

## **Annual medical and sanitary report / Trengganu.**

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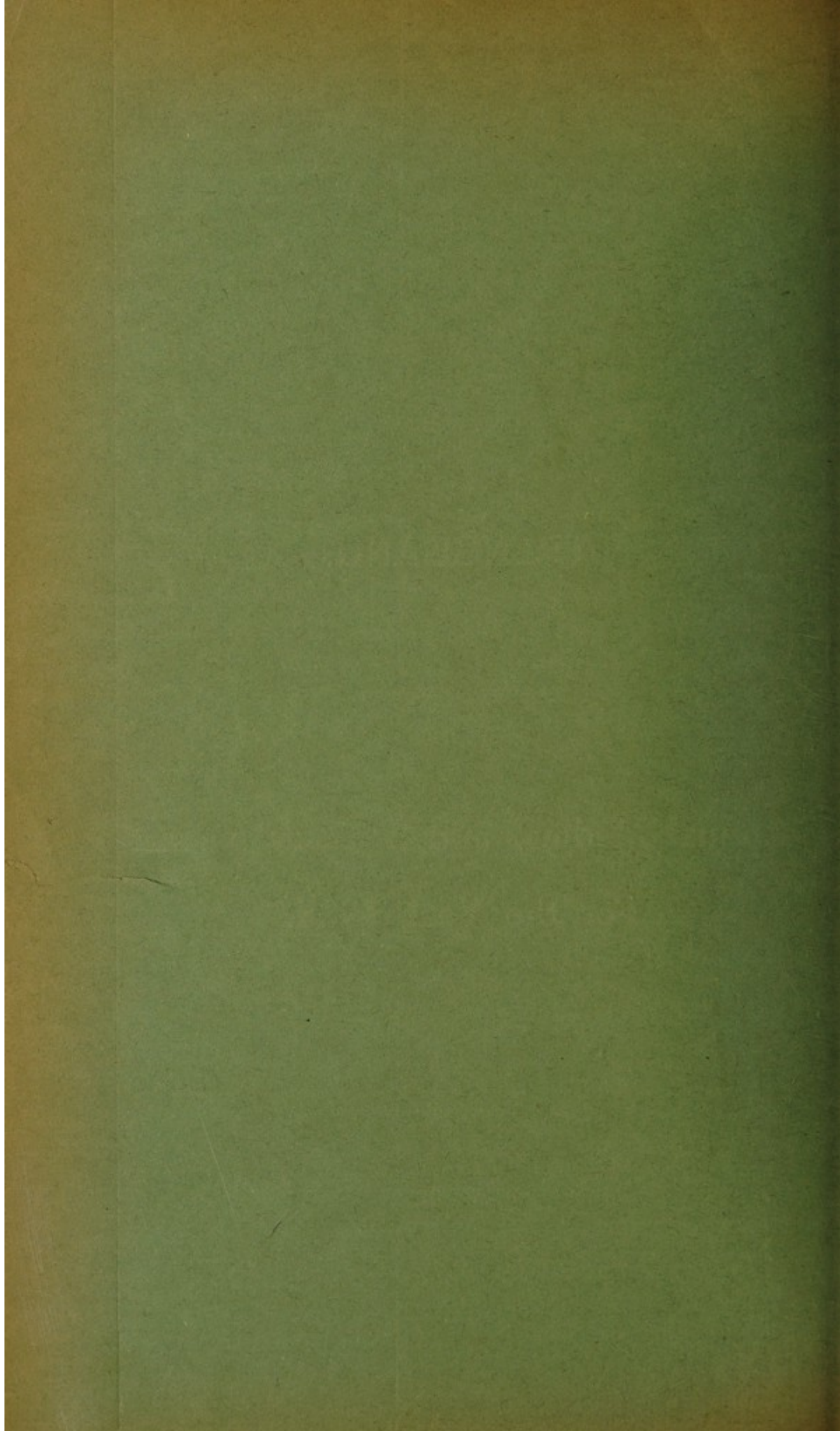
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## TRENGGANU.

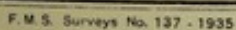
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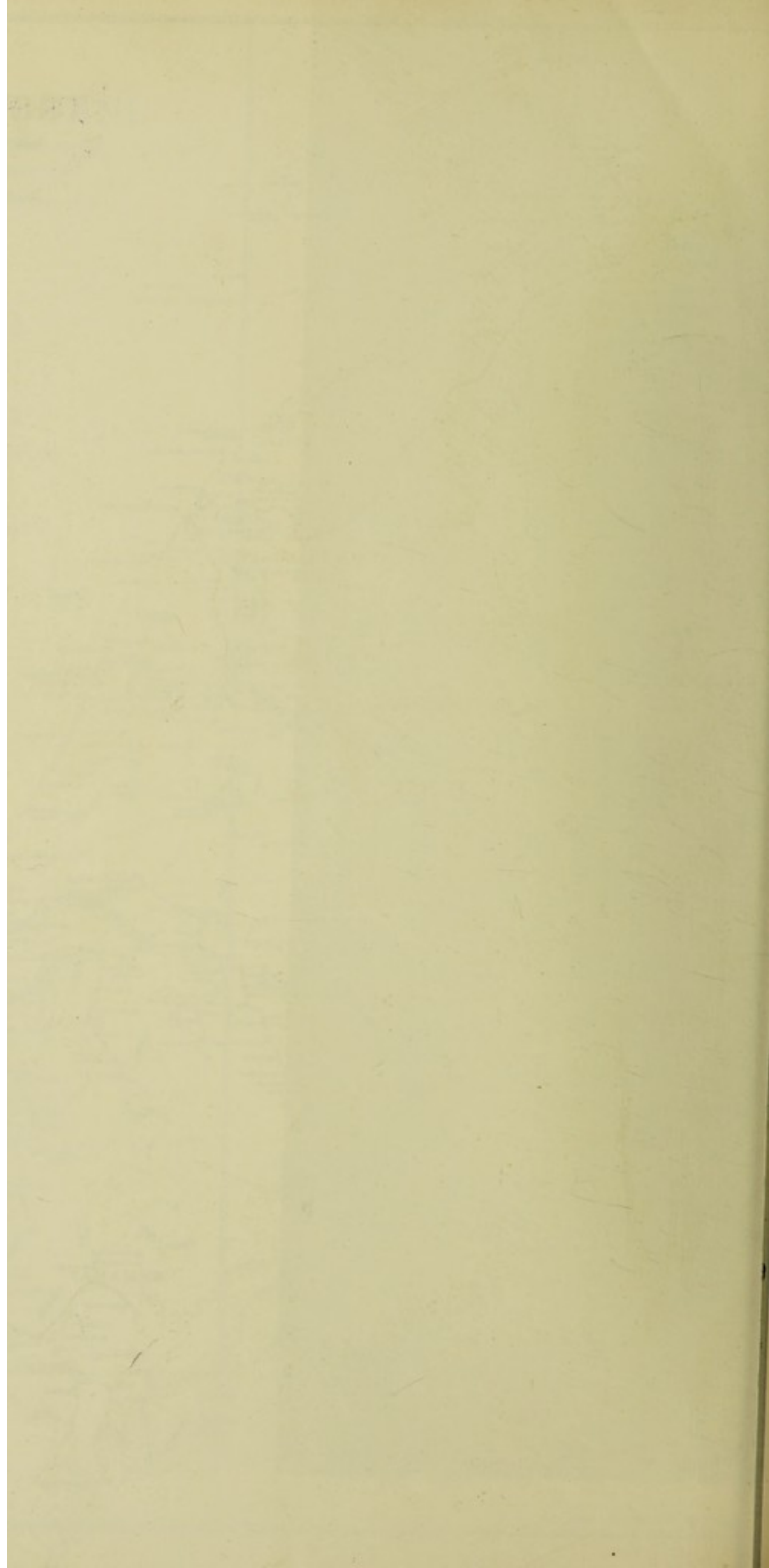
Annual Medical and Sanitary Report  
For the Year 1935.





## Roads









ANNUAL REPORT OF THE MEDICAL OFFICER IN CHARGE OF THE  
TRENGGANU MEDICAL DEPARTMENT FOR THE YEAR 1935.

CONTENTS.	Page.
I. ADMINISTRATION:	
Staff; legislation; finance; buildings. . . . .	1
II. VITAL STATISTICS:	
General population; births; deaths; registration. . . . .	2
III. HEALTH OF THE EUROPEAN POPULATION & ASIATIC OFFICIALS:	
Europeans; Asiatic officials. . . . .	4
IV. HYGIENE & SANITATION:	
Special diseases; general measures of sanitation. . . . .	5
V. PORT HEALTH WORK: . . . . .	12
VI. MATERNITY & CHILD WELFARE WORK:	
Maternity work; Maternity and child welfare clinic, Kuala Trengganu. . . . .	12
VII. HOSPITALS & DISPENSARIES:	
Hospitals; dispensaries; laboratory work. . . . .	13
VIII. PRISONS & ASYLUMS:	
Prisons; asylums. . . . .	17
IX. VETERINARY: . . . . .	18
X. METEOROLOGY: . . . . .	19
APPENDIX A: STAFF OF THE MEDICAL DEPARTMENT:	
Distribution of staff; appointments; dismissals, etc. . . . .	20
APPENDIX B: DEATHS GROUPED ACCORDING TO AGE, SEX & NATIONALITY: . . . . .	22
APPENDIX C: HEALTH STATISTICS OF LABOUR POPULATION IN TRENGGANU: . . . . .	23
APPENDIX D: RETURNS OF DISEASES & DEATHS OF IN-PATIENTS: . . . . .	24
APPENDIX E: DETAILS OF OUT-PATIENTS TREATED AT THE VARIOUS DISPENSARIES: . . . . .	30

