

Annual medical and sanitary report / Trengganu.

Contributors

Terengganu. Medical Department.

Publication/Creation

Singapore : Govt. Printer., [1937]

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AC. 226

TRENGGANU.

Annual Medical and Sanitary Report

For the Year 1937.





TRENGGANU

Scale, 12 Miles to an Inch

REFERENCE

Roads

Alienated Land

Mining

Mining Concession



TRENGGA

State of New York

REVENUE

1880

1881

1882

1883

1884

1885

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1889

1890

1891

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1930

1931

1932

1933

1934

TRENGGANU.

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TRENGGANU

Annual Medical and Sanitary Report

For the Year 1937

TRENGGANU.
ANNUAL MEDICAL AND SANITARY REPORT
FOR THE YEAR 1937.

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I.—ADMINISTRATION.

(A) Staff.

Dr. G. I. H. Braine, who is an officer seconded from the Malayan Medical Service, remained in charge of the department throughout the year.

Dr. Ten Yoon Fong, L. M. S. and Dr. Raman Peruvanam Seshadri, L. M. S. continued to serve in their posts as Assistant Medical Officers of Kuala Trengganu and Kemaman respectively.

Dr. Suppiah Kanagalingam, L. R. C. P. & S. (Edinburgh), L. R. F. P. & S. (Glasgow) was appointed Assistant Medical Officer, Dungun on 12. 6. 1937.

The strength of the staff at the end of the year was as follows:—

| | | | |
|----------------------------|---------|----|---|
| Medical Officer | .. .. . | 1 | |
| Assistant Medical Officers | .. .. . | 3 | |
| Male Dressers | .. .. . | 28 | (one special grade, one grade I, seven grade II, eleven grade III and eight probationers) |
| Nurse | .. .. . | 1 | (grade III) |
| Midwives | .. .. . | 5 | |
| Vaccinators | .. .. . | 5 | |
| Health Inspectors | .. .. . | 3 | |
| Clerks | .. .. . | 4 | |
| Steward & Storekeepers | .. .. . | 2 | |
| Menials | .. .. . | 42 | |

This represents an increase of two dressers, one qualified health inspector and eight menials.

The distribution of the staff, appointments, promotions, resignations and the results of examinations are given in an appendix (A) to this report.

(B) Legislation.

The Deleterious Drugs Enactment which had been prepared has not yet been published.

An enactment to provide for the destruction of mosquitos was not passed by Government. The Medical Officer proposes to pursue the matter further.

The following enactments were passed during the year:—

A new Town Boards Enactment, No. 12 of A. H. 1355, was passed on 18. 2. 1938. Rules under this enactment came into force on 14. 9. 1937.

A Quarantine and Prevention of Diseases Enactment, No. 6 of A. H. 1356, was passed on 6. 3. 1937.

A Workmen's Compensation Enactment, No. 12 of A. H. 1356, was passed on 22. 6. 1937. Rules under this enactment also came into force.

A Pensions Enactment, No. 14 of A. H. 1356 was passed on 1. 7. 1937.

A Poisons Enactment, No. 15 of A. H. 1356 was passed on 16. 7. 1937. This replaced the old rules for druggists which were unsatisfactory.

A Red Cross Enactment, No. 16 of A. H. 1356, was passed on 11. 8. 1937 and controls the use of the heraldic emblem of the Red Cross.

A Registration of Dogs Enactment, No. 17 of A. H. 1356 was passed on 11. 8. 1937.

A Registration of Dentists Enactment, No. 23 of A. H. 1356, was passed on 12. 9. 1937. It supersedes the old rules for the registration of dentists which gave Government very little control over their activities. Draft rules have been prepared but have not yet been passed.

New rules under the Labour and Burial Enactments were also published.

(C) Finance.

The actual expenditure was as follows:—

| | Actual Expenditure |
|-----------------------------|-----------------------|
| Personal Emoluments | \$65,842.36 |
| Annually Recurrent | 45,003.80 |
| Special Votes | 1,640.00 |
| | <u>\$112,516.16</u> |

(N. B.—\$1.00 = two shillings and fourpence).

The estimates for 1938 provide for an expenditure of \$126,092.00 which is 5.09% of the total estimates for the State.

The revenue collected by the Medical Department was as follows:—

| | |
|--|-------------------|
| Hospital charges | \$1,946.25 |
| Sale of medicine | 1,004.40 |
| Licences to druggists and dentists | 65.00 |
| Registrar, Births and Deaths | 60.00 |
| Miscellaneous | 4.00 |
| Total Revenue | <u>\$3,079.65</u> |

The following table compares the financial position with that of previous years:—

| Year. | Revenue from Medical Department. | Revenue of State. | Expenditure of Medical Department. | Expenditure of State. | Percentage of Medical to State Expenditure. |
|-------|--|----------------------|--|--------------------------|---|
| 1933 | \$517.15 | \$1,165,578.00 | \$56,465.76 | \$1,060,306.00 | 5.25% |
| 1934 | 764.05 | 1,699,319.12 | 59,380.93 | 1,405,157.17 | 4.23% |
| 1935 | 1,693.68 | 2,196,949.07 | 69,601.05 | 2,038,841.49 | 3.41% |
| 1936 | 1,929.46 | 2,431,519.52 | 92,928.96 | 1,911,730.81 | 4.86% |
| 1937 | 3,079.65 | 2,660,398.98 | 112,516.16 | 2,645,686.33 | 4.25% |

The expenditure of the State included \$619,403.54 in respect of repayment of loans to the Straits Settlements Government.

(D) Buildings.

The following buildings were completed during the year:—

Kuala Trengganu.—

A ward containing 6 rooms for male paying patients with kitchen attached.

A general ward with accommodation for 20 male patients to replace an old temporary ward which was demolished.

A new temporary ward to accommodate 6 male patients suffering from infectious diseases to replace the old ward for lepers which was burnt.

The store was extended while a new store for fire-wood, etc. was built.

The old water-tank was replaced by a larger one and new piping was connected to many of the wards.

Kuala Dungun.—

The nucleus of a new hospital was built on a good site on the sea-shore beside the dispensary. It comprises a ward for 20 male patients with kitchen, dhobi-house and quarters for two attendants. Houses were built for the Assistant Medical Officer and Midwife. The ward was opened on the 1st. of May.

Chukai, Kemaman.—

A small hospital was commenced during the year.

The old dispensary was abandoned and the site of the old Malay School selected. The old school-room was converted into a general ward for 16 females but it was only possible to occupy it on the 15th of December.

A general ward for 20 males, a kitchen and a dhobi-house were completed as well as houses for the Assistant Medical Officer, the midwife and the dresser-in-charge; it is expected that an administrative block with operating room and dispensary and a small mortuary will be completed early in 1938. In the meantime, a portion of the male ward is serving as dispensary and operating-room and there is space for only 12 beds.

II.—PUBLIC HEALTH.**(A) Population.**

The population at the 1921 census was 153,765 while at the 1931 census it was 179,789 of which 92,354 were males and 87,435 were females. It comprised:—

| | | | | | | |
|------------|----|----|----|----|----|---------|
| Malaysians | .. | .. | .. | .. | .. | 164,564 |
| Chinese | .. | .. | .. | .. | .. | 13,254 |
| Indians | .. | .. | .. | .. | .. | 1,371 |
| Europeans | .. | .. | .. | .. | .. | 35 |
| Eurasians | .. | .. | .. | .. | .. | 15 |
| Others | .. | .. | .. | .. | .. | 550 |

The mid-year population for 1937 calculated by the geometrical method was 198,246 and the rates for births and deaths are calculated on this basis. This method of calculation is suitable for Trengganu as there is very little change in the population from immigration and emigration and in any case the available statistics for these are incomplete. The Indian population, however, has probably doubled itself since the year 1931 as there now over 1,200 Indians on the Jabor and Kretay Estates where there were none before.

(B) Births.

There were 6,845 (7,105)* live births registered during the year of which 3,501 (3,725) were males and 3,334 (3,380) were females; the ratio of male to female births was thus 1,050 (1,102) per 1,000 females born. The live birth-rate was 34.53 (36.51) per mille.

The number of still births recorded was 295 (250) giving a rate of 41 (34) per 1,000 total births (Malays 285, Chinese 7 and Indians 3).

Appendix B sets out the births according to race.

(C) Deaths.

The number of deaths registered was 4,427 (4,683) giving a rate of 22.33 (23.99) per mille; of these 2,406 (2,554) were males and 2,021 (2,129) were females. The highest number of deaths was 511 (in June) and the lowest 305 (in October). Deaths of children under five years of age numbered 1,717 (2,039) or 38.78% (43.54) of the total deaths.

*The second number, in brackets, refers throughout the report to the figures of the preceding year, which are given for comparison.

Appendix B shows the deaths arranged according to sex, race and age-group.

Causes of Deaths.—The main causes of deaths as reported during the last five years have been:—

| | 1933 | 1934 | 1935 | 1936 | 1937 |
|---|-------|-------|-------|-------|-------|
| Unspecified fever and malaria (v.i.) .. | 2,061 | 2,529 | 2,557 | 2,661 | 2,761 |
| Convulsions | 786 | 1,031 | 996 | 1,095 | 867 |
| Intestinal Diseases | 154 | 273 | 264 | 172 | 183 |
| Beri-beri | 64 | 68 | 76 | 61 | 23 |
| Respiratory diseases | 45 | 134 | 143 | 140 | 90 |
| Maternal mortality | 56 | 51 | 77 | 64 | 53* |
| Old age | 214 | 308 | 238 | 217 | 212 |
| Accidents | 70 | 63 | 50 | 66 | 60 |
| Other causes | 169 | 133 | 218 | 197 | 182 |
| Total .. | 3,619 | 4,590 | 4,619 | 4,683 | 4,431 |

A closer analysis of the causes of deaths would be useless for reasons given in previous reports and the number of deaths certified by qualified medical practitioners amounted to less than 3% of the total.

Of the 2,761 cases of unspecified fever and malaria, 84 were due to malaria. Nineteen were stated to be due to *demam kepialu* which means a long, continuous fever and might be possibly be enteric or typhus. No cause can be assigned to the others.

Noxious Animals.—Eight (4) persons were killed by tigers, one by an elephant and one by a snake.

Maternal Mortality.—Fifty (64) women were stated to have died as the result of child-birth giving a rate of 7.0 (8.71) per thousand total births (alive and still); the rate for Malays was 6.93. Three Malay women also died as the result of abortion.

*Includes 3 deaths from abortion.

(D) Infantile Mortality.

The number of deaths of children aged under one year was 1,202 (1,514) or 27.15% (32.35%) of the total number of deaths of which 699 (872) were males and 503 (642) were females. The infantile mortality rate was 175.60 (213.09) per mille. The mortality rate of children under the age of 4 weeks per 1,000 live births was 73.05 (90.78).

The rates according to race for the last two years have been:—

| | 1936 | 1937 |
|-----------------|--------|--------|
| Malays | 216.82 | 178.17 |
| Chinese | 167.41 | 152.48 |
| Indians | 133.33 | 192.31 |
| Others | 170.73 | 90.90 |

The following table shows the infant mortality rates according to district for the past five years:—

| | 1933 | 1934 | 1935 | 1936 | 1937 | 1937 | |
|-----------------|--------|--------|--------|--------|--------|----------------|-----------------------|
| | | | | | | No. of births. | No. of infant deaths. |
| Besut .. | 140.14 | 157.35 | 115.01 | 182.13 | 146.23 | 848 | 124 |
| Setiu .. | 229.68 | 196.01 | 172.98 | 283.15 | 162.17 | 259 | 42 |
| Batu Rakit .. | 202.45 | 248.10 | 226.74 | 288.21 | 150.11 | 473 | 71 |
| K. Trengganu .. | 149.59 | 236.19 | 200.66 | 201.72 | 174.89 | 3,082 | 539 |
| Ulu Trengganu | 128.32 | 106.51 | 269.07 | 141.37 | 139.10 | 453 | 63 |
| Marang .. | 141.73 | 186.70 | 239.32 | 190.71 | 149.28 | 335 | 49 |
| Dungun .. | 186.67 | 299.42 | 257.31 | 280.75 | 207.09 | 396 | 82 |
| Paka .. | 255.03 | 314.29 | 317.92 | 276.07 | 267.70 | 161 | 43 |
| Kemasek .. | 224.22 | 307.69 | 238.99 | 278.78 | 252.81 | 178 | 45 |
| Kemaman .. | 224.22 | 247.27 | 250.76 | 230.78 | 218.18 | 660 | 144 |
| Whole State .. | 163.75 | 221.33 | 207.65 | 213.09 | 175.60 | 6,845 | 1,202 |

With the exception of Ulu Trengganu which lies inland from Kuala Trengganu, this table is arranged geographically, Besut being in the north and Kemaman in the south. It is interesting as it shows that the infantile mortality rate is higher in the south of Trengganu. The rate at Besut, which has been comparatively low ever since registration was started, approximates to that prevailing in the neighbouring State of Kelantan (130.07 in 1936); the Besut people are to all intents and purposes Kelantan folk resembling them in speech and appearance.

In the most inland district of the Besut, Trengganu, Marang, and Dungun river basins the rate was 132.99 in spite of the fact that these districts are the most malarious in the State while at Kuala Trengganu, Chukai and Kuala Kemaman, where the spleen rate of school children was 0.31%, the combined rate was 183.44. It would seem, therefore, that malaria is not one of the major factors involved. In the inland districts, where money is scarce, breast-feeding is perforce the usual method of feeding. In the towns, tinned milks and usually inferior brands at that have taken in place of the natural method; this is probably on account of vanity on the part of the mother and also the belief that tinned milk is superior. Breast feeding is often stopped at once on the first sign of indigestion. Very few can read the simple directions on the tins if there are any while domestic measures of the correct size are often not available. It is usual to supplement the milk diet from the beginning with rice and cook bananas and if the child is not thriving this regime is supplemented by the addition of biscuits and other foods. No definite feeding times are observed and the child is fed when it cries; it is difficult in many cases to know what to do here for the sun is still the clock as far as the majority of the Trengganu women are concerned. One may expostulate with the father and mother with a fair degree of success but the grandmother or other relation will frustrate these endeavours.

But incorrect feeding is not the only cause as is illustrated by the case of Kuala Dungun. This town was a little fishing village until the advent of the Nippon Mining Co. in 1929 when the population rapidly increased and the conditions of extreme squalor prevailed. Reconstruction of the town has now been going on since 1935 and large portions of the old town have been demolished while new shop-houses, cooly lines, quarters etc. have been built. The infantile mortality rate was 400.0 in 1934, 309.09 in 1935, 296.55 in 1936 while it was 240.0 in 1937. Progress in sanitation has not been so marked in other towns but it has doubtless played a great part in reducing the rate which has always been higher in the towns than in the rural districts.

Improvement, however, is steady although in view of the relatively small numbers involved, a reduction in rate cannot be expected each year. In the period 1928-1932 there were 7,947 infant deaths giving a rate of 274.89 while during the last quinquennium the number of deaths was 6,741 giving a rate of 195.89 although it must be noted that during the former period there was no registration of still-births while registration of births was not so complete.

