COMMONWEALTH OF AUSTRALIA.
SCHOOL OF PUBLIC HEALTH AND TROPICAL MEDICINE
THE UNIVERSITY, SYDNEY

FILE OF PAPERS.

SUBJECT: PULAU JEREJAK, LEPER SETTLEMENT, PENANG; STRAITS SETTLEMENTS.

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<th>Letter No.</th>
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Introduction.

Pulau Jerejak is an island lying between Penang Island and the mainland of the Malay Peninsula, about 8 miles from Georgetown, Penang Island.

Pulau Jerejak is the Male Leper Colony of the Straits Settlements, admitting lepers from Singapore, Malacca, Penang and the native State of Kedah. It differs from Sungei Buloh in that it has not been definitely planned but has gradually grown up from simple beginnings. This, of course, has been a great handicap - for the original camp occupies the buildings and site formerly used as the quarantine station. It follows that the long wards, fashionable three decades ago as quarantine barracks, are in no wise suitable as a leper colony. This was realised some years ago when another camp (B) was built, about 1/2 miles from the former Camp A, which, however, was not abandoned.

Camp B merely consists of six wards each accommodating 40-45 patients and one hospital ward.

With the development of the colony system for leper settlements another camp was constructed in 1929, some two miles from Camps A and B. This was called Camp E; here the buildings are of modern construction, and in this report the constructional details of Camp E alone will be described.

Camp E - Constructional details.

(1). Site. Camp E was built in 1929 on a flat tract of land on the western shores of Pulau Jerejak and running up in a valley between the overhanging hills.

(2). General outline. As will be seen from the accompanying diagram the land is roughly triangular in shape with the base along the waterfront. It occupies an area of between 6 and 8 acres. The huts are all of standard size and construction and arranged in groups of 12 around a central communal latrine and bath house. Each hut is completely surrounded by a concrete drain which in turn empties into a lateral drain, these running into the central drain which discharges into the sea.
(3). The huts. There are 52 huts and each stands in its own little garden plot of 50 feet by 50 feet. As can be seen from the plan the hut is 12 feet square and 10 feet high with three windows on each side and one at the back. The whole stands upon a concrete base which extends about 2 feet beyond the walls.

The walls are built of fibro cement sheets upon a wooden framework, a space of 8" being left between the lower end of the walls and the concrete floor and another space of 18 inches between the top of fibro cement and the roof. The apex of the roof is 4'6" above the top of the walls, whilst the eves of the roof extend 2 feet beyond the walls. The roof is of galvanised iron.

The windows are fibro sheets and are hinged at the top and have to be raised and held in position with a timber support.

In front of the house a Dapor has been built about 4½ feet high and about 4 feet from the front wall. All cooking is done in this space.

The furniture consists of wooden bed and a locker for each inhabitant. Most huts accommodate three, some four, lepers.

(4). Latrines. These are built of concrete and are of the trough principle. The trough is divided into compartments by five feet concrete walls, and it is flushed every ten minutes from a cistern operated by means of an automatic flush. The effluent discharges into the sea.

(5). Bath Houses. These are also built of concrete and consist of a large circular water tank from which the patients dip the water and throw it over themselves after the principle of the old fashioned Shanghai bath. Neither the latrine nor bath house are provided with a roof.

(6). Water supply. Across the valley immediately behind the camp a retaining wall has been built, thus damming the water up into a reservoir of 750,000 gallons capacity; an ample supply for the 150 patients housed at Camp E.
(7) Gardens. In the apical half of the triangular area are the patients' gardens, there they grow vegetables which the administration buys.

The Patients.

(1) Source. The patients are drawn from the Straits Settlements and Kedah.

(2) Number.

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<tbody>
<tr>
<td>Chinese</td>
<td>700</td>
</tr>
<tr>
<td>Tamils</td>
<td>150</td>
</tr>
<tr>
<td>Malays</td>
<td>40</td>
</tr>
<tr>
<td>Other Eurasians</td>
<td>23</td>
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913.

(3) On Admission. On arrival at the leper settlement the patients enter the admission ward where they remain for one week. Here the diagnosis is confirmed by:

(i) Clinical means,

(ii) Bacteriological Methods of which there are 3 main tests.

(a) The cut method = the removal of a section of skin to be paraffin embedded and sectioned.

(b) The clip method = when a small snipping is made from the skin and the undersurface is rubbed on a slide and stained.

(c) Nasal smear.

The disease is then classified and hookworm and other concomitant diseases are treated and finally the patient is drafted into one of the camps according to the following scheme:

Camp A. Decrepit and advanced cases,

Camp B. Medium and advanced cases,

Camp E. Early, clean predischarge cases (not necessarily non-infective), C₁ or C₂ or bacteriologically negative.
(4). The daily life of the lepers. Work at Pulau Jerejak is not compulsory but optional.

(a) One hundred and twenty three lepers are employed in the labour gangs of the three camps, whilst a number act as teachers. Lepers are not employed either as dressers or policemen. The remuneration of these lepers is at the rate of menials £4 - 10 a month and teachers £10 - 15 a month.

(b) Many patients are market gardeners. The land is provided free, but the patients have to provide their own seed and fertilizer - human excreta is strictly forbidden. The superintendent buys from the patients all vegetables at market rates, the monthly expenditure being in the vicinity of £275 or A.£40.

(c) Poultry farming proves to be a lucrative following, for the administration pays £200 or A.£30 a month to lepers for poultry.

(d) Some patients spend their time cutting wood which they sell to other patients.

(e) Other lepers own and manage shops, whilst

(f) Coffee shops (Gambling houses) are found scattered through the three camps.

(5). Social intercourse.

Ample provision has been made to keep the patients occupied during their hours of recreation.

