continued to do duty until, losing his place, he became again excited, and was returned to the hospital July 11th, 1894. Again he quieted down, and began to assist at light work on the ward, but mentally he lost ground, and epileptiform seizures appeared, each one leaving him physically and mentally on a lower plane. He went down rapidly, became bedridden, ceased to talk, and now, in the fourth year of his malady, was near the end. Removed to the Toner Building October 3rd, 1895, and subjected to the treatment. Improvement was wonderful as unexpected. In less than three months was up and about the ward, talking rationally, doing his work again, and with much of his old mental vigour. Suddenly epileptiform seizures returned, and he died June 1st, 1896, of general paralysis, having come nearer to spontaneous recovery in the early stages than any other parietic in the hospital for a decade, and afterwards, in the third stage, brought back by active treatment. Unfortunately no necropsy could be obtained.

J. B. McD., admitted March 2nd, 1894, with the characteristic symptoms of general paralysis. This case, as well as the preceding one, were detailed at length in the 1896 Report of the Government Hospital for the Insane, Medical Supplement. Suffice it to say here that this was a typical case of the active destructive dementia type of the disease wearing out every body and steadily going down. He was transferred to the Toner Building June 6th, 1895, the disease being then of over eighteen months' duration. Under the wet-pack treatment and opium he came back from an untidy dementia and silence to his old cleanly habits and the old activities of life, with the delusions of grandeur no longer present. He took up his profession, that of a musician, and played as well as ever. He was allowed to leave the hospital to play in an orchestra in the summer of 1896, he reporting from time to time, and was finally discharged February 11th, 1897. He has continued in the orchestra, and with no recurrence of the disease up to the present time.

P. B. M., admitted in the acute stage of general paralysis, April 16th, 1897. Transferred to the Toner Building, April 20th, 1897. Aged 35. Driver; married; habits temperate. About two months before admission became markedly absent-minded, with general restlessness and expansive ideas of grandeur, thinks he is going to build big houses, constantly building useless boxes; talkative and excitable, easily diverted, memory imperfect, perceptions impaired. A typical case of the disease, delusions being of the expansive form. Coachman of a family of social prominence, and for months suffered loss of sleep. He has aortic valvular disease with both systolic and diastolic murmurs, the result of rheumatic endocarditis. This double cause of cerebral malnutrition is of interest, and etiologically of great importance. There was irregularity of pupils, tremor of tongue and lips, slurring of words in speech, and delusions of unbounded wealth characteristic of the disease. He was treated by rest in bed for six weeks, with wet packs of two hours' duration twice daily, followed by massage. Temperature one to three degrees F. in excess of normal during most of the time, and for this ice was applied to the head, and 2½ gr. phenacetin administered morning and evening. Milk was freely given. At the end of six weeks, temperature having become normal, some increase of flesh and mental improvement having taken place, he was allowed gradually to get about the building. The duration of pack reduced to an hour and a half each, with cold douche immediately following. Has now (August 1897) lost all his delusions, gained many pounds in weight, and seems well advanced on the road to a normal mental condition, if not recovery. This is the only case reaching the Toner Building in the early stages of the disease. This was due to the building not being fitted for active, violent cases, but this has now been provided for, and hereafter these cases will pass directly under the St. Elizabeth treatment.

REMARKS

ON

LEPROSY IN THE BRITISH EMPIRE.*

By PHINEAS S. ABRAHAM, M.A., M.D., B.Sc., F.R.C.S.I.,

Assistant Surgeon, Hospital for Diseases of the Skin, Blackfriars;

Dermatologist at the West London Hospital; and Hon. Sec.

of the "Special" and "Leprosy Investigation"

Committees of the National Leprosy Fund.

At the request of the Honourable President and Secretary of this International Conference, I have undertaken the task of laying before the assembled delegates a general survey of the present position of the leprosy question in the British Empire.

I must first of all express my thanks at the honour which has been thereby conferred upon me; and in the second place I must express my regret that I have not been able, partly through the pressure of other avocations, to fulfil the task in as complete and satisfactory a manner as I could have wished.

My efforts in collecting facts, however, have been ably seconded by numerous correspondents, to whom my thanks are due, as well as by the Government authorities in London, particularly at the Local Government Board, the Colonial Office, and the India Office, where everything bearing upon the subject has been freely placed at my disposal.

The question is one of very great importance to England and her dependencies: for, as we shall see, not only do lepers form a numerous class in India and in several of the colonies,

but they are occasionally met with even in Great Britain and Ireland.

We must bear in mind, moreover, that the prevalent feeling among the public with regard to leprosy is one of loathing and disgust; and, although the fear of its spreading from the diseased to the healthy may be exaggerated by the ignorant, no Government, even in the interests of the lepers themselves, can safely remain quiescent, and allow things to drift, when the disease has become as endemic as it has in many parts of the British empire.

I propose to treat, first, of leprosy in Great Britain and Ireland, and shall venture to form an approximate estimate of the number of cases which have recently come under notice; secondly, of the disease in India and the Colonies; and thirdly, I shall put forward a few considerations on the subject in general, and shall show that the various Governments in India and the Colonies have not been altogether indifferent in the matter.

Finally, I shall append the various Acts and Laws in reference to leprosy and lepers, which have been passed by these Governments in late years.

LEPROSY IN ENGLAND.

The following cases have come under my own personal observation during the past ten years, irrespective of those which I have seen exhibited at medical societies, etc.:

CASE I. *Nodular Leprosy*.—Male, aged 18 in 1888; English; born in London; taken in infancy to Trinidad.