(E) Registration of Births and Deaths.

The Medical Officer is the Registrar while he has a clerk who acts as Assistant Registrar. There are Deputy Registrars at the following 42 places:—

Hospitals, Kemaman and Dungun—Assistant Medical Officers
 28 Police Stations—Officers in charge
 2 Customs Offices—Officers in charge
 10 Offices of Penghulus (district head-men).

It is considered that registration is now fairly complete—but there were 14 prosecutions for failure to register births and 3 for failure to register deaths.

The following table shows the number of births, deaths and deaths of infants with the corresponding rates since the inception of registration in Trengganu. The mid-year population has been calculated from the census figures of 1921 and 1931 by the geometrical method:—

| Year. | Mid-year Population. | Number of Births. | Birth-rate. | Number of Deaths. | Death-rate. | Number of Infant Deaths. | Infantile Mortality rate. |
|-------|----------------------|-------------------|-------------|-------------------|-------------|--------------------------|---------------------------|
| 1927 | 169,550 | 3,940 | 23.24 | 4,980 | 29.96 | 1,403 | 356.09 |
| 1928 | 172,222 | 4,555 | 26.45 | 4,847 | 28.14 | 1,619 | 355.43 |
| 1929 | 174,936 | 4,841 | 27.67 | 4,763 | 27.23 | 1,643 | 359.39 |
| 1930 | 177,693 | 6,189 | 34.83 | 4,591 | 25.84 | 1,573 | 254.14 |
| 1931 | 180,493 | 6,489 | 35.05 | 4,323 | 23.05 | 1,469 | 226.38 |
| 1932 | 183,338 | 6,836 | 37.29 | 4,809 | 26.24 | 1,643 | 240.35 |
| 1933 | 186,227 | 7,078 | 38.01 | 3,619 | 19.43 | 1,159 | 163.75 |
| 1934 | 189,161 | 6,330 | 33.46 | 4,590 | 24.27 | 1,401 | 221.33 |
| 1935 | 192,142 | 7,055 | 36.72 | 4,619 | 24.04 | 1,465 | 207.65 |
| 1936 | 195,170 | 7,105 | 36.51 | 4,683 | 23.99 | 1,514 | 213.09 |
| 1937 | 198,246 | 6,845 | 34.53 | 4,427 | 22.33 | 1,202 | 175.60 |

III.—HYGIENE AND SANITATION.**(A) Special Diseases.**

The most reliable information as to the incidence of disease in Trengganu is to be obtained from the statistics of patients treated by the Medical Department. As has been pointed out above, the reports of deaths are more trustworthy as to the fact than as to the cause.

(i) Malaria.

The incidence varies widely in different parts of Trengganu. The coast-line, where about two-thirds of the population resides, is fairly free from it as is shown by the spleen rates ascertained at school inspections. It is fortunate that the two largest towns, Kuala Trengganu and Chukai, Kemaman (including Kuala Kemaman) are situated on or near the coast; the spleen rates here were 0.19% and 0.76% respectively. There are some malarious villages on the coast, however, such as Kretay where the spleen rate is always found to be over 20% (27.42% in 1937); in such places, the flat, sandy plain is broken by hills. The further one goes inland, the higher becomes the incidence of the disease. At Pasir Gajah school, for instance, 11 miles inland from Chukai the spleen rate was found to be 42.86%. In the region of the Trengganu river, on the other hand, it is only above Kuala Brang that many cases with enlarged spleen are encountered and along the lower reaches of the river, the Medical Officer has examined groups of 15—20 children without finding one such case. In the upper reaches of the various rivers in the north of Trengganu, malaria is extremely prevalent and in the most distant villages practically all the children with the exception of some very young babies have enlarged spleens; the incidence in the corresponding districts of the south of Trengganu appears to be lower and averages about 50%. Fortunately the population in these districts is sparse as the inhabitants live

mainly by shifting cultivation which is prohibitive of large villages. The islands lying off the coast of Trengganu are highly malarious especially Pulau Perhentian where the spleen rate is over 90%; in 1937 there were 8 births and 6 deaths here of children under the age of one year. The rate at Redang Island is lower, being 35.5% in 1937. The population on these islands is small and probably does not amount to 800 people.

The following figures are relevant:—

| | 1936 | 1937 |
|--|--------|--------|
| Number of deaths reported as being due to malaria .. | 136 | 84 |
| Number of deaths reported as being due to fever unspecified | 2,525 | 2,677 |
| Number of deaths reported as being due to convulsions .. | 1,095 | 867 |
| Total death rate per mille | 23.99 | 22.33 |
| Number of out-patients treated by Dept. for malaria .. | 17,601 | 20,860 |
| Percentage " " " " " .. | 13.43 | 14.64 |
| Number of in-patients treated by Dept. for malaria as the principal disease | 389 | 579 |
| Percentage of in-patients treated by Dept. for malaria as the principal disease | 15.82 | 16.99 |
| Percentage of Malays (i.e. the stable population) admitted into Government hospitals suffering from malaria as the principal disease | 5.83% | 7.08% |
| Spleen rate of school children | 2.78% | 3.02% |

As regards the mines and estates, there were 15 deaths from this cause in an average monthly population of 7,073 as compared with 19 deaths in an average monthly population of 5,516 during 1936 but the number of case treated increased.

The conclusion is that any increase in malaria during the year if any was slight.

(ii) Dangerous Infectious Diseases.

There was no case of plague, cholera, smallpox or other dangerous infectious disease.

Vaccination against smallpox.—Primary vaccinations numbered 11,742 and revaccinations 652, a total of 12,394 as compared with 12,774 in 1936. No difficulties are encountered by the vaccinators in performing their work. The details are as follows:—

| | Primary Vaccinations. | Revaccinations. | Total. |
|------------------------------------|-----------------------|-----------------|--------|
| Vaccinator Besut | 3,724 | 121 | 3,845 |
| Vaccinator Kuala Trengganu | 3,450 | 120 | 3,570 |
| Vaccinator Kuala Brang | 1,167 | 129 | 1,296 |
| Vaccinator Dungun | 1,449 | 118 | 1,567 |
| Vaccinator Kemaman | 1,493 | 164 | 1,657 |
| Dispensaries | 93 | 0 | 93 |
| Travelling Dressers | 366 | 0 | 366 |
| Total | 11,742 | 652 | 12,394 |

(iii) The Typhus Group of Fevers.

The following table shows the number of cases which have been diagnosed so far;—all have been confirmed by serological tests:—

| Type Serological Type. | "Scrub" Typhus B. Proteus X"K." | "Shop" Typhus B. Proteus X"W." | Deaths. |
|---------------------------|------------------------------------|-----------------------------------|---------|
| 1935 | 3 | 0 | 1 |
| 1936 | 2 | 2 | 1 |
| 1937 | 2 | 1 | 0 |

The "shop" type case came from Kuala Trengganu; of the others, one came from Kuala Brang and one from Kuala Trengganu.

(iv) Bowel Diseases.

The number of deaths reported to have been due to diseases of the bowel was 183 (172).

The continued low incidence of dysentery and enteric fever is remarkable in view of the low hygienic standard that obtains in regard to conservancy and water supplies. Doubtless the filtering action of the sandy soil on the coast plays a great part while the people living on the banks of the rivers are too scattered to pollute the rivers to any serious extent.

Dysentery.—Sixty-two (41) cases were treated in Government Hospitals of which 19 (15) were amoebic while 196 (169) were treated as out-patients of which 24 (64) were reported as amoebic. In addition, 38 cases of dysentery were reported from the estates and mines. There was no epidemic.

Enteric Fever.—Only 9 (12) cases were reported and there was no (3) deaths.

Helminths.—These are very prevalent and 72.02% (66.78) of all specimens of stool examined at the hospitals and dispensaries had some kind of helminthic infection which was usually multiple (microscopic film method). The worms encountered were:—

| | |
|-----------------------|--------------------|
| Ankylostoma | in 27.36% of cases |
| Ascaris | in 52.32% „ „ |
| Trichuris | in 45.18% „ „ |
| Strongyloids | in 0.35% „ „ |
| Lambliia intestinalis | in 0.06% „ „ |

No others were seen during the year.

The stools from one hundred and sixteen pupils of a school in Kuala Trengganu were examined (one slide) and 111 had some kind of helminthic infection.

Treatment by santonin and oil of chenopodium is very popular and 21,220 patients were treated by the Medical Department as the principal disease.

(v) Cerebro-spinal Meningitis.

There was no case of cerebro-spinal meningitis.

(vi) Tuberculosis.

Ninety (140) people were reported to have died of respiratory disease and 51 (51) of these deaths were said to have been due to tuberculosis. Seventeen of these deaths occurred in Government Hospitals and accounted for 25.76% (25.9) of the total deaths there.

There is no overcrowding in the houses, at least among the Malays, for 1931 census showed that the house density in Trengganu was only 4.3. Most of the cases that came to the Government hospitals are Chinese.

(vii) Beri-beri.

Most of these cases occur towards the end of the north-east monsoon. The incidence is greater among the Chinese than among the Malays while it is not common in the case of Indians. In women, it is usually noted after a confinement. It often becomes manifest during an attack of malaria while it is a complication of a large proportion of our few enteric fever cases. The disease is common on the coast where the population depends on fishing for a livelihood and buys the polished rice which it eats but it is rare in the interior where the home-grown, unpolished rice is the staple diet.

The disease was not so much in evidence this year. One thousand one hundred and ninety (1,412) cases treated by the Medical Department. Only 23 (71) deaths were reported; this result is in some degree due to the use of concentrated injections of Vitamin Bi which were used by Mines and Estates as well as the Government Hospitals and Dispensaries. There were 4 deaths due to beri-beri on the Mines and Estates during 1936 but there was no death during 1937 while the death rate in the Government Hospital was 1.85% per 100 admissions as compared with 7.76% during the period 1932—1936.

(viii) Yaws.

The number of cases treated by the Department during the last five years have been:—

| | Admissions In-patients. | Percentage to Total Admissions. | Out-patients Treated. | Percentage to Total number of Out-patients Treated. |
|------|----------------------------|------------------------------------|--------------------------|---|
| 1933 | 473 | 26.92 | 4,291 | 4.68 |
| 1934 | 422 | 23.24 | 3,995 | 4.24 |
| 1935 | 324 | 13.68 | 4,334 | 3.78 |
| 1936 | 257 | 10.45 | 2,845 | 2.17 |
| 1937 | 231 | 6.78 | 3,694 | 2.59 |

Of 2,648 school children examined, only 3.80% showed signs of yaws as compared with 9.97% in 1936; none of these showed signs of the early stages being mostly tertiary lesions of the hands and feet. It is now unusual to see any of the children in the towns and most of the villages suffering from the early stages. The disease is still common, however, in certain areas.

Attention has been repeatedly drawn in these reports to the fact that the Trengganu Malays are not fond of injections although the Malays who enter hospital have no such fears. The explanation given was that injections of sodium-bismuth-tartrate were once administered as a routine which caused a local and a focal reaction which were sometimes severe. This is undoubtedly true but it is also due to the fact that "stovarsol" has such a tremendous—and justified—reputation; this drug has been known to them for a long time. Formerly, there was not enough money available to issue this drug in quantity but it was found possible to purchase a fair supply at the end of the year. The writer organized a campaign in the Kuala Trengganu district and held fortnightly clinics in six villages a few miles from Kuala Trengganu where the disease was known to exist. The response was dramatic, people bringing their children from places miles away. Only children were given the drug but it was also possible to persuade quite a number of adults to receive injections as well. This campaign accounts for the increase in the number of out-patients treated. There is no doubt that mass treatment with stovarsol is the solution of the problem; it may be a little more expensive than injections of neoarsphenamine but a lot of time is saved in treatment and no great skill is required on the part of the dressers. The State, which has never been so prosperous, can easily bear the expense.

A curious point worth noting is that the Malays do not like treatment to be given to their children until the mother yaw fully developed; they say that if this is done "the poison enters the system". The explanation may be that untreated cases with marked cutaneous lesions are less liable to develop late lesions (cases treated by Malay medicine are virtually untreated for they have no effective drug).

(ix) Other Infectious Diseases.

Chickenpox.—Small out-breaks occur from time to time all over the State. 38 (58) cases were reported with no death.

Diphtheria.—No case was reported.

Influenza.—This term includes the common cold; 4,797 (4,403) cases were treated by the Medical Department.

Measles.—Twenty-five (69) cases were reported and there was no (0) death from this cause. Twelve of these cases occurred on the Jabor Valley Estate, the disease having being introduced by Indian children who had newly arrived on the Estate.

Mumps.—Forty-four (39) cases were recorded with no (0) death.

Tetanus.—There was only one case and the patient survived.

Whooping Cough.—Thirty-one (95) case was recorded, all from the Jabor Valley Estate where there were two outbreaks in March and May.

(B) GENERAL MEASURES OF SANITATION.

(i) Town Boards and Staff.

There are Town Boards at the following ten places:—Besut, Batu Rakit, Kuala Trengganu, Marang, Kuala Dungun, Paka, Kretay, Kemasek, Kijal and Chukai, Kemaman. In most cases there are unofficial as well as official members on the Boards and in all cases the Presidents are Malays.

During the year, the Medical Officer was formally appointed Health Officer, Kuala Trengganu while the Assistant Medical Officers of Kemaman and Dungun were appointed Assistant Health Officers at Chukai and Dungun (and Paka) respectively. There are Health Inspectors in each of these places while the Dressers act as Health Inspectors in some of the smaller places. A Malay Town Board Inspector from Besut received a short training at Kuala Trengganu. The Doctors and Health Inspectors pay visits to the other towns and give advice.

Work has been greatly facilitated by the passing of a new Town Boards Enactment and Rules.

The subordinate staff in the principal districts is as follows:—

| | Overseers | Mandors. | Drivers. | Coolies. | | | Total. |
|---------------------------------------|-----------|----------|----------|---------------------|---------------------|---------------|--------|
| | | | | Cleansing & Padang. | Markets & Lighting. | Conservancy. | |
| Besut, Kg. Raja & Kuala Besut | 1 | 1 | — | 7 | (on contract) | — | 7 |
| K. Trengganu | 1 | 2 | 4 | 48 | 9 | 6 | 63 |
| Kuala Dungun | — | 1 | 1 | 9 | 1 | 3 | 13 |
| Kemasek (Kuala Kemasek & Ayer Jerneh) | — | — | — | 4 | 2 | — | 6 |
| Chukai, Kemaman | — | 1 | 1 | 9 | 2 | (on contract) | 11 |

Use is also made of prisoners. Elsewhere there are only seven coolies.

(ii) Anti-malaria Measures.

As has been pointed out, the larger towns are free from malaria and anti-malaria measures are most required where such are most difficult to achieve.

No oiling is done by the Government except at Marang where there is a ravine, neglect of which always leads to out-breaks of malaria.

Mosquito surveys were made by the Health Inspectors at the following places in addition to the routine work performed in the towns:—

Kampong Jaya, Chukai—a few cases of benign tertian malaria occur here; *Anopheles philippensis*, *vagus*, *sinensis* and *kochi* were found.

