANA, J. Resultados obtenidos con la dihidroestreptomycina en la reacción leprótica. [Results obtained with dihydrostreptomycin in lepra reaction.] Médica (Matanzas) **8** (1949) 123-127.

The authors report very satisfactory results in 4 cases of lepromatous lepra reaction treated with a daily dose of 1 gm. of dihydrostreptomycin in four 250 mgm. injections. All of them had been treated for several days with classical remedies without amelioration. The total dose required for

complete remission varied from 8 to 20 gm. The success of the drug is ascribed to its "action on the bacillus and its toxic products and not to any antiallergic or desensitizing action." —F. R. TIAN

CASTRO PALOMINO, J., CURBELO, A., GRAU TRIANA, J. & MARQUEZ, V. Resultados terapéuticos obtenidos con la aureomicina en dos casos de lepra. [Therapeutic results with aureomycin in 2 cases of leprosy.] Bol. Soc. cubana Dermat. y Sif. **6** (1949) 121.

The authors report two cases of lepromatous leprosy treated for three months with aureomycin, the total doses administered being 225 and 249 gm. respectively. The patients' tolerance of the drug was good except for some nausea and vomiting, which did not necessitate interruption of treatment. There was no clinical, bacteriological or pathological amelioration.

—F. R. TIAN

[EDITORIAL] Thiosemicarbazone in the treatment of leprosy. Lep. India **22** (1950) 171-173.

From a brief review of the work done so far with these compounds in experimental and human tuberculosis and limited trials in leprosy, it is presumed that the thiosemicarbazones have opened a new and fruitful field for therapeutic investigations in leprosy, and that this may result in the introduction of another potent remedy for the treatment of the disease, in addition to sulfone therapy. It is possible that a combination of the two remedies may be more effective than either alone, since the mode of action of the two groups appears to be different. —DHARMENDRA

FERNÁNDEZ, J. M. M., CARBONI, E. A., TOMASSINO, P. & GIMÉNEZ, M. M. Estudio hematológico de los enfermos de lepra tratados con diasona. [Hematological study of leprosy patients treated with diasone.] Rev. méd. Rosario **39** (1949) 10-18.

In the first part of this paper the authors discuss the characteristics of the anemia provoked by diasone, describing its clinical manifestations, its frequency, and its relation to the intensity of the treatment and its evolution. The alterations are confined to the red cells, the other blood elements not being greatly affected. Anemia starts early in the first weeks of treatment, and as a rule recovers completely during the rest periods. In the second part the mechanism of this anemia is considered from a study of the patients treated with respect to reticulocytosis, urobilinuria, bilirubinemia, direct or indirect, and the cell resistance; in addition, in several cases biopsy material was obtained from the bone marrow. The trouble is not ascribed to the marrow since a good reticulocyte response has been observed in all cases and there is no leukopenia; the marrow biopsy reveals normal or increased erythroblastic activity and the medullary granulopoiesis also is normal or increased. It is believed, on the other hand, the drug acts as a hemolytic toxin, since there is a manifest tendency to lowering of globular resistance, urobilinemia is practically constant in all cases, there is an absence of biliary pigments in the urine, an absence of direct bilirubinemia, and in the majority of cases the determination of indirect bilirubinemia is negative. It is therefore concluded that diasone may provoke anemia by acting as a hemolytic toxin, that the anemia is generally mild in nature and does not necessitate interruption of treatment, and that the use of common antianemia drugs—iron, liver and vitamin B complex—exercises a favorable effect and increases the tolerance

of the organism to the drug.—[From authors' summary, supplied by G. Basombrío.]

BARNETSON, J. Osseous changes in neural leprosy. Radiological findings. *Acta Radiol.* **34** (1950) 47-56.

This paper records the results of a survey [see original article in this issue] of the radiological changes in the bones of the hands and feet of 107 adult native South African cases of neural leprosy. The findings, illustrated by 33 excellent radiographs, show that in early cases there is notching of the tufts of the terminal phalanges, going on later to increasing absorption until only the base remains. The changes are similar in the hands and feet, but are usually more advanced in the feet. They are bilateral, but rarely symmetrical. In advanced cases the bone atrophy extends to all of the phalanges and the metatarsals, and may rarely involve the metacarpals. Osteosclerosis and sequestrum formation were rare in the absence of secondary infection; joint affection was usually associated with infection. Diffuse osteoporosis occasionally occurred.—[In part from abstract in *Trop. Dis. Bull.* **48** (1951) 161.] —J. REENSTIERNA

BARNETSON, J. Osseous changes in neural leprosy. Correlation between histopathological and radiological findings. *Acta Radiol.* **34** (1950) 57-64.