CASE II. *Nodular Leprosy*.—Female, aged 29 in 1887; Irish; taken to India when 4 years old. Symptoms appeared three years after returning to England. She was subjected to the tuberculin treatment. Died in 1894.

CASE III. *Neural Leprosy*.—Male, aged 64 in 1889; English; formerly sailor in Mediterranean and Baltic forty years ago. (This was Dr. Larder's case, which was subsequently alluded to by His Royal Highness the Prince of Wales.)

CASE IV. *Nodular Leprosy*.—Male, aged 17 in 1837; born in Barbados, of English parentage. First symptoms noticed three or four years after coming to England.

CASE V. *Nodular Leprosy*.—An English officer, aged 45 in 1890. His affection commenced in India in 1883. He improved very much under treatment, but was subsequently attacked by dysentery and died.

CASE VI. *Mixed Leprosy*.—West Indian boy, aged 7 in 1891. He improved greatly under treatment, but recently manifestations of the disease have reappeared. Tuberculous injections were used in his case, and lately two injections of an antileprosy serum.

CASE VII. *Nodular Leprosy*.—Male, aged 33; English; went to India as an infant, returned when 11 years old. About eleven years afterwards first symptoms of leprosy appeared. He was also subjected to the tuberculin treatment. His larynx subsequently became stenosed, and tracheotomy was performed. He wore the tube for several years, and died from bronchitis and occlusion of the tube.

CASE VIII. *Nodular Leprosy*.—Male, aged 20 in 1893; of Scottish and German parentage, born in Trinidad. Had been vigorously treated with mercury in the belief that it was syphilis.

CASE IX. *Nodular Leprosy*.—Female, aged 21; English; taken to Ceylon as an infant, came back when 7 years old. Six years after her arrival erythematous blotches appeared. Considerable improvement took place in her condition under care. In November last year she was on two occasions injected with small quantities of Dr. Carrasquilla's serum. These had no effect in stopping the disease.

CASE X. *Nodular Leprosy*.—Male, aged 22 now; born in Jamaica. The disease commenced probably with neuritis in one leg, which was treated as supposed infantile paralysis. After coming to England in 1892 brown spots appeared on the thigh. The disease was only correctly diagnosed towards the end of 1895, when it was a well advanced nodular case. He has allowed material to be taken from his tuberosities for the purpose of preparing an antileprosy serum.

CASE XI. *Nodular Leprosy*.—Male, aged 24; West Indian; born in Barbados; coloured. Three years affected. Symptoms commenced in mucous membrane of the nose. This man has received a large number of injections with a new antileprosy serum.

CASE XII. —Male, aged about 45; born in South Africa, of European parentage. An early case in the macular stage.

CASE XIII. *Nodular Leprosy*.—Male, aged about 50; father English, mother Burmese; lived in Burmah until recently.

CASE XIV. *Nodular Leprosy*.—Female, now aged about 18. Slightly coloured. Came from the West Indies in 1891, when spots had already appeared on the face, arms, and hands. A very bad case. She had been subjected to the "Mattei treatment" for two or three years.

In order to ascertain—approximately at any rate—the number of cases now, or within recent years, under other medical notice in Great Britain and Ireland, a circular was addressed to the authorities of a large number of hospitals and infirmaries throughout the country, and application was also made to many dermatologists and other medical men, who might be considered likely to have met with cases.

Returns have been received so far from 106 institutions, but lepers have been under observation, according to the replies, only in 90 of them. Dr. J. H. Bryant, Medical Registrar at Guy's Hospital, has furnished notes of 3 cases. Dr.

* Abstract of a Paper presented at the International "Lepra-Conferenz" at Berlin, October, 1897.

H. Sequeira, Medical Registrar of the London Hospital, has also furnished notes of 3 cases. Dr. Calvert, of St. Bartholomew's Hospital, has furnished notes of 2 cases. Dr. Hardcastle, of Charing Cross Hospital, of 1 case. One case also, which was under my own care in 1891, has been reported from Westminster Hospital, and 1 case from King's College Hospital, and 1 case from the Regent's Park Hospital for Paralysis, etc. At Blackfriars there have been 4 cases during the last ten years, and at the West London Hospital 2 cases. One case has been reported from the Dorset County Hospital. I am also aware that within the last ten years there have been several other cases at St. George's, University College, and St. Mary's. References have also been given to me of a case at South Shields, and 1 in Newcastle-on-Tyne.

Sir Richard Thorne Thorne, K.C.B., Dr. Downes, and other officials of the Local Government Board, have kindly interested themselves in the matter; and in response to a circular issued by Dr. Downes to the Metropolitan Poor-law infirmaries, negative replies have been received from 20 institutions, and records of cases of leprosy from 5, namely, the Hackney Union Infirmary, Lewisham Infirmary, Greenwich Union Infirmary, in each of which 1 case has been noted, and in the Whitechapel Infirmary 2 cases.

In December, 1896, the case of a lad admitted into the Dorset County Hospital came under the notice of the Local Government Board. The hospital authorities were unable to keep the boy, and the District Council requested advice as to what should be done with him. The matter had become known in the county, and the inhabitants of the neighbourhood were much alarmed. Dr. Lush, under whose care he was, published the case subsequently, and he has recently given me further particulars and a photograph. The boy, aged 8, was born of English parentage, at Singapore. Symptoms appeared eight months after his arrival in England.

