Five Years of Leprosy Work in British Guiana.

A Report to the Medical and Sanitary Committee of the Colonial Office.

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IN 1926, as a result of the report of a Departmental Conference on Leprosy appointed by Surgeon-General Dr. P. J. Kelly, an intensive campaign against leprosy was launched in British Guiana. Five complete years have now elapsed, and the time seems opportune for a review of the work done and the results achieved.

The main lines of action have been three, *viz.*, measures to induce patients to seek treatment early, to ensure segregation of open cases until they are no longer dangerous, and to follow up discharged cases with thoroughness over long periods.

Patients have been induced to seek early treatment by continuous propaganda, by changes in the law, which now only enforces the segregation of open cases, by the establishment of out-patient clinics for the treatment of closed cases and the examination of suspects, and by the provision of increased comforts and facilities for mental and physical recreation at the leprosy hospital.

Propaganda has been carried on by lantern lectures, the distribution of leaflets, and instructions to discharged patients, who play an important part in the discovery of fresh cases, and by surveys in different parts of the country.

By these methods a large measure of success has been achieved.

With regard to legislation, admission to the leprosy hospital has been simplified and the magistrate and police eliminated as part of the legal procedure. Since the new Ordinance was passed in 1931, nearly all the notified cases have been voluntarily admitted; if they are unable to afford the means of transport, their passages are paid by the Government from Poor Law funds.

Closed cases are not compulsorily isolated, though the majority seek admission and are treated for a certain period before becoming out-patients. A Leprosy Board has been appointed which confirms the diagnosis of leprosy in new

admissions, recommends the discharge of arrested or quiescent cases, and also generally acts in an advisory capacity to the Surgeon-General.

The Ordinance also provides for the compulsory removal of new-born children from their parents, if one or both of the parents suffer from leprosy.

Other provisions include compulsory notification and the appointment of a Board of Official Visitors and of a Visiting Justice.

Through the generosity of the British Empire Leprosy Relief Association, which made a grant of £500 for the purpose, leprosy surveys in different parts of the country have been followed by the erection of out-patient clinics, one on the outskirts of the capital city, Georgetown, and another on the outskirts of New Amsterdam, the capital of the County of Berbice. With the out-patient station at the leprosy hospital itself, there are, therefore, three centres at which closed cases may attend as outpatients and discharged cases for examination and further treatment. Special attention is also paid at these centres to examinations of the families of infected persons, a measure on which so much stress is laid by Sir Leonard Rogers.

During the first three months of 1932, there were 147 attendances at Georgetown and 83 at Mahaica. In Berbice, where the clinics are held at monthly intervals, there have been 40 attendances in the two months since the clinic was opened. Many suspicious cases, attending of their own free will, or on the advice of their doctors, have been seen at the clinics, which are clearly fulfilling a real need.

Other measures which are not only adjuvants to treatment but are calculated to make compulsory segregation in the leprosy hospital more attractive, include the provision of facilities for regular out-door exercise and such amenities as cinema entertainments, a wireless receiving set, etc., and the establishment of Scout and Guide troops. Improvements in the diet and in the comforts afforded to the patients in general make life in the institution now far more tolerable, and there is not evinced the same degree of invincible antipathy to segregation as existed in former years. It may be confidently claimed that, as a result of all these measures, we have now a reasonably accurate estimate of the incidence of leprosy among the population.

The chart (facing p. 8) shows that, as was to be expected, the total number of known cases showed a sharp rise from

1926, when the campaign began, owing to the increasing willingness to undergo treatment and the more thorough following up of discharged cases. At the end of 1931 the number of known cases was 477 or about 1·5 per thousand of the total population. This number will naturally show a long continued tendency to increase, since it includes arrested cases who have been discharged whose number is not entirely offset by the deaths, as well as new cases arising year by year. The dotted line in the chart shows the decrease in the number compulsorily segregated, that is, in the number of active cases remaining in the leprosy hospital, from 1925 to 1931.

One of the chief factors in the campaign has been the striking success of the methods of treatment used. After extensive trial, with due controls, of various preparations, a standard method of treatment has been evolved which is, as far as possible, fool-proof and can be left, with adequate supervision, in the hands of unqualified assistants. This consists of a preliminary course of alepol in 5 per cent. solution intravenously in mixed and pure cutaneous cases, followed by intramuscular injections of pure hydnocarpus oil or its esters. The intravenous injections are given bi-weekly until a dose of 10 c.c. is reached. Sometimes it happens that severe attacks of fever and ague follow these injections, in which case it is necessary to change to oil or esters sooner. Thereafter the oil or esters are injected intramuscularly, or intradermally as well in suitable cases. The oil in our hands gives the best results, but occasionally it becomes necessary to change to esters.

