

LEPROSY REVIEW

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THE BRITISH EMPIRE LEPROSY RELIEF ASSOCIATION.

VOL. VII. No. 1.

JANUARY, 1936.

Principal Contents:

Bacillaemia in Leprosy

The Curability of Leprosy.

Anti-Leprosy Work in the
Punjab.

Pluri-glandular Syndromes
with Gynecomasty in
Leprous Subjects.

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LEPROSY REVIEW.

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EDITOR - E. MUIR, M.D.

CONTENTS.

| | PAGE |
|---|------|
| Editorial | 2 |
| Bacillæmia in Leprosy H. v. R. MOSTERT | 6 |
| Toc H. Special Committee of B.E.L.R.A. | 10 |
| The Curability of Leprosy F. G. ROSE | 11 |
| Anti-Leprosy Work in the Punjab S. S. JAİKARIA | 15 |
| How Leprosy was regarded by the African Natives before Europeans came SISTER M. THECLA STINNESBECK | 17 |
| Pluriglandular Syndromes with Gynecomasty in Leprous Subjects CLAUDIO NATALI and SAMUELE CAFFARENA | 19 |
| Reports | 22 |
| Newspaper Cuttings | 26 |
| Reviews | 30 |
| Correspondence | 48 |
| Grants for Leprosy Work | 50 |

The Association does not accept responsibility for views expressed by the writers. Communications may be sent to the Editor, at 131 Baker Street, London, W.1.

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Editorial

How many people in the world have leprosy? This is a question which is frequently asked, but it is difficult to give a definite answer.

In "Leprosy" (Rogers & Muir) page 29, the following table is given of leprosy incidence in the British Empire:—

| | | | | | | | |
|-------------------|-----|-----|------|-------------|-----------|------|-----------|
| India | ... | ... | 1921 | Census | 102,513 | 0.32 | per mille |
| Ceylon | ... | ... | 1921 | | 577 | 0.13 | " " |
| Malay States | ... | ... | 1921 | | 450 | 0.34 | " " |
| British N. Borneo | | | 1919 | | 54 | | |
| Fiji | ... | ... | 1920 | | 450 | | |
| West Indies | ... | ... | 1921 | Census | 1,189 | 0.74 | " " |
| British Guiana | ... | ... | 1924 | | 247 | 0.83 | " " |
| Cyprus | ... | ... | 1921 | | 74 | 0.23 | " " |
| Africa—Nigeria | ... | ... | 1921 | Census | 32,000 | 3.20 | " " |
| Tanganyika | | | 1924 | | 11,480 | 2.80 | " " |
| Kenya | ... | ... | 1922 | | 2,018 | 0.74 | " " |
| Uganda | ... | ... | 1919 | | (?) 3,000 | 1.00 | " " |
| Nyasaland | | | 1921 | Census | 1,666 | 1.39 | " " |
| S. Rhodesia | | | 1921 | | 1,000 | 1.11 | " " |
| S. Africa | | | 1923 | | 2,501 | 0.46 | " " |
| Mauritius | | | 1923 | (Balfour) | 600 | 1.60 | " " |
| Palestine | ... | ... | 1902 | (Jeanselme) | 600 | 0.86 | " " |

According to these figures, founded on Colonial Medical Reports, there are 160,000 cases in the British Empire.

There is good reason to believe, however, that the number is far greater. Surveys carried out in India during the last 10 years have shown that multiplication of the census figures by 10 would not be an exaggeration. Dr. Macdonald, from his extensive knowledge of leprosy in Nigeria, recently computed the number of cases in that country as 200,000; while in Rogers & Muir it is argued that "the total lepers in tropical Africa cannot be less than 500,000, and may easily amount to double that number, including early cases." We may therefore take the number of cases in Africa, as in India, as half to one million.

In the table above, the Malay States are shown as having 450 cases; but in the Leper Colony at Sungei Buloh alone there are over 1,100.

We are therefore, in making a rough computation of the incidence of leprosy in other parts of the British Empire, justified in multiplying the figures in the table by 5—10, giving 15 to 30 thousand.

It is held by doctors with prolonged experience of leprosy in China, that the number is from 1 to 1½ million.

From an article by Dr. Browning, appearing in the last

number of this journal, it may be gathered that there are at least 100,000 cases in South America, and possibly far more.

French Indio-China, Siam, the Dutch East Indies and many of the islands of the Pacific, are highly endemic areas, and have at least 100,000. In Europe there are at least 6,000 cases.

The following table gives the maximum and minimum figures.

| | | | Minimum. | Maximum. |
|------------------|------------|-----|-----------|-----------|
| China | ... | ... | 1,000,000 | 1,500,000 |
| India | ... | ... | 500,000 | 1,000,000 |
| Africa | ... | ... | 500,000 | 1,000,000 |
| British Empire | outside of | | | |
| Africa and India | ... | | 15,000 | 30,000 |
| South America | ... | | 100,000 | 150,000 |
| Europe | ... | | 6,000 | 10,000 |
| Other Countries | ... | | 100,000 | 150,000 |
| Total | ... | | 2,221,000 | 3,840,000 |

For a rough computation we may put the number as 2 to 4 millions in the world.

Leprosy is like tuberculosis in this respect, that many are infected in whom clinical disease never develops or gives discomfort to the patient. Such cases are likely to pass unnoticed except in the careful examination of contacts with frank infectious cases. Recent village surveys in N. India, in which careful examination of contacts has been carried out, show on an average 2 bacteriologically positive to 3 bacteriologically negative cases, the criterion of positive and negative being the ordinary routine examination.

It is therefore obvious that under careful examination of contacts the number is bound to rise, whereas when figures are based on more desultory methods the number will be less.

The plan of campaign against leprosy must necessarily vary in different countries, and according to the local conditions, such as the distribution of the population, their education and social conditions. In small islands with a limited and insulated population, and especially with a paternal form of government, strict laws of isolation following a careful survey may be sufficient rapidly to control the disease. In India conditions vary considerably in different places. Readers of "Leprosy in India" are familiar with

the Propaganda-Treatment-Survey method, reference to which is to be found in Dr. Jaikaria's report in the present number of this journal. In Africa, on the other hand, such methods are not at present applicable. The following letter from Dr. Macdonald, of the Itu Leper Colony in Nigeria, makes this clear :—

"I am very strongly of the opinion that in Nigeria the only progress that will ever be made in controlling leprosy is by means of leper colonies. Out-patient work I have found to be useless, and have taken none for five years. This is confirmed by other doctors who have tried it, and who, like myself, at the opening of a dispensary have had a large and enthusiastic band of patients. The following are the principal objections :—

1. Inadequate or no temperature taking. A patient for several days may show a normal temperature in the morning, and 103° to 105° in the evening.
2. Patients cannot be expected to walk one to ten miles in sun or rain, receive a painful, or at least never a painless injection—perhaps after a long wait, walk back again to their homes, and do this twice weekly for three to five years. In ulcerated or exhausted cases, the walk would do more harm than the injection would do good. There are very few large towns such as there are in India.
3. Intercurrent diseases cannot be properly treated.
4. Leprotic reaction cannot be controlled.
5. The patient goes home to infect others.
6. It would be impossible to see if lepers were getting properly fed. Giving injections to half-starved lepers is a waste of drugs. This applies principally to the debilitated and to children, strong people in Nigeria need never starve.
7. The African leper needs to be kept mentally and physically occupied by every possible means.
8. The attendance is so unsatisfactory that it will bring the treatment into disrepute.

"The fact is, with few exceptions the patients do not satisfactorily attend. It is difficult enough to get 'arrestment' in a colony. How many patients have attended regularly for 3 or more years and been rendered symptom-free by out-patient treatment alone?

"To make any progress in relief, I submit that we have to get two cardinal points into their heads :

1. That leprosy is contagious.
2. That leprosy is curable.

"We know that there are degrees of contagiousness, but the simple African will not appreciate distinctions, and I suggest that out-patient clinics will defeat the ideas in (1) and (2) in their minds.

"Re colonies, money is required for expenses apart from the provision of food by private gardens. The children and the helpless need to be supplied, and in Nigeria only the able-bodied men build houses. I have found that if sufficient interest is taken in the individual patients, most of them will stay as required for prolonged treatment."

There is, however, a distinct danger to be guarded

against in connection with leper colonies. Dr. Wiggins, from his extensive experience of Africa and anti-leprosy work, writes as follows:—

“I am bound to admit that the scheme of colonies for lepers and their healthy relatives does seem to be necessary. If carried out, definite rules are, I think, essential: (1) European daily supervision (residence, if possible, on the colony); (2) separate sleeping huts and separate utensils and bedding for those infected. On a large scale it might be possible to have the utensils and blankets for lepers of a different colour to those used by the healthy residents in the colony.

“Much as I dislike the idea of healthy children living on a leper colony, I do believe it to be the only way to secure prolonged regular attendance of lepers, and if the two conditions given above are carried out, with ample room and no crowding, dangers of contracting the disease can be reduced very considerably. Without such conditions, I think a leper colony might do more harm than good, in fact, I *know* that this is so.”

On the other hand, the following note by Dr. Maxwell, in the “International Journal of Leprosy,” Vol. 3, No. 1, gives the point of view of a worker in China:—

“From his own experience the writer is convinced that, speaking generally, leprosy is a disease of the villages rather than of the cities, and that the large majority of the sufferers in the cities have come there to work or beg. Of course, this is not a universal rule, and it may be untrue in other places, but we believe that it is the case in China at least. Yet little is being done for lepers in the villages where the disease arises, where the cases are largely in earlier stages than those seen in the cities, and where preventive measures may be applied—and must be applied if prevention is to be accomplished. In China, as elsewhere, leper settlements are built and rapidly filled with patients, each of whom might have been prevented from needing to find a place in such a home. Surely there is something wrong here.

“The cost of settlement treatment is high, while that of treatment in village clinics is low, not more than a tenth of the former. Is treatment in the settlement any more effective than in the clinic? In China, one is inclined to believe, patients who continue to live in their own homes and to follow their usual vocations may respond more rapidly to treatment than in the usual settlement. Finally, what is any settlement doing to prevent the spread of the disease in the homes? To a village clinic there may be attached health nurses to follow up the patients in their homes, teach them how to live healthy lives, how to protect the children, and how to recognise the disease in the earliest stage in the children when it does occur.

“It is not the intention in writing this to suggest that settlements are unnecessary, but it is held that a radical change of emphasis is urgently required. The day may come when the settlement may be regarded as a mere adjunct in the proper treatment of leprosy, a place for the few who escape the screen of village clinics, and for those who fail to respond to treatment. This is an ideal which, it is granted, may be impossible of attainment in many places at present, but it is one towards which our energies should be focused.”

Bacillæmia in Leprosy

H. v. R. MOSTERT.

1. *Its value in diagnosis.* Certain investigators, Sarjito and Sitanala in Batavia¹ and Campos in Brazil,² claim to have found the *Mycobacterium leprae* in the blood both of nodular and maculo-anæsthetic cases of leprosy. The investigators in Batavia moreover state that of 129 apparently healthy "contacts" examined bacilli were found in six of these cases. The "thick film" method was employed and blood obtained by puncturing an apparently healthy finger. *What then is the diagnostic value of blood examination in our South African cases?*

Technique:

1. A thick film is prepared as for malaria. It is important though that the film be not too thick.
2. Allow it to dry and then fix it gently over a flame.
3. Dehæmoglobinise with *tap* water immediately after fixing.
4. Set film aside to dry and stain by the Ziehl-Neelsen method. (We have found that the best results are obtained by staining with warm carbol-fuchsin for 1-2 minutes, washing well with water, decolourising in one per cent. H_2SO_4 for 15-20 seconds, again washing well with water and counterstaining with methylene blue for 15 seconds. The bacilli in the blood do not appear to be very acid-fast hence the weak acid, and as bacilli are often very scanty the leucocytes should be stained a pale blue so that the organisms in them can be easily seen.)

The method of withdrawing blood is important. Taking blood from an apparently healthy area is not devoid of error, for bacilli are frequently found in areas of skin showing neither infiltration nor erythema on superficial examination. This is often the case with the finger and the writer has frequently been struck by the number of extracellular bacilli in a blood picture taken from an apparently healthy finger as compared with the scarcity of such bacilli in blood taken from a vein in the same case. Care should, however, be exercised in withdrawing blood from the vein not to drain bacilli from the skin, for in 14 cases of nodular leprosy blood taken from a selected vein was bacteriologically positive in 12 cases, a skin scraping from the neighbourhood of the vein positive in 13 cases, and in one case both the skin and blood were negative. Therefore to reduce the possibility of error to a minimum 0.5 c.c. of normal saline was injected into an apparently healthy vein through a fine needle so as to wash out any bacilli that might have got into the needle

during its passage through the tissues of the skin. 0.5 c.c. of blood was then taken, the needle withdrawn from the syringe and a thick film prepared from a drop of blood taken from the contents of the barrel.

Result (N.B.—Cases of nodular leprosy were taken at random in the compounds, some early, some advanced):

| | |
|------------------------------|----------------------------------|
| <i>No. of Cases Examined</i> | <i>No. Bacteriolog. Positive</i> |
| 15 | 15 (100%) |

Bacillaemia is therefore the rule in nodular leprosy and not only the case during acute exacerbations of the disease.

**Differential Count* (cells with Bacilli):

| | |
|------------------------|-----|
| Large mononuclears ... | 80% |
| Small mononuclears ... | 3% |
| Polymorphs ... | 17% |

—In one instance a giant cell with pale eccentric kidney shaped nucleus was found packed with bacilli.

In the blood taken from the finger a large mononuclear with pale oval nucleus is frequently seen, often with heavy infection, but these cells are probably always from the skin (connective tissue derivatives).

The bacilli vary greatly in morphology. A number are straight well-stained rods, but fragile and beaded bacilli, diptheroid rods and spore-like forms also occur. In the plasma they may be seen singly or in bundles.