In this paper are correlated the findings in radiological and histological examinations of bones of the feet of five native South African patients, four being neural cases and one mixed. Fraying of distal margins of bones in early cases is associated with breaks in continuity of the cortex, the gaps being filled by connective tissue which extends from periosteum to marrow. In case of gross deformity, when no diffuse osteoporosis is visible radiologically, the cortical bone remains dense and of normal width up to the distal ends of the bones. When diffuse osteoporosis exists the cortical bone is narrowed, and evidence of active osteoclastic activity can usually be found. In concentric atrophy the cancellous bone undergoes absorption and the marrow cavity is greatly reduced in width, but the cortical bone remains intact. Active osteoclastic absorption of bone cannot always be detected; probably, on account of the extreme chronicity of bone absorption in neural leprosy, osteoclasts occur either intermittently or on such a slight scale that osteoclasts are scanty. The cause of myxomatous changes and fibrosis of bone marrow, which appears to increase in severity with the extent of bone change, is at present unknown. —R. MELSOM

WALLEMAN, O. J., MONTGOMERY, O. B. & FOARD, T. B. Acid-fast non-tubercle bacilli in paraffin. *Tech. Bull. American Soc. Clin. Path.* **21** (1951) 295.

The authors have found in tissue sections acid-fast bacilli which were proved to be derived from the tissue mat used in preparing sections. In their morphologic and staining characteristics they resembled those of *M. tuberculosis*, and several erroneous diagnosis of tuberculosis were made prior to their discovery. This microorganism could not be grown in culture as the tissue mat had to be heated to 56°C. to melt it, which had apparently killed the organisms. It is suggested that the bacilli may have been *M. phlei*. —F. A. JOHANSEN

- 6 POWELL, M. E. & ARONSON, J. D. Immersion oil as a possible source of diagnostic errors. *American Rev. Tuberc.* **63** (1951) 717.

Among the sources of error in examining slides for tubercle bacilli are the presence of saprophytic acid-fast bacilli in the water used, and of acid-fast bacilli on previously used and improperly cleaned slides or on the surface of the microscope lens. Artifacts, such as scratches or imperfections in the slides, or paraffin particles in the specimen, may simulate such bacilli. Another source of extraneous acid-fast bacilli has been found in the applicator used in applying immersion oil. This had been contaminated by contact with slides carrying smears of acid-fast bacilli, which had been transferred by the applicator to other slides and to the oil. The consequences of such contamination from a diagnostic point of view are obvious. It is recommended that immersion oil be applied only by some disposable type of applicator such as a toothpick, which may be used once and then discarded.

—F. A. JOHANSEN

- 6 SOUZA CAMPOS, N., ROSEMBERG, J. & AUN, J. N. Da relação imunobiológica entre tuberculosis e lepra. II. Da inter-relação entre as reações tuberculínica e lepromínica em filhos de doentes de lepra. [Immunobiological relationship between tuberculosis and leprosy. II. The interrelationship between tuberculin and lepromin reactions in children of leprosy parents.] *Rev. brasileira Leprol.* **17** (1950) 117-127 (summary in English and French).

At the Educandario Santa Teresinha, 185 healthy children of leprosy parents, 2 to 16 years old, have been tested with tuberculin (Mantoux, 1:10) and lepromin (classical Mitsuda-Hayashi technique). Of these children, 148 were confined immediately after birth (contact-free group). The other 37 were confined only after having lived with their parents for periods varying from one month to six years (contact group). Altogether, 45 (24.3%) proved to be Mantoux positive, while 129 (69.7%) reacted to lepromin. In the contact-free group, these tests gave 20.9% and 64.2% positive results, respectively. In the contact group they gave 37.8% and 91.9% positives. The tuberculin-sensitive cases in the contact-free group are explained on the ground of tuberculous contagion in the institution. Those in the contact group can be explained partly on that basis and partly by contagion before confinement. Comparing the results of the two tests, the lepromin reaction was positive in all of the 45 tuberculin-positive children, but in only 60% of the 140 tuberculin-negative cases. Considering the tuberculin negatives by groups, 64 (54.7%) of the 117 noncontacts were lepromin sensitive, against 20 (86.9%) of the 23 contacts. The high percentage of Mitsuda-sensitive children in the contact group as a whole must be mainly attributed, evidently, to infection by leprosy due to their having lived with their sick parents. On the other hand, however, the fact that there were no tuberculin-sensitive cases which were negative to the Mitsuda test shows well the role of tuberculous infection in the development of this reaction, especially clear in the contact-free children. Furthermore, with respect to the cases in the contact-free group (for whom leprosy contagion is out of the question) which proved to be Mitsuda positive but tuberculin negative, it is suggested that the cause may still be tuberculous infection in the institution. This suggestion is made because some of these children had reacted positively to tuberculin in a partial inquiry made six years before; loss of the tuberculin-sensitiveness in these

