

LEPROSY REVIEW

The Quarterly Publication of
THE BRITISH EMPIRE LEPROSY RELIEF ASSOCIATION.

VOL. VIII. No. 1.

JANUARY, 1937.

Principal Contents:

Leper Survey of the Arabian
Peninsula.

The Origin of Leprosy in Brazil.

Leprosy in Ceylon.

Age Groups of Leper Patients
at Nauru.

Leprosy in Barotseland.

Adenoma Sebaceum et Acan-
thoides Cysticum resembling
Leprosy.

Reviews.

Reports.

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EDITOR - E. MUIR M.D.

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Literature Obtainable from the Association.

"WORSE THAN SLAVERY " Annual Report for 1935.

"LEPROSY REVIEW " Vols. I—VII. Issued quarterly by the Association. Price 2s.

"LEPROSY, DIAGNOSIS, TREATMENT AND PREVENTION " by Dr. E. Muir.

"LEPROSY IN INDIA " Vols. IV—IX. Issued quarterly by the Indian Council of the Association.

"ANNUAL REPORT, 1936." Indian Council of B.E.L.R.A.

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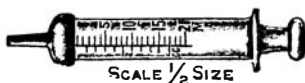


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Editorial

The Fourth International Leprosy Conference will, by the kind invitation of the Egyptian Government, meet in Cairo in March, 1938. The Conference is to begin on March 21st and the general sessions will probably last four days, though discussions in committee may continue for some five or six days longer.

The Conference is to be held under the auspices of the International Leprosy Association, of which all members will be invited. Others wishing to attend the Conference may do so by becoming members (subscription £1 1s.). It is hoped that the Governments of those lands in which leprosy is prevalent, and those that are interested in the solution of leprosy problems, will send one or more delegates to the conference.

The first three International Conferences were held at Berlin in 1897, at Bergen in 1909 and at Strassbourg in 1923. Each of these lasted some four or five days; papers were read and discussed and resolutions passed. The Berlin Conference resulted in the publication of the international journal "Lepra", in German, French and English, which continued until the beginning of the Great War.

After Strassbourg several national leprosy conferences were held in various countries. The League of Nations arranged for meetings of leprologists at Bangkok during the sessions of the Far Eastern Association of Tropical Medicine in December, 1930, at which Prophylaxis formed the principal discussion.

The Leonard Wood Memorial Conference met in the Philippines in January, 1931. Its meetings lasted two weeks. Papers were not read, but all subjects connected with leprosy were fully and frankly discussed both in full session and in committees. It was thus possible to cover ground and come to conclusions to an extent that would have been otherwise impossible. One of the principal results of this conference was the inauguration of the International Leprosy Association, under the auspices of which the Egyptian Conference is to meet.

The Leonard Wood Memorial Conference formed a basis of understanding regarding many questions where before there had been confusion. On this basis much has been built

during the last few years especially through the agency of the "International Journal of Leprosy". It is hoped that the Egyptian Conference will furnish an opportunity for consolidation.

To gain success in this respect it is important that the delegation should be widely representative and should include a sufficient number of leprologists of large experience. This will be a unique opportunity, and it is hoped that all governments and others concerned will do their utmost to make it a success.

Egypt, herself one of the oldest and yet one of the youngest countries, has known leprosy for some 6,000 years. Within recent times she has conducted an active anti-leprosy campaign.

On this account, and because of her central position between the East and the West, Egypt forms a peculiarly suitable location for such a conference. We acknowledge with gratitude her proffered hospitality and her desire to contribute towards the final control and elimination of this ancient disease.

* * * *

Those who are familiar with recent literature on leprosy must have been impressed by the growing interest taken within the last few years in methods of control. This interest is well illustrated by the present number of this journal. Readers will find in the various articles published signs of new and intense interest in many countries. Dr. Storm tells of his unique experiences in Arabia. Dr. de Souza Araujo describes the history and geography of leprosy and the intensive campaign in Brazil. Dr. Cochrane tells of the interest resulting from his original visit elaborates thorough public health measures for the control of leprosy which may be of great value in other small insular areas with well-organised public health services.

Nauru furnishes a unique example of the rapid spread of leprosy among a primitive people, which has been quickly taken in hand and efficiently controlled. The equality of the

sex incidence, and the fact that 15% must have been over the age of 25 when they received their first chance of infection, are points of special interest.

We draw our readers' attention to the interesting appeal from the Barotse Province of Northern Rhodesia where, following on Government and missionary effort, the native population are rousing themselves to the need and possibility of self-help in the fight against leprosy.

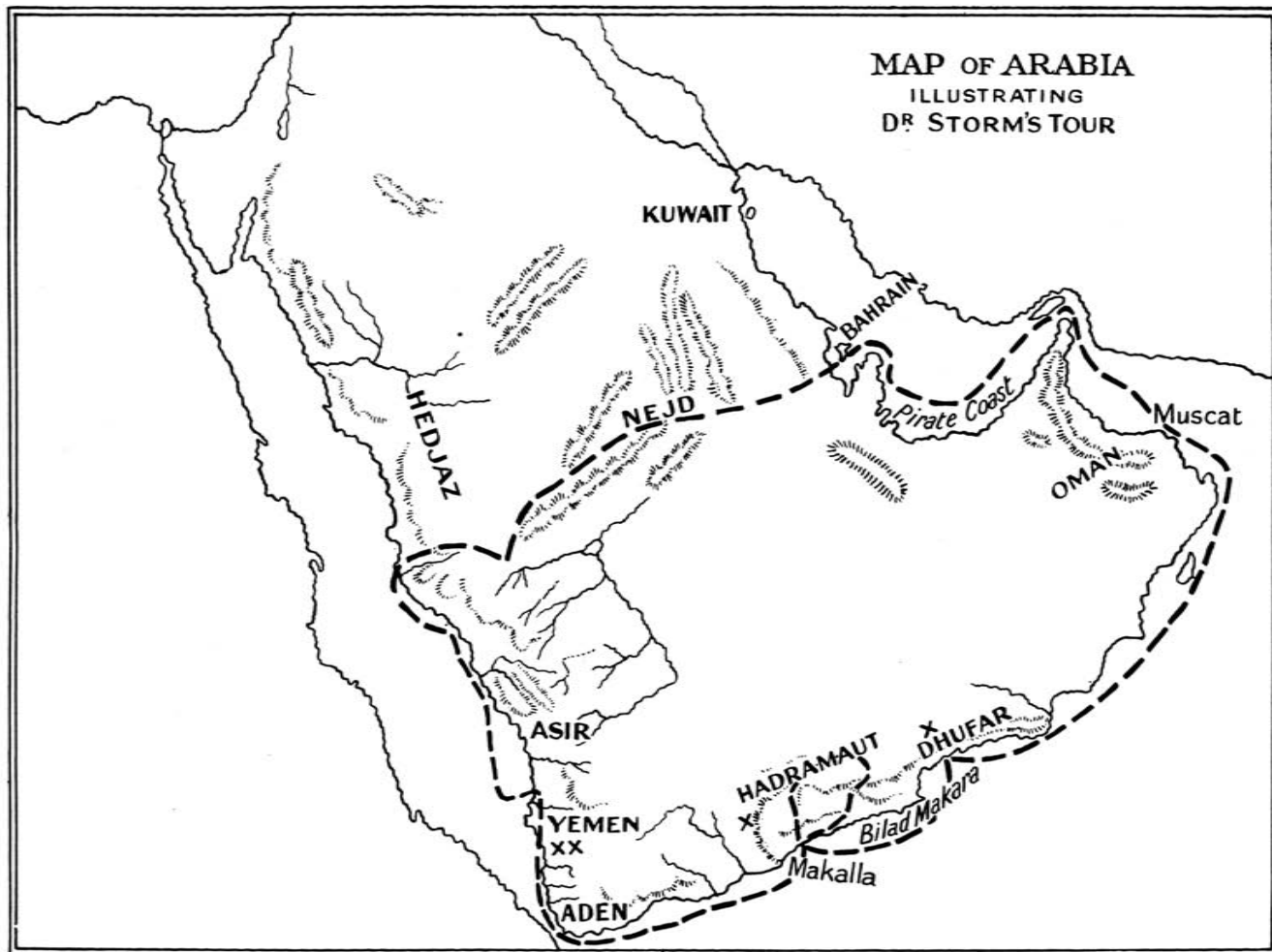
The case described by Dr. Hasselmann forms another valuable contribution to the differential diagnosis of leprosy.

Toc H Volunteers.

Five non-medical leprosy workers were sent out under B.E.L.R.A.—Toc H to Nigeria 18 months ago to help in the leper settlements of Nigeria. Three of these are in Northern Nigeria: at Katsina (Crayford); Somaila, near Kano, (Lambert), and Maiduguri (Pedrick). Two are in Southern Nigeria: at Oji River in Onitsha Province (Parker) and at Itu in Calabar Province, (Macgregor). Every one of these men has done excellent work. Two new men have been sent out recently (Hockley and Stacey) to relieve Crayford and Lambert, and we hope to send out two more relieving men in the beginning of the year. We have also an agriculturist in the Dichpali Leper Settlement in the Nizam's Dominions, India.

The sending out of these volunteers was first of all undertaken as an experiment, but the experiment has been fully justified and now there is a demand from other colonies for more men of this kind. While qualified doctors and nurses are of first importance in leprosy treatment and control, there is a great deal that can be done by young men who, though without medical qualifications, have been trained in some of the excellent leprosy institutions in Nigeria.

MAP OF ARABIA
ILLUSTRATING
DR. STORM'S TOUR

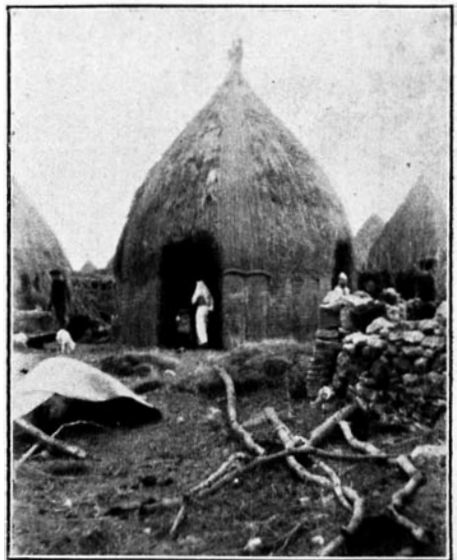




WATER WAGONS, JIDDAH.



The Ian Keith Falconer Mission
Hospital, located at Sheikh Othman,
Aden.



Making an Asis hut. Note man at top
winding rope around centre pole.



CLINIC. JEIGON

Leper Survey of the Arabian Peninsula

W. H. STORM.

In the 1935 annual report of the British Empire Leprosy Relief Association, entitled "Worse than Slavery," we read :

(1) "It is not an exaggeration to say that of all diseases leprosy is the most terrible—not killing, but mutilating by slow degrees, and ultimately destroying even the semblance of a human being. Men, women and children become moulded into that ghastly form in which personality, sex and age are blotted out, and the victim becomes a mere caricature of humanity."

(2) "Few realize that of the world's population at least one person in every 370 suffers from leprosy, and that in the British Empire there are at least two million sufferers, some indeed put the number much higher."

The object of the Council of the British Empire Leprosy Relief Association is the banishment of leprosy from the Empire. The purpose of the International Leprosy Association is to rid the world of Leprosy.

The burden of such a task is great. An educated public opinion is necessary. "Much has already been accomplished as the result of continued research and widespread carefully conducted surveys; to our knowledge has come a deeper realization of the extent and gravity of the scourge, and of the immense effort that is necessary to deal with it adequately. Only a small percentage of the areas infected by leprosy are at present touched; hundreds of sufferers are being refused admission for lack of means and accommodation; devoted doctors and nurses are overburdened with labour."

It was in view of all of this that in connection with my recent tour across and around Arabia I attempted a survey of the entire Peninsula from the point of view of leprosy bearing in mind chiefly its incidence and the form of the disease.

In French text books leprosy is known by the term "Lepres de Arabes".

Mohammed is supposed to have said "Flee from the leper as you would flee from a lion". This expresses in no small measure the attitude of Mohammedans everywhere. There is also a general fatalistic attitude as expressed by Dr. Mahmud, Medical Director of Hedjaz Government Medical Service in Taif—"No cure".

The methods we used were carried out in connection with our general routine medical and surgical work. I examined

every suspicious case. As soon as I arrived at a town or a village I let it be known that I was especially interested in skin diseases. News in the Orient spreads with incredible speed. Soon all forms of skin diseases would appear. I would then trace all contacts of the suspected leper case, especially among his children and friends. Here it must be noted that inasmuch as schools do not exist it was impossible to examine children in any large number. The methods of examination were :

- (a) General impressions.
- (b) History.
- (c) Physical findings.
- (d) Nasal smear.
- (e) Wade incision smear.
- (f) Occasional excision smear.

I at once realized the inadequacy of this method, but when one considers the political situations, difficulties of travel, and non-cooperation or entire lack of the local medical force, I believe it was and is the only possible method at present for a leper survey of Arabia.

Our time was spent as follows :

Six weeks were spent in Taif. Three weeks in Asir. Fifteen days in Aden. One month in Hadramaut. Two months in Dhufar.

We visited many villages en route and were in constant contact for nearly ten months with native peoples.

The medical statistics for the whole tour were as follows :

Total treatments	...	...	10,406
Operations	...	...	224
Out calls	...	...	558

For the purpose of this survey, I have divided the Arabian Peninsula into the following sections. They are, for the main part, political identities and therefore serve as natural boundaries for any survey.

NEJD.	ADEN PROTECTORATE.	OMAN.
HEDJAZ.	MAKALLA-HADRAMAUT.	BAHRAIN.
ASIR.	BILAD MAHARA.	KUWAIT.
YEMEN.	DHUFAR.	

Nejd.

Leprosy is practically not seen at all among Nejd bedouins. I found one case among the women of the Royal Court in Ryad. Also one Hadji (pilgrim), obviously a leper was seen on the streets of Ryad. I have consulted with Dr. Dame, of the American Mission in Bahrain, who has done extensive travelling in Nejd, and he verifies these findings—namely that leprosy is only very occasionally found in this section.

Hedjaz.