REPORT OF THE BOARD OF HEALTH  
FOR THE YEAR 1900

CONTENTS

I. GENERAL STATEMENT	1
II. VITAL STATISTICS	10
III. REPORT ON THE PREVALENCE OF DISEASES	25
IV. REPORT ON THE PREVALENCE OF INFECTIOUS DISEASES	35
V. REPORT ON THE PREVALENCE OF TUBERCULOSIS	45
VI. REPORT ON THE PREVALENCE OF SMALLPOX	55
VII. REPORT ON THE PREVALENCE OF MEASLES	65
VIII. REPORT ON THE PREVALENCE OF SCARLET FEVER	75
IX. REPORT ON THE PREVALENCE OF DYSENTERY	85
X. REPORT ON THE PREVALENCE OF CHOLERA	95
XI. REPORT ON THE PREVALENCE OF MALARIA	105
XII. REPORT ON THE PREVALENCE OF YELLOW FEVER	115
XIII. REPORT ON THE PREVALENCE OF HYPERTENSION	125
XIV. REPORT ON THE PREVALENCE OF DIABETES	135
XV. REPORT ON THE PREVALENCE OF RHEUMATISM	145
XVI. REPORT ON THE PREVALENCE OF GOUT	155
XVII. REPORT ON THE PREVALENCE OF BRUCELLOSIS	165
XVIII. REPORT ON THE PREVALENCE OF SYPHILIS	175
XIX. REPORT ON THE PREVALENCE OF TUBERCULOSIS	185
XX. REPORT ON THE PREVALENCE OF LUNG CANCER	195
XXI. REPORT ON THE PREVALENCE OF STOMACH CANCER	205
XXII. REPORT ON THE PREVALENCE OF COLON CANCER	215
XXIII. REPORT ON THE PREVALENCE OF PANCREAS CANCER	225
XXIV. REPORT ON THE PREVALENCE OF LIVER CANCER	235
XXV. REPORT ON THE PREVALENCE OF BLADDER CANCER	245
XXVI. REPORT ON THE PREVALENCE OF PROSTATE CANCER	255
XXVII. REPORT ON THE PREVALENCE OF UTERINE CANCER	265
XXVIII. REPORT ON THE PREVALENCE OF OVARIAN CANCER	275
XXIX. REPORT ON THE PREVALENCE OF BREAST CANCER	285
XXX. REPORT ON THE PREVALENCE OF SKIN CANCER	295



## 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., a graduate of Singapore, was appointed Assistant Medical Officer on 20/4/1935.

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

Medical Officer	1	
Assistant Medical Officer	1	
Male Dressers	22	(Two grade I, four grade II, nine grade III & four probationers)
Sanitary Inspector & Assistant	2	
Midwives	3	
Vaccinators	4	
Clerks	3	
Storekeepers	2	
Menials	29	

This represents an increase over the staff of the previous year of 3 dressers, one widwife and one menial.

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

The grading of dressers is in accordance with a scheme following that adopted by the Government of the Straits Settlements.

Examinations for dressers are held at Kuala Trengganu but some dressers prefer to sit the examinations held by the Governments of the Straits Settlements and the Federated Malay States as the grades conferred by Trengganu are not valid outside the State. There were no candidates for examination during 1935.

### (B) LEGISLATION.

Regulation (Peraturan) No. 5 of A. H. 1353, dated 18/2/1935, and Proclamation (Ishtihar) No. 68 of A. H. 1353, dated 22/3/35, concern the registration of druggists; druggists have now to pay a registration fee of \$5.00 every year.

Regulation No. 6 of A. H. 1353, dated 18/2/1935 and Proclamation No. 8 of A. H. 1354 concern the registration of dentists who have now to pay a fee of \$10.00 on registration.

Proclamation No. 14 of A. H. 1354, dated 2/6/1935, gave the Medical Department authority to vaccinate passengers coming from Singapore. This proclamation was later rescinded by Proclamation No. 54 of A. H. 1354 dated 17/11/1935.

Proclamation No. 18 of A. H. 1354, dated 6/6/1935, is an amendment to the Extradition Enactment, No. 4 of A. H. 1352, and makes a person who has attempted to commit an offence by dealing in dangerous drugs liable to banishment.

A new Town Board Enactment has been prepared but has not yet been published.

### (C) FINANCE.

The Estimates for 1935 provided for an expenditure of \$76,476.00 while the actual expenditure was \$69,601.05 and was made up as follows:—

	Estimated	Actual Expenditure
Personal emoluments	\$47,212.00	\$43,065.68
Annually recurrent	28,546.00	25,761.02
Special vote	1,200.00	774.35
	<hr/>	<hr/>
	\$76,958.00	\$69,601.05

N.B.—\$1.00=two shillings and four pence.



Owing to the improving conditions of the State finances, the Estimates for 1936 provide for an expenditure of \$104,822.00.

The subordinate staff received its first increment since May 1931 on the 1st of January and on the 1st of October all arrears of increments were restored.

The revenue received by the Medical Department during the year was \$1,693.68 (\$764.05)\*.

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.
1932	\$ 446.35	\$ 986,901.00	\$61,623.89	\$1,095,584.00	5.63%
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%

N.B.—\$577,090.00 of the State expenditure for 1935 was for payment of principal and interest on loans made by the Government of the Straits Settlements.

#### (D) BUILDINGS.

Work on a new ward containing six single bed-rooms for officials and paying patients was commenced at the end of the year and it will be completed by the end of June, 1936.

A few minor works and repairs were completed.

## II. VITAL STATISTICS.

#### (A) GENERAL 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 1935 calculated by the geometrical method is 192,142 and the rates for births and deaths are calculated on this basis. This method of calculation is suitable for Trengganu as there is little change in the population from immigration and emigration. The figures for immigration and emigration are not reliable.

#### (B) BIRTHS.

During the year, there were 7,055 (6,330)\* live births registered of which 3,587 (3,212) were males and 3,468 (3,118) were females giving a sex-ratio of 967 (971) females to every 1,000 males. The live birth-rate was 36.72 (33.46) per mille. The number of still births recorded was 209 (170) giving a rate of 29 (26) still births per 1,000 total births.

The following table shows the births according to race:—

	Malays.	Chinese.	Indians.	Europeans.	Eurasians.	Others.	Total.
Males ..	3,374	190	8	0	0	16	3,588
Females ..	3,277	166	12	0	0	12	3,467
	6,651	356	20	0	0	28	7,055

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



## (C) DEATHS.

4,619 (4,590) deaths were registered during the year giving a rate of 24.04 (24.27) per mille; of these 2,515 (2,463) were males and 2,104 (2,127) were females. The highest number of deaths in any one month was 420 (in October) and the smallest 362 (in April).

A table showing the deaths according to sex, nationality and age-group is given in appendix (B).

**Infantile Mortality.**—The number of deaths of children under the age of one year was 1,465 (1,401) or 31.72% (30.52) of the total number of deaths of which 803 (790) were males and 662 (611) were females. The infantile mortality rate was 207.65 (221.33) per mille.

Deaths of children under five years of age numbered 2,109 or 45.66% of the total deaths.

**Maternal Mortality.**—Seventy-seven (51) women died as the result of childbirth giving a rate of 10.91 (8.05) per thousand live births.

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

	1931	1932	1933	1934	1935
Unspecified fever and malaria (v. i) ..	2,525	2,814	2,061	2,529	2,557
Convulsions .. .. .	730	778	786	1,031	996
Bowel diseases .. .. .	203	225	154	273	264
Beri-beri .. .. .	58	76	64	68	76
Respiratory diseases .. .. .	43	48	45	134	143
Maternal mortality .. .. .	86	108	56	51	77
Old age .. .. .	254	287	214	308	238
Accidents .. .. .	79	96	70	63	50
Other causes .. .. .	345	368	169	133	218
Total .. .. .	4,323	4,800	3,619	4,590	4,619

It must be pointed out, however, that these figures are far from accurate for the deputy registrars are persons possessed of little or no medical knowledge and in just over 2% of the deaths was the certificate signed by a qualified medical practitioner.

Instructions issued to deputy registrars have met with only limited success for although the diseases are differentiated to a greater extent than formerly it is only the most prominent symptom that is recorded such as fever, "hot" fever ("deman panas"—which usually means malaria), cough, abdominal colic, convulsions and so on. Instructions were issued that fever *per se* was not to be accepted as a cause of death and that the nature of the fever was to be recorded as it was thus hoped that more accurate information about the number of deaths due to malaria would be obtained. Of the 2,557 cases of fever recorded above, 194 were due to malaria, 1,933 were due to "deman panas" which usually means malaria and 430 were due to vague or undetermined kinds of fever. It will be a long time before Trengganu can furnish accurate information in this respect. Spirits and other malign influences are still held by a large section of the Trengganu people to play a great part in disease and of the 218 deaths due to "other causes" mentioned above, 4 were ascribed to "kelintasan" and 41 to "badi." "Kelintasan" is believed to be caused by the Spirits of the Forest or other places who resent the intrusion of a traveller or wood cutter into some special preserve of theirs; it usually befalls a man journeying in the heat of the day in some lonely spot. It is accompanied by loss of speech or incoherent speech and paralysis; in fact, it is sudden death caused by a stroke and is found in middle-aged and old people. "Badi" are the ghostly influences haunting the scene of the slaughter of human beings, of animals such as tiger and elephant, and of certain birds while apparently even trees may have this power of retaliation. Of the 41 cases, all but 6 were under 2 months of age and the oldest was 2 years. "Jengi" appears to be the the same as "badi" when only an attempt to kill has been made.



Noxious Animals.—Five persons were killed by tigers and one by a crocodile.

Road Accidents.—Even Trengganu has its road problems and five persons were killed in motor-car accidents; it is a matter for congratulation that there were only 316 licensed vehicles in the State.

#### (D) REGISTRATION IN TRENGGANU.

The registration of births and deaths has been compulsory since July 1927.

The Medical Officer is the Registrar while he has a clerk who acts as Assistant Registrar. There are Deputy Registrars in thirty-five places of which twenty-nine are police-stations, two are customs offices and four are the offices of penghulus (district head-men).

It is considered that the registration of deaths is fairly complete but that this is not the case with regard to the registration of births. Apart from the fact that a permit to bury is not given unless the death is first registered, failure to report might entail suspicion of foul play and consequent serious trouble with the police. The only risk involved in failure to report a birth is the infliction of a light fine. The police were requested at the beginning of the year to keep a special watch for this and as a result there were 13 prosecutions and 8 convictions for failing to report births and 7 prosecutions and 6 convictions for failure to report deaths; those not convicted were warned.

The following table shows the number of births, deaths and infantile deaths with their 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

### III. HEALTH OF THE EUROPEAN POPULATION AND ASIATIC OFFICIALS.

#### (A) EUROPEANS.

The total number of Europeans resident in the State at the end of the year was 26. One European died during the year as the result of a drowning fatality.