Saberang Dungun—*Anopheles kochi* and *vagus* were found in a swamp which was drained.

Kampong Nibong, Dungun, on the property of the Nippon Mining Company—*A. umbrosus*.

Kretay Plantations & Estates—*A. vagus* and *kochi*.

Kajang Mine.—*A. maculatus*, *sinensis*, *vagus* and *kochi*.

Sungai Ayam Mine.—*A. sinensis*, *kochi* and *vagus*.

Jabor Valley Estate.—*A. maculatus*, *kawari* and *sinensis*.

(iii) Sewage Disposal.

(a) Kuala Trengganu.—A "double-pail" system was started by the Town Board on the 1st. of August and superseded the work of a private company. 475 latrines were being served at the end of the year including 148 belonging to Government offices and institutions. The pails are carried by a 27 H.P. Bedford Lorry of excellent type with steel compartments. There is a good trenching ground extending to 8 acres complete with washing plant, septic tank, drying-shed and store. A second lorry was purchased towards the end of the year and the system is to be extended.

(b) Kuala Dungun.—The small conservancy system was extended by the purchase of a Bedford lorry similar to that in use at Kuala Trengganu and a suitable trenching ground was obtained. The lorry started work on the 5th. of September. The number of latrines served at the end of the year was 121 but steps are to be taken to increase this number.

(c) Chukai.—The town is well served by a private contractor; the number of latrines served increased from 205 to 270.

Elsewhere there are a number of pit-latrines and latrines built over rivers but as a rule there is no proper method of disposal, the fore-shore or river, a clump of vegetation or the space under the house being utilized.

(iv) Refuse Disposal.

Disposal of refuse is by control tipping in the larger towns and by burning and burying in the villages. Three lorries remove the rubbish in Kuala Trengganu and one at Kemaman while two bullock carts are used at Kuala Dungun.

1,000 dust-bins were purchased by the Medical Officer for the use of the State and were distributed among the 6 largest towns for sale. There is a marked disinclination on the part of the public to buy these in Kuala Trengganu but a list is being compiled of owners of the shops and bigger houses who will be compelled to purchase them. A great deal of time is wasted by the Town Board coolies in cleaning up piles of rubbish on the streets in front of houses. A number of large concrete, iron and wooden dust-bins are provided by the Town Boards on the main streets but they are too few in number.

(v) Water Supplies.

In all the towns and larger villages water is obtained from shallow and for the most part unprotected wells while in the up-country districts it is usually obtained from the rivers. The water is of fair quality thanks to the sandy nature of the soil but in the larger towns a certain amount of pollution goes on account of the absence of proper drainage system.

The position as regards water is unsatisfactory in certain of the crowded parts of Kuala Trengganu especially on the banks of the river where the water is salty and cannot be used for consumption. Water is sold to the people here by bullock cart but the water comes from two wells which are potentially dangerous. Investigations are to be made in 1938 for purer sources and apparatus for boring is to be ordered.

Permission has to be obtained from the Boards before new wells can be built and a good site and proper construction are demanded.

(vi) Drainage.

The drainage systems are poor and concrete drains are few. Earth drains are hard to maintain owing to the sandy nature of the soil. Towards the end of the year a survey was started in Kuala Trengganu and levels were taken with a view to introducing a system of main drains.

(vii) House Inspections.

The inspection of houses is regularly performed at Kuala Trengganu, Kuala Dungun and Kemaman by the Health Inspectors and recommendations are made to the Town Boards.

94 houses were recommended for demolition at Kuala Dungun and 30 houses and 15 kitchens at Kuala Trengganu while similar action was taken in a number of cases in the other towns. Action has already been taken in the majority of these cases.

(viii) School Hygiene.

Medical Inspection.—Twenty-three (22) Government schools and ten (5) private schools were inspected by the Assistant Medical Officers and senior dressers. All the children underwent a medical examination and were later given the opportunity of treatment. The number examined was 2,148 (2,309) which was 85% (86.12) of the number on the roll. 1,232 (1,294) of these pupils were in the Kuala Trengganu schools.

The proportion of the pupils with enlargement of the spleen was 3.02% (2.78), the rate being 0.19 (0.31) at Kuala Trengganu and 5.51% (5.81) in the other schools.

The spleen rates in the other towns were 1938 onwards until he qualifies.

(a) On the coast—Besut 3.54%, Setiu 1.98%, Marang 6.35%, Kuala Dungun 3.49%, Paka 13.46%, Kretay 27.42%, Kemasek 5.38%, Kijal 9.68% and Kuala Kemaman and Chukai 0.76%.

(b) Inland—Kuala Telemong 16.72%, Kuala Brang 2.78%, and Pasir Gajah 42.86%.

Signs of yaws were noted in 3.80% (9.97) of the children. All of these cases presented tertiary lesions mainly of the hands and feet.

A great number of the pupils are infected with worms. Samples of faeces from 116 pupils of Ladang School, Kuala Trengganu were examined (one microscopic preparation) and 111 showed ova including 96 cases of ascaris and 44 of ankylostoma.

Dental caries was noted in 50%. At Kuala Trengganu, the rate was 69.32% (62.19) and the defects were classified as "marked" in 3.51%, "average" in 22.60% and "slight" in 73.89%. This state of affairs will be improved in 1941 when Kuala Trengganu will have an Asiatic dental surgeon who is at present a student at the College of Medicine, Singapore. The Government of Trengganu is to pay an annual sum of \$600.00 towards his cost of training from 1938 onwards until he qualifies.

Sanitation.—Reports are sent to Government about defects in sanitation.

The English School, Kuala Trengganu and the Malay schools at Kuala Dungun and Chukai have all been rebuilt on new sites but they have not yet been occupied. New Malay schools were built at Pasir Gajah, Kemaman and Bukit Payong while others are being built at Jerteh, Kerangang and Sabarang Takir (Kuala Trengganu).

(ix) Labour Conditions.

Certain details abstracted from the health reports sent to the Medical Officer every month are summarized in Appendix C.

(a) Mines.—There are three tin and two iron mines which employ labour on a considerable scale, the average labour force employed monthly being 3,706 (3,435) while the number of dependents numbered 1,336 (1,297) giving a total monthly population of 5,042 (4,732). Only 34 deaths were reported as against 64 during 1936 giving a death rate of 6.74 (13.74) per mille. One thousand two hundred and forty-seven (852) cases of malaria were reported with 8 (19) deaths. Owing to the isolated position of these mines beri-beri is frequent and there were 291 (204) case recorded but there was no (4) death. Injections of Vitamin B1 were used in cardiac cases.

The Nippon Mining Company, Dungun, a large iron-mining company, has a hospital and dispensary while the Medical Staff consists of two doctors, a dresser, a nurse, a midwife and a dentist who are all Japanese subjects. There is also a qualified Indian sanitary inspector who has a staff of one mandor and 40 coolies at the mine and also a few coolies on the Company's railway stations and the lines near Kuala Dungun. The average monthly population was 3,320 (2,749). Conditions are steadily improving at this mine and the death rate of 7.23 (14.55) per mille was the lowest yet recorded. This is probably due to the fact that the coolies do not show so much reluctance as formerly to utilize the Company's medical services and the admissions to the hospital numbered 785 as against 284 in 1936.

The hospital requires to be extended and already a new isolation ward and operation theatre have been built. During the year, seven large lines were built at the mine and five at Kuala Dungun; the rooms, however, measure 10' x 10' and the company have been asked to increase this to 10' x 12' in future. A new water supply has been installed, roads and drainage have been improved while a large recreation field is being made. Sick coolies who reside at Kuala Dungun are sent to the Government Hospital there.

Three of the other four mines employ dressers while the Ishihara Sangyo Koshi employs a doctor. Three of them have small hospitals for emergency cases but a number of sick coolies are sent to the Government Hospital at Chukai.

The Sungai Ayam Tin Mining Company and the Ishihara Sangyo Koshi, have been asked to improve the housing accommodation for their coolies.

(b) Estates.—

The Kretay Plantations and the Kretay Estate, which are under the same management, employed an average monthly force of 870 (572) labourers while the dependents averaged 178 (155). The number of deaths was 12 (15) giving a rate of 11.45 (20.63) per mille of which 1 (5) was due to malaria. A number of lines were reconstructed to suit the special requirements of the Tamil coolies while a few excellent cooly lines of the cottage type have been built.

The Jabor Valley Estate is situated in the extreme south of Trengganu and is about 4,800 acres in extent. It was started in 1936. The only approach road to the estate is from Kuantan in Pahang.

Health conditions were bad at first but great improvements have been effected. Thirty-one lines each with 10 rooms of a good type and a new hospital with three wards have been constructed. A piped water supply has been installed. There are creches for children. Several miles of anti-malaria drains have been made and a regular system of oiling is now in progress.

The company employed a monthly average of 909 (887) coolies while the dependents averaged 194 (182). There were 36 deaths giving a death rate per mille of 32.64 (32.28) but of these deaths 16 occurred during the first three months of the year while there was only one during the last two months of the year. There were 6 deaths due to malaria and 9 to pneumonia. Sixteen births were recorded while the deaths of infants numbered 8. A great improvement on these figures can be anticipated with confidence next year.

All these estates and mines were visited by the Medical Officer or by the Assistant Medical Officers and the Sanitary Inspectors, special attention being paid to the Nippon Mining Company. A number of smaller mines and estates were also visited.

The number of coolies admitted from these concerns into the Government Hospitals was 439 of whom 167 were suffering from malaria and the details were as follows:—

| | |
|--|-----|
| Nippon Mining Company | 346 |
| Kretay Estates and Plantations | 4 |
| Sungai Ayam Tin Mines Ltd. | 6 |
| Bundi Tin Mine | 32 |
| Kajang Kemaman (1925) Ltd. | 10 |
| Ishihara Sangyo Koshi, Ltd. | 41 |

There were 6 deaths, 4 being due to malaria.

(x) Housing and Town Planning.

Fairly wide municipal limits have been fixed in the towns. Within these limits, site and building plans have to be passed by the Town Boards before a house can be built. Additions buildings and renovations have also to be sanctioned by Town Boards. In Kuala Trengganu, the rule is that all plans for permanent buildings and for additions and renovations of a value of \$500.00 and over have to receive the sanction of the Medical Officer while the Health Inspector inspects all other plans.

Arrangements are being made to bring Bukit Payong under the control of the Kuala Trengganu Town Board; this is a rapidly growing village which is 8 miles from Kuala Trengganu.

Town Planning.—Progress was made by a sub-committee of the Kuala Trengganu Town Board of which the Medical Officer is a member. An area, 2 acres in extent, is being reclaimed from the river and provisional plans were made for this area.

Progress continues at Kuala Dungun and many shop-houses, private houses, and Government buildings were constructed during the year. Progress was also made at Jerteh, a growing village in the Besut area.

There are no building societies in the State.

(xi) Food in Relation to Health.

The following premises are licensed:—coffee-shops, eating houses, lodging-houses, ice-factories, aerated water factories and bakeries. In the larger towns, regular inspections are paid by the Health Inspectors and all are inspected at least twice a year (some of the worse ones much more often) by the Medical Officer and Assistant Medical Officers. Gradual improvements are being effected and conditions have much improved but the bakeries leave a lot to be desired, the great difficulty being that there is a lack of suitable houses.

Markets.—There are markets of a semi-permanent type in the towns and of a temporary type in the villages. Accommodation at Kuala Trengganu is still inadequate but land is being purchased with a view to extending one of the markets while it is proposed to demolish another one and build afresh on the new land which is being reclaimed from the river. The erection of a pork-market was delayed by the difficulty of selecting a site owing to religious difficulties. A semi-permanent market at Kuala Dungun and a temporary market at Jerteh were completed.

Abattoirs.—There are slaughter-houses at the following places:—

Kuala Trengganu—one for cattle and one for swine, the latter having been completed during the year.

Kuala Dungun—one for swine; a site has been selected for one cattle.

Chukai—one for cattle and one for swine; the efferent drainage channels require to be improved.

(xii) Other Licensed Premises.

Laundries, billiards saloons and hair-dressing saloons have to be licensed and are regularly inspected by the Medical Officer. Under the new Town Board Bye-Laws certain offensive trades such as fish-curing will be controlled by the Town Boards.

(xiii) Measures Taken to Spread the Knowledge of Hygiene and Sanitation.

The Health Inspectors, Dressers and other officials endeavour on their periodical visits to impress upon the people the necessity of keeping their houses and the surrounding land in a clean condition. Otherwise, little is done. One of the chief difficulties in Trengganu is the illiteracy of the population. Even now number of school-children in the State is just 3,112 of whom 363 are girls. The teaching of hygiene forms part of the curriculum.

(xiv) Dentists and Druggists.

Compulsory registration is in force and the Medical Officer is the registrar.

Dentists.—Thirty-eight dentists have been registered but only 22 are in practice, none of whom has proper qualifications. A Dentists Enactment was passed at the end of the year and will be the means of tightening up control. Dentists will have to possess annual practising certificates. Draft rules are being prepared and will provide for better premises, cleaner instruments, etc.

Druggists.—The number of registered druggists is 8 (9). A new Poisons Enactment has superseded the old Poisons Rules.

Control of Drugs.—The Medical Department helps the Customs Department to control the import of drugs by indentifying drugs while returns of all drugs imported are sent to the Medical Officer for scrutiny. All deleterious drugs are first sent to the Medical Officer before importation.

IV.—PORT HEALTH WORK.

The out-break of cholera in Siam persisted and so precautions were taken by the Department until June. The passengers and crews of 241 (640) junks were examined during that period.

V.—MATERNITY AND CHILD WELFARE WORK.

There are five midwives in the service of the Department while the nurse is also a qualified midwife. There are three other qualified midwives in residence in the State, one of whom is employed by the Nippon Mining Company, Dungun.

(A).—Maternity Work.

Cases conducted in the Kuala Trengganu Hospital numbered 102 (64) while cases conducted in the patients' homes numbered 248 (150).

