Garkida Agricultural-Industrial Leprosy Colony.

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Introduction.

THE purpose of the writer in this paper is, partly to make the Second Annual Report of the Garkida Leprosy Colony, the colony having been officially opened early in September, 1929, and partly to present some views and conclusions relative to leprosy treatment and the management of a leprosy colony in Nigeria.

When the colony was opened for the reception of cases on September 7th, 1929, there came a nucleus of 36 far-advanced cases, what we then termed " burned out," or nearly so. Early, hopeful cases came slowly the first year ; therefore, the report a year ago was also not hopeful and meant very little. In the last twelve months, progress has been made ; changes and improvements in the administration have occurred and the following statistics will mean something and can teach some things which may be helpful. However, since it has been found that the average time of treatment for all cases is about four years, even this report does not mean as much as future reports will mean.

Garkida Leprosy Colony is unique, first, because of its geographical position, located in north-eastern Nigeria, with a radius of at least 300 miles from the nearest treatment centre run on modern lines ; second, because of its location in the midst of many small, pagan tribes which are very different and very much harder to impress with a new idea than are their large, partly civilised, kindred tribes of Southern Nigeria ; third, because of the variety of organisations and agencies interested in and promoting the colony, *viz.*, the Adamawa Native Administration gave 500 acres on which to build the colony and for farming land. The British Empire Leprosy Relief Association has given two donations for the first buildings and improvements in the colony. The American Mission to Lepers is helping splendidly with an annual gift of money for permanent buildings, touring, propaganda, medicine, school and industrial activities ; the Native Administrations in the surrounding provinces, sponsored and encouraged by Government officials, are giving one shilling per week per case for food ; and lastly, the Church of the Brethren Mission (United States) is furnishing the staff, some financial aid, and acting as a unifying agent for all those named above.

Statistics

Number in the colony 1 year ago	65	
Total new patients since 1 year ago	68	
Deaths in colony in last year	5	
Number who left colony without permission	14	
Net increase in last year	49	
Number being treated regularly now ...	114	
Number of different tribes represented ...	27	
Number of males	82	72%
Number of females	28	28%
Number of adults, or over 15 years	89	78%
Number of children, or under 15 years ...	25	22%
*Number of cripples, or C-2 and C-3 cases (or N-2 and N-3)	49	43%
Number early cases, not past C-1 or N-1 ...	65	57%
Number discharged as arrested last year ...	1	
Number ready to go home now, arrested (waiting until end of rainy season) ...	6	5%
Number almost ready to go home, arrested ...	7	6%
Number of cases definitely improved ...	75	65%
Number of cases, no improvement	17	14%
Number of cases actually worse	9	7%
Total number of arrested, almost arrested and improved cases	88	77%

Detailed causes of the five deaths :—

One gastric ulcer, perforated, early case, aged 19 years, male, autopsy done.

One syphilis, elephantiasis of breast, multiple sclerosis, old case, aged 40 years, refused treatment, female.

One pneumonia, advanced case, aged 35 years, female.

One generalised leprosy, " relapsed case," aged 50 years, male.

One syphilis, herxheimer's reaction, too persistent antiluetic treatment, advanced case, aged 30 years, female.

The case discharged was with deformity. The six cases ready to be discharged are all with deformity, *i.e.*, having lost digits or having some degree of paralysis. The seven cases almost ready for discharge are all early cases, without deformity, except one.

By studying the above figures, the reader will note that an unbiased report is given, not over optimistic, showing the failures and mistakes; but considering that the colony is only two years old and that the early cases have nearly all come within the last 18 months, the percentage of arrested

* New classification according to International Leprosy Association.

cases should rise with each succeeding year, and what is more important, the percentage of cases arrested without deformity should also rise.

Immediate Contagiousness of Leprosy.