The following table shows the sick, invaliding and death-rate of the European Officials:—

Total number of officials resident	16
Average number resident	11.87
Total number on sick list	10.
Total number of days on sick list	99
Average daily number on sick list	0.27
Average number of days on sick list for each patient	9.9
Average sick time to each resident	8.34
Total number invalided	0
Percentage of invalidings to total resident	0
Total deaths	0
Percentage of deaths to total residents	0
Percentage number of deaths to total average number resident	0
Number of cases of sickness contracted away from residence	4.



## (B) ASIATIC OFFICIALS.

The total number of new cases treated was 5,154 (4,469) of which 2,113 (1,554) were in the Police Force.

## IV. HYGIENE AND SANITATION.

## (A) SPECIAL DISEASES.

The number of prevailing diseases treated during the last five years have been:—

Disease.	1931	1932	1933	1934	1935
Malaria .. .. .	5,408	6,180	10,718	12,965	16,931
Fever unspecified .. .. .	862	574	1,695	1,019	658
Diseases of respiratory system (excluding influenza) .. .. .	1,357	1,676	3,109	4,608	3,407
Influenza .. .. .	1,820	2,070	2,278	2,986	3,933
Yaws .. .. .	2,601	3,434	4,789	4,400	4,334
Beri-beri .. .. .	1,181	433	782	968	1,176
Intestinal parasites .. .. .	3,539	4,940	8,561	11,080	15,484

These figures represent the total number of new patients treated, both in-patients and out-patients. They are a better guide to the incidence of diseases in Trengganu than the alleged causes of death which are so unreliable.

## (1) MOSQUITO-BORNE DISEASES.

Malaria.—The incidence varies widely in different parts of Trengganu. The coast-line, which is the most densely populated part of the State, is fairly free except in certain parts where the flat, sandy plain is broken up by hills.

It is considered that there is no malaria in Kuala Trengganu which is the capital and largest town in the State though the Medical Department is always watching for cases. The incidence of enlarged spleen among 1,111 school-children was only 0.72% (0.26). Anopheline mosquitos are not very numerous although they are found in increased numbers after the monsoon rains and in many parts of the town it is possible to sleep all the year round without a mosquito-net. The following varieties of mosquitos are found:—*A. barbirostris*, *A. hyrcanus*, *A. kochi*, *A. rossi*, *A. sinensis* and *A. vagus*.

The incidence of enlarged spleen among the school-children at the other towns on the coast is as follows:—Kuala Besut—3.01%, Kuala Setiyu—0%, Kampong Panjang, Setiyu—1.18%, Kampong Penarek, Setiyu—0%, Marang—10.0%, Kuala Dungun—4.76%, Paka—3.85%, Kretir—19.35%, Kemasek—8.0%, Kijal—14.89%, Kuala Kemaman—4.44% and Chukai, Kemaman—1.76%. The most malarious places on the coast are Batu Rakit, Marang and Kretir. Anti-malaria oiling was done on a small scale at Marang during the year.

The further inland one goes, however, the higher becomes the incidence of the disease although the two inland schools did not show a high rate; at Kampong Raja, Besut the rate was 2.04% while at Kuala Brang, which is about twenty-five miles inland, the rate was 3.45%. The Medical Officer has found on his visits to the upper reaches of the various rivers in Trengganu that malaria is extremely prevalent and that in the most distant villages practically all the children with the exception of some very young babies have enlarged spleens; fortunately the population is very sparse in these parts. The Dungun river seems to be less malarious than the other rivers.

The islands are highly malarious especially Pulau Perhentian but the population on these islands is small and probably does not amount to 800. The Medical Officer attempted to find the breeding-places of the anophelines concerned. Numerous larvae of *Culex* and *Stegomyia* were found in pools especially on rocks and in coconut husks but the search for anophelines was disappointing, only two specimens being found, one—unidentified—in water among the roots of a tree and one—*A. maculatus*—in a water-jar.



There is always a certain amount of malaria on the mines and estates and there was a great increase in the number of cases of malaria at the Nippon Mining Co., Dungun especially during the last half of the year (v.i.).

The question as to whether there has been an increase in malaria during the year is a difficult one. From a consideration of the causes of death, it would seem that there was no significant increase. A comparison with 1934 shows the following:—

	1934	1935
Deaths stated to be due to malaria	92	194
Deaths due to fever unspecified	2,621	2,363
Deaths due to convulsions	1,031	996

As has been pointed out, no great weight can be laid on these figures while the increase in the number of figures stated to be due to malaria is probably due to the efforts of the Medical Department to secure accurate registration.

School medical inspections indicate that the spleen rate has declined from 3.12% to 2.38% but this merely shows that there has been no increase on the coast as nearly all the schools are there.

The percentage of out-patients treated (new cases) rose from 13.57 to 14.22. The rise is probably of no significance as the percentage of out-patients treated during visits to the out-lying villages rose from 43,998 to 60,061 and in consequence more visits were paid to the inland villages where the incidence of malaria is higher.

On the other hand, the percentage of in-patients treated for malaria as the principal disease rose from 9.2% to 25.93%.

The details are as follows:—

	1934		1935	
	Cases	Deaths	Cases	Deaths
Number of patients admitted for malaria with parasites seen by the microscope in the blood	32	2	340	2
Number of patients admitted judged to be suffering from malaria though no parasites were discovered in the blood	135	2	274	3
Total	157	4	614	5

A scrutiny of these 614 cases revealed that no fewer than 303 of them claimed to be employed by the Nippon Mining Co., Dungun and in 203 of these cases parasites were demonstrated in the blood by the microscope. In the health returns of the company, only 72 cases of malaria were reported with 13 deaths most of which occurred in the latter half of the year. There has not been such a high proportion of cases admitted suffering from malaria since the period 1930—1931 when the percentages admitted were 30.86 and 27.56 respectively. The percentage of Malays admitted suffering from malaria rose from 5.61 in 1934 to 9.87.

From a consideration of these facts, it has to be admitted that there has been a slight increase in the incidence of malaria probably due to the increased activity on the mines and estates as was the case in the period 1930—1931.

In all, 16,485 (12,965) cases were treated.

Dengue.—No case of this disease was reported.

Filaria.—One patient was admitted into hospital suffering from this disease.



## (2) BOWEL DISEASES.

264 (274) deaths were reported to have been due to bowel diseases.

Dysentery.—It is remarkable that dysentery is not more prevalent considering the extremely unhygienic state of affairs with regard to conservancy in areas where the water-table is very high and shallow, unprotected wells form the water-supply; the filtering action of the soil which is very sandy on the coast doubtless plays a great part. With the exception of two small out-breaks reported from the Bundi Mine in which 16 people were concerned (1 death) there was no epidemic although a number of sporadic cases occurred throughout the State. Twenty-six (29) cases were treated in the hospital of which six (25) were amoebic and there were four (6) deaths. One hundred and forty-seven (167) were treated as out-patients of which forty-eight (84) were amoebic.

Diarrhoea and Enteritis.—Six hundred and fifty eight (627) cases were treated.

Helminthic infections.—These are extraordinarily prevalent. School inspection at Kuala Trengganu showed that over 90% of the children had signs of worms while 84.30% (83.90) of all specimens of stool examined at the laboratory had some kind of helminthic infection which was usually multiple (microscopic film method); of these cases, the common parasites were ankylostoma—24.39% (29.11), ascaris 92.21% (70.13) and trichocephalus dispar 75.01% (58.05). Microscopical work at the out-stations showed that 76.64% (77.82) of the specimens examined were positive; here too, ascaris was found to be much commoner than ankylostoma. Occasional cases of distoma infection such as *Clonorchis sinensis* occur but no case has been seen for over two years while no case of tape-worm has yet been found. Free treatment of cases is the only practicable measure at present and the number so treated rose from 11,080 in 1934 to 15,484 in 1935.

Enteric fever—V. I.

## (3) DANGEROUS INFECTIOUS DISEASES.

There were two out-breaks of small-pox during May. The first occurred at Chukai, Kemaman among the Tamil lighter coolies employed by the Ishihara Sangyo Koshi, an iron mining company. There were four cases in all with one death. The infection had been introduced by a new arrival from Singapore where there was a small epidemic. The second out-break was discovered shortly afterwards in a village near the main road to Kuala Brang about sixteen miles from Kuala Trengganu and here also there were four cases with one death. Enquiry did not shed any light on the source. Measures were at once taken to check these out-breaks while all passengers disembarking from Singapore were vaccinated unless they could produce certificates of recent vaccination until the epidemic there abated. The result was that 15,711 vaccinations were performed as compared with 9,146 in 1934. The total was made up as follows:—

1. Vaccinator, Besut	..	..	..	..	..	3,200
2. Dresser, Kampong Buloh	..	..	..	..	..	135
3. Vaccinator, Kuala Trengganu	..	..	..	..	..	5,271
4. Hospital, Kuala Trengganu	..	..	..	..	..	345
5. Town Dispensary, Kuala Trengganu	..	..	..	..	..	584
6. Travelling Dresser, Kuala Trengganu	..	..	..	..	..	256
7. Dresser, Kuala Brang	..	..	..	..	..	123
8. Vaccinator, Kuala Dungun	..	..	..	..	..	2,449
9. Dresser, Kemasek	..	..	..	..	..	22
10. Vaccinator, Kemaman	..	..	..	..	..	2,795
11. Dresser, Kemaman	..	..	..	..	..	441
Total						15,711

## (4) OTHER INFECTIOUS DISEASES.

No case of tsutsugamushi fever or leptospirosis has yet been diagnosed in Trengganu. Three cases of tropical typhus, however, occurred which were the first cases of this disease to have been discovered. Diagnosis has been greatly facilitated by the introduction of the Weil-Felix test. Two of the cases came from Ulu Dungun and one of them died. The other case was a patient who had recently been in Ulu Dungun but as he had also been in Ulu Tembeling, Pahang it was impossible to say where the disease had been contracted.



Enteric fever.—As in the case of dysentery, it is remarkable that the incidence is so small. There was no epidemic and only sporadic cases occurred. There were nine (7) cases of typhoid fever and three (0) of paratyphoid B fever. Seven of the typhoid cases and all the paratyphoid cases were treated in hospital and there was one death in each group.

Chicken-pox.—One hundred and two (30) cases were treated, none of which was fatal.

Measles.—Sixty nine (93) cases were treated and three (4) deaths were reported.

Mumps.—Two (2) cases were reported.

Whooping-cough.—There were twenty five (6) cases treated and two (0) deaths were reported.

Tetanus.—There was one fatal case.

Anterior Poliomyelitis.—One case of this was reported from the Bundi mine in the Kemaman district.

There was no case of diphtheria.

