# LEPROSY NOTES

No. 4. JANUARY, 1929.

*Issued Quarterly by*

**The British Empire Leprosy Relief Association.**

(EDITOR:—FRANK OLDRIEVE.)

*The Association's Object:*

TO RID THE EMPIRE OF LEPROSY.

PRINCIPAL CONTENTS.



24, CAVENDISH SQUARE, LONDON, W.1.

THE

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# *Leprosy Notes.*

No. 4. JANUARY, 1929.

## New Year's Message.

From the CHAIRMAN.

I hope that the subscribers to The British Empire Leprosy Relief Association, and those interested in the object of the Association " To Rid the Empire of Leprosy," appreciate the information given in these " Notes."

At first it was thought sufficient to issue the " Notes " occasionally; now we issue them quarterly.

The Committee of the Association has certain clearly-defined aims:—

1. To be the clearing house of all the latest information on the treatment of the disease, and to pass this on to those who are engaged in leprosy work in all parts of the Empire.
2. To set up Branches of the Association in all parts of the Empire.
3. To assist with funds, as far as they are available, the extension of existing and the formation of new Treatment Centres, and to issue all kinds of preparations for the treatment of the disease.

Readers of these " Notes " will be able to judge how far we are carrying out this work.

The interesting articles on the treatment of the disease are written by such well-known authorities as Sir Leonard Rogers, Dr. E. Muir, Dr. R. G. Cochrane and others. Articles from Nigeria, Tanganyika, the Gold Coast, Uganda, Nyasaland, South Africa and India, as well as from other parts of the Empire, illustrate the many different aspects of the work for the elimination of leprosy supported by the Association, with the co-operation of the various Governments concerned.

A list of our grants to Treatment Centres was given in "Leprosy Notes" No. 2, issued in July. Since July we have made further grants, and a list of these will be found below.

I claim, then, that we are fulfilling the work which the Committee set out to do; and I most earnestly commend the cause to the interest, sympathy and support of those who believe that the health of the peoples within the Empire comes first among the objects of good Government.

## Grants for Leprosy Work.

The Executive Committee of The British Empire Leprosy Relief Association have recently made the following grants of money:—

| | £ |
|---|---|
| Committee of the Uganda Branch of the Association, for work in the Protectorate ... ... ... ... ... | 1,000 |
| Seventh Day Adventist Mission, Malamulo, Nyasaland (additional, to complete building scheme) ... ... | 60 |
| Seventh Day Adventist Mission, for new Treatment Centre at Mwami, Northern Rhodesia ... ... ... ... | 250 |
| United Free Church Mission, Bandawe, Nyasaland ... | 100 |
| Sudan United Mission, for buildings at Nigerian stations ... | 50 |
| Sudan United Mission, Vom, N. Nigeria (additional) ... | 150 |
| Bethel Mission, Bambuli, Tanga, Tanganyika ... ... | 40 |
| Grant to Dr. Peacock, Leprosy Clinic, Mandalay ... ... | 100 |
| American Mission, Nasser, Sudan, for motor boat for leper clinics ... ... ... ... ... ... ... | 30 |
| Dutch Reformed Church Mission, Madzimoyo, N. Rhodesia | 100 |
| Church of Scotland Mission, Kikuyu, Kenya ... ... | 100 |
| London Missionary Society, Kawimbe, N. Rhodesia ... | 100 |
| Seventh Day Adventist Mission, Gendia, Kenya ... ... | 50 |

These grants have been made for the provision of dispensaries, simple housing accommodation for lepers undergoing regular treatment, equipment, etc. Applications for financial aid will be sympathetically considered by the Committee, and full particulars should be sent to the Secretary.

# Success of the Latest Treatments.

By The Editor.

That the latest treatments for leprosy are successful is proved by the reports which are continually being received from medical men and women in all parts of the world.

Dr. E. Muir, in the October, 1928, issue of *The Scottish Nurse*, wrote:—

> "That, especially in the early stage, leprosy is remediable, so that if suitable means are taken all active signs will disappear, and, provided the patient's general health is maintained, he will remain well and free from the disease."

Readers will not forget the statement made by the same authority in his article entitled "The Campaign against Leprosy," published in these "Leprosy Notes" in July, 1928, where he said:—

> "But given ordinarily favourable circumstances, a patient determined to get better and a doctor who understands his work and is willing to take trouble, there are few cases in which all active signs of leprosy cannot be stamped out."

Dr. Victor Heiser, Associate Director for the Far East of The Rockefeller Foundation, one of the great authorities in the world on leprosy, whom we quote elsewhere in this issue, recently said:—

> "There is so much difference of opinion as to what constitutes a cure in leprosy, that I hesitate to interpret results. But it may be said that there are thousands of persons in the world to-day who were once diagnosed as lepers but are now restored to their homes. No leprologist, no matter how experienced, can find evidence that these persons are still lepers, and so far as can be ascertained they are not capable of conveying leprosy. It is true that a few have relapsed; but what of that, in comparison with the many that have remained well? At Carville a number of patients have been released as they have recovered. Think of the hope implanted in the breasts of the lepers in many lands, and the stimulus there has been to increased effort among those who are trying to help. It is certainly encouraging to have recoveries where only failure was encountered before."

Those who, like the present writer, have had to do with lepers for a good many years, well know the wonderful difference that exists to-day wherever lepers are cared for, and it is almost

entirely due to the use of the latest treatments for the disease. Whether it is wise to use the word " Cure " is a debatable point, but I think that most authorities would go so far as to agree that it is no exaggeration to say that " leprosy is curable in the early stages." Where Dr. Heiser and Dr. Muir would write of " recovery " the ordinary layman would feel inclined to use the word " cure." Both probably mean the same, that the leper is apparently recovered, and is free of the disease.

Remembering this, the following statements convey cheering news.

*The Jamaica Mail*, Kingston, prints a telegram from Georgetown, British Guiana, as follows:—

> " Referring to the work of the Mahaica Leper Asylum the current number of the ' Catholic Standard ' says, ' Several genuine cures of the loathesome disease have taken place since Dr. F. G. Rose has been in charge of the institution, which demonstrates that the dreadful disease is not incurable if treated in its earliest stages.' "

*The South Pacific Mail*, Valparaiso, says:—

> " It is announced from Caracas that twelve patients suffering from leprosy have been discharged, completely cured, from the settlement at Cabo Blanco. It is understood that the application of recently discovered specifics is revolutionising the measures taken for combating the disease."

*The Star*, Toronto, Canada, publishes a Washington, D.C., telegram, which reads:—

> " Eight lepers have just been released from the National Leper Home at Carville, La., as apparently cured and no longer a menace to the community, according to an announcement of the U.S. public health service here, under which the national leprosarium is operated."

It is, of course, clearly realised to-day that " treatment " means much more than the injection of a particular drug. It certainly includes the giving of some preparation of one of the oils used for leprosy, whether given by injection or by the mouth, but it also includes the treatment of the other diseases that may be present, and also the treatment of the leper as an individual. By that one means the provision of suitable employment (Dr. Muir and other authorities advocate hard work) and the endeavour to provide mental stimulus and spiritual solace.

The importance of all these points has not always been realised, but each has its place in dealing with lepers. If each has its rightful place, there is every reason to expect real and lasting success in leprosy work.

F. O.

# Treatment in Leprosy.

## COMPLICATIONS AND SEQUELÆ.

By R. G. COCHRANE, M.D., M.R.C.P., D.T.M. & H.