When a dose of 15 c.c. is reached, or in children 10 c.c., the injections are given once in two weeks, this being regarded as the maximum dose, until six consecutive monthly examinations have proved negative, when the patient comes before the Leprosy Board for discharge on parole. After such a discharge, the patient is given monthly intramuscular injections of 10 c.c. of oil or esters for an indefinite period, monthly bacteriological examinations being also made. In cases of the neural type intramuscular injections of oil are given from the outset. Local treatment consists of the application of trichloracetic acid in suitable dilution and of pencils of solid carbon dioxide. Minor surgical operations, such as the excision of isolated nodules, trimming off of the enlarged lobes of ears, peri-arterial sympathectomy as practised by Py and Riveros[1] for the relief of trophic ulcers, tendon-lengthening, etc., have been frequently performed under local, and in the case of sympathectomy spinal

anæsthesia with novocaine and adrenalin, and have a distinct sphere of usefulness.

The electrical department is equipped for treatment by ionisation, faradisation, high-frequency and diathermy currents, and ultra-violet radiation, and is of great benefit in commencing contractions of the fingers and toes, the treatment of nasal lesions[2] and the relief of generalised thickening of the skin.

In addition the oil and esters used for injection are exposed at a distance of 12-in. for one hour to ultra-violet radiation from a mercury-vapour lamp. Since this procedure was adopted our results have been uniformly good with oil from H. Wightiana and Taraktogenos Kurzii. The injection causes little pain, and abscess is a comparatively rare complication. The weight-chart is an invaluable guide to dosage. The dose is increased by 1 c.c. each time to the maximum as long as the weight increases. If the weight diminishes by less than 2 lbs. or remains the same, the same dose is repeated; if there is a loss of 2 lbs. or more, the dose is reduced by 1 c.c. One need hardly add that the weight is always taken at the same time of day, under as nearly as possible the same conditions. By following this method one avoids almost entirely those severe and sometimes fatal reactions which so often impede treatment. So valuable has this guide to dosage proved that a weighing-machine is considered an indispensable adjunct of all out-treatment centres.

The accompanying tables show the results in the cases, 491 in number, which have undergone treatment during the past five years.

The terminology used is that recommended by the International Leprosy Conference at Manila.

Table I gives a general view of the results in all cases.

TABLE I.

RESULTS OF TREATMENT IN ALL CASES, 1926-31.

Number Treated	491	
Arrested	128	
Quiescent	132	
Subsiding	101	
Total improved	361	(73·5 per cent.)
Stationary	18	
Worse	17	
Died	95	(19·3 per cent.)

Table II shows the results in early cases, Table III in the more advanced.

TABLE II.

EARLY CASES, CUTANEOUS AND NEURAL.

Type of Case.	*No. Treated.*	*Arrested.*	*Quiescent.*	*Subsiding.*	*Total Improved.*		*Stationary.*	*Worse.*	*Died.*	
					No.	*Per-centage.*			*No.*	*Per-centage.*
C1 ..	33	6	19	5	30	90·9	—	—	3	9·0
C1N1..	17	2	8	4	14	82·4	—	—	3	17·6
C1N2..	5	2	1	—	3	60·0	1	1	—	—
N1 ..	48	13	18	14	45	93·8	2	—	1	2·1
N2 ..	91	41	27	8	76	83·5	2	2	11	12·1
Total..	194	64	73	31	168	86·6	5	3	18	9·3

TABLE III.