Influenza.—Three thousand nine hundred and thirty-three (2,986) cases were treated by the department. The incidence is greatest at the onset of the north-east monsoon.

#### (5) FOOD DEFICIENCY DISEASES.

Beri-beri.—Most of these cases occur towards the end of the north-east monsoon. The incidence is perhaps greater among the Chinese than among the Malays and is often noted in women after confinement. It is difficult to persuade these patients to vary their diet of polished rice and dried fish with vegetables. This 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.

One thousand one hundred and seventy six (968) cases were treated while seventy six (68) deaths were reported; this latter figure is probably an accurate index of the mortality for the symptoms of the disease are well known to the people. There were 107 admissions into hospital with 11 deaths; the disease often first becomes manifest during an attack of malaria.

Scurvy.—No case was treated although there were two in 1934.

Goitre.—A number of cases occur in a localized area in the upper reaches of the Trengganu river. About 5% of the population have marked enlargements while minor degrees of enlargement are common. The disease is commoner in women and is said to appear about the age of puberty.

#### (6) TUBERCULOSIS.

Eighty-one (101) cases of pulmonary and laryngeal tuberculosis were treated. There were forty-one (48) admissions into the hospital and there were sixteen (15) deaths; as usual, they were practically all middle-aged and old men who were unable to obtain work. One hundred and forty-three persons (132) were reported to have died of respiratory diseases and forty-seven (45) of these deaths were stated to be due to tuberculosis.

#### (7) YAWS.

This disease is extremely prevalent and every manifestation can be seen. The disease is more common on the coast and is practically confined to the Malays. Owing to the campaign against this disease, the early active stages of the disease are rarely encountered in the larger towns.

A total of four thousand three hundred and thirty four (4,400) cases were treated including three hundred and thirty three in-patients. The routine treatment is now injections of metallic bismuth, neoarsphenamine or sulpharsphenamine while stovarsol and injections of bismuth-sodium-tartrate are given in selected cases. Unfortunately, it is not always easy to persuade the patients, with the exception of those in the hospital, to receive injections. Apart from the fact that Trengganu Malays do not like injections at any time, they associate injections for yaws with the general reaction that almost invariably follows injections of bismuth-sodium-tartrate for this drug was used as a routine treatment when money available for drugs was scarce; further, stovarsol, the easy administration of which by the mouth pleases the Malays, is sold by druggists and others, which would not be a bad thing but unfortunately, owing to the high cost, they sometimes do not buy sufficient for a single course of treatment. The Medical Department cannot afford to use this as a routine treatment and in any case injections are more reliable.



The following injections were given:—

First injections	2,034
Subsequent injections	1,130
Total	3,164

Of these, 1,114 were given in the hospital.

#### (8) LEPROSY.

Every effort is made to persuade these patients to come for treatment. Two (3) deaths were reported from this cause during the year.

#### (9) SKIN DISEASES.

Tinea and scabies were the principal skin diseases. Nine thousand nine hundred and forty-four (9,444) cases of tinea and nine thousand two hundred and ninety (9,290) cases of scabies were treated.

#### (10) CHRONIC ULCER.

Eleven thousand nine hundred and forty-nine (11,949) cases were treated.

#### (B) GENERAL MEASURES OF SANITATION.

Sanitation is not highly organized in Trengganu.

In Kuala Trengganu, control is exercised by a Town Board which has official and unofficial members including the State Engineer, the State Surveyor and the Medical Officer; a Malay official is in charge of the Department. There are also small Town Boards at Kemaman and Besut. Elsewhere, sanitation is in the hands of the Malay District Officers who are supposed to consult the Dressers in their districts with regard to these matters. There is only one sanitary inspector in the State who is stationed at Kuala Trengganu.

Coolies are employed by all the larger towns and use is also made of prisoners.

The staff of labourers employed by the Kuala Trengganu Town Board at the end of the year was as follows:—

- 1 Overseer.
- 2 Mandors.
- 50 Coolies for lighting lamps, cleaning drains, markets, streets, etc. (The average number employed was not so high).

The staff employed by Kemaman Town Board was one mandor and ten coolies.

The number of coolies employed in the rest of the State numbered 12.

#### (1) SEWAGE.

Very little of this is done and that only in the larger towns.

In Kuala Trengganu, a "double-pail" system is carried out by a private company but only about 250 latrines are served in a town of over 14,000 inhabitants; ultimate disposal is by trenching. The work of this company was not satisfactory. In addition, the hospital, goal and some private houses have private trenching systems of their own and the prisoners in the gaol also remove the pails from the police-barracks, some of the Government offices, the Government rest-house and some of the schools. The provision of public latrines has been postponed until 1936.

An improved trenching-site was in the course of preparation at the end of the year.

A pail and trenching system was installed at Kemaman during the year and serves most of the houses within the Town Board area. There are public latrines here.

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



## (2) DISPOSAL OF REFUSE.

Disposal of refuse in the larger towns is by dumping.

In Kuala Trengganu a number of large concrete bins of an improved type and a new lorry was purchased making the number of lorries now engaged on this work three.

## (3) DRAINAGE.

With the exception of a few concrete drains at Kuala Trengganu and Kemaman, there are only earth drains though conditions are not too bad owing to the sandy nature of the soil in the principal towns. About 400 yards of new concrete drain were added in Kuala Trengganu.

## (4) WATER SUPPLY.

Reference has already been made to the water-supply which in all the towns and larger villages consists of shallow, and for the most part unprotected, wells; in the up-country villages, water is usually obtained from the rivers.

## (5) FOOD.

Inspections are regularly performed by the Sanitary Inspector at Kuala Trengganu and by the Dressers elsewhere. Coffee-shops, eating-houses, lodging-houses and bakeries have to be licensed.

Markets.—There are markets in the towns and the larger villages. The accommodation at Kuala Trengganu is inadequate but the matter is under consideration.

Slaughter-houses.—Small slaughter-houses for cattle were built at Kuala Trengganu and Kemaman and the slaughter of cattle elsewhere within the town limits is forbidden. A slaughter-house for pigs was also opened at Kemaman. The slaughter of pigs in Kuala Trengganu is awarded by tender to a licensee and indiscriminate slaughter is forbidden.

## (6) HOUSING AND TOWN PLANNING.

Fairly wide municipal limits have been fixed in all the larger towns. Within these limits, a site plan has to be furnished and the building plan has to be passed by the Town Board. Additions to buildings and renovations have also to be sanctioned by the Town Board. Outside the town areas there are no building regulations.

The town board limits of Kuala Trengganu were extended to include Sabarang Takir, a crowded fishing-village of some 800 inhabitants lying on the north bank of the Trengganu river. Though a town plan was approved some time ago, little progress has been made on account of the delay of completing the settlement of ownership of land within the town limits.

A town plan has been prepared for Jerteh, a fairly large village situated beside the main road near the Kelantan boundary.

A town plan has also been prepared for Kuala Dungun, a town which is rapidly springing into prominence owing to its proximity to the prosperous Nippon iron mines. The Government is to spend a lot of money here in 1936 on roads, housing, markets, etc. and these measures will effect a great improvement in the present unsatisfactory, squalid conditions.

At Kemaman, a plan is under consideration for the improvement of the shop-house area; it is proposed to abolish the present narrow streets and to make provision for wide ones with suitable back lanes. It is also hoped to do away with a large slum area on the river bank, a remnant of the old town.

There are no building societies in the State.

There are very few cooly lines as local labour is generally employed. There are a few lines belonging to the Public Works Department while there are lines on the larger mines and estates.

There are very few Government quarters with the exception of those occupied by the European officials.



With the exception of the main streets in the larger towns, the common type of house is raised about 6—8 feet on wooden posts. The floors are of wood or split bamboo, the walls are generally of split bamboo or bark and the roofs of palm leaf. The houses in the case of the towns and the larger villages frequently lie close together with little provision for roads and lanes although this matter is receiving attention in the new town-planning schemes; in the smaller villages, however, the houses are generally well-spaced apart. As a rule, there are no drains or latrines while holes in the floor serve for waste water and refuse. Over-crowding is not the rule probably on account of the small proportion of Chinese in the population.

#### (7) SCHOOL HYGIENE.

All the Government schools within the State, twenty-two in number, and six private schools were inspected by the senior dressers.

Reports were received with regard to the structure, ventilation and lighting of the school buildings and the general sanitation. The accommodation at a number of the schools was found to be defective but a number of them are to be rebuilt or extended during 1936. A number of the schools were provided with suitable latrines and urinals.

All the children underwent a medical examination and were given the opportunity of treatment. The number examined was 2,058 (1,572) which was 81.96% (74.01) of the number on the roll. 1,111 (789) of the pupils were in the schools at Kuala Trengganu.

The proportion of the pupils with enlargement of the spleen was 2.38% (3.12), the rate being 0.72% (0.26) at Kuala Trengganu and 4.33% (5.96) in the other schools.

Signs of yaws were noted in 592 or 28.77% of the children but in the majority of these the disease was apparently inactive while 200 required immediate treatment mostly for yaws of the feet.

About half of the pupils showed signs of intestinal parasites.

Dental caries occurred in 49.61% (41.29). The defects were classified into three grades, slight, average and marked and of these cases, the defects were marked in 3.43%, average in 19% while in the remaining 77.57% the defects were slight, being confined to only one or two teeth. Pyorrhoea occurred in 3.35%.

Ulcers occurred in 5.10% (3.87), scabies in 14.09% (13.42), tinea in 11.76% (8.78) and other skin conditions in 1.85% (1.72). Other diseases, mainly of the ear and eye and respiratory affections, occurred in 2.21%.

#### (8) PROPAGANDA IN THE PREVENTION OF DISEASE.

The Sanitary Inspector, 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. In general, the Malay is meticulous about the cleanliness of his person but is rather indifferent to his surroundings.

Otherwise, little else is being done. One of the chief difficulties is the illiteracy of the population; it is estimated that not more than 17% of the boys of school age go to school while the school-girls number just over a hundred. Hygiene is a subject in the curriculum of the schools.

#### (9) DENTISTS AND DRUGGISTS.

Compulsory registration is in force and periodical inspections are made. The number of registered druggists at the end of the year was 15 while the number of registered dentists was 29.