An interesting phenomenon observed in one case was the clumping together of 6 leucocytes, 5 with bacilli, to form what appeared to be a small embolus.

In a series of 200 cases in which the Thick Blood Film was prepared either from a healthy looking finger or vein the results tabulated below were obtained:—

| | | | | | | | | | | |
|---|---------|-------|---------|-------------------------------------|-----|----|---|--------|---|----------|
| <i>Nodulars</i> B1.+Wass+Wass±Wass—B1.+Wass+Wass—B1.—Wass+Wass— | | | | | | | | | | |
| 79 | 62 | 30 | 7 | 25 | 10 | 5 | 5 | 7 | 2 | 5 |
| | (78.5%) | (48%) | (12.7%) | | | | | (8.8%) | | |
| | | | 91 2% | | | | | | | |
| <i>Muculo-Anæsthetics</i> | | | | B1+B1—Wass+Wass±Wass—Wass not taken | | | | | | |
| 121 (incl. 6 contacts) | | | | 0 | 121 | 37 | 2 | 76 | 6 | contacts |
| | | | | (100%) | | | | | | |

* In skin scrapings the bacilli are chiefly extracellular, a few being intracellular in the tissue cells. For practical purposes therefore a blood was accepted as *positive* only when bacilli were found in the essential leucocytes, the large and small mononuclears and polymorphs; cases with bacilli in the plasma *only* being regarded as doubtful.

† The old classification of maculo-anaesthetic and nodular leprosy is used for the sake of convenience, for in cases with active cutaneous macules (now classified with nodular cases as "cutaneous" leprosy) the blood picture was consistently negative.

It will therefore be seen—

(a) *Bacillaemia is the rule only in the nodular type of leprosy.* The few exceptions were cases in comparatively good health but the possibility of errors of technique should also be considered. It appears that a leprotic bacillaemia is an indication of lowered resistance. In maculo-anaesthetic cases we presume that the blood has a degree of immunity and the bacilli therefore locate themselves either in the nerves or skin (macules), whereas in nodular leprosy, because of markedly impaired resistance, the disease becomes more generalised and bacilli are found in the blood stream as well (cf. Mitsuda's skin reaction and Bargehr's specific skin reactions.³).

(b) *Examination of the blood is of no practical value in diagnosis.* Bacilli are often found only after prolonged search and are far more readily demonstrated in these (nodular) cases by skin scrapings or nasal smears. All cases in which *M. leprae* were found in the blood had positive noses.

(c) *A positive Wassermann frequently accompanies nodular leprosy with bacillaemia* (48% of above mentioned cases). At present there is still much confusion as to the true value of the Wassermann reaction in leprosy. Rhee⁴ and others mention the close relationship between the quantity of lipid and the frequency of a positive Wassermann in leprosy serum. One might remark though that 27 out of the 30 Wassermann positive cases referred to above were strongly positive. If syphilis can be accepted as the underlying cause it might play an important part in predisposing to the infectious nodular type of the disease. (Naturally there are other factors to be considered also: climatic, dietetic and racial. Cochrane⁵ speaks of the South African community as not being highly "leprolised." Also other concurrent diseases may predispose to this type of leprosy.)

2. *The Blood during an Acute Exacerbation.* In view of Professor de Langen's⁶ interesting infection, using an emulsion of a leproma prepared from a nodular case during an acute exacerbation of the disease, thick blood films were made from several cases during such reactions.

RESULT :—

Cases Examined
5

Blood Positive
5

*Blood Picture**a. Extracellular in plasma*

Several globi, also fairly numerous bacilli singly and in clumps—well stained “vegetative” rods, beaded bacilli, cocci-bacilli and spore-like forms.

b. Intracellular

Numerous intracellular bacilli chiefly in the large mononuclears (large monos. 79%, polys. 21%). A few cells with single bacilli but the majority of the cells with heavy infection. Again a polymorphic variety as in the plasma but noteworthy were the number of long and short fragile delicately stained bacilli.

The feature in all was the abundance of bacilli both in the leucocytes and in the plasma. Are these bacilli as virulent as those obtained from the lepromas? The frequency of metastatic lesions would tend to suggest this possibility. Further proof is however necessary. The blood of these acute cases may be of importance in the spread of the disease by insect vectors, *e.g.* by mechanical transmission, —a point perhaps of public health interest.

3. *The value of Much's modification of Gram's method in bacillaemia.* Because the bacilli in the blood do not appear to be very acid-fast and there is a strong possibility that many are decolorised by the acid when the ordinary Ziehl-Neelsen stain is employed, *Much's method* of staining was adopted in 3 cases

stain the bacilli take on varying tints of violet according to their degree of acid-fastness. The blood films were prepared as before and neutral red was used as the counterstain. Results were most encouraging the violet bacilli standing out clearly against the pale red background, and there is no doubt that far more bacilli were seen in the films stained by this method than in corresponding films stained by the Ziehl-Neelsen method. The beaded nature of many bacilli, the frequency of heavy mononuclear infection and the number of bacilli free in the plasma were clearly demonstrated.

4. *Bacillaemia and Prognosis.* As *M. leprae* occurs as a constant feature only in the blood of nodular lepers a bacillaemia is a very unfavourable indication. In four cases, up till recently classified as maculo-anaesthetic and apparently “quiescent,” bacilli were found in the blood. On further examination all four were now found to be early diffuse nodulars, retrogressing rapidly with skin scrapings from face positive. They were all young girls who had reached the age of puberty and this would account for the

unfavourable change in their conditions. Whether a bacillaemia precedes signs of nodular infiltration cannot be said at present. Certainly in the cases mentioned infiltrated areas teeming with bacilli were easily found after our suspicions had been aroused by blood examination.

Kren⁷ mentions that a certain parallelism exists between the presence of the tubercle bacillus and the clinical symptoms: "So long as tubercle bacilli circulate in the blood we cannot speak of cure." —The same remark can be aptly applied to leprosy with bacillaemia.

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Toc H Special Committee of B.E.L.R.A.

As the result of a visit to Nigeria in 1933, The Rev. P. B. Clayton, (Tubby of Toc H) called for volunteers from Toc H who would be willing to serve in the field for five years or the duration, working to help doctors and especially to build up social welfare work for lepers. The work of Dr. MacDonald of Itu, Southern Nigeria, was their example of what could be done and in addition there was the vast field of preventive work which is likely to be the most fertile in the near future.

One man, Herbert Spencer, is working at Dichpali in H.E.H. The Nizam's Dominions, India, and five others are already in Nigeria.

Hamish MacGregor, Itu.

Len Parker, Onitsha.

Peter Pedrick, Maidugari.

Norman Crayford, Katsina.

William Lambert, Sumali near Kano.

In addition, Dr. Money has reached Nigeria to be in control of the new work at Onitsha.

This pioneer work in Nigeria is under the Direction of Sir Walter Johnson, Director of Medical and Sanitary Service, and the reports of the first tour will be received with great interest by the Special Committee of B.E.L.R.A.

—Toc H.

*The Curability of Leprosy

F. G. ROSE.

THE writer's thanks are due to the Secretary of the British Empire Leprosy Relief Association for persuading him to publish the article under the above name, intended for another audience, in the Leprosy Review, for it has elicited some very interesting and instructive comments from many authorities universally held in the highest esteem.

Some misconceptions, however, should be removed. We are not wedded in British Guiana to the idea of the specificity of hydnocarpus oil and its derivatives. Indeed quite as spectacular results have been obtained in a few cases with esters prepared from the local "crab-oil," a product of *Carapa Guianensis*. Thus it would seem that other oils and their esters produce a similar effect.

There is also some evidence, which need not be detailed here, that the beneficial effects of the administration of these products are not due to any direct bactericidal or other similar action on the *M. leprae*, although one must admit that it is hard to explain on other grounds the undoubted efficacy of intra-dermal injections of the esters.

In fact, the analogy mentioned by Dr. MacLeod with codliver oil in tuberculosis is very much to the point.

At the same time there is no doubt that very remarkable results are obtained from administration of hydnocarpus derivatives quite apart from the improved living conditions consequent upon hospitalization referred to by Dr. Wade.

In this country for five years we have operated out-patient clinics where early and closed cases are treated and deliberately no advice has been given as to diet, exercise, etc. . . . The only additional factors operating after admission to the clinic have been the administration of hydnocarpus oil products and the application of local irritants. Some cases have, of course, attended irregularly and serve as a control group. The evidence has not yet been marshalled, but the improvement in general well-being, increase of body-weight, disappearance of signs and symptoms etc. are so striking as to carry the conviction that there is some factor in these products operating beneficially on the patient.

However that may be, the purpose of the article was not

*Dr. Rose originally wrote a paper on this subject which appeared in the October 1934 number of this Journal. In that issue and the following issue of the Journal a number of comments on Dr. Rose's paper by authorities in different countries were published. The present paper is an answer to these comments.

to demonstrate any specificity of this oil and its derivatives, but merely to obtain some sort of agreement as to what might be considered a criterion of cure.

Dr. Wade enquires very pertinently what percentage of cases hospitalized before the treatment period is represented by the 180 spontaneously arrested with deformity. Very pertinently, because both Drs. Sharp and Wayson conclude entirely erroneously that 180 out of 647 cases recovered without treatment.

In point of fact, only three cutaneous cases survive from the pre-treatment period and some of the 180 go back as far as 45 years. The percentage of survivals is really much nearer 2.7% than 27.8%.

Dr. Wayson disparages the photographs which Dr. Sharp finds convincing! Dr. Wayson's is a great rich country, ours a small poor one. The enlargements were made with an apparatus devised by the writer from an old lantern projector. The photographs were taken by one of the nursing sisters in her little spare time. They may be poor, but they are the best we can do with the apparatus at our disposal.

One must agree with Dr. Wade that "arrested, with deformity" is a satisfactory exchange for "burnt-out," and that "arrested without deformity" is more applicable than "arrested and recovered." The former will therefore be used in future. It might be pointed out, however, that some commentators do not seem to have recognized the identity of cases "spontaneously arrested with deformity" with "burnt-out" cases.

Dr. Sharp states that it is generally claimed that 40% of early cases will become spontaneously arrested. If by this he means arrested without deformity, we here cannot claim a similar fortunate experience. It is true that one sees occasionally, in examining contacts, cases in which the attack seems to have aborted, but whoever believes that 40% of untreated cases become arrested without deformity is bound some day to have a rude awakening.

Dr. Sharp also suggests that after six years' arrest a spontaneously arrested case might also be regarded as cured. This suggestion one must accept, and, in fact, the figure of 6 years' was obtained partly by taking such cases into consideration, but it is necessary to bear in mind that practically no spontaneously arrested case is arrested without deformity, and herein lies the great contrast between the treated and the untreated.

Dr. le Roux stresses the inaccurate means of assessing "arrest," but then "arrest" is not obtained until 2 year after "quiescence" and during those 2 years' many examinations have been made, thus reducing the possibility of error.

His observations are much more pertinent in considering the question of "interruptions" during "quiescence" to which no reference is made in the paper.

Dr. Muir refers to the examination of contacts and the isolation of children from infectious cases. Home contacts have been examined for many years, but with regard to school contacts, there are difficulties which have not yet been surmounted. The separation of children from infectious cases is, of course, a matter of some importance which has been engaging the attention of the authorities here for some time and will, soon, I think, be very satisfactorily dealt with.

Dr. Welch's experience with children with well-marked symptoms at an early age does not correspond with ours, but here, thanks to the establishment of out-patient clinics, and wide propaganda, we get very few C3 children, most of them coming under treatment in the early stage.

Experience here does not support the idea of any uniform and gradual change from macular type to the more serious stage of neural leprosy and some years later to cutaneous nodular type, as described by Dr. Mitsuda.

It is a rare occurrence in this country for a pure neural case to progress into a cutaneous or mixed; we have very few such cases on our records, though almost invariably the cutaneous stage is preceded by a macular stage, often without anaesthesia or other evidence of nerve involvement.

The appearance of macules may precede the development either of a pure neural, of a cutaneous or of a mixed type; in rare instances the neural or the cutaneous type may be unheralded by macules, but transformation from neural to cutaneous or vice versa is a rare event. One cannot but think that the time-periods given by Dr. Mitsuda in the relapse cases he mentions are not comparable with those in the original article. The suggestion is that a period of 6 years *after arrest* should be allowed to intervene before a patient is pronounced "cured"; this means after an unbroken period of $8\frac{1}{2}$ years of inactivity. It appears that 33 of the 128 cases quoted by Dr. Mitsuda relapsed after 8 years of apparent recovery. He does not state, however, whether these patients were under continuous observation

so that the exact date of relapse could be calculated with sufficient accuracy. My own cases have almost all been examined at regular monthly intervals throughout the period in question, nor were my observations confined exclusively to cutaneous cases.

One is quite clear from previous experience with relapsed cases that if they are not followed up, they do not at once report themselves but wait, it may be a year or more, when they can no longer deceive themselves, before they once more seek treatment.

One would like to know, therefore, to what kind of supervision these people were exposed and how the date of relapse was calculated. More especially is it essential to know whether the nasal mucosa was regularly examined.

It has been stated—and it is borne out by our own experience—that the skin, as a rule, becomes positive before the nose, and that the nasal examination must be regarded as supplementary to that of the skin.

Much experience in following up quiescent and arrested cases, however, has taught us in British Guiana that the nasal mucosa frequently remains positive long after the skin has become negative, and that the re-appearance of the *M. leprae* in the nose almost invariably precedes its re-appearance in the skin, so that the regular examination of the nasal mucosa is a very essential procedure in the supervision of quiescent and arrested cases.

Twenty years ago when the writer was appointed Bacteriologist to the Government of British Guiana, it was the practice only to isolate closed cases of leprosy and only to discharge cases after bacteriological examination by the Bacteriologist and the Government Medical Officer of Health.