The population of Hedjaz is less purely Arab. Turkish domination and Sherifan Rule brought in influences from many outside sources. The war and post-war periods increased those already existing and added new ones. Mecca and Medina (the Moslem Holy Cities) with their yearly influx of thousands and thousands of pilgrims are confronted with numerous public health and medical problems. Climate, native methods of living, housing, sanitation and water supply do not help in the least to solve these problems. Rather they enhance them. One hesitates to think what might occur during a Hadj season if it were not for an effective quarantine. The local quarantine services at Jiddah and Yembo leave much to be desired. Patah says about 50% of the pilgrims come through the seaports of Jiddah and Yembo. To reach these ports the pilgrims must pass either the International Quarantine Station at Kameran or the Egyptian Quarantine Station at Tor. Both of these Stations are adequately manned, capable of caring for thousands of pilgrims at a time, and maintain a most effective system of quarantine.

Patah reports :

<i>Year</i>	<i>Pilgrims</i>	<i>Lepers Reported</i>
1930	100,000	7
1931	50,000	2
1932	40,000	0

Dr. Abdul Rahman, in Meccan Dispensary, presents the following report. (Statistics given me by Charge d'Affairs of Jiddah).

Haj 1353—1934.

			<i>No. Cases.</i>	<i>Lepers</i>
Javanese	...	...	4,691	4
Malayan	...	...	441	0
Arabs	...	...	552	1

The British Consulate for the year 1934 gives statistics of approximately 38,000 cases treated and only 4 lepers found.

My own statistics :

<i>Place</i>			<i>No. Treated</i>	<i>Lepers</i>
Taif	...	...	4,475	17
Jiddah	...	...	136	1
Yembo	...	...	100	1

One of the chief difficulties in such a problem, especially when introduced by one from the outside, is the hopeless attitude assumed by the Medical Department of the Saudia Government. In my first conversation with the Director, the only responses he gave were—"there isn't any here"—"No cure". Two of the proven cases in Taif were of

infectious type and were found to be bakers in the bazaar. On reporting this to the local authorities, they could see no concern for alarm.

Although the incidence is not great, there is enough present to create a problem. It would not take a great deal to eradicate it completely from the country, provided, of course, the quarantine services by sea continue their excellent work and the Saudia Government whips into action an adequate service for the land pilgrims. The situation is quite hopeful but must be attacked through the existing Saudia Medical Service.

Asir.

This small buffer state lying between Hedjaz and Yemen is now under Saudia Rule. The same general problems that confront Hedjaz apply here.

In treating 2,092 cases I saw only 4 positive lepers and only one of these could be said to be infectious. Here the people are the poorest to be found anywhere in Arabia and medical conditions are very bad. Certainly leprosy is not a problem here and can be practically dismissed except that from an economic and sociological point of view it is fertile soil for leprosy to spread if once implanted.

Yemen.

Yemen in many respects is the most closed of all sections of Arabia to the foreigner. I had to be content with the information gathered during my coastal trip by camel caravan from Ibn Abbas to Hodeidah and during my stay in Hodeidah. I interviewed various influential men and especially the Italian Doctor in Hodeidah. Much information was also gained at a later date from the staff of the Ian Keith Falconer Mission Hospital in Sheikh Othman and the frontier Secretary of the Residency in Aden. Here we have what is undoubtedly our biggest problem concerning leprosy in the whole peninsula.

There is without doubt a definite area in Southeast Yemen centering around Taiz. The exact geographical boundaries of this area and the extent of the infection is as yet unknown. Reported cases of entire villages and families with six to seven victims within the family came to my attention. Practically all of the cases treated in the Leprosarium in Sheikh Othman come from these Montane and sub-Montane regions in south Yemen bordering on Aden Protectorate. It is general knowledge that this condition exists and equally common knowledge that except for the efforts in Sheikh Othman nothing is being done.

Aden Protectorate.

The situation here is so closely tied up with Yemen that they really become one. In the Leprosy Review, January, 1934, there appeared two splendid informative articles—

(1) Aden and its Leprosy Problem—by E. S. Phipson.

(2) Leprosy Work in Aden Settlement—

by P. W. R. Petrie.

Whenever a work is fashioned on a compromise between *humanity* and *expediency* it will by the very nature of the case fall far short of adequacy.

The work done by the faithful workers at the Leprosarium and the attempt of the Aden Leper Board to meet the demands made by those lepers who come into Aden from the Hinterland deserves high commendation. But all, even those closest to the work, admit its shortcomings.

It seems that the obvious solution to a perplexing problem is the establishment of a leprosarium in the Hinterland near the source of trouble. One would immediately think of Yemen as a suitable site, but realizing the fanatical unsympathetic attitude of the Iman of Yemen the impossibility of such an event discourages every initiative in thought. Two alternatives suggest themselves :

(1) Continuance with what all admit is useful but in no sense adequately meeting the needs.

(2) Establishment of a Leprosarium within the Aden Protectorate near the Yemen border.

The latter of these two alternatives was discussed fully during interviews at the Residency both with the Frontier Secretary and the Chief Commissioner. Both expressed deep interest and sympathy provided certain conditions could be met, chief of which were :

(1) Approval of the local state.

(2) Assurance of proper police precaution against transfer of foci from present site into uncontaminated territory.

The task is no easy one. The ultimate solving of the problem can be done only by those most closely connected with the situation. The purpose of such a report is but to give impressions in the hope that some outside unprejudiced opinion may stimulate activity.

Makalla and Hadramaut.

If Aden and Yemen present problem No. 1, then Makalla and Hadramaut present problem No. 2. Here we found another definite leper area within quite definite geographical boundaries.

Here on the whole the disease seems to be self-limiting

in that many of the cases are of the far advanced type (stage of subsidence of disease). Some were mutilated beyond hope of recovery and no longer infectious. Then there has been developed in Wadi Doan and Wadi Esar an unusual system of isolation. If we take Wadi Esar for example, we find nine small huts built outside a town to which the lepers are committed. They are then not allowed to enter the town except very occasionally. Food is brought to them by members of their own families. This method lacks much but is quite effective. Unfortunate victims are often called leprous and committed to a hut. I saw one case in Wadi Doan of a woman who was non-leprous (I was sure) and reported it to the authorities. They agreed to allow her to return to the village but it was soon evident that public opinion was so strong that she would have to return to the hut. I did not find here early cases such as I saw in Sheikh Othman coming from the Yemen area. In Wadi Hadramaut proper I found no cases.

Bilad Mahara.

The work done here was very small in amount and therefore can only be an impression. Adverse circumstances at sea forced me to spend some days at both Saihut and Gishn. I did not have my medical kit with me so I did not treat many patients, but a Doctor in Arabia is never without the sick, and soon the halt, maimed and blind all come. I did see a great number of patients but only three lepers. The people do not know the disease and there is no public horror of the same as in Wadi Doan. This I consider very significant.

Dhufar.

Dhufar Providence is an integral part of Oman Sultanate. It is, with the exception of Yemen, the most fertile part of Arabia. I spent two months here and discovered what I believe may be the beginning of a third focus of leprosy. A number of children showed signs of the disease. We did 3,439 treatments and discovered 21 positive cases, six of whom were children.

Muscat and Oman.

In Muscat and Muttrah, sister seaports of Oman, we have some twenty-five to thirty lepers; they are all beggars. Most of them are of the non-infectious type.

Bahrain.

Along with Bahrain we will consider the Pirate Coast. Here leprosy is found but does not create a specific problem.

Bahrain lepers are found in the Baharnar villages. It is to be hoped that in the very near future the Bahrain Government will establish work among them. Along the Pirate Coast especially in the city of Dubai they isolate cases in much the same way as they do in Hadramaut. This method of isolation has its decided drawbacks because of the profound ignorance concerning the true nature of the disease that exists.

Kuwait.

Dr. Mylrea, who has spent over twenty-five years in this field, writes—"Leprosy is not one of our problems. I think I have treated only two lepers in Kuwait since 1929 (7 years)"

CONCLUSION.

(1) A few cases of leprosy may be found in any section of Arabia, but it is only in the southern number and nature of the disease become such as to create a concrete problem.

(2) Leprosy is not one of the medical problems in Kuwait and Nejd.

(3) Definite foci of infection are to be found in Yemen and Wadi Doan.

(4) Dhufar has possibly the beginning of a third focus of infection and should be carefully watched.

(5) The situation in Sheikh Othman does not in any sense adequately meet the situation. They are to be commended for the good work that they are doing, but I am sure those in charge would be the first to admit the shortcomings. An institution on or near the border which would not be a compromise between humanity and expediency but rather a leprasorium of high grade could then cope with the need and become a real factor in the eradication of leprosy from Yemen and the Aden Protectorate.

(6) Profoundest ignorance of leprosy exists on the part of nearly all Rulers and Government Officials and Medical Officers of the Government.

(7) A careful survey of the Yemen field should be undertaken as soon as possible.

(8) Literature and anti-leprosy propaganda should be sent to the Medical Officers of Saudia, Yemen and the Aden Governments. Their full co-operation should be enlisted. Some medical person with a knowledge of leprosy and a knowledge of the country and situation should be used as a center for such dissemination.

(9) The methods of isolation at Wadi-Doan should be studied carefully from a sociological point of view and also a study into Arab customs and nature.

(10) This survey gives ample proof that leprosy is essentially focal in its distribution and that we should concentrate on the more serious focal points in anti-leprosy campaigns.

The Origin of Leprosy in Brazil and its present Situation

(Lecture given at the Woman's Club, April 6th, 1936).

H. C. de SOUZA-ARAUJO.

History.

When Brazil was discovered leprosy was unknown among our natives. The famous medical report of Dr. G. Pison, published in Holland in 1648, is the proof of such affirmation. Later on many other books regarding our natives have appeared, and in no one is leprosy described among our pure Indian tribes. The Jesuits lived here 210 years (1549-1759), most of them among Indians; they wrote very many books and reports but they never referred to leprosy as being a disease met with among our aboriginals.

From 1917 to 1924 I examined, personally, hundreds of Indians (Guaranys and Caingangs in the South and Tembés and Tymbiras in the North of Brazil, and Navahos in Arizona, U.S.A.), looking for leprosy and never found one case of this malady among them.

The origin of this terrible scourge in Brazil can be traced to the European colonists and African slaves. Without any doubt the Portuguese were the first to introduce the disease here which was very prevalent in Portugal at that time. In France in the 14th and 15th centuries there were very many leper asylums. In the Department of Pas-de-Calais alone there were 237 and in Normandy 218 such institutions. Brittany (Bretagne) was also a great focus of the disease. In these regions of France were recruited most of the mariners who came to Brazil in different expeditions, from 1555 to 1711, and we believe that among them came many lepers. You must remember, that the old foci of leprosy in Canada originated from French mariners from Normandy.

The Dutch also lived in Brazil by thousands for 30 years (1624 to 1654), and in the 15th and 16th centuries leprosy was also prevalent in Holland. There were 60 leprosariums which began to be closed after the navigation period. In 1614 that at Delft was closed, in 1628 that in the Haag, in 1641 that at Middeeburg, and in 1672 in Leeuwarden, etc. The Dutch people ruled through 300 leagues of our littoral. I believe that they also introduced leprosy cases into the Northern part of Brazil.

On a much larger scale are the African negros responsible for the introduction and dissemination of leprosy in

Brazil. According to Barao do Rio Branco (*Esquisse de l'Histoire du Brésil*) Africans were first brought here in 1540 and in 1585 the known population of Brazil was as follows: White people 25,000, Indians 18,500, African slaves 14,000, totalling 57,500. Prof. Fernando Terra says that the British navigators started the introduction of African slaves into Brazil in the year of 1580. This inhuman commerce lasted until the 4th of September, 1850, when it was definitely prohibited.

The principal ports of importation of negros were Rio de Janeiro, Bahia and Recife, where the disease progressed rapidly. In 1637 the first plea for leprosy control in Rio was made. In 1710, Rio's population was 60,000, of which half were negro slaves. In 1849 the population of Rio Municipality (created on August 12th, 1834) attained 266,466, being 142,403 whites and 124,063 coloured, of which 110,602 were negro slaves. In 1851 the Province of Rio de Janeiro had 556,080 inhabitants, of which 293,554 were slaves! The second report against the dissemination of leprosy here is dated 1696 (Governor Arthur de Sá e Menezes). This showed that the disease was much more prevalent among black and mixed people, than among whites, as proved by the following data:

In Rio from the beginning of the 19th century until 1897 there were interned in the Hospital dos Lazaros 2,090 lepers (Males 1,247, Females 843) out of which about 2/3rds were negros or mulattoes. Of the whites (1/3), about a half were Portuguese. In Bahia from 1787 to 1890 were isolated in the Hospital dos Lazaros 1,411 lepers. Out of 1,285 in which races were specified there were: Whites 331, African negros 453, Brazilian negros 194, Mulattoes 337: 984. Three-fourths of these lepers were negros or their close offspring. In Recife (Pernambuco) from 1789 to 1880 there were isolated 1,440 lepers, of which more than two-thirds were coloured people. The recent census of lepers gives for Pernambuco 688 lepers, of which about 70% are negros or mixed.

In the State of Pará in 1847 there were in the leper Asylum of Tocunduba 70 lepers, of which only five were white. The census of lepers which I organized in Pará and published in 1922 shows that for the total of 1,354, 763, or more than 56% were coloured people.

F. Terra affirms that since 1600 there were many lepers in the city of Rio. The first cry of alarm of the Municipality is dated 1637, the second 1697. In 1740 the Municipality asked the Royal Government to build "gafaria" for Rio's

lepers, which then totalled 300 for little more than 60,000 population.

In 1741 the Governor-General of Rio, Count de Bobadella, (1737 according to Sigaud), concentrated the poor lepers of the City in S. Christovam where he built some huts. After the death of Count de Bobadella (January 1st, 1763), Count da Cunha was nominated Viceroy of Brazil, who, by Royal order moved the lepers from the primitive huts to the Jesuits Convent of S. Christovam, in the same place where exists now the old Hospitam dos Lazaros, maintained by the Brotherhood "Candelaria". This hospital is now modernized.

Statistics.

There are in Brazil three great foci of leprosy: in the North, from Maranhão to Acre Territory; in the Centre, Minas Geraes; in the South, São Paulo. But, unfortunately, we have lepers in every State and the total is estimated at about thirty thousand, that is about three-quarters per thousand population or 75 lepers per 100,000 inhabitants.