Somtimes the complications and sequelæ which arise in leprosy give rise to a certain amount of anxiety. Especially is this the case where treatment is carried on, as it often is, by a layman. It is hoped that this article will assist the lay worker in his efforts to do all he can for the lepers who are under his care. It is not intended at present to deal with accompanying diseases, but only with those complications and sequelæ which are due to leprosy.

It will perhaps lead to clarity if this subject is divided into (A) those complications that are the direct result of what is known as " Lepra-reaction," and (B) those complications which arise in the course of the disease apart altogether from any reactions which may occur.

### (A) Complications due to Lepra-Reaction.

Lepra-reaction itself may be called a complication of the disease, because it gives rise to fever and much debility at times. Lepra-reaction is an important condition which should be recognised by all who treat lepers. It occurs in both the treated and untreated cases, but is seen in its more severe forms, as a rule, in those cases which are under treatment, especially is this the case in certain patients who are being treated with potassium iodide. The nature of the phenomena of lepra-reaction is imperfectly understood, some consider that it is largely due to allergy, and is analagous to the sensitisation phenomena seen in a number of other diseases. Others consider that the reactions are exaggerated stages of the leprous process. These and other theories have been propounded as to the nature of lepra-reaction, but whatever the explanation be it is most important to be able to diagnose this condition and treat it effectively. Lepra-reaction is generally ushered in by a rise in temperature, and in skin cases especially fresh eruptions are apt to break out. Even though the patient is running a comparatively high fever, he frequently has a feeling of well being; this unique experience is occasionally found in those who suffer from tuberculosis. In lepra-reaction, therefore, subjective signs cannot always be relied on. In early nerve cases which have multiple depigmented patches a bout of fever may be the determining factor in the spread of the disease and causing

such cases to pass into the skin stage. The depigmented patches become raised and red, and bacilli are now found where they where not demonstrable before. These eruptions may be erythematous, papular, vesicular or nodular. One type of eruption is seen in the form of small red nodules, which appear under the skin, but not in it; these disappear again in a few days. When the attacks are mild and the patient in the stage of subsidence of the disease, the sharp fever induced by a reaction is often beneficial. But in its more severe forms, and especially in the invasion period when the disease is beginning to get a grip on the body severe reactions are harmful, and if these are repeated or last for some weeks a definite cachetic condition may set in. Lepra-reaction does not only manifest itself in fever with exacerbation of skin symptoms, but rheumatic pains, neuritis, orchitis, or adenitis may all be found. The neuritis which is sometimes seen, especially in nerve cases undergoing iodide treatment, may be very severe, and the nerve may become painful and swollen and an abscess result.

Mild attacks of lepra-reaction can only be detected by keeping regular records of the temperature, and as mild attacks may usher in a more severe one, it is important when giving potassium iodide to keep a watch on the daily temperature and regulate the doses accordingly. It is those patients who will not or are unable to take active exercise that the most severe forms of lepra-fever are frequently found. In these more severe cases the patient should be put to bed and his bowels should be well opened by a saline aperient. If headache is severe aspirin or phanacetin may be given. Sodium salicylate combined with large doses of sodium bicarbonate is sometimes useful for rheumatic pains. For the neuritis which is so often seen 10m. or 1 in 1,000 adrenalin hydrochloride given subcutaneously sometimes has a marked effect. Recently ephedrine hydrochloride has been found more certain and lasting in treating these painful nerve affections. One half-grain is dissolved in a drachm of water and administered, and this dose is repeated in 10-15 mins. if pain has not been relieved. As a rule there is a marked relief after the first dose, and complete relief after the second dose. Sometimes in those cases where the nerve is found to be hard and indurated, then the ephedrine is used with 5 c.c.s. of saline and injected underneath and around the painful nerve; this has been found to answer in the few cases that have not responded to ephedrine given by the mouth. When a nerve abscess is formed or in danger of forming then the nerve sheath should be opened and dissected off for about four inches. This relieves the pressure and as a result the pain

disappears. Ephedrine frequently relieves the joint pains which accompany leper fever. Adenitis can be helped by painting the affected parts with a mixture of equal parts of glycerine and belladonna; if there are sinuses this can be packed into the sinus. If the fever is high and lasts more than a week, especially if the patient shows signs of intolerance to the reaction, then 0·02-0·04 gm. potassium antimony tartrate given intravenously every other day will frequently bring the fever to an end. During the acute febrile stage a plain diet should be given and plenty of milk should be taken if the patient can obtain it. As often the successful treatment of leprosy depends on the efficient control of lepra-reactions, it will be realised that this condition should be carefully studied by all who are treating the disease.

### (B) Complications which arise in the course of Leprosy.

#### Eye Infections.

Leprosy may attack the eye from without, producing a localised leproma which ultimately spreads to the component parts of the eye, or else the disease may affect the eye as the result of the bacilli being carried in the general blood stream and the whole uveal tract or any other part of the eye may be attacked. If the patient develops iritis or any inflammation of the eye during treatment, one must proceed carefully, lest the sight is speedily lost. In leprous affections of the eye atropine can be used freely; in fact, one must strive to one's utmost to avoid adhesions forming, for once adhesions are firmly established the prognosis is decidedly bad. If there is any bulging of the anterior chamber a timely paracentesis may save the sight. Unfortunately, measures for the relief of eye symptoms are, as a rule, only palliative, for once the eye is attacked in leprosy the prognosis as to sight is bad. A simple iritis without gross infection of any other part of the eye frequently clears up. If the eye is attacked by the disease one must be careful to avoid reactions.

#### Treatment of Ulcers.

These are naturally divided into two types:—

(1) True leprotic ulcers.

(2) Trophic ulcers.

(1) *Leprotic ulcers.*—This type of ulcer is best treated by the application of hydrocarpus oil. When there is much induration one sometimes finds improvement setting in after curretting with a sharp spoon and freshening up the edges. Injection of hydnocarpus oil into the base frequently helps in the resolution of the nodules. The timely application of trichloracetic acid may cause

resolution of the nodules and so prevent ulceration. Trichloracetic acid should not be applied to open sores.

Ulceration of the nose often gives rise to troublesome symptoms. Crusts can be kept from forming and softened if they have formed by soaking gauze in liquid paraffin and applying night and morning. After this treatment the following prescription has been found useful:—

Camphor Two drachms ʒii
Creosote Two drachms ʒii
Hydnoc. Oil One ounce ʒi
Olive Oil Two ounces ʒii

(2) *Trophic ulcers.*—These occur typically in the advanced " so-called " burnt-out case, and therefore are not always dealt with on essays on treatment. Until a state can look after the crippled and maimed humanely and effectively the discharge of the advanced non-infective secondary anæsthetic case cannot be recommended. Unless home conditions are good and there are friends to care for the " burnt-out " cases he will only swell the ranks of the pauper begging class, and ultimately die a miserable death from sepsis as a result of ill cared for ulcers. In a leper home sometimes the cases that give rise to most anxiety are the advanced cases with bad ulceration. Therefore it may be a help briefly to describe some methods of treatment that have been found to be effective. The remedy which appears to do the most good is eucalyptus oil in which ten grs. of iodoform have been dissolved in every ounce. This is soaked on a piece of gauze, and applied to the ulcer after it has been cleansed with hot permanganate solution. As this remedy is somewhat expensive, it is better to use for clean ulcers gauze soaked in iodine made with methylated spirit and half the usual B.P. strength. Stronger iodine can be used, but it is more expensive. There is, however, no better remedy than the eucalyptus oil preparation for cleaning up foul and septic ulcers. Except for a preliminary cleansing with hot permanganate solution, watery dressing on account of the devitalised condition of the skin are to be condemned. If any sinuses form these heal rapidly if tincture of iodine is injected into the whole length of the sinus, and then packed with gauze soaked in eucalyptus oil. Diseased bone should be removed and indolent ulcers should be scraped with a sharp spoon and cauterised with copper sulphate. A timely amputation will save life in severe cases, but the decision to operate must be taken quickly, for once sepsis begins to spread it spreads rapidly in the already devitalised tissues. Provided the

condition of the skin is good, amputation wounds should heal by first intention, the presence of anæsthesia does not affect the healing power much. If the above methods are carried out, ulcers of the type described should heal, but they are always liable to break down again. While the treatment of trophic ulcers is the least pleasant part of the work in a leper home, yet the result in the morale of the patients when they see that their ulcers are kept clean and sweet amply repays one for the time and trouble taken to heal them.