By taking a careful history and much questioning of 148 patients, 94, or 64 per cent., give a definite history of near relatives having leprosy, members of the immediate family; 33, or 22 per cent., are doubtful, or gave a poor history and, in some cases, refused to answer; while only 21, or 14 per cent., denied close association with sufferers from leprosy. In the class giving a history of familial contact were grandparents, parents, brother, sister, or several of them. One case had ten brothers and sisters who contracted leprosy some time in their lives. There are many brothers and cousins in the colony. There are four cases of parents and children in the colony, all helping to prove that leprosy is contracted after a long period of close contact, in most cases; however, there are some cases who deny ever having seen a case of leprosy before.

Treatment.

The following has become the routine treatment after trying others and searching for a standard. (1) Injections with alepol, intramuscular and subcutaneous, every fifth day. Ethyl esters of hydnocarpus wightiana were tried. The injections caused much pain, evidently too much of the fatty acids were left in during the preparation and after some days the site of injection would still be swollen and painful, the oil not being absorbed would have to be evacuated. (2) Trichloracetic acid applied to the lesions every 15 days. (3) The infiltration or Plancha method to those cases having a few, definitely outlined cutaneous lesions, every 20 days, and (4) gold chloride in 1/20 gr. doses to all cases of leprosy having eye involvement. This is given every 10 days. In eye affections whose etiology is thought to be the mycobacterium lepræ, gold chloride in small doses will clear up most of the cases in three to six injections, depending on the severity and the depth of the lesion. Of course, after ulceration and thickening of the cornea have started, the lesions can only be aborted and the pathology checked. I have not found that gold chloride acts except in the eye. Ptosis of the eyelids and cutaneous leprosy were not affected by this drug. But in institutional cases where the patients are being observed regularly, and when the myco-

bacterium lepræ infiltrates into the lymph vessels of the eyes, causing lacrimation, photophobia, conjunctivitis, or even to the deeper layers causing uveitis, our cases have reacted very well to the drug.

Intercurrent Diseases.

I am convinced that Dr. Muir[1] and others are right when they advise the treatment of all other diseases from which the leprous patient is suffering; that very little progress can be made until all other diseases are treated; and also, if such diseases are cured, the resistance of patient in good surroundings, on a well-balanced diet, and getting proper exercise, will be raised and, with any little help in the way of antileprosy drugs an improvement will be noticed.

In this vicinity, the prevalent intercurrent diseases are in the order of their prevalence: syphilis, yaws, bilharzia (both types), tapeworm, scabies, chest infections, malaria, and filariasis. These prevent improvement of leprosy, and until they are cured very little headway can be made. The truth of the matter is that after a few months of consistent treatment, if improvement is not seen in the leprosy, one of the above-named infections is generally to be found lurking in the system. Of course, a thorough examination and history is taken when a new patient is admitted, but all the diseases mentioned above may not be detected on admittance and on one examination. These intercurrent diseases, along with ulcers and the whole category of maladies that the sufferer may fall prey to, are a great stumbling block in the propaganda against leprosy. Leprosy associations and philanthropic organisations supply the specific drugs to cure the disease, but, as a matter of fact, those specific, antileprosy drugs are only a very small part of the drugs needed to treat cases. Every case is a potential in-patient, and frequently falls a prey to all the diseases rife in any vicinity or country. Injections are only to be given at most twice a week, while any or all the cases may need to be treated every day for some other complaint. Our records show that during the last nine months 3,205 injections were given, while for the same time 6,356 other treatments were given. The larger the percentage of early and young cases, the fewer the other treatments necessary. This not only calls for dispensers and a great deal of nursing care, but entails an outlay for all the drugs in any common dispensary and added equipment.

Each Case of Leprosy should be Treated as an Individual Case.