It has been his good fortune, therefore, to have seen and examined practically all the known cases of British Guiana for the past 20 years and, in fact, all known cases now surviving have passed through his hands.

No case is discharged without a rigorous examination of skin and nasal mucosa personally carried out. All suspicious skin is examined and by a method which one is gratified to find is the same as that des

Review, except that the skin is not cleansed before or compressed during the incision.

The period of $8\frac{1}{2}$ years is therefore based on a fairly lengthy experience, and it would be very helpful if Dr. Mitsuda would be good enough to clear up these points.

Anti-Leprosy Work in the Punjab

Work done from March, 1931 to December, 1934.

S. S. JAIKARIA.

IN January, 1925, His Excellency the Viceroy constituted an Indian Branch (Indian Council) of the British Empire Leprosy Relief Association with a view to inaugurating an active campaign for the eradication of this terrible malady from India. At His Excellency's instance the then Governor of the Punjab constituted a Provincial Branch of the Association. A Technical Committee was then appointed by the Local Government to deal with the problem and to suggest practical measures from time to time for stamping out leprosy from the Province.

With this object in view a whole time Leprosy Officer, Dr. S. S. Jaikaria, M.B., B.S., was appointed in March 1931. to collect the necessary material and formulate definite proposals. He commenced the work in Kangra district, under the auspices of the British Empire Leprosy Relief Association, Punjab Branch of which the Inspector General of Civil Hospitals, Punjab, is the President and the Director of Public Health, Punjab, the Honorary Secretary.

The work done from March 1st, 1931 up to the 31st December, 1934, may be summarized under the following heads:—

(1) Surveys. (2) Training of doctors. (3) Establishing treatment centres

SURVEYS.

In Kangra district, an area covering 3,382.07 sq. miles constituting four tahsils (Palampur, Kangra, Dehra Gopipur and Kulu) out of seven, was surveyed, in a systematic manner, i.e., by a house to house and village to village survey, by P.T.S. Method—a method in which propaganda treatment and survey go hand in hand. In all 2,983 villages and sub-villages, with a population of 873,237 were surveyed, out of which 453 villages (15.10 per cent.) furnished 1,005 leprosy cases (males 790 and females 215) in different stages of the disease. Of these 628 cases were infectious and 377 non-infectious. There were 522 cases of N1, N2 and C1 types which are easily amenable to treatment, and active treatment along with careful observation would result in saving so many lives and reducing the sources of infection. The figures revealed by this survey were six times the 1931

census figures because only such advanced cases as are evident to the lay enumerators were returned in the census.

In Lahore district, an area covering 731 sq. miles, consisting of Lahore and Baghbanpura Municipalities and Lahore tahsil with 372 villages with a population of 393,004, was systematically surveyed by the P.T.S. method. Three villages and seven places in Lahore municipality furnished 22 leprosy cases (males 20 and females 2) in different stages of the disease. Of these, 16 were non-infectious and six infectious.

It may be of interest to note that in the area surveyed no cases had been hitherto reported, but this survey revealed as many as 22 lepers.

In Rawalpindi district, an area covering 258.19 sq. miles, consisting of tahsil Murree, was surveyed in a systematic way by the P.T.S. method. Forty-one villages out of 226 furnished 102 leprosy cases (males 71 and females 31) in different stages of the disease. Of these, 63 were non-infectious and 39 infectious.

Besides these systematic surveys the Provincial Leprosy Officer also toured in the districts of Multan, Jullundur, Karnal and Ludhiana, in which he detected many leprosy cases and established local clinics.

TRAINING OF DOCTORS.

The number of doctors of this province so far trained in leprosy work at Calcutta and by the Provincial Leprosy Officer is 127. In addition, lectures and demonstrations on leprosy were given to the Final Year Students and Post Graduate Class of the King Edward Medical College, Lahore, Medical School, Amritsar, and the Women's Christian Medical College, Ludhiana, by the Provincial Leprosy Officer. Thirty-four treatment centres were started in the districts of Kangra, Jullundur, Ludhiana, Karnal and Rawalpindi. All the medical men in charge of these centres have been trained in up-to-date methods of leprosy diagnosis, treatment and prevention and their dispensaries have been equipped with anti-leprosy drugs. The working of the five Leper Homes in the Punjab has been overhauled and treatment brought up-to-date and rendered more helpful in the prevention of the spread of leprosy.

PROPAGANDA.

All the schoolboys were examined and extensive propaganda was carried out in the majority of the villages and schools of the areas surveyed, by magic lantern shows,

wall chart lectures, by demonstrations of cases detected during the examination parades, and by initiating free discussions on different aspects of the disease. Lastly, booklets, pamphlets and leaflets on leprosy in Urdu and Hindi were distributed free of charge.

Wherever cases of leprosy were found the dangers of the disease were explained to the patients themselves, to their near relations, and to the village people generally as well as to the village officials by the Provincial Leprosy Officer, who also issued subsequently instructions to the village officials to ensure that the persons suffering from leprosy regularly attended the centres for treatment. Infectious cases of leprosy were isolated in houses or huts outside the villages; where house or village isolation was not possible, they were induced to go to Leper Homes.

How Leprosy was regarded by the African Natives before Europeans came

SISTER M. THECLA STINNESBECK.

THE lepers living at the leper settlement at Ndanda, Tanganyika Territory, are mostly Wannvera, Wamakua, Wajao and Wamakonde. They give the following information.

Amongst the natives leprosy was always regarded as an infectious and incurable disease, and they carefully avoided coming in touch with a leper. A leper was forced to take his food separately. Young people, suffering from nodular leprosy, were forbidden to marry. If the disease manifested itself after marriage in young people, they were divorced, but elder married people were allowed to live together. Children, although it was known that they would be infected if they were not taken away from their parents, were not removed from their mothers. The excuse given was that nobody but the mother can rear her own child.

Advanced cases were segregated. The relations built a hut apart from the rest, and forbade the sick person to leave it. Some tribes were cruel and fastened the door outside, leaving the leper without food or drink, to starve to

death. Others were less cruel, they brought food and drink until the leper himself refused to take anything. But the relations never entered a leper's hut. These were always locked from the outside, and as soon as they no longer heard any obvious sign of life inside, they ceased visiting the leper and left the corpse to rot with the hut. They never willingly burnt down the said hut. The relations themselves removed elsewhere. This is being done up to the present day where no Europeans reside.

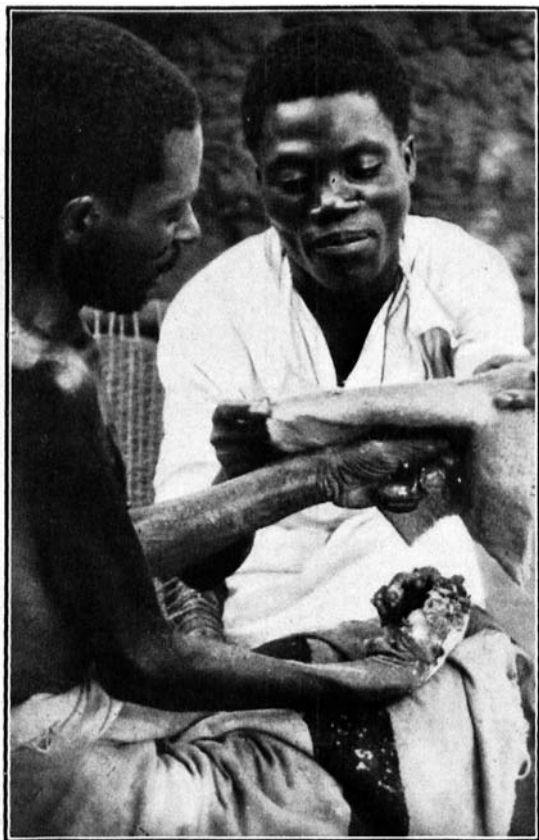
Native treatment of leprosy consists of rubbing into the skin the juice of a plant that scales the whole skin. Besides that they give the patient a drastic emetic and purgative. I saw one case of nerve leprosy whose raised patches became flat.

this is no cure for nodular leprosy, but is a temporary cure for nerve cases which holds good for about a year.

It is difficult to estimate the correct number of lepers. We have 1,600 registered, living mostly between the Ruvuma and the Mbemkuru. There are 3—3.5 per cent. amongst the children attending our mission schools. The percentage of lepers who confess to having a member of the family suffering from leprosy is 33.5 per cent. In reality, I think, the number is much higher, because many cases are not recognised by them to be leprosy. Neither are the following figures very reliable concerning the length of time from the outbreak of leprosy until the patients came for treatment:—

| | | |
|---------------------|-----|--------------|
| 5 years or more ... | ... | 17 per cent. |
| 4 years ... | ... | 8 „ „ |
| 3 „ ... | ... | 19 „ „ |
| 2 „ ... | ... | 21 „ „ |
| 1 year ... | ... | 17 „ „ |
| Under 1 year ... | ... | 18 „ „ |

Many of the natives are afraid to say how long they have been suffering, even if they remember the time that has elapsed.



DRESSING ULCERATING HANDS.



OPERATING ON GANGRENOUS FOOT.

KUYU LEPER COLONY, LIULI.
UNIVERSITIES MISSION TO CENTRAL AFRICA.



SHORES OF LAKE MYASA.
Mngehe in the distance.



MNGEHE DISPENSARY.

Pluriglandular Syndromes with Gynecomasty in Leprous Subjects

CLAUDIO NATALI AND SAMUELE CAFFARENA.

(Precis of an article published in the "Revista Sud-Americana de Endocrinologia, Immunologia y Quimioterapia," Vol. XV, Jan. & Feb., 1932, Nos. 1 & 2).

THE authors point out the high percentage (14 per cent.) of gynecomasty observed amongst 60 cases of leprosy examined at the lazaret-house of S. Isabel in Asuncion. They discuss six cases which have been studied by them clinically as regards the "endocrina" syndrome, and histologically as regards the breasts by biopsy.

1st Case. A man of 44, suffering for 12 years, of the maculo-anæsthetic type. He is a tardy hypogenital with signs of hyperthyroidism and bilateral gynecomasty, but only marked and of the true type on the left side. This gynecomasty must have started some four months ago, and for the last two days the left breast has been painful, the pain being increased by pressure. There is orchio-epididimitis.

2nd Case. A man of 27, his father and brothers leprosy. His illness started nine years ago and it is a mixed form of leprosy, mutilating, not uniform. There are evident signs of dysthyroidism of the old basedowian type; and sexual impotence with secondary sexual characteristics tending towards the feminine type, together with gynecomasty. The latter developed five months ago, and is bilateral and true, and it represents the breasts of a young girl at the time of puberty. The patient has had a painful attack in the left breast accompanied by inflammation. There is orchio-epididimitis, although not serious enough, at least clinically.

3rd Case. A man of 25 years, declared leprosy 10 years ago and affected by combined leprosy of the prevailing macular type. In this case a constitutional hormonal deficiency of the sexual glands can be admitted. At present the patient is a hypogenital with obvious signs of hyposubrenalism, accompanied by other numerous and slight signs of hyperthyroidism. Bilateral gynecomasty of the true type has lasted for the last 12 months, and at present the breasts have reached the size of an orange. There have been repeated attacks of pain at irregular intervals lasting for some days, and inflammation of the organ. There is leprosy orchio-epididimitis.

4th Case. A man of 30. He is a beautiful example of eunuchism combined with the characteristics of the xeroderma dystrophico of Rummo-Ferrannini and of the feminine eunuchism of Tende. He has been interned in the lazaret house for the last eight years: he was already leprosy before then, but the date of the beginning of the illness cannot be established. At present the disease is in the maculo-anæsthetic state. Puberty at 15, very slow. True gynecomasty has prevailed for the last three years, the breasts being similar to those of a woman. Painful attacks with increase of volume and inflammation of the breasts recur at irregular intervals and last for several days, during which the nipples become more prominent and the

"rings" more coloured. There is leprous orchi-epididimitis to an appreciable extent only on the right side, and the smallness of the left testicle shows the hypoplastic congenital state of the genital glands.

5th Case. A man of 26. At the age of 17 he was declared leprous and not yet pubescent. He presents a pluriglandular syndrome in which the signs of eunuchism of the first variety of Tende predominate over those of dysthyroidism, with characteristics of hyperthyroidism, and over those of hypo-adrenalism. True gynecomasty has prevailed for the last three or four years. Also in this case there are periods in which the breasts become painful and increase in volume. There is chronic leprous orchi-epididimitis with occasional febrile exacerbation.

6th Case. A man of 44, affected by pustulous leprosy. The illness started 17 years ago. Bilateral gynecomasty developed four years after the beginning of leprosy; there was a slow progression for two years, after which the breasts lost their firm contour and became flacid and drooping, presenting the appearance of those of an old woman whose breasts have never functioned. Painful crisis absent. Only for the last seven or eight months the patient has noticed disproportion in his skeleton. At present the vulgarity of the leprous picture disappears before the beauty and interest offered by the endocrine syndrome represented by typical acromegale associated with tardy hypogenitalism and true gynecomasty. There is grave leprous orchi-epididimitis.

The authors assert in the first place that the generalisation of the phrase "rudimentary gland" for the masculine breast is unsuitable, particularly when individual pathological problems are to be considered. It would be imprudent, at least, to-day, to base scientific reasoning on "axiomatic notions" in view of the numerous fluctuations in the individual characteristics, somatic and organic, which exist without, however, exceeding normal limits. Therefore, they conclude that in the case of the male breasts individual variations of structure must be admitted; and hence it is not illogical to think that individual anatomical conditions, consisting perhaps of a greater abundance of glandular tissue with a higher or lower vitality are essential in order to determine a true gynecomasty, while there are special pathological conditions which enhance them.