The following are summaries of the work performed:—

Maternity Cases Conducted.

| | Malays | Chinese | Indians | Others | Total | Maternal Deaths. | Still births. | Infants Died 1st 10 days including Premature. |
|-----------------------------------|--------|---------|---------|--------|-------|------------------|---------------|---|
| Kuala Trengganu Hospital | 13 | 84 | 4 | 1 | 102 | 1 | 4 | 6 |
| Kuala Trengganu Town Clinic | 61 | 37 | 1 | 2 | 101 | 0 | 3 | 7 |
| Midwife, Besut | 50 | 4 | 1 | 0 | 55 | 0 | 2 | 1 |
| Midwife, Dungun | 12 | 19 | 0 | 0 | 31 | 0 | 0 | 1 |
| Midwife, Kemaman | 2 | 57 | 1 | 1 | 61 | 0 | 2 | 2 |
| Total | 138 | 201 | 7 | 4 | 350 | 1 | 11 | 17 |

Abortions and Miscarriages.

| | Malays | Chinese | Indians | Others | Total | |
|-----------------------------------|--------|---------|---------|--------|--------|--|
| Kuala Trengganu Hospital | 0 | 2 | 0 | 0 | 2 | |
| Kuala Trengganu Town Clinic | 6 | 3 | 2 | 0 | 11 | |
| Midwife, Besut | 7 | 0 | 0 | 0 | 7 | |
| Midwife, Dungun | 0 | 2 | 0 | 0 | 2 | |
| Midwife, Kemaman | 1 | 1 | 0 | 0 | 2 | |
| Total | 14 | 8 | 2 | 0 | 24 (7) | |

Women Appearing for Ante-natal Examination.

| | Malays | Chinese | Indians | Others | Total | Total Attendances |
|-----------------------------------|--------|---------|---------|--------|-------|-------------------|
| Kuala Trengganu Hospital | 3 | 7 | 0 | 0 | 10 | — |
| Kuala Trengganu Town Clinic | 49 | 16 | 3 | 1 | 69 | 195 |
| Midwife, Besut | 45 | 3 | 2 | 2 | 52 | 59 |
| Midwife, Dungun | 13 | 16 | 0 | 0 | 29 | 36 |
| Midwife, Kemaman | 4 | 10 | 1 | 0 | 15 | 17 |
| Total | 114 | 52 | 6 | 3 | 175 | 307 (107) |

General Hospital, Kuala Trengganu.—It is only here that accommodation for in-patients is available. The number of cases conducted was 102 (64) including 13 (9) Malays. There was one death, the case of a Chinese woman who was admitted in poor condition with a retained placenta 53 hours after the birth of her child; she had received no attention from any midwife and showed signs of extreme neglect. The placenta was removed manually but she died 10 days afterwards from puerperal septicaemia. Abnormal cases treated included 3 cases of breech presentation, 1 case of twins, 2 cases of occipito-posterior lie, 3 cases of retained placenta and one case of post-puerperal haemorrhage.

Kuala Trengganu Town Clinic.—The number of cases treated by the Japanese midwife was 101 (92) including 61 (42) Malays and 37 (50) Chinese. Difficult cases are referred to the Hospital but none was sent. The case of a European lady delivered by the Medical Officer is included in these figures.

Besut.—The Malay midwife conducted 55 cases as against 14 during the last seven months of 1936; the great majority of the women are Malays.

Dungun.—The Indian midwife conducted 31 cases of whom 19 were Chinese and 12 were Malays. (In 1936, a midwife was stationed for 2 months and she delivered 5 Chinese women).

Kemaman.—The Chinese midwife here conducted 61 (48) cases. As in 1936, the women were nearly all Chinese, only four being of other races including 2 (1) Malays. The abnormal cases included 7 protracted labours, 3 breech presentations and 1 case of prolapse of the cord.

(B) INFANT AND CHILD WELFARE SERVICES.

It is hoped with the help of the four midwives in the districts to build up gradually a child welfare service. After delivery, they are expected to pay ten daily visits to the mother and child. When not otherwise engaged, they assist in the treatment of women and children in the dispensaries.

A maternity and child welfare clinic is run in conjunction with the Kuala Trengganu Town Dispensary. The following table compares the number treated during the years 1936 and 1937:—

| | 1936 | 1937 |
|---|-------|-------|
| Number of infants treated under 1 year of age | 169 | 225 |
| Number of children treated aged 1—12 years | 1,243 | 1,117 |
| Cases receiving ante-natal treatment | 84 | 69 |

VI.—HOSPITALS AND DISPENSARIES.

(A) HOSPITAL IN-PATIENTS.

The additions to the accommodation for in-patients have already been described in Section 1 D. The following accommodation for in-patients is now available:—

| | Total Number of Beds. | Average Daily No. of In-patients 1937. |
|--|--------------------------|---|
| 1. Kuala Trengganu, General Hospital:— | | |
| 5 general wards for males, each of 20 beds | — | — |
| 1 ward for males, infectious diseases, 20 beds | — | — |
| 1 ward for male lepers, 6 beds | — | — |
| 1 special ward for male patients, 6 rooms | — | 3 |
| 1 general ward for females and children, 20 beds | — | — |
| 1 maternity ward comprising 2 rooms for paying patients and one room with 4 beds (revised) | — | 4 |
| Total accommodation | 158 | 124 (127) |

2. Kuala Trengganu, Gaol Hospital:—

| | | |
|--|---|---|
| 1 ward for seven male patients | 7 | 5 |
|--|---|---|

3. Kuala Dungun Hospital:—

| | | |
|--|----|----|
| 1 general ward for males, 20 beds (opened on 1st May) | 20 | 15 |
|--|----|----|

4. Kemaman Hospital:—

| | | |
|---|----|---|
| 1 general ward for males, 20 beds (opened on 10th April but only 12 beds available at present) | 12 | 8 |
|---|----|---|

| | | |
|--|----|---|
| 1 general ward for females, 16 beds (opened on 15th December) | 16 | — |
|--|----|---|

| | | |
|------------------------------|-----|-----|
| Total number of beds | 213 | 156 |
|------------------------------|-----|-----|

The highest number of patients in the General Hospital, Kuala Trengganu on any one day was 155, on the 6th of July; at such times as these, especially during the dry months, the hospital accommodation is rather strained as such wards as the leper ward, infectious diseases ward and paying patients ward are rarely full. Extensions are required here while the temporary ward for male infectious cases is in a bad way and should be replaced as soon as possible.

The opening of the hospitals at Kemaman and Kuala Dungun did not affect the number of admissions into the General Hospital, Kuala Trengganu although the number of cases coming from these districts fell; the average number of admissions for the last seven months of the year (124) was the same as for the first five months.

The charges are moderate, being 40 cents a day for admission to the general wards (payment is usually only made by companies on behalf of their coolies) and \$1.00 per day in the case of the special wards.

The cost of diets was as follows:—

| | | |
|--|-------|----------------|
| Kuala Trengganu.—General wards | 10.89 | cents |
| Special wards | 55.96 | „ |
| Kuala Dungun.—Contractor till 31st first | .18½ | „ p.d. approx. |
| 1st August—end of year | .19 | „ „ „ |
| Kemaman.—Contractor | .14½ | „ „ „ |

The following is a summary of the work performed at the hospitals; the figures for the General Hospital, Kuala Trengganu for the previous four years are given for the purposes of comparison:—

| Kuala Trengganu.— General Hospital. | | | | | | 1937 | | | All Hospital 1937 excluding transfers. |
|--|-------|-------|-------|-------|-------|------------------|--------------------|---------------------------|--|
| | 1933 | 1934 | 1935 | 1936 | 1937 | Gaol Hospital | Dungun Hospital | Chukai from 10.4.37 | |
| Total number of admissions .. | 1,710 | 1,775 | 2,314 | 2,418 | 2,622 | 64 | 453 | 275 | 3,408 |
| Total number of females admitted .. | 303 | 304 | 334 | 336 | 494 | 0 | 3 | — | 497 |
| Total number of Malays admitted .. | 977 | 1,051 | 1,074 | 1,082 | 1,260 | 20 | 55 | 50 | 1,385 |
| Total number of Malays females admitted .. | 241 | 233 | 250 | 236 | 297 | 0 | 0 | 0 | 297 |
| Total number of deaths .. | 43 | 62 | 76 | 81 | 49 | 1 | 7 | 9 | 66 |
| Number of deaths per 100 admissions .. | 2.51 | 3.49 | 3.28 | 3.35 | 1.87 | 1.56 | 1.54 | 3.27 | 1.94 |
| Number of deaths excluding cases dying within 48 hours of admission .. | 33 | 56 | 60 | 72 | 41 | 1 | 7 | 5 | 54 |
| Number of deaths per 100 admissions excluding cases dying within 48 hours of admissions .. | 1.94 | 3.19 | 2.61 | 2.97 | 1.61 | 1.56 | 1.54 | 1.81 | 1.59 |
| Number of cases of child-birth conducted in maternity ward .. | 44 | 44 | 59 | 64 | 102 | — | — | — | 102 |
| Number of operations performed (excluding teeth extraction) .. | 101 | 100 | 149 | 219 | 244 | — | 107 | 198 | 549 |
| Number of deaths after operation .. | 1 | 3 | 2 | 4 | 2 | — | 0 | 0 | 2 |
| Number of cases treated by dental extraction .. | 90 | 164 | 176 | 230 | 353 | — | 36 | 196 | 585 |

The returns of diseases and deaths of in-patients is set out in Appendix D.

The following figures relate to the prevailing diseases treated:—

| Disease | Admissions | Deaths | Mortality per cent. |
|---|------------|--------|---------------------|
| Malaria Acute (parasites demonstrated in blood) | 334 | 6 | 1.80% (2.15) |
| „ „ (clinical diagnosis) .. | 232 | 1 | 0.43 (0) |
| „ „ Cachexia .. | 13 | 0 | 7.69 (14.28) |
| Influenza .. | 227 | 0 | 0 (0) |
| CHEST AFFECTIONS.— | | | |
| Bronchitis .. | 61 | 0 | 0 (0) |
| Pneumonia, lobar, and broncho-pneumonia .. | 14 | 1 | 28.57 (44.44) |
| Empyema & Pleurisy .. | 5 | 4 | 0 (12.50) |
| Pulmonary tuberculosis .. | 68 | 17 | 25.0 (42.86) |
| INTESTINAL AFFECTIONS.— | | | |
| Diarrhoea and enteritis .. | 30 | 0 | 0 (0) |
| Dysentery .. | 58 | 6 | 10.34 (8.82) |
| Hepatic Abscess (amoebic) .. | 4 | 1 | 25.0 |

| Disease | Admissions | Deaths | Mortality per cent. |
|--|------------|--------|---------------------|
| OTHER AFFECTIONS.— | | | |
| Helminthic diseases | 248 | 2 | 0.81 (1.15) |
| Beri-beri | 108 | 2 | 1.85 (6.67) |
| Anaemia | 9 | 0 | 0 (0) |
| Yaws | 231 | 0 | 0 (0) |
| SURGICAL CONDITIONS.— | | | |
| Chronic ulcers | 370 | 0 | 0 (0) |
| Wounds, fractures, etc. | 232 | 1 | 0.43 (1.96) |
| Abscesses, boils, cellulitis, carbuncles, etc. | 110 | 1 | 0.91 (0) |
| VENEREAL DISEASES.— | | | |
| Syphilis, late manifestations | 11 | 3 | 27.27 (7.14) |
| Hereditary | 0 | 0 | 0 (0) |
| Syphilis, other forms | 22 | 0 | 0 (0) |
| Other venereal diseases | 230 | 0 | 0 (0) |

NOTES ON PREVAILING DISEASES AMONG HOSPITAL PATIENTS.

(i) Malaria.—There were 579 (389) admissions which represents 16.99% (15.82) of the total admissions. The mortality for all types of cases was 1.38%—the details are given above. Quinine hydrochloride is usually exhibited but atebrin is given in special cases; most of the severe cases are treated with intramuscular injections of atebrin musonate. Plasmoquine is subsequently given if crescents have been found. Atebrin was first used in the hospital about the middle of 1932.

The following figures are of interest:—

| | Admissions | Deaths | Mortality per 100 cases treated |
|---|------------|--------|---------------------------------|
| PERIOD 1928-1932.— | | | |
| Acute malaria—parasites demonstrated in blood | 442 | 24 | 5.43 |
| Malaria, clinical diagnosis & cachexia | 1,325 | 32 | 2.41 |
| PERIOD 1933-1937.— | | | |
| Acute malaria—parasites demonstrated in blood | 977 | 15 | 1.54 |
| Malaria, clinical diagnosis and cachexia | 892 | 8 | 0.90 |

The following table shows the type of malaria in the cases confirmed by microscopical identification:—

| | 1936 | 1937 |
|----------------------------------|------|------|
| Subtertian infection | 110 | 187 |
| Benign tertian infection | 68 | 111 |
| Quartan infection | 24 | 24 |
| Mixed infection | 31 | 12 |

As in 1936 no case of black-water fever was recorded.

(ii) Venereal Diseases.—Syphilis is rarely seen in the case of the local Malays and most of the cases are Chinese from Kuala Dungun where there is a considerable influx of people from other states. There were 33 (35) admissions being 0.97% (1.30) of the total admissions.

There were 201 (126) admissions for gonorrhoea being 5.90% (5.12) of the total admissions.

The numbers according to race were as follows:—

| | Malays | Chinese | Indians | Others | Total |
|---------------------------------------|--------|---------|---------|--------|-------|
| Gonorrhoea | 103 | 54 | 44 | 0 | 201 |
| Syphilis | 3 | 22 | 7 | 1 | 33 |
| Soft sore & Lympho-granuloma Venereum | 9 | 11 | 9 | 0 | 29 |

The dresser in charge of the General Hospital, Kuala Trengganu was sent for a course of training to Singapore. At the beginning of 1937, one of the wards was given over, as far as possible to the treatment of cases of venereal diseases, both in-patients and out-patients. 222 in-patients were treated and the following is a summary of the work performed on them:—

(a) Injections given—

| | |
|-----------------------------|-----|
| Neoarsphenamine | 44 |
| Sulfarsenol & Sulphostab | 19 |
| Metallic bismuth | 19 |
| Thiostab | 1 |
| Dmelcos vaccine | 102 |
| Gonococcus vaccine | 548 |
| Gonoderm "Corbus-Ferry" | 21 |
| Calcium chloride | 25 |
| Contramine | 66 |
| Acriflavine & trypanflavine | 82 |
| Other | 3 |

(b) Miscellaneous—

| | |
|-------------------|-------|
| Dressings | 2,035 |
| Irrigations | 4,011 |
| Prostatic massage | 377 |
| Dilations | 15 |
| Catheterization | 5 |
| Minor operations | 7 |

(c) Diagnostic procedures are included in laboratory returns.

(iii) Pulmonary Tuberculosis.—There were 68 (49) cases with 17 (21) deaths giving a case-mortality of 25% (42.68). These deaths represented 25.76% (25.1) of the total.

(iv) Dysentery.—Fifty-eight (34) cases were admitted. There were 15 (15) cases of amoebic dysentery with no (0) death, 15 (10) cases of bacillary dysentery with 3 (0) deaths and 28 (18) cases with 3 (3) deaths in which the cause was undefined. In addition, there were four (0) cases of amoebic liver abscess with one death.

(v) Beri-beri.—There were 108 (135) cases being 3.17% (5.49) of the total admissions but there were only two (9) deaths. The record for the General Hospital, Kuala Trengganu was 87 cases with one death; these included 12 cases with cardiac symptoms. All these cases were treated with intramuscular injections of Vitamin B₁. The dose given at first was 2,000 pigeon units (?1,000 international units) of Bayer's "Betaxin" but this is not a sufficient dose in some cases (Hawes et Al., Journal of the Malayan Branch of the B. M. A. Vol. 1, No. 2) and the case that died at Kuala Trengganu, which was among our early cases in March, might have been saved if further injections had been given. These injections seemed to have little effect on the nervous manifestations although slight improvement was detected in one or two cases.

The mortality of 1.85% was a distinct improvement over that of the period 1932-1936 which was 7.76% although the Medical Officer formed the impression that the cases were on the average of a milder type; these injections, however, saved some cases which formerly would have died.