While this is partly true of any disease, it is very true of leprosy, perhaps more so than in syphilis or tuberculosis. I doubt whether in 100 cases of leprosy, any two would be alike in all phases. The extent and manifestation would be different; the resistance of the two patients would be different; the extent of invasion would be different; and last and most important, the reactions to treatment and dosage would be different. We would say that those having the most success in treatment are those who are studying their individual cases the longest and closest. In addition to the sedimentation test to show the resistance and reaction level of the patient, there should be a close scrutiny clinically of each case on every injection day to gauge his general condition, change in lesions, musculature, ulcers, burns, facial expression and general attitude. Lacking native assistants properly to check temperature and run the sedimentation test, I place individual clinical examination of each patient on each injection day above those laboratory tests. In addition to this, at the Itu Leprosy Settlement, accurate temperatures are taken, which is possible with trained natives.

Leprosy is so protean in its manifestations and each case so different in its reactions and changes that the successful physician must be personally acquainted with each individual case under his care. No rule for the treatment of leprosy applies to all cases. The watchword in the treatment is care and slowness. It is much better to go slowly, increasing the amount of the drug very gradually than to hurry, giving a large dose, thus causing a greater reaction than the patient's resistance can stand and putting him back many months. The disease goes in cycles regardless of treatment, and it is necessary, therefore, to become acquainted with the patient and to know whether he is in the midst of a remission or an exacerbation. I am sure that I have made some patients worse by treating them too vigorously, and some of them a great deal worse. Medical officers and those in charge of treatment in any colony should not be changed often and in each case the patient should be studied individually.

When the colony was opened for patients two years ago, only early cases were encouraged to come. A nucleus of old cases were taken in from the segregation camp at Yola, but otherwise, such cases were discouraged from coming, and some were refused admittance because they

were past being infective, and their deformities could not be remedied. The main reason for limiting the cases to those in the early state was so as not to fill up the camp with old cases and then subject a few young cases to living with a camp full of hopeless ones. The reputation of the camp was at stake. We wanted to get several good cases, prove to them that there was hope for them and thus spread the good news.

That purpose has been accomplished to some extent, sufficiently so that we feel safe in throwing the doors open to all cases now. There is much superstition connected with leprosy in the pagan tribes, and, of course, there is still doubt in many minds. The approach even here is different from the partly-civilised, sophisticated tribes of Southern Nigeria. I am safe in saying that the incidence of leprosy is much higher in Adamawa and Bornu Provinces than has ever been recorded. Dr. Mayer[2] records 0·3 to 0·5 per mille for Adamawa. I would say for the Hawal Valley and Adamawa Province the incidence is more than 5·0 per mille, *i.e.*, more than 1 per 200. And from examination of school children and touring, I am prepared to say that it is either spreading rapidly or else it is being recognised more readily. We have hardly touched the problem yet, in fact, just begun the work, but the machinery is set up, the reputation of the colony is established, and a constant growth and development is to be expected.

Segregation Camp.

The segregation camp, apart from the early cases, is the solution of many problems in a colony. We might have followed this idea earlier in the history of our colony, and thus could have received all cases, but we thought the colony too small to start this before. About four months ago, we began segregating all far advanced cases, *i.e.*, C-3, N-2 and N-3 cases on a site about $\frac{1}{4}$ mile from the main colony, but still within the 500 acres. This is not only more hygienic and an attempt to prevent reinfection, if this is possible, but the psychological effect on the early cases is wonderful. They see the demarkation. The fate of long-standing cases, untreated and hopeless physically, is not constantly thrust before their eyes. Thus the colony serves two major purposes. First, institutional segregation of, and care of the old, helpless cases. Second, institutional treatment of, and healing of early cases.

At the beginning of 1931, Mr. Harold A. Royer, a full-time Superintendent, assumed his duties. These are varied.