It is true that in many other countries the incidence of leprosy is much higher than in Brazil and the control of it is not so well developed as here, but it is very pitiful that our Federal and State governments have lost so many years without taking any measures of control, which has resulted in the very bad present situation!

Legislation.

The early legislation against leprosy in Brazil is voluminous and interesting. In 1740 the City Council of Rio (Camara Municipal) alarmed at the prevalence of leprosy in the City, asked, through the Governor of the Capitania, General Gombes Freire de Andrade, the King of Portugal, Dom João V, for control measures. The king nominated a Commission of three court physicians to elaborate a plan of control of the disease in Rio. This was done on January 27th, 1741 and sent to the Governor of Rio with the Royal Order of April 27th, 1744. This ordinance considered leprosy as a contagious disease; regulated the treatment of patients, considering curable those in the early stages; regulated the isolation of the patients in leper asylums separating them according to sex and social conditions; advised the segregation of children from leprous parents, and advised the rigorous selection of African immigrants; advised measures against improper food; remembered the possible confusion of leprosy with syphilis,

and promulgated very many other wise measures which enhanced the importance of the measure.

On February 17th, 1766, Count da Cunha approved a decree considering compulsory the segregation of all lepers in the Hospital dos Lazaros. With the rigid enforcement of this decree the hospital became overcrowded. In 1787 the Governor of Bahia, Dom Rodrigo José de Menezes inaugurated a second hospital for lepers whose regulations were a model of leprosy legislation. The results of segregation of lepers in Rio and in Bahia were very good.

On May 10th, 1836, the Governor of Pará, Barão de Caçapava, also approved a law against leprosy. If those good laws had been rigidly enforced for the necessary time, the terrible scourge of leprosy would have disappeared from the original foci of colonial times. As the result of a paper read before the National Academy of Medicine in 1838 the control of leprosy was relaxed and the disease increased.

From 1840 to 1920 the leprosy problem was abandoned. In 1921 was created the Federal Bureau of control of Leprosy, in connection with the National Public Health Department. Then a census of lepers was started. The Federal rules of prophylaxis were approved, which included the modern anti-leprotic treatment in dispensaries, the isolation of lepers in domicile, in asylums, in sanatoria and especially in agricultural colonies. The State of S. Paulo adopted the Federal Regulations. We do not need better laws for the control of leprosy, we need decisive action by the Governments—Federal, State and Municipal.

Control.

The segregation of lepers is the paramount measure against the disease. But we need only to segregate the "open cases", i.e., those with active lesions and expelling bacilli. The "closed cases", i.e., those actually considered as not infectious, may be treated in general hospitals and kept at home under sanitary supervision. For segregation of lepers we have now in Brazil the following institutions, called "Hospital dos Lazaros", which are leper asylums:

1. In Rio de Janeiro, founded in 1766, with about 100 patients.
2. In Bahia (s. Salvador), founded in 1787, with 50 beds.
3. In Recife, founded in 1789, with more than 200 beds.
4. In Belem (Para), founded in 1815, with 300 patients.
5. In Sabara (Minas), founded in 1883, with 70 beds.
6. In Rio Branco (Acre), opened in 1930, with 60 beds.

Modern leprosaria.

The following new leprosaria, some of the hospital-

asylum type, others of the colony type, have been opened more recently and have been increasing in size and in importance.

1. Lazaropolis do Prata (Paraá), the first Brazilian agricultural colony for lepers, founded by me and opened on June 24th, 1924, with 354 patients. Now it has more than 600 patients, and it is being enlarged by the "Liga contra a Lepra do Pará".
2. Leprosario Sao Roque (Parana), opened on October 20th, 1926, now with 400 patients.
3. Asylo-Colo with 400 patients, now with about 1,200.
4. Hospital-Colonia Curupaity (Rio de Janeiro city), opened on 15th October, 1928, with 50 patients and now with 400. It is being enlarged to 700 beds. Its founder and director is Dr. Theode Almeida.
5. Leprosario Canafistula (Antonio Diogo, Ceará), opened on August 9th, 1928. Now with 210 patients. Connected with it there is a preventorium for children of leprous parents.
6. Leprosario S. Francisco de Assis (Natal), opened on January 14th, 1929. Now with 100 patients.
7. Leprosario Paricatuba (Belisario Penna, Manáos), opened on July 1st, 1930. Now with more than 300 patients.
8. Sanatorio Padre Bento (S. Paulo city). Leper sanatorium for transient and for good social class lepers, founded by myself and opened on June 5th, 1931. Now much enlarged, with 300 patients.
9. Colonia Santa Izabel (Minas Geraes), inaugurated on December 23rd, 1931, now with about 1,000 patients and being increased to 1,600
10. Asylo-Colonia Pirapitinguy (S. Paulo), opened in 1933. Now with 1,550 patients. This one is the largest and most comfortable in Brazil.
11. Asylo-Colonia Aymorés (Bauru, S. Paulo), opened in 1934. Now with 500 patients.
12. Asylo-Colonia Cocaes (Casa Branca, S. Paulo), opened in 1934. Now with 600 patients.
At present Sao Paulo alone has about 5,000 lepers isolated, without any help of the Federal Government.
13. Colonia Itanhenga (Espirito Santo), inaugurated on May 23rd, 1935. Capacity for 300 patients.

The National plan for the control of leprosy organized by me in 1933 is being studied by the Government to be put in execution.

In the control of leprosy in Brazil the women's cooperation has been of great importance. It is enough to remind you of the ladies Alice Tibiriçá and Margarida Galvão of S. Paulo, and Eunice Weaver of Minas Geraes, among others, who have done very much for the relief of our poor lepers.

Leprosy in Ceylon

Being a summary of the Report of a visit of investigation submitted to the Ceylon Government in December, 1935.

ROBERT G. COCHRANE.

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It was gratifying to return to Ceylon and witness the amount of progress which has been made since my last visit. The position in Ceylon up to the issue of my report was summarised in "Leprosy Review", Vol. V, No. 2, p. 64. It is impossible in an article of this nature exhaustively to review the work done in Ceylon during my last visit. The main object of the present visit was to examine the situation with a view to determining whether the recommendations then made were justified, and to suggest lines along which an anti-leprosy campaign could be organised.

It will be remembered that emphasis has been laid on the fact that a number of cases never progress to the more advanced stages of the disease, and that where there was little indication of activity of the disease such cases do not need to be treated, but should be kept under observation. There was evidence that this action was justified, for many of the cases examined three years before were found to have remained stationary. In a country such as Ceylon it is possible to observe such cases, and important facts concerning the progress of neural cases in adults should be elicited during the next few years.

The analysis of groups according to age, sex and type will, it is hoped, be published later. Suffice it to say that the proportion of children with early lesions was far greater under than over thirteen, and they have therefore been divided into two groups: those under thirteen and those between thirteen and eighteen. Those above eighteen have been counted as adults.

This article will summarise briefly the anti-leprosy system which has been suggested for Ceylon, as it may help authorities in countries with a limited problem and a comparatively small population to deal more effectively with leprosy.

The principles enunciated were as follows. The most efficient system possible should be organised in the areas already surveyed before a further survey is undertaken. Unless a survey is adequately followed up with effective action, it merely results in an accumulation of figures. In so far as

leprosy is one of the endemic diseases of the island, unless a system is organised under the control of the health and medical officers of the districts, the prevention of leprosy is liable to be relegated to a special department and the whole-hearted co-operation of these authorities is not so likely to be forthcoming. Certain specialised officers should be appointed, but their duties should be of an advisory nature.

The following appointments, some of which already existed, were suggested :—

1. SUPERINTENDENT OF LEPROSY CAMPAIGN AND
SENIOR SURVEY OFFICER.

The duties of this officer would be as follows :—

(a) He would be in charge of the Central Leprosy Office and be responsible to the Director of Medical and Sanitary Services for keeping information up-to-date concerning the number and progress of cases throughout the island. All forms, quarterly and annual, would be sent through the Provincial Surgeon to the Superintendent of Leprosy Campaign, who would furnish the necessary figures for the annual report.

(b) With the assistance of the survey officer he would complete the survey of the island and organise an adequate system of control in areas when surveyed.

(c) He would supervise the work at the Colombo clinic and act with the assistance of the survey officers as an adviser on problems of leprosy, clinical and preventive, when they arise.

(d) He would be responsible for the organisation of adequate training of those organising anti-leprosy measures in areas where leprosy is an important endemic disease. This would involve courses of lectures for :—

(1) *Medical and Health Officers.*

This course would stress early diagnosis and prevention with instruction regarding types of cases suitable for intensive treatment, and lines of treatment. Methods of propaganda would also be dealt with.

(2) *Sanitary Inspectors.*

This course would cover the preventive aspects of leprosy, with special emphasis on follow-up and observation of cases and contacts. They would be taught the importance of instructing those who have leprosy, or associate with lepers, to keep healthy and organise their lives, as far as possible along hygienic lines.

(3) *Lectures to Medical Students.*

This course would be a general series of lectures and demonstrations, so that those graduating from the Medical School may be familiar with modern views concerning leprosy in its various aspects.

(e) He would be responsible for the organisation of propaganda and see that an adequate number of leaflets, etc. are available for the health officers in centres where leprosy is an important problem.

(f) He would act as consultant, with the assistance of the survey officer, in cases where it is doubtful whether a patient should receive treatment, be placed under observation, or be segregated, and in questions of diagnosis when difficulty arises.

2. ASSISTANT SUPERINTENDENT OF LEPROSY CAMPAIGN AND SURVEY OFFICER.

The duties of this officer would be as follows :—

(a) He would assist the Superintendent of Leprosy Campaign in all or any of his duties.

(b) He would devote his time more particularly to survey and the collecting and collating of figures rather than to conducting of treatment. He would see that adequate records are kept in each Province and District and see that the Medical Officers of Health, Sanitary Inspectors, are fully familiar with the routine procedure.

(c) He would act for the Superintendent of Leprosy Campaign when on leave or otherwise off duty.

3. MEDICAL OFFICER OF THE LEPROSY CLINIC (COLOMBO).

(a) This officer should preferably be the Senior Assistant Medical Officer at Hendala, as he is constantly in touch with active treatment. He should therefore be responsible, under the Superintendent of the Leprosy Campaign, for the active treatment of patients at the Colombo clinic. As his duties at Hendala would occupy his whole time, he should not be given other duties except in emergency.

Leprosy Apothecaries.

It was mentioned in the report that there are areas either where leprosy is so prevalent or where the disease is so scattered that the M.O.H. cannot give the personal attention necessary to the problem. In such areas it was suggested that leprosy apothecaries should be appointed who would assist the M.O.H. in the follow-up of cases.

With a Senior Survey Officer, Survey Officer, Medical Officer of the Leprosy Clinic and special leprosy apothecaries, it should be possible to organise an anti-leprosy campaign and maintain accurate records. These records would, after a period of years, give valuable epidemiological data. The object of any system is not only to record all cases of leprosy but to ascertain at least once a year the exact amount of leprosy and the progress or otherwise of each case.

The procedure suggested would be as follows :—

The survey having been completed, a survey card would be filled up for each case, on which would be recorded a district (D), Provincial (P) and Central (C) number.

The District number is the number which is allocated by the M.O.H. of the district who is in charge of the Leprosy Campaign and appears on the register of the sanitary inspectors whose duties are detailed elsewhere. The M.O.H. files a copy of the card in his office and sends another copy to the central office through the Provincial Surgeon. The Provincial Surgeon then allocates a Provincial Number to each case and notifies the number to the M.O.H. Thus each District Number has a corresponding Provincial Number. The chief details, namely Provincial Number, District Number, Name, Address, age, sex and type of disease, are then noted in a book kept for the purpose by the Provincial Surgeon, who forwards the Survey Card to the Central Office. The card has now the District and Provincial Number recorded. The Superintendent of Leprosy Campaign then allocates a Central Number and informs the Provincial Surgeon what this number is and this is recorded in his book. The District Number then is used by the Medical Officer of Health, the Provincial Number by the Provincial Surgeon and the Central Number by the Superintendent of Leprosy Campaign, who files his survey cards according to Provinces. The Central Office uses the Central Number because in that office will ultimately be recorded all the cases in Ceylon.

In each district the Leprosy Campaign would be headed up by the Medical Officer of Health, and he would be assisted by the District Medical Officer, Sanitary Inspectors and Leprosy Apothecaries. The duties of these officers are detailed later.

The Medical Officer of Health would examine every case of leprosy in the district once a year.

He would transmit a quarterly return giving brief details of the cases of leprosy in his district, and each year more detailed records would be compiled. In order to do this the Medical Officer of Health should examine every case of leprosy in his district once a year including any new cases or fresh lesions in cases under observation. The Medical Officer of Health would keep a register of each visit made to inspect the Sanitary Inspector's work.

The annual report would be sufficiently detailed to enable the General Office to record not only the number of cases in each district, but also the progress made, as for instance the number of early cases among children and among adults, which clear up or remain stationary. The cases which pass into the more advanced stages and the probable reason would also be recorded. It would be of value if sociological and other conditions were noted in the endemic centres, so that information might gradually be acquired which would perhaps enable the authorities to determine later the reason why certain areas remain as foci of the disease.

In this way valuable epidemiological facts would be elicited which would probably result in a better knowledge of the type of leprosy and conditions in which leprosy is likely to become a public health problem. It cannot be too strongly emphasised that the problem is too vast to be coped with in all its aspects, even in a small country such as Ceylon.

Therefore if a solution is to be found there must be an attempt to reduce the problem to such proportions that it can be dealt with, within the scope of the resources of the medical staff. Specialised investigation must be continued, but the general campaign should be part of a general health campaign throughout the country.

In certain areas where the Medical Officer of Health finds it impossible to give detailed supervision to the Leprosy Campaign, assistance should be provided by the appointment of Special Leprosy Apothecaries.

Lines along which a Provincial Leprosy Campaign might be developed were suggested in my full Report, and it was stated that before any system is perfected further instruction in prevention and methods of propaganda should be given by the Survey Officers as they undertake the work of setting up a system of control in each area where leprosy is prevalent. It was found when it was explained to the Medical Officers of Health that leprosy should be looked upon as an ordinary health problem, and that all measures of prevention and propaganda should be developed *pari passu* with those of other diseases, that these officers became keen to do what they could.