## Potassium Iodide Treatment.

### The Use of Pot. Iodide in the Leprosy Treatment Centres in India.

By I. SANTRA.

During the last 17 months the Leprosy Survey Party, working under the Indian Council of the British Empire Leprosy Relief Association, has opened its P.T.S. centres, and at these 3,414 patients are being treated. Everywhere the results have been of uniform improvement. Whenever I hear or read a complaint against the use of potassium iodide in leprosy I think that the complainant has relied more on himself than on the patient.

When we began this work we had no time for the sedimentation test or to record temperatures. The reactions and the general feeling of the patients were the best guide to ascertain the doses. That was the day when it was advised to begin potassium iodide from ½ a grain and increase very cautiously. From the patients we learnt that in many cases one could safely begin from 30 grains.

I hold the view that among all the medicines that are now in vogue for leprosy, potassium iodide is the safest one in the hands of the Indian patients. The results have been so encouraging that even the Kaviraj (the Ayurvedic practitioner) comes to learn the use of potassium iodide in leprosy.

We have not seen a single case where a leper has not been benefited by potassium iodide. It must be remembered that the late B3 and A2 cases are not treated in the P.T.S. centres.

Patients travel on foot, bullock carts and on horseback from a radius of 15 miles, which provides plenty of exercise to produce the dramatic effect that we see in so many cases.

# Voluntary Leper Colonies and Clinics.

## IN PLACE OF COMPULSORY SEGREGATION.

By Sir Leonard Rogers, M.D., F.R.S., C.I.E.
(Hon. Medical Secretary.)

I have repeatedly pointed out that in tropical and sub-tropical areas compulsory segregation has yielded very disappointing results, although in Norway seventy years of isolation under mild conditions has at length reduced the disease to only 5 per cent. of the numbers found in 1856, and in Iceland a great reduction has taken place since the re-establishment of isolation in 1897. The splendid attempt of the Americans to stamp out leprosy by segregation in the Culion island settlement of the Philippines has reduced greatly the number of advanced lepers seen in the towns, but, as the admissions average 8 years' duration, during which they have had ample opportunities for infecting others, numerous new cases are still found every year, and recently the policy of compulsory segregation has been modified by adopting the plan, long advocated by Muir, myself and others, of allowing early cases to be treated at hospitals and clinics established near to where the patients live. In one of our British colonies our suggestion, to allow early cases, found by a medical board to be uninfective, to be treated at clinics is likely to be sanctioned before long. On the other hand, in South Africa the Union Government still has a policy of rigid compulsory isolation, with the result that a recent report stated that the duration of the cases on admission was of four, six or more years, and treatment was then of comparatively little avail, as compared with its effect in their earlier cases now being attracted to clinics in many of our colonies, and the disease will inevitably be maintained by infections from cases before they are detected and isolated.

For these reasons our Association has set its face against the introduction of compulsory isolation in our badly affected tropical African colonies, where anti-leprosy campaigns are being taken up energetically, in some cases under whole time medical officers trained in the modern treatment at the Calcutta School of Tropical

Medicine under Dr. Muir. In Tanganyika compulsory segregation was introduced by the Germans, but the British administration are now supporting our policy of attracting cases to come voluntarily to clinics and colonies for treatment, and in Uganda Dr. Wiggins has opened a splendid campaign by means of six clinics, visited once a week by motor, in which 1,500 cases were under treatment voluntarily within a few weeks of the work being started. It remains to be seen whether the patients will attend for long enough for good results to be obtained, but about two years' experience of Dr. Macdonald, at Itu in Southern Nigeria, with about 1,000 lepers now in his voluntary colony, has proved this measure to be of great value, although in the neighbouring French Cameroons attempts at isolating lepers by compulsion only led to the cases being hidden, but, after some good results had been obtained by treatment, patients doing well were sent in couples through the villages to persuade the lepers to come voluntarily for treatment, with far greater success in attracting the patients, without any compulsion whatever.

In addition to clinics for comparatively early and little infective cases, leper colonies are required where the more advanced and dangerous infective cases can be persuaded to reside for long periods under treatment. Fortunately the abundance of highly fertile land in tropical Africa makes such colonies feasible at a very minute fraction of the cost of compulsory isolation, as well as being far more effective in obtaining the desired residence of the patients. Our Association has given numerous grants to allow missionary and other doctors to build dispensaries and strong native huts for accommodation of the lepers, who are able to grow their own food within a few months, and thus become self-supporting, and the cost of treatment with sodium hydnocarpate, in the form of Alepol or Martindale's C fraction is only about half-a-crown a year per case, as far as the drug is concerned. When we recall that in New South Wales the cost of compulsory isolation is over £200 per case per annum, the immense advantage of attracting the infectious lepers to come voluntarily to our new leper colonies is very evident, and it is, in fact, the only feasible way of dealing with the problem in our none-too-wealthy African colonies. These leper colonies, then, provide both for the voluntary isolation of the infective cases at a nominal cost, as compared with compulsory isolation, and also attract the patients in earlier stages (when they are more amenable to treatment) than under compulsion. When a considerable proportion of the infective cases can thus be dealt with,

and many of the early uninfective ones can be cleared up and prevented from going on to the more advanced infective stage at colonies, a blow will then be struck at the disease which must inevitably result in the material reduction of its prevalence in a decade or two. As the Union of South Africa at present adheres to a policy of rigid compulsion, that area will serve as a useful control, and it will be most interesting to see if neighbouring areas, far less advantageously situated as regards both financial resources and climate, will not out distance the southern area of Africa in the race greatly to reduce leprosy in their respective territories.

## Local Branches in Great Britain.

### NEW BRANCHES FORMED.

For some time Local Branches of The British Empire Leprosy Relief Association have been doing good work in Edinburgh, Glasgow and Bristol. Meetings have been held in these cities, and considerable sums of money have been contributed by those whose interest has been stirred.

During recent months Branches have been formed in Aberdeen, Dundee, Hull, Plymouth, Brighton and Hove, Rugby, Worcester, and Cheltenham. In all these centres the Lord Provost, Lord Mayor, or Mayor has accepted the invitation to become the President of the Branch, while leading medical, professional and business men have joined the Committees.

Lantern Lectures have also been given in several places where Branches have not been formed, while a large number of Rotary Clubs have been addressed. The Secretary will gladly give a lantern lecture on the work of the Association if such can be arranged, and he will be delighted to hear from anyone who can help in this direction.

# Value of Physiotherapy in Deformities Associated with Leprosy.

By Paul A. McIlhenny, M.D., F.A.C.S.

The early recognition of deformities of the extremities is of primary importance. Atrophies, contractions and bone lesions will eventually produce distressing and crippling deformities, and unless such are anticipated, correction and even arrestment is often difficult.