#### (10) ATHLETICS.

The organization of sport is not so advanced as it is in other parts of Malaya but there is no doubt that interest is increasing. Association football, tennis and badminton all have their adherents but the sandy grounds are not suitable for such sports as hockey and cricket. There are only a few football pitches of any worth in the State but Government is prepared to set aside land for others when there is a demand for them. The village Malays do not indulge much in these games but they play "sepak raga," a game which consists in keeping a rotan ball in the air by means of kicking, "bergayong," a kind of wrestling, kite-flying and "main gasing" or spinning tops which is by no means a lazy pastime.



## (11) LIGHTING OF THE TOWNS.

There are as yet no public supplies of electricity and the towns are lit by means of oil lamps. Efforts at improvement were made during the year notably at Kemaman.

## (12) LABOUR CONDITIONS.

Mines.—There are two iron and three tin mines which employ labour on a considerable scale, the average monthly number of employees in 1935 being 3,327 (2,100), while the number of dependents averaged 1,024 (777). Sixty-seven (29) deaths were reported of whom fifty-three were labourers. Certain details abstracted from the health reports sent to the Medical Department every month by these concerns are given in an appendix to this report (C).

The Nippon Mining Co., Dungun has a hospital and dispensary while the staff consists of two qualified doctors, a dresser, a nurse and a dentist who are all Japanese. Owing to the rapid development of this mine, the housing accommodation for the coolies was inadequate while the fact that the coolies had usually to pay for treatment and had to provide their own food in hospital was a violation of the Labour Enactment. An order was issued to the Company to attend to this and to other matters.

The Ishihara Sangyo Koshi iron mine employs a qualified doctor and owns a small hospital. The other mines all employ dressers. The Bundi Mining Co. opened a small hospital during the year.

An order was issued to the Kajang Mining Company to deal with a swamp which was found to be a breeding place for *Anopheles maculatus*.

Estates.—There is only one estate of any size in Trengganu, a large coconut and rubber estate which employed a monthly average of 519 (403) labourers while there was an average of 82 dependents. There is a hospital and two dressers are employed. There were twelve (7) deaths six of these being labourers but only one (3) was due to malaria. Details of the health conditions are given in appendix C.

**V. PORT HEALTH WORK.**

From 2/6/1935 until 17/11/1935, all the passengers on ships coming from Singapore were examined as there was an out-break of small-pox there during 1935. Vaccinations were performed on all passengers who could not produce evidence to show that they had been recently vaccinated.

On account of the out-break of cholera in Siam during the latter half of the year, all boats coming from Siam have to be examined before the passengers and crew are allowed to land. This order came into force on 25/9/1935.

**VI. MATERNITY AND CHILD WELFARE WORK.****(A) MATERNITY WORK.**

There are three midwives attached to the Medical Department, two of whom are stationed at Kuala Trengganu and one at Kemaman; the appointment at Kemaman is a new one and the midwife was sent there on 19/8/1935. There was only one other qualified midwife in the State. An experiment made in 1934 to train local Malay midwives was not successful and it was found that at the end of the course they were far inferior in skill to the female attendants at the hospital. Local custom and tradition is very strong and it is feared that it will be a long time before suitable young women are available for this type of work. The number of Malay girls who go to school is extremely small but this state of affairs will be improved when a school for Malay girls is opened in 1936 at Kuala Trengganu and this may eventually solve the problem. The Department is still willing to give a course of training to any of the local, unqualified midwives.

Kuala Trengganu Hospital.—Fifty-nine (44) confinements were conducted by the midwife while one (2) case of miscarriage and one case of hydatidiform mole were also treated. Of these patients, 45 (35) were Chinese, 12 (7) were Malays and 2 (1) were Indians. There were two cases of retained placenta necessitating manual removal, one case of placenta praevia and a case of delayed labour; the latter two died. The case of placenta praevia had come a long way to hospital from Ulu Temomong and was in a bad condition on arrival. The other case was an unmarried primipara who was blind and suffering from chronic yaws; before the labour started, an external version had been performed. The labour was slow and had to be completed by forceps while later the placenta had to be removed manually. There was also a case of frank breech in a primipara.



Maternity and Welfare Clinic.—The midwife in charge here conducted 89 (112) confinements in the patients' homes as well as attending to 5 (2) cases of miscarriage. Of these 89 patients, 47 (60) were Malays, 40 (52) were Chinese and 2 were Japanese. Altogether, she paid 1,296 visits to the patients' homes. There were no maternal deaths. The women are encouraged to come for ante-natal treatment. The number was lower this year owing to trouble with the original midwife who was often ill and finally left the service.

Kemaman.—The number of cases conducted by this midwife was 13 of which 12 were Chinese and one was a Malay. There were no maternal deaths.

#### (B) CHILD WELFARE CLINIC.

The following are the figures for the past five years in connection with the Maternity and Child Welfare Clinic, Kuala Trengganu:—

	1932	1933	1934	1935
Ante-natal visits .. .. .	42	47	29	58
District labours and miscarriage .. .. .	130	132	114	94
Adult women general diseases .. .. .	1,154	945	954	1,185
Infants under one year of age .. .. .	105	122	189	205
Children between the ages of one and twelve .. .. .	1,340	1,368	1,438	1,631
Vaccinations performed on children (not included in above) .. .. .	294	193	224	453
Total number of adults treated .. .. .	1,326	1,124	1,097	1,337
Total number of children treated .. .. .	1,739	1,683	1,851	2,289
Total number of new cases .. .. .	3,065	2,807	2,948	3,626
Total attendances .. .. .	7,401	7,854	7,130	6,421

The number of new cases by race was as follows:

	Children	Women	Total
Chinese .. .. .	911	520	1,431
Malays .. .. .	923	806	1,729
Indians .. .. .	1	2	3
Others .. .. .	1	9	10
Total .. .. .	1,836	1,337	3,173

### VII. HOSPITAL AND DISPENSARIES.

#### (A) HOSPITAL.

There is a Government hospital at Kuala Trengganu which has nine wards with accommodation for one hundred and fifty-six patients. Two of the wards are for females, one of which is a maternity ward comprising a labour theatre, an eight-bedded ward and two single rooms for paying patients. The remaining wards are for paying patients, one of which is reserved for lepers and one for cases of tuberculosis. The other buildings in the hospital include an administrative block with dispensary, laboratory and operating-theatre attached and a store.

No other provision is made for in-patients in Trengganu with the exception of a small ward for sick male prisoners in the gaol.

The accommodation provided at the hospital, with the exception of the two single rooms in the Maternity ward, is what would be described as third-class elsewhere in Malaya but this state of affairs will be improved when the new ward for officers will be completed. If the patients can pay, they are charged at the rate of thirty cents a day.



The following is a summary of the work performed at the hospital during the last five years:—

	1931	1932	1933	1934	1935
Total number of admissions	1,949	1,640	1,710	1,775	2,314
Total number of Malays admitted	790	806	997	1,051	1,074
Total number of females admitted	200	249	303	304	334
Total number of deaths	77	63	43	62	76
Number of deaths per 100 admissions	3.95	3.84	2.51	3.49	3.28
Number of deaths excluding cases dying within 48 hours of admissions	—	—	33	56	60
Number of deaths per 100 admissions excluding cases dying within 48 hours of admission	—	—	1.94	3.19	2.61
Number of labours performed in the maternity ward (excluding miscarriage)	26	34	44	44	59
Number of major operations performed	21	24	15	17	23
Number of minor operations performed	64	76	86	83	126
Number of persons treated by dental extraction	66	59	90	164	176
Number of deaths after operation	0	0	1	3	2

The large increase in the number of in-patients is largely due to the increased activity on the mines and estates; 461 of these patients came from the Nippon Mining Company, Dungun. The best indication of the steady increase in popularity of the hospital is to be found in the increasing number of Malays who form the fixed population of the State. The increase in number was very small this year—only 23—but an explanation of this is the fact that their great festival day, Hari Raya, happened to fall twice within the year 1935, a circumstance which will not take place again for more than thirty years. On the 334 females, 250 were Malays.

The highest number of patients in the State hospital on any one day was 157 while the lowest was 69.

The average cost of feeding the patients was 10.47 cents per day.

One of the deaths following operation was due to a strangulated inguinal hernia in the case of a patient who had been previously refused operation on the grounds of cirrhosis of the liver and general ill-health. The other fatal case was that of a man over sixty years of age on whom was performed an amputation through the thigh for secondary infection of the bones of the leg following chronic yaws; for a long time, he had refused operation.

In all surgical procedures, even in the case of dental extractions, anaesthetics are given on every possible occasion. Procaine hydrochloride is the favourite drug and the spinal route is almost invariably used for major operations on the lower half of the body. Increasing use is being made of sodium evipan for general anaesthesia while avertin is exhibited for prolonged operations on the head and neck. Anaesthetics by inhalation are seldom administered.

The return of diseases and deaths of in-patients for the year 1935 is given in Appendix D.

#### (B) DISPENSARIES.

There is a chain of Government dispensaries all along the coast, where dwells the main part of the population, at the following centres:—Besut, Setiyu, Kuala Trengganu town, Kuala Trengganu Hospital, Kuala Dungun, Kemasek and Kemaman. In addition, there is a dispensary at Kuala Brang which is situated about 25 miles up the Trengganu river.



During the latter part of the year, travelling dressers were attached to the dispensaries at Besut and Dungun so that there are now full-time travelling dressers attached to these places, the hospital and Kemaman. The Dressers at the other dispensaries also pay regular visits to the out-lying villages. Travelling, however, is usually greatly restricted from November until March by the north-east monsoon, especially in the interior of the State where the rainfall is much higher than on the coast but conditions were unusually favourable during 1935.

In connection with the Kuala Trengganu—Besut road improvement scheme, a dispensary is maintained by the Public Works Department at Kampong Buloh. The dresser-in-charge receives all his medicines and stores from the Medical Department. In addition to his duties as dresser-in-charge of the Public Works Department he treats all the sick in the neighbouring villages.

In addition to performing vaccinations, the four vaccinators distribute medicine among the villages on their visits.

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, antiseptic ointments and lotions, vermifuges, etc. for the benefit of the staffs and the general public.

The total number of new patients treated was 114,686 (94,226) and the total number of attendances was 140,188 (117,406); increases of 21.71% and 19.4% respectively over the figures for 1934. (These figures do not include vaccinations).

The number of new patients treated by dressers on visits to out-lying villages was 47,530 (28,218); an increase of 68.44% and the number of nights spent away from head-quarters by the dressers on these visits was 352. (These figures do not include the patients treated by the vaccinators, police, etc.).

A greater percentage of the new cases treated were females, the numbers for 1934 and 1935 being 23.66% and 28.23% respectively of the total treated.

