Aden and its Leprosy Problem.

E. S. PHIPSON.

THE leprosy problem in Aden, though not at the moment of serious dimensions, presents certain unusual aspects arising from its geographical position and from its political associations which threaten to give the problem a wider ambit than would at first appear.

The Fortess of Aden is situated on a peninsula about 12 deg. North of the Equator and 45 deg. East of Greenwich, on the south coast of the ancient province of the Yemen, Arabia. The inhabited peninsula is roughly oval, with a diameter of three to five miles, connected with the continent by a narrow neck of land some three miles long. Aden consists of a huge crater, walled round by precipices, the highest peak being 1775 feet above the sea. A great gap in the circumference of the crater has been rent on its sea face by some later volcanic disturbance, and on this aspect the bed of the crater, but little above the sea level, slopes gently to the sea.

The main town of Aden, with some thirty thousand inhabitants, lies in this crater, almost surrounded by precipitous volcanic hills. On the opposite side of the main peak, known to mariners as " Shum-Shum," is situated the modern shipping quarter, Steamer Point, which skirts part of the fine natural harbour of Aden.

The climate of Aden is trying for many months of the year, particularly in the lulls between monsoons in May and September. The mean shade temperature is roughly 90 deg. F. in the summer months and 75 deg. F. in the winter months, but in certain periods of the year the atmospheric humidity is high, and at these times the climate is very oppressive. The rainfall is scanty, and has an irregular annual average of about three inches. In spite of the many discomforts of life in Aden, it is by no means unhealthy, but prolonged residence causes inevitable deterioration in health. Malaria is now practically non-existent, though constant vigilance is required to keep it so. The local anophelines, now rarely encountered, are *culicifacies* and *subpictus*, while *Culex fatigans* and *Aedes egypti* will breed in great profusion if given an opportunity. The periods of local prevalence of the culicines are often observed to coincide with localised outbreaks of dengue fever which, with bacillary dysentery and, it may be added, chicken pox and mumps, are the only diseases which can be said to be endemic in the Settlement. Mosquito breeding

is kept down to so low a level by the natural aridity of the peninsula and by municipal and other measures that the use of mosquito nets by night is unnecessary, which adds greatly to personal comfort in the hot weather.

Historically, Aden is of great antiquity. Aden formed part of the Yemen under the ancient Humyarite kings. It has been identified with the Eden of Ezekiel xxvii, 23—the Eden whose merchants traded " in all sorts of things : in blue cloths and broidered work ; in chests of rich apparel bound with cords and made of cedar." In the first few centuries of the Christian era, Aden was an important *entrepot* of trade between the provinces of the Roman Empire and the East, and later for many centuries it flourished under Islamic rule ; from the sixteenth century onwards the rulers of Aden were at times the Turks, and at times local Arab chieftains, and its importance gradually diminished. In 1839 it was captured by the British under Captain Haines and has since remained under British rule, until recently as a detached part of the Presidency of Bombay, thirteen hundred miles away to the north-east. Since that time Aden has regained and no doubt surpassed its former glories, and is once again an important centre of transit trade, and still more important as a coaling port, and latterly as an oil-bunkering port, the oil being brought to Aden from Abadan in the Persian Gulf, by sea.

The Protectorate of Aden, as distinct from the fortress and the suburb of Shaikh Othman, embraces a large tract of territory some forty-two thousand square miles in area, forming a maritime belt extending for some hundreds of miles along the southern coast of Arabia ; it includes a number of states of local Arab sultans and chiefs in treaty-relations with the British Government, the rest of the territory being occupied by various semi-nomadic tribes, subservient to one or other of the Arab chiefs and under British protection. North of the Protectorate, lies the territory of the Yemen proper, ruled by an Arab chief, the Imam of Sana'a, who owes allegiance to no one, and his territory, is perhaps unique in being completely immune from "spheres of influence," mandates, or other forms of external political control, or even formal diplomatic contact, although abutting on one of the main lines of maritime commerce.

It is these circumstances which invest Aden with a special interest. It is the only centre of western civilisation within the southern half of the Arabian peninsula, which, therefore, becomes a reservoir of cases of leprosy which tend to gravitate into Aden as the only centre of scientific

and, it may be safely assumed, of humane treatment in this vast area. The population of this area is quite unknown and the degree of endemicity of leprosy is equally unknown, but it is probably highest in those montane and sub-montane districts which lie partly in the Aden Protectorate and partly in the independent territory which rises to the fertile plateau of the Yemen proper, a verdant country, the "*Arabia Felix*" of the Roman Empire, which produces the finest coffee in the world.