After a thorough discussion on the histological aspect or discovery of the breasts under examination, and on the determination of gynecomasty and its frequency in leprosy, the authors go on to describe the aetiopathogenesis of the endocrine syndrome under consideration and the biological meaning of gynecomasty, and they came to the following conclusions:—

1. Gynecomasty is frequent in the leper.

2. In the six cases under review the gynecomasty is true. The gland presents the histological characteristics of the non-functioning female breast, with some differences. These consist of: the presence around the epithelial formations of a muff of reticular tissue; a tendency towards sclerosis of the interstitial connective tissue; the different type of cells with a common origin; and in some cases in the arrangement of the epithelium in various strata.

3. The presence of the periepithelial reticulum is due to functional stimulus producing more active division of the epithelium at the expense of the adventitial and endothelial cells of the capillaries.

4. The histological observation of the process of growth shows a complete parallelism with the development of the feminine breasts at the time of puberty.

5. The parallelism is increased by the fact that the breasts under consideration present true functional cycles at irregular periods, corresponding to morphological variations which consist of acinoblastic transitory activity, with neoformation of capillaries, active hyperemia and intensive œdema, which explain the erethism of the breasts, and the pains revealed by the patients (an analogy with the menstrual cycles of the breast in the woman).

6. With regard to the functional capacity of the neoformed gland, the presence of a colloidal substance in the interior of some acini makes it different from the female gland, and makes it atypical to a certain extent.

7. The condition here is that of a pathological growth which, on account of its peculiarities, belongs to hyperplastic processes: the male gland under an adequate hormonal stimulus grows and presents similarity with the pubescent development of the breast in the woman; the final product, however, assumes characteristics which put it on a plane of morphological inferiority.

8. Gynecomasty constitutes a process closely associated with the deficiency or suppression of the testicular endocrine function (orchi-epididimitis leprosy), which brings about alterations in the correlations of the endocrine system; and these alterations are, therefore, traced to the same cause, namely leprous infection.

9. This takes place in the cases under review, or in individuals who have already shown signs of an unbalanced endocrine state, or in other young boys during the critical

period of puberty; in all of them there is shown to be a more or less grave orchitis.

10. All the endocrine syndromes illustrated present the common characteristic of hypogenitalism, tardy or pubescent, in relation to the date on which leprosy appeared.

11. Beside somatic hermaphroditism, in which the heterosexual characteristics develop themselves through an imperfect differentiation in the sexual embryonic stage and for which it is better to adopt the description of spontaneous pubescent, there must be placed the somatic hermaphroditism which appears in subjects who have passed the period of puberty, and which is probably due to the action of stimulus emanating from rudiments of the opposed genital gland, persisting in the individuals; these rudiments enter into action as a result of the abolition or inhibition of the testicular endocrine function. For this second type of somatic hermaphroditism, as there is the same mechanism of production, the authors suggest the description of *acquired somatic hermaphroditism of adults*.

REPORTS

THIRD ANNUAL REPORT (1934) OF THE NATIVE ADMINISTRATION **Leprosy Colony, Uzuakoli, Nigeria.**

Dr. James A. K. Brown, the doctor in charge, reports that there are now 550 inpatients, an increase of 114 during the year. Of these, 15 per cent. are partially or totally self-supporting, and the rest are paid in money or kind for work done in the colony. The following are some interesting abstracts:—

“There are 10 uninfected children in the children's ward provided by the Nigerian Branch of the British Empire Leprosy Relief Association, and others will be admitted shortly. They are in charge of ‘clean’ nurses, and have been fed artificially on ‘Cow & Gate,’ ‘Trufood’ and Nestle's Milk, until old enough to transfer to ordinary food.

“The farming policy has again been modified. The land has been divided among the able-bodied dependent cases, and they have each been given a number of seed yams. The colony work has been restricted to the mornings, leaving the afternoons free for farming, resting or their own private pursuits. For the morning work they are paid subsistence money of sixpence weekly, with which to provide meat, fish, salt, oil, tobacco, etc. The weakly and the children are provided with yams on certain days, oil and meat, and given a little money with which to buy the other necessary foods. This introduction

of individual farming, with reduced subsistence money in place of communal farming, has only become possible as the colony has developed.

"The social, recreational and religious work in the colony has been provided for financially by the Methodist Missionary Society."

St. John's Leper Colony, Mandalay.

This institution has a pauper ward with 69, and a voluntary ward with 396 patients. There is also an orphanage with 36 healthy children of leprous parents. The patients are treated by up-to-date methods, and are taught various industries and encouraged to take plenty of exercise. Regarding out-patient work, the following quotation is of interest:—

"Leper attending as out-patients are not many. The panic of the educated class and the callousness of the layman seem to be the two greatest obstacles that keep the patients from seeking advice until the symptoms are far advanced. Unless vigorous steps are taken to give effect in respect of propaganda, treatment and survey, it will be impossible to stamp out leprosy in the province. I have reason to believe that there are plenty of lepers in Mandalay."

REPORT OF DR. H. C. ARMSTRONG ON A LEPROSY SURVEY IN THE REGION ROUND THE SOUTHERN PORTION OF Lake Bosumtwi, S. Nigeria.

We make the following extracts from the report, which are of special interest:—

"The area covered was along the margin of the lake from Isase to Anhase, being from the West to the South-East shore, which is the portion of the lake in the Bekwai district.

"There is a general belief that the lepers received their disease as a punishment for transgression against the lake god. The patients themselves appear quite resigned to their fate. There are no attempts at segregation except in the old burnt-out cases with marked deformities. From the preventive aspect this is useless.

"The general sanitary condition of most of the villages is very poor, the lake being used as rubbish dump, water supply and latrine. Several have uncovered pit latrines at the edge of the lake; these pits are full of water and during the rainy season, owing to the seepage water from the surrounding hills, overflow and foul the land. A solution would be to have pit latrines properly covered dug at the back of the village on the high ground, with efficient contour drainage to carry away the surface water.

"The total population for the ten villages in the area is 2,651, and there were 84 cases discovered. This gives a combined rate per mille of the district of 31.69, which is abnormally high. The number of cases under the age of 25 years was 43, which is over 50 per cent. of the total cases for all age groups. A fair percentage of cases, when asked, admitted that either one or both parents had suffered from leprosy.

"If a settlement were established useful work could be carried out in preventive propaganda. With a small laboratory bacteriological examination could be carried out in all cases, and also apparently healthy contacts could be examined to exclude cases harbouring the bacillus without showing clinical signs."

ANNUAL REPORT OF **Work for Leper Patients in Japan, 1935.**

"The most important feature has been the wider spread of knowledge among the people about the disease itself, about the ways of prevention and the treatment of the disease, and about the condition of the several hospitals, government and private, in which at present several thousands of leper patients find comfortable homes and are being tenderly cared for.

"Another important feature of progress has been the increasing number of medical men in Japan who are industriously studying the subject of leprosy from the scientific point of view, by which much additional light is shed upon the nature and development of leprosy and the ways of preventing its spread, as well as upon the subject of the treatment of patients.

"Still another step in steady advance during the past year has been the increase of hospitalization facilities both at government and at private institutions. This feature of the subject, however, is lagging behind the known need of care for leper patients and even behind the amount of application for entrance made by patients.

"There is at present a greatly encouraging co-operation between leper patients desiring to be treated and cared for and the government medical authorities desiring to meet their needs and requests. This co-operation is a new thing in Japan. Until recently the efforts to get leper patients under care and treatment in government hospitals were only on the part of the government. The patients steered clear, as far as possible, of being detected and 'taken in.' It savoured to them too much of being consigned to prison with a life sentence. And while there are doubtless still thousands of leper patients among the non-hospitalized who have more or less of this feeling of dread of a hospital, their numbers are constantly and rapidly decreasing."

The inspection tour of Dr. Hayashi and the Educational Leprosy Conference held in November, 1933, are mentioned. Then the work in the various leprosaria throughout Japan is briefly described. The account of the Ai-sei-en (Love-Life Garden) is of special interest:—

"The growth of this institution has been phenomenal. It was not until March 27th, 1931, that the first patients, 80 in number, were transferred from the Zensei Byoin to the new plant at Nagashima. At the close of 1934 there were about 1,000 patients. One of the secrets of this very rapid growth in the number of patients is *the rule of voluntary admission* laid down at the start four years ago and strictly adhered to thus far. This was something untried in government leper hospitalization in Japan and has put an entirely new phase to the subject. Its initiation by the Ai-sei-en has not stopped there but has been followed by numbers of voluntary entrants in the prefectural leper hospitals. The adoption of and strict adherence to

this policy of admitting only voluntary applicants by all the government hospitals in Japan would doubtless have a two-fold result. It would keep out of the hospitals certain advanced and hopeless cases that would easily be detected by the police inspectors. But this would be far more than offset by the larger number of initial and hopeful cases that under the policy of compulsory entrance seek in various ways to elude detection by the inspectors. This, at least, has been the two-fold result of the Ai-sei-en under its policy of voluntary admission, and there is no good reason to expect that the result would be different in the other hospitals."

The report is written by A. Oltmans, Secretary for Japan of The American to Lepers.

REPORT OF DEPARTMENT OF LEPROSY OF **French West Africa** FOR 1932.

This report tells of the initiation of a wide and well considered plan of campaign against leprosy in the French provinces of W. Africa. A sum of five million francs has been budgeted for this work.

The scheme includes the following:—

"The formation (for each circle in principle) of special villages reserved for sufferers from leprosy, and constituting an annex of the dispensary of the chief town of the circle.

"The construction in each colony (Ivory Coast, High Volta, Senegal, Sudan) of a home intended to accommodate the impotent diseased, unable to fully meet their own needs.

"The construction in Bamako of the Central Institute of Leprosy, an institution to include a complete organisation for the scientific study of this affection and of its treatment, and offering accommodation for a large number of cases subject to this treatment.

"The prophylaxis of leprosy will not be carried out simultaneously on all the circles of the Ivory Coast. It will first be organised in a few circles, and subsequently extended to the whole of the colony.

"The circles where the prophylactic action is to be exercised from now onwards are: The Circle of Bassam, the Circle of the Lagunes and the Circle of Tagouanas in addition to the Circle of Bobo-Dioulasso and the Circle of Ouagadougou.

"The treatment of cases affected by leprosy is already in operation at the Bamako Laboratory, where the Doctor, Captain Gourvil, attends to nearly three hundred cases affected by leprosy inhabiting Bamako, or who have come from the neighbouring localities to receive treatment."

M. Trefouel, Chief of the Laboratory of Professor Fourneau, at the request of M. Marchoux, in the course of a series of manipulations carried out first by both himself and the Chief Medical Officer of the Leprosy Service, and completed by the latter, has initiated the practical manufacture of distilled ethylic esters of oil of chaulmoogra. The accurate technique of this manufacture has been drawn up by the Chief Medical Officer of the Leprosy Service in a

paper with a view to the manufacture of these esters at the Central Institute of Leprosy.

A survey has already been carried out in limited areas, and has shown 4,682 cases. If one estimates at 50,000 the number of leprosy existing in the Federation, it is gathered from the foregoing that the hunting out and the census of the cases affected by leprosy have only been "primed" during the year 1932.

After those of Great Britain the colonies and dependencies of France are next in importance. Apparently the disease of leprosy is of great importance as a problem in French West Africa, and it is good to see that it is being dealt with by the French Government by modern methods. We hope to see co-operation between these two countries in solving their mutual problem of leprosy.

Newspaper Cuttings

There are many items regarding leprosy appearing in the popular press which may be of interest to our readers. We have therefore opened this section, and shall be glad to receive contributions in the form of short cuttings from newspapers, journals, etc.

New Cure for Leprosy. Many of the South Indian and Ceylon papers report "a new cure for leprosy which Dr. Noble has discovered." This, according to the papers, is colloidal copper. Dr. Noble has been studying the effects of this drug under Dr. Denney at Louisiana, and we are informed that Dr. Denney and Dr. Noble are of the opinion that it is "a more thorough cure for leprosy than Chaulmoogra Oil."

We absolve Dr. Noble from all responsibility for these exaggerated reports, but we consider that the journals concerned are at fault. Think of the multitudes of sufferers from leprosy who must have read or heard of this and other similar fantastic reports. Their hopes are raised only to be dashed to the ground. Surely their sufferings are great enough without this fresh torture.

Philippines. Governor General Frank Murphy's veto of the Philippine Legislature's act to "turn the lepers loose" was upheld in effect today by a report of a commission of Filipinos and Americans, made public after a long study.

The report said that "all measured control of the spread of leprosy must be based on isolation . . . and treatment," but it favored a policy of greater decentralization.

It recommended that the population of the colony on the isolated island of Culion, which is the world's largest leper settlement, be not allowed to exceed the present 7,000, and that the number be reduced as rapidly as possible.

Establishment of more regional treatment stations was urged.

The commission found that of 3,500 lepers released as bacteriologically negative, nearly fifty had relapsed, but that, because of the faulty follow-up system, only ten of these had been resegreated.

Lepers in Abyssinia. Since the beginning of the Abyssinian War many references have been made in the newspapers to the prevalence of leprosy in that country. According to one report "Leprosy is the scourge of Ethiopia—a scourge to which one in three of the population sooner or later succumbs." This is surely an exaggeration! Apparently the Italians "are already organising hospitals for the advanced cases." Catholic missions have worked among the Abyssinian lepers for years, and in 1932 a leprosarium was begun under the patronage of the Emperor, and with the help of the American Mission to Lepers.

Mission to Lepers. In his address, entitled "Enlarging Hope through 60 Years," Mr. Elliott said that during last year, their diamond jubilee, they had cleaned up 1,052 afflicted people, a thing which would have been impossible 16 or 17 years ago, when their only hope was to shelter and not relieve the sufferers. "There is still no cure for leprosy, despite what people say," said the speaker, "but many cases are treatable and much can be done for the children of affected parents."