Tropical Typhus.—There were three (4) admissions with no (1) death. One of these cases, a Chinese, was of the "shop" type and came from Kampong Tanjong, Kuala Trengganu town, the other cases were of the "scrub" type and were Indians who came from Chabang Tiga, Kuala Trengganu and from Kuala Brang respectively.

No case of the tsutsugamushi type has yet been diagnosed in Trengganu.

(B) OUT-PATIENTS.

There are permanent Dispensaries at the following places:—

Kampong Raja, Besut.

Kampong Buloh (belonging to the Public Works Dept.).

Kuala Trengganu Town.

General Hospital, Kuala Trengganu.

Kuala Brang.

Hospital, Kuala Dungun.

Hospital, Chukai, Kemaman.

In addition, there are small dispensaries at Setiu and Kemasek each in the charge of a travelling dresser while a travelling dresser is attached to the Kampong Raja Dispensary and to each of the Hospitals; these travelling dressers are all Malays. The work of the travelling dressers is greatly restricted during the period of the north-east monsoon (November—March). The State is, in general, fairly well served by these dispensaries and travelling dressers with the exception of the Paka river basin where a small dispensary should be established while the growing volume of routine work at the Kuala Brang Dispensary interferes with travelling work so that a travelling dresser is also required here. Prior to 1936, the lower reaches of the Trengganu river and the basins of the Telemong and Nerus rivers, both of which are important tributaries of the Trengganu rivers, were rather neglected. This was rectified by sending there in rotation the Malay dressers working in the hospitals (this is in addition to the work performed by the Travelling Dresser attached to the Hospital). Visits to the upper reaches of the Trengganu rivers entail journeys by small boats (*perahu*) lasting about a week or so.

The number of new cases treated by these dispensaries and travelling dressers was 125,640 (113,059) while the total number of attendances was 157,853 (141,440). Of these new cases, 67,380 (55,345) were treated by dressers on their visits to out-lying villages away from headquarters. In general, it may be said that the number of cases treated at the dispensaries has shown little change during the last year or two and the increase in the numbers treated has been due to more frequent visits by the dressers to outlying villages. The total number of nights spent away from headquarters by these dressers was 531 (439).

In addition to performing vaccinations, the vaccinators distribute medicine during their visits and the number of new cases so treated was 15,822 (16,992).

Eleven rural police stations and four customs stations, which are situated in places where there are no dispensaries, are supplied with small stocks of simple drugs such as quinine, anti-septic lotions and ointments, vermifuges, etc. for distribution and 863 (1,047) treatments were given.

There is no dispensary in the extreme South of Trengganu. The Jabor Valley Estate is paid a small sum of money in return for medical attention to the few Government servants who are stationed there.

The following table shows the numbers treated:—

| | 1936 | | 1937 | |
|---|-----------|-------------------|-----------|-------------------|
| | New Cases | Total Attendances | New Cases | Total Attendances |
| Cases treated by Dispensaries & Travelling Dressers | 113,059 | 141,440 | 125,740 | 157,853 |
| Cases treated by Vaccinators | 16,992 | 18,397 | 15,822 | 16,571 |
| Cases treated by Customs and Police stations | 1,047 | 1,048 | 863 | 863 |
| | 131,098 | 160,885 | 142,425 | 175,287 |

The number of females treated was 29.36% (29.12) of the total. Appendix F shows the number of patients treated at the various dispensaries.

Four thousand, nine hundred and seventeen (3,545) patients were visited by the dressers at their homes while the number of visits paid by the Assistant Medical Officers was as follows:—

| | |
|--|-------|
| Assistant Medical Officer, Kuala Trengganu | 906 |
| Assistant Medical Officer, Kemaman | 371 |
| Assistant Medical Officer, Dungun (from 14th June) | 250 |
| Total | 1,527 |

The Medical Officer is always in attendance at the Dispensary of the General Hospital, Kuala Trengganu; he attends personally to most of the calls from his Highness the Sultan and family, Europeans and some Asiatics while he is called into consultation by the other officers. Regular visits are paid by him to the towns and villages in the State and to the larger mines and estates although he is now helped to a great extent by the Assistant Medical Officers and the Health Inspectors. A visit was paid to Pulau Redang (Redang island) and a long visit was made to Ulu Besut and Ulu Setiu. Visits were made to the villages along the lower reaches of the Trengganu river while towards the end of the year a series of weekly visits were paid to the villages round Kuala Trengganu in connection with the campaign against yaws.

Venereal Diseases—1,018 (653) patients were treated for gonorrhoea being 0.61% (0.46) of the total number treated but these figures do not give a proper indication of the prevalence of the disease which the Medical Officer believes to be very common in the towns while the rural population are relatively free from it. It is proposed to build a new Town Dispensary for Kuala Trengganu in 1938 and if this is done, it is proposed to reserve the clinic at certain times for the treatment of venereal disease. In the meantime a start has been made by referring out-patients to the ward for venereal diseases at the General Hospital and 59 patients attended of whom 2 were suffering from soft sore, 52 from gonorrhoea and 5 were free from venereal disease. Total attendances numbered 296. The following formed part of the treatment:—

(a) Injections—

| | |
|---------------------------------------|----|
| Acriflavine and trypanflavine | 4 |
| Gonococcus vaccines | 55 |
| Contramine | 3 |
| Dmelcos vaccine | 6 |

(b) Other procedures—

| | |
|---------------------------|-----|
| Dressings | 4 |
| Irrigations | 214 |
| Prostatic massage | 41 |
| Catheterization | 2 |
| Urethroscope | 2 |

(c) Diagnostic procedures are included in the section on laboratory work.

(C) OPERATIONS.

A list of the operations performed is given in Appendix E 1,179 people underwent operations but the majority were of a minor nature and 588 were cases treated by extraction of the teeth.

(D) LABORATORY WORK.

This is summarized in Appendix G. All the permanent dispensaries are now equipped with microscopes while specimens for serological examinations are sent to Kuala Trengganu as required.

(E) MALAYS AND THE MEDICAL DEPARTMENT.

The following table shows the number of patients treated by the Medical Department arranged according to race:—

| | Malays | Chinese | Indians | Others |
|----------------------|--------|---------|---------|--------|
| Estimated Population | 90.5% | 7.5% | 1.5% | 0.5% |
| Out-patients treated | 90.13 | 7.72 | 1.85 | 0.30 |
| In-patients | 40.64 | 43.12 | 15.53 | 0.71 |

The proportion of Malays admitted to the General Hospital, Kuala Trengganu increased from 44.74% in 1936 to 48.44% in 1937.

It can be seen therefore that the Malays do not like entering hospital but they are as willing as any of the other races to accept Western medicine. It is hard to say why Malays are reluctant to enter hospital: apparently religious considerations have little to do with the question but it is apparently considered to be a slight on the members of their households to do so as it implies that their friends are unwilling or incapable of looking after them at home. Government servants apart, the type of Malay that enters the Trengganu Government hospitals is the illiterate rustic.

VII.—PRISON HOSPITALS.

The only prison in the State is that at Kuala Trengganu where there is a ward of seven beds for male prisoners. There is no such accommodation for the women and the few female prisoners falling seriously ill are sent to the General Hospital, but no case (1) was sent during the year.

In-patients.—There were 64 (41) admissions with one (1) due to subtertian malaria. There was an out-break of a mild form of bacillary dysentery affecting 5 men.

Out-patients.—530 (550) new cases were treated.

N.B.—The daily average number of prisoners was 85 (78).

VIII.—INSTITUTIONS FOR MENTAL DISEASE AND LEPROSY.**(A).—MENTAL DISEASE.**

There is no separate asylum for mentally deranged patients and they are confined in the prison at Kuala Trengganu. An experienced attendant, who is also attached to the prison ward, looks after them while the Hospital Assistant visits at least every day and the Assistant Medical Officer once a week; the visits of the Medical Officer average once a fortnight. The prisoners are allowed out into the prison compound at times during the day. Cases that do not improve within a few months are sent to the Mental Hospital at Singapore while those that improve are handed over to the care of their relatives who have to sign an agreement to look after them properly. About 40% of the admissions are merely feeble-minded persons. The position is unsatisfactory and it would be better if the patients were confined in a special observation ward at

the General Hospital. An attempt is made as far as possible to treat a number of mental patients in the hospital and nine were so treated of whom five were admitted for observation only; two cases were subsequently transferred to the gaol. After recovery some of the patients are sent to the hospital for convalescence.

The number of patients treated in the gaol was 91 (67) including 8 (6) females. The average daily number was 15 (14). The average time spent by each patient in the gaol was 60 (76) days which is a great improvement on the figure of 179 recorded in 1934 when there was no money to send the chronic patients in Singapore.

The following figures refer to the patients treated in the gaol:—

| | Males | Females | Total |
|-------------------------|-------|---------|-------|
| Remaining on 1.1.1937 | 15 | 2 | 17 |
| Admitted | 68 | 6 | 74 |
| Total treated | 83 | 8 | 91 |
| Discharged | 53 | 7 | 60 |
| Transferred | 15 | 1 | 16 |
| Died | 4 | 0 | 4 |
| Remaining on 31.12.1937 | 11 | 0 | 11 |

The following table refers to the lunatics maintained at the Singapore Mental Hospital:—

| | Males | Females | Total |
|-------------------------|-------|---------|-------|
| Remaining on 1.1.1937 | 8 | 2 | 10 |
| Admitted | 5 | 1 | 6 |
| Total treated | 13 | 3 | 16 |
| Discharged | 1 | 0 | 1 |
| Died | 2 | 1 | 3 |
| Remaining on 31.12.1937 | 10 | 2 | 12 |

(B).—LEPERS.

On 10.4.1937, seven male lepers, four Malays and three Chinese, were sent to the Leper Settlement at Sungei Buloh, Selangor. These men, who were the entire number of lepers resident at the Kuala Trengganu Hospital, went on a voluntary basis. Seven others had volunteered to go but they refused at the last minute. There are now powers to compel lepers to go there under the new Quarantine and Prevention of Disease Enactment and as many lepers will be sent next year as funds permit.

After these lepers left, the old leper ward was burnt down and a new one built there at the end of the year.

For the last five years, a register has been kept of all lepers coming to the notice of the Department. The names of ninety people have been recorded and of these 28 have died, 10 have left the State of their own accord, 6 are at the Leper Settlement, at Sungei Buloh (one of the Chinese sent died), 16 cannot be traced and 30 are known to be alive.

The following table refers to those in the two latter categories:—

| | Alive | | Untraceable | | Total |
|-----------------|-------|---------|-------------|---------|-------|
| | Males | Females | Males | Females | |
| Malays | 16 | 10 | 5 | 3 | 34 |
| Chinese | 3 | 1 | 8 | 0 | 12 |
| Total | 19 | 11 | 13 | 3 | 46 |

IX.—HEALTH OF THE EUROPEAN POPULATION & ASIATIC OFFICIALS.

The total number of Europeans resident in the State at the end of the year was 27 (37). There was no (0) death. Europeans Officials.—The following table shows the sick, invaliding and death-rate of the European Officials:—

| | |
|--|-------|
| Total number of officials resident | 20 |
| Average number resident | 14 |
| Total number on sick list | 7 |
| Total number of days on sick list | 94 |
| Average daily number on sick list | 0.26 |
| Average number of days on sick list for each patient | 13.43 |
| Average sick time to each resident | 6.71 |
| Total number invalided | 1 |
| Total deaths | 0 |
| Number of cases of sickness contracted away from residence | 1 |

Asiatic Officials.—The total number of new cases treated was 5,105 (5,086) of which 1,748 (2,224) were members of the Police Force. Most of the officials were examined during the year for signs of tuberculosis.

X.—METEOROLOGY.

Readings on the instruments kept at the General Hospital Kuala Trengganu showed that:—

The highest temperature of 93°F was recorded on 23.6.37.
 The lowest temperature of 71°F was recorded on 8.12.37.
 The month with the highest rainfall was December with 48.91 inches.
 The highest rainfall within 24 hours was 6.45 inches and this occurred on 27.12.1937.
 The total rainfall for the year was 107.26 (172.93) inches.

Rain-gauges are also kept at the dispensaries at Kuala Dungun, Kampong Raja, Besut on the coast and Kuala Brang in the interior. The annual rainfall in the interior of the State, as estimated at Bukit Besi and Kuala Brang, is usually about 40 inches higher than on the coast. The wettest part of the year is the period of the north-east monsoon which falls between November and March and this greatly interferes with the travelling work of the dressers. The rainfall at Kuala Brang was 164.86 (191.15) inches, that at Kampong Raja 139.29 (159.89) inches and that at Kuala Dungun 119.47 (166.95) inches.

XI.—VETERINARY WORK.

There is no veterinary department in Trengganu and any work of this nature falls upon the Medical Department.

There was no epidemic of any importance. A few animals were treated and this entailed minor operations in one or two cases. Cattle were examined at Kuala Trengganu and Kemaman prior to export.

The new Quarantine and Prevention of Disease Enactment also applies to animals. The Medical Department have to perform inspections prior to the export of cattle.

The following prohibitions as regards import were in force at the end of the year:—

| Disease | Animals | from | Extent of Order |
|----------------------|---|------------|----------------------|
| Rinderpest | All animals | Indo-China | Absolute prohibition |
| Rinderpest | Cattle, Buffalos, sheep, oxen, goats & pigs | Siam | " " |
| Foot & Mouth | Goats & sheep | India | " " |
| Disease | Buffalos, oxen, goats, sheep & pigs | Singapore | " " |
| Rabies | Dogs | Singapore | " " |

By Gazette Notification 177, authority from the Medical Officer must first be obtained before cattle can be imported from the neighbouring State of Kelantan while a certificate must be produced from the Chief Medical Officer, Kelantan, certifying that the cattle are free from disease.

G. I. H. Braine, M.B., CH.B., D.T.M. & H.

Medical Officer,
TRENGGANU.

31.1.1938.

APPENDIX A.

STAFF.

(1) DISTRIBUTION OF STAFF.

The distribution of the staff at the end of the year was as follows:—

STATE.—

- 1 Medical Officer, in charge.
- 1 Chief Clerk, Malay clerk special grade.
- 2 clerks, Malay grade II.
- 1 grade III English clerk.
- 1 Steward and Storekeeper.
- 1 Assistant Storekeeper.
- 1 Peon.

KUALA TRENGGANU.—

- 1 Assistant Medical Officer.

(a) General Hospital:—

- 1 Dresser in charge grade I.
- 3 Dressers grade II.
- 5 Dressers grade III (One passed grade II).
- 5 Probationer Dressers.
- 1 Nurse grade III.
- 1 Midwife (holds certificate "B" of the Straits Settlements).
- 27 Menials (including 3 females).

(b) Town-Dispensary, Welfare Centre and Gaol:—

- 1 Dresser special grade (holds certificate of the Royal Sanitary Institute).
- 1 Dresser grade II.
- 1 Midwife (holds a Japanese Certificate).
- 3 Attendants (1 female).