In a Provincial Campaign the following officers would be responsible for its organisation, and their duties would be as follows :—

1. *Provincial Surgeon.*

It is to this officer as head of the Provincial Medical Service that all reports would be sent. He would then transmit them to the Central Office and, if required, to the Director of Medical & Sanitary Services. His office would keep a record of all cases in the Province and allocate a serial Provincial Number to each case. He would note particulars of each case regarding name, address, classification number, and whether under treatment or observation, and then transmit the survey cards to the Central Office.

2. *Medical Officer of Health.*

In each district the Medical Officer of Health should supervise the leprosy campaign and his duties would be as follows :—

(a) He would keep a register of visits to endemic areas for the purpose of examining sanitary inspector's books; these visits should be made at least every quarter.

(b) He would file copies of all survey cards of cases in the district, forwarding the originals to the Superintendent of Leprosy Campaign through the Provincial Surgeon. He would allocate a District Number to each case and enter the Provincial Serial Number on receipt of information from the Provincial Surgeon.

(c) He would examine every new or suspected case of leprosy, completing survey card if the diagnosis is confirmed, and decide whether the case is one for observation only or for treatment or segregation. He would examine every case in which the disease has

become worse, or in which new lesions have appeared, and revise, if necessary, any previous decision. If in doubt he would consult the Superintendent of Leprosy Campaign.

(d) In large districts or those with a comparatively high incidence of leprosy a leprosy apothecary might be appointed to work under the supervision of the M.O.H.

(e) He would arrange for the distribution of propaganda pamphlets prepared by the Superintendent of the Leprosy Campaign. He would pay particular attention to headmen, school teachers and other responsible individuals, giving if possible special instructions on leprosy, its dangers to children and the method of transmission.

3. *District Medical Officers.*

His particular duty would be the treatment of cases referred to him by the Medical Officer of Health.

He would keep a register and records of all cases suitable for treatment, and request the sanitary inspectors to visit those who are irregular in their attendance at the clinic.

In so far as the treatment of leprosy needs special care medical officers in whose districts leprosy is prevalent would acquaint themselves with the modern methods of treatment by periodic visits, if possible, to the Colombo clinic, or by attendance at lectures and demonstrations given by the Survey Officers when in the district.

The Medical Officer should pay particular attention to the investigation of the general condition of the patients attending for treatment, taking special note of any signs of dietary deficiency and the presence of chronic disease, such as malaria, dysentery, helminthic infection, etc.

4. *Leprosy Apothecaries.*

These are special appointments which would be made in districts where there is sufficient leprosy to justify such appointments. Their duties would be:—

(a) To organise anti-leprosy measures in the area to which they are appointed under the supervision of the M.O.H. and in co-operation with the sanitary inspectors.

(b) To endeavour continually to trace new cases, persuade infective cases to be isolated and active cases to be treated.

(c) To visit homes of cases and their contacts and carry on educative work among villages emphasising the nature of the disease and how to prevent it.

(d) To give attention to children especially emphasising the need of adequate diet, sufficient sleep, exercise and fresh air, and drawing attention to the special susceptibility of children to the disease.

(e) To treat cases at the clinics established in the district under supervision of the District Medical Officer, and keep records of all cases.

(f) To chart new cases and re-chart if fresh lesions appear; this to be done under the general supervision of the Medical Officer of Health.

5. *Sanitary Inspectors.*

The Sanitary Inspectors can play an increasingly valuable part in the leprosy campaign. Their duties as summarised are to:—

(a) Keep a register of cases in their areas.

(b) Visit cases quarterly and note whether their condition is worse, stationary or improved.

- (c) Visit contacts twice a year and report if new cases arise.
- (d) Report fresh cases in their areas.
- (e) Report any illness in cases or contacts.
- (f) Report pregnancy in cases or contacts.
- (g) Report change of address in cases or contacts.
- (h) Make full notes of visits in a book provided for the purpose.
- (i) Persuade cases needing treatment to go to the treatment centre.
- (j) Continually endeavour to emphasise the necessity of adequate food, fresh air and exercise, and the danger to children of contact with infectious cases.

(k) Help and assist the Medical Officer of Health and Leprosy Apothecaries in the pursuance of their duties.

(l) Although the Medical Officer of Health would ordinarily undertake bacteriological examinations, apothecaries, where they are appointed, might be permitted to make such examinations at the hospital or clinics under the supervision of the District Medical Officer.

It is hoped that such a scheme as is herein indicated will result in a substantial advance being made towards the control of leprosy in the island of Ceylon.

Age Groups of Leper Patients at Nauru

T. M. CLOUSTON.

In response to a request by Dr. Robert Cochrane during 1935 for more detailed information about the course of leprosy at Nauru than was given by Bray⁽¹⁾ and Grant⁽²⁾, it is proposed in this brief paper to set out the various age groups affected since the first cases were definitely diagnosed in 1920. In addition, some further facts will be given, in the light of some comments made in an Editorial in the "International Journal of Leprosy".⁽³⁾

As Grant pointed out, cases of leprosy are here divided into infectious and non-infectious according as to whether acid-fast bacilli are found in skin section smears and nasal smears, or not. This classification is still used for convenience in administration, but for record purposes, the standards and classifications of the Manila Conference⁽⁴⁾ are employed. The infectious cases are segregated; the non-infectious are treated at an outpatient clinic until fit for parole and subsequent discharge.

Unfortunately, whilst more or less complete information about all patients placed in segregation since 1921 is available, many histories of those admitted for treatment at the clinic only have been lost. The course of the disease in two hundred and eighty-four cases (excluding three Chinese

labourers who had contracted the disease in China long before arrival) can be fairly accurately traced. This was the total number admitted to segregation from 1920 to 30th June, 1936. The number of histories of patients treated at the clinic only is one hundred and ninety-three, whereas more than this number are known to have been admitted to the Clinic.

The following tables show all those admitted to segregation, and all those that could be traced as attending the clinics only, in age and sex groups.

TABLE I.—Patients admitted to segregation.

Age Group	0—5	6—10	11—15	16—20	21—30	31—40	41—50	Over 50	Total
Year	M...F	M...F	M...F	M...F	M...F	M...F	M...F	M...F	
1921	0...1	5...4	9...3	2...4	1...1	3...1	1...0	1...0	36
1922	3...4	16...11	12...8	7...5	10...8	7...2	0...2	1...1	97
1923	0...1	3...3	0...2	0...0	3...2	2...2	1...1	0...0	20
1924	4...3	7...5	3...1	6...1	9...6	3...8	1...3	1...3	65
1925	1...0	0...0	0...0	0...0	0...1	0...1	0...1	1...0	5
1926	0...0	0...1	0...1	1...0	1...4	0...1	2...1	0...3	15
1927	0...1	0...0	0...0	1...1	1...1	2...2	1...0	1...0	11
1928	0...0	0...0	1...0	2...0	3...0	0...0	0...0	0...2	8
1929	0...0	0...1	0...0	0...0	1...0	0...0	1...1	1...0	5
1930	0...1	0...0	0...1	0...0	0...1	1...0	0...0	0...0	4
1931	0...0	1...0	0...0	0...0	0...0	1...0	0...0	0...0	2
1932	0...0	0...2	2...0	0...0	1...1	0...0	0...0	0...0	6
1933	0...0	0...1	1...0	0...0	0...0	1...0	1...0	0...0	4
1934	2...0	0...0	0...1	0...0	0...0	0...0	0...0	0...0	3
1935	0...0	0...0	0...0	0...0	0...0	0...1	0...1	0...1	3
Total	10...11	32...28	28...17	19...11	30...25	20...18	8...10	8...9	284
Percent.	(7.4)	(21.1)	(15.8)	(10.5)	(19.4)	(13.4)	(6.3)	(6.0)	

NOTE.—The figures for admissions for the years 1931 and 1932 differ from those given by Grant (4 and 16 respectively) because in 1931 two cases admitted as new cases have been since found to have been relapses; and in 1932, as noted by Grant, a number were admitted without bacteriological examination by a relieving medical officer and of these ten were found to be bacteriologically negative and were shortly discharged. Accordingly these have not been included amongst the infectious cases.

TABLE II.—Patients admitted to Outpatient Clinic only.

Age Group	0—5	6—10	11—15	16—20	21—30	31—40	41—50	Over 50	Total
Year	M...F	M...F	M...F	M...F	M...F	M...F	M...F	M...F	
1924	3...2	4...2	6...7	3...5	8...10	2...4	0...2	0...1	59
1925	0...6	1...5	0...3	2...1	5...3	3...3	0...3	0...0	35
1926	0...0	0...2	0...0	1...0	1...2	1...2	0...1	0...2	12
1927	0...0	0...0	0...0	0...0	0...1	0...1	0...0	0...0	2
1928	0...1	0...0	0...0	0...0	1...1	0...0	0...0	0...0	3
1929	0...1	2...3	1...0	1...0	3...2	1...0	1...1	1...3	20
1930	1...1	1...2	1...0	2...1	1...0	2...1	0...0	0...0	13
1931	0...1	1...0	1...0	0...1	0...0	0...0	0...0	0...0	4
1932	0...0	1...0	1...1	2...0	0...1	2...1	1...0	0...1	11
1933	1...0	1...2	0...0	0...0	0...0	1...1	0...0	1...0	7
1934	1...1	1...8	1...2	0...0	0...0	0...1	0...2	0...0	17
1935	0...0	3...2	0...1	0...0	0...0	0...0	0...0	0...0	6
1936(June)	0...0	1...1	0...0	0...1	0...0	0...0	0...0	1...0	4
Total	6...13	16...27	11...14	11...9	19...20	12...14	2...9	3...7	193
Percent.	(9.8)	(22.3)	(12.9)	(10.4)	(20.2)	(13.0)	(5.7)	(5.2)	

NOTE.—Here again the figures for admissions for the years 1929 to 1933 inclusive differ from those given by Grant, in this case very markedly. This is due to the fact that in compiling this table, only those cases were included for which histories could be found, so that an accurate check on sex and age could be made. Grant's figures were compiled from total returns and are accurate as to totals.

Several tendencies are disclosed by a study of these tables. It will be noticed that in the latter years, the number of bacteriologically positive new cases is low compared with the earlier years, whilst the figures for admission to the clinic of bacteriologically negative cases has not shown a similar decrease. (This is emphasised the more by a study of Grant's figures for admissions of new cases to the clinic. These are: 1929—29 new cases; 1930—60; 1931—31; 1932—43; 1933—8.).

Two reasons may be advanced for this. Firstly, the system of frequent examination of all natives for (*inter alia*) suspicious signs of leprosy has resulted in earlier detection of both infectious and non-infectious cases. This results in the early treatment of both types, and also in the segregation of the infectious case at the earliest possible moment, thus removing a source of infection to others, especially children. Secondly, the general resistance may be increasing, partly through repeated subliminal infections and partly as a result of persistent pressure from the administrative authorities to secure better hygienic conditions of housing and living. The result is that fewer cases now reach the infectious stage, pointing strongly to the advisability of early and continued treatment.

It will also be noticed that approximately fifty-five per cent. of the admissions to segregation could have been infected before reaching the age of 15 years, and that about forty-five per cent. were definitely infected before reaching the age of 15. Almost the same figures apply to those receiving treatment at the clinic. On the other hand, twenty-five per cent. at least were over the age of twenty-five years when they showed the first signs of infection and fifteen per cent. of the total cases must have been over the age of twenty-five when they received their first chance of infection. This is assuming that the first generalised opportunity of infection was about 1917, three or four years earlier than the generally accepted date of the outbreak. As noted by Bray, the evidence points to there having been definite neural cases before 1916. It seems probable that there were more than this number if reliable data were only available. It seems fairly definite that there were no cases before 1911 or 1912.

It thus appears that the possibility of initial infection in adult life is strongly supported by the figures quoted.

A small number of "non-infectious" (*i.e.* probably neural) cases have gone on to nodule formation in spite of early and continued treatment. Four such cases have been

traced and all are still nodular. The period from first diagnosis to the appearance of nodules varied from two to four years. At least five cases in the last six years have developed from non-infectious to infectious (i.e. cutaneous cases but not nodular) despite treatment, the period of appearance of bacilli in the skin smears being from three to eleven years after the appearance of the original signs. Seventeen cases admitted to segregation as mildly infectious cases and receiving continuous treatment advanced to the nodular form. This is six per cent. of the total admissions to segregation. Of these seventeen cases, ten have been males and seven females. Two of the females have now improved and do not show any nodules, exhibiting fairly active macules with anaesthesia and analgesia.

More encouraging is the fact that thirty-two cases (fifteen male and seventeen female) who have been at some time nodular have been released from segregation since 1929, which was the first year in which a previously nodular case was found to be bacteriologically negative. This number is approximately 11 per cent. of the total admissions to segregation. In addition, twelve cases previously nodular have lost their nodules but are still in segregation. Of these, seven are males and five females. (One of the females has died since the figures for this paper were collected. Cause of death was senility). Thus the total number of persons who showed definite improvement from the nodular state and have maintained this improvement unless interrupted by death, is forty-four, or approximately 15.5 per cent. of the total admissions.

From all the figures so far quoted, it will be seen that there is no great disproportion in the sex incidence. For the cases admitted to segregation, the totals are one hundred and fifty-five males and one hundred and twenty-nine females, a ratio of 1.2 : 1.0. For cases treated in the clinic the totals available are eighty males and one hundred and thirteen females, a ratio of females to males of 1.41 : 1.0. The total cases of which records are available, including both infectious and non-infectious types, comprise two hundred and thirty-five males and two hundred and forty-two females.

If any conclusions can be drawn from such a comparatively small group of cases, it would seem that the males when once infected exhibit a slightly greater tendency to develop the infectious type of the disease, whereas the females appear to exhibit a slightly higher resistance to the development of infectious lesions.

The "relapse rate" to the infectious type of the disease appears to be somewhat lower than the published figures for other parts. Such a relapse here may be defined as one who has had the infectious form of the disease and has been in segregation, has been discharged to receive treatment at the clinic and is either still receiving treatment or has been finally discharged as arrested, and who then exhibits infectious types of skin or nasal lesions again. Such a case is of course returned to segregation. Twenty-five such cases have had to be readmitted since 1925. These readmissions have not been included in the total admissions given previously. Thus the relapse rate is 8.8 per cent. of the total admissions to segregation. Of these twenty-five, six have developed nodules since readmission in spite of continuous treatment over an average period of twelve years, both in segregation and at the clinic.