Physiotherapy, as carried out at The National Leprosarium at Carville, Louisiana, has produced very satisfactory results in many patients, and among those who have faithfully taken treatment there are very few who have not been improved.

Contrast baths have proved most valuable; these given in connection with massage and exercises have produced gratifying results in contractions, atrophies and anæsthetic hands and fingers. Ultra-violet radiations are especially useful in leg ulcers; callosities and perforating ulcers; infections about the hands and feet are also benefited by short exposures. Indurated areas respond more readily to radiant light applications, and this followed by massage is often helpful.

The Infra Red Ray has proved more valuable in nerve pains than any other treatment so far, and patients generally prefer it to either ultra-violet or the radiant light exposures. Improvement is often experienced after the first application, and many cases have been completely relieved after ten treatments, though others require many more and some experience little or no benefit. Low grade cellulitis is more resistant than any other complication, and various combinations to relieve this condition have been tried out thoroughly; so far, contrast baths, radiant light, followed by massage, have produced the more satisfactory results, though at best these can hardly be classed as satisfactory.

Diathermy has not produced the results looked and hoped for from its application though, in certain cases, nerve pains have been relieved by its use when other measures have failed completely. Rarefying osteitis and necrosis of the hands and feet have been arrested by the use of diathermy, but care must be used in anæsthetic areas or serious burns may result.

As a general rule, cases of the nerve type respond more readily to physiotherapy than do the tubercular or mixed types. Some mixed type cases develop acute tubercles after one or two visits to the physiotherapy department, and, in these, treatments have to be suspended; this is unfortuate, as before the tubercles subside what benefit was gained is often greatly diminished.

Anæsthetic areas, especially in the hands and feet, with marked atrophies and contractions, respond well to contrast baths, massage and radiant light, and if active and passive exercises are used, the results are gratifying; many such cases have regained normal sensation and motion; others of a more advanced type have improved enough to distinguish between heat and cold, though response to pain is diminished.

Anæsthetic areas on the extremities have been reduced by applications of ultra-violet rays and, in some, normal sensation has returned. Treatments should be given daily, at least six times a week, and patients encouraged to take their exercises in their rooms morning and evening, independent of those given in the department. Many of the contractions could be greatly benefited and the duration of treatment reduced by the application of corrective splints at night; this, however, is almost impossible because of the fact that patients have, in many respects, to care for themselves, and the large number having contractions makes the use of splints impractical.

Active and passive motion machines of the Zander type are very useful in overcoming moderate contractions of the hands and fingers and developing muscle power; these can be easily adjusted to the requirements of each individual case, and exercises given with them should be pushed to a point just short of muscle fatigue.

## Growing Hydnocarpus Trees.

It is generally admitted to-day that treatment of the disease is the most important item in the programme of those who are working for the eradication of leprosy, and, indeed, it is the only reasonable hope that there is for the control of leprosy. Chaulmoogra oil held the field in the treatment of the disease until some ten years ago, when Sir Leonard Rogers began to experiment with other oils.

It is now considered that the preparations made from Hydnocarpus Wightiana oil are giving the best results, and for some three years a good deal of attention has been given by The British Empire Leprosy Relief Association to the question of the supply of the oils from Hydnocarpus Wightiana and Hydnocarpus Anthelmintica trees. Dr. Victor G. Heiser, Associate Director for the Far East of The Rockefeller Foundation, speaking in New York recently, said:—

> " The questions have been asked: Should chaulmoogra orchards be established? Should volunteer organisations try to encourage the growing of additional chaulmoogra trees? A few years ago a greater acreage of trees appeared essential. At that time it was thought that the oil from the Taraktogenos Kuzil was the only one that was useful in the treatment of leprosy. Later experience indicates that the oil from a number of species of chaulmoogra trees, hydnocarpus and others, are equally effective. It so happens that the world has a large supply of nuts from the hydnocarpus trees. I was surprised to find that in Siam the trees are so common that ordinary soap is made from the oil. This would indicate that the supply is abundant in Siam at least."

Up to the present the Association has obtained its supplies of Hyd. Wight. oil from South India, and the Hyd. Anthel. nuts have been obtained from Siam. For the past three years, however, quite large supplies of the seed of both these trees have been sent out to every part of the British Empire, as it has been felt that it would be a wise thing to find out where the trees could be readily grown. Hyd. Wight. has been grown, from seed supplied by the Association, in West Africa, in Nigeria, the Gold Coast and Sierra Leone; in East Africa, in Uganda and Kenya; while it seems to have grown well in quite a number of islands in British West Indies. In a number of British colonies no success was obtained after the seeds had been sown, but this may have been due to the seeds not arriving in good condition. Hyd. Anthel. is grown in a number of colonies, but full reports have not yet been received as to the success that has been obtained. Dr. E. A. Neff, Medical Superintendent of the Leper Station at Makogai, Fiji, has just written as follows:—

> " We have now nearly a thousand trees of Hydnocarpus Wightiana and Anthelmintica coming along, of which some are now three years old. One of the latter has recently been in bloom and now carries about a dozen small nuts! I hope that, in the not too far distant future, we shall be utilising our own oil."

And this is encouraging.

In view of the fact that Hydnocarpus oil is most likely to be required in larger quantities as time passes in all parts of the British Empire, at least, where leprosy is prevalent, it certainly seems advisable that efforts should be continued to grow both Hyd. Wight. and Hyd. Anthel. The Editor will be glad to send supplies of either seed to any part of the Empire where workers are prepared to try and grow the trees, and he would call attention to a review, in " Leprosy—Summary of Recent Work," No. 8, pages 515-6, of an article by Dr. T. A. Henry, entitled ' The Treatment of Leprosy by Artificial Oils.' If any fuller information is required on the subject the Editor will be glad if communications may be sent to him.

F. O.

## Lepers Turned Away.

### PROGRESS IN NYASALAND.

" We have ninety-seven lepers receiving treatment at our Centre at present, and have to turn patients away almost daily."

So writes Dr. C. F. Birkenstock, of Malamulo, Nyasaland, on September 10th. His successor, Dr. H. A. Erickson, wrote on October 2nd:—

' Since coming up here we have turned over 100 lepers away, as we cannot do the work. We are treating 103 patients now. When one gives a hundred intravenous injections in the morning, it takes all our time."

This is typical of how leprosy work grows when a doctor starts a Treatment Centre. The Association has made grants of money for the extension of the work, and Dr. F. E. Whitehead, Director of Medical and Sanitary Services, Nyasaland, recently wrote:—

' Since you were here the Malamulo Mission have built their new camp. I inspected it a few days after it was opened, and the patients had been moved to it from the old one. I can assure you that their grant has been well spent; it is well built, with an excellent lay out, and the organisation is good. It is at present the best in the Protectorate, and the Mission is to be congratulated."

Such Treatment Centres are needed wherever lepers are to be found, and the Committee of the Association will gladly consider applications for financial help for commencing or enlarging such Centres.

F. O.

# Leprosy Work in British Guiana.

By F. G. Rose, B.A., M.D., D.M.R. & E., Cantab.

(Medical Superintendent, Mahaica Leper Hospital).

A British Guiana Branch of The British Empire Leprosy Relief Association was formed here in 1926, following upon the visit of the Secretary of the Association, but the Branch has not yet functioned at the time of writing.

In 1925 a new Leprosy Ordinance was framed and handed over to the Law Authorities of the Crown for final drafting, but this has not yet been put before the Legislative Chamber. Leprosy work in the Colony, therefore, resolves itself into the work done at the Mahaica Leper Asylum, where, on an average, 300 patients are segregated.