The columns of the various medical papers published in Great Britain and Ireland, and the *Transactions* of the medical societies, have been carefully searched, and references have been found to 33 cases of leprosy, as having been shown or described from the year 1887 to 1897. Several of these patients are identical with those alluded to above, and 2 of them were shown on more than one occasion, or at different societies, and placed in the list more than once.

The remaining 21 cases include: 1 shown by Mr. Malcolm Morris in 1887; 1 alluded to by Dr. Wyndham Cottle in 1889; 1 recorded by Dr. O'Carroll in Dublin in 1889; 1 by Dr. Selby in 1889; and 4 described by Dr. Crocker in the same year; 1 by Dr. Cavafy; 1 by Dr. Wallis; 1 by Mr. Alexander in 1890; 1 alluded to as occurring in Ulster in 1891; 1 shown by Mr. Hutchinson in 1893; 1 by Dr. Heath in 1893; 2 shown by Mr. Malcolm Morris in 1895; 1 shown by Dr. Sibley in 1896; 1 described by Dr. E. S. Reynolds in 1896; and 2 cases alluded to by Dr. Crocker in 1896. During this year a case in Dublin has been mentioned in the *Lancet*, and Dr. Crocker has described another case in England. At the meetings of the Dermatological Society of Great Britain and Ireland in 1894 to 1897, 7 cases of leprosy have been exhibited, 5 by myself and 2 by Dr. Crocker. These are all included in the above enumeration. At one of the meetings Dr. Brooke alluded to a case of his at Manchester.

During the same period the Dermatological Society of London has, I believe, had before it 4 or 5 cases. It is probable that these also are included in the above list. At the International Congress of Dermatology, held in London in 1896, Mr. Jonathan Hutchinson showed an apparently cured case of leprosy. Dr. Dockrell exhibited a man, aged 37, who had lived in British Guiana; an advanced case, of 10 years' duration; and Dr. Crocker 2 cases, which had improved under hypodermic injections of mercury.

CASES IN SCOTLAND.

Dr. Allan Jamieson has been good enough to send an interesting account of a case of a young lady, aged 17, born in Ceylon, apparently a half-caste, who eventually went back to the East, and died of phthisis. Dr. Whiting has referred to a case under Sir T. Grainger Stewart's care, at the Edinburgh Royal Infirmary; and Dr. C. B. Ker has also referred me to a case at the Royal Infirmary, Glasgow. In 1888 a case was

alluded to in the *BRITISH MEDICAL JOURNAL* as occurring at Fettes College, Edinburgh, in connection with which a lawsuit was in progress.

CASES IN IRELAND.

Since the celebrated cases of Dr. Hawtrey Benson, very few patients with leprosy have cropped up in Ireland. Dr. H. S. Pardon had a case under his treatment at the Belfast Hospital for Diseases of the Skin—a man who was born of Irish parents in Madras. Dr. Mackenzie had a case at the Lisburn Union Workhouse—a man who was born in India and was diseased for twenty years. The Local Government Board of Ireland was communicated with in connection with this case, its existence having caused a great scare in the district. He was subsequently kept in a small house provided by the guardians; and, although blind, he attempted to escape. The only other recent cases that I have heard of in Ireland are Dr. O'Carroll's case, referred to above; and a case which was recently mentioned in the *Lancet*, and which is now probably in Paris.

LEPROSY IN THE BRITISH NAVY AND ARMY.

The Director-General, Sir James N. Dick, K.C.B., informed me in 1889 that not a single case of leprosy among the officers or men of the navy could be traced in the office, and that at the same time the late Sir Thomas Crawford, K.C.B., of the Army Medical Department, could discover but little evidence of the disease among the British troops. Only one case had come to light, namely, in a soldier born in Madras, whose father was an Irishman and mother a native.

The present Director-General of the Army Medical Department has been good enough to have the records of the service again examined, and no other case, it appears, has been reported amongst British troops and non-European troops, exclusive of native troops in India. Information has also been given to me of another sad case, in which an army medical officer has become affected. One of my own cases, however (No. 5) was an officer in the army.

Sir James Dick has also, upon the present occasion, kindly investigated the matter; and he has been able to state again that no case of leprosy has ever occurred in the navy.

Carefully collating the above cases, and excluding, as far as possible those which have been referred to more than once, I may say that the total number of cases of which I have been able to find records amounts to some 56.

I have reason to believe that a few others have been under the observation of medical men, who, for various reasons, have been unable to furnish notes of their cases; but this number cannot be a very large one, and can safely be put down at certainly not more than 20. We may allow a further margin of say 20, for unrecognised cases, and, adding these all up, it will be seen that we may fairly estimate the number of cases of leprosy during the last ten years in Great Britain and Ireland as certainly under 100.

From time to time supposed cases have been reported, and I can refer to at least 10 such cases which have come to my knowledge. A few weeks ago a young woman was brought to me as "an undoubted case of commencing leprosy." She had been attending a real case from May to October last year in a nursing home, and believed that she had caught the disease. I discovered that she was of an extremely nervous and hysterical temperament, but could find no evidence whatever of leprosy, only a considerable amount of acne about the chest and back, with the old scars resulting from those lesions, and patches of seborrhoeic eczema elsewhere.

Although unusual causes of death are always noted at Somerset House, I can only find 1 case of death from leprosy there recorded in ten years—that of a man, aged 25—as happening in London in 1889.