The first requirement for such a position is versatility. He must be father, adviser, superviser of all works, gardener, horticulturist, carpenter, builder, blacksmith, artisan, plumber, well-digger, teacher, judge, lawyer, defender, and above all, a good foreman. The Government could well afford to combine agricultural experimental stations with their leprosy colonies. Agricultural stations have the problem of labour. Leprosy colonies have the problem of unemployment. The secret of a successful colony, especially among doubtful pagans is to keep them busy and happy. Even at best, the time spent in camp is a long time. The idea is to have plenty of outdoor labour, a great variety of trades to learn, and opportunities to learn something new. At Garkida, besides having all the farming land they desire, there is a school with an average attendance of 48, which is an attraction to the young patients. There are buildings going up, not only of local mud and grass, but stone and cement, with roofs of grass, tile and metal. A trained mason is teaching several assistants. A carpenter is teaching his trade, a blacksmith has his following. An industrial building is planned for the near future in which to teach and learn the crafts. However, the most important, from the writer's viewpoint, are the agricultural experiments ; fruits, vegetables and grains, not only those peculiar to Nigeria but experiments with imported fruits, vegetables and small grains are cultivated. Then there is a herd of cattle, about 40 head, where breeding will be done to produce the best milkers, and incidentally, the manure adds to the agricultural work. Ploughing and green manuring is another feature ; all of these are stressed in the Native Administration Agriculture Stations. At Garkida everybody works until noon. The afternoons are given over to school and treatments. There are, too, many cases of leprosy in Nigeria, or in the world for that matter, for them to gather into colonies and sit and wait to be treated free of charge. But, if revenue, tax money, Governments, education departments, missions, and philanthropic organisations can provide schools, work, learning of new trades, and healing at the same time, this certainly means conservation of energy and money.

Admission has been voluntary from the beginning. No coercion is wanted. In fact, the less we beg them to come, the more likely are they to come. Those who do not suffer from leprosy are not allowed to spend any length of time in the colony and never to spend the night. Traders do bring their wares and food for sale. The patients are allowed

certain freedom in returning home for a few days occasionally. They usually bring back one or more friends with them. At first, we wrongly thought that separate locations must be provided for separate tribes. They, however, live together, work together, go to school together, get their treatments together and laugh and cry together. Thus, the colony is only another agency for amalgamating and bringing under one central government all these hundreds of tribes of Nigeria to make of them some day an independent country able to run their own affairs.

The writer feels that false hopes and too optimistic views were expressed by writers and workers concerning leprosy some two or three years ago; that rapid cures had been discovered and that as high as 80 per cent. of all sufferers could be cured. I have heard of cases being cured in a few months. I doubt it now having given most of the medicines a fair trial and having treated cases for more than two years. I agree that great strides have been made and that the outlook for the sufferer is very hopeful. I have much faith in treatment now, but it still resolves itself into a game of patience and years of treatment. Instead of months, it is years before a case can be pronounced arrested. There is nothing gained in setting up temporary treatment centres. There is nothing gained in treating out-patients irregularly, nor in visiting villages for a few months treating patients and then abandoning the venture. But great good can be done, the world can be rid of leprosy in a few generations if those taking up the work, either financially or personally, will determine to make their efforts permanent and pledge themselves to stay by the job until something is accomplished. Permanent camps must be set up, permanent buildings built, and an attractive educational programme offered to all cases of leprosy. The surroundings and the environment must be inviting. True, there must be some advertising and propaganda work done. In the last year, 1,330 miles were travelled advertising the colony. Patients were brought in by motor. They were not promised a cure in a few weeks or months. No false hopes were set up. We simply said that we had good houses in which they could live, a pleasant environment, work with remuneration and medicine which would help them and cure many of them if they co-operated and stayed three or four years.

Begin on a small scale but have permanent plans. Develop the colony as the number of cases increases. The initial outlay is small but a permanent income must be assured. If the leprosy colony and the Agricultural

Experiment Stations can be linked up, each supplying the other's needs, then Government is not adding financial responsibilities but is in a fair way to solving two problems with one staff.

(1) Muir, Ernest. (1931). The Treatment of Leprosy, Transactions of the Royal Society of Tropical Med. and Hygiene. Vol. 15. No. 2, page 87-102.

2) Mayer, T. F. G. (1930). Distribution of Leprosy in Nigeria with special reference to the Aetiological Factors on which it depends.