Appendix E shows the numbers treated by the various dispensaries, etc.

Four thousand and fourteen (5,972) patients were visited in their homes by the dressers in charge of the dispensaries when they were at head-quarters. Of these, 2,232 (3,598) were paid by the Hospital Assistant in charge of Kuala Trengganu Town Dispensary while a further 556 visits were paid by the new Assistant Medical Officer who attends this dispensary every day and has taken over the work of the Medical Officer here.

The Medical Officer is always in attendance at the Hospital Dispensary if required; he attends personally to calls from H. H. the Sultan and family, Europeans and some of the Asiatics while he is sometimes called into consultation by the other officers. Regular visits are paid by him to the larger towns and villages while he usually pays two visits a year, each lasting several days, to the up-country villages. In 1935, a visit was paid to Ulu-Dungun whence he crossed into the neighbouring State of Pahang and returned by way of the river Tembeling. Unfortunately, an attack of tropical typhus contracted on his visit precluded any more of these visits during the year.

246 (534) minor operations were performed by the dressers in charge of the dispensaries.

### (C) LABORATORY WORK.

The following investigations were performed at the hospital where there are also examined specimens from the Town Dispensary and other sources:—

Blood.—Microscopical examination for parasites 2,622 (1,880); 453 (85) were positive for malaria comprising:—

Plasmodium vivax	..	..	..	..	233
Plasmodium falciparum	..	..	..	..	143
Plasmodium malariae	..	..	..	..	47
Plasmodium vivax, falciparum and malariae	..	..	..	..	5
Plasmodium vivax and falciparum	..	..	..	..	7
Plasmodium vivax and malariae	..	..	..	..	12
Plasmodium falciparum and malariae	..	..	..	..	6
Filaria (out of 9 examinations)	..	..	..	..	1
Differential counts of white blood cells	..	..	..	..	40 (13)
Total counts of white cells of the blood	..	..	..	..	50 (30)
Total counts of red blood cells	..	..	..	..	42



During the second half of the year, Widal and Weil-Felix reactions were performed by the Assistant Medical Officer. For the Widal reaction, five emulsions were used, namely formalized emulsions of *B. typhosus* "H" and of *B. paratyphosus* A, B, and C and an alcohol-treated suspension of *B. typhosus* "O." For the Weil-Felix reaction, sera were tested against alcohol-treated suspensions of *B. proteus* OXK ("K") and *B. proteus* OX 19 ("W").\* Dreyer's dropping technique was followed in both reactions.

The following are the results:—

Total Widal reactions performed	31 (from 20 patients).
B. Typhosus positive	12
B. Paratyphosus A positive	0
B. Paratyphosus B     "	4
B. Paratyphosus C     "	0
Total Weil-Felix reactions performed	29 (from 22 patients).
B. Proteus OXK ("K") positive	3
B. Proteus OX 19 ("W")     "	0

Sputum.—Microscopical examinations 365 (145), 40 (30) were positive for the tubercle bacillus.

Pus from the urethra, prostate, cervix, conjunctiva, etc. for gonococci.—108 (82) slides were examined and 67 (35) were positive.

Nasal and other smears for the lepra bacillus.—15 (13) slides were examined of which 5 (3) were positive.

Urine.—Chemical examinations 415 (250); microscopical examinations 297 (276).

Faeces.—For ova and parasites 2,573 (1,714). Multiple infections were frequent and there were only 320 (276) negative specimens.

The findings were as follows:—

Ankylostoma	47
Ascaris	288
Trichocephalus	45
Entamoeba histolytica	6
Entamoeba coli	10
Strongyloids	15
Ankylostoma and ascaris	186
Ankylostoma, ascaris and trichocephalus dispar	212
Ankylostoma and trichocephalus dispar	66
Ankylostoma and entamoeba coli	6
Ankylostoma, ascaris, entamoeba coli and trichocephalus dispar	2
Ascaris and trichocephalus dispar	1,302
Pus and blood cells	68

Medico-legal examinations.—For blood, seminal stains, etc. 20 (7).

(2) The following is a summary of the work performed at the dispensaries of Besut, Dungun and Kemaman.

Blood.—641 (950) microscopical examinations of the blood were made for parasites of which 119 (291) were positive comprising:—

Plasmodium falciparum	45
Plasmodium vivax	72
Plasmodium malariae	2

Sputum.—Out of 44 (43) specimens examined for the tubercle bacillus, 13 (12) were found to be positive.

Nasal and other smears for the lepra bacillus.—The only slide examined was negative (1 out of 3).

\*We are indebted to the Government Pathological Laboratory, Singapore for the gift of these cultures.



Urethral smears for gonococci.—57 were examined and 32 were positive.

Urine.—231 (167) microscopical and chemical examinations were made.

Faeces for ova and parasites.—Out of 822 (825) specimens examined 630 (642) were positive and the findings were:—

Ankylostoma	..	..	..	..	..	79
Ascaris	..	..	..	..	..	221
Trichocephalus dispar	..	..	..	..	..	31
Entamoeba histolytica	..	..	..	..	..	23
Ankylostoma and ascaris	..	..	..	..	..	72
Ankylostoma, ascaris and oxyuris vermicularis	..	..	..	..	..	1
Ankylostoma, ascaris and trichocephalus dispar	..	..	..	..	..	70
Ascaris and trichocephalus dispar	..	..	..	..	..	122
Blood and pus cells	..	..	..	..	..	11

### VIII. PRISONS AND ASYLUMS.

#### (A) PRISONS.

The only prison, in the true sense of the term, in the State is that at Kuala Trengganu where there is an eight-bedded ward for male prisoners. There is no hospital accommodation for women and if any of the few female prisoners fall seriously ill, they are sent to the Kuala Trengganu hospital for treatment.

In-patients.—There were 54 (41) admissions and there was no (2) death. There was no out-break of infectious disease.

Out-patients.—The number of prisoners treated as out-patients was 542 (458).

N.B.—The daily average number of prisoners in 1935 was 59.

#### (B) ASYLUMS.

Lunatics.—There is no separate asylum for mentally deranged patients in Trengganu and they are confined in cells within the prison compound. An experienced attendant, who is also attached to the prison ward, looks after them while a Hospital Assistant visits them daily and the Assistant Medical Officer every week. Their health was good throughout the year and there were no deaths. Their lot is not too hard a one; they are allowed out into the prison compound at times during the day and if they are fit and willing they are given light work.

It is realized that this is by no means an ideal state of affairs. It has been decided to build a mental observation ward in the hospital compound; the bad cases will be sent to Singapore Mental hospital if they can be admitted while the others will be handed over to their relations or friends provided that they give an undertaking to take proper care of them, as is done at present. At the beginning of 1934, the State Council was persuaded to allow Malay lunatics to be sent to Singapore; this was a big step forward as, prior to that, it had been found possible to send away only a few lunatics of other races. Five Malay lunatics were sent away in 1935 while the cases of others were under consideration at the close of the year.

The total number treated at Kuala Trengganu during the year was 63 (60\*) including 10 (14) females. It is to be remembered that a number of them were under observation only and others were cases of mental defect not amounting to insanity. The average daily number of lunatics was 23.

The following are the details relating to these patients:—

	Males.	Females.	Total.
Remaining	22	6	28
Admitted	31	4	35
Total treated	53	10	63
Discharged	28	8	33
Transferred	4	2	6
Died	0	0	0
Remaining	21	3	24

\*It is to be regretted that in the 1934 report, the number of females was included twice in the total treated.



The following table refers to the lunatics maintained by the Government of Trengganu at the Singapore Mental Hospital:—

	Males.	Females.	Total.
Remaining .. .. .	5	1	6
Admitted .. .. .	3	2	5
Total treated .. .. .	8	3	11
Discharged .. .. .	2	0	2
Died .. .. .	2	0	2
Remaining .. .. .	4	3	7

2. LEPERS.—There is no leper asylum in Trengganu but there is a small ward of eight beds for males in the hospital. The present position is not at all satisfactory.

A register has been kept for over three years of all lepers who come to the notice of the Department pending future action for the control of the disease. The register is kept up to date as far as is possible. The following table shows the number, sex, and race of the patients on the register:—

	Malays.	Chinese.	Total.
Males .. .. .	27	14	41
Females .. .. .	16	1	17
Total .. .. .	43	15	58

The total recorded last year was 54.

### IX. VETERINARY.

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

A few animals were treated during the year while a number of cattle was examined at Besut, Kuala Trengganu and Kemaman prior to export.

No epidemic were reported. In spite of this, the Government of Kelantan informed the Department that it would not allow the import of Trengganu cattle into Kelantan but no active measures have been taken by this Government to prevent cattle straying or being driven across the boundary.

Legislation.—The following Proclamations (Ishtihar-ishtihar) were passed during the year:—

No. 47 of A. H. 1353 dated 10/1/1935 prohibited the importation of horses from Pahang. This Proclamation was rescinded on 17/11/1935 by Proclamation No. 40 of A. H. 1354.

No. 15 of A. H. 1354 dated 4/6/1935 prohibited the importation of cattle, sheep, goats and pigs from Kedah, Siam and Perak.

No. 25 of A. H. 1354 dated 8/7/1935 prohibited the importation of cattle, sheep, goats and pigs from Singapore.

No. 38 of A. H. 1354 dated 9/10/1935 prohibited the importation of all animals from Indo-China.

No. 46 of A. H. 1354 dated 2/12/1935 prohibited the importation of goats from India.

Imports and exports of live-stock.—The following particulars have been supplied by the Customs Department:—

Imports		Exports
Buffalos	0	94
Other cattle	0	408
		(practically all to Pahang except for a few sent to Selangor by sea.)
Pigs	336 (mostly from Indo-China)	25 (to Pahang).
Sheep	5 (from Kelantan)	0
Goats	18 (from Kelantan)	2
Fowls and ducks	5,354 (mostly from Singapore)	997 (mostly to Pahang).

#### X. METEOROLOGY.

Readings by the instruments kept at Kuala Trengganu Hospital show that:—

The highest temperature was 93° F recorded on 25/6/1935.

The lowest temperature was 67° F recorded on 14/1/1935.

The month with the highest rainfall was December with 23.40 inches.

The highest rainfall in 24 hours was 4.58 inches on 5/12/1935.

The total rainfall for the year was 98.28 inches, a dry year.