About eight years ago (March, 1889) an attempt was made by the *BRITISH MEDICAL JOURNAL* to in some way estimate the number of cases of leprosy which had, up to then, come to light in Great Britain and Ireland, and a large number of authorities were written to for information. Dr. Pye-Smith could refer to 6 cases which had been seen at Guy's Hospital since 1862; Dr. Crocker had at the time 2 cases under his care; and Mr. Malcolm Morris 1. Dr. Mapother believed that he had seen 2 cases in Dublin since 1872; Dr. Thin had seen 3 cases; Dr. McCall Anderson 3, at Glasgow; Dr. Jamieson 1; and Dr. Gairdner 1. Dr. Colcott Fox reported that 20

cases had been exhibited at the Dermatological Society between the years 1882 and 1889, and that he himself had seen 6 cases in private and 3 in hospital practice.

Although the estimate which I myself have now (September, 1897) ventured to make is apparently larger, it will be seen that my field of inquiry has been at the same time greater; and I think we may again safely endorse the opinion expressed by the *BRITISH MEDICAL JOURNAL* in 1889—namely, that “There is no reason to believe that we have more lepers amongst us now than at any previous time for many years.” Indeed, Mr. Hutchinson, who perhaps sees more “rare” diseases of the kind than any other authority in London, informs me that in his experience cases of leprosy are fewer now than formerly.

LEPROSY IN INDIA AND THE COLONIES.

It is still difficult in some colonies to form a very accurate judgment as to the extent of the disease. As everyone interested in the subject is aware, the leprosy question in India has been discussed in a most able and searching manner by the Commissioners who were sent to that country in 1890, under the auspices of the National Leprosy Fund, and by their colleagues appointed by the Government of India. For many years previously the matter had been under the careful consideration of the Government, but in consequence of the intrinsic difficulties of the question, and the varying opinions of the highest medical authorities, but comparatively little had been attempted in the way of legislation, or of the systematic management of lepers. The number of the latter had been no doubt grossly exaggerated, but still it was well known that there were no fewer than 100,000 of these unfortunate people throughout India, of whom probably not 2 per cent. were under proper care. Comprehensive legislation was under the consideration of the Governor-General in Council before the Commission commenced their labours, but the Government wisely postponed action until the Commissioners' report was before them. There had, indeed, been several previous Acts in India—so far back as 1866—empowering the arrest without warrant of lepers found begging or exposing their sores, but there was nothing to authorise definitely the detention of lepers.

In Bombay, however, it was found that under a Local Act (vi, of 1867) the consulting officer of health for the city had the power to detain in a sanitarium, until they were fit to go about, persons suffering from a dangerous disease or “an infectious disease dangerous to life,” who had been brought there by the police. On the strength of this, the Local Government ultimately took steps to enforce the law and apply it to the lepers, and in 1890, by the help of a munificent donation from Sir Dinshaw Petit, and through the energy of Mr. H. A. Ackworth, of the Municipal Council, an efficient Leper Asylum—the Matunga Hospital—was established near Bombay, with accommodation for about 300 inmates. One of the results has been to free the city of Bombay from the beggars who used to extort alms by the exhibition of their sores about the public buildings, schools, water tanks, etc.

The Government of Bengal shortly after passed a Bill—“The Lepers Act, 1894”—for the segregation of pauper lepers and the prohibition from certain callings of those lepers who are not paupers. The regulations under this Act are now being enforced as far as possible.

It appears that the Burmese and other Local Governments in India were then desirous of having the provisions of the Bengal Act extended to their provinces, and last year, as it was considered by the Government of India more desirable to frame a general measure rather than a separate Act for each province, the “Lepers Act, 1896,” was introduced and ordered to be published in the *Gazette*. (See Appendix A.)

In several parts of the Indian Empire, indeed, an endeavour is being made to carry out the suggestions of the Leprosy Commissioners as far as practicable, namely, the voluntary isolation of lepers; the prohibition of lepers from following occupations connected with food, drink, clothing, etc.; the enactment of municipal by-laws preventing vagrant lepers from begging in or frequenting places of public resort or using public conveyances; the enlargement of existing asylums, and the building of others near towns where they do not already exist; the establishment of leper colonies or farms in rural districts; and the institution of orphanages.

The strongly expressed opinion of the Leprosy Commission that “the alarm about the increase of leprosy in British India is altogether groundless,” and that the data available “point strongly to a decrease.....in any case, to the disease being at a standstill,” seems to be shared by those most competent to judge. The Governor-General, in Council, in 1895, saw “no reason to dissent from the general conclusion of the Commissioners that leprosy does not prevail in India to such an extent as to constitute a general or universal danger.”

STRAITS SETTLEMENTS.

A Committee was appointed on the leprosy question in Perak in 1893. In an interesting report they make a number of suggestions with reference to segregation. In addition to the native Malay lepers, concerning whom an Order in Council was passed in 1890, there were in the country a considerable number of immigrant cases, chiefly Chinese. Measures were therefore adopted for their registration, and to prevent their entry into the country. The Committee strongly urged the establishment of a segregation settlement, although they thought that “there is no reason to suppose that the disease is much on the increase among the Malay population. It has existed among them in a greater or less degree for many years without apparently making any marked progress.” And, moreover, that “up to the present time it has not been proved that leprosy is on the increase among our alien population.”

The Committee recommended that the life of the people on the segregation island should be assimilated, as far as possible, to that to which they had been accustomed; and that they should be permitted, as far as compatible with their safe keeping, to exercise on the island the same liberty as their fellows enjoy in the State.

SOUTH AFRICA.