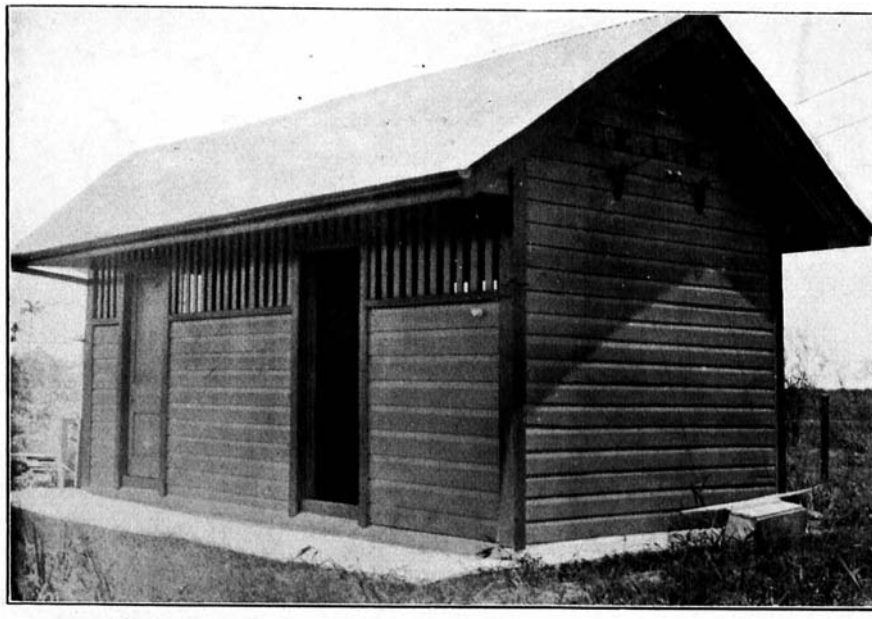
ADVANCED CASES, CUTANEOUS AND NEURAL.

Type of Case.	*No. Treated.*	*Arrested.*	*Quiescent.*	*Subsiding.*	*Total Improved.*		*Stationary.*	*Worse.*	*Died.*	
					No.	*Per-centage.*			*No.*	*Per-centage.*
C2 ..	79	8	29	23	60	75·9	5	5	9	11·4
C3 ..	54	1	2	22	25	46·3	2	3	24	44·4
N3 ..	86	50	10	1	61	70·9	1	2	22	25·6
C2N1..	22	3	7	7	17	77·3	0	2	3	13·6
C2N2..	17	1	3	4	8	47·1	1	2	6	35·3
C3N1..	12	0	2	6	8	66·7	0	0	4	33·3
C3N2..	9	0	2	3	5	55·5	1	0	3	33·3
N3C1	12	0	2	4	6	50·0	2	0	4	33·3
N3C2..	2	0	1	0	1	50·0	0	0	1	50·0
Secy. Neural	4	1	1	0	2	50·0	1	0	1	25·0
Total..	297	64	59	70	193	65·0	13	14	77	25·9

Table IV, showing the results in 116 untreated cases, is given for comparison.

Except for the absence of special treatment, they lived under exactly the same conditions.

Six early cases died of intercurrent disease before treatment could be instituted and are, therefore, omitted from the Table.



VIEW OF ONE OF THE OUT-PATIENT CLINICS, BRITISH GUIANA.
(Erected by the British Empire Leprosy Relief Association.)

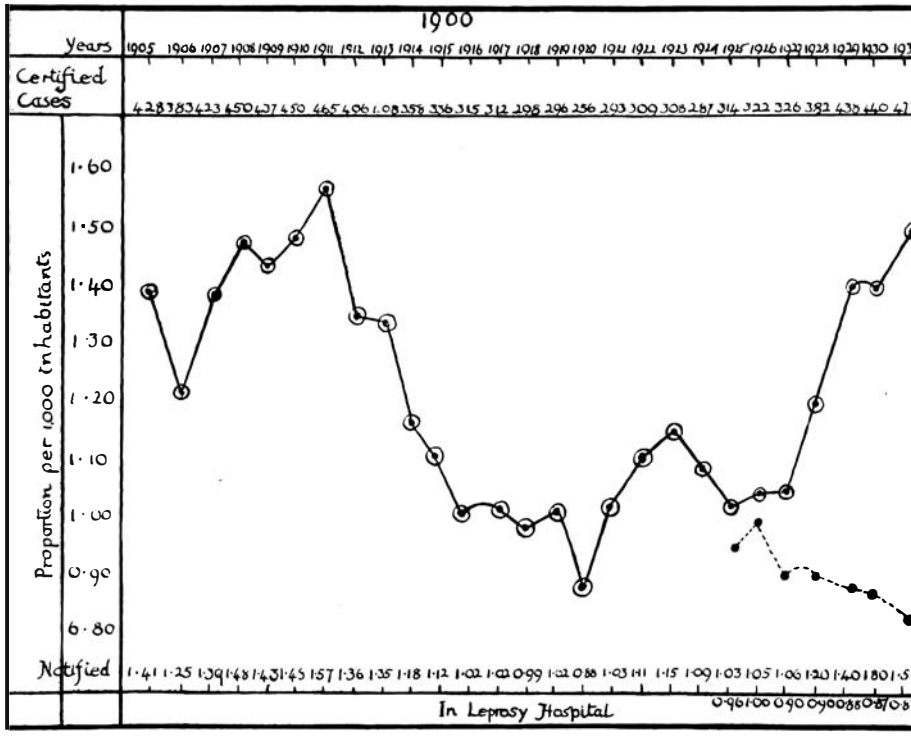


CHART SHOWING THE INCREASE IN THE NUMBER OF NOTIFIED CASES IN BRITISH GUIANA (PLAIN LINE) AND DECREASE IN THOSE IN THE LEPROSY HOSPITAL (DOTTED LINE).