Rain gauges are also kept at the dispensaries at Kuala Dungun and Kampong Raja, Besut on the coast and at Kuala Brang in the interior. The rainfall in the interior of the State is always much 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 usually greatly interferes with the travelling work of the dressers but 1935 was a dry year and conditions were especially favourable for travelling. The total rainfall for the year at Kuala Brang was 146.74 inches which was much higher than the rainfall at Kampong Raja—106.09 inches—and at Kuala Dungun—117.49 inches.

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

MEDICAL OFFICER,  
TRENGGANU.



## APPENDIX A.

## STATE OF MEDICAL DEPARTMENT.

## (1) Distribution Staff.

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

State—One Medical Officer, in charge.

1. Kuala Trengganu:—One Assistant Medical Officer.

## (a) General Hospital:—

- 1 Dresser in charge, grade I.
- 2 Dressers grade II (of whom one had passed grade I).
- 3 Dressers grade III (of whom two had passed grade II).
- 4 Probationer Dressers (of whom two had passed grade III).
- 1 Midwife (holds certificate "B" of the Straits Settlements).
- 1 Steward and Storekeeper.
- 1 Assistant Storekeeper.
- 1 Clerk grade I.
- 2 Clerks grade III (one acts as Assistant Registrar, Births and Deaths).

## (b) Town Dispensary and Welfare Centre:—

- 1 Dresser grade I (holds certificate of the Royal Sanitary Institute).
- 1 Dresser grade III.
- 1 Midwife (holds a Japanese midwifery certificate).

(The staff of the Town Dispensary also attends to the prisoners, the mental patients in the State Prison and the Police).

## (c) Out-door and other duties:—

- 1 Sanitary Inspector.
  - 1 Assistant Sanitary Inspector.
  - 1 Vaccinator.
2. Besut Dispensary at Kampong Raja:—
- 1 Dresser grade III (passed grade II).
  - 1 Probationer Dresser for travelling.
  - 1 Vaccinator.
3. Setiyu Dispensary at Kampong Panjang:—
- 1 Dresser grade III.
4. Kuala Brang Dispensary:—
- 1 Dresser grade III.
5. Dungun Dispensary at Kuala Dungun:—
- 1 Dresser grade II.
  - 1 Probationer Dresser for travelling.
  - 1 Vaccinator.

6. Kemasek Dispensary:—

1 Dresser grade III.

7. Kemaman Dispensary at Chukai:—

1 Dresser grade II.

1 Probationer Dresser for travelling.

1 Midwife (holds certificate "B" of the Straits Settlements).

1 Vaccinator.

In addition, one grade III Dresser was on long leave.

The menial staff comprises 25 males and 4 females.

**(2) Appointments.**

The following appointments were made during the year:—

Ten Yoon Fong, L.M.S., a graduate of Singapore, was appointed Assistant Medical Officer on 20/4/1935.

Seng Chuan Koon was appointed Probationer Dresser on 6/1/1935.

Ooi Eng Cheng, who had passed his grade II examination in the Federated Malay States, was appointed Grade III Dresser on 27/3/1935.

Inche Ahmad bin Salim, Vaccinator, was promoted to Probationer Dresser on 16/4/1935.

Inche Ngah bin Jusoh, Assistant Sanitary Inspector, who had been promoted to Vaccinator on 16/4/1935, was further promoted to Probationer Dresser on 5/9/1935.

Raja Maimunah binti Raja Walid, was appointed midwife on 1/5/1935. She has been trained at the Kandang Kerbau Maternity Hospital, Singapore and holds the "B" certificate of the Straits Settlements Government.

Miss Florence Chin, was appointed midwife on 19/8/1935. She had also been trained at the Kandang Kerbau Maternity Hospital, Singapore and holds certificate "B."

Inche Mohamed Sa'aid bin Domat, was promoted to Vaccinator on 5/9/1935.

Inche Yacob bin Ibrahim was promoted to Vaccinator on 8/9/1935.

**(3) Dismissals  
etc.:—**

Mr. R. M. Iyer, a grade II Dresser who had passed his grade I examination, was dismissed on 7/3/1935.

Lim Guat Neo, the midwife attached to the Town Clinic, Kuala Trengganu left the service on 12/4/1935.

Inche Abdul Rahim bin Mohamed, Vaccinator, Kemaman was dismissed on 23/8/1935.



## APPENDIX B.

## Deaths Grouped according to Age, Sex and Nationality.

Deaths by Age Groups.	Sex	Europeans	Eurasians	Chinese	Malays	Indians	Others	Total
0 ..	M			12	334		1	347
	F			13	266			279
4 Weeks ..	M			7	218			225
	F			8	169			177
3 months ..	M			6	122		1	129
	F			5	115			120
6 months ..	M			5	97			102
	F			8	78			86
1 year ..	M			8	313	2		323
	F			15	305		1	321
5 years ..	M			4	118			122
	F			3	94			97
10 years ..	M			4	48			52
	F			1	38			39
15 years ..	M			1	44	1		46
	F				29			29
20 years ..	M			7	61			68
	F			1	56			57
25 years ..	M			20	59	6		85
	F			4	76			80
30 years ..	M			27	123	4		154
	F			5	115			120
35 years ..	M	1		22	52	7	2	84
	F			5	38			43
40 years ..	M			28	121	4	1	154
	F			4	102		1	107
45 years ..	M			28	37	2	2	69
	F			2	20			22
50 years ..	M			18	139	3	1	161
	F				103			103
55 years & Over	M			32	359	2	1	394
	F			10	414			424
Total Deaths ..	M	1	0	229	2,245	31	9	2,515
	F	0	0	84	2,018	0	2	2,104
Grand Total ..		1	0	313	4,263	31	11	4,619

# APPENDIX C.

## Health Statistics of Labour Population in Trengganu.

Name of Concern.	Average Monthly Number of Employees	Average Monthly Number of Dependents	Average Monthly Total Population	DEATHS.				Total Death Rate per Mille	SICKNESS.			
				Employees	Dependents	Total	Injury	Malaria	Labourers.		Dependents.	
									Total Number	Total Number of Days	Total Number	Total Number of Days
1. Nippon Mining Co., Dungun	2,209	581	2,790	31*	7	38	5	13	3,980	17,374	430	2,659
2. Ishihara Sangyo Koshi, Kemaman	334	48	382	7	0	7	0	5	844	3,096	89	402
3. Bundi Mining Co., Kemaman	468	342	810	6	4	10	1	0	1,545	3,485	953	2,474
4. Sungei Ayam Mine, Kemaman	161	21	182	5	2	7	0	1	222	995	3	16
5. Kajang Mining Co., Kemaman	155	32	187	4	1	5	0	0	226	1,483	6	15
6. Kretay Estates, Kretch Kemaman	519	82	601	6	6	12	0	1	975	5,071	106	499
Total	3,846	1,106	4,952	59	20	79	6	20	7,792	31,504	1,587	6,065

\*In addition to these, 8 labourers who claimed to work at this mine, died in the State Hospital, Trengganu. One was a case of malaria.



## APPENDIX D.

## Return of Diseases and Deaths of In-Patients for the year 1935.

DISEASES.	Remaining in Hospital at end of 1934.	Yearly Total.		Total Cases Treated.	Remaining in Hospital at end of 1935.
		Admission.	Deaths.		
I.—Infectious and Parasitic Diseases.					
1. Enteric fever:—					
(a) typhoid .. .. .		7	1	7	
(b) paratyphoid B .. .. .		3	1	3	1
2. Typhus fever group:—					
(a) tropical .. .. .		2	1	2	
(b) tsutsugamushi .. .. .					
3. Relapsing fever .. .. .					
4. Undulant fever .. .. .					
5. Malaria:—					
(a) tertian (benign) .. .. .	5	168		173	1
(b) quartan .. .. .	1	29		30	
(c) aestivo-autumnal (subtertian) .. .. .	2	120	2	122	1
(d) mixed infection .. .. .		23		23	
(e) cachexia .. .. .		9	2	9	
(f) black-water fever .. .. .					
(g) unclassified .. .. .		265	1	265	10
6. Dengue fever .. .. .					
7. Varicella (chicken-pox) .. .. .		3		3	
8. Small-pox .. .. .					
9. Measles .. .. .		3		3	1
10. Scarlet fever .. .. .					
11. Whooping cough .. .. .		5		5	
12. Diphtheria .. .. .					
13. Influenza .. .. .	1	83		84	1
14. Mumps .. .. .					
15. Cholera .. .. .					
16. Dysentery:—					
(a) amboebic .. .. .	1	5		6	
(b) bacillary .. .. .		2	1	2	
(c) undefined or due to other causes .. .. .		18	3	18	
17. Plague .. .. .					
18. Yellow fever .. .. .					
19. Erysipelas .. .. .	1			1	
20. Acute poliomyelitis .. .. .					
21. Encephalitis lethargica .. .. .					
22. Epidemic cerebro-spinal fever .. .. .					
23. Glanders .. .. .					
24. Anthrax .. .. .					
25. Rabies .. .. .					
26. Tetanus .. .. .					
27. Leprosy .. .. .	6	6		12	10
28. Tuberculosis:—					
(a) adenitis .. .. .		1		1	
(b) meningitis .. .. .		1	1	1	
(c) peritonitis .. .. .		1		1	
(d) respiratory system .. .. .	5	41	16	46	9
(e) vertebral column .. .. .	1	1		2	
(f) other bones and joints .. .. .	1	1	1	2	
Carried forward .. .. .	24	797	30	821	34