As the question of leprosy in South Africa will be adequately treated on the present occasion by the representative of that colony, the matter need not be gone into at length, especially as a very important and valuable report of the Cape Leprosy Commission of 1894-5, which has dealt exhaustively with the question in that colony, is probably already in the hands of the members of this Conference. It will, of course, be remembered that the Commissioners considered that some form of compulsory segregation, complete or modified, was necessary, and also the compulsory notification of every case; but they urged that the stringent regulations then in force, with Robben Island as the sole place of detention, only led to the concealment of cases, and they recommended that the degree of isolation necessary in each case should be secured in licensed houses and locations on the mainland, otherwise the working of the Act “would be extremely difficult and unnecessarily repugnant to the people.”

A leper asylum has recently been established at Emjanyana for the native territories. Between 5,000 and 6,000 acres of land are attached to the institution, and the asylum is estimated to provide accommodation for 350 lepers.

It appears that the Robben Island leper asylum costs the colony something like £30,000 per annum. Besides those who were in the asylum in 1894, there were 676 lepers on the register, 268 in the colony proper and 408 in the native territories.

The medical officer of the Government observed that “it is still difficult to ascertain definitely the effect the operation of the Leper Act is having on the spread of the disease, inasmuch as, owing to the want of systematic accommodation, it has not been possible to at once isolate every case on its discovery, many, especially in the more purely native districts, having to be left at large for a practically indefinite period. I think, however, from a consideration of the following figures, showing the state of the districts of the Colony as regards lepers under observation, and dealt with each year since the putting into operation of the Leprosy Repression Act on May 17th, 1892, we are justified in coming to the conclusion that the disease is decidedly on the decline so far as the Colony proper is concerned. Of the native territories it is impossible to speak, as practically nothing has been accomplished there in the matter of systematic segregation.”

MAURITIUS.

Since the report of the Leprosy Inquiry Commission in

1888 very few facts have been recorded in reference to the leprosy question in Mauritius. From the steadily diminishing number of deaths from leprosy returned during the few previous years, falling from 86 per annum in 1881 to 37 in 1889, Dr. Lovell, chief medical officer of the Colony, seemed inclined to think that the disease was not on the increase, and the returns furnished by the police appear to point to the same fact. The total number certified by them as being at large in 1879 was 519, while in 1887 they reported 458. These returns were admittedly more or less defective and incomplete, but the Leprosy Commission was nevertheless of the opinion, from a consideration of all the data before them, that the disease was not making great progress in the Colony, and that there was nothing to lead them to believe that it was increasing out of proportion to the population.

AUSTRALIA.

It is hardly necessary to go into detail with reference to leprosy in Australia, seeing that the subject has been so recently treated in a most able and exhaustive manner by Dr. J. Ashburton Thompson, the Chief Medical Inspector to the Board of Health in New South Wales, in his work, *A Contribution to the History of Leprosy in Australia* (London, 1897).

From his chronological summary of all recorded cases in Australia, we learn that the total number which had come to light during the years 1855 to 1894, amounted to 70 in New South Wales, 48 in Queensland, 45 in Victoria, 2 in Western Australia, and 19 in the Northern Territories. Of the South Australian cases 33 have been white persons. The large majority of the other lepers in Australia have been Chinese and Kanakas.

The table which he gives shows a general increase of recorded cases subsequent to 1877. It shows also a further increase of recorded cases subsequent to effective legislation in New South Wales and Queensland. He points out, however, that the apparent increase during more recent years may be due to the greater attention which has been turned to the disease, and that the data are too imperfect strongly to support any positive conclusion. He thinks "that a recent increase of leprosy on the continent of Australia has been alleged on superficial grounds, and that probably there has been no such increase."

Dr. Thompson appears to have come to the conclusion that the maintenance of leprosy is not by direct or indirect communication with lepers, and that the theory of its inoculability will not hold water. According to him, "it fails from want of evidence, experimental or clinical, sufficient even to raise a presumption." He is inclined to look for the true habitat of the virus in the surroundings of man, and not in the diseased body.

It is remarkable that these views should be held by the principal medical officer of a country which has enacted perhaps some of the most stringent laws extant against lepers.

NEW ZEALAND.

Since Dr. Ginder's Report in 1890, we have but little information with reference to leprosy in New Zealand. Several cases had then been discovered among the Maories, and Dr. Bakewell also stated that he had seen one or two cases among the whites, and one in a Chinaman.

FIJI.

Dr. Corney was of opinion in 1890 that there had been some increase in leprosy in late years. According to the natives, this was due to the abolition of a practice of privately killing affected persons, which was in vogue before the British rule. In 1891 he reported 21 cases other than aboriginal; 11 of them were Indian.

CANADA.

In Dr. Taché's report, 1885, it was shown that the cases in New Brunswick had diminished from 76 in 1875 to 25 in 1885; 22 of the latter were in the asylum at Tracadie.

In 1889 Dr. Hayd gave an account of a visit to that lazaretto. The total number then confined and a few who were not did not amount to more than 22.

Dr. A. C. Smith in 1896, Superintendent of the Tracadie Asylum, wrote that "leprosy exists in Nova Scotia only in the descendants of the Highland Scotsmen who emigrated in the early part of the century." The lepers of New Bruns-

wick are "degenerated French." Dr. Smith had found 3 cases at Cape Breton, and Dr. John Cameron 6 in other districts of Nova Scotia. The Montreal correspondent of the *Lancet* last year referred to a case of leprosy in a Chinaman in that city. The diagnosis had been made *post mortem*. At the recent meeting of the British Medical Association in Canada, Dr. Shepherd and Dr. Boyce exhibited a patient, probably in the early stage of anæsthetic macular leprosy. As far as was known, he must have contracted the disease in British Columbia.