More than 1,000 years before Christ there was mention of lepers among Sudanese slaves, and there were lepers to-day from the frozen North to Africa, where, in some places, one in five of the inhabitants was affected. Now the Mission was working at 100 stations in 25 different countries. Gradually the nations were awakening to their responsibilities, and, as in the case of India, giving grants towards the lepers' treatment.

Diet versus Infection. Dr. Hutchison suggested that leprosy arose from the eating of badly preserved or decomposed fish, and not for any other reason. People readily seized on this idea, and many hold it still, though, for example, in the case of the Basutas and others, leprosy has spread extensively among a race that eat no fish and never see it. What is very obvious is that leprosy spreads very rapidly among badly nourished races, and clears up in a very great measure with a higher standard of living. Civilisation brought into England great advances in general sanitation, land drainage, agriculture, and diet. Up to the end of the 15th century the common diet of the England we know only as the England of beer and beef, consisted of black rye bread with a little salt meat or fish, and almost no vegetables.

Of late years there has been a tendency to go to the other extreme in respect of leprosy, and declare that it is hardly infectious at all—that "you could no more catch leprosy by sitting next to a leper in a tram than you could catch alcoholism by sitting next to a drunkard"! This snappy saying is too epigrammatic to be true, because, of course, there is no real analogy. It is not true, as anti-contagionists often assert, that husbands do not acquire leprosy from their wives, though it is true that a number escape; or that continued residence in the same house is not dangerous; or that those who attend on lepers do not get the disease. Of 700 cases investigated by Leonard Rogers, 128 were

infected while living as husband and wife, 279 while using the same house, 139 while attending upon lepers, and 136 by close association with a leper. The reason that many husbands or wives escape infection is that there is considerable resistance to the disease developed in all of us by the time we reach 30 years of age, just as there is a resistance developed to tuberculosis, a closely similar disease. On the other hand, the infection of children is remarkably easy, and the young married leper, though he may not infect his wife, may certainly infect some of his children.

Leprosy in Egypt. Dr. Mustafa Kamel said in an interview that, though no definite figures were available, there were at least 10,000 lepers in Egypt of whom a fairly large proportion were advanced cases.

The Egyptian Government had just begun to control the disease and with that object had started five clinics. So far about 3,000 lepers had volunteered to receive treatment in these clinics. As a large proportion of lepers in rural tracts would not be able to attend the clinics, an itinerant motor clinic van was introduced. This van visited the various villages.

An up-to-date leper colony was being constructed by the Egyptian Government. The scheme, it was expected, would be completed in five years. Some portions of the colony and the hospital attached to it had been completed. Dr. Mustafa Kamal is the Medical Officer of that colony.

A Systematic Campaign. Mrs. Todd said she hoped the re-drafting of the constitution of the Indian Council of B.E.L.R.A. would be completed by the end of this month and that before long Madras would have a branch of the Indian Council. Co-ordination of effort was a great thing in leprosy relief, she observed, and she hoped that all the branches of the Indian Council would co-ordinate their efforts and carry on a systematic campaign against the disease.

In this Presidency there were various Leprosy Relief Councils, but they were not inter-connected. She said that efforts should be made to bring them together.

The opening of hospitals and clinics, according to Mrs. Todd, would not solve the problem. They would only render relief to those who sought relief, and leave those who did not seek relief severely alone. Much of the work, namely, of prevention has to be done in the villages.

She hoped that every village would have a leper home, where advanced cases would be separated. These unfortunate men and women should be told of the importance of such methods and they should of their own accord go into those homes.

Another important thing was that cases of infection should be carefully watched, and they should be persuaded to go to the clinics for treatment. Even after treatment such cases should be watched for some time to see that they did not relapse into the disease.

A regular organisation in villages looking to sanitation, and teaching villagers to lead clean lives, was essential.

Since much of the prejudice which stood in the way of anti-leprosy work came from Indians, those prejudices, she said, would have to be removed by Indians themselves.

Leprosy in Madras. There were at least twenty thousand known lepers in the city and probably an equal number of unknown lepers. When a strong public opinion was created among the people against this disease, the establishment of segregation camps might become practicable. Further, without a strong public opinion, it would be futile to introduce legislation for compulsory segregation. Legislation in advance of public opinion had always proved a failure. The Sarda Act was an instance in point.

All leprosy workers are of opinion that the susceptibility to the disease decreases after childhood, that a latent disease in childhood will flare up at a later age when the general resistance is lowered by a physiological strain in the teens or by other diseases, and that if the disease is rendered completely inactive in childhood, there is very little likelihood of its breaking out at a latter age. Statistics show that the incidence of leprosy among the students in the Madras City will be about 0.5 per cent. Therefore, in order that the incidence among adults, say after a decade, may be reduced it is very necessary that a careful eye is kept on every child who has exposed itself to infection or who has signs of the disease. In the Madras City, out of a population of 647,000 according to the 1931 census, about 210,000 are below the age of 15, of whom at least 100,000 are students. All the students in the elementary, secondary and high schools should be examined every year for signs of leprosy, and those having signs of the disease and those who are living with infective parents or relatives, should be observed for a period of at least five years, active cases being treated. If this is done, the incidence of leprosy will in course of time be greatly reduced.

The St. Francis Leper Guild. The object of this Guild is to give grants to Roman Catholic Leprosy workers, especially in Africa. Recently a meeting of the Guild was held at the Mansion House, presided over by the Lord Mayor, and addressed by Dr. Hinslev, Archbishop of Westminster, on his recent tour in Africa, and by Sir Leonard Rogers.

British Empire Leprosy Relief Association Exhibiton. An educative exhibition is being shown by the Organising Secretary of B.E.L.R.A. at some eighteen different centres during the season.

The main feature of the exhibition is an Eastern hospital with an out-patients' department where lepers are being treated. By means of full-sized models visitors are shown the early and progressive signs of the disease, ending up with a case showing the tragedy of long-delayed treatment. By means of illuminated models and tableaux the history of leprosy throughout the ages is depicted.

Another series of illuminated models illustrates "Landmarks of the Past," showing churches, leper houses, and other buildings in this country which have survived to tell the tale of the high incidence of leprosy here for many centuries, notably in the thirteenth, when England, with a population estimated at some two millions had 200 leper houses. It is pointed out that the "leper squint" is to be seen in many old parish churches throughout the land.

A cinema film entitled "A Stain on our Empire's Flag," with spoken descriptions, is shown four times daily, and a Livingstone film is given twice daily. Lantern views are projected on a smaller screen.

Reviews

Leprosy in India, VOL. VII, October, 1935.

Dr. Rodriguez writes on *Lazarine Leprosy*:—

"The distinguishing features of this variety of leprosy are the following:—A rapid, sometimes sudden, development often in the *early* stages of the disease. In some cases, there may be 'no lepromas or macular lesions or any other dystrophic manifestations of leprosy' Formation of blisters and blebs. These usually start from an erythematous patch, a solitary nodule, or on a pachydermic edema of an extremity. Sometimes, they may appear on normal-looking skin. Rupture of the bullæ producing rapidly growing ulcers or areas of skin necrosis, which may 'disorganise cutaneous tissues, muscles, tendons and bones, opening up joints, and ending in tremendous deformities'. Presence of *M. lepræ* in the fluid of the bullæ and particularly in the secretion from the ulcers, usually in large numbers. Histologically, the picture is typically 'tuberculoid', but in contrast with the usual scantiness of the organisms in 'tuberculoid leprosy' numerous *M. lepræ* are found in the tissues."

A case described, the peculiarity of which is the "extremely rapid development of the ulcers, without any manifestations of acute *lepra reaction*. The temperature was absolutely normal and the patient did not feel weak or ill at all. There was no thickening of the cutaneous nerves and no enlargement of the superficial lymph glands.

"The picture presented is that of the existence, in a fairly early stage of the disease, of allergy and extreme irritability of the tissues towards the invading organism, resulting in violent efforts to limit the invasion and to eliminate the organisms. Except for some anesthesia around the larger ulcers, the ordinary signs of nerve involvement were conspicuous by their absence in this case.

"As in malignant syphilis, the presence of early allergy may explain the rapid course of the infection in lazarine leprosy. On the other hand, the rapid and destructive development may be due also to utter lack of resistance on the part of the host, to extreme invasive powers of a particular strain of the bacillus, or to the co-existence of another infection. Also it must be stated that the prevailing opinion is that the blebs are due to trophic disturbances or to inflammatory reaction in the nerve-trunk supplying the part. If this were the principal cause, however, we would expect to find much less bacilli in the fluid contents of the bullæ, if any. We have at present very few good reports on the subsequent development of the disease among those who survive the initial attack; such information would doubtless throw some light on the subject."

In a later note on this case Rodriguez mentions :

"During the months of January and February, he was afebrile, in fair condition, and the ulcers about the knees were improving very gradually. On the 19th of March, however, he suddenly developed several irregular erythematous patches on both legs and feet which rapidly sloughed off, forming acute ulcers. By the fourth day, the

larger coalescing ulcers measured several inches across. At the same time there was severe prostration and considerable fever. The patient lost about 4 pounds in one week.

"Scrapings from the base and sides of all the new ulcers showed numerous acid-fast bacilli. The total leucocyte count taken on March 25, was 11,100; the polymorphonuclears were 85%; small lymphocytes, 3%; and transitional forms, 1%. The urine was negative for albumin, sugar, and casts on repeated examination. During the last 3 days of March, the fever became continuous, reaching up to 103° F.

"As to treatment, mercurochrome, fluorescein and neosalvarsan have been injected intravenously without the least effect. Among the numerous local applications tried, Dakins solution was found to be the most useful.

"The writer believes that at the present time, the patient presents the picture of typical lazarine leprosy."

Dr. Dow contributes an article on *Massage, Electricity and Diathermy in the Treatment of Contracture*. He states:

"The selection of cases which will derive benefit from electricity, etc. requires care and discrimination, and such specialised treatment demands the supervision of someone trained in this type of work. In this hospital, neural cases with deformities are referred to our Physio-electro-therapeutic Department which is in the charge of a specially trained Sister, and there, before a patient is accepted for treatment, his electrical reactions are tested, as patients showing reaction of degeneration are not regarded as suitable, though even some of these have shown a degree of improvement under prolonged treatment."

The next article is *A Study of the Transmission of Leprosy in Families*, by Dr. Christian. His summary is as follows:—

"A detailed investigation is made of 57 families in which one or both the parents were suffering from leprosy, in order to study the factors influencing the transmission of the disease in such families. The following conclusions are drawn:—

Cases of leprosy which do not show *M. lepræ* on clinical examination (i.e. 'neural' cases), do not transmit the disease.

Cases of leprosy showing *M. lepræ* on clinical examination transmit the disease, more than 90% of the children of such parents showing signs of leprosy.

Susceptibility to leprosy appears to be inversely proportional to age, young children exposed to infection showing a very high incidence, older children not so high an incidence, and adults a low incidence, conjugal infections being rare.

The incidence of leprosy in children exposed to infection is about the same in males and females.

The disease tends to take a severer form in male children than in female children.

The children of infectious fathers show almost as high an incidence of leprosy as the children of infectious mothers.

The joint family system greatly aids the transmission of leprosy in families.

The employment of infectious leper servants is sometimes the cause of leprosy in children whose parents are healthy."

Indian Medical Gazette, Vol. LXVIII, No. 9, Sept., 1933.

Dr. John Lowe contributes an article on *Bacillæmia in Leprosy*. This article is of considerable value, and should be read in full. His conclusions are as follows:—

"The finding of bacilli in the circulating blood of cases of neural leprosy is very rare. The finding of bacilli in the circulating blood of cases of cutaneous leprosy is commoner. The thick film method of detecting bacillæmia in the blood is extremely unreliable, nearly all the positive results reported being false positives due to the prick being made in leprotic skin.

"Examination of the venous blood by a concentration method as described is much more reliable, showing bacilli very occasionally in neural cases, and commonly in cutaneous cases, particularly in marked cutaneous cases, but it is probable that some of these findings are false positives.

"Examination of venous blood for lepra bacilli is a complicated and difficult procedure and quite unnecessary for diagnosis.

"Other methods of bacteriological examination particularly skin examination by the 'slit' and 'clip' methods are far easier and far more reliable than blood examination.

"One very interesting point to which we have previously referred but which the present investigations have demonstrated very clearly, is the very frequent finding in definite cases of leprosy of acid-fast bacilli in apparently unaffected areas of skin. In cases of cutaneous leprosy the involvement of the skin is very much more extensive than the clinical lesions would indicate. In practice we find that in marked cases of cutaneous leprosy, although the visible lesions are confined to certain areas of the skin, yet practically all the skin of the body may be involved; hence it is difficult or impossible to puncture a vein through unaffected skin."

International Journal of Leprosy, Vol. 3, No. 1, January—March, 1935.

Dr. H. P. Lie writes an original article on *The Curability of Leprosy*. He refutes the commonly held idea of "Once a leper, always a leper." He gives the following general view of leprosy:—

"When we attempt to obtain a general view of the nature of leprosy and its course, we find that the causative agent, the leprosy bacillus, may encounter very different conditions in different individuals, and may thus have quite different effects. Many observations and theoretical considerations lead to the assumption that many people, perhaps most, possess an absolutely unfavourable soil for this microbe,

and that in such persons it loses its pathogenic power. In other words, the number of those infected with the leprosy bacillus is greater than the number who actually suffer from leprosy.

"Among those who acquire the actual disease the bacillus in certain cases finds good soil for life and multiplication, meeting with little or no resistance; in such cases the duration of the disease may be short, though acute leprosy with a fatal outcome is rare. The more common occurrence is the well-known chronic form of the disease, for in most cases the human organism resists the invader. Unfortunately, this attempt is often too late and is ineffective, whereupon we see the common picture of nodular leprosy, with its unfortunate outcome after many years. However, even in this form of the disease the human organism may ultimately be the victor, and this more frequently than we have been inclined to believe, though in these cases victory is paid for very dearly.