cases has been facilitated by the lack of new tuberculous superinfections. It is thus shown that, besides leprous infection itself, and other causes that still have to be elucidated, tuberculous infection is also responsible for the production of the positive lepromin reaction, as has already been proved by several researchers. However, the independence of the lepromin reaction from that to tuberculin is a patent fact. The organism which undergoes a primary infection by the Koch bacillus develops tuberculin-sensitiveness and, at the same time, begins to react to lepromin, so that the coexistence of the positive Mantoux and Mitsuda reactions reflects simply the exteriorization of two independent phenomena of different nature.—[From authors' summary.]

ROSEMBERG, J., AUN, J. N. & DE SOUZA CAMPOS, N. Da relação imunobiológica entre tuberculose e lepra. III. A lepromino-reação em crianças de descendência não leprosa vacinadas com BCG por via oral. Dissociação entre alergia tuberculínica e reação de Mitsuda. [Immunobiological relationship between tuberculosis and leprosy. III. The lepromin reaction in children of nonleprous parentage vaccinated orally with BCG; dissociation between tuberculin allergy and the Mitsuda reaction.] *Rev. brasileira Leprol.* **18** (1950) 128-143 (summary in English and French).

In the first report of this series [see *THE JOURNAL* **18** (1950) 555] the authors showed that oral administration of BCG to children who had been separated from their leprous parents at birth gave rise to lepromin positivity. The present report has to do with the behavior of the Mitsuda test in children of entirely healthy ancestry who had been vaccinated with BCG. The observations were made on 36 children interned in a crèche immediately upon birth or within a few days, all of whom had been vaccinated with BCG between the ages of 10 days and 34 months. After they had been proved to be tuberculin negative (Mantoux, 1:10), BCG was given by mouth as follows: 13 received a single 0.1 gm. dose, while 23 received daily progressive doses for 28 days, to a total of 1.19 gm. After the vaccination, 25 of the children became tuberculin sensitive at various time intervals, while 11 remained negative. The lepromin tests were made 10 months after the calmetization, when only one of these 25 children was still positive, the others having lost their sensitivity at times varying from 4 to 9 months before the lepromin testing. The Mitsuda reaction was frankly positive in all of the 36 children (100%). The promptness of the appearance of some of these reactions was striking. In certain cases definite infiltrative nodules could be observed as early as the second day, and they stayed thus or even increased in size until the final reading, 30 days after the test. In detail, 3 cases were found positive on the second day, 1 on the fourth, 7 on the seventh, 21 on the eleventh, 3 on the fifteenth, and 1 on the thirtieth day. The specificity of these reactions has been confirmed by histological examinations. No correlation has been found between the promptness or intensity of the Mitsuda response and the development or lack of development of postvaccination tuberculin sensitiveness. To investigate the degree of the dissociation between tuberculin allergy and the Mitsuda reaction, the authors tested 23 of these children for infratuberculinic sensitiveness (latent allergy). This test was made by intradermal inoculation of heat-killed BCG. Of 12 formerly tuberculin-sensitive children and 11 which had not developed tuberculin