(c) Outdoor and Other Duties:—

- 1 Health Inspector (holds certificate of the Royal Sanitary Institute).
- 1 Travelling Dresser grade III.
(Dressers from the Hospital also assist in this work in rotation).
- 1 Vaccinator.

KUALA DUNGUN.—

- 1 Assistant Medical Officer.

(a) Hospital & Dispensary:—

- 2 Dressers grade II (one passed grade I).
- 1 Midwife (holds certificate "B" of the Straits Settlements).
- 4 Menials.

(b) Outdoor and Other Duties:—

- 1 Health Inspector (holds certificate of the Royal Sanitary Institute).
- 1 Travelling Dresser, Probationer.
- 1 Vaccinator.

CHUKAI, KEMAMAN.—

- 1 Assistant Medical Officer.

(a) Hospital & Dispensary:—

- 1 Dresser grade II.
- 1 Dresser grade III.
- 1 Midwife (holds certificate "B" of the Straits Settlements).
- 5 Menials.

(b) Outdoor and Other Duties:—

- 1 Health Inspector (holds certificate of the Royal Sanitary Institute).
- 1 Travelling Dresser, grade II.
- 1 Vaccinator.

KAMPONG RAJA DISPENSARY, BESUT.—

- 1 Dresser grade III.
- 1 Travelling Dresser, Probationer.
- 1 Midwife (holds certificate "B" of the Straits Settlements).
- 1 Vaccinator.
- 1 Attendant.

KAMPONG PANJANG DISPENSARY, SETIU.—

- 1 Travelling Dresser grade III.

KUALA BRANG DISPENSARY.—

- 1 Dresser grade III.
- 1 Vaccinator.
- 1 Attendant.

KEMASEK DISPENSARY.—

- 1 Travelling Dresser, grade III.

In addition, there is a grade I Dresser in charge of the dispensary at Kampong Buloh but he is employed by the Public Works Department. He is, however, to be transferred to the Medical Department in 1938 when it assumes full charge of the dispensary.

(2) APPOINTMENTS.

The following appointments were made during the year:—

Dr. Kanagalingam Suppiah L.R.C.P.&s. (Edinburgh), L.R.F.P.&s. (Glasgow) was appointed Assistant Medical Officer, Dungun on 12/6/1937.

Koh Eng Phin, who holds the certificate of the Royal Sanitary Institute, was appointed Health Inspector, Kemaman on 1/4/1937.

Seng Chuan Kooi was appointed Probationer Dresser on 1/4/1937.

Mohammed Tahir bin Tedoh was appointed Probationer Dresser on 10/4/1937.

V. E. Krishnan, who had passed the examination for second grade dressers, was appointed a grade III dresser on 13/9/1937.

(3) PROMOTIONS.

Syed Shith bin Jaafar was promoted to grade III on 1/1/1937.

Seng Chuan Koon was promoted to grade III on 1/7/1937.

(4) RESIGNATIONS.

Dr. Wong Boon Phin, L.M.S., Assistant Medical Officer, Dungun left the service on 31/12/1936.

(5) EXAMINATIONS.

Seng Chuan Koon passed the June examination for grade III Dresser (average 72.5%).

APPENDIX B.

CALENDAR YEAR 1937.

Deaths grouped according to age, sex and race Live Births
grouped according to sex and race.

DEATHS.

| Death by Age Groups. | Sex | Europeans | Eurasians | Chinese | Malays | Indians | Others | Total |
|----------------------|-----|-----------|-----------|---------|--------|---------|--------|-------|
| 0 .. | M | — | — | 23 | 277 | 3 | — | 303 |
| | F | — | — | 9 | 185 | 3 | — | 197 |
| 4 weeks .. | M | — | — | 13 | 160 | 1 | 3 | 177 |
| | F | — | — | 7 | 145 | — | — | 152 |
| 3 months .. | M | — | — | 9 | 117 | 1 | — | 127 |
| | F | — | — | 6 | 73 | 2 | — | 81 |
| 6 months .. | M | — | — | 12 | 79 | — | 1 | 92 |
| | F | — | — | 7 | 66 | — | — | 73 |
| 1 year .. | M | — | — | 6 | 261 | 4 | — | 271 |
| | F | — | — | 11 | 225 | 8 | — | 224 |
| 5 years .. | M | — | — | 10 | 118 | — | — | 128 |
| | F | — | — | — | 128 | 1 | 1 | 130 |
| 10 years .. | M | — | — | 1 | 71 | — | — | 72 |
| | F | — | — | 1 | 47 | 1 | — | 49 |
| 15 years .. | M | — | — | — | 46 | 2 | — | 48 |
| | F | — | — | — | 35 | — | — | 35 |
| 20 years .. | M | — | — | 8 | 76 | 1 | 1 | 86 |
| | F | — | — | 5 | 67 | 1 | — | 73 |
| 25 years .. | M | — | — | 15 | 64 | 4 | — | 83 |
| | F | — | — | 4 | 66 | 2 | — | 72 |
| 30 years .. | M | — | — | 17 | 118 | 2 | 2 | 139 |
| | F | — | — | 4 | 111 | — | — | 115 |
| 35 years .. | M | — | — | 19 | 53 | 4 | — | 76 |
| | F | — | — | 2 | 59 | — | — | 61 |
| 40 years .. | M | — | — | 21 | 134 | 4 | 2 | 161 |
| | F | — | — | 3 | 107 | 1 | 1 | 112 |
| 45 years .. | M | — | — | 17 | 41 | 1 | 1 | 60 |
| | F | — | — | 3 | 35 | — | — | 38 |
| 50 years .. | M | — | — | 18 | 124 | 5 | 2 | 149 |
| | F | — | — | 3 | 103 | — | — | 106 |
| 55 years & Over | M | — | — | 36 | 392 | 4 | 2 | 434 |
| | F | — | — | 6 | 477 | — | — | 483 |
| | M | 0 | 0 | 225 | 2,131 | 36 | 14 | 2,406 |
| | F | 0 | 0 | 71 | 1,929 | 19 | 2 | 2,021 |
| Total Deaths .. | | 0 | 0 | 296 | 4,060 | 55 | 16 | 4,427 |
| Births } | M | 0 | 0 | 314 | 3,142 | 25 | 20 | 3,501 |
| | F | 1 | 0 | 250 | 3,043 | 27 | 23 | 3,344 |
| Total Live Births .. | | 1 | 0 | 564 | 6,185 | 52 | 43 | 6,845 |

APPENDIX C.
HEALTH STATISTICS OF LABOUR POPULATION IN TRENGGANU.

| Name of Company | Average Monthly Number of Employees | Average Monthly Number of Dependents | Total Average Monthly Population | Deaths. | | | | | Total Death Rate per Mille | Sick—Rate. | | | |
|--|-------------------------------------|--------------------------------------|----------------------------------|-----------|------------|---------|--------|---------|----------------------------|--------------|----------------------|--------------|----------------------|
| | | | | Employees | Dependents | Total | Injury | Malaria | | Labourers. | | Dependents. | |
| | | | | | | | | | | Total Number | Total Number of Days | Total Number | Total Number of Days |
| 1 Kretay Estates & Kretay Plantations, Kretay .. | 632 138 | 135 43 | 767 181 | 3 1 | 8 — | 11 1 | — — | 1 — | 14.34 5.52 | 1682 560 | 3177 420 | 224 56 | 338 31 |
| 2 Jabor Valley Estate, Jabor .. | 909 | 194 | 1103 | 23 | 13 | 36 | 1 | 6 | 32.64 | 2209 | 11427 | 818 | 3977 |
| 3 Hin Leong Sawmill, Kemaman .. | 101 | 28 | 129 | 2 | — | 2 | 2 | — | 15.50 | 16 | 169 | — | — |
| 4 Bundi Mining Co., Kemaman .. | 398 | 349 | 747 | 4 | — | 4 | — | 1 | 5.35 | 957 | 2559 | 290 | 722 |
| 5 Sungei Ayam Mining Co., Kemaman .. | 121 | 31 | 152 | — | — | — | — | — | — | 101 | 607 | — | — |
| 6 Kajang Mining Co., Kemaman .. | 207 | 57 | 164 | 1 | 2 | 3 | — | — | 11.36 | 249 | 359 | 55 | 60 |
| 7 Ishihara Sangyo Koshi, Kemaman .. | 455 | 84 | 539 | 2 | 1 | 3 | — | 2 | 5.57 | 740 | 3896 | 205 | 1132 |
| 8 Nippon Mining Co., Dungun .. | 2,505 | 815 | 3,320 | 19 | 5 | 24 | 6 | 5 | 7.23 | 7,388 | 39,633 | 1,157 | 8,560 |
| Total .. | 5,466 | 1,736 | 7,202 | 55 | 29 | 84 | 9 | 15 | 11.66 | 13,902 | 62,247 | 2,805 | 14,820 |

HOSPITAL IN-PATIENTS.
Return of Diseases and Deaths for the year 1937.

| DISEASES. | Remaining in Hospital at end of 1936. | Yearly Total. | | Total Cases Treated. | Remaining in Hospital at end of 1937. |
|---|--|---------------|---------|-------------------------|--|
| | | Admissions. | Deaths. | | |
| I.—Infectious and Parasitic Diseases. | | | | | |
| 1. Typhoid fever | — | 5 | — | 5 | — |
| 2. Paratyphoid fever | — | 1 | — | 1 | — |
| 3. Typhus:— | | | | | |
| Tropical typhus | — | 3 | — | 3 | — |
| 4. Relapsing fever | — | — | — | — | — |
| 5. Undulant fever | — | — | — | — | — |
| 6. Small-pox | — | — | — | — | — |
| 7. Measles | — | 1 | — | 1 | — |
| 8. Scarlet fever | — | — | — | — | — |
| 9. Whooping cough | — | — | — | — | — |
| 10. Diphtheria | — | — | — | — | — |
| 11. Influenza:— | | | | | |
| (1) With pneumonia | 1 | — | — | 1 | — |
| (2) With other respiratory complications | — | 16 | — | 16 | — |
| (3) Without respiratory com- plications | 4 | 211 | — | 215 | 2 |
| 12. Cholera | — | — | — | — | — |
| 13. Dysentery:— | | | | | |
| (1) Amoebic (Liver abscess see item No 82) | 2 | 15 | — | 17 | 1 |
| (2) Bacillary | — | 15 | 3 | 15 | — |
| (3) Undefined or due to other causes | 1 | 28 | 3 | 29 | — |
| 14. Plague | — | — | — | — | — |
| 15. Erysipelas | — | 1 | — | 1 | — |
| 16. Acute poliomyelitis | — | — | — | — | — |
| 17. Encephalitis lethargica | — | — | — | — | — |
| 18. Cerebro-spinal fever | — | — | — | — | — |
| 19. Glanders | — | — | — | — | — |
| 20. Anthrax | — | — | — | — | — |
| 21. Rabies | — | — | — | — | — |
| 22. Tetanus:— | | | | | |
| (1) Tetanus of newly born | — | — | — | — | — |
| (2) Other form of tetanus | — | 1 | — | 1 | — |
| 23. Tuberculosis:— | | | | | |
| (1) respiratory system | 6 | 68 | 17 | 74 | 9 |
| (2) bones vertebral column | — | 1 | — | 1 | — |
| tibia | — | 1 | — | 1 | — |
| (3) lymphatic system | — | 1 | 1 | 1 | — |
| (4) peritoneum | — | 1 | — | 1 | — |
| 24. Leprosy | 9 | 9 | 1 | 18 | 3 |
| 25. Syphilis:— | | | | | |
| (1) Primary | — | 9 | — | 9 | — |
| (2) Secondary | 2 | 13 | — | 15 | 1 |
| (3) Tertiary | — | 10 | 3 | 10 | 2 |
| (4) Hereditary | — | — | — | — | — |
| 26. Other venereal diseases:— | | | | | |
| (1) Soft chancre | — | 20 | — | 20 | — |
| (2) Gonorrhoea and its com- plications | 8 | 170 | — | 178 | 8 |
| Carried Forward .. | 33 | 600 | 28 | 633 | 26 |

APPENDIX D.—(Contd.)

| DISEASES. | Remaining in Hospital at end of 1936. | Yearly Total. | | Total Cases Treated. | Remaining in Hospital at end of 1937. |
|---|--|---------------|---------|-------------------------|--|
| | | Admissions. | Deaths. | | |
| <i>Brought forward</i> .. | 33 | 600 | 28 | 633 | 26 |
| (3) Gonorrhoeal ophthalmia .. | 1 | 6 | — | 7 | — |
| (4) Gonorrhoeal arthritis .. | 3 | 25 | — | 28 | 6 |
| (5) Lympho-granuloma vene- reum .. | — | 9 | — | 9 | — |
| 27. Purulent infective septicaemia:— | — | — | — | — | — |
| 28. Yellow fever .. | — | — | — | — | — |
| 29. Malaria:— | | | | | |
| (1) Tertian .. | 2 | 111 | — | 113 | 2 |
| (2) Quartan .. | — | 24 | — | 24 | — |
| (3) Aestivo-autumnal (subter- tian) .. | 1 | 187 | 6 | 188 | 6 |
| (4) Mixed infection .. | — | 12 | — | 12 | — |
| (5) Unclassified .. | 5 | 232 | 1 | 237 | 11 |
| (6) Cachexia .. | — | 13 | 1 | 13 | — |
| (7) Blackwater fever .. | — | — | — | — | — |
| 30. Other diseases due to protozoa:— | | | | | |
| (1) Yaws (framboesia) .. | 13 | 231 | — | 244 | 10 |
| (2) Spirochaetosis ictero- haemorrhagica .. | — | — | — | — | — |
| 31. Ankylostomiasis .. | 5 | 106 | 1 | 111 | 2 |
| 32. Other diseases due to helminths:— | | | | | |
| Cestodes .. | — | — | — | — | — |
| Nematodes .. | | | | | |
| (1) Ascaris .. | 5 | 138 | — | 143 | 4 |
| (2) Filaria .. | — | 4 | 1 | 4 | — |
| 33. Sprue .. | — | — | — | — | — |
| 34. Other infectious or parasitic dis- eases:— | | | | | |
| (1) Rubella .. | — | — | — | — | — |
| (2) Varicella (chicken-pox) .. | — | 4 | — | 4 | — |
| (3) Mumps and its complications | — | 2 | — | 2 | — |
| (4) Dengue .. | — | 1 | — | 1 | — |
| (5) Melioidosis .. | — | — | — | — | — |
| II.—Cancer and Other Tumours. | | | | | |
| 35. Sarcoma:— | | | | | |
| (1) maxilla .. | 1 | — | — | 1 | |
| (2) naso-pharynx .. | 1 | — | — | 1 | |
| (3) tongue .. | — | 1 | 1 | 1 | |
| (4) lympho-sarcoma .. | — | 1 | 1 | 1 | |
| 36. Cancer of the digestive organs, and peritoneum:— | | | | | |
| (1) gum .. | — | 1 | — | 1 | |
| (2) liver .. | — | 1 | 1 | 1 | |
| (3) stomach .. | — | 2 | — | 2 | 1 |
| 37. Cancer of the male genitourinary organs:— | | | | | |
| (1) Epithelioma of scrotum .. | — | 1 | — | 1 | |
| 38. Cancer of the female genital organs:— | | | | | |
| (1) Breast .. | — | 1 | — | 1 | |
| <i>Carried Forward</i> .. | 70 | 1,713 | 41 | 1,783 | 68 |