It is evident, therefore, that the leprosy policy in Aden cannot be directed merely to the care and treatment of the greatest number of cases consistent with financial means, but it must be fashioned on a compromise between humanity and expediency, political as well as financial; accommodation and maintenance on too lavish a scale must inevitably attract Arab sufferers in such numbers as would embarrass, or even paralyse, the limited arrangements which can be made for their reception.

The accommodation and standard of living require therefore, to be of the simplest possible character, and simple as they are, they are far better than the Arab is accustomed to in his own village.

The segregation and special treatment of cases of leprosy in Aden is of comparatively recent origin. Some twenty-two years ago, the Rev. J. C. Young, M.D., the head of the Keith Falconer (Church of Scotland) Mission, who devoted forty years of his life to its service at Shaikh Othman, and died in harness in 1926, called attention to the increasing numbers of cases from the interior who were presenting themselves for treatment at the Mission hospital, which had then, as it has still, a wide and beneficent connection with the interior of Arabia. The establishment of a leprosy hospital was considered advisable, and in due course it was established as a branch of the Mission hospital at Shaikh Othman, assisted by a small subsidy from the Aden Settlement. Sufferers from this disease from the Hinterland had, of course, presented themselves from time to time for treatment at the Government Civil Hospital, Aden, and the local Settlement Dispensary, but no special arrangements were made for their segregation.

In 1923, the Indian statute, known as the Lepers Act of 1898, was made applicable to Aden, and the Mission Leper Hospital, or more accurately "ward," was re-organised on a rather extended footing in accordance with the Act, assisted by grants from the Government of India as well as from the Aden Settlement. This Act made provision for

the organisation of Leprosy Hospitals, defined the procedure with regard to pauper cases and, in particular, prohibited them from following certain trades and doing certain acts which imply a risk of infection to the public.

In 1926, the lamented death of the Rev. Dr. Young led to an important change in the situation ; the number of cases was still increasing, and the Indian Government and Settlement grants were insufficient to cover the rising cost of maintenance.

During his lifetime, the Rev. Dr. Young, with characteristic generosity, had been in the habit of meeting all deficits out of his own pocket. After his death, the Mission felt, not unnaturally, unable to continue this private subsidy, and the management of the patients was handed over to the Aden Settlement Committee, and was established at Shaikh Othman as a branch of the Settlement Infectious Diseases Hospital, a primitive institution, of which the most imposing feature is its name.

In 1929, the accommodation and standard of equipment at the Infectious Diseases Hospital was considered to be inadequate and unsuitable, and the cases of leprosy were finally transferred to a building in the pleasantest part of Shaikh Othman, which is the property of Government and which was formerly used as a circuit-house, and the medical charge was once more placed in the hands of the Keith Falconer Mission, who are now adequately subsidised from Indian Government and Settlement sources. The general management of the leprosy hospital is in the hands of a Leper Board, constituted as contemplated in the Lepers Act, and consisting of Dr. Petrie, Hon. Medical Officer ; Mr. A. F. Ferram, I.S.O., Superintendent of Shaikh Othman ; Khan Bahadur, M.A.K., Mackawee, an influential Arab merchant, and the writer. The circuit-house has been converted at the expense of the Indian Government into a Leprosy Hospital capable of accommodating twenty-five inmates, including nine females. The hospital stands in pleasant surroundings, in a walled date-garden, and so pleasant is it as a haven from the rigours of the desert that, as indicated above, the difficulty which is likely to be encountered is the excessive number of those seeking admission. In the words of Dr. Petrie, the present Medical Superintendent of the Keith Falconer Mission, and Hon. Medical Officer of the Leprosy Hospital : " The steady rise in admission rate suggests that we are only starting to discover the extent of leprosy in the Protectorate and neighbourhood. In the first quarter (of the year under report) there were six cases ;

in the second, thirteen; in the third, twenty. Since this, the hospital has been full and only three cases were admitted, but thirty were seen and turned away for lack of accommodation."

As regards the actual medical work of the hospital, Dr. Petrie has been good enough to furnish the following account :—

"THERAPEUTIC MEASURES EMPLOYED.

1. *General.*

There can be no doubt as to the efficacy of the general treatment of patients suffering from leprosy. Patients of poor physique and convinced as to their unfitness for physical exertion are put on the regular full diet of the hospital and encouraged to join one of the working parties with the result that they improve both mentally and physically.

2. *Specific.*

Alepol has been the drug of choice. We have administered it intramuscularly, subcutaneously and intradermally in 3% solution, and intravenously in a 1% solution. We have found that a dose of over 5 c.c. of the 3% solution into one spot is invariably followed by considerable pain and the method we now follow is the subcutaneous administration of 3 c.c. of the 3% solution into one or more areas. Thus :—

1st week, Tuesday and Friday: 3 c.c. into the right upper arm.
2nd week, Tuesday and Friday: 6 c.c. in two doses of 3 c.c. into separate areas of the left upper arm.
3rd week, Tuesday and Friday: 9 c.c. in three doses of 3 c.c. into separate areas of the right thigh.