allergy, there were 4 and 3 cases, respectively, which did not present any allergic substrate. It is important, therefore, to underline this complete dissociation found between tuberculin allergy and the reaction to lepromin. These facts strongly suggest that the Mitsuda reaction is determined by an antigenic fraction of the bacillary body that is different from the one which induces allergy. The fact that the tuberculin-positive organism (the hypersensitiveness caused either by virulent primary infection or by BCG vaccination) responds systematically to lepromin, shows a simple exteriorization of two phenomena of diverse nature unchained [conditioned?] by the bacterial antigenic complex. Once the hypersensitiveness has vanished, however, there remains a reactional state that brings about the lepromin reaction. Moreover, the latter may be developed without the former ever having appeared. Considering the dissociation of the phenomena of hypersensitiveness and immunity in tuberculosis, it has been suggested that the Mitsuda reaction unchained [conditioned?] by BCG may be connected with the immunity process of tuberculosis, being like the latter independent of hypersensitiveness. The mass positivization of the Mitsuda test by means of oral BCG vaccination of children of healthy parents isolated during the first days of life in contagion-free surroundings, is another proof of the absorption of the vaccine when given by mouth even in the cases that do not develop tuberculin sensitiveness. Emphasis is laid on the great practical importance of these findings in connection with the prophylaxis of leprosy. In view of the present belief that the positive lepromin expresses a state of resistance to leprosy infection, it is easy to understand the great benefit that will result for the fight against leprosy from mass BCG vaccination. Besides the antituberculosis protection conferred by calmetization, there will be also the advantage of making the people Mitsuda positive from the earliest age.—[From authors' summary.]

FLOCH, H. & DESTOMBES, P. Réactions concomittantes de Mitsuda et de von Pirquet chez 128 enfants atteints de lèpre tuberculoïde et indifférenciée. [Concomittant Mitsuda and von Pirquet reactions in 128 children with tuberculoid and indeterminate leprosy.] Inst. Pasteur Guyane et Terr. Inini, Publ. No. 197, October 1949. Also, Rev. brasileira Leprol. 18 (1950) 181-185.

Of 43 children with minor tuberculoid leprosy, 93% gave positive Mitsuda reactions, and of 39 indeterminate cases, 45% were positive, these results being normal for these categories. Reactions to tuberculin (von Pirquet) were positive in 30 (23%) of 128 children, but more frequently in the tuberculoid cases (39%) than in the indeterminate ones (15%). (In the nonleprosy school children of Cayenne the authors had obtained analogous results: 20% in the 6-10-year group and 31% in those 11-15 years old.) Of the total, 54% showed concordance in the results of the two reactions, and 46% discordance. When there was a discordance it was almost always (54 of 59 cases, or 91%) that the Mitsuda was positive and the von Pirquet negative; in the few cases (5, or 9%) in which the reverse was observed the reaction to tuberculin was only slightly positive. These results, it is concluded, seem to confirm the opinion of Rogers and Muir that people living in highly tuberculous regions present a certain degree of resistance to leprosy, while on the contrary Hansen's disease provokes no antituberculosis immunity. If the Koch bacillus is capable of giving rise to a state of parallergy *vis-à-vis* the Hansen bacillus, the

reverse is far from being the general rule. This is not surprising. For one thing, the intrinsic pathogenic capacity of the Hansen bacillus is indisputably lower than that of the Koch bacillus. Furthermore, it is generally admitted that the former produces nothing analogous to tuberculin, the usual agent for the detection of tuberculosis allergy; leprosy allergy is principally demonstrated by means of microbial bodies (Mitsuda reaction) and not of more or less toxic products of metabolism. In connection with attempts that have been made to study comparatively tuberculosis and leprosy allergies with other antigens, it should be said that results obtained with the killed BCG antigen are different from those obtained with tuberculin in cuti- or intradermal reactions. In the case of tuberculosis itself, the interpretation of these differences is still a matter of discussion. It could only be the same, *a fortiori*, if one should attempt to study with analogous techniques the crossed immunological relations between leprosy and tuberculosis. [In connection with this article, see also one in THE JOURNAL 18 (1950) 177-183.] —AUTHORS' ABSTRACT

MONTESTRUC, E. & BLACHÉ, R. La vaccination au B.C.G. dans la prophylaxie de la lèpre. [BCG vaccination in the prophylaxis of leprosy.] Rev. Colon. Méd. Chirur. 15 (1950) 358-360.