"In other instances the organism resists the bacillus at an early stage and hinders its multiplication to a very considerable degree. In some cases this may result in the disease being completely cured in a relatively short time. Such cases, quite surely, occur more often than we have been inclined to suppose. Many of them never come up for clinical observation, and may not even be noticed by the patients themselves. For this reason proof of this assumption may be difficult to obtain, but in my opinion careful clinical and pathological observations during the course of leprosy make it perfectly justified. However, in most cases when the invading bacillus meets resistance the disease assumes a more or less chronic course, presenting the clinical picture of the maculo-anaesthetic type (in which is included pure nerve leprosy), which possesses a distinct tendency to cure."

Dr. Lie says that "tuberculoid leprosy" must be very rare in Norway, for despite research only one single case has been found. His remarks regarding age at onset and duration are of special interest:—

"Of all those who were cured, 11 per cent. were 10 years old or younger when leprosy broke out, while of those not cured only 4.6 per cent. were as young at the onset. Similar proportions existed in patients who were from 10 to 20 and 25 years old at the outbreak, 49 per cent. and 75 per cent., respectively, for those cured, 30 per cent. and 54 per cent. for those not cured. The chances of a cure are not great when the disease appears after the age of 25. The oldest patient cured was 47 at the outbreak of the disease."

Perhaps this is due to the greater natural resistance of adults as compared with children; for should an adult after the age of 25 acquire the disease in a country of comparatively low endemicity like Norway, it would be a sign that his general health was reduced to a very considerable extent to make the naturally resistant soil of the adult body suitable for the growth of leprosy infection. With such reduced health the prognosis would be particularly bad. A number of photographs are given of patients presumably cured for 20 to 50 years.

Prof. Hoffmann writes on *Allergic Erythematous Eruptions in Leprosy*. He discusses the possibility of an "ultra-organism," a granular or filtrable form of *M. leprae* in its causation, and suggests the analogy of a similar filtrable form in tuberculosis.

Drs. Wade and le Roux write on *A Leprosy Case Progress Chart*:—

"The essential part of the chart is the form for the progress graph; in the example which accompanies this article that form, plus space for recording the bacteriological findings, occupies one-half of the total enclosed space, but this can, of course, be varied to suit particular needs or preferences. The other part, susceptible to much more variation, is provided for the periodical summarization of data such as weight, treatment, and clinical events, which presumably will include the occurrence of lepra reaction and important complicating conditions. Where tests such as the sedimentation index or the Wassermann reaction are made periodically, separate spaces for them would be provided.

"The progress form itself has two parts, one for the C ('cutaneous') and one for the N ('neural') phase of the disease; and each of these type-areas is divided into three spaces in accordance with the subtypes of the Memorial Conference classification (C1, C2 and C3; N1, N2 and N3). Each of these spaces is further sub-divided, the reason for this being that during the intervals between examinations there may be changes in the case sufficient to be indicated in the graph as a trend, but not sufficient to change the actual classification from, for example, C2 to C1. The first, least advanced of the sub-type spaces (i.e. C1 and N1) are both nearest a central blank space, which may be called the 'negative' or 'neutral' zone, so that with increasing severity of the case the graph line goes farther from that zone, and in an advancing 'mixed' case the two lines diverge. The negative zone is intended to indicate absence of—or rather, disappearance of—evidence of the disease.

"With respect to the vertical rulings, the chart may be divided for as many years as desired, but the narrower these divisions are made the fewer notes can be inserted in them. Each of the year spaces is subdivided as if for quarterly recording, not because it is expected that many will attempt to reclassify their cases that frequently, but in order to permit rough correlation of records and dates, as shown in the illustrative cases.

"The sample chart herewith is designed for a sheet form measuring 8 x 10.5 inches, the left-hand margin being wider to provide for binding, but it can easily be modified for other sizes of records. A modification, based on suggestions received, is printed on an ordinary 8 x 5 inches filing card, one-half of the whole form on each side. Better in certain respects would be to use a double card of tough, durable stock, 8 x 10 inches when opened, folding transversely and then measuring 8 x 5 inches, to be filed, of course, with the folded edge uppermost. The entire chart could be printed on the inside; the outside, back and front, would be available for other records, including personal data."

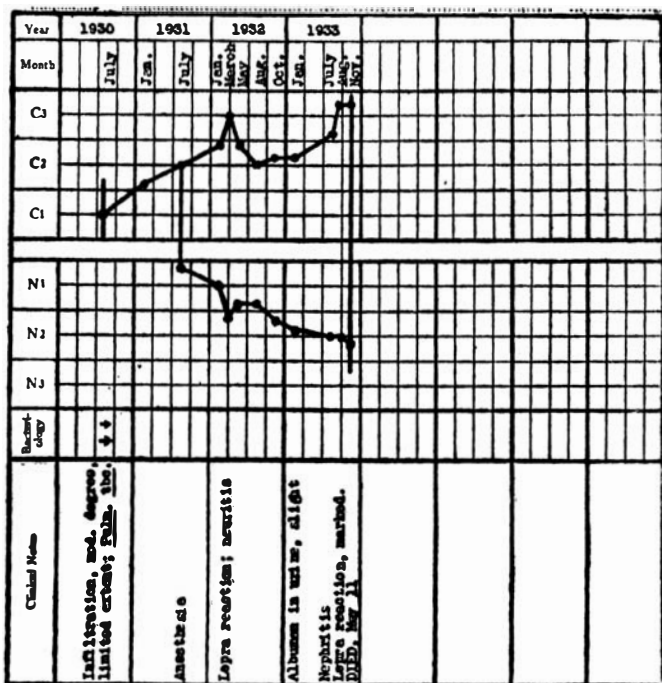


FIG. 1. Representing an untreatable cutaneous-type case of unfavourable course, dying of protracted leprosy reaction.

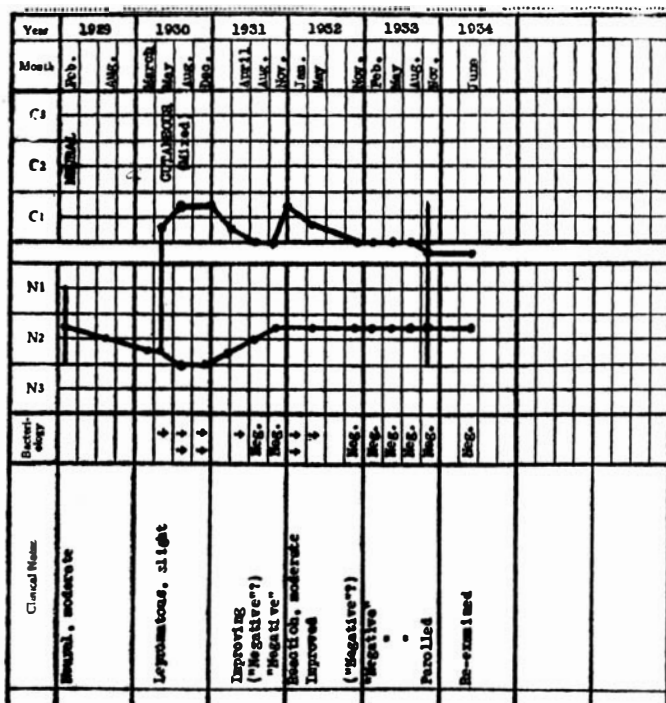


FIG. 2. Representing a neural case that became "mixed" but recovered, though with permanent stigmata.

The following is an index to primary divisions of case progress chart.

| | | | | | |
|--|---|-----|--|--|--|
| CUTANEOUS type (C): All cases showing "leprotic" lesions in the skin, <i>with or without neural symptoms.</i> | { | N1 | <i>Advanced</i> : Numerous or very marked leprotic lesions in various stages of development or retrogression, usually with lesions of the mucosa. | { | Details of further division of each sub-type not specified by any convention; may vary more or less under different circumstances. |
| | | N2 | <i>Moderate</i> : Numerous leprotic macules, or fairly numerous or marked areas of infiltration or nodules, frequently with lesions of the mucosa. | | |
| | | N3 | <i>Slight</i> : One to a few leprotic macules, or a few small areas of infiltration, or nodules. | | |
| (Negative or neutral zone.) NEURAL type (N): | { | (a) | <i>Preneutral</i> : For cases under special observation; i.e., quiescent cases previously with leprotic lesions. | { | (As above) |
| All cases showing evidence of actual or previous nerve involvement (i.e., alterations of sensation, trophic disturbances or paralyses and their consequences), <i>without "leprotic" skin changes.</i> | { | C3 | <i>Slight</i> : One or a few small areas of disturbed sensation, with or without alterations of circulation or pigmentation, or minor degrees of paralysis or trophic changes. | | |
| | | | C2 | | |
| | | | C1 | <i>Advanced</i> : More or less extensive anaesthesia and marked motor and trophic disturbances; marked paralyses, atrophies, contractures, trophic ulcers and mutilations. | |

Prof. E. Loewenstein claims to have cultivated the leprosy bacillus. His conclusions are as follows:—

"Cultivation of the leprosy bacillus has been successfully accomplished by means of my sulphuric-acid method on an egg medium to which fish-broth has been added. The statements of Lie and others that leprosy bacilli are found in the blood have been verified both by direct smear and by culture. In two out of five cases a pure culture was obtained from the blood. In two cases tubercle bacilli were also found in the blood, along with the leprosy bacilli.

"The growth of this leprosy bacillus is very slow, taking up to six months to form macroscopic colonies on my fish-egg medium. These leprosy strains have not shown evidence of pathogenicity in guinea pigs observed for six months. They are characterised by a strong capacity of acid production, both on the egg medium and in the fish-asparagin solution."

These claims would have to be confirmed before they could be generally accepted. Judging from the text alone it is difficult to award this organism any higher marks than its preceding rivals.

Dr. H. de Souza-Araujo writes on the Brazilian Chaulmoogra (*Carpotroche Braziliensis*). Sapucinha oil obtained from the seeds of this tree has the qualities of other chaulmoogra oils, viz. the power to rotate polarised light to the right (51.5 to 58.9) and high iodine saturation index (up to 112.8). Carpotrochinic acid derived from this oil is said to have a lower melting point than chaulmoogric and hydnocarpic acids. The pulp of ripe fruits is used as a beverage when mixed with water and honey. There seems to be an abundance of this tree and its products in Brazil; the following is a list given of the principal products on the market:—

Hansenyl, ethyl esters of carpotroche oil with ethyl morrhuate. Recommended for leprosy and tuberculosis (Granado & Co., Rio de Janeiro.)

Carpotrenol (L.C.L.), ethyl esters of carpotroche oil. For intramuscular use in leprosy.

Carpoidil, tabloids of magnesium iodocarpotrochate, for internal use. (The last two products from Laboratorio Leopoldineuse, Minas Geraes, Prof. A. Machado & Co.)

Karpotran, "a physiohydrosol of cupric carpotrochate, sterile, with an absolute titre of 1:1,000, isotonic," marketed in ampules. (Instituto Therapeutico Orlando Rangel, Rio de Janeiro.)

Aurocarpol, of two kinds: "A," iodine carpotrochate of gold and sodium 0.064, water q.s. 2 c.c.; "B," iodo-carpotrochate of gold and sodium 0.096, water q.s. 3 c.c. For intravenous and intramuscular injections.

Protocarpol, a sodium carpotrochate, iodized, 0.06; iodo-protein (carpotroche oil) 0.20. In ampules of 2 c.c. for intramuscular use with aurocarpol.

Carpol, in tabloids: sodium carpotrochate iodized, 0.40; calcium phospho-caseinate, 0.20. For internal use.

Carpol in gelatin capsules (perles): iodized ethyl esters of carpotroche oil, 0.50; ethyl esters of cod liver oil 0.20. (The last four products by Dr. Raul Leite & Co., Rio de Janeiro.)

Beautiful illustrations of the tree, flowers, fruit and seeds are given. It might be well to cultivate this tree in other parts of the world.

Dr. Macleod and Dr. Cochrane write notes on *Leprosy in Great Britain*:—

"A century or two ago it still prevailed in the outer islands of Scotland—the Shetlands, the Orkneys and the Hebrides. In the seventeenth century it was common in the Shetland Islands, where the lepers were segregated on the island of Papa Stour, which is situated to the west of the Shetland group and is separated from the mainland of Shetland by a stormy sound that effectively isolates it in all but fine weather. The last person with leprosy in Papa Stour died about a century ago and the present people, many of whom are descended from lepers, are a hardy race of healthy crofters.

"It is not possible to estimate the exact number of cases at present in the country, and such numbers as fifty to a hundred, sometimes quoted, are mere guess-work. This want of precise knowledge is largely due to the fact that the disease is not notifiable in Great Britain, and in consequence patients are liable to be hidden away and their existence carefully concealed. Cases also are apt to go unrecognised, as the disease is so rare that only the few medical men who have practised abroad are capable of diagnosing it."

Mention is made of the St. Giles Homes for British Lepers in this country, to provide "a home for such patients as were homeless and uncared for."

A special article describes *Leprosy Control in the Southern Soudan*. The following is the summary and conclusions:—

"In the area north of the sixth parallel it is considered that leprosy can be best dealt with by: (1) propaganda among tribal sheikhs or chiefs as to the infectivity of the disease and the necessity for relative isolation, i.e. the patient to be prohibited from eating, smoking or sharing a hut with an uninfected person; (2) wherever possible moving the leper to the near vicinity of a hospital or dispensary so as to insure treatment; and (3) in certain cases making special provision for the accommodation and treatment of lepers near a hospital.