## APPENDIX D.—(Continued).

DISEASES.	Remaining in Hospital at end of 1934.	Yearly Total.		Total Cases Treated.	Remaining in Hospital at end of 1935.
		Admission.	Deaths.		
<i>Brought forward</i>	24	797	30	821	34
29. Spirochaetosis ictero-haemorrhagica .. .. .					
30. Yaws .. .. .	12	324	1	336	8
31. Syphilis:—					
(a) primary .. .. .	1	16		17	
(b) secondary .. .. .		4		4	
(c) tertiary .. .. .		9		9	
(d) hereditary .. .. .		1		1	1
32. Other venereal diseases:—					
(a) soft chancre .. .. .		16		16	1
(b) gonorrhoea and its complications .. .. .	2	104		106	6
(c) gonorrhoeal ophthalmia .. .. .		6		6	
(d) gonorrhoeal arthritis .. .. .	5	17	1	22	
(e) tropical bubo .. .. .		1		1	
33. Septicaemia .. .. .		1	1	1	
34. Pyaemia .. .. .		1		1	
35. Fever unclassified .. .. .		5	1	5	
36. Helminthic infections:—					
(a) ankylostoma .. .. .		46	1	46	
(b) ascaris .. .. .		98		98	1
<b>II.—Cancer and Other Tumours.</b>					
37. Cancer of the digestive organs .. .. .		3		3	
38. Cancer of the lip .. .. .		3		3	
39. Cancer of the breast .. .. .		2		2	
40. Cancer of the penis .. .. .		1		1	1
41. Sarcoma of neck .. .. .		2	1	2	
42. Tumours not malignant .. .. .		24		24	
<b>III.—Rheumatism, Diseases of Nutrition and of Endocrine and other General Diseases.</b>					
43. Rheumatic fever .. .. .					
44. Chronic rheumatism .. .. .	1	14		15	3
45. Scurvy .. .. .					
46. Pellagra .. .. .					
47. Beri-beri .. .. .	4	107	11	111	9
48. Rickets .. .. .					
49. Diabetes mellitus .. .. .	1			1	
50. Diseases of the thyroid glands:— Exophthalmic goitre .. .. .		2		2	
<b>IV.—Diseases of the Blood and Blood Forming Organs.</b>					
51. Anaemia .. .. .		2		2	
52. Hodgkin's disease .. .. .		1		1	
<i>Carried forward</i>	50	1607	47	1651	64



## APPENDIX D.—(Continued).

DISEASES.	Remaining in Hospital at end of 1934.	Yearly Total.		Total Cases Treated.	Remaining in Hospital at end of 1935.
		Admission.	Deaths.		
<i>Brought forward</i>	50	1607	47	1657	64
<b>V.—Chronic Poisoning.</b>					
53. Chronic poisoning by organic substances:—					
Opium addiction		1		1	1
54. Chronic poisoning by mineral substances:—					
Arsenical dermatitis		2	1	2	
<b>VI.—Affections of the Nervous System of Sense.</b>					
55. Affection of the spinal cord:—					
Myelitis		1	1	1	
56. Disseminated sclerosis		1		1	
57. Apoplexy and paralysis:—					
(a) cerebral and paralysis		1	1	1	
(b) hemiplegia, cause not determined	1	4		5	1
58. Paralysis agitans		3		3	
59. Insanity	1	6		7	
60. Epilepsy					
61. Infantile convulsions					
62. Facial paralysis		1		1	
63. Other forms of neuritis		6		6	
64. Neurasthenia					
65. Diseases of the eye:—					
(a) conjunctivitis		8		8	
(b) other affections of the eye		8		8	1
66. Diseases of the auditory apparatus:—					
(a) otitis media		6		6	
(b) mastoiditis	1	1		2	
<b>VII.—Diseases of the Circulatory System.</b>					
67. Diseases of the heart					
68. Diseases of the arteries		1		1	
69. Diseases of the veins:—					
Haemorrhoids		6		6	
70. Diseases of the lymphatic system:—					
(a) lymphangitis		2		2	
(b) lymphadenitis		9		9	1
<b>VIII.—Diseases of the Respiratory System.</b>					
71. Rhinitis		2		2	
72. Laryngitis		1		1	
<i>Carried forward</i>	53	1677	50	1730	68

## APPENDIX D.—(Continued).

DISEASES.	Remaining in Hospital at end of 1934.	Yearly Total.		Total Cases Treated.	Remaining in Hospital at end of 1935.
		Admission.	Deaths.		
<i>Brought forward</i>	53	1677	50	1730	68
73. Bronchitis:—					
(a) acute		4		4	
(b) chronic	3	33		36	1
74. Broncho-pneumonia	2	3	2	5	
75. Lobar pneumonia		9	6	9	
76. Pleurisy		1		1	
77. Asthma		42		42	4
<b>IX.—Diseases of the Digestive System.</b>					
78. Diseases of the buccal cavity, pharynx, etc.:—					
(a) pyorrhoea		2		2	
(b) dental caries		8		8	1
(c) stomatitis		1		1	
(d) cancrum oris		1		1	
(e) tonsillitis		7		7	
(f) pharyngitis		1		1	
79. Ulcer of the stomach and duodenum:—					
(a) ulcer of the stomach					
(b) ulcer of the duodenum	1		1	1	
80. Other diseases of the stomach	1	6		7	
81. Diarrhoea and enteritis (under two years)		2		2	
82. Diarrhoea and enteritis (over two years)		21		21	1
83. Appendicitis		3		3	
84. Hernia and intestinal obstruction					
(a) hernia		7		7	
(b) strangulated hernia		1	1	1	
85. Affections of the anus (fistula etc.)		4		4	1
86. Diseases of the liver:— Catarrhal jaundice		3		3	
87. Diseases of the gall-ducts:— Cholecystitis		1		1	
<b>X.—Diseases of the Genito-urinary System (Non-Venereal).</b>					
88. Acute nephritis		3	1	3	
89. Chronic nephritis	1	19	3	20	3
90. Pyelitis		4		4	
91. Cystitis		6		6	
92. Diseases of the urethra:— Stricture with extravasation of urine		1	1	1	
93. Diseases of the male genital organs:— Hydrocele		7		7	
<i>Carried forward</i>	61	1877	65	1938	79



## APPENDIX D.—(Continued).

DISEASES.	Remaining in Hospital at end of 1934.	Yearly Total.		Total Cases Treated.	Remaining in Hospital at end of 1935.
		Admission.	Deaths.		
<i>Brought forward</i> ..	61	1877	65	1938	79
94. Diseases of the female genital organs:—					
(a) ovarian cyst ..		1		1	
(b) retroversion of uterus ..		1		1	
(c) dysmenorrhoea ..		1		1	
<b>XI.—Conditions Arising in Preg- nancy, Childbirth and the Puerperal State.</b>					
95. Ante-natal ..		11		11	
96. Abortion ..		1		1	
97. Hydatidiform mole ..		1		1	
98. Normal labour ..	2	55		57	1
99. Retained placenta ..		2		2	
100. Puerperal hæmorrhage:—					
(a) placenta prævia ..		1	1	1	
(b) other ..		1	1	1	
101. Puerperal Septicæmia ..	1			1	
102. Mastitis ..		1		1	
<b>XII.—Diseases of the Skin and Cellular Tissues.</b>					
103. Cellulitis ..		9		9	2
104. Boil ..	1	10		11	
105. Abscess ..		34		34	1
106. Gangrene ..		1		1	1
107. Mycotic infections ..	1	20		21	
108. Scabies ..	2	39		41	4
109. Urticaria ..		2		2	
110. Eczema ..		9		9	
111. Herpes ..		3		3	
112. Elephantiasis ..		4		4	
113. Ulcers ..	5	100		105	10
<b>XIII.—Diseases of Bones and Organs of Locomotion (other than Tuberculosis).</b>					
114. Osteomyelitis ..		2		2	
115. Arthritis ..		7		7	1
<b>XIV.—Malformations.</b>					
<b>XV.—Diseases of Early Infancy.</b>					
116. Asphyxia neonatorum ..		1	1	1	
117. Premature birth ..		2	2	2	
118. Marasmus ..		2	2	2	
<i>Carried forward</i> ..	73	2198	72	2271	99

## APPENDIX D.—(Continued).

DISEASES.	Remaining in Hospital at end of 1934.	Yearly Total.		Total Cases Treated.	Remaining in Hospital at end of 1935.
		Admission.	Deaths.		
<i>Brought forward</i> ..	73	2198	72	2271	99
<b>XVI.—Affections of Old Age.</b>					
119. Senility ..		1		1	1
<b>XVII.—Affections Produced by External Cause.</b>					
120. Attacks by animals:—					
(a) snake bite ..		1		1	
(b) goring, bites, kicks, etc., by other animals ..		9		9	
121. Accidental burns:—					
(a) by fire ..		2		2	
(b) scalds ..		1		1	
122. Wounds:—					
(a) by cutting or stabbing instruments ..	3	84	1	87	4
(b) by fall ..		8		8	
(c) by machinery ..	4	3		7	
(d) by gunshot ..		2	1	2	
123. Sprain ..		4		4	
124. Fracture ..	4	15	2	19	3
125. Dislocation ..		1		1	
126. Other external injuries ..		37		37	
<b>XVIII.—Ill-Defined Diseases.</b>					
127. Persons accompanying patients ..		2		2	
Total ..	84	2368	76	2452	107

N.B.—Of the above figures 54 admissions were at the Prison Hospital, Kuala Trengganu.



# APPENDIX E.

Details of Out-patients treated at the various Dispensaries.

Dispensaries.	1934		1935				New Patients Treated on Visits to Kampongs.		
	Total New Patients	Total Attendances	New Cases		Total	Total Attendances	Males	Females	Total
			Males	Females					
Besut .. .. .	8,707	9,595	5,020	1,174	6,194	7,718	1,618	497	2,115
Besut Travelling Dresser .. .. .	—	—	1,908	616	2,524	2,524	1,908	616	2,524
Setiu .. .. .	7,327	8,338	5,750	2,805	8,555	8,966	4,180	2,320	6,500
Kuala Trengganu Town Dispensary and Clinic .. .. .	17,936	29,035	14,276	4,958	19,234	30,520	—	—	—
Kuala Trengganu Hospital .. .. .	5,584	7,810	5,471	2,086	7,557	9,485	—	—	—
Hospital Travelling Dresser .. .. .	4,197	5,187	5,470	2,792	8,262	9,427	5,470	2,792	8,262
Kuala Brang .. .. .	9,970	10,528	12,731	5,999	18,730	19,226	9,812	4,916	14,728
Kuala Dungun .. .. .	7,805	11,159	5,936	2,578	8,514	10,379	2,016	795	2,811
Kuala Dungun Travelling Dresser .. .. .	—	—	1,592	957	2,549	3,075	1,592	957	2,549
Kemasek .. .. .	3,618	3,723	2,949	717	3,666	4,352	1,327	359	1,686
Kemaman .. .. .	12,556	15,432	9,948	2,359	12,307	16,684	3,916	1,145	5,061
Kampong Buloh (P.W.D.) .. .. .	746	819	3,175	888	4,063	4,526	1,760	534	2,294
Vaccinators .. .. .	14,946	14,946	7,461	4,125	11,586	12,361	7,461	4,125	11,586
Police, etc. .. .. .	834	834	628	317	945	945	628	317	945
	94,226	117,406	82,315	32,371	114,686	140,188	41,688	19,373	60,061







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