The authors refer briefly to the immunological relationships between leprosy and tuberculosis and quote from the literature in support of the desirability of vaccinating with BCG infants who are exposed to contact with leprosy. As far back as 1938, the authors, in Martinique, saw a case of an infant whose mother suffered from lepromatous leprosy which rapidly became worse as her pregnancy advanced: she was thus highly infectious at the time of parturition. As the newborn infant could not be separated from the mother, it was thought desirable to undertake BCG vaccination. This infant, and two others born of the same mother in 1940 and 1941, were vaccinated with BCG at birth and kept under constant observation. All three were revaccinated regularly at 1, 3, 5 and 7 years. Today, at the ages of 12, 10, 9, they are in excellent health and show a 1/100 Mantoux reaction and a positive Mitsuda test. Four other similar cases are reported. These children are now aged 12, 9, 7 and 5 years. All were vaccinated with BCG at birth, and two were revaccinated at the age of one year. The eldest, at the age of 4 years, developed a suspicious skin lesion on the forearm. Close supervision was exercised. The lesion has now disappeared and all four children are without signs of leprosy. Thus seven children of 5 to 12 years living in close contact with highly infectious cases of leprosy and vaccinated with BCG at birth and usually later have not developed the disease. Four other infants, living in the same condition of exposure but not vaccinated with BCG, have developed leprosy at 11 months, 3, 5 and 7 years respectively; three are lepromatous and one tuberculoid in type. The authors note, despite the small number of cases, the encouraging possibility that BCG has an antileprosy action and should be tried for this purpose on an increasing scale in countries where leprosy is endemic.—[Abstract from *Trop. Dis. Bull.* 48 (1951) 270.]

CONTRERAS, F., GUILLÉN, J., LLOMBART, A. & TORELLA, E. Lepromina visceral. [Visceral lepromin.] Actas Dermo-Sif. 42 (1950) 241-257.

After considering the preparation of "visceral lepromin" from the cadaver, and the importance of this method because the efficacy of the new drugs is making it increasingly difficult to obtain suitable cutaneous

lepromas, the authors report their own experience. Autopsies are made on all patients who die in the Fontilles sanatorium, and when the visceral organs are found rich in bacilli they are used for the preparation of lepromin. This study has involved 22 cases, and 50% of the lepromins made from them have given results similar to those obtained with the leproma lepromin used as control. The results are similar regardless of the visceral organ used, although in the first biopsies [*sic*] the preparations made with lymph nodes seem to be superior, followed in order by the spleen and then the liver. These differences, as well as the specificity of the reactions, are clear from the histological examination of the reactions produced by these antigens, which usually show a typical tuberculoid structure.

—AUTHORS' ABSTRACT

- SATO, S. Animal experiment of leprosy especially in the chicken. *Sci. Rep. Res. Inst. Tohoku Univ., Ser. C*, **1** (1949) 22-29.

The author relates in summary many experiments with various animals, from fish to the monkey, in which no striking results were obtained except with the chicken. Positive results in that animal, transmissible from hen to hen, have been claimed by Ota and Nitto, but other Japanese workers have failed to confirm transmissibility. In his own work visceral lesions of some size were produced in chickens by multiple inoculations, and in some cases the histological findings were suggestive. Subtransplantation from chicken to chicken, however, were uniformly unsuccessful. Since the results did not satisfy Koch's postulates, the experiments are regarded as all negative, interesting as are the results seen in some of these animals.

—H. W. W.

- GOMES, J. M. & DE SOUZA, L. A. Culturas cromogenicas isoladas de lepromas murino e humano. [Chromogenic cultures isolated from murine and human lepromas.] *Arq. Fac. Hig. e Saude Publ. Univ. São Paulo* **3** (1949) No. 1 (summary in English).

A lengthy summary gives conclusions reached after 10 years of cultivation work, during which there were repeatedly isolated cultures of the same type of chromogenic acid-fast bacillus held to differ entirely from known cultures. Essential to success are (1) aging of the leproma, kept sterile in the refrigerator and sealed with paraffin, (2) drying of a loopful of material taken from a smooth culture, then diluting it with distilled water and incubating it for 24-48 hours before planting on Petragani's medium, and (3) keeping the cultures for periods of months until the acid-sensitive forms die off, leaving only those with greater capacity of adaption, the acid-fast bacilli—these being referred to as "methods of violence." Among various other things there appear "fungiform bodies," which are related to the "globies" of Marchoux (not the "globis" of Neisser) in the natural lesions. This article is illustrated by 11 colored drawings and 2 photomicrographs, the latter and 2 of the drawings showing acid-resistant fungiform bodies surrounded by acid-sensitive bacilli.

—H. W. W.

- HANKS, J. H. & SOULE, M. H. An attempt to confirm an "in vitro cultivation of rat leprosy organism." *J. Infect. Dis.* **85** (1949) 225-229.