There have been nine relapses in the last eighteen months (to June 30th, 1936). Eight of these gave negative reactions to the Leprolin Test, using Muir's technique, thus indicating a lowered resistance. The ninth case was not tested.

It has not been possible to ascertain the relapse rate in the purely neural cases treated at the clinic only, but it appears to be very low.

Possibly the most important reason for this low relapse rate is the fact that the small area of the Island, the small population of just over sixteen hundred natives and the small number of persons receiving treatment make it easy to keep an accurate check on attendance for treatment, together with the fact that a prolonged period of treatment is insisted upon (at least five years except in certain special cases treated as suspects only, and two years treatment after the last sign of activity). The patient is not allowed to cease treatment until the medical officer is satisfied that such action is justified. It must be noted in justice to the majority of patients that they do not desire to cease treatment until they are considered by the medical officer to be safe from further manifestations. In fact, several have recently requested to be allowed to continue with somewhat less frequent injections, although pronounced fit for parole. It will thus be seen that the average Nauruan does not regard treatment with disfavour, but rather looks on it as a safeguard.

Dr. Cochrane also asked whether we have any evidence of natural arrest of the disease in the early neural stage of the disease amongst adults. It is not possible to throw any light on this question from our experience here, as all cases in which a definite clinical diagnosis can be reached

are placed on treatment as soon as possible. Similarly, any strongly suspicious cases are treated to be on the safe side.

The publication of articles on Tuberculoid Leprosy by Wade⁽⁵⁾ and Moisier⁽⁶⁾ led to a careful search for any cases showing the clinical features of this form of the disease, but none have been found in the last eighteen months, nor can any reference to findings suggesting Tuberculoid Leprosy be found in the records. Nerve abscess, described as a tuberculoid manifestation, is conspicuous by its absence.

In conclusion, it may be of interest to quote the present situation as regards the types of cases on the Island. There are fifty-seven cases in segregation, of whom twenty-two are nodular, seventeen being males and five females; the remaining thirty-five are milder though infectious cutaneous cases, sixteen being males and nineteen females. There are one hundred and two attending the clinic, of whom forty-five are male and fifty-seven female. Thus the total number of persons actually receiving treatment for leprosy is one hundred and fifty-nine, or approximately ten per cent. of the native population. This is a high percentage, but contrasts very favourably with the figure of almost thirty per cent. in 1924 and fourteen per cent. at the end of 1933. As Grant pointed out, the high figure for persons attending the clinic is indicative of the severity of the standard of "apparent cure". Our object is to be over-cautious and to take no risks whatever. The goal of the Administration is the total conquest of the disease.

Summary.

(1) A summary of the result of a survey of all the available records of leprosy at Nauru up to June 30th, 1936 is given.

(2) A high incidence of infection in childhood and adolescence is noted, together with a definite incidence of infection in adults.

(3) A small but definite tendency for adequately treated cases to progress to the nodular type is noted. Against this is the fact that a proportion of previously nodular cases has shown very definite improvement as a result of treatment.

(4) The relapse rate is shown to compare favourably with experience elsewhere.

(5) A definite improvement in the incidence of the disease in the last twelve years is noted.

(6) The tuberculoid form of the disease appears to be absent.

(7) No reference has been made to methods of diagnosis and treatment employed, as these have already been fully discussed by others^{(1) (2)}.

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Leprosy in Barotseland

The Barotse Province of Northern Rhodesia forms the extreme western part of that province. Through its centre flows the Zambesi river joined by many large tributaries. Regarding this province the Director of Medical Services writes:—"It has been calculated that about 2 per cent. of the population of the Barotse Province, especially in the Balovale District, are lepers, and in consequence the Government evolved a scheme known as the 'Occupational Scheme for Lepers' which was intended to encourage those infected to present themselves for treatment and to keep them occupied. The scheme has proved to be very popular, even cases in the early stage of infection appearing for treatment."

We have received the following account from Mbikusita A. Godwin, care of the Paramount Chief's Office, Lealui:—

"Many people in Barotseland are suffering very much from leprosy, and it appears that this serious disease is increasing instead of decreasing. Therefore we should ask ourselves why does it increase and how can it be decreased?"

"There are people of one family, who are, most of them, suffering from leprosy, and by that they think that they are being bewitched by a neighbour. The reasons that bring such misfortune are:—

- (1) When a relative or friend is affected by this disease his friends or relatives share food with him from the same dish (using their own hands).
- (2) A Mulozi does not hesitate in lending a blanket, shirt or hat to a leper when he is related to him.

- (3) When a Mulozi meets a leper (friend or relative) he does not hesitate in kissing him, never mind whether the spot to be kissed is actually affected.
- (4) A leper can be asked to occupy any chair or mat in the house without hesitation.

Some people, most especially educated ones, do all these by flattering, they very well know that by allowing these they are actually poisoning themselves, but they don't want to disappoint their friends or relatives.

"The only thing that can help very much in decreasing this disease is an Hospital that can be built specially for those who are suffering from this disease. GOD HELPS THOSE WHO HELP THEMSELVES. If an agreement, after arrangement, can be made to have such a Hospital in Barotseland, every Mulozi, male and female, should subscribe something towards its establishment, and instead of being optional, the subscription should be compulsory, because the Hospital will be beneficial to all. Women may bring baskets of maize or mwanja meal for their subscription, which can be sold quite easily. Such subscription should be an annual one to be run for three or more years. It takes time to make a good business. It is bad for us to put all loads upon the Government. If the Government and other European friends may like to help us in this connection, they can do that after we ourselves have established a fund. Although Barotseland is a little child and the Government is its parent, this child must be a growing one, which should one day help its parent. When you are taught, you must show your knowledge, if you don't, you discourage your teacher. Your Missionaries taught you hygiene, therefore don't neglect that knowledge.

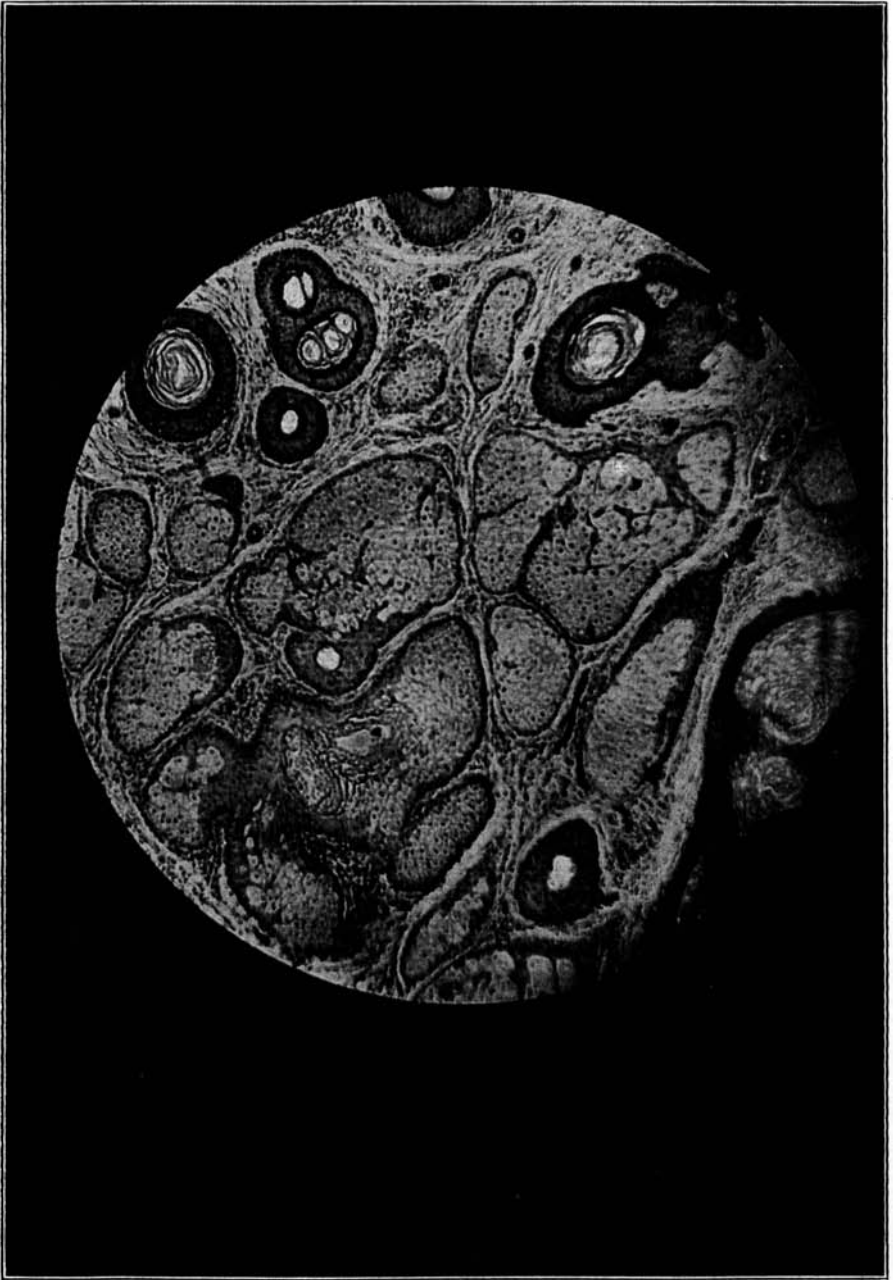
"The Hospitals that we have at Mongu and Balovale cannot adequately accommodate all those who are suffering from leprosy. Any attempt, at this moment, to do so, will create a sudden shortage of food. They can only be accommodated by a Special Hospital to be situated far from villages where they may be allowed to make gardens (those who are able to do so).

"This is a cry to all you Barotse people at home and abroad. Something good is required to free us from this enemy, otherwise thousands of souls will perish, which will mean depopulation of the whole country.

"This is a suggestion for your consideration."



ADENOMA SEBACEUM ET ACANTHOIDES CYSTICUM, RESEMBLING LEPROSY.



Enormous increase in number and complexity of sebaceous glands together with numerous bud-like epithelial prolongations developing cysts at their extremities in adenoma sebaceum et acanthoides cysticum, clinically resembling leprosy.

Adenoma Sebaceum et Acanthoides Cysticum, resembling Leprosy

(From the Section on Dermatology & Syphilology,
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C. M. HASSELMANN.

The report on Dermal Leishmaniasis resembling Leprosy⁽¹⁾ induces us to add Adenoma sebaceum et acanthoides cysticum to the series of nodular skin efflorescences resembling leprosy more than any we have yet encountered. The appended picture illustrates how this case could have been mistaken for leprosy under which diagnosis he came to us.

The gross clinical appearance was that of either Adenoma sebaceum as first described by Bock⁽²⁾ or that of Acanthoma adenoides cysticum as first reported in literature, although under a misnomer, by Kaposi and Bielsiadecki⁽³⁾. Observations of both dermatological entities have since been listed by various authors under various names. In our case, the evaluation of the histological texture, however, did not allow us to differentiate simply one from the other.

Our patient was a 74 years old Filipino of Malayan stock with the history, since early childhood, of these discrete, firm, sometimes pedunculated, indolent, yellowish or slightly pinkish, cutaneous nodules symmetrically over face, neck and upper chest. There was no defect or ulceration in the epidermis, and nothing like an excretory opening. However, when pricked with a needle, white, inspissated sebum could be expressed. The eye-brows were intact, and no sensory disturbances were present.

The histo-pathology, as already stated, shows both the architecture of true growth of the sebaceous glands with an enormous increase in their number and complexity together with finger-like prolongations of epithelium and epithelial bud-like growths from hair-sacs with many cysts of circular or oval shape. These latter are filled with partly colloid and corneous material. The inner lining of the cysts is a narrow corneal layer directly in transition to the contents of the cysts. There follow, to the periphery, well defined layers of kerato-hyalin cells, of pricklecels, and of palisade-like cylindrical cells. This latter outer zone is, apparently, under some pressure with crowding of the darkly stained nuclei. The obviously mechanical pressure in the periphery of the tumorous growth is also evidenced from some dilation of the lumina of sweat-glands as the result

of stasis. Otherwise, there is no pathology of the sudoriferous coils.

It is manifest in many sections that the bud-like offshoots of epithelium developing cysts at the extremities are formed from the normal epithelial lining of the hair-follicles. It is outside of the scope of this paper to discuss if such cells from which the growth starts have retained some sort of embryonic nature for the commencement of these benign cystic tumors.

Considering the large number of lesions and the extensive area affected in our case, nothing could be done therapeutically, of course.

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Reviews

Leprosy in India, Vol. VIII, No. 2, April 1936.

This issue includes an article by J. Lowe on "Modern Thought on Leprosy and its Bearing on Mission Work in India". He states:—

"It is now being realised that the control of leprosy is an exceedingly complicated problem, quite as much a social and economic problem as a medical one. Leprosy is a disease not only of individuals but of the community, and its control demands measures involving the whole community, and not merely the sufferers from leprosy. Its control means better hygienic conditions, better food, better housing, better sanitation, better education, particularly in health matters. All these mean more money, but a still more vital need is a real social awakening of the people. India will not be free from leprosy until the people of India have a really earnest desire to free their country from the disease and are prepared to work to that end. This day is not yet, and until these things are brought about, we can do a certain amount of valuable work but we cannot really get to grips with the leprosy problem of India."

In the July number (Vol. VIII, No. 3) is a very useful article by Lowe on "Macules in Nerve Leprosy", which we hope to reprint in the next number of the Review.

Dr. Dow reports on "Late Results of Nerve Decapsulation in Leprosy". He concludes as follows:—

"In the light of the results which have followed upon operation in thickened nerves, we now feel justified in resorting to surgery only in cases of nerve abscess, and only exceptionally in these cases is it necessary to decapsulate the nerve."

Batavian Leprosy Conference.