APPENDIX D.—(Contd.)

| DISEASES. | Remaining in Hospital at end of 1936. | Yearly Total. | | Total Cases Treated. | Remaining in Hospital at end of 1937. |
|---|--|---------------|---------|-------------------------|--|
| | | Admissions. | Deaths. | | |
| <i>Brought forward</i> .. | 70 | 1,713 | 41 | 1,783 | 68 |
| 39. Tumours non-malignant:— | | | | | |
| (1) Of female genital organs .. | — | 4 | — | 4 | 1 |
| (2) Of other sites .. | — | 26 | — | 26 | 1 |
| III.—Rheumatism, Diseases of Nutrition and of Endocrine Organs and other General Diseases. | | | | | |
| 40. Rheumatic fever .. | — | 1 | — | 1 | |
| 41. Chronic rheumatism and osteo-arthrititis .. | 3 | 56 | — | 59 | 1 |
| 42. Diabetes (not including diabetes insipidus) .. | — | 4 | — | 4 | |
| 43. Scurvy including Barlow's disease .. | — | — | — | — | |
| 44. Beri-beri including epidemic dropsy .. | 9 | 108 | 2 | 117 | 3 |
| 45. Pellagra .. | — | — | — | — | |
| IV.—Diseases of the Blood and Blood Forming Organs. | | | | | |
| 46. Anaemia:— | | | | | |
| (1) Pernicious anaemia .. | — | — | — | — | |
| (2) Secondary anaemia .. | 2 | 9 | — | 11 | 1 |
| V.—Chronic Poisoning. | | | | | |
| 47. Chronic poisoning by other organic substances:— | | | | | |
| Opium Addiction .. | — | 13 | — | 13 | 1 |
| 48. Chronic poisoning by mineral substances:— | | | | | |
| Arsenical dermatitis .. | — | 3 | — | 3 | |
| VI.—Diseases of the Nervous System and Sense Organs. | | | | | |
| 49. Encephalitis (not including encephalitis lethargica):— | | | | | |
| Cerebral tumour .. | — | 1 | — | 1 | |
| 50. Meningitis (not including tuberculous meningitis or cerebro-spinal meningitis) .. | — | 1 | 1 | 1 | |
| 51. Tabes Dorsalis .. | — | — | — | — | |
| 52. Other diseases of the spinal cord:— | | | | | |
| Transverse myelitis .. | — | 1 | — | 1 | 1 |
| 53. Apoplexy and paralysis:— | | | | | |
| (1) Cerebral haemorrhage and paralysis .. | 1 | — | — | 1 | |
| (2) Hemiplegia cause not determined .. | 2 | 9 | — | 11 | |
| 54. Insanity:— | | | | | |
| (1) Under observation .. | — | 1 | — | 1 | |
| (2) Insanity .. | — | 4 | — | 4 | |
| 55. Epilepsy (grand mal) .. | — | 1 | — | 1 | |
| 56. Infantile convulsions (age under five years) .. | — | — | — | — | |
| <i>Carried Forward</i> .. | 87 | 1,960 | 44 | 2,047 | 77 |

APPENDIX D.—(Contd.)

| DISEASES. | Remaining in Hospital at end of 1936. | Yearly Total. | | Total Cases Treated. | Remaining in Hospital at end of 1937. |
|---|--|---------------|---------|-------------------------|--|
| | | Admissions. | Deaths. | | |
| <i>Brought forward</i> | 87 | 1,960 | 44 | 2,047 | 77 |
| 57. Other diseases of the nervous system:— | | | | | |
| (1) Neuritis | — | 11 | — | 11 | |
| (2) Disseminated sclerosis | — | 1 | — | 1 | |
| (3) Hysteria | — | 1 | — | 1 | |
| 58. Diseases of the eye:— | | | | | |
| (1) Styne | — | 3 | — | 3 | |
| (2) Dacryocystitis | — | 2 | — | 2 | |
| (3) Pterygium | — | 3 | — | 3 | |
| (4) Conjunctivitis | 1 | 23 | — | 24 | |
| (5) Corneal ulcer | — | 3 | — | 3 | |
| (6) Iritis | — | 5 | — | 5 | |
| (7) Cataract | — | 1 | — | 1 | |
| (8) Panophthalmitis | — | 2 | — | 2 | |
| 59. Diseases of the ear and or mastoid sinus:— | | | | | |
| (1) Otitis media | — | 5 | — | 5 | |
| (2) Mastoiditis | — | 3 | — | 3 | 1 |
| VII.—Diseases of the Circulatory System. | | | | | |
| 60. Chronic endocarditis: Valvular disease:— | | | | | |
| Mitral valve disease | — | 2 | 1 | 2 | |
| 61. Diseases of myocardium:— | | | | | |
| Chronic myocardial degeneration | 1 | 4 | 4 | 5 | |
| 62. Arterio-sclerosis | — | 3 | — | 3 | 1 |
| 63. Diseases of the veins:— | | | | | |
| Haemorrhoids | — | 12 | 1 | 12 | |
| 64. Diseases of the lymphatic system:— | | | | | |
| Lymphadenitis | — | 4 | — | 4 | 1 |
| VIII.—Diseases of the Respiratory System. | | | | | |
| 65. Diseases of the nasal fossae and its annexa:— | | | | | |
| Diseases of the nose; nasal polypus | 2 | — | — | 2 | |
| 66. Laryngitis | — | 1 | — | 1 | |
| 67. Bronchitis:— | | | | | |
| (1) Acute | — | 11 | — | 11 | |
| (2) Chronic | 2 | 50 | — | 52 | 5 |
| 68. Broncho-pneumonia | — | 4 | 1 | 4 | |
| 69. Lobar pneumonia | — | 10 | 3 | 10 | |
| 70. Pleurisy:— | | | | | |
| (1) Empyema | 1 | 1 | — | 2 | |
| (2) Other pleurisy | — | 4 | — | 4 | 1 |
| 71. Asthma | 2 | 50 | 1 | 52 | 1 |
| <i>Carried Forward</i> | 96 | 2,189 | 55 | 2,275 | 87 |

APPENDIX D.—(Contd.)

| DISEASES. | Remaining in Hospital at end of 1936. | Yearly Total. | | Total Cases Treated. | Remaining in Hospital at end of 1937. |
|---|--|---------------|---------|-------------------------|--|
| | | Admissions. | Deaths. | | |
| <i>Brought forward</i> .. | 96 | 2,189 | 55 | 2,275 | 87 |
| IX.—Diseases of the Digestive System. | | | | | |
| 72. Diseases of the buccal cavity, pharynx etc:— | | | | | |
| (1) Pyorrhoea .. | — | 8 | — | 8 | |
| (2) Dental caries .. | — | 4 | — | 4 | |
| (3) Stomatitis .. | 1 | 1 | — | 2 | |
| (4) Diseases of the tonsils .. | — | 2 | — | 2 | |
| (5) Pharyngitis .. | — | 6 | — | 6 | |
| (6) Vincent's angina .. | — | 1 | — | 1 | |
| 73. Ulcer of the stomach or duodenum | 1 | 14 | — | 15 | 5 |
| 74. Other diseases of the stomach .. | 1 | 43 | — | 44 | 1 |
| 75. Diarrhoea and enteritis (under 2 years) .. | — | 9 | — | 9 | |
| 76. Diarrhoea and enteritis (over 2 years) .. | 3 | 19 | — | 22 | |
| 77. Appendicitis .. | — | 2 | — | 2 | |
| 78. Hernia, Intestinal obstruction:— | | | | | |
| (1) Hernia .. | — | 11 | — | 11 | 1 |
| (2) Strangulated hernia .. | — | 2 | — | 2 | 1 |
| 79. Constipation, intestinal stasis .. | — | 6 | — | 6 | 1 |
| 80. Affections of the rectum & anus:— | | | | | |
| (1) Fissure in ano .. | — | 1 | — | 1 | |
| (2) Ano-rectal fistula .. | — | 2 | — | 2 | 1 |
| (3) Fistula in ano .. | — | 1 | — | 1 | |
| (4) Ischio-rectal abscess .. | — | 1 | — | 1 | |
| 81. Cirrhosis of the liver (non-syphilitic):— | | | | | |
| (1) Alcoholic .. | — | — | — | — | |
| (2) Not returned as alcoholic .. | — | 16 | — | 16 | 2 |
| 82. Other diseases of the liver:— | | | | | |
| Hepatitis .. | — | 4 | — | 4 | |
| Amoebic abscess .. | — | 4 | 1 | 4 | 1 |
| 83. Diseases of the gall-bladder and ducts:— | | | | | |
| (1) Cholecystitis without record of calculi .. | — | 3 | — | 3 | |
| (2) Catarrhal jaundice .. | 1 | 5 | — | 6 | 1 |
| 84. Subphrenic abscess .. | — | 1 | — | 1 | |
| X.—Diseases of the Genito-Urinary System (Non-Venereal). | | | | | |
| 85. Acute nephritis .. | — | 8 | 4 | 8 | 1 |
| 86. Chronic nephritis .. | — | 24 | 1 | 24 | 1 |
| 87. Other diseases of the kidney and annexa .. | — | 7 | — | 7 | |
| 88. Calculi of the urinary passages:— | | | | | |
| (1) Calculi of the kidney .. | — | 1 | — | 1 | |
| (2) Calculi of the bladder .. | — | 2 | — | 2 | |
| (3) Calculus of the female urethra (impacted) .. | — | 1 | — | 1 | |
| <i>Carried Forward</i> .. | 103 | 2,398 | 61 | 2,491 | 103 |

APPENDIX D.—(Contd.)

| DISEASES. | Remaining in Hospital at end of 1936. | Yearly Total. | | Total Cases Treated. | Remaining in Hospital at end of 1937. |
|--|--|---------------|---------|-------------------------|--|
| | | Admissions. | Deaths. | | |
| <i>Brought forward</i> .. | 103 | 2,398 | 61 | 2,491 | 103 |
| 89. Diseases of the bladder:— | | | | | |
| Cystitis | — | 3 | — | 3 | |
| 90. Diseases of the Urethra:— | | | | | |
| Stricture | — | 1 | — | 1 | |
| 91. Diseases of the male genital organs:— | | | | | |
| (1) Hydrocele | 1 | 10 | — | 11 | 1 |
| (2) Orchitis | — | 3 | — | 3 | |
| 92. Diseases of the female genital organs:— | | | | | |
| (1) Leucorrhoea | — | 1 | — | 1 | |
| (2) Menorrhagia | — | 3 | — | 3 | |
| (3) Menopause | — | 2 | — | 2 | |
| (4) Prolapse of uterus | — | 4 | — | 4 | |
| XI.—Conditions Arising in Pregnancy, Childbirth and the Puerperal State. | | | | | |
| 93. Ante-natal | — | 10 | — | 10 | |
| 94. Abortion | — | 2 | — | 2 | |
| 95. Conditions associated with labour:— | | | | | |
| (1) Normal labour | 2 | 92 | — | 94 | 3 |
| (2) Abnormal labour | — | 7 | — | 7 | |
| (3) Accidents of childbirth | — | — | — | — | |
| 96. Retained placenta (with Puerperal Septicaemia) | — | 1 | 1 | 1 | |
| 97. Puerperal fever | — | 1 | — | 1 | |
| 98. Post-partum haemorrhage | — | 1 | — | 1 | |
| 99. Toxaemias of Pregnancy:— | | | | | |
| Ante-partum eclampsia | — | 1 | — | 1 | 1 |
| XII.—Diseases of the Skin and Cellular Tissues. | | | | | |
| 100. Carbuncle, boils | 2 | 16 | — | 18 | |
| 101. Cellulitis, acute abscess:— | | | | | |
| (1) Cellulitis | 1 | 17 | 1 | 18 | 2 |
| (2) Acute abscess | — | 77 | — | 77 | 3 |
| 102. Elephantiasis | 1 | — | — | 1 | |
| 103. Ulcers | 7 | 370 | — | 377 | 25 |
| 104. Dermal mycoses | — | 25 | — | 25 | 1 |
| 105. Eczema | — | 18 | — | 18 | 1 |
| 106. Herpes | — | 4 | — | 4 | |
| 107. Scabies | 7 | 49 | — | 56 | 1 |
| 108. Psoriasis | — | 2 | — | 2 | |
| XIII.—Diseases of the Bones and Organs of Locomotion (Other than Tuberculosis). | | | | | |
| 109. Periostitis | — | 2 | — | 2 | |
| 110. Arthritis | — | 11 | — | 11 | |
| 111. Bursitis | — | 1 | — | 1 | |
| <i>Carried Forward</i> .. | 124 | 3,132 | 63 | 3,246 | 141 |

APPENDIX D.—(Contd.)

| DISEASES. | Remaining in Hospital at end of 1936. | Yearly Total. | | Total Cases Treated. | Remaining in Hospital at end of 1937. |
|---|--|---------------|---------|-------------------------|--|
| | | Admissions. | Deaths. | | |
| <i>Brought forward</i> .. | 124 | 3,132 | 63 | 3,246 | 141 |
| XIV.—Diseases of Early Infancy. | | | | | |
| 112. Congenital Malformations:— | | | | | |
| (1) Harelip | — | 1 | — | 1 | |
| (2) Polydactylism | — | 1 | — | 1 | |
| (3) Ectopic testis | — | 1 | — | 1 | |
| (4) Imperforate anus | — | 1 | — | 1 | |
| XV.—Conditions Associated with Old Age. | | | | | |
| 113. Senility | 1 | 2 | 1 | 3 | |
| XVI.—Affections Produced by External Causes. | | | | | |
| 114. Snake bite | — | 1 | — | 1 | |
| 115. Food poisoning | — | 1 | 1 | 1 | |
| 116. Poisoning by ingestion of corrosive fluid | — | 1 | — | 1 | |
| 117. Suicide by drowning | — | — | — | — | |
| 118. Attacks by animals:— | | | | | |
| Goring, bites, kicks, etc. .. | — | 15 | — | 15 | 1 |
| 119. Accidental burns:— | | | | | |
| (1) Burns by fire | — | 11 | — | 11 | |
| (2) Scalds | — | 1 | — | 1 | |
| 120. Injury by cutting or piercing instruments | 3 | 98 | — | 101 | 5 |
| 121. Injury by fall, crushing, etc:— | | | | | |
| (1) By fall | 1 | 29 | 1 | 30 | |
| (2) By motor-car | — | 6 | — | 6 | |
| 122. Sprain | — | 11 | — | 11 | 1 |
| 123. Fracture | 3 | 12 | — | 15 | 2 |
| 124. Dislocation | — | 1 | — | 1 | |
| 125. Other external injuries | — | 60 | — | 60 | |
| XVII.—Undetermined Diseases. | | | | | |
| 126. Fever unclassified | — | 14 | — | 14 | 1 |
| 127. Persons admitted for observation .. | — | 7 | — | 7 | 1 |
| 128. Persons accompanying patients .. | — | 10 | — | 10 | |
| Total .. | 132 | 3,406 | 66 | 3,538 | 152 |