The authors have attempted, with her assistance, to confirm Ashbel's report that acid-fast bacteria can be cultivated from rat lepromata after incubation for a few weeks to 1½ years and can be shown to cause rat

leprosy following reinoculation into rats. Two types of confirmatory experiments were carried out, (a) cultivation of acid-fast bacteria from rat lepromata by Ashbel's method on several kinds of media, and (b) the production of rat leprosy by inoculation of the cultures of acid-fast bacteria supplied by her. The results of the cultivation work after one year were negative. The inoculated animals were autopsied after 10-12 months and microscopic examinations were made of the lesion sites, the lymph nodes and the spleens. These failed to reveal acid-fast bacteria outside of the circumscribed local caseous abscesses. It was impossible to find collections of histiocytes or epithelioid cells which might suggest an incipient leprosy infection. This study is regarded as just another example of the many failures to confirm reported cultivation of the causative agents of human or rat leprosy or to validate the significance of the acid-fast organism which from time to time have been recovered from such lesions.

—F. A. JOHANSEN

ABSTRACTS FROM LA LEPRO, 1949

(Continued from preceding issue)

- HIGUCHI, K. On the amount of vitamin found in tropical lepra patients and co-dwellers' blood. *La Lepro* **18** (1949) 63-64 (in Japanese); English abstract, p. 55.

In Java, vitamin A (carotinoid) and vitamin C have been found to be slightly diminished in quantity in the blood of cutaneous leprosy cases. In neural leprosy there was little difference from healthy people. Judging from this survey, it seems that lack of vitamin is caused by the leprosy process, and is not to be considered a cause of the disease.—[From abstract.]

- SATO, S., MAYAMA, A., SUZUKI, T. & MATSUMOTO, S. ABO type and S type of lepra patients, especially relationship among relatives. *La Lepro* **18** (1949) 65-68 (in Japanese); English abstract, p. 55.

The ABO type test was made in 469 cases of leprosy, and the S type test in 406 cases, without finding any specific relation between abnormality types and constitution. Survey of 48 groups of patients among their kin revealed no specific relationship to the disease.—[From abstract.]

- KAWAKAMI, I. The fuchsin puffer staining of acid-fast bacterium in tissue. *La Lepro* **18** (1949) 69 (in Japanese); English abstract, p. 56.

The following buffer solution of Mommson proved very favorable for staining the acid-fast bacterium in tissue. Phenol 3% and fuchsin 0.1% are added to the buffer solution (1/10 N caustic soda solution, 21.6 cc.; 1/10 N glacial acetic acid, 27 cc., distilled water, 10 liters). This solution, at 30°-60°C., is applied in staining for 10 minutes.—[From abstract.]

- OTONARI, K. The effect of vitamin K on *Mycobacterium leprae murium*. *La Lepro* **18** (1949) 70-71 (in Japanese); English abstract, p. 56.

Vitamin K in various concentrations was added to test tubes containing this bacillus or was injected into previously inoculated white rats, without finding any material effect. However, in both cases it was found that to a slight degree the bacillus multiplied and the lepromas grew less actively than otherwise.—[From abstract.]

- ONISHI, K. Study on early reaction of the Mitsuda test (1). *La Lepro* **18** (1949) 72-74 (in Japanese); English abstract, p. 56.

Eighteen persons with leprosy, 72 healthy people, and 10 patients with syphilis and other dermatological conditions were tested with the filtered medium of cultures of the No. 920 strain of nonpathogenic acid-fast bacillus. The intracutaneous reaction to this material was investigated in comparison with the tuberculin reaction and the early Mitsuda reaction. The reaction to the filtered culture fluid consists of reddening and infiltration appearing in 24-48 hours. When these symptoms have disappeared no later reaction like that of Mitsuda ever appears. The reactions to the three materials used corresponded in 40-70% of cases. However, it can be ascertained that these three are activated by different factors.—[From abstract.]

- ICHIHARA, T. Anti-discoloring quality of *Mycobacterium leprae murium* influenced by lepra therapy. *La Lepro* **18** (1949) 78-81 (in Japanese); English abstract, p. 75.

The author has investigated the anti-discoloring quality of the mycobacterium in murine leprosy granulomas while he was treating them with tellurium, murine leprosy bacillus vaccine, and the vaccine with tellurium added. The group treated with the last of these preparations showed the weakest anti-discoloring quality, and the tellurium group next. The murine leprosy vaccine group showed a little stronger anti-discoloring quality than the others. This fact shows that the more the possibility of recovery, the weaker is the anti-discoloring quality.—[From abstract.]

- YOSHINAGA, T. The complement fixation reaction of leprosy. *La Lepro* **18** (1949) 82-85 (in Japanese); English abstract, p. 75.