The grounds of the Settlement extend over some 62 acres, and are surrounded by a zinc fence some eight feet in height, surmounted by rows of iron spikes; the female portion is similarly divided off from the male.

Of the 300 patients roughly two-thirds are males. About one-third are East Indians, the rest being black and mixed races, with a very few Portuguese and Chinese.

During the last two years treatment has been very energetically carried out; a laboratory has been established, and some 40 Hydnocarpus trees (grown from seed kindly supplied by The British Empire Leprosy Relief Association) are growing vigorously within the compound. No attempt is made, except in the case of young children, of whom there are 25, to enforce treatment, but so encouraging has been the visible results that patients present themselves voluntarily to such an extent that 222 persons were under treatment during the six months from January to June, 1928; in fact, it is not too much to say that every case susceptible of improvement is now under treatment. The majority of the cases in the asylum are, unfortunately, old anæsthetic cases, deformed and mutilated, uninfective, but unable to fend for themselves in the outside world. Every patient, however, who has been admitted during the last two years has voluntarily submitted to continued treatment. Whereas prior to 1926 there were no cases of voluntary admission, so far as one can ascertain, in 1926 two cases, in 1927 fourteen cases, and in 1928, up to the end of July, sixteen cases voluntarily sought admission to the asylum, while

about 12 uninfective cases of the early anæsthetic type are being treated as out-patients. This is by far the most gratifying feature of the work, and as many early cases are now coming up for treatment the results are correspondingly good. In the last two years it has been possible to discharge 64 patients who have become negative under treatment, while of this number only three have so far relapsed.

These persons are discharged conditionally, and are to be re-examined periodically for some years before final discharge.

Special attention is devoted to the diet, and one endeavours to make it more palatable than was formerly the case and to vary its montony so far as possible. A farm of over 10 acres is under cultivation by the patients, and they are encouraged to grow vegetables and greens, which are bought from them at roughly one-half of the market rates, for the use of the institution. Patients also work in the tailors', carpenters', shoemakers' and blacksmiths' shops, assist the mason, act as dressers, scrubbers, latrine attendants, etc., in nearly all cases for additional rations of sugar, biscuits, or for tobacco, etc. The women work as laundresses, seamstresses, etc. Some few patients keep shops or employ themselves as hawkers. The rearing of poultry is indulged in very extensively, fowls, ducks, turkeys, pigeons and guinea birds being kept. The poultry and eggs are sold, at about one-half of the market rates, to the store for the use of the patients. Some patients are also engaged as gardeners, and in weeding-gangs about the grounds of the institution, receiving about half the current rates of pay outside. There is a fairly well-equipped school, with four teachers, two of whom are recognised and paid by Government. All children under the age of 14 attend, and the discipline and teaching in general are of quite good character. There is an orchestra of five or six performers, all inmates, under an inmate conductor, which plays for patients' functions and reaches a moderately high standard of performance. An Inmates' Sports Club has been formed, which organises debates, concerts, dances, cricket and football matches, athletic sports, etc., regularly throughout the year, and a prominent citizen has presented a handsome cricket cup, the Walcott Cup, which is played for by teams of patients, one of which has already secured a lien.

By the devoted efforts of the wife of His Excellency the Governor, the Lady Rodwell Hall has been opened and a cinematograph machine installed. The hall has a large stage with wings, on which dramatic performances are staged at intervals by volunteers from outside, and cinema shows from the London Electric Theatre, in Georgetown, are given once a week. With

all these measures a new spirit of cheerfulness and optimism animates the patients, and not the slightest difficulty has been experienced in inducing them to subject themselves to the most painful forms of treatment over prolonged periods. Hardly one avenue of treatment has been left unexplored. Antileprol, the Esters prepared from Hydnocarpus Wightiana oil, the pure oil, Thymol, Sodium morrhuate, Protein Shock Therapy, Solid Carbon Dioxide, Chrysolgan, Muir's Potassium Iodide treatment have all been under trial.

At present most of the patients are under treatment with Sodium Hydnocarpate, given intravenously in a 3 per cent. solution, while a large group is also under treatment by Esters of Hydnocarpus. Local applications of Trichloracetic Acid and solid Carbon Dioxide are also used as routine in suitable cases.

Research in various problems, local or general, is also being carried out, such questions as the local distribution of the disease being at present under investigation. A post-mortem examination is carried out with great thoroughness in every case, and two new lines of treatment are now under trial. Many small operations are carried out from time to time, nearly all under spinal anæsthesia.

An Electrical Department has been installed, and is used for the treatment of ulcers and to correct commencing deformities due to nerve-involvement. Faradisation and ultra-violet therapy are available, while surgical operations, such as transplantation of tendons, excision of bones, and nerve-grafting, are performed in some cases to remedy deformities of long standing where the disease appears to have been arrested. The result of effective treatment is clearly reflected in the fall of the death-rate from 10·2 in 1925 to 5·7 in 1927.

The patients have been absolutely convinced by actual demonstration that all early cases of leprosy can be cured, and several have been discharged in whom no visible trace of the disease remains.

# Leprosy in Europe.

## No. 1.—LEPROSY IN THE BALTIC COUNTRIES.

By Rev. JUSTIN E. ABBOTT, D.D.

I attended the Conference on Leprosy, held in Strasburg in 1923. From conversation with representatives from European countries, and from their papers, I learned much of the leper problems in their lands, but the information was, of course, fragmentary and incomplete. I had already discovered that all books, dealing with the statistics of leprosy in Europe, were likewise either out of date or incomplete. I decided, therefore, to visit all the countries of Europe, and gain on the spot a first hand knowledge of the prevalence of leprosy, of the care bestowed on lepers, of the laws relating to them, and of their plans and expectations for freeing themselves from this terrible disease, that for centuries had been endemic in many of these lands. To this end I visited England, France, Belgium, Holland, Sweden and Norway in 1923, and Sweden, Finland, Esthonia, Lithuania, Latvia, Poland and Germany in 1926. In this paper my remarks will be confined to the countries bordering the Baltic Sea. My remarks on leprosy in Norway are from notes taken in 1923.

### NORWAY.

On one of the main streets of Bergen, and near one another, are two groups of buildings, that give shelter to most of Norway's lepers. The smaller of the two is called St. Jörgen's (George's) Hospital, and is the original leper hospital, going back to 1547. Dr. D. Armauer Hansen, son of the Hansen who discovered the bacillus of leprosy, and who is the physician in charge of the lepers, kindly acted as my guide through the larger building used as a leper hospital. He took me into every ward. I had thus an opportunity of comparing the lepers of Norway with those of India. Here was the same terrible mutilation and the same running sores. The sad scene in each ward had, however, its bright side in the smiles and kindly greeting given to Dr. Hansen, and the equally kindly response, while giving his personal attention to their immediate needs. The lepers were well advanced

in years. Dr. Hansen was using Chaulmugra oil in the treatment of the disease, and some were benefited by it, but no noteworthy results have followed its use. I was shown the workrooms where lepers were busy at carpenters' benches. Other lepers were making shoes, fishing nets and the like. The painting of the buildings was being done by the lepers. The women were employed in sewing and knitting.

Pastor Wilhelm Holdt, who was ministering to the spiritual needs of the lepers, was my guide over the other buildings, the St. George's Hospital. Here there were 10 aged lepers, nine women and one old man of seventy. This has been their home for many years, and it has been very humanely decided to let them remain here undisturbed for the few years that remain to them.