So far, we have not gone on into higher doses but have continued at nine or ten c.c.'s for a month or six weeks, then allowing three weeks rest. *Chaulmoogra oil* is given in the rest-period and to patients who for any reason are deemed unsuitable for *Alepol* injections.

Potassium iodide is practically only used as a test of cure.

3. *Local.*

Trichloracetic acid has been most useful in reducing the size of the leprous nodules. We have also painted the edges of active macules with half-strength solution and the patients themselves declare that it was good, but the evidence is less conclusive.

Diseased bones associated with trophic ulcers have been removed by operation and successfully treated on ordinary surgical lines.

4. *Adjuvants.*

We have only started to use intravenous *mercurochrome* in two of our more septic cases and it is early yet to express an opinion of its efficacy. Other drugs occasionally used have been *fibrolysin* and *sodium morrhuate. Epinephrin* for nerve pains we have found most useful when combined with aspirin."

In February, 1931, the present writer had the pleasure of welcoming Dr. R. G. Cochrane, the Editor of this journal, on a brief visit to Aden, limited to the few hours that the P. & O. mail-steamer stays in port. On that occasion, Dr. Cochrane kindly gave, at my invitation, a lecture-demonstration on the diagnosis and treatment of leprosy at the Settlement Dispensary at Shaikh Othman, which was attended and greatly appreciated, by nearly every medical man in Aden.

The Arab sufferers, although in most cases indigent and accustomed in their own country to a life of penury and partial ostracism, retain the characteristically independent spirit of their race, and are difficult to handle. One is tempted to speculate whether this racial peculiarity may not be exalted by the lepra toxin—a sort of *spes leprotica* similar in nature to its tubercular congener.

To illustrate their peculiar mentality, the following anecdote may be related. It must be remembered that the treatment of these cases, as well as their maintenance and the provision of clothing, is entirely gratuitous. A year or two ago, while the patients were located in the Infectious Diseases Hospital at Shaikh Othman, the Resident received a police telephone message that the inmates were " in revolt " and that the more able-bodied of them had marched out of the Leprosy Hospital in a body, to the neighbouring village of Shaikh Othman and were demonstrating their grievances in a turbulent and threatening manner in public and before the house of the Kazi. The Resident ordered an enquiry, which elicited the fact that the cause of their " revolt " was partly that they did not receive a daily ration of meat (the poorer classes of Arabs rarely eat meat on account of its cost) and in particular that they strongly resented a recent change-over from the semi-opaque preparation of chaulmoogra-derivatives, used in their routine therapeutic injections, to a more refined, but limpid and colourless preparation, which they were convinced was

nothing but water, and that they were therefore being defrauded. The "revolt" was fortunately quelled by peaceful means and they were persuaded once more to accept the hospitality of the Leprosy Hospital!

With patients of this type continuous treatment of selected cases is rarely possible, as no compulsion can be used in segregation and the restriction of vagrant cases under the Act applies only to the Settlement of Aden and not to the hinterland. Only persuasion can be employed in the attempt to ensure continuous treatment, the patients being free to leave the Settlement for the interior whenever they wish. The statistical results of treatment can never therefore be very satisfactory, but the hospital's most important function is the segregation of cases under economical conditions, so that they will not be a danger to the community. But it remains to be seen whether the ultimate results of the provision of organised treatment and greatly improved accommodation may not prove to be embarrassing.

Herein, therefore, lies the leprosy problem of Aden; Aden itself has no vagrant or indigent cases; the Leprosy Hospital, maintained at the joint expense of the Government of India and the Aden Settlement, is filled to overflowing with Arabs, to whom neither of these bodies is under any moral obligation, other than the common obligation of humanity. The British Government, which exercises, through the Resident, a political control in the Protectorate, may be presumed, in theory, at any rate to watch over the interests of sufferers from leprosy from protected territory—a small minority, but nobody other than the Imam of Sana'a, who is not interested in leprosy either in his own domains or elsewhere, can be held responsible for the majority of the leprous inmates of the Hospital, whose home is in the independent territory of the Yemen.

It is not difficult to envisage the probable development of the present position; the gradual drifting of the leprous population, numbering no doubt, many hundreds from the whole of Yemen and the Protectorate, towards Aden. Should this come to pass—and it is difficult to discern, from the present trend of events, any likely alternative—the leprosy problem of Aden may well develop into a political and administrative problem of considerable magnitude.