The complement fixation reaction was made with lepra sera using lecithin and kephalin, both of which had been extracted from lepromas and murine leprosy granulomas, with the following results: (1) These lecithins showed about the same positive percentages (35.3%) as yolk lecithin. (2) The kephalins showed 17-24% lower positive rates than ox-brain kephalin (68.0%). (3) Ox-brain kephalin has priority as a non-specific reaction antigen; kephalin of leprosy tissues is of little value. (4) With rabbit serum immunized with *M. leprae*, the lecithin and kephalin from lepromas gave a higher positive rate than those from murine leprosy granulomas. On the other hand, with rabbit serum immunized with *M. leprae murium*, the lecithin and kephalin from murine leprosy gave higher results than those from human leprosy. (5) Kephalin showed a higher positive rate than lecithin.—[From abstract.]

- OGAWA, K. Experimentation on cultivation of *Mycobacterium leprae* by means of solid culture medium. *La Lepro* **18** (1949) 86-92 (in Japanese); English abstract, p. 75.

By using various solid culture media, many attempts have been made to cultivate *M. leprae murium*, and a few attempts have been made to cultivate *M. leprae*. Blood agar, Ueda culture medium, Kircher blood agar, Urabe Kaku culture medium, mucin-added potato culture medium, and glucosamin serum agar were successful in increasing the production of the mycobacteria. However, none of them could be transmitted through generations.—[From abstract.]

- OGAWA, K. Animal experimentation of leprosy. *La Lepro* **18** (1949) 93-101 (in Japanese); English abstract, p. 76.

Some attempts were made to accelerate the development of murine leprosy in the white mouse, while others were made to raise the infectivity of *M. leprae* to the mouse. The results obtained are as follows: (1) Eosin and erythrosin when applied to the inoculated region greatly accelerated the development of murine leprosy, while hematoporphyrin, fluorescein and bergamot oil did not show this effect. (2) The inoculation of *M. leprae murium* with addition of mucin of the submaxillary gland of the cow accelerated the development of symptoms. (3) The joint inoculation of a nonpathogenic acid-fast agent (No. 421) in the mouse also caused acceleration. (4) The inoculation of *M. leprae*, egg yolk and the non-pathogenic agents in the mouse stimulated the production of a leprosy lesion to a slight extent, but this reaction could not be transmitted through generations.—[From abstract.]

- TANIOKU, K. Leprosy therapy with diasone and promizole. *La Lepro* **18** (1949) 102-105 (in Japanese); English abstract, p. 76.

Sixty light cases were treated with promin, diasone and promizole, alone or in combination. In all cases the injection of a large amount at an early stage of the disease was found beneficial, especially promin and diasone given together with ferrum reductum against anemia.—[From abstract.]

- NAKAMURA, K. & ENDO, M. Studies on the cultivation of the leprosy bacillus. *La Lepro* **18** (1949) 106-108 (in Japanese); English abstract, p. 76.

Our new method for the cultivation of the leprosy bacillus and its results have been described elsewhere in detail [see *THE JOURNAL* **17** (1949) 169]. Since then, up to November 30, 1949, subcultures have been successful, as follows:

Strain	Generation	Period of cultivation
Rat leprosy bacilli		
Kumamoto strain	14th	1 year, 10 months
Fukuoka No. 1 strain	12th	1 year, 7 months
Keishicho strain	8th	1 year, 2 months
Human leprosy bacilli		
Watanabe strain	9th	1 year, 9 months
Asai strain	8th	1 year, 1 month
Suruga No. 2 strain	9th	1 year, 3 months
Mochizuki strain	7th	9 months
Suruga No. 5 strain	5th	7 months

Our method has been employed in several other laboratories. The most exact and reliable experiment has been a cooperative one in Tokyo, carried out with the same pathogenic material and the same culture media, and at the same place, by research workers of five different laboratories. In this work the first and second subcultures of human leprosy bacilli were successful. Thereafter, the cultivation was carried out using culture media that were prepared by our method in the different laboratories concerned, but the results were various. In some laboratories the third subculture was unsuccessful, while in another the 4th and 5th subcultures succeeded.

In our laboratory, subcultures have been successful and the cultivation is still being continued.—[From abstract.]

NISHIMURA, S. & HONDA, H. Supplementary experimentation on cultivation of *Mycobacterium leprae* and *Mycobacterium leprae murium* by means of Nakamura Endo mucin culture medium. (1st Report.) *La Lepro* **18** (1949) 109-116 (in Japanese); English abstract, p. 77.

