

# **Annual report of the Director, Medical & Health Department / Colony of Mauritius.**

## **Contributors**

Mauritius. Medical and Health Department.

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COLONY OF MAURITIUS



# ANNUAL REPORT

ON THE MEDICAL AND HEALTH  
DEPARTMENT

1st JANUARY to 31st DECEMBER, 1934





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**COLONY OF MAURITIUS**  
**ANNUAL REPORT**  
on the Medical and Health Department,  
1st January to 31st December, 1934.

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**I.—Administration**

No appreciable administrative progress has been possible during the year, though a number of minor changes have taken place which have resulted in improvements. Proposals made for the reorganisation of the Bacteriological Laboratory Staff were not approved in their entirety. A compromise was made in consequence of which the organisation of the Laboratory is in a transition stage which shows every likelihood of being a prolonged one. The vacant post of Government Analyst was filled by the appointment of J. A. R. Stoye, B.Sc., A.I.C., who assumed duty on the 13th April, 1934. Recommendations made for the reorganisation of the sanitary staff involved some drastic retrenchment of unsuitable officers and the recruitment of more promising applicants than had been forthcoming in the past. Those recommendations were not approved so that prospects of improvement in the efficiency of the sanitary staff are remote. One can only hope that closer control of the work of the subordinate sanitary staff by the Medical Officers of the Districts will prevent deterioration from becoming too marked.

The conditions arising out of the drought and the reduced crop, to which reference will be made later in this report, caused an increase in the amount of poor relief work undertaken by the staff which prevented further development along health centre lines in the District of Pamplemousses, where the new system is to be tried out before its full adoption in the other rural Districts.

**LEAVE, MUTATIONS, ETC.**

2. Dr. A. C. d'Arifat, Deputy Director, left the Colony, on leave, on the 20th May, 1934 and returned on the 24th December, 1934.

Dr. W. R. Dupré, Government Radiologist, went on leave on the 22nd December.

Dr. H. André, M.B.E. Government Medical Officer, Pamplemousses, went on leave on the 4th September, 1934 and was replaced by Dr. F. Bouloux.

Dr. Jean Cantin, Government Medical Officer, Savanne, went on leave on the 16th July, 1934; his duties were performed by Dr. F. Bouloux, Resident Medical Officer, Civil Hospital, up to the 31st July, 1934. On the 1st August, Dr. L. N. R. Comty, Police and Prison Surgeon, Port Louis, was appointed Acting Government Medical Officer, Savanne, and in view of this arrangement Dr. F. Letellier of the Civil Hospital was detailed for duty as Police and Prison Surgeon, Port Louis.

Dr. R. Laventure, Government Medical Officer, Flacq, returned from leave on the 8th March, 1934.

Miss I. Rogers, Matron, Mental Hospital, returned from leave on the 14th November, 1934.

Mrs. H. Brunning, Matron, Moka Hospital, retired from the service on the 1st November, 1934.

Mr. J. A. R. Stoye, Government Analyst, arrived in the Colony and assumed duty on the 13th April, 1934. The appointment of Mr. P. de Sornay as Acting Government Analyst terminated on Mr. Stoye's arrival.

Dr. Jocelyn Maingard, M.B.E. was appointed Medical Officer to the Police Department on the 1st August, 1934 with the inclusion, among his duties, of the medico-legal investigation of criminal cases which are likely to fall under the jurisdiction of the Assizes Court.

Dr. R. Lavoipierre, was appointed on the 1st July, 1934, as Health Officer, of Plaines Wilhems and Black River Districts and he was replaced as Government Medical Officer, Grand Port by Dr. H. Joomaye.

Dr. R. Pierre, Resident Medical Officer, Civil Hospital was appointed as Assistant Radiologist on the 1st July, 1934. Owing to the death of Dr. R. Mayer, and the appointment of Dr. R. Pierre as Assistant Radiologist, Drs. Letellier and Rousset were appointed temporarily in the Medical Service of the Colony.

#### DEATH

3. Dr. R. Mayer, Resident Medical Officer, Victoria Hospital, died on the 21st January, 1934.

#### STAFF

4. The professional staff of the Department on the 31st December, 1934 was as follows:

*Director* : J. BALFOUR KIRK, M.B., Ch.B., M.R.C.P., D.P.H., D.T.M. & H.