This conference was held in the Leprosy Research Institute on 18th February, 1936. In a paper by Dr. Lampe, the Director of this Institute, he says:—

"The development of progressive leprosy is not governed exclusively by infection or superinfection. It is possible that also local conditions exercise an influence upon the generation of leprosy foci. This deserves further inquiry. An extensive investigation, therefore, has been initiated on Java, in 6 regions where leprosy is frequent, and in 9 regions where it is rare, covering 150 families chosen at random, comprising about 900 individuals. Particular attention is being directed to the geological character of the soil, the disposition and utilization of the garden compounds, the housing condition, the manner of dress and personal cleanliness, the physical condition of the persons concerned, and their dietary. The investigation of the dietary by daily control is to be continued for fully a year, in order to obtain seasonal and annual averages. Undoubtedly co-incidentals will be established, though it is hardly likely that more definite interpretation will be possible; for in this respect, at least as regards the prophylaxis against progressive leprosy, we are still groping too much in the dark."

Another paper stated that:—

"Amongst the 650,000 inhabitants 654 lepers were observed, which amounts to 0.1 per cent. The distribution of the disease is capricious, nor does it seem to hold any relation to difference in geological conditions. The proportion of male to female lepers is as 2.7 : 1. Classified according to age, there were counted 123 cases below the age of 20, and 408 above that age, whilst 258 individuals stated that they had become affected prior to their 20th year. The investigation proved that of 1398 contacts 93 had contracted the disease through infection, and of these very early cases 66 individuals stated that they had already been affected with leprosy before they were 20 years of age. As regards the source of infection in these 93 contacts, it was particularly remarked that infection transmitted by brothers or sisters was quite frequent (in 40% of these cases)."

An interesting paper on "*Rat Leprosy*" by Lampe and de Moor, mentions that their "efforts to cultivate the originator of rat leprosy were unsuccessful. Cultures of acid-resistant micro-organisms were isolated on the medium of Löwenstein out of the subcutaneous lymph nodes of 200 wild rats with rat leprosy and out of the subcutaneous closed granulations of 30 white rats with experimental leprosy or with 'soil leprosy,' in 20% of the cases. Cultural investigation and animal experiments proved that these were cultures of acid-resistant saprophytes that very probably had entered the inoculation material from the skin and the hairs of the

rats at the time of preparation. Out of 30 mud samples—with which 'soil leprosy' could be produced—similar cultures of acid-resistant saprophytes could be isolated in 100% of the cases, by means of Söhngen's method." In an analysis of 225 autopsies in the Semarang Leprosarium the causes of death were mostly tuberculosis and pneumonia. The distribution of the causes of death were almost the same as in the general population.

Revista de Combate á Lepra, Vol. 1, No. 1, Sept. 1936.

This is the official organ of the Federation of Leprosy Relief and Prophylaxis Societies, whose function is to co-ordinate all the work done by the different leprosy relief agencies throughout Brazil. This is the first number of the Review, which is to be published quarterly with the collaboration of all the chief Brazilian leprologists, such as E. Rabello, de Souza-Araujo, etc.

In a leading article Prof. E. Rabello particularly emphasises the necessity for the proper organisation of the campaign for *saving the children*, and for the care and control of the families from which lepers have been isolated. Details are given of antileprosy work in the various states of Brazil. Whereas in the states of Pará, Sao Paulo and Minas Geraes the State Governments and private agencies have provided leper colonies, dispensaries, hospitals, etc. of the most modern types, practically no leper work has been done in most of the other States. A report is given of a 60 days propaganda campaign in Parahyba, Pernambuco and Bahia which resulted in £2,000, £3,000 and £2,500 being raised in these States respectively. It is estimated that there are about 50,000 lepers in Brazil of which 19,734 are registered and 5,914 are segregated. The chief leprosy foci are in the States of Sao Paulo 15,000, Minas Geraes 15,000, Pará 4,000. There are in Brazil 20 leprosaria with 8,675 beds, but they calculate that they require hospital accommodation for over 23,000 cases. There are 8 "Preventoria" but only some 500 children have so far been collected into them. A programme of the courses in leprology to be given in the Faculty of Medicine at Rio de Janeiro by Prof. H. C. de Souza-Araujo is given. J. W. LINDSAY.

Sodium Thiosulfate in Treatment of Scabies. Scabies is so commonly an accompaniment of leprosy that this form of treatment described by G. V. Kulchar and W. M. Meininger in the *Archives of Dermatology and Syphilology*, Vol. 34, No. 2, Aug. 1936, may be of interest.

"The treatment is carried out as follows: The patient is directed to take a soap and water bath. After he is thoroughly dry, a 40 per cent. aqueous solution of sodium thiosulfate is applied over the entire body except the head and face; particular attention is paid to the areas between the fingers, flexural surfaces of the wrists, breasts, abdomen, buttocks, thighs and external genitalia. Fifteen minutes later 4 per cent. hydrochloric acid is applied in a similar way, and one hour later the applications are repeated in the same order. The procedure is repeated the next day; on the following day the patient again bathes and changes to fresh clothing. All bed linen, sleeping garments and clothing previously used are sterilised by boiling for five minutes. As the solutions are stable, they may be made up in large quantities and dispensed as needed. Four ounces (118.92 cc.) of each solution is sufficient to carry out the treatment.

"We used sodium thiosulfate in treating fifty patients with scabetic infestations of all degrees of severity. As a control, fifty patients were treated with an ointment prepared in the manner described in Greenwood's article. The diagnosis was made on the basis of the morphology and distribution of the lesions, the presence of burrows and the history of nocturnal itching. The ages of the patients who were treated by the use of sodium thiosulfate varied from 7 months to 62 years. On examination of the patients in this group one week after completion of the treatment, all were found to be free from evidence of scabies, although one patient returned with a relapse or a reinfection five weeks after the treatment, having been free from lesions during the intervening period. Contrary to instructions, five patients repeated the regimen of treatment two times and one four times before returning for examination. In the latter instance a mild sulfur dermatitis occurred after the eighth application of the solutions. No other dermatitis reactions occurred.

"The ages of the patients treated with the ointment varied from 1 year to 73 years. Thirty-one of the patients showed no evidence of scabies after one application of the ointment. For eleven, two applications, and for three, three applications, were necessary to effect a cure. For one patient four applications of the ointment were required before a cure was attained. For four patients treatment was not effective, although two of them used the treatment only once and one twice, and one carried out the routine three times without success. Ten of the patients acquired a sulfur dermatitis, six after one application and four after two applications of the ointment.

"With the exception of the slight odour of sulfur detectable for about fifteen minutes after the application of the sodium thiosulfate and hydrochloric acid solutions, patients were not in any way inconvenienced by the therapy. Patients who had been previously treated with ointments of various kinds containing a sulfur expressed a decided preference for the therapy with sodium thiosulfate."

A Study of Nerve Leprosy, by Muir, E., and Chatterji, S. N., Indian Journal of Medical Research, Vol. 24, No. 1, July, 1936.

As the result of a detailed investigation, clinical, pathological and histological of 81 cases of leprosy, the authors are able to throw much light upon the *path of infection* in nerve leprosy, the nature of the *pathological processes* inside

the nerves, and the bearing of these upon the various *clinical manifestations*. The article is well illustrated with photographs and drawings.

Location of bacilli—M. Leprae. In definitely neural cases acid-fast bacilli were found not in the skin but in one or more nerves: in all the cutaneous cases bacilli were found both in the skin and in the nerves.

In affected thickened nerves large masses of bacilli were found, but little sign of any cellular response and practically no destruction of nerve fibre. In the nodules and globular swellings of affected nerves bacilli were found in the caseous matter and in the pus of the abscesses.

Smears of the skin from patches or anæsthetic areas in such cases were invariably negative for bacilli.

Evidence is given to show that the *route of nerve infection* from the skin upwards is through the neuro-vascular plexuses of the skin, in which there may or may not be any clinical lesion. In recently infected skin it is in connection with these plexuses that M. Leprae is found. It is probable that the bacilli are propelled up the course of the nerve bundles by the lymph flow and that they multiply as they pass up. Wherever they meet with any obstruction in their course as at branching of the nerves or the passage of the nerve over bone, there result *accumulations of the bacilli*. The bundles of peripheral nerves are found to form a more favourable medium for the multiplication of M. Leprae than do the skin and the connective tissue sheaths of the bundles, so that whether it is due to mechanical obstruction of the bacilli or to some *neurotropism* on the part of the M. Leprae, the fact remains that such accumulations of bacilli in the nerves do occur. Additional proof of neurotropism is seen in the fact that with the passage and presence of M. Leprae among the nerve fibres there is comparatively little or no cellular response by way of reaction against the presence of the organisms. On the other hand the cells most concerned in the reaction to M. Leprae are the endothelial cells of the capillaries in both skin and nerves. "In the latter the bacilli are isolated from the endothelial cells of the centrally-placed capillary by the medullated nerve fibres, and thus may escape phagocytic destruction, whereas in the skin the bacilli lie in close proximity to the endothelial cells and are thus more liable to be phagocytosed."

Caseation and abscess formation seem to be determined by a combination of two factors: a considerable accumulation of bacilli at one point as mentioned above and high resistance of the patient to M. Leprae and consequently powerful cellular response in what is called "*recovery reaction*." It has been shown that the most marked signs of leprosy are due more to the intensity of *cellular reaction* to the bacilli than to the actual number of bacilli present in the body. It is well known that it is on the condition of the general health of the patient that there depends the continuance of any *specific resistance* he may naturally have to M. Leprae. With depression of general health and consequent lowering of resistance the bacilli tend to multiply in the body. With restoration of health there is coincident "*recovery reaction*" in the lesions within which the bacilli had multiplied during the temporary depression, with the appearance then of markedly raised and erythematous skin lesions of the tuberculoid type. There may, indeed, occur such violent cellular reaction in the affected nerves as to result in extreme cases of caseation and abscess formation, the

"*recovery reaction*" even being sometimes sufficient to destroy the bacilli in the nerves.

From the neurotropism of the *M. Leprae*, as suggested by the histological findings of the authors, it is probable that the peripheral nerves form the *principal reservoirs* for *M. Leprae* in the body, at least in incipient cases. So long as there is adequate general resistance of the patient the bacilli tend to be sealed up inside the infected nerves and no generalized infection may occur.

The *two types of anæsthesia* in nerve leprosy are described, the primary and the secondary, the former due to destruction of small nerve branches in the skin and subcutaneous tissue, the latter due to the infection invading the larger sensory and mixed nerves and causing pressure upon bundles of fibres which supply healthy skin.

The distinction is drawn between *lepra fever* or *lepra reaction* occurring in patients in poor general health or in connection with inter-current diseases, and the *recovery action*, due to the restoration of the temporarily depressed power of the cells to react to *M. Leprae*.

Whether or not these reactions, one or other or both, are of the allergic type, as seen in diseases of a more toxic nature, does not seem to have been decided.

J. W. LINDSAY.

Boletin de la Oficina Sanitaria Panamericana, July, 1936.

Climatology of Leprosy in Tropical and Sub-Tropical America. (Extracts from the Spanish by J. W. Lindsay).

At the Third Pan-American Conference of Directors-General of Public Health held in Montevideo in April, 1936:

Dr. McCoy stated that in the U.S.A. the only region where leprosy shows a tendency to spread is in the States on the Gulf of Mexico.

General Siurob of Mexico said that most cases of leprosy were found in the States that have a heavy rainfall, and almost no cases were reported from the central high tableland, where the climate is cooler, confirming thus the "law of Rogers."

Dr. Paz Soldan of Peru pointed out that leprosy does not exist in his country outside of the forest regions bordering on Brazil, and that even there only a few cases have been found.

Dr. Sussini of the Argentine stated that the greater number of lepers are found in the provinces of the basin of the great River Parana-Plate, between latitudes 25° to 35° South. In the more central hilly province of Cordoba (30° South) there are some 200-250 lepers, while in the northern hilly provinces, of latitudes 23° to 27° South, Jujuy, Salta and Tucuman, there are only some 25 to 30 lepers. In the Audine provinces with small rainfall there is no leprosy, and it also does not exist in the cold windy regions of Patagonia. In the Province of Santiago del Estero

in latitude 28° South, low-lying country within view of the Andes, but the hottest place in the Argentine, the summer sun in January and February registering 110°F. there is no leprosy.

The Leprosy Outlook in Brazil.—Dr. Barros Barreto in speaking of the 30,000 lepers in Brazil said:—"The illusion of the possibility of isolating all the lepers is being dissipated, and efforts are being concentrated on what is practicable, viz., in the provision of the necessary Lazarettos in the separate States, the establishment of dispensaries for treatment, the early diagnosis of the disease, and the systematic examination and following up of cases.

International Journal of Leprosy, Vol. IV, No. 1, Jan.-Mar., 1936

Castious Swelling of Nerves in Leprosy is the title of a paper by N. de S. Campos. He describes in 15 patients this now well-known condition in leprosy. He confirms the opinion of others that it is always an index of a mild and residual form of the disease and shows a high degree of immunity in the patient. Several interesting photos are given.

J. N. Nolasco writes on *Calcification and Osteoid Changes in the Nerve in Leprosy*—a very real condition.

M. Paul describes *Surgical Measures in Leprosy* recommending strapping with adhesive plaster for superficial ulcers of the foot and excision of the metacarpus when this bone is involved.

H. P. Lie writes on *The Classification of Leprosy*. He advises the following:—

M for the macular form, the degree being shown by M¹, M² or M³.
NM when these are accompanied by anaesthesia, the degree being indicated at N¹, N² or N³.

MO where there have been macules which have disappeared.

N³MO would thus indicate old patient with considerable mutilations, who in the past had pronounced macules which have now disappeared.

T to indicate tuber or nodule would cover the present C or cutaneous form, degrees being indicated by T¹, T² and T³.

"t" added to M would indicate that the macules were of the tuberculoid variety.

NMt would thus be the symbol of tuberculoid leprosy with anaesthesia, 1, 2 and 3 being added to show the degree.

Nt would indicate that the tuberculoid condition was confined to the nerve trunks.

MtNt would signify the affection of both.

TN or TNM would indicate the mixed form.

TNMP would signify that there had primarily been macules but that the disease was now of the nodular and nerve type.

TpNM or TpN would indicate the reverse process, primary nodular having given place to the neuro-macular or neural form.

B+ added to any of the above would indicate that bacilli had been found.

[This is perhaps the most rational and complete symbolism that has yet been invented. It seems however to ignore one common condition, viz., the diffuse form of the disease in which the greater part of the skin is infiltrated with leproma, without either macules or nodules appearing. The letter D for *diffuse* might perhaps in these cases be substituted for T, or DT when nodules appear on the diffuse lesions. Also B + + or B + + + might indicate a larger number of bacilli found. Ed.].