In our laboratory we made 76 liquid culture media with cow submaxillary mucin, and using them we tried to cultivate the Kumamoto strain of murine leprosy 71 times, the Fukuoka strain 49 times, and human leprosy—11 strains—93 times. In no case did we observe any increase of the mycobacteria. However, we got an encouraging suggestion with *M. tuberculosis* in the No. 65 medium, which showed a remarkable growth of the bacilli. The experiments are being continued.—[From abstract.]

WATANABE, Y. & WATANABE, C. Animal experimentation of leprosy. *La Lepro* **18** (1949) 117-122 (in Japanese); English abstract, p. 77.

First we inoculated *M. leprae murium* into Nakamura's Endo mucin culture medium and a similar one, and animals were inoculated with this material. In a mucin-added liquid culture medium we could observe the existence of the mycobacterium for a considerably long period, but we could not be certain if the organisms had multiplied or were those which had been introduced. When large numbers of the bacilli were inoculated into white rats, some of them produced lepromas while others did not. We have concluded that *M. leprae murium* can exist in a mucin cultured medium longer than is usually supposed.—[From abstract.]

WATANABE, Y. Experimental research on leprosy. *La Lepro* **18** (1949) Spec. No. (July), 2-11 (in Japanese); English abstract, p. 1.

The author's long experience in the cultivation of *M. leprae* and animal inoculation work has led to the following conclusions: (1) Cultivation of *M. leprae* by means of about 300 kinds of culture media has proved negative. (2) Histological changes due to inoculation of *M. leprae* are found in the nodes located in the inoculated tissues and in adjacent lymphatic glands. They consist of lepra cells or epithelioid cells, but they have a tendency to regressive degeneration. (3) Cultivation of *M. leprae murium* was tried with hundreds of culture media. All attempts at cultivation *in vitro* in histological procedures, and the chicken-egg method have produced no colony of the bacteria. (4) Rat leprosy inoculation of guinea pigs, monkeys and hens only showed temporary abnormalities in the regions inoculated which seem to be pseudo-tubercular structures. (5) As to the filtrable form of *M. leprae murium*, the existence of the Keim was proved in Chamberland L2 and L3 filtration fluids. (6) Experiments with rats have revealed the transmission of the bacilli through the placenta.—[From abstract.]

FURUMI, K. On cepharanthin treatment of leprosy. *La Lepro* **18** (1949) Spec. No. (July), 12-18 (in Japanese); English abstract, p. 1.

The cepharanthin treatment has been used in 280 cases in the Rakusen-en. The dosage was 0.1-0.05 mgm., given daily or every other day, as determined for each patient, no dose exceeding 0.2 mgm. a day at the maximum. The duration of treatment ranged from 3 to 12 months. Macular cases showed the highest recovery rate, 66%. Next came nodular

and neural ulcers, both showing more than 40% recovery. Nodular leprosy showed 7% complete recovery. Neural paralysis was found difficult to cure. More than one-half of the patients did not stop losing hair. No patient got worse during the course of treatment; 60 to 80% of them showed increase of body weight. The sedimentation rate was usually reduced. In nodular leprosy the Mitsuda reaction proved more often positive than negative as the frequency of injections increased.—[From abstract.]

- 6 SATO, S. Cultivation and inoculation of *Mycobacteria leprae* on animals. *La Lepro* 18 (1949) Spec. No. (July), 19-27 (in Japanese); English abstract, p. 1.

Cultivation experiments: All attempts at cultivation of the leprosy bacillus in the slide cell with some 300 kinds of liquid, semi-liquid and solid media, pure and in symbiosis, and even by means of the chicken egg and tissue cultures, have failed to produce colonies. In some instances, microscopically we observed increase of the inoculated bacilli, for example with sliced pumpkin in Kirchner's solution with serum, the surface of the solution being covered with chicken fat. All culture media to which serum had been added showed favorable results. Anaerobic conditions were better than aerobic. Animal inoculations: Various methods of inoculation were employed with gerbels, goldfish, frogs, toads, birds such as the paddy-bird, canary, parrot, and love-bird, *Mus bacterianus*, *Rattus norvegicus*, *Cavia cobaya*, rabbits, dogs, Japanese monkeys, and hens. The results have been negative. Repeated injections of live bacilli into hens caused lesions similar to the changes of nodular leprosy, but those lesions proved negative with successive inoculation.—[From abstract.]