*Deputy Director of Medical Services* : L. A. C. D'ARIFAT, L.R.C.P., M.R.C.S.

*Medical Officer of Health, Port Louis and Port Health Officer* : L. M. J.

RAYMOND PILOT, M.B., B.S., M.R.C.S., L.R.C.P., D.T.M. & H.

*Senior Pathologist* : Dr. A. R. D. ADAMS, M.D.

*Pathologist* : (vacant).

*Superintendent, Civil Hospital* : Y. CANTIN, M.R.C.S., L.R.C.P., D.T.M.

*1st Resident Surgeon, Civil Hospital* : F. A. G. BOULOUX, M.R.C.S., L.R.C.P. (temporary and provisional); acting as Government Medical Officer, Pamplémousses and Superintendent Leper Hospital. Duties of Resident Surgeon performed temporarily by Dr. L. H. Mottet.

*2nd Resident Surgeon, Civil Hospital* : Vacant (Dr. S. Peerbaye, M.D. (Montpellier) acting).

*Superintendent, Victoria Hospital* : L. R. DU VERGE, M.C., M.R.C.S., L.R.C.P.

*1st Resident Surgeon, Victoria Hospital* : L. V. PIERRE GOUPILLE, M.D., (Paris).

*2nd Resident Surgeon, Victoria Hospital* : Vacant. (M. A. H. M. ROUSSET, acting).

*Superintendent, Mental Hospital* : J. D. DYSON, M.B., B.S., D.P.M., M.R.C.S., L.R.C.P.

*Assistant Superintendent, Mental Hospital* : J. F. E. BRUNEL, M.D., (Montpellier).

*Police and Prison Surgeon, Port Louis* : L. N. R. COMTY, M.B., B.S., M.R.C.S. (acting as Government Medical Officer, Savanne); duties of Police and Prison Surgeon performed temporarily by Dr. Letellier.

*Health Officer, Plaines Wilhems and Black River* : R. LAVOPIERRE, M.D. (Paris), D.T.M. (Paris), L.R.C.P., L.R.C.S., L.R.F.P. & S., D.P.H.

*Superintendent, Leper Hospital* : J. H. ANDRE, M.B.E., M.R.C.S., L.R.C.P.

*Medical Officer in charge Hookworm and Malaria Department* : L. J. Mc GREGOR, M.B., B.S., M.R.C.S., L.R.C.P., D.T.M. & H.

*Radiologist* : W. R. DUPRE, L.R.C.P. & S., L.F.P. & S., D.M.R.E.

*Assistant Radiologist* : R. PIERRE, M.B., B.S., L.R.C.P., M.R.C.S., D.T.M. & H., D.P.H.

*Government Analyst* : J. A. R. STOYLE, B.Sc., A.I.C.

*Police Medical Officer* : J. J. MAINGARD, M.B.E., L.M.S., S.A., (London),  
Mèdecin Colonial (Paris).

#### DISTRICT MEDICAL OFFICERS

(*Government Medical Officers having charge of a district hospital and of all the dispensaries in their district, and also of the Sanitation of the district.*)

*Pamplémousses* : J. H. ANDRE, M.B.E., M.R.C.S., L.R.C.P., (on leave ;  
replaced by Dr. F. A. G. Bouloux).

*Rivière du Rempart* : S. PIARROUX, L.R.C.P. & S., L.F.P. & S.

*Fiacq* : R. LAVENTURE, M.D. (Montpellier).

*Grand Port* : H. JOOMAYE, M.R.C.S., L.R.C.P., D.T.M. & H.

*Moka* : R. PILOT, M.B.E., M.D. (Lyons).

#### LEGAL

5. The following ordinances were enacted during the year :

5 of 1934—This Ordinance amended and consolidated previous ordinances on the subject of dangerous drugs and gave effect to the provisions of the International Opium Convention signed in 1931.

6 of 1934—An amending Ordinance to the principal Ordinance of 1912, designed to ensure the retention by pharmacists for a period of 2 years of prescriptions concerning drugs to which part IV of the preceding Ordinance applies, and enacting other measures for the better control of the pharmacy trade especially with regard to dangerous drugs.