Dr. H. P. Lie is in charge of the leper problem for the whole of Norway. Lepers, who can afford it, may be isolated in their own homes, and Dr. Lie has the duty of inspecting such in different parts of Norway, and securing obedience to the regulations required of them. Under Norway's policy every year has seen a decrease in her number of lepers.

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## SWEDEN.

Through the kindness of Dr. J. Reenstierna, of Stockholm, recently appointed Inspector of Leprosy, I visited the Leper Home at Järfso, about 80 miles north of Stockholm. The Home consists of a single two-storey building, in neatly kept grounds. There were but 12 lepers in the Home, and all were aged. In all my experience I have never seen a leper home so clean, so bright, so home-like. The bedspreads were snow white. Plants, flowers and pictures completed the adornment. If smiles were wanting on the leper faces, as the good head nurse took me from room to room, the terrible facial mutilation, the blindness of some, and the humiliation of their diseased lives, were a sufficient reason. A local doctor was in charge, but no medical treatment for leprosy was given the lepers. Should anyone wish to visit this Leper Home, a hotel, with most reasonable charges, and a self-help table, will be found about a mile from the Home.

Of the other 20 lepers in Sweden, one was in the hospital at Stockholm, under Dr. Reenstierna's care, and 19 are in their own homes as permitted by Swedish law. Leprosy is endemic in only two of the provinces of Sweden, namely Halsingland and

Dalecarlie. As aged lepers pass away, leprosy is decreasing, and yet new cases have been frequently discovered, showing that reliance on the present policy is not wholly satisfactory.

## FINLAND.

The Leper Home at Orivesi, formerly military barracks, is in an extensive enclosure, with fields, vegetable and flower gardens and a forest. Sister Matilda Hjon, of a Lutheran order, was in charge, with several assistant Sisters. Dr. Helme was the physician in charge. Sister Matilda had received word of my coming, and her cordial hospitality knew no bounds. She knows Finish only, and our conversation had to be in gestures and smiles, but a spotlessly clean guest-house in the enclosure, and a table laden with good things, were some of the concrete forms of her hospitality.

Sister Matilda clothed me in a doctor's white robe and cap, to protect me from leprosy germs, and we passed through all the rooms, which were clean, bright and airy. Here also the lepers are all aged people, soon to pass off from the stage of their sufferings. Dr. Helme has used Chaulmugra oil, as well as Dr. Paldrock's freezing method, but with little beneficial results. This is not surprising, however, as the lepers are all in advanced years. There were 22 lepers in the Home. Fifty-three are living in their own homes, as Finish laws allow, but they are without medical treatment for the disease.

The laws regarding leprosy in Norway, Sweden and Finland are practically the same. Pauper lepers are supposed to go to the Homes provided for them. Those having their own homes may remain there, subject, however, to the rules for their isolation.

## ESTHONIA.

A Ford car took me over a rough road to Kuda, about 50 miles from Revel. Immediately outside of the leper enclosure is the home of the kindly physician in charge, Dr. Kuppfer, formerly an Inspector of Leprosy, when Esthonia was a part of Russia. He has made many successful experiments, and has written extensively on the subject of leprosy. There were 71 lepers living in the wholly inadequate buildings within the enclosure. Esthonia is as yet a poor country, and she has to do the best she can with the little money she has. At the Health Department, however,

I was told of an increase in the budget for 1927 for the better care of their lepers. The buildings, originally intended for some other purpose, were over-crowded. The rooms seemed dark and dingy. They looked untidy, and it seemed a dismal home, but there was a bright side, and that was the success of Dr. Kuppfer in his treatment with Chaulmugra oil. The Commission that deals with those apparently cured had just declared several as cured, and they had been given permission to return to their homes. Their smiles were in marked contrast to the sad countenances of those who still had to remain behind. As I left the institution a large group of lepers made an earnest, pathetic plea that I should secure for Dr. Kuppfer more Chaulmugra oil, as the State was providing him with an insufficient quantity.

There are three other leper homes in Esthonia. The one at Tarvast is connected with the Medical School at Dorpat. Esthonian law compels all lepers to go to one of the four Homes, whether they be rich or poor, but, as a matter of fact, leprosy seems to prevail only among the poorer classes, whose method of crowded living together is a condition favourable for the spread of leprosy. The number of known lepers in Esthonia was 226, and they were living in the four Homes as follows:—

| | |
|---|---|
| Kuda ... ... ... | 71 |
| Tarvast ... ... ... | 85 |
| Muli ... ... ... | 15 |
| Island of Oesel ... | 55 |
| A total of ... ... | 226 |

## LATVIA.

In a pine forest, 4 kilometers from the centre of the city of Riga, there is a Leper Home with 120 lepers. There is another Home at Talsen with 90 lepers. A former Home at Venden has been closed. In Latvia also the law compels all lepers to isolate themselves in one of these Homes.

The buildings of the Home near Riga were formerly used as an electric establishment, and, while adequate as to space, lack what could make them a Home of brightness and hope. Dr. Schiron, physician in charge, was my guide. A fairly equipped laboratory was at Dr. Schiron's disposal, in which he has been able to make valuable experiments. A very kindly looking head nurse was in charge of the internal arrangements of the Home. The lepers have plots of ground which they can cultivate, and various occupations are provided, by which they can earn money.

## LITHUANIA.

Leprosy is not feared in this State, and there are no special laws for its regulation. Leprosy is endemic only in the province of Memel, formerly belonging to Germany. I was told, by the officers of the Health Department at Kovno, that there was a small Home at Nemel, with 15 inmates. It was thought that there might be altogether 21 lepers in Lithuania. I was unable to visit the Memel Home.

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## GERMANY.

At the Health Department I learned that there were eight known cases of leprosy in Germany. Of these five were in Prussia and three elsewhere. All these, however, are foreigners, there being one Chinaman and the others coming from South America. There were no German lepers.

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## SUMMARY.

In 1926 there were 702 known cases of leprosy in the countries bordering the Baltic Sea, distributed as follows:—

| | |
|---|---|
| Norway ... ... ... | 130 |
| Sweden ... ... ... | 32 |
| Finland ... ... ... | 75 |
| Esthonia ... ... | 226 |
| Latvia ... ... ... | 210 |
| Lithuania ... ... | 21 |
| Germany ... ... | 8 |
| Total ... ... ... | 702 |

I have reason to believe that the above figures are reliable, for in every country I visited I had an interview with the heads of the Public Health Departments, and had their statements confirmed by my visits to the leper homes, and by interviews with medical men interested in leprosy. While the expectation that leprosy will gradually decrease in these Baltic countries, under present methods of dealing with the disease, is justifiable, it is however probable that the desired end could be hastened by the application of methods and policies in harmony with the more recent discoveries.

Leprosy is still endemic in Norway, Sweden, Finland, Esthonia, Latvia and Lithuania. With the transfer of Memel to Lithuania, Germany has no longer any endemic leprosy.

# Leprosy in China.

By Henry Fowler, L.R.C.P., L.R.C.S., L.F.P.S.

Although from time to time attempts have been made to ascertain the extent and general conditions of leprosy in China, its prevalence and treatment in certain extensive areas are unfortunately still awanting. The country is vast in its dimensions and intercommunications in many districts, even under modern conditions, are next to impossible. In these very districts the native medical profession is so thoroughly empirical in its practice and outlook that no reliable information may be expected from this source. Until an enlightened civil administration seriously investigates public health conditions throughout the empire, much will remain hidden among the mountains and valleys of these inaccessible districts.

Meantime, certain data is available from the better traversed regions, and a brief review of these indicate some interesting features of the general leper situation.