A Group of Patients at Itu, Nigeria.

TABLE IV.
UNTREATED CASES.

Type of Case.	*No. Treated.*	*Arrested.*	*Quiescent.*	*Subsiding.*	*Total Improved*		*Stationary.*	*Worse.*	*Died.*	
					No.	*Per-centage.*			*No.*	*Per-centage.*
C2 ..	8	—	—	—	—	—	—	—	8	100·0
C3 ..	18	—	—	—	—	—	—	1	17	94·4
N1 ..	3	1	—	—	1	33·3	—	—	2	66·7
N2 ..	14	4	—	—	4	28·6	2	—	8	57·1
N3 ..	63	31	3	—	34	54·0	—	—	29	46·0
C2N1..	2	—	—	—	—	—	—	—	2	100·0
C2N2..	5	—	—	—	—	—	—	—	5	100·0
C3N2..	3	—	—	—	—	—	—	—	3	100·0
Total..	116	36	3	—	39	33·6	2	1	74	63·8

In comparing the Tables it has to be borne in mind that the cases in Table IV are nearly all cases arising prior to 1926, since every case now admitted without exception undergoes treatment.

Nevertheless, the Tables demonstrate unmistakably the fate of the untreated patient and the encouraging outlook for the early case under treatment.

Table V shows the number of positive cases who have become negative after treatment, some of whom (neural cases) had been positive in the nasal mucous membrane consistently for some ten years or so previously. *No positive case has been observed to become negative without treatment.*

TABLE V.
POSITIVE CASES BECOMING NEGATIVE AFTER TREATMENT.

Type.	*Number of Positive Cases Treated.*	*Number becoming Negative after Treatment.*	*Percentage.*
C1	33	26	78·8
C2	79	38	48·1
C3	54	3	5·6
N1 ..	4	3	75·0
N2 ..	4	3	75·0
N3 ..	8	6	75·0
C1N1 ..	17	9	52·9
C1N2 ..	5	3	60·0
C2N1 ..	22	7	31·8
C2N2 ..	17	4	23·5
C3N1 ..	12	3	25·0
Total ..	255	105	41·2

Some of the cases admitted in 1931 had been receiving treatment for only a few months before this report was compiled, so that the results are even better than they appear on the surface. With regard to the vexed question of recurrence, 14 arrested cases relapsed at various times, but at the time of writing only six have failed to recover, and are still in hospital under active treatment. That is to say, there are now only six relapses out of 128 arrested cases, a proportion of 4·7 per cent., which cannot be considered other than highly satisfactory. The " follow-up " is particularly complete. Each case is examined monthly at one of the clinics after being discharged on parole. The attendance on the whole is regular and there are only two cases in the whole series whose future history is unknown. The results may, therefore, be taken as presenting a high degree of accuracy.

It remains to enquire what effect, if any, this work has had on the incidence of the disease in the Colony.

To this end, Table VI has been compiled, showing the notifications from 1907 to 1931.

The yearly average over five-yearly periods has been taken because it happens that in the past patients did not seek admission as a rule in the year that the disease first made its appearance.

During the last four years the notifications also include out-patients in an early stage who were not seen heretofore until the disease was comparatively far advanced.

TABLE VI.

NOTIFICATIONS FROM 1907 TO 1931.

Year.	*Annual Average of Notifications of Five-Yearly Period.*	*Persons Suffering from Leprosy Repatriated to India.*
1907-1911 ..	109·0	73
1912-1916 ..	63·8	35
1917-1921 ..	66·8	47
1922-1926 ..	61·6	24
1927-1931 ..	56·2	6

The period 1912 to 1916 includes a period when the policy was adopted of only admitting open cases to the leprosy hospital. This policy fell into abeyance later, with the result that the number rose again to some extent in the next period. Moreover, from 1907 to 1926, 179 patients were repatriated to India. There can be no doubt that the

measures taken during the past years have materially reduced the incidence of the disease. This is illustrated in another way by the fall in the daily average number treated year by year in the leprosy hospital from 288·8 in 1926, to 260·7 in 1931.