"South of the sixth parallel the leprosy problem is more serious; in certain districts as much as 4.3 per cent. of the population is infected. In order to deal with the immediate situation large settlements have been formed, and some 70 per cent. of the total leper population have been admitted to these camps. By this means the lepers have been brought under close observation and regular treatment. The problem of the infectivity of the disease has been studied under conditions closely resembling those of normal village life, and observations have been made on the degree of improvement which can be expected from regular treatment and from satisfactory conditions of life. In addition, the lepers and the relations are being taught the simple precautions that are necessary to take to avoid infection. It has been found possible to repatriate to their villages some 40 per cent. of these lepers.

"A large percentage of early cutaneous cases remain stationary and do not require treatment or segregation. If adverse conditions obtain, such cases may rapidly acquire active signs. It is not only unnecessary, but unwise, to bring such cases into a leprosy settlement unless they become 'open' cases. Strict segregation of highly infective

cases is a very beneficial measure in prophylaxis and should be extended.

"Treatment by the present methods, though not spectacularly curative, certainly tends to keep the disease from advancing. Measures intended to improve the living conditions, and especially the quality of the food, are more important than actual drug treatment. The salt ration must be maintained.

"Bush dispensaries manned by trained native staffs should be developed to deal with the leprosy problem on the spot. Lepers could be housed near such dispensaries and while leading their normal lives still be under frequent supervision. Highly infective cases only need be removed to the central camp. It will take at least two years to train a sufficient staff for this. With the staff and resources available only routine work can be done, but we are gradually accumulating data of epidemiological value, which should in time point the way to a sounder prophylaxis.

"With regard to permitting relatives to live with the lepers, it must be remembered that, though there is a fresh infection of three to four per cent. in the settlement, in Li Rangu practically all, and in Yubo 50 per cent. of the relatives living there have for an average period of five years been in close contact with their leper relatives outside before entering the settlement, and fresh infections were to be expected from them in any case."

Dr. Cole describes a syrupy yellow oily fraction in which resides the greater part of the irritant character of anti-leprotic oils and their derivatives:—

"Not only is the yellow syrupy acid mixture to be obtained from the mixed fatty acids of the original chaulmoogra oil, but it also appears after a time in highly purified, separated hydnocarpic and chaulmoogric acids, due to a gradual decomposition. The decomposition is more rapid in the presence of air and light than otherwise, and, of course, more rapid if the acid is allowed to remain in small crystals than when it is melted into a solid cake. If a small amount of a pure acid is sealed in a relatively large container (such as a quart mason jar) and opened after a period of months, air rushes into the jar indicating that oxidation has actually taken place."

Dr. S. N. Chatterji describes two cases to show that the type of leprosy (neural or cutaneous) which will develop depends approximately upon the general health of the one infected, and also on the number of bacilli which entered the body.

**The International Journal of Leprosy, Vol. III, No. 2,
April—June, 1935.**

Dr. Wade gives his fourth paper on *Tuberculoid Leprosy* and deals with the classification of this type. Dr. Wade assigns it to the neural rather than to the skin type for the

following four reasons:—

Clinical. Outstanding is the fact that its course and prognosis are those of neural rather than cutaneous leprosy; it is relatively benign, indefinitely prolonged, and often self-healing. Typical tuberculoid leprides may develop in an ordinary neural case without a change anything like that which follows the appearance of lepromata in such cases. Without going into details regarding the lesions it may be pointed out that the tuberculoid leprides, like the simple ones, are more sharply limited, less diffused, than lepromatous infiltrations often are. The question of sensory changes is interesting in that they apparently are often less marked than in simple neural leprides. A tuberculoid lepride without anaesthesia is particularly liable to be mistaken for a leproma.

Bacteriological. It is of the greatest significance that typically the tuberculoid lepride gives negative smears in the standard examination. When an untreated infiltrated lesion proves negative it is open to more than a mere suspicion of being tuberculoid, provided the examination is properly made. For the present at least it seems that a clinician working without the benefit of histological diagnosis is quite justified, if not compelled, to accept this as the principal diagnostic criterion. The relatively few tuberculoid cases which in the writer's experience have proved positive showed very few bacilli in lesions which, had they been lepromata, should have had very many.

Histological. The principal evidence which the histopathology affords in the present connection is negative, namely, that the condition is not lepromatous. But it does give an indication of the degree of reaction to the infecting organism, much greater than in typical lepromata, and it may prove to be more directly indicative of the case type if it turns out that the tuberculoid change, in slight degree, is common in simple, flat leprides. It is significant that the tuberculoid change is rarely if ever seen in the nerves of unmixed cutaneous leprosy, but is the rule in at least the skin nerves in the tuberculoid variety, and in India, peculiarly, often goes on to necrosis and liquefaction.

Immunological. Hyashi states that the leprolin test will differentiate between tuberculoid and cutaneous-type infiltrations, and Muir says that cases with tuberculoid lesions give even stronger reactions than ordinary neural cases. Certainly the frank, florid tuberculoid case suggests that there has been some change which has greatly exaggerated, and perhaps even basically modified, the reaction to the infecting agent that is shown in the ordinary neural case. This increased sensitivity presumably involves some change of resistance to that agent, but whether it is an increase or decrease has not been shown. The familiar question of sensitization (allergy) versus true immunity is involved here, for it is not seen to what factor other than allergy the tuberculoid tissue-reaction can be ascribed. However, if there is a decrease of resistance it clearly does not approach the breakdown that is seen when lepromata develop in a neural case."

Later, referring to the definition of "leprotic" in the Leonard Wood Memorial Conference Report, he says:—

"Examining first the definitions that have been quoted, it is

evident that 'leprotic' is used there in a special sense, actually synonymously with 'lepromatous,' which of course refers to the condition universally accepted as characteristic of the cutaneous type of the disease. Recognizing that this lesion (defined by the Conference, with the greatest conservatism, as a granulomatous change in which bacilli can 'usually' be demonstrated by ordinary methods), is the bacillus-rich lesion composed chiefly of the lepra cells of Virchow, it would be a misconception to confuse or include with it the tuberculoid granuloma, which is typically negative for bacilli and essentially epithelioid in nature."

We fail to see the logic of this statement. Undoubtedly the tuberculoid lesion shows "changes which present clinical or microscopic evidence of inflammatory processes, typically of granulomatous nature, which are apparently caused by mycobacterium leprae in them" (the L.W. Conf. definition of *leprotic*). Even though the organism cannot be "usually demonstrated by the ordinary methods of examination" (as added in the L.W. Conf. report), it can frequently be demonstrated by special methods, and its presence in the skin is undoubtedly the cause of the inflammatory granuloma present.

In some countries, as for example N. India, this form of lesion is among the commonest, and has long been considered by workers in Calcutta the primary (A1 in the old classification) type of neural lesion.

We agree with Wade that this form of leprosy should be classified under the neural type, but we disagree with his suggestion that these cases should be classified "by simply recognising them as a variety or sub-type of the neural (N) type."

Dr. A. A. Stein of Leningrad contributes an article on *Lepra Reaction and Meteorotropism*. His conclusions are as follows:—

"The occurrence of exacerbation of leprosy depends upon changes in the atmospheric conditions. There is no relation between exacerbation and the annual or monthly temperatures, the barometric pressure, rainfall or winds. Exacerbations occur in a region with the passage of 'variable layers' of different systems (cyclones, anti-cyclones etc.). The greatest number of exacerbations (73 per cent. of my cases) occurred during the passage of cyclones and occluded cyclones. The greatest number of exacerbations were observed during the passage of the warm front of cyclones (44 per cent.), and next the cold front (29 per cent.). In cold seasons exacerbations prevail when the warm front sets in, and to the contrary in the warm season when the cold front passes. Multiple cases of exacerbation are more numerous and appear more frequently in winter. In stable weather only a small number of cases of exacerbation was

observed (7 per cent.); they appeared only as isolated cases. The exacerbations of leprous processes appear not only on the day the variable layer passes, but also on the previous day."

Many leprologists must have noticed results similar to those of Dr. Stein. In India lepra reaction is particularly common in the long hot weather and exacerbations are common in the case of hillmen coming to the plains, such as Gurkha soldiers serving with the British Army or police.

Dr. Ota and other Japanese doctors have prepared an emulsion of the ethyl esters of *hydnocarpus anthelmintica* which can be given intravenously. We quote as follows:—

"This emulsion contains particles of the ethyl esters which are about 1 micron in diameter and nearly uniform, and its colloidal condition is so stable that it can be preserved for a long time, whether it contains 10 per cent. or 50 per cent. of the esters. We have used one containing 40 per cent. as the standard, though what we call 'Esperol' is a 10 per cent. emulsion.

"Experiments with rabbits have shown that the dose of the 40 per cent. emulsion given at one time should be less than 2 c.c. per kgm. If the dose is 0.5 c.c. per kgm. no unpleasant symptoms are caused. In patients we injected single doses of 2.5 and 3.0 c.c. of the 40 per cent. emulsion (1 c.c. of the esters), and with some patients 5 c.c. at times. Intravenous injections of such large amounts of ethyl esters have never been made before, and not only did this large amount cause noticeable secondary reactions, but also flushing of the face, feeling of oppression in the chest etc. These reactions, which were occasionally met with at the first stage of our investigation, have nearly been gotten rid of through improvements in the preparation. It is much safer to use the emulsion diluted about 5 to 10 times with distilled water, physiologic saline or 4.5 per cent. glucose solution. The largest number of injections given to any of the patients treated was 50, and the total amount of emulsion injected reached 148 c.c., this figure being calculated as of the standard 40 per cent. preparation.

"What is the effect of the intravenous injections? Is this method superior to the usual intramuscular or subcutaneous injections? These questions are difficult to solve, and our experience is as yet too limited to decide upon them. They must be reserved for the investigation of specialists, but we are convinced that the method of injection we use is not inferior to those used up to this time."

French workers, working in S. India, have found that after neutralising pure *hydnocarpus* oil by frequent washings with alkali, it was possible to inject up to 1.5 c.c. intravenously without unpleasant symptoms. In Calcutta we were able to confirm their results. Most workers, however, now consider that intramuscular, subcutaneous, and above all, intradermal injections are more effective.

Dr. Hayashi describes his interesting world tour as a fellow of the League of Nations.

Dr. Soule writes on *The Wassermann Reaction and the Kahn Test in Leprosy*:—

"The sera of 615 patients with more or less advanced cutaneous leprosy, and 54 other cases with severe lepra reaction, were tested by both the Kolmer-Wassermann and the Kahn procedures for syphilis. The group had been carefully selected, and comprised only individuals whose clinical examinations and case histories failed to reveal evidence of syphilis or yaws. Of the 615 sera from cases without lepra reaction the Wassermann test gave 109 strongly positive and five positive, a total of 18.5 per cent., as compared with 121 strongly positive and 70 positive, a total of 31 per cent. reactors with the method of Kahn. Of the 54 sera of patients undergoing severe lepra reaction 18 were strongly positive and one positive with the Wassermann test, and 18 strongly positive with the Kahn, 35.2 per cent. and 33.4 per cent., respectively. This study adduces considerable evidence that leprosy *per se* is responsible for the positive reactions.

"The true answer as to whether the positive serological reactions are due to undiagnosed syphilis or yaws in the presence of leprosy, or to an influence of leprosy itself, will be found only as a result of the testing at frequent intervals, over a protracted period of time, of such individuals as are found positive. A number of workers are now engaged in this project. The outcome of the survey under consideration by the United States Public Health Service will be awaited with interest by leprologists. In that study approximately 1,000 specimens of blood will be submitted to a representative group of participating serologists. The object is to appraise separately the various serodiagnostic tests for syphilis. Included among the donors selected will be individuals with leprosy."

Dr. Ribeiro reports that leprosy is capable of producing complete alterations of the finger prints:—

"In a number of patients whose fingers appeared absolutely normal there were alterations of the papillary designs so marked that it was impossible to classify them and effect identification by dactyloscopy. In many cases previous finger-prints were available, and comparison showed that before the illness they were normal. Biopsy showed that this change is not due to secondary atrophic changes, but to an active lepromatous infiltration with distortion of the bodies of the papillae. Numerous leprosy bacilli were found."

Dr. Montanés writes on *Leprosy in Spain*. He estimates that there are not less than 2,000 cases, or 0.04 per thousand.

Dr. Wilson, of the Biederwolf Leper Colony in Korea, describes how certain selected inmates of his colony:—

"... in whom the disease had been arrested have been allowed to choose mates. After they had built, with some assistance, houses for themselves on plots of land assigned to them, and after the males had been sterilized, they were married. Each couple was required to select from among the children of the colony one to adopt and

bring up as their own. Those who entered this relationship did so voluntarily, and the experiment so far has been eminently successful. It has had a good effect upon all of the inmates of the colony, and has reduced to one fourth the per capita cost of maintaining those concerned."

Belgian Congo—Leprosy Control.

The following extract from a letter of H. Wakelin Coxhill will be of interest to some of our readers :—

"On Dr. Helser's return here we together saw the Governor General and the Médecin en Chef; both were most cordial and were obviously interested in hearing what Dr. Helser had to say about his tour. Seeing that the Governor General was leaving Leopoldville for his own extensive tour in the Colony two days after our interview with him, and was exceedingly busy, we appreciated the more the time he granted us.

"We asked Dr. Van Hoof what he thought of the following suggestions as to the aid the Government might give to Protestant missions willing to enter into the fight against leprosy :—

To grant concessions of land for leper colonies and for agriculture.

To furnish medicines.

To pay for a superintendent for each lazaret.

To furnish 0.50 centimes daily,

1 bed cover,

1 mosquito net,

2 cotton drawers (for females).

To grant subsidies for the construction of provisional huts.

"The Médecin en Chef was so heartily in accord with these suggestions that he asked me to present them officially to the Governor-General without any delay, so that provision might be made in his 1936 budget, which he was then preparing. It was realised that there must not be any hold-up in the granting of required concessions for leper work, and that though the 0.50 cms. per day might be sufficient in some areas, it would be far from sufficient in others, such as in and around Elisabethville, and that adjustments would be made according to local conditions.