Of the eighteen provinces making up China proper, undoubtedly the one with the highest leper index is Kwantung in the South, followed next by Shantung in the North-West. Both of these provinces have an extensive coast line, and, inasmuch as the Chinese have for generations been adventurous sailors and keen traders, it is interesting to note that in the early days many of them found their way to our British colonies. There they undoubtedly carried the "lepra bacillus," which later was to play havoc with so many of these emigrants, and, in turn, become a source of anxiety to the Colonial Authorities.

To indicate the prevalence of leprosy in South China, Dr. James Cantlie is found writing from Hongkong some forty years ago, claiming the ear of the Home Government to protect the colony from the many lepers found on the streets, many of whom were presenting themselves at the hospital for treatment, and for whom little could be done. "There is no law," he writes, "against the importation of lepers, nor yet against begging in Hongkong, therefore the streets of the city with its rich inhabitants are as an El Dorado to the leprous Chinaman of the mainland." Leprosy is apparently just as prevalent in the South

to-day as it was forty years ago; in the case of Hongkong, however, all Chinese found suffering from leprosy are now repatriated to Canton.

With this condition of things before their eyes, it is no wonder that our pioneers of tropical medicine and surgery—Drs. Manson and Cantlie—estimated the total leper population of China at an extravagant figure. Investigations have since shown the leper problem in other provinces is not nearly so acute as it is in Kwantung.

While the neighbouring provinces of Fukien, Kwangsi and Yunnan have many foci of the disease, the victims of leprosy living there, for some reason or other, do not seem to be on the increase. Curiously, as the interior of the country is approached from the Coast, wide non-infected gaps appear between the leper areas. Thus, the native of the Northern provinces, *e.g.*, Chili, Shensi and Shansi, show no trace of the disease whatsoever. The only lepers met with would seem to have journeyed from known leper-infected areas, such as Shantung, North Kiangsu, Chekiang, Fukien and Kwantung.

In the very centre of China, at Siaokan, in Hupeh, there is a distinctly circumscribed endemic area of leprosy, and again in the South of Hunan, the country bordering on Kwantung, shows numerous leper foci.

To the North of Hupeh no endemic leper areas are met with until Kansu is reached. Here many Mohammedan families are reported to be victims of the disease.

In the mountainous districts of Kweichuh and Yunnan the aboriginal Mios tribesmen would seem to be particularly susceptible to the ravages of the leprous bacillus. Szechuen, in the extreme West, except in certain small areas on the immediate Tibetan and Kansu borders, seems quite free from leprosy.

Finally, in respect to the distribution of leprosy in China, it is worth noting that locally infected and vagrant lepers are found in many districts bordering the whole length of the Yang Tsz from Chungking to Shanghai.

While it is true that many leper centres are associated with low-lying and humid conditions, it is equally true that in China many leper foci are found on the uplands and in mountainous districts. Perhaps the biggest factors in the spread of leprosy in China are total ignorance of health laws and malnutrition. Floods and drought invariably mean diminished food supplies for a large percentage of China's teeming population. Under such conditions the marvel is that leprosy and other endemic diseases are not more devastating. Through the ages immunity to certain

diseases has been undoubtedly established, and infant mortality is so high that in no country is it more true to say that those who have survived are the fittest.

As to remedial and protective measures against the spread of leprosy, the question naturally arises: " What measures have the Chinese authorities undertaken of an effective nature for the unfortunate leper? " The reply is: " Practically none." If it is true, as frequently stated, that within the Chinese Empire more lepers exist than in any other country, there certainly should have been a corresponding effort made to deal with the disease. Beyond providing the pauper lepers with the merest pittances, and driving them from the confines of the cities to the hillsides, or to some so-called leper village, such as is seen in Kwantung or Fukien, the Provincial Authorities have been utterly indifferent to the leper menace.

Perhaps the non-intervention treatment found in many districts should not be put down to deliberate and intentional cruelty, so much as to complete neglect. In the light of present-day requirements, no properly organised State should be indifferent to conditions producing disease, nor to the crowds of friendless, hopeless and starving lepers who wander throughout the streets and countrysides. It is earnestly to be hoped that with an enlightened Nationalist Government early efforts will be made for dealing with health conditions and that under such the lepers will greatly benefit.

Meantime, Christian enterprise and sympathy have been extended through The Mission to Lepers to a small percentage of the lepers in most of the leper-infested provinces of the country. Voluntary segregation on a necessarily limited scale has been made possible there in homes provided by the Mission. These have been voluntarily managed by Christian missionaries of the various societies with which The Mission to Lepers co-operates. The homes have been maintained at a minimum of cost, the expenditure incurred being chiefly confined to the actual maintenance of the inmates and the upkeep of the institutions.

Quite recently a Chinese Mission to Lepers has been formed and Auxiliaries established in some of the big cities on the coast. With more settled conditions in the interior earnest efforts will doubtless be made to elicit sympathy and practical aid for the lepers from Chinese citizens and Provincial Authorities.

With the marked success in the modern treatment of leprosy in the adjoining country of Korea, where the death rate is said to have been reduced from about 15 per cent. in former years to 1 per cent. last year, comes a direct challenge to China.

The accumulated experiences of successful treatment in this and other countries, if put into operation by the Chinese Authorities, would undoubtedly greatly hearten the workers among lepers there. Meantime, the fight to overcome repugnance or indifference to the leper may be severe and prolonged, but it is worth while, and will eventually result in untold blessings to many of China's lepers.

## A Barbarous Way to Cause Rain.

The Madras correspondent of "The Pioneer" (Allahabad) sends the following gruesome story, dated August 28th last:—

"Eighteen persons belonging to Mutsandra Village, in Hosakote Taluq, have been taken into custody for alleged serious offence under the Penal Code, although it would appear the alleged act was committed to satisfy local superstition.

It appears that there is a tradition in villages, that if the dead bodies of persons who were suffering from serious diseases like leprosy, be burnt after being put under the soil for some time, it would propitiate the God of rain, and the village where such an act is performed, would no more suffer from drought. It is this belief that was responsible for the alleged desecration of graveyards, for which offence the accused have been arrested.

It is stated that, some time ago, two Moslems' bodies bearing marks of leprosy had been buried, and 18 villagers, over-zealous to propitiate the God of rain on account of the recent failure of the rains, exhumed the two bodies and burnt them. The Mahommedan section of the village took offence at this, and a very serious situation was only averted by the timely arrival of the police."

# The Frequency of Leprosy in Brazil.

By H. C. de Souza-Araujo, M.D., Dr.P.H.

Leprosy was imported through European colonists and African slaves. The first report on the prevalence of leprosy in Rio de Janeiro was made by Dr. Arthur Sá de Menezes, in 1696.

In 1740 there were many cases, and the Municipality asked the Royal Government for the second time for measures against the situation. The King of Portugal, D. Joao V, ordered Dr. Euzebio Ferreira to study the subject in Rio and Drs. Francisco Teixeira and José Rodrigues, of Lisbon, to outline the programme of control of leprosy in Brazil. This first regulation was dated from Lisbon, January 17th, 1741, and sent to the Capitan-General Gomes Freire de Andrade, Count of Bobadella, Governor of Rio de Janeiro, with the Royal Order of April 27th, 1744, to be appointed a medical board to decide how to deal with the problem.

Later on the Governor, Count of Bobadella, built on his own account some rudimentary cottages in Sao Christovam District for some ten poor lepers and appointed three monks of the order of St. Antonio to care for them. Bobadella maintained that institution till January 1st, 1763, when he died.