Juvenile Leprosy gives a description by E. Muir of a form of leprosy common in young children.

Mrs. R. C. Richardson writes on *Experience with Children of Lepers*.

Out of 46 children of lepers only 4 "have developed evidence of leprous infection so far as is known". She concludes as follows:—"It is realised that no general conclusions can be drawn from so few cases, but they may be of interest particularly as they indicate that in this country at least a very large proportion of the children of lepers, even those who have had long exposure to the more infectious type of the disease, remain free from evidence of infection if removed to favourable surroundings before such evidences appear. It may be added that the records of this Home show that no other children of these parents were infected. It is indicated in Table 1 when two or more children were of the same parents."

C. J. Austin writes on *A Study of Leprosy in Fiji*. We have recently given (*Leprosy Review*, Vol. VII, No. 3) a similar article by this writer.

Compulsory Segregation of Leprosy is the title of an article by J. Knott, writing on Saint Croix in the West Indies, where there are 99 known cases of leprosy. "Twenty-five years of trial of compulsory segregation of all known cases of leprosy in St. Croix has not resulted in any appreciable decrease in the incidence of the disease."

A. C. Howard writes on *Leprosy in Nigeria*, giving a general description of the disease in this colony.

Lepra Bubalorum is the title of a reprinted article by L. W. M. Lobel, which is summarized as follows:—

"It can be said that the resemblance between the buffalo and leprosy bacilli is very close, both as regards their individual morphology and the important feature of grouping. The tissue reaction on the part of the host is in many respects the same. The important pathognomic vacuolation and fat-production are outstanding phenomena. The multivacuolar form of the Virchow lepra cell is not formed, but the univacuolar form is produced. In the buffalo disease coagulation

necrosis, calcification and formation of Langan's giant cells occurs frequently. The clinical phenomena of the buffalo disease and nodular leprosy also shows close agreement. The negative results of the biological examinations constitute important evidence of the close relationship between the organisms of these two diseases. On account of the close agreement between human nodular leprosy and the buffalo disease, the name "lepra bubalorum"—buffalo leprosy—is given to the latter. Or, if it is desired to give special emphasis to the particular nodular feature of this disease as it has been observed it might be called "lepra tuberosa bubalorum"—nodular buffalo leprosy. *Lepra bubalorum* is a chronic infectious disease of the water buffalo caused by an acid-fast micro-organism. It shows very close resemblance to human nodular leprosy. The question whether its causative organism is entirely identical with that of human leprosy, and whether mutual infection is possible, cannot be answered." Some very fine photographs are given.

International Journal of Leprosy, Vol. IV, No. 2, Apr.-June, 1936.

The first paper is a *Field Study of Leprosy in Cebu*, by J. A. Doull, J. N. Rodriguez, R. Guinto and F. C. Plantilla. In a population of 6063 persons, 104 cases were found, making an incidence of 17.2 per thousand. Of these 43 were already in segregation and 16 others on parole. It is calculated that if the same ratio between segregated and non-segregated can be assumed throughout the Philippines, the total number would be 20,000. Of the 30 newly discovered cases, only 3 were bacteriologically positive. Close contact could only be traced in 38.5 per cent., and 26% others gave a history of family contact, but it is suggested that further enquiries may raise that percentage. In a high proportion the "primary" lesions were situated on those parts of the body most exposed to injury. There was no obvious associated infectious disease except yaws and parasitic skin diseases, nor any obvious dietary deficiency; but overcrowding was a suggestive association.

Leprosy in New Guinea is an article contributed by E. M. Holland. He states that:—

"The evidence that leprosy was introduced into New Hanover only during this century is conclusive, and although the spread of the disease has been rapid, in the majority of cases it has been mild, which is against the experience of other countries. Although the New Hanover language has a rich vocabulary it has no name for leprosy but has adopted names for the different manifestations. Thus *kal* (a smooth pigmented scar) has been given to the early neural patches, *tapok* (a dead tree with falling limbs and bark) to advanced neural cases, and *karigot* (a vine with a nodular stem) to nodular lesions.

"In contrast to this is a group of islands, the Squally Islands, located in this district but somewhat isolated, near the equator. In

a population of nearly 2,000 we have collected in recent years 12 lepers, all early neural cases. The natives denied all knowledge of the disease and we concluded, erroneously, that it had been introduced recently. Since then, however, the natives have become more communicative, and have told us that the disease has been known among them from time immemorial. They have one word covering all the different lesions of leprosy, but everything connected with the disease was *tambu*, the death penalty being inflicted for merely uttering the name. They state that strict isolation was carried out on the first appearance of lesions, and lepers were not allowed to marry. They recognise the communicability of the disease from man to man. These natives have a strong Malay strain in them, and it is possible that the disease was introduced by Malays many centuries ago."

N. C. Wayson contributes an article on *Early Diagnosis of Leprosy*.

He advocates the study of leprosy in its earlier stages. Emphasis is placed on the fact that in the early stages of the disease there may be only minor neurological findings, and that the skin lesions which may or may not be evident in these stages are often of short duration and cannot be regarded as specific to leprosy. One hundred and eight children born of leprous parents, and subsequently maintained in an institution segregated from contact with leprous persons, were observed for a period of three years. Ten of these children have developed leprosy. The first clinical findings are exemplified by notes of three cases.

Leprosy and Childbirth is discussed by I. Tajiri.

Of 112 leprous women at Aisei-en who have had children, 39 (34.8 per cent.) developed the disease during pregnancy or shortly thereafter. In 100 pregnancies that occurred in women with leprosy, exacerbation of the disease occurred 48 times, the remaining 52 being uneventful in this respect. Though the initial symptom of leprosy is usually a simple macule, or anaesthesia, the symptoms that appear in pregnancy or childbirth are usually acute lesions, the so-called "rash", often appearing as numerous active macules and frequently with edematous, erysipelas-like swellings of the face. In the case of abortion there usually is little advance of the disease, though occasionally a case becomes worse in spite of it. It is evident that for women who are in the incubation stage of leprosy, pregnancy and childbirth are liable to precipitate the development of the disease, and for those who have leprosy childbearing is apt to lead to its exacerbation and extension.

J. Lowe writes on *Tuberculoid Changes in Leprosy, as seen in India*. After describing various forms of this lesion he says:—

"The question arises as to whether we in Calcutta are dealing with a local peculiarity of the disease, or whether such cases are common in other parts of India and in other countries. A survey of the literature of the subject of the tuberculoid condition in leprosy (which is extensive, for I traced over fifty references to it) shows that such lesions are apparently much more common in some countries than in others. They are commonly seen in Japan, North India, and parts of Africa, but seldom in most other countries. However, there seems to be records of such lesions in practically every country in

which leprosy exists, even in Norway where it is said to be very rare; Lie reported having observed three cases. It is interesting to observe that when such cases occur in countries where they are rarely seen there often seems to be considerable difficulty in diagnosis, and I have seen several records of such patients being shown for diagnosis before dermatological societies where there was much discussion as to whether the condition was leprosy or tuberculosis of the skin."

G. A. Ryrie, writing on *The Therapeutic Effects of Phthalic Acid Salts*, summarizes his observations as follows:

"The magnesium, calcium, potassium-hydrogen and cotarnine salts of phthalic acid have been tried out, on twenty patients each, over a period of six months by intravenous injections twice a week. Intravenous injections of magnesium, calcium and potassium-hydrogen phthalate appear to have no therapeutic effect in leprosy in doses of 20 cc. of a 1 per cent. solution. Out of nineteen cases treated with intravenous injections of cotarnine phthalate, in 20 cc. doses, first of a 1 per cent. solution and later a 2 per cent. solution, twice a week, twelve showed marked improvement, four slight improvement and three no change. The improvement in these cases occurred only during the first three months of treatment. The clinical improvement appears to be accompanied by a general increase in resistance as indicated by a drop of over 25 per cent. in the sedimentation rate of twelve of the patients. It is suggested that the effect of the phthalate group in leprosy is dependent to some extent on the length of time the drug is retained in the body."

P. C. R. Pereira applied the reaction of Witebsky, Klingenstein and Kuhn to the blood of 107 cases of leprosy.

"It was found that it was positive in 100 per cent. of 12 cases of the cutaneous type and 35 mixed cases, and in 80 per cent. of 60 neural cases. Of 84 sera of persons who had had continued contact with leprosy, the greater part of them being children and mates of lepers, 53 gave negative reactions, 4 doubtful and 27 positive. Nine of the negative cases were found to present symptoms that might be due to leprosy, but which actually did not seem to depend on that malady. As for the positive reactions, excluding those cases which were probably leptotic, with beginning or atypical lesions, and a few cases that were tuberculous, there remain nine in which an explanation of the positivity of the reaction is not evident. In view of the foregoing it seems justifiable to conclude that (1) The reaction of Witebsky, Klingenstein and Kuhn gives the highest number of positive reactions, in all forms of leprosy, of any test yet known. (2) It should always be employed in cases difficult of diagnosis and in latent leprosy. (3) It is indispensable to make as complete an examination of the case as possible to avoid errors and confusion."

J. W. MacKenzie writes on *Leprosy Work in Korea*.

R. C. Germond, dealing with *The Last Six Years of the Leprosy Campaign in Basutoland*, states:—

"The present stage in the campaign began in 1929 with the appointment of two leprosy inspectors, one for the north and one for the south. The result of this experiment was so satisfactory that four more inspectors were appointed in the following year. The employment of these specially trained workers marks the beginning

of a new and more hopeful era. It has resulted in such all-round improvement that, after six years, it is possible to offer concrete evidence of a large measure of success. The immediate result of the new measure was a sudden and important increase in the number of admissions. This somewhat exceeded the 1920 figures and brought the population to its highest level since 1914. For the first time in the history of the campaign the increase in population continued uninterruptedly for no less than five years. It was not until 1934 that a slow decline began, and this has continued to the present date. The employment of four additional inspectors in 1930 did not result, as might have been expected, in further increase in the number of admissions. To the contrary, the unexpected happened, namely, a large and sudden fall. It is certain that this would not have occurred if there still had been a considerable number of lepers in the territory."

REPORTS

Sudan.

The Report of the Sudan Medical Service for 1935 states:—

"At the end of the year 2,698 lepers were in camps or settlements, and 1,512 were under observation and treatment. The distribution of leprosy in the Sudan is estimated as follows:—

PROVINCE	In Camps or Settlements		Under observation and treatment as hospital out-patients	Total under treatment	Under observation	Estimated No. of further cases	Estimated total No. of cases
	Segregated	Under treatment but not segregated					
Northern ...	—	—	52	52	—	—	52
Blue Nile ...	—	43	19	62	—	—	62
Kassala ...	—	26	—	26	—	—	26
Khartoum ...	—	—	34	34	—	—	34
Kordofan ...	—	—	419	419	42	1,500	1,961
Darfur ...	—	58	28	86	—	250	336
Port Sudan ...	—	—	1	1	—	—	1
White Nile ...	—	—	5	5	—	—	5
Upper Nile ...	—	—	3	3	—	100	103
Bahr-el-Ghazal ...	—	78	—	78	237	—	315
Mongalla ...	390	2,103	951	3,444	3,972	400	7,816
	390	2,308	1,512	4,210	4,251	2,250	10,711

New leper settlements have been opened at Roseires in Blue Nile Province and at Koggi in Mongalla Province, west of the Nile, near Juba. Attempts are now being made to deal with the disease in all districts.

The Nuba Mountains area requires further attention, but it has been impossible to do much during the last two years owing to the severe epidemic of cerebrospinal meningitis which has been raging

there. It is intended to open voluntary settlements near dispensaries in 1936.

It is hoped that the economic development in this region will rapidly lead to a higher standard of living, which should be of assistance in dealing with this disease.

The stage has been reached where further treatment with chaulmoogra derivatives is of no avail, in so far as this applies to cases prior to 1933-34.

It is particularly worthy of note that, whereas in 1932, 31% of lepers had been rendered quiescent, by 1935 the percentage is 78. A big proportion of early cases become arrested in any case, but is assisted to do so by treatment.

No form of treatment yet tried holds out much prospect for the advanced cutaneous and mixed cases. They have all undergone prolonged treatment, and the very few who have improved would have probably done so without interference. The most hopeful outlook for the majority of C3 cases who survive is the gloomy prospect of the maimed and disabled N2 stage.

Methylene blue has proved entirely dissappointing in the advanced cases, although possibly more effective than sodium gynocardate.

In spite of the great incidence of leprosy it is important to note (1) that less than 10% of cases are any danger to their neighbours as far as can be at present judged, in the absence of exhaustive and repeated laboratory examinations, (2) that treatment is effective and worth trying in a large percentage of active early cases over a period not exceeding four years, (3) that the settlements have removed the chief foci of infection in the district, and both centralized and simplified their control."

Southern Rhodesia.

The Report of Public Health for 1935 states:—

"The Government maintain two leprosy hospitals of practically equal size—one at Ngomahuru and one at Mtoko. In addition, Mnene Medical Mission, which is subsidized by the Government, has a leprosy section attached to its hospital. The leprosy hospitals are really large estates in which the patients' mode of life approximates as nearly as possible to their natural conditions. The leprosy laws are in force, but these hospitals, as far as is possible, resemble voluntary institutions. The success of the Government's policy is indicated by the fact that the number of lepers under treatment has increased in six years from 508 in 1929 to 1,359 last year. Further, a large proportion of patients now ask for admission. This does not mean that there are more cases in the Colony, but that more are seeking treatment.

In 1935 a complete reorganisation of the Mtoko Leper Settlement was undertaken. This included the building of 45 new huts for the accommodation of the leper patients, a house for the European orderly, the opening up of new roads throughout the leper settlement, the laying-on of water supplies to the leper compounds, the establishment of a creche for leper children, the creation of a kitchen garden for the purpose of supplying fresh vegetables to the leper patients, and various other measures for the benefit of the native patients accommodated there. In the coming year it is intended to complete the building of the native compounds.

At Ngomahuru many improvements were effected during the past year, the chief of which were the completion of the plans for a new water supply which will be drawn from the Tokwe River by means of a pumping station and which will ensure for Ngomahuru an ample supply for all its needs. At Ngomohuru iodised esters constitute the drug chiefly used, and the Medical Superintendent reports that the results of this treatment are very satisfactory.