APPENDIX E.
RETURN OF OPERATIONS.

| Pathological Condition and Nature of Operation. | Number of cases. | | | | | Result. | | |
|---|--|---|---------------------------------------|---------------------|--------|-----------|--------|-------|
| | Kuala Trengganu Hospital and Dispensary. | Chukai Kemaman Hospital and Dispensary. | Kuala Dungun Hospital and Dispensary. | Other Dispensaries. | Total. | Relieved. | Cured. | Died. |
| Skin & subcutaneous tissues:— | | | | | | | | |
| Abscesses, boils, carbuncles, cellulitis, etc. | 45 | 112 | 71 | 18 | 246 | — | 246 | — |
| Aspiration of abscess | 1 | — | — | — | 1 | — | 1 | — |
| Sinuses excised & scraped | 4 | 1 | 3 | — | 8 | — | 8 | — |
| Removal of nail | 2 | — | — | — | 2 | — | 2 | — |
| Suturing wounds | 16 | 29 | 19 | 25 | 89 | — | 89 | — |
| Removal of foreign bodies:— | | | | | | | | |
| Ear | 1 | — | — | — | 1 | — | 1 | — |
| Eye | 2 | 2 | — | — | 4 | — | 4 | — |
| Nose | 7 | — | 1 | — | 8 | — | 8 | — |
| Upper extremity | 3 | 2 | 2 | — | 7 | — | 7 | — |
| Lower extremity | 9 | 3 | 1 | — | 13 | — | 13 | — |
| Other site not defined | — | — | 4 | 3 | 7 | — | 7 | — |
| Removal of cysts:— | | | | | | | | |
| Dermoid | — | 1 | — | — | 1 | — | 1 | — |
| Meibomian | — | 2 | — | — | 2 | — | 2 | — |
| Sebaceous | 18 | 9 | — | — | 27 | — | 27 | — |
| Other | — | 3 | — | — | 3 | — | 3 | — |
| Tumours:— | | | | | | | | |
| Epithelioma of skin of foot | — | 1 | — | — | 1 | — | 1 | — |
| Fibroma | 5 | 4 | — | — | 9 | — | 9 | — |
| Granuloma | 1 | 1 | — | — | 2 | — | 2 | — |
| Lipoma | 2 | 3 | — | — | 5 | — | 5 | — |
| Other | 1 | 3 | — | — | 4 | — | 4 | — |
| Lymphatic glands:— | | | | | | | | |
| Incision of bubo, etc. | 3 | 2 | — | — | 5 | — | 5 | — |
| Lips, mouth & salivary glands:— | | | | | | | | |
| Alveolar abscess | 3 | — | 4 | — | 7 | — | 7 | — |
| Epulis | 1 | — | — | — | 1 | — | 1 | — |
| Extraction of teeth | 353 | 196 | 36 | 3 | 588 | — | 588 | — |
| Repair of hare-lip | 1 | 1 | — | — | 2 | — | 2 | — |
| Ear, Mastoid, etc:— | | | | | | | | |
| Ear-boring, repairs for this and other minor plastic operations | 9 | 3 | 1 | — | 13 | — | 13 | — |
| Schwartz's operation for acute mastoiditis | 2 | — | — | — | 2 | — | 2 | — |
| Nose:— | | | | | | | | |
| Nasal polypus | 1 | — | — | — | 1 | — | 1 | — |
| Spine & meninges:— | | | | | | | | |
| Diagnostic lumbar puncture | 7 | — | — | — | 7 | 7 | — | — |
| Thorax:— | | | | | | | | |
| Aspiration of empyema | 3 | — | — | — | 3 | 3 | — | — |
| Abdomen:— | | | | | | | | |
| Aspiration of liver abscess | 7 | — | — | — | 7 | 3 | 3 | 1 |
| Paracentesis | 25 | 5 | — | — | 30 | 30 | — | — |
| Carried forward | 532 | 383 | 142 | 49 | 1106 | 32 | 1062 | 1 |

APPENDIX E.—(Contd.)

| Pathological Condition and Nature of Operation. | Number of cases. | | | | | Result. | | |
|--|--|---|---------------------------------------|---------------------|--------|-----------|--------|-------|
| | Kuala Trengganu Hospital and Dispensary. | Chukai Kemaman Hospital and Dispensary. | Kuala Dungun Hospital and Dispensary. | Other Dispensaries. | Total. | Relieved. | Cured. | Died. |
| <i>Brought forward</i> .. | 532 | 383 | 142 | 49 | 1106 | 43 | 1062 | 1 |
| Rectum & anus:— | | | | | | | | |
| Ano-rectal fistula & fistula in ano .. | 3 | 1 | — | — | 4 | — | 4 | — |
| Excision of haemorrhoids .. | 4 | — | — | — | 4 | — | 4 | — |
| Imperforate anus .. | 3 | — | — | — | 3 | — | 3 | — |
| Sigmoidoscopy .. | 2 | — | — | — | 2 | 2 | — | — |
| Hernia:— | | | | | | | | |
| Radical cure for oblique inguinal hernia .. | 3 | — | — | — | 3 | — | 3 | — |
| Radical cure for strangulated oblique inguinal hernia .. | — | 1 | — | — | 1 | — | 1 | — |
| Radical cure for strangulated direct inguinal hernia .. | 1 | — | — | — | 1 | — | 1 | — |
| Male Uro-genital organs:— | | | | | | | | |
| Circumcision .. | 3 | 1 | — | — | 4 | — | 4 | — |
| Hydrocele, radical cure .. | 1 | — | — | — | 1 | — | 1 | — |
| Hydrocele, tapping and injection of sclerosing solution .. | 10 | — | — | — | 10 | 2 | 8 | — |
| Scrotal abscess .. | 3 | — | — | — | 3 | — | 3 | — |
| Urethral abscess .. | 1 | — | — | — | 1 | — | 1 | — |
| Dilatation of stricture .. | 12 | 1 | — | — | 13 | — | 13 | — |
| Female uro-genital organs:— | | | | | | | | |
| Abscess, labium majorum .. | 1 | — | — | — | 1 | — | 1 | — |
| Craniotomy .. | 2 | — | — | — | 2 | — | 2 | — |
| Forceps, application of .. | 2 | 5 | — | — | 7 | — | 7 | — |
| Prolapse of uterus .. | 1 | — | — | — | 1 | — | 1 | — |
| Retained placenta, removal of .. | 3 | — | — | — | 3 | — | 2 | 1 |
| Wound of labia majora .. | 1 | — | — | — | 1 | — | 1 | — |
| Bones:— | | | | | | | | |
| Reduction of fractures .. | 2 | — | — | — | 2 | — | 2 | — |
| Joints:— | | | | | | | | |
| Aspiration of knee-joint .. | 2 | — | — | — | 2 | — | 2 | — |
| Reduction of dislocations .. | | | | | | | | |
| Shoulder .. | 1 | — | — | — | 1 | — | 1 | — |
| Hip .. | 1 | — | — | — | 1 | — | 1 | — |
| Repair of shoulder joint .. | 1 | — | — | — | 1 | — | 1 | — |
| Amputation:— | | | | | | | | |
| Fingers .. | 1 | 2 | 1 | — | 4 | — | 4 | — |
| Bilateral amputation of redundant thumbs in polydactylism .. | 1 | — | — | — | 1 | — | 1 | — |
| Total .. | 597 | 394 | 143 | 49 | 1183 | 47 | 1134 | 2 |

APPENDIX G.
LABORATORY WORK.

| | Kuala Trengganu. | Chukai, Kemaman. | Kuala Dungun. | Kuala Brang. | Kampong Raja. | Total. |
|--|---------------------|---------------------|------------------|-----------------|------------------|--------|
| BLOOD. | | | | | | |
| Microscopical examinations for protozoa:— | | | | | | |
| Total number of films examined | 3,141 | 391 | 564 | 14 | 70 | 4,180 |
| Negative | 2,845 | 258 | 433 | 8 | 59 | 3,603 |
| Positive | 296 | 133 | 131 | 6 | 11 | 577 |
| Plasmodium vivax | 54 | 60 | 90 | 4 | 10 | 228 |
| Plasmodium falciparum | 185 | 70 | 32 | 2 | 1 | 290 |
| Plasmodium malariae | 23 | 2 | 8 | — | — | 33 |
| Plasmodia vivax & falciparum | 25 | 1 | 1 | — | — | 27 |
| Plasmodia vivax & malariae | 4 | — | — | — | — | 4 |
| Plasmodia vivax, falciparum & malariae | 2 | — | — | — | — | 2 |
| Microscopical examinations for microfilaria (all nega- tive) | 24 | 2 | — | — | — | 26 |
| Differential counts of leuco- cytes | 4 | 1 | — | — | — | 5 |
| Enumerations of leucocytes | 30 | 4 | — | — | — | 34 |
| Enumerations of erythro- cytes | 14 | 1 | — | — | — | 15 |
| Estimations of coagulation time | 5 | — | — | — | — | 5 |
| Widal reaction:— | | | | | | |
| Total performed (from 21 patients) | 26 | — | — | — | — | 26 |
| B. typhosus positive | 5 | — | — | — | — | 5 |
| B. paratyphosus A positive | 0 | — | — | — | — | 0 |
| B. paratyphosus B positive | 1 | — | — | — | — | 1 |
| B. paratyphosus C positive | 0 | — | — | — | — | 0 |
| Weil-Felix reaction:— | | | | | | |
| Total performed (from 20 patients) | 25 | — | — | — | — | 25 |
| Positive to B. proteus X "K" strain | 2 | — | — | — | — | 2 |
| Positive to B. proteus X "W" strain | 1 | — | — | — | — | 1 |
| Kahn test:— | | | | | | |
| Number performed | 244 | — | — | — | — | 244 |
| Positive | 50 | — | — | — | — | 50 |
| Estimation of blood sugar | 6 | — | — | — | — | 6 |
| Fouchet's test:— | | | | | | |
| Number performed Positive | 5 | — | — | — | — | 5 |
| Positive | 3 | — | — | — | — | 3 |
| CEREBRO-SPINAL FLUID. | | | | | | |
| Nonne-Apelt reaction (posi- tive) | | | | | | |
| Enumeration of cells | 1 | — | — | — | — | 1 |
| .. .. | 1 | — | — | — | — | 1 |

APPENDIX G.—(Contd.)

| | Kuala Trengganu. | Chukai, Kampong | Kuala Dungun. | Kuala Brang. | Kampong Raja. Brang. | Total. |
|---|---------------------|--------------------|------------------|-----------------|----------------------------|------------|
| BACTERIOLOGY. | | | | | | |
| Cultures for <i>B. diphtheriae</i> (all negative) .. | 3 | — | — | — | — | 3 |
| Vaccines made .. | 2 | — | — | — | — | 2 |
| "Dmelcos" skin test for soft sore (4 positive) .. | 5 | — | — | — | — | 5 |
| Sputum:— | | | | | | |
| Microscopical examinations for <i>B. tuberculosis</i> (numbered (positive) .. | 456 58 | 14 10 | 22 2 | — — | — — | 492 70 |
| Cervix, conjunctive, urethra, etc:— | | | | | | |
| Microscopical examinations for gonococci (numbered (positive) .. | 328 198 | 8 6 | — — | — — | — — | 336 204 |
| Nose & skin:— | | | | | | |
| Microscopical examinations for the lepra bacillus (numbered (positive) .. | 57 12 | 2 0 | 3 — | — — | — — | 62 12 |
| STOMACH. | | | | | | |
| Gastric analyses .. | 33 | — | — | — | — | 33 |
| URINE. | | | | | | |
| Chemical examinations (ex- cluding routine examina- tions in the wards) .. | 695 | — | — | — | — | 695 |
| Microscopical examinations | 389 | — | — | — | — | 389 |
| Urinary examinations, un- specified .. | — | 666 | 562 | 2 | 56 | 1,286 |
| FAECES. | | | | | | |
| Infection with ankylostoma, ascaris and trichuris is very common; entamoeba histolytica, entamoeba coli, lamblia intestinalis and strongyloids are not nearly so frequent. Tapeworm, distomes and oxyuris vermicularis are oc- casionally observed but there was no case in 1937. | | | | | | |
| The following are the results of the examinations:— | | | | | | |
| Preparations examined .. | 3,133 | 260 | 633 | 30 | 183 | 4,239 |
| Negative .. | 878 | 169 | 123 | 7 | 19 | 1,186 |
| Positive .. | 2,255 | 91 | 510 | 23 | 164 | 3,053 |
| Ankylostoma .. | 103 | 10 | 27 | 14 | 26 | 180 |
| Ascaris .. | 406 | 18 | 33 | 1 | 50 | 508 |
| Entamoeba coli .. | 2 | — | — | — | — | 2 |

APPENDIX G.—(Contd.)

| | Kuala Trengganu. | Chukai, Kemaman. | Kuala Dungun. | Kuala | Kemaman, Raja. | Total. |
|---|---------------------|---------------------|------------------|-------|-------------------|--------|
| Entamoeba histolytica .. | 0 | 5 | 4 | — | — | 9 |
| Entamoeba histolytica and ascaris .. | 1 | — | — | — | — | 1 |
| Entamoeba histolytica, anky- lostoma, ascaris & trichuris .. | 1 | — | — | — | — | 1 |
| Lamblia intestinalis .. | 1 | — | — | — | — | 1 |
| Pus or blood cells or pus and blood cells .. | 191 | 4 | 10 | — | 23 | 228 |
| Pus & blood cells & Charcot —Lyden crystals .. | 1 | — | — | — | — | 1 |
| Strongyloids .. | 8 | — | — | — | — | 8 |
| Trichuris .. | 219 | 18 | — | — | 9 | 246 |
| Ankylostoma & ascaris .. | 102 | — | 68 | — | 18 | 188 |
| Ankylostoma, ascaris and strongyloids .. | 1 | — | — | — | — | 1 |
| Ankylostoma, ascaris, lamblia intestinalis & trichuris .. | 2 | — | — | — | — | 2 |
| Ankylostoma, ascaris and trichuris .. | 261 | 18 | 69 | 2 | 1 | 351 |
| Ankylostoma, ascaris, tri- churis & strongyloids .. | 1 | — | — | — | — | 1 |
| Ankylostoma & strongyloids .. | 1 | — | — | — | — | 1 |
| Ankylostoma and trichuris .. | 84 | 3 | 34 | — | 17 | 154 |
| Ascaris & trichuris .. | 866 | 15 | 265 | 6 | 20 | 1,156 |
| Ascaris, trichuris & stron- gyloids .. | 4 | — | — | — | — | 4 |
| For occult blood:— | | | | | | |
| (examinations numbered .. | 23 | — | — | — | — | 23 |
| (positive .. | 16 | — | — | — | — | 16 |

| Sl. No. | Particulars | Rate | Quantity | Amount | Remarks |
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Printed by
G. H. Kiat & Co., Ltd.,
Singapore.