In February, 1763, the Bishop Don Antonio do Desterro asked the Catholic Fraternity " Irmandade da Candelaria " to take over the care of the leper asylum, when was given it the name of " Hospital dos Lazaros." There were then 52 lepers.

The first Viceroy of Brazil, Count da Cunha, obtained from the King, D. José I, permission to move the lepers from the primitive huts to the convent sequestered from the Jesuits. The Viceroy approved the regulation of the new re-installed hospital in March 13th, 1766, which regulation was written by a Commission of experts.

In 1793 (December 19th) there were in Rio de Janeiro 150 lepers, of whom 15 to 20 were helpless.

From 1766 to 1838 the ordinances against leprosy were enforced rigidly, and produced very satisfactory results, but later were relaxed, and the disease increased.

Bahia was the first " Capitania " which followed the good example of the city of Rio de Janeiro.

The General Governor of Bahia, Don Rodrigo José de Menezes, took the first steps to build a leper asylum in Sao

Salvador City, December 4th, 1784, which was finished on August 21st, 1787, and inaugurated on 27th of the same month and year and named " Hospital S. Christovam dos Lazaros." The regulation of this hospital was enforced rigidly. His article 11 established the compulsory segregation of all classes of lepers. That is the reason that leprosy decreased definitely in Bahia.

In the fourth quarter of the 17th century leprosy had become so frequent in Pará that her Governor, Count dos Arcos, gave, in 1804, his assistance to the " Santa Casa da Misericordia " to build an asylum for lepers. This hospital (Hospital dos Lazaros) was founded in Tócundaba, near Belem, the capital, and inaugurated in 1815. The frequency of leprosy in the low Amazon Valley becoming more and more prevalent, the Governor of the Province of Pará, Baron de Caçapava (General Soares de Andréa) sanctioned an Act regulating the control of the disease on May 12th, 1838. This regulation of prevention is very good, but never was rigidly enforced, as we can see by the very high prevalency of leprosy in that region.

1918 I wrote the Sanitary Code for the State of Paraná, which was approved on October 8th, 1918, and now the part regarding leprosy is being rigidly enforced, after the inauguration of the Paraná State Leprosarium St. Roque.

In September, 1920, was created the National Department of Public Health, with the Division of Control of Leprosy. This " Inspectoria de Prophylaxia da Lepra " began its work in the Federal District and some States in 1921. The Health Regulations were amended by the Act No. 16,300, December 31st, 1923, and are in force. The regulations for the control of leprosy were written by Prof. Eduardo Rabello, and are very good, but not yet rigidly enforced as is imperative (See American Jour. Trop. Med., May, 1925). In 1926 the State of Sao Paulo adopted the Federal Sanitary Code regarding leprosy. By accord and contract the Federal Government is doing work in many States for the prevention of leprosy.

*Statistics.*—From 1921 to 1926, inclusive, the Lepra Board and its branches examined and prepared records of more than 12,000 lepers. I believe that the total for our country is 24,000 cases. For the distribution by States see my article, " The Leprosy Problem in Brazil " (Am. J. Trop. Med., May, 1925). The situation of to-day is almost the same: for Sao Paulo the sanitarists give now 10,000 cases, of which more than 5,000 are already recorded, for the North-Eastern States the numbers are less than I gave for 1924.

The major foci are in the States of Amazonas, Pará, Maranhao, Minas Geraes and Sao Paulo. Minor foci are known in N.E. and the South of Brazil. The Central States have also active foci.

*Leprosaria.*—The oldest principal leper asylums of Brazil, which are still functioning, are:—

(1) " Hospital dos Lazaros," of Rio deJaneiro (1760), maintained by the " Irmandade da Candelaria "; director, Professor Fernando Terra, M.D.

(2) " Hospital dos Lazaros," of Sao Salvador, Bahia, founded in 1787.

(3) " Hospital dos Lazaros," of Recife, Pernambuco, founded in 1789, Santa Casa.

(4) " Hospital dos Lazaros," of Tocunduba, Belém, Pará, founded in 1815.

(5) " Hospital dos Lazaros," of Sabará, Minas Geraes, 1883.

(6) " Hospital dos Lazaros," of Guapira, Sao Paulo, founded in 1904, maintained by " Santa Casa da Misericordia "; director, Dr. Ribeiro de Almeida.

Their capacities are, respectively: 120, 80, 150, 300, 40 and 400 beds.

There are many other small leper asylums, of minor importance. The State of Sao Paulo is said to have 21.

*New Leprosaria.*

(1) " Lazaropolis do Prata," of Pará, the first Brazilian agricultural colony for lepers, was organised by me, and inaugurated June 24th, 1924, with 354 patients. Its actual capacity is 600 beds, and there is land for 3,000. It is maintained by Federal Government with the co-operation of the State Government. There are now 360 patients. Director, Dr. Bernardo L. Rutowitcz.

(2) " Leprosario S. Roque," near Curityba, State of Paraná, inaugurated in October 20th, 1296. Capacity, 500 beds. Actual number inmates, 300. Founded and maintained by the State Government. Type: Hospital-asylum, quite modern and good one. Director, Dr. Luiz Medeiros.

(3) " Leprosaro Santa Angelo," founded by Santa Casa da Misericordia," assisted by the State Government, 54 kms. distant of Sao Paulo City. Type: Hospital-asylum. Very large and modern pavilions, for 1,000 patients. Inaugurated in August, 1928, with 400 patients.

(4) " Leprosario Sao Luiz," founded recently by the Federal Government, near St. Luiz, the Capital of Maranhao.

Capacity, 250 beds. Type: Hospital-asylum. Not yet inaugurated.

(5) The Leprosario Santa Izabel, of Minas Geraes, built by consortium of Federal and State Governments. Will be inaugurated soon. It is of village type.

(6) Leprosario de Paricatuba, Estado do Amazonas, in process of organisation.

(7) The States of Ceará and Rio Grande do Norte are doing some preliminary work for building two leprosaria.

(8) For the Federal District the " Gaffrée-Guinle Foundation " is planning to found the National Leprosarium for 500 patients, near Rio de Janeiro, for which the Foundation donated four thousand contos de reis (about one million U.S. dollars at regular exchanges). The Public Health Department isolates lepers, temporarily, at Jacarepaguá, within a few kilometers of Rio. The National Leprosarium, when inaugurated, will be maintained by the Federal Government. Its type is: Hospital-asylum, with an Institute of Research on leprosy.

(9) The State of Sao Paulo is taking steps to build two Regional leprosaria. Mixed type: Colony-asylum, for which was voted 10,000 contos (more than 2 million dollars).

Within a very short time will be inaugurated the Laboratory for research on leprosy, as a department of the new " Institute of Hygiene," in Sao Paulo.

*Control.*—For the control of leprosy Brazil needs ten great leper colonies like the Culion Leper Colony. In an article published recently (Scienca Medica, V, No. 4, April, 1927) I suggested that such leprosaria should be founded by collaboration of the Federal, States and Municipal Governments.

The interference of the Federal Government in the States affairs is against the Constitution, so that all that programme must be executed by previous accord.

The system used in Brazil for maintaining the Rural Sanitation, *i.e.*, fifty to fifty, between the Union and the State, may be adopted for the control of leprosy. I suggested also, as an auxiliary measure, the creation of dermatological clinics in each State, to examine and treat lepers and for epidemiological research on leprosy. At present there are a few clinics for leprosy, but modern anti-leprotic treatment is not yet general in the country. There will be a great advance made when it is.

Résumé: 36,000,000 population; lepers 24,000 or 0·67 per 1,000.

# The British Empire Leprosy Relief Association.

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