JAMAICA.

Dr. Donovan, Medical Attendant of the Lepers' Home, informs me that he has sent a paper to the Conference, in which he has given as close an idea of the leper population of the island as possible. He expects that the new "Lepers' Asylum Law," 1896, will have some beneficial effect in checking the development of fresh cases of the disease, although that law practically deals only with vagrants. He estimated in 1890-91 that the leper population of the island was 450, or 1 in 1,555 of the total population. It is to be hoped that the data which he will now adduce will elucidate the point as to whether the disease in Jamaica has not decreased. In his report for the year ending March 31st, 1897, which he has just sent to me, he states that the law of 1896 has now been in operation for a little over a year, and already its efficiency can be appreciated; the vagrant leper, for whom it was specially intended, will no longer be a menace to the public health as heretofore.

LEEWARD ISLES.

The Census Report for 1891 gives the total number of lepers at 172; and of these 129 were under restraint; 98 were in the island St. Kitts, and 45 in Antigua. According to Mr. Boon, however, there were 120 known lepers in St. Kitts in 1892; this being a great increase on the number, 72, found by Dr. Munro in 1872.

An ordinance to establish a leper asylum for St. Kitts was passed in 1890, and an Act to provide for the care and maintenance of indigent lepers, and to prevent the dissemination of leprosy was passed in Antigua in 1896.

BARBADOS.

The census returns for 1871, 1881, 1891, give the lepers in the island at 96, 108, and 156 respectively. The ratio thus increasing from 0.57 to 0.85 per 1,000 of the population.

From the greater attention recently directed to the leprosy question, it is very probable that the enumeration was more accurate at the latter period. The cost of the asylum for 1896-1897 was £3,210.

ST. VINCENT.

The Colonial Surgeon (Dr. Newsam) stated in his report for 1894 that leprosy did not appear to be on the increase. Twenty-three cases had been under treatment during that year in the asylum. The census returns for 1891 gave 62 lepers in the Colony, being an increase of 5 since 1881.

ST. LUCIA.

The census of 1891 gives 32 lepers. Very few cases seem to have been under treatment in hospital.

GRENADA.

The census of 1891 gives 21 cases.

TRINIDAD.

In reply to a circular issued by the Surgeon-General in 1881, it appears that there was evidence of 389 lepers in the island, of whom 210 were in the asylum.

What Dr. Beaven Rake wrote in 1890 is probably true now: "As to the increase of leprosy in Trinidad, it is impossible to give a definite answer. If there is any truth in Père Etienne's 860 (1878), and Archdeacon Wright's 480 (1889), and if the present figure (348) represents anything near the present number of lepers here, one would be forced to conclude that the disease is on the decrease. I do not, however, think that any of these figures are sufficiently reliable to warrant any absolute conclusion."

It may be added that we have had since then no further definite information on the subject. The asylum figure have varied comparatively little during the last few years

the cost of the establishment last year amounted to nearly £5,000.

Dr. Knaggs, the present superintendent of the asylum, states, in a letter dated August, 1897, that his views are as follows:

1. Leprosy is a contagious disease, tubercular more than anæsthetic.
2. Every leper is a possible focus of contagion.
3. *Ergo*, the only rational line of treatment (in the absence of a radical cure for the disease) is isolation. Segregation if you like, and even colonisation, but removal as far as possible from any commerce or dealings with the surrounding population.

BRITISH GUIANA.

The Surgeon-General, in his report for 1892-3, observes: "As far as I am aware, there is no ground for supposing that the ratio of lepers to population is increasing in this colony, and those who state the contrary offer no proof in support of their assertions. It seems to me that there is no necessity for any change in the policy which has been followed here, namely, that of inducing sufferers from the disease to voluntarily go to the refuge provided for them, and, when there, making them as comfortable as possible."

In the report of the Mahaica Asylum in 1892 Dr. Barnes stated that the question of the sexes was a most difficult one to deal with. Most of the disturbances, absconding, etc., were due to this. "The women at Gorchum are visited regularly by the male inmates, and the women also frequent the male asylum. For some years past marriages have frequently been solemnised by the neighbouring clergy between male and female inmates." Nevertheless, extremely few births seem to have taken place. In 1894 the female asylum was removed from Gorchum to Mahaica, so that better discipline and administration could be maintained. The year 1895-96 was the first, for ten years, in which no illegitimate birth had taken place at Gorchum. The census reports give little information as to the extent of leprosy in Demerara, the only reference being to the number of cases then in the asylum.

Of the total population of British Guiana in 1891, the East Indian element formed a percentage of 37.89. The coolies are known to add largely to the number of lepers.

Dr. F. Neal, the present Medical Superintendent at the Asylum, kindly informs me (September, 1897) that the people generally do not consider the disease catching, but are firmly convinced of its hereditary nature. He has been good enough to send me most valuable notes upon the question in general in British Guiana. In 1831 the number of lepers returned for the Essequibo Division of the united Colony of Demerara and Essequibo was 431, giving the ratio of 1 in 58.2 if the Essequibo Division only be considered, or 1 in 182.8 for the united Colony of Demerara and Essequibo. In 1864 the estimate was 529 lepers, or 1 in 294.7 of the population. In 1879 525 were returned, or a ratio of 1 in 476, but this return was admittedly very inaccurate. In 1891, according to a calculation recently made by Dr. Neal, by taking the number of lepers in the asylum on January 1st, 1891 (355), and then all the cases admitted since that date, in which the onset of the disease was prior to January 1st, 1891, there must have been 650 lepers in Demerara at that date, or 1 in 427.6, this calculation lending support to the general belief that there are as many lepers outside the asylum as in it. Considering the returns of 1831, it will be seen that, if the ratio had been continued, there should have been in British Guiana, in 1891, at least 882 more cases than Dr. Neal's calculation shows. As he says: "The greatest supporter of the increase of leprosy in the Colony would not venture to uphold this."