11 of 1934—This Ordinance facilitates the registration in the Colony of Medical Officers of Government appointed by the Secretary of State for the Colonies.

23 of 1934—To amend the dangerous substances consolidating ordinance 1913.

38 of 1934—To facilitate the appointment of Sanitary Authorities and to confer upon the Director, Medical and Health Department with regard to the subordinate staff of hospitals and dispensaries the same disciplinary powers as he has over the subordinate sanitary staff.

Proclamation No. 13 of 1934 to apply Part IV of the Dangerous Drugs Ordinance, 1934, with certain modifications, to Methyl Morphine (commonly known as Codeine), Ethylmorphine (commonly known as Dionin) and their respective salts.

#### GOVERNMENT NOTICES

G.N. No. 14—Medical Officers attached to hospitals to grant free burial permits to paupers deceased in hospitals.

G.N. No. 24—Regulations under The Dangerous Substances Consolidating Ordinance 1913, as amended.

G.N. No. 25—Rules for Nursing Students in Hospital.

G.N. No. 27—"Alcoolat de Lavande" being deleted from list of "alcoolats" appearing in Government Notification No. 219 of 31st October, 1929.

G.N. No. 32—Charges of Bacteriological, Pathological and Parasitological examinations at Bacteriological Laboratory.

G.N. No. 42 and 52—Regulations relating to the Milk Trade, and consolidating and amending previous Regulations

G.N. No. 54—Regulations made by the Board of Curepipe re sale of articles of food outside the Public Market.

G.N. No. 61—Regulations re Management of Public Markets in rural districts. Consolidating and amending previous Regulations.

G.N. No. 62—Regulations re Dangerous Substances.

G.N. No. 64—Regulations under the Pharmacy Ordinance, 1912, amending regulations under G.N. No. 232 of 22nd November, 1913, as subsequently amended.

G.N. No. 65—Regulations re The Curepipe (Markets and Slaughter Houses) Ordinance, 1913.

#### FINANCIAL

6. The revenue of the Colony for the financial year 1933-34 was	...	...	...	Rs. 16,567,110.18
The expenditure on Medical and Sanitary Services (including municipal expenditure under this Department's control) out of the Revenue was	...	...	...	Rs. 1,587,957.85

### II.—Public Health

7. The favourable climatic conditions experienced during the year have been reflected in the vital statistics. The death rate has again fallen in spite of the fact that the serious shortage in the sugar crop reduced the amount of money circulating in the Colony. The death rate for the year was 25.7 per 1,000 as compared with 27.3 for the previous year. The birth rate was 34.5 per 1,000 of the population.

The most likely cause of this improvement is the long spell of dry weather which proved so disastrous to the sugar crop. It is common experience in the Colony that drought is accompanied by better health conditions. The converse also holds good: abundant rainfall means an increase in the amount of malaria in the country districts as well as an increase in affections of the respiratory system. These rapidly affect the statistics, which, on account of the small numbers involved are very sensitive to changes which would make little difference if the population were reckoned in millions rather than thousands.

The density of the local population is also a factor which tends to make the statistics unduly sensitive because a given infection may influence a larger number of persons in a shorter time than would happen if the population were more scattered.

8. The statistics of the occurrence of malignant disease keep fairly steady. The absence of records of primary malignant disease of the lungs and bronchi is interesting in view of the increase observed in Great Britain. So far no explanation has yet been forthcoming for this feature of the British statistics, and happily, it is not yet necessary for the Colony to take it into account.

142 patients suffering from malignant disease were admitted to the hospitals, as compared with 135 during 1933. 97 of the tumours were situated in the female genital organs and breast; the stomach and liver accounted for 8; peritoneum and intestinal tract 10; buccal cavity 7; and the skin 10. In 10 cases the site was not specified. The non-malignant new growths numbered 91.

The total number of deaths from Cancer and other tumours in the Colony is given by the Registrar General as 70.

#### COMMUNICABLE DISEASES

##### (A).—INSECT-BORNE DISEASES—MALARIA

9. The total number of patients suffering from malaria admitted to the hospitals was 2,723, a decrease of 322 over the figure for the previous year. The case mortality was 2.90%.