"Our appointment to see the Governor followed immediately after our interview with Dr. Van Hoof. Monsieur Ryckmans' perfect command of English made it easy for him to converse freely with Helser. We soon found that the Governor was genuinely sympathetic, and was at once in full accord with the suggestions we placed on the table. He told me there was no need for me to go to the trouble of writing further on the matter, as he would do all that was necessary right away that day, promising us that where land is required for leper work he would arrange that the local authorities grant it without long drawn out formalities. It is naturally understood that the concessions and Government assistance herein envisaged will only be granted to those able and willing to do leper work."

"Some Experience of the Aniline Dyes in the Treatment of Leprosy," Reviota de Leprologia de Sao Paulo, September, 1935.

Drs. Fernandez and Schujman give full details of a thorough trial of various dyes. Their conclusions are as follows:—

1. We have employed bonney blue, fluorescein, eosin and methylene blue in the treatment of distinct forms of leprosy and their complications, but we have not obtained the favourable results obtained by some other authors. We have proved, on the contrary, that in the majority of the cases treated there has been a distinctly prejudicial effect on the evolution of the disease.
2. According to our experience the therapeutic action of these anilines is inferior to that of chaulmoogra and its derivatives.

Journal of Medical Association of South Africa, July, 1935.

Dr. Mostert discusses the contagion theory. "Of 426 children born of lepers prior to their admission to this institution, there is a history of 230 (54 per cent.) of these children contracting the disease: 78 per cent. of infections occurred before the age of 20 years; 59 per cent. of the parents suffered from leprosy of the nodular type. In contrast, only 33 (or 8.6 per cent.) of 385 married lepers now in the institution (of whom 43 per cent. are nodular) give a history of the healthy mate contracting the disease after marriage from the leprous partner."

Regarding methylene blue, brilliant green and trypan blue, he says: "It is rather too early to predict the future of the various dyestuffs in leprosy. The ideal preparation would be one of high leprocidal action and low toxicity, capable of prolonged administration. None of the drugs used by us so far attain this ideal. Trypan blue appears to be the most effective, but our results with this dye and brilliant green cannot compare, however, with results obtained by Ryrie in Malaya, or by Ryles in India."

Regarding mercurochrome, he states: "Although it does not in the long run appear to benefit the leprotic process itself, it is a drug of absorbing interest in leprosy, and has received a thorough trial at West Fort. It relieves nerve pains and clears up septic conditions and lepra reactions. Its action on nerve pains has so far been its most striking feature, and patients have flocked for treatment. Of a series of 71 patients, 87 per cent. were completely relieved of pain

after five injections, and with one exception, all the others benefited by treatment. Six months later 80 per cent. were still free of pain. Some gave a history of nerve pains of over ten years' duration. All manner of superimposed septic states tend to resolve. Acute inflammatory conditions of the skin subside rapidly, but chronic septic states (e.g., foul leprotic ulcers) require prolonged treatment. A cellulitis, secondary to some septic wound, is frequently seen, and is characterised by a hot, red, swollen, brawny area, exceedingly painful, with ill-defined outline and a tendency to spread and abscess formation. Mercurochrome exerts a most beneficial influence on this condition. The patient has early relief from pain, and the temperature and redness subside rapidly. Small injections of the dye may also be beneficial in clearing up pyorrhœa, but excessive doses tend to loosen the teeth and cause painful gums. Muir states that mercurochrome appears to be much more powerful than potassium antimony tartrate in stopping lepra reactions, and we have found it most useful, even the worst cases usually showing improvement after the initial injection. It is contra-indicated in tuberculosis, but appears to be of benefit in certain cases of albuminuria, those probably of septic origin.

"The drug is not very toxic and reactions following administration have so far been negligible. In some had nodulars there is a transient tightness of the throat soon after injection, presumably due to a temporary congestion of an already affected larynx. During the initial injections there may be an exacerbation of symptoms at the seat of the trouble.

"Best results are obtained by employing small doses initially, 3 c.c. of a one per cent. solution in distilled water intravenously, and working up gradually to a maximum of 10 c.c. twice weekly."

British Medical Journal, November 2nd, 1935.

Dr. Norman Burgess describes the use of phenyl ethyl hydno-carbate injected intradermally in lupus vulgaris. This method was first used by Sir L. Rogers in 1933, who used creosoted moogrol, as did also Dr. Muende. Burgess found the phenyl ethyl preparations less painful and better tolerated by patients. He describes six cases and illustrates three of them, before and after treatment, by means of excellent photographs. The most striking results are in a case

of facial lupus extending into the mouth. Even in the mucus membranes the injections were effective. [This form of treatment might be tried in other infective granulomata—Editor.]

Transactions of The Royal Society of Tropical Medicine & Hygiene, Vol. XXVIII, No. 6, April, 1935.

Dr. J. M. Lindsay, in his paper on Medical Services in the Chaco War, states:—

“Leprosy is very prevalent in South America, and the number of lepers in Paraguay is very large considering the small population of the country. For certain political reasons and in connection with their immigration policy, the numbers are not allowed to be published. For some time efforts had been made by various missionary bodies, including the Salvation Army, to found and support a leper colony on mission lines, far away from the capital; and a few years ago I ventured to make some propaganda in the matter and my views were quoted at the Strasburg Tropical Medicine Congress and later ventilated at the League of Nations in Geneva.

“In 1929 Dr. Etienne Burnet, of the League of Nations Leprosy Commission, visited Paraguay; and in May of last year I travelled with him from San Paulo in Brazil: speaking of Paraguay, he said that the leprosy problem there was very difficult and the outlook rather hopeless.

“It has not proved to be so, however. One of the Fellows of this Society of Tropical Medicine, Dr. J. Nairn Hay, a graduate of Edinburgh, and, as a native born citizen of Paraguay, a Member of the Faculty of Medicine of Asuncion, has been working most energetically with the good-will of the President and his ministers and with the hearty co-operation of the local Faculty of Medicine and the Department of Hygiene, for the founding of a Leper Colony. Dr. Nairn Hay, as a Paraguayan citizen, had been mobilised for the war and had served in one of the military hospitals. In the beginning of this year, however, he was demobilised and commissioned to carry on the work of the Leper Colony. The American Leprosy Association has taken a great interest in this work, and a few months ago Dr. Webster Browning of that Association visited Paraguay in connection with the matter. Now in the latest Paraguayan newspapers I read that the first buildings of the Leper Colony have been completed, and all the lepers have already been removed from the hospital in the capital to their new home far out in the country. All this has been accomplished through the initiative and energy of our colleague, Dr. J. Nairn Hay, aided and backed in every way by a most patriotic zeal on the part of the higher authorities of the nation during the course of this terrible war which, it might have been supposed, would have sapped the nation of all its resources.”

Correspondence

MAHAICA LEPROSY HOSPITAL,
BRITISH GUIANA.
11th September, 1935.

Dear Sir,

I wish to protest, if you will allow me, against the use of a certain word which seems to be creeping into current use in recent years.

Last year, while on leave in England, I read for the first time, in a communication from India, of "tainted" and "untainted" children. It seems that we are endeavouring to release ourselves, not altogether with success, from "lepers" only to fall victims to "tainted," which surely bears much the same idea of a stigma in the minds of ordinary folk.

Why cannot we use the ordinary technical terms "infected" and "uninfected"?

These words are well understood and seem to me to convey the same meaning, unless they have some special significance which I have not quite appreciated.

Yours faithfully,
F. G. ROSE.
Medical Superintendent.

The Editor,
"The Leprosy Review."

Dear Sir:—

Leprosy Infection from Mosquitos and Minor Accidents.

By way of comment on the references in the "Journal" of April-June, 1935, Vol. 3, No. 2, to the "Mosquito theory advocated by certain South American Workers" (p. 169) and the "Risk of acquiring the infection of leprosy from minor accidents" (p. 230) the following personal experiences may be of interest.

In November, 1900, I was sent as medical officer with an exploring-surveying party to the River Monte Lindo zone of the Gran Chaco of Paraguay. The special reason for my accompanying the expedition was that the surveyor, an old Dane of 70 years of age, was said to be rather a sick man from heart disease and dropsy. He resented any suggestion that there was anything the matter with him. From a certain known fixed point the survey was begun, two other white men and myself, with a party of Chaco Indians, doing the surveying with chain and flags and compass. I was given the duty of noting down the distances and directions. Every evening, when we camped, I sat beside old Don Pedro making the logarithm calculations to get the figures right for the next day's survey. By the edge of the Chaco forest, or stream or swamp, the mosquitos simply swarmed at that hour. After suffering patiently for some time I suggested to Don Pedro that our calculations could be more comfortably done under a mosquito net. "Mosquitos!" he protested, "I neither feel nor see any mosquitos; it will be too stuffy under the net." Next evening, however, I rigged up my mosquito net and told Don Pedro I was going to do my logarithms inside. He was annoyed, but came under the net saying he must see what I was doing. For a full fortnight we

sat under the mosquito net an hour or more, sometimes with candle light, and generally with a sufficiency of mosquitos inside to worry me. Don Pedro was a huge man, sweated profusely, and smelt strongly from many sores on his feet and legs, and my nightly ordeal with him was far from pleasant.

Two and a half years afterwards I was sent for to visit a European, who was living in the city of Concepcion, Paraguay. A report was required regarding his condition; he was said to be a leper, and the local authorities wanted him removed from where he was. I found that it was my old friend, Don Pedro, the Danish surveyor. Two and a half years of neglect and poor living had made very evident the leprosy from which he had been suffering already for some twenty years. When I remembered what he was like during our previous Chaco expedition, the swollen leonine face and multiple sores, I saw that I had been deceived in not having then diagnosed the disease. In November-December, 1900, I had been in the closest contact with him and generally in the midst of clouds of mosquitos. In June, 1903, I had him provided for, brought to a habitation near my own place, and tended him until he died.

His sores often got fly blown, and the maggots had to be evacuated. The old man's eyes were badly affected and he was practically blind. On one occasion I had to get maggots from a wound between his toes. While I was bending over him, working with forceps on the maggots, he moved his foot, and it came up with considerable force, an ulcerated big toe coming right against my lips and mouth! I immediately rinsed my mouth out with a solution of permanganate of potash I was using for the patient. Owing to the general insensitiveness of the tissues, it was not always possible to find where maggots were harbouring. When too late, I found them far beyond reach up the nose and sinuses, and so the old man died like Herod the Great "consumed with worms." That all happened over thirty years ago. Since then I have suffered various minor accidents during the course of treatment of lepers, but never attributed any importance to them or worried about treatment for them.

J. W. LINDSAY.

Tolworth, Surrey.

THE LEPER COLONY,
UZUAKOLI, N.E.R.,
PORT HARCOURT,
S. NIGERIA.

Dear Sir:—

Intra-dermal Needle for use in giving Leprosy Injections.

Certain difficulties are experienced in giving intra-dermal injections of the preparations of Hydnocarpus Oil when there is no method of securing the needle to the syringe. The preparations are thick oily liquids, and a certain amount of force is necessary to drive the injection into the skin. The oil acts as a lubricant at the joint so that even a tightly-fitting slip-on needle becomes loose in a very short time. The result is that the injection, to be given successfully, takes considerable time and concentration. More commonly the injection is given subcutaneously, or the needle and syringe become separated with much

waste of the drug. The hands of the person giving the injection become covered with oil, and it is then difficult to hold the syringe firmly. This is exaggerated if the operator is wearing gloves, as he ought. It is thus impossible to give a large number of intra-dermal injections successfully, when reliance has to be placed upon native staff using such equipment.

In 1933 I asked Messrs. J. Gardner & Son, of Edinburgh, if they could arrange for the special intra-dermal needles recommended by Dr. Cochrane of the British Empire Leprosy Relief Association, to screw on to the syringe. This they were able to do, and one turn of the needle now makes it absolutely secure. A washer is provided with each needle for the upper end of the mount.

In the Uzuakoli Leper Colony a large number of intra-dermal injections of Iodised Moogrol are given every week by the native staff, using the needles described. The experience of the last eighteen months has shown that the injections are given with more certainty, more convenience, and far less waste.

JAMES A. K. BROWN.

10.3.35.

Medical Superintendent.

Grants for Leprosy Work.

The Executive Committee of the British Empire Leprosy Relief Association made the following grants during 1935 :—

| | | | | £ | s. | d. |
|---|-----|-----|-----|-----|----|----|
| NIGERIA. | | | | | | |
| Methodist Missionary Society, Lagos | ... | ... | ... | 100 | 0 | 0 |
| NYASALAND. | | | | | | |
| Livingstonia Mission, Bandawe | ... | ... | ... | 100 | 0 | 0 |
| Utale Catholic Mission | ... | ... | ... | 150 | 0 | 0 |
| TANGANYIKA. | | | | | | |
| White Fathers Mission, Makete | ... | ... | ... | 200 | 0 | 0 |
| Benedictine Mission, Ndanda | ... | ... | ... | 150 | 0 | 0 |
| N. RHODESIA. | | | | | | |
| 7th Day Adventist Mission, Mwami | ... | ... | ... | 50 | 0 | 0 |
| S. RHODESIA. | | | | | | |
| Leprosy Hospital, Mtoko | ... | ... | ... | 300 | 0 | 0 |
| SUDAN. | | | | | | |
| Church Missionary Society, Omdurman | ... | ... | ... | 250 | 0 | 0 |
| UGANDA. | | | | | | |
| Local Committee of B.E.L.R.A., for distribution | ... | ... | ... | 300 | 0 | 0 |

Applications for financial aid will be sympathetically considered by the Committee, and all applications should, in the first place, be sent to the Director of Medical Services of the Colony concerned, who will forward them to the Secretary of the Association.