A further point of interest which clearly illustrates the value of modern methods of treatment is the fact that of 81 cases discharged in 1931 as arrested or quiescent, over 68 per cent. were free from the stigmata of the disease, and only three were unable to earn their living without help from Poor Law funds. These three, moreover, were cases of spontaneous arrest without treatment.

Reference may be made to four new developments now under consideration which will undoubtedly render the campaign against leprosy still more effective. There seems no doubt that the infection is generally contracted in childhood. The more one gets hold of early cases, the greater becomes the number of children admitted. These children, for whom no special accommodation is available, are thrown perforce from a tender age into unfitting surroundings, living among adults, many of them drawn from the lowest classes, and some of them grossly deformed and mutilated. His Excellency the Governor, Sir Edward Denham, was so strongly impressed with this fact on his first visit to the hospital, that he proposed the erection of a separate building for children of a tender age. Owing to financial conditions, however, Government found it impossible to proceed with the work and the British Empire Leprosy Relief Association was approached for a grant for the purpose. The Association, however, found it impossible to accede to the request.* The matter, therefore, remains in abeyance until a visitor from England, a member of the Galton family, and a cousin of the late Roman Catholic Bishop of the Province, greatly impressed with the necessity, expressed her intention on returning to England of endeavouring to raise the funds from private sources, with every hope of success. Secondly, a scheme is being considered to collect the old deformed neural cases scattered about the villages, and in receipt of Poor Law relief, as well as some few who remain in the leprosy hospital, into a leprosy colony in a remote part of the country.

A British Guiana Branch of the British Empire Leprosy Relief Association begun to function in 1931. His Excellency the Governor honoured the Branch by becoming its President, the Surgeon-General being one of its Vice-Presidents,

* A grant of £300 has just been made.—EDITOR.

and to one of its sub-committees has been entrusted the task of considering this scheme for a leprosy colony. Thirdly negotiations are now under way, with every prospect of success, for the engagement of religious sisters to work in the leprosy hospital, a development which is bound to be of great importance owing to the inadequacy of the nursing facilities hitherto available. Lastly, Lady Denham, wife of His Excellency the Governor, seeing that there was no machinery for continuing the education and training outside the leprosy hospital of children in whom the disease had become arrested, and sympathising with the wretched plight of children whose parents had contracted the disease, conceived the idea of a Home, in which such children, of whom there are over 30 at present, could be maintained, educated and trained to earn their livelihood in useful ways. With this end in view, Lady Denham is accumulating funds from private sources and has already collected a substantial nucleus. The committee in charge of the arrangements have decided, very fittingly, that the Home should be called The Lady Denham Home for the Protection of Children from Leprosy, and it is hoped that the coming year will see the initiation of this splendid enterprise. The leprosy hospital has thus been very fortunate in its benefactors, and, last but not least, the writer wishes to acknowledge the support and sympathy of the Honourable Dr. P. J. Kelly, to whom the initiation of the campaign is due and without whose help the measure of success already achieved could never have been obtained.

It remains to be added that the work has been carried on without any additional cost, rather the reverse, as the following table shows :—

Year.	*Actual Expenditure of Leprosy Hospital, except Medical Superintendent's Salary and Emoluments.*	*Revenue.*	*Nett Cost of Upkeep.*
	$	$	$
1926 ..	42,128,31	501·46	41,626·85
1927 ..	42,560·57	920·92	41,639·65
1928 ..	40,503·86	1052·66	39,451·20
1929 ..	38,740·04	1123·98	37,616·41
1930 ..	37,766·14	1048·34	36,717·80
1931 ..	32,319·04	1182·95	31,136·09

This in spite of the fact that hydnocarpus oil as well as other drugs has to be supplied not only to the inmates of

the leprosy hospital, but to all the 500 odd patients who are under treatment. Under this head some relief will be obtained when our hydnocarpus trees have arrived at maturity. Of these, we have over 40 at the leprosy hospital, and four in the North-West District. A few of our trees have fruited, and the seeds have been handed to Mr. Follett-Smith, Government Ecologist, at his request, for planting by the Potaro Road in the interior of the Colony.

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[1]Py (C) and Riveros (MO) 5a Reunion Society, Argentina Patol Reginal del Norte, Jujuy, 7 al 10 Octubre, 1929. Vol. I, pp. 408-419. Reviewed in *Tropical Diseases Bulletin*, 1930. December, Vol. XXVII, No. 12, p. 1004.

[2]Rose, F. G. B.M.J., January 26th, 1929.

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