The following tabular statement shows the admissions for malaria and deaths ascribed to it during this and the preceding year:—

Institutions	Admissions		Deaths	
	1933	1934	1933	1934
Civil Hospital ...	1,020	852	40	18
Port Louis Prison Hospital ...	119	40	—	—
Long Mountain Hospital ...	346	329	26	9
Poudre d'Or Hospital ...	194	169	7	4
Flacq Hospital ...	219	346	9	14
Mahebourg Hospital ...	171	173	11	5
Souillac Hospital ...	221	294	1	5
Victoria Hospital ...	492	354	14	18
Beau Bassin Prison Hospital ...	73	27	—	—
Moka Hospital ...	146	114	6	6
Mental Hospital Infirmery ...	37	21	—	—
Barkly Industrial School Hospital	7	4	—	—
<b>Total ...</b>	<b>3,045</b>	<b>2,723</b>	<b>114</b>	<b>79</b>

The total number of deaths in the Colony from malaria and malarial cachexia, 1,884, is equivalent to a death rate of 4.80‰ living. The rate for 1933 was 6.34‰.

10. Owing to the disorganisation attendant upon the transition from the old type of organisation to the new, it has not been possible to include in this year's report the splenic indices of school children in the various districts of the Colony. This feature of the report will be resumed as soon as the Department is restored to its full strength.

#### PLAGUE

11. No case of plague occurred during the year.

The plague-preventive work carried out is recorded in the report of the Medical Officer of Health, Port Louis. (Appendix IV).

#### TYPHUS FEVER

12. No case of this disease was notified during the year.

### (B).—INFECTIOUS DISEASES

#### SMALL POX.

13. There has been no small-pox in the Colony since 1913. 9,284 children were vaccinated during 1934 by the Public Vaccinators. The data are given hereunder :

Successful vaccinations on 1st attendance ...	7,921
Successful vaccinations on 2nd and subsequent attendances	1,005
	—8,926
Unsuccessful vaccinations ...	333
Vaccinations in which the results could not be obtained ...	25
<b>Total ...</b>	<b>9,284</b>

The proportion of children vaccinated by Government Vaccinators to live births is 68.6%.

## ENTERIC FEVER

14. The total number of cases notified is considerably less than was the number in 1933 when 181 were registered. The monthly occurrence of notifications in the districts is shewn in the following table.

## ENTERIC FEVER FOR THE YEAR 1934

Districts.	January	February	March	April	May	June	July	August	September	October	November	December	Total
Port Louis ... ..	1	2	2	—	—	2	—	—	—	—	1	—	8
Plaines Wilhems ... ..	—	6	5	2	4	11	10	2	3	8	5	5	61
Moka ... ..	3	2	3	2	2	2	—	—	1	1	—	1	17
Pamplemousses ... ..	—	—	2	1	—	3	—	—	—	—	—	—	6
Rivière du Rempart... ..	—	—	—	1	—	—	—	—	—	—	—	—	1
Flacq ... ..	—	—	—	—	—	—	—	—	—	1	—	—	1
Savanne ... ..	—	1	—	6	2	4	2	—	3	—	4	—	22
Grand Port ... ..	1	2	2	2	1	2	—	—	—	—	—	—	10
Black River ... ..	—	—	—	—	—	—	—	—	—	—	—	—	—
Total cases ... ..	5	13	14	14	9	24	12	2	7	10	10	6	126

Of these figures the only ones which may be regarded as being even approximately accurate are those for Port Louis, Plaines Wilhems and possibly Moka, the reason being that those are the only districts in the Colony containing an adequate number of resident medical practitioners. And even in these districts there can be no doubt that numerous patients suffering from mild enteric fever never see a doctor at all. There have been no outbreaks brought to the notice of the Sanitary Authorities, most of the cases being sporadic.

The small number of cases notified in Port Louis is undoubtedly due to the chlorination of the water supply of the town.

## DIPHTHERIA

15. 28 cases of Diphtheria were notified in 1934.

## PUERPERAL STATE

16. 178 deaths were registered as being due to the puerperal state.

The deaths are classified as under:—

Puerperal albuminuria and convulsions	...	...	16
Puerperal Haemorrhage	...	...	5
Puerperal Sepsis	...	...	28
Puerperal embolism	...	...	1
Other accidents of pregnancy	...	...	5
Other toxæmias of pregnancy	...	...	3
Other accidents of childbirth	...	...	120

22 cases of puerperal septicaemia, of which 12 proved fatal, were treated in hospitals—a case mortality of 54.5%.