(a) Band. The Eurasians and educated Chinese have formed a brass band which gave a very creditable performance for the writer.

(b) Dramatic societies. There are three Chinese, one Tamil and one Malayan Dramatic Society. A Drama is staged at least once a month.

(c) There is a troop of Boy Scouts.

(6). Cooking arrangements.

The arrangements vary at each camp. At Camps A and B the Authorities cook the rice whilst the patients cook their own meat and adjuvants except in the case of the educated Chinese and Eurasians when the whole of the cooking is carried out by the authorities. At Camp C each patient does his own cooking. Rations are issued three times a week.
(7). The future - Hope of Discharge.

All patients are encouraged to look forward to discharge. During the last 10 years it has averaged that 5% of the inmates are discharged each year.

Criteria for discharge. The patient must be bacteriologically negative and free from all active signs of the disease for one year. Upon discharge the health officer of the district is notified and the patient has to submit for periodical examination for the next three years.

Staff.

(1). Medical.

(a). The medical staff consists of two Asiatic medical officers who are directly in charge of the Colony. They of course take their instructions from the Principal Medical Officer, Penang, in whose district Pulau Jerejak is situated.

(b). Dressers; these are non-lepers. It is the belief that the use of lepers as dressers is detrimental to the efficiency of the work, as the lepers tend to have too great a sympathy with other lepers.

(2). Non-medical.

(a). Lay superintendent whose duties consist of constructional work, supervision of the sanitation arrangements and farming.

(b). Police. All policemen are non-lepers. It is thought that it improves the discipline of the station to have non-lepers.

(c). Labourers. There are a few labourers, who act as boats' crews, etc.
Treatment.

1. Anti-Leprotic Routine.

Clinics are held twice weekly at each of the camps when all patients are seen by the Senior Medical Officer who orders the treatment, gives the patient a chit, which he takes to the dressing room, which is superintended by the Assistant Medical Officer.

Intramuscular and intradermal injections are given by the dressers whilst the Assistant Medical Officer gives the intravenous injections.

All treatment is voluntary and consists of intramuscular injections of the Ethyl esters of Chaulmoogra Oil with 4% double distilled creosote added. For intradermal injections, the Ethyl esters with 0.5% iodine added are used. This routine treatment is continued for six months, after that the patients receive a series of intravenous injections of Sodium morrhuate - a 2% solution with ½% phenol added.


(a). The Lepra reactions are treated with intravenous injections of 1% Mercurochrome given in doses of 5-10 ccs. only weekly up to 10 injections. At the same time the patient is given Calcium lactate, gr. x, by mouth, cod liver oil and malt, eggs, chicken and bovril.

(b). Septic leprotic ulcers. These are treated with intravenous injections of iodine. The iodine is dissolved in rectified spirits -

\[
\begin{align*}
\text{Tinct. iodine} & : 1 \text{ cc.} \\
\text{Saline} & : 10 \text{ cc.}
\end{align*}
\]

Costs of Maintenance.

1. Diet, ordinary patients, 27 cents per patient per day, or 9.7 pence.

Eurasian and Educated Chinese boys 60 cents or 21.6 pence per patient per day.
2. Treatment.

The average cost per patient for drugs was 7½ cents per day. This included all forms of treatment.

3. Total Costs.

The total expenditure for the whole settlement was 72 cents or 2½ per patient per day. These figures are based on 1933-34 expenditure statement as furnished to the Director of Medical Services.

Points of interest.

1. Results of treatment.

In the years 1932 and 1933 there were 120 patients discharged from Pulau Jerejak. Of these cases 23% had not at any stage had any anti-leprotic treatment. It was suggested by the Medical Officers that this was the result of good food, regular hours and good hygienic conditions.

2. Diagnostic Methods.

The thick blood film method, as advocated by Sardjito and Sitanal, has not been practised as a routine, but shortly after the publication of the first article by these two workers, the method was tested at Pulau Jerejak. One hundred skin positive cases, diagnosis being confirmed by both clips and cut methods, were examined by means of the thick blood film method, and in only 30 were acid fast bacteria found.

Antimalarial Provisions.

The vector of Malaria at Pulau Jerejak is Anopheles maculatus. All breeding places within the half mile circle around the three colonies have been eradicated by means of subsoil drains, rock drains, and any suitable methods that succeed in placing the water permanently under ground.

The water from the subsoil drains has been used for a variety of purposes. Some has been diverted into bathing pools, others to the gardens, whilst most of it runs into the water reservoirs.
1. The wooded slopes of Pulau Jerajak - just north of Camp B.

2. The exterior of the Assembly Hall - Camp A.
3. The interior of a ward - Camp A.

4. Latrines and bath houses - Camp A.
5. A garden scene between the wards - Camp A.

6. The exterior of the wards - Camp B.
7. Interior of a ward - Camp B.

8. The exterior of a hut - Camp E.
   Note the canvas shelter over the cooking pots instead of the suggested dapor.
-9. A side view of a hut with surrounding garden.

-10. View of gardens and huts. On the left can be seen a latrine with overhead automatic cistern.
- 11. Huts in their garden plots - Camp E.

- 12. The Gospel Hall - Camp E.
13. The Reservoir - Camp E.

14. A general view of the gardens - Camp E.
15. The chicken coops of the poultry farmers - Camp E.

16. The interior of a Chinese shop - Camp E.
17. Band Rotunda for the use of Eurasians and educated Chinese boys - Camp A.

18. A view of the Band Rotunda showing its picturesque setting on the sea shore.
19. The troop of Boy Scouts.

20. The Chinese school boys and their teacher.
21. The exterior of a coffee shop - Camp A.

22. A well - Camp E - fed by subsoil antimalarial drainage pipes. The water is used for gardening purposes.