According to Dr. Neal's figures, the history of leprosy in British Guiana shows a diminution rather than an increase; but, as he admits, no decided opinion can be given in the absence of a more thorough and regular leper census.

As regards the need of legislation, he does not consider that in British Guiana more is required than already exists. The Government supports a large asylum, of nearly 400 beds, admission to which is optional, except in the cases of lepers exposing themselves or making a public nuisance of themselves, when they are forced to come in. He considers the question of legislation cannot be settled as a whole, but must be left to individual Governments to decide the matter for themselves.

CYPRUS.

Since the important report of Dr. Heidenstam on leprosy in Cyprus in 1890, and Dr. Zambaco Pasha's interesting work, *Voyages chez les Léproux*, 1891, nothing of much interest has been recorded on the subject from this island. There were then about 100 lepers known, showing a marked decrease in the preceding ten years. About 70 were congregated at the Nicosia Farm, and there were supposed to be 30 at large. In 1891 a new law was passed to provide for the better segregation of lepers, and for regulating their management at the places set apart for them. In 1895 there were 93 inmates at Nicosia. Dr. Heidenstam observes in his report for that year that the passing of the law of 1891 had had a most beneficial effect, especially the provision that the village authority should report to headquarters persons suspected to be suffering from the disease, and thus bringing to notice, almost without exception, every existing leper.

CONCLUSION.

Considering the facts which have come to my knowledge, many of which are brought forward in this paper, I believe that I can fully support certain views which have been more than once arrived at by other observers, especially in England, in India, and in our Colonies, who are interested in the study of leprosy.

With regard to the disease in Great Britain and Ireland, we may say that:

1. A certain small number of cases are always to be met with in this country.
2. There is no reason to suppose that the number is greater at the present time than it has been at any period within recent years.
3. In all cases, since Dr. Hawtrey Benson's in 1872, the patients have become affected with the disease after a longer or shorter sojourn in countries or districts where leprosy is endemic, with the possible, but very doubtful, exception of the Lewisham Infirmary case.
4. Although the British and Irish cases have never been subjected to any real isolation—indeed, in most instances they have been treated as ordinary patients, suffering from a non-contagious disorder—leprosy has, nevertheless, with the single exception referred to above, never, in recent years, spread to other persons.
5. As the disease, therefore, cannot be regarded—at least in Great Britain and Ireland—as highly contagious, or likely to be passed on to others, there is at present, at any rate, no need for repressive legislation, nor any cause for alarm at the existence of a comparatively few lepers among the people.

At the present time there is no establishment in the country where sufferers from leprosy and other chronic and disfiguring diseases of the skin can be cared for. I believe that in the interest of the lepers themselves such an institution or "home" is greatly needed; indeed, I have frequently been written to on the subject by the friends of indigent, as well as of other cases whose presence in a neighbourhood has caused unpleasantness. As it is, the poorer patients may be kept for a few weeks in the general hospitals, but they have ultimately to drift into the Poor-law infirmaries. At least 2 cases from this kingdom have, to my knowledge, found an asylum at the St. Louis Hospital in Paris.

With reference to the leprosy question in India and the Colonies, it is abundantly evident that:

1. The various Governments interested have, in most cases, long had the subject under their anxious consideration, and that they are doing what they can to mitigate the evil.
2. The social and political conditions in the different countries are so varied, that it is manifestly out of the question that any uniform or universal system for the management of lepers will be possible. As Dr. Neal says: "The question of legislation cannot be settled as a whole, but must be left to individual Governments."

Even supposing that the best authorities were satisfied that leprosy was a highly contagious disease, and only to be stamped out by the strictest isolation of the existing cases, it would still be futile for the Governments of some places, at any rate, to attempt to enforce rigorous laws of absolute isolation and segregation. But with the existing differences of opinion among medical men, and as public opinion is not

everywhere agreed that harsh measures are justifiable, the Governments are, in my opinion, well advised in not making the attempt. Law-abiding though they be, British subjects do not tamely submit to what they may regard, rightly or wrongly, as unnecessary coercion.

Where the lepers are comparatively few, and the public in general desirous of their seclusion—as in New South Wales, for instance—such measures may be to a large extent feasible; but where the lepers are numerous, and the lepers' friends still more numerous, and not acquiescent in their separation, it seems to me that harsh measures can only lead to the concealment of cases—as has been well exemplified, for example, in South Africa and in Hawaii.

If difficulties be raised among an ignorant people by the enforcement of common sense sanitary precautions against such an acute and virulent disease as a rapidly spreading plague, how much more difficult might it not be to insist on rigorous measures in the case of a disease of such slow and insidious progress as leprosy?

With regard to India, moreover, even if the complete isolation—in spite of the above considerations—were possible, the question of "ways and means" must come in. The segregation and maintenance of upwards of 100,000 souls is, to say the least, a large undertaking.

We must not forget that our knowledge of the etiology of leprosy is still far from complete; and although we may form theories and impressions from the imperfect data which are before us, we are not justified in dogmatically insisting upon conclusions which are practically only based upon such mere theories.