Leprosy institutions are now looked upon as curative hospitals and not as prisons. A large number of "arrested" cases are discharged each year—117 from Ngomahuru and 202 from Mtoko in 1935. The return of these patients to their kraals has an excellent effect, and the number of patients who come voluntarily for treatment increases every year.

The Government are greatly indebted to the British Empire Leprosy Relief Association for the generous gifts they have made from time to time, especially towards the erection of the Leprosy hospital at Mtoko, and also for assistance in obtaining leprotic drugs, some of which are very expensive. The following table shows the working of the above-mentioned institutions during the year:—

Institution.	LEPERS TREATED DURING 1935.				
	On register 1/1/35	Admitted 1935	Discharged or died	On register 31/12/35	Total Cases Treated
Ngomahuru ...	532	137	154	515	669
Mtoko ...	536	106	230	412	642
Mnene Mission ...	42	6	6	42	48
	<hr/> 1,110	<hr/> 249	<hr/> 390	<hr/> 969	<hr/> 1,359

Queensland.

The Report of the Director-General, Health & Medical Services, June, 1935, states:—

The position as regards leprosy tends to remain *in statu quo*. From time to time, coloured persons who have been detected during some medical survey, are sent into the Lazaret.

The following table shows recent fluctuations in the numbers of inmates on Peel Island:—

WHITE INMATES.				COLOURED INMATES.			
1933.				1933.			
Remaining 1st January	...	31		Remaining 1st January	...	29	
Admitted	...	3		Admitted	...	9	
		<hr/> 34				<hr/> 38	
Discharged	...	4		Discharged	...	2	
Deaths	...	0		Deaths	...	4	
		<hr/> 4				<hr/> 6	
Total number,				Total number,			
December, 1933		30		December, 1933		32	
1934.				1934.			
Remaining 1st January	...	30		Remaining 1st January	...	32	
Admitted	...	3		Admitted	...	10	
		<hr/> 33				<hr/> 42	
Discharged	...	1		Discharged	...	4	
Deaths	...	5		Deaths	...	2	
		<hr/> 6				<hr/> 6	
Total number,				Total number,			
December, 1934		27		December, 1934		36	
<hr/>				<hr/>			
Grand total at Lazaret, 31st December, 1933	...	...	62	Grand total at Lazaret, 31st December, 1934	...	63	

Nyasaland Protectorate.

The Annual Report of the Medical & Sanitary Department states regarding leprosy :—

There are in this country 12 clinics all administered by Missions, at which lepers are treated either as in-patients or out-patients or both. All of them receive money grants from Government in proportion to the number of cases treated.

Arrangements in regard to staff, housing and maintenance of patients at the various clinics vary considerably. Some have a doctor in charge with a qualified nurse and native subordinates, the majority are in charge of a qualified nurse only. Housing varies from wattle and daub huts, to well-built red-brick structures. At some centres the lepers have been encouraged to grow their own food supplies, at others food is bought in bulk by the Mission concerned. One or two of the Missions have started schools for the lepers and though the majority of lepers may not be able to gain much knowledge from the instruction given, it is of great benefit to them to have their interest aroused and their minds distracted from their unfortunate physical condition.

The numbers under treatment at the Leper Centres, and the admissions, discharges and deaths are as follows :—

Name of Centre	Average No. of patients per quarter		Admissions		Discharges		Deaths	
	Male	Female	Male	Female	Male	Female	Male	Female
Bandawe ...	31.00	33.00	2	0	1	1	2	1
Domasi ...	15.00	10.50	6	10	13	7	7	1
Likomi ...	8.50	8.50	0	2	1	2	0	0
Likwenu ...	45.50	18.50	6	2	18	15	2	0
Livingstonia	4.00	3.00	1	0	1	0	0	1
Loudon ...	10.50	6.50	3	1	2	1	2	0
Malamulo ...	191.00	58.25	70	23	31	7	3	1
Malindi ...	20.50	10.75	11	4	5	3	2	2
Mkhoma ...	4.00	4.00	2	2	0	0	1	0
Mua ...	39.00	25.50	3	10	4	2	8	2
Mwami ...	23.75	15.50	7	4	2	0	1	0
Utale ...	70.50	27.00	34	10	8	7	11	0
			145	68	86	45	39	8

In addition to the cases maintained and treated by the Missions, 88 males and 18 female lepers were treated as out-patients by Government medical officers.

It is on the whole the more advanced and crippled type of case which enters a clinic as an in-patient, and dealing with these is a very disheartening procedure. In some districts however cases come for treatment in the early stages of the disease, and—for instance at Malamulo—considerable success has been attained with these.

The Public Health Ordinance enables Rules to be made for the segregation and compulsory treatment of lepers, but no rules actually have been made, for the reason that any form of compulsion largely defeats its own ends.

Even though the percentage of cures is low, the Mission clinics are doing a large amount of good, for they care for unfortunates who would otherwise be left in misery, and they lessen the risk of the passage of infection to the next generation.

The financial assistance afforded by Government to these leper treatment centres amounted to £900 during the year. The cost of drugs for the treatment of leprosy supplied to these institutions was approximately £30.

Sarawak.

In the Annual Report of the Health Department, 1935, mention is made of the Leper Camp at 13th Mile, Penrissen Road. The permanent staff of the Institution is comprised of a Superintendent, one Senior Sanitary Inspector, one Junior Sanitary Inspector, with a dresser or Junior Sanitary Inspector in attendance monthly for training. There were 462 persons as inmates as compared with 413 in 1934. The morale of the settlement has been good. All the leading religious denominations are represented by church and mosque. Games are encouraged and free movement in the camp precincts permitted. The planting of cereals, tobacco and fruit trees occupies a major interest; padi with the Dyaks and vegetables with the Chinese—both nationalities enjoy the benefits of a reserved area for the erection of sties for pig producing. Barter is considerable. Successive squads of able-bodied lepers, which are changed fortnightly, maintained the sanitation of the camp, and are employed as carpenters, tinsmiths, gardeners, cooks, etc. Such occupation, with its contingent remuneration, contributes materially towards brightening their lot.

The New Public Health Laws of Paraguay, 1936.

The following laws dealing with leprosy and tuberculosis are found in Chapter VII.

Article 30. The Minister of Public Health in exercise of the powers granted him by the present law will organise a campaign against the dissemination of and the ravages caused by tuberculosis and leprosy.

Article 31. Marriage between lepers and healthy persons is prohibited, and the circumstance of one of the contracting parties being leprous is now incorporated in Article 9 of the Law of Civil Marriage, as one of the impediments.

Article 32. The right to make objection to the celebration of the marriage of lepers lies with the Ministry of Public Health or its delegates, and the procedure to be followed will be in accordance with the provisions of Chapter VI. of the said Law of Civil Marriage.

Decree Law No. 2001. Public Health.

Republic of Paraguay, Asuncion, June 15th, 1936.

J.W. LINDSAY.

Newspaper Cuttings

Lepers get Free March in Manila. "Several hundred lepers broke out of San Lazaro Hospital today, marched through Manila streets to the Presidential Palace and protested against being held as 'prisoners.'

For hours the afflicted hundreds paraded through the streets. The police attempted to break up the demonstration but captured only eleven. The others went on to the grounds of Malacanan Palace, residence of President Manuel Quezon.

Palace officials, not knowing the intent of the marchers, summoned extra guards. José Vargas, Presidential secretary, met the lepers in front of the palace.

They presented a memorial asserting they were being held as prisoners while persons suffering from tuberculosis were allowed to run loose. They contended tuberculosis was more dangerous to the public than leprosy.

Biding their time, they overpowered a hospital guard early this morning, surged over the institution's walls and headed for the palace.

Mr. Vargas promised to present their views to President Quezon and they were herded back to the hospital.

The cry of the leper against rigid confinement is an old one in the Philippines. *More than a year ago the insular Legislature passed a bill that would have permitted the release of many of the 5,000 lepers from the Culion colony 200 miles south of here.* Frank Murphy, then Governor General, vetoed the bill but appointed a commission to survey the problem."

Manila drafts 5 Year Plan to curb Leprosy. "A five-year program of leprosy control, which includes the establishment of new leprosaria on Luzon and the Visayan Islands, is being worked out by the Department of Public Instruction, which has control of the public health service of the commonwealth government. The program, which will involve the expenditure of approximately \$500,000 to start with, will be submitted to the National Assembly for approval.

The new leprosy control program envisages the ultimate abandonment of the Culion leper colony, established thirty years ago by Dr. Victor G. Heiser, then director of the Philippine Bureau of Health and the father of anti-leprosy work in the Philippines.

Several reasons have been advanced in support of the plan, the chief ones being that Culion is overcrowded now and any expansion project would cost too much; that Culion is not easily accessible from other parts of the Philippines and lepers segregated there are completely removed from all contact with their relatives.

The major phase of the new leprosaria department program seeks the construction this year of a leprosarium in the province of Bulacan, near Manila, which is to be the central Luzon leprosarium. Later on another leprosarium will be constructed in the province of Abra, which will be the northern Luzon segregation station, and a third one in the province of Cagayan."

Lepers on Strike in Japan. "As a consequence of the leper strikers beating the superintendent the police who are doing duty on the leper island have been supplied with rubber gloves and masks to enable them to restrain the strikers. Some of the patients who are suffering

from their refusal of medical treatment have puzzled the authorities, who are endeavouring to effect a settlement.

[An earlier message stated that 1,100 lepers were hunger striking in their colony, an island in the Inland Sea. The lepers were demanding better pay, self-government, and the dismissal of the superintendent.] "

A Leprosy Problem. "For more than 20 years there has been an agitation at Broome for better handling of the leprosy problem. In a special article in the 'West Australian' it is stated that the residents have recently expressed considerable alarm at the spread of the disease, and indignation at what they consider official negligence in not dealing with it more promptly. The inaction, they suggest, is due in part to the Health Department and the Aborigines Department each attempting to throw the responsibility on the other. The majority of the cases of leprosy have been among natives, but there have been other cases among white people to give ground for the alarm of the townspeople.

Leprosy in the north was first investigated in 1924 by Dr. C. Cook, who reported: 'Leprosy has spread amongst the blacks and is already amongst the whites, and even if matters are remedied immediately further cases must be expected to appear.' He recommended an immediate inspection of natives by a medical officer, and other suitable action, but nothing was done. Ten years later, in 1934, leprosy formed one of the most sensational subjects dealt with by the Royal Commissioner on Aborigines (Mr. H. D. Moseley), who found it 'amazing that so little action had been taken since Dr. Cook's report,' and declared that it was essential that the matter should receive urgent attention. In the course of evidence before the Moseley Commission, it was stated that over 80 native lepers had been detected in the Kimberleys during the preceding year. Since then a medical inspection of natives has been commenced by Dr. A. P. Davis. His first progress report, issued last April, showed that 19 more lepers had been discovered in the Broome and neighbouring districts. A contract for £13,687 was let this month for the erection of a leprosarium on a site near Derby."

Leprosy in F.M.S. "Faced with the threat of a rise in malaria in Pahang last year, the F.M.S. has just recorded also that the number of new lepers admitted to the Settlement at Sungei Buloh, Selangor, was 'rather alarming.'

At the beginning of last year there were about 1,320 lepers in the Settlement. By the end of the year the number had increased to 1,600 and there are now nearly 1,800 cases. It is calculated that the admission rate now is 1 in 5,000 of the population.

This figure is given by the Hon. Mr. T. S. Adams, British Resident of Selangor, in his 1935 report on the social and economic progress of the people of Selangor. It is pointed out that the admissions represent not the occurrence of leprosy in a permanent population, but to a considerable extent the residue of lepers left by the population that flows through Malaya.

At least 70 per cent. of the lepers in Sungei Buloh, says the report, were born in China and India.

The report makes no reference to steps being taken to combat the rise, but it is understood that a more stringent watch over immigrants at Colony ports has been suggested."

The Leper Mass. "From within the monastery has come a procession of slowly moving figures. It is past midnight and the people of the village are not stirring from their darkened houses. The monks do not have far to go. The village is small, the houses few.

Before one of these the marching figures pause. A hand reaches forth in the darkness and knocks three times upon the wooden door. There is the sound of someone slowly fumbling with a latch, and then the door is swung open. As the damp mist pours into the house, the priests enter, one bearing aloft a crucifix. There is but one room, small and unkempt. Rushes cover the clay floor; and because they have not been changed for months, all manner of filth and refuse mingle with the rotting covering.

Pressed against the side of the house stands a man staring dumbly, with frightened eyes, at the monks. Crouched down upon the matted straw bed, with three half-naked and dirty children beside her, a bedraggled woman sways back and forth. Her gaze is fixed upon the glittering cross. Both of them know why the monks have come.

Weeks before, the man noticed the faint swelling in his limbs, the suspicious thickening of his skin. It was then that fear crept over him. One day there had come the order that he must receive the medical examination for leprosy. Crude and unscientific, it was long and complicated, taking several days. Finally a messenger came to his humble dwelling and gave the verdict. He was a leper.

Henceforth in the midst of all things which live, he would be as one dead. Forbidden to stir from his house, he was required to wait until the religious authorities could arrange his removal. They had come at last. Come to take him to the church. There the Leper Mass would be said. When it was over, he no longer would have wife or child. All civil rights would be gone. By this ceremony he would become separated for ever from the world and its activities.

A large wooden rattle is placed in his hand. He is told that he must never be without this rattle. Whenever he sees someone in the distance approaching, this instrument must be sounded, as a warning that a leper is nearby. A small wooden bucket attached to a long stave is the next gift. Whenever he wishes food or wine this bucket must be presented for the food to be dropped within.

They turn to leave him now. It may be he will enter one of the many leper houses of the church. Perhaps he will live in a cave or small hut in the forest. It matters little. For him this world has vanished. In the midst of men and women he, a living man, has been pronounced dead.

He is left alone. In one hand he holds the long stave, the other clutches the wooden rattle. The world has vanished; ahead lies loneliness, perhaps long years of sorrow and pain, and at the end a horrible death

What this man thought as he stood there, we can never know. For though this happened thousands of times, it all took place long ago. The year was about 1200, when the lepers in England were a third of the population. So very many were there, and the Leper Mass was so common, that no one ever paused to question how the leper himself felt.

Seven hundred years were to pass before science would even hint that it had cured its first leper."

[Leprosy possibly included other disfiguring diseases, such as syphilis, in these days. Ed.]