In an Appendix were given the various Laws and Acts bearing upon the subject of leprosy, which have been passed within recent years by the Governments of:

1. India.	9. Jamaica.
2. The Straits Settlements.	10. Barbadoes.
3. Cape of Good Hope.	11. St. Kitts and Nevis.
4. Natal.	12. Antigua.
5. British Bechuanaland.	13. Trinidad and Tobago.
6. The Seychelles.	14. British Guiana.
7. New South Wales.	15. Malta.
8. Queensland.	16. Cyprus.

THE INTRACRANIAL CIRCULATION IN SOME OF ITS ASPECTS.*

By GEORGE ELDER, M.D., F.R.C.P. EDIN.,

Clinical Tutor Royal Infirmary, Edinburgh; Assistant Physician Leith Hospital.

Few subjects have given rise to so much discussion as the question regarding the differences existing between the circulation as observed in the brain with an opening in the cranium and that carried on when the skull is intact. For nearly 150 years a vast amount of work, and still greater amount of theorising, has been done on this subject. Schlichting¹ in 1750 made the first real step towards the elucidation of the cerebral circulation when he showed that movements of the brain corresponded with respiratory movements, expansion of the brain occurring with expiration and retraction of the brain with inspiration. De la Mure² and also Haller³ a few years afterwards showed that these movements of the brain were due to the mechanical effect of the respiratory movements of the chest on the large veins entering the thorax, and the latter demonstrated that in addition to the movements of the brain with respiration there were pulsations synchronous with the arterial pulsation elsewhere. Little advance was made in our knowledge of the intracranial circulation in the open skull till Mosso⁴ wrote his important monograph about twenty years ago on the circulation of the brain in man, derived largely from tracings taken from the brains of men with gaps in the skull. A considerable number of writers have used this method since then in similar conditions, and two years ago Dr. Hutchison⁵ and the writer showed that much information could be got in this

direction from the movements of the fontanelle in children when a delicate apparatus is used. It is not my intention at present to deal with this aspect of the question at any length, but it is necessary in order to discuss the relationship of this to the circulation in the closed skull to state the chief facts which have been observed in connection with the circulation in the unclosed skull.

There is in an unclosed skull a double cerebral pulsation—(1) synchronous with arterial pulsation, and due to distension of the arteries by the cardiac systole; and (2) with respiration, retraction of the brain from aspiration of the venous sinuses with the inspiratory movement, and distension of the brain with the expiratory movement. The amount of blood in the brain therefore varies very greatly with the respiratory movements from the fact that when the venous pressure is reduced in inspiration the small vessels in the brain are compressed by the atmospheric pressure. The greater the extent of the respiratory movements the greater of course the movements of the brain. The arterial pulse wave as taken by various instruments is nearly always found to be anacrotic in character, though at times, as we shall see, it may become katacrotic. No satisfactory explanation has yet been given of the cause of this anacrotism.

When we come to the consideration of the circulation inside the closed skull the subject becomes much more difficult, and it is this aspect of the intracranial circulation which has led to so much discussion. So long ago as 1760, Lorry⁶ put forward the idea that the pulsation of the arteries with cardiac systole might lead to a compression of the venous sinuses, and to a more rapid return of blood to the heart. Monro Secundus⁷ taught that as the skull was a closed box the quantity of blood inside it could not vary except under certain pathological conditions, when its place was taken by effusions. This view was strongly supported by his pupil, Dr. George Kellie,⁸ of Leith, as the result of his experimental and pathological experience, and the theory of the unvarying quantity of blood in the skull has therefore been named the Monro-Kellie doctrine. It must be remembered that at this time the constant presence of cerebro-spinal fluid in the central nervous system was not known, for although it had been described before this by Cotugno, the discovery had been lost sight of. Not till Majendie in 1825 carefully described the presence of this fluid was the Monro doctrine much questioned. Majendie⁹ put forward the theory that with distension and contraction of the vessels of the brain, the cerebro-spinal fluid flowed backwards and forwards between the cranial and the spinal cavities, and this theory with some modifications has practically up to the present been the one generally accepted. Burrows¹⁰ also, in 1846, strongly combated Kellie's views, by experimenting in a somewhat similar direction, and came to the conclusion that the amount of blood inside the cranium could vary to a very considerable extent. This work of Burrows was pretty generally recognised, especially in this country, as having completely refuted the old doctrine of the Edinburgh School, but the results of the magnificent recent work of Leonard Hill tend to show that in its essential points the Monro-Kellie doctrine was fairly correct.

We have seen in speaking of the circulation in the open skull that there are two forms of cerebral pulsation (1) the arterial, and (2) the respiratory. Do such pulsations occur in the closed skull, and, if so, by what means is accommodation made inside the closed cavity for them? It is obvious that with each cardiac systole blood is forced into the arteries of the brain. The cranium is practically a closed cavity, and there must be some provision to accommodate this increased quantity of blood. It has been proved that the brain tissue is incompressible, and therefore there are only two possible means apparently by which the necessary space for the increased arterial blood can be got (1) by displacement of cerebro-spinal fluid, and (2) by displacement of venous blood. As we have seen, the former explanation has been hitherto pretty generally accepted. It has been argued that although the cranium is a closed cavity the spinal column is not; that as the cerebro-spinal spaces of the one cavity are continuous with those of the other, fluid passes from the cranial into the spinal cavity when arterial pulsation occurs, and *vice versa* between the beats. It must be remembered, however, that although the dura mater hangs loose inside the spinal column

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