The maternal mortality rate (the ratio of the number of deaths ascribed to the puerperal state to the total number of births including still-births) was 12.00‰ in 1934 as compared with a rate of 9.9‰ for the previous year.

## ERYSIPELAS

17. 68 cases were notified, compared with 77 in 1933. 10 deaths were registered,

## TUBERCULOSIS

18. Out of the 10,069 deaths of 1934, 345 were due to tuberculosis giving a death rate of 8.8 per 10,000 inhabitants.

## LEPROSY

19. The report on the work of the Leprosy Board and of the Leper Hospital appears in Appendix VI.

## CHICKEN POX

20. 8 cases of this disease were treated at the Barkly Industrial School Hospital.

## VENEREAL DISEASES

21. 390 cases of Syphilis, with 22 deaths were admitted to the hospitals during the year. 225 cases of Gonorrhœa were treated and 124 cases of soft chancre.

Mauritius is a signatory to the International Agreement signed at Brussels in 1924 respecting facilities to be given to merchant seamen for the treatment of venereal diseases.

This agreement provides for the free treatment of seamen suffering from venereal disease. The treatment is open to all merchant seamen or watermen without distinction of nationality.

Treatment cards drawn up in the form of the model indicated in the agreement are issued to seamen coming for treatment for the first time. On the card is recorded a short clinical account of the case; the diagnosis; the treatment carried out at the centre; indications for treatment on the voyage and the results of the serological examination undertaken in cases of syphilis.

The only difference between local practice and the requirements of the agreement is that the Kahn test is now used instead of the Wassermann reaction in the serological diagnosis of syphilis.

The treatment centre is situated at the Civil Hospital, Port Louis, within easy reach of the harbour. It is open daily, Sunday excepted, from 8 a.m. to 5 p.m.

Hospital cases are accommodated in the hospital.

## (C).—HELMINTHIC DISEASES

## ANKYLOSTOMIASIS

22. Reference to this condition are to be found in Appendix II.

The number of cases of this condition treated at the hospitals and dispensaries was 22,587 and the number of deaths in hospitals due to hookworm disease was 108.

## SCHISTOSOMIASIS

23. 60 cases of this condition were treated in the hospitals during the year, and 301 at the dispensaries.

## DEFICIENCY DISEASES.

24. In view of the economic strain under which the Colony has been labouring for the past five or six years it is rather remarkable that so few of the commoner deficiency diseases should have been recorded. Only 2 cases of Scurvy and 11 cases of Beri-Beri have been observed. In December Dr. Y. Cantin, Medical Superintendent Civil Hospital, recognised a papular skin condition in a negro girl as being a manifestation of vitamin A deficiency. The recognition of this condition led to the discovery of two more cases, one being a brother of the first patient; the other having no relation to her whatever. A departmental circular was sent to other medical officers

describing the condition and asking them to report for consultation and diagnosis any cases complying with the description given therein. As the circular was issued in the last week of the year there was not time to obtain reports from the districts in time for inclusion in this report.

#### VITAL STATISTICS

25. The Vital Statistics of the Colony are now calculated on the basis of the number of the population on the 30th June of the year under reference.

#### ACTUAL POPULATION OF MAURITIUS ON THE 30TH JUNE, 1934.

Districts	Area in square miles	Total population	Density per square mile
Port Louis ...	16	54,695	3,418.44
Pamplemousses ...	69	35,460	513.91
Rivière du Rempart ...	57½	31,108	541.00
Flacq ...	115	51,341	446.44
Grand Port ...	101	47,493	470.22
Savanne ...	93½	30,176	322.73
Plaines Wilhems ...	78	98,790	1,266.53
Moka ...	89	29,339	329.65
Black River ...	101	13,465	133.31
Grand Total ...	720	391,867	544.25 (mean)

The chief feature of interest here is the high density of population : 544.25 per square mile.

#### MARRIAGES

26. 1,767 marriages were celebrated in 1934 as compared with 1,521 in 1933 ; showing an increase of 246. This is equivalent to a marriage rate (number of persons married to every thousand of population) of 9.0‰ against 7.9 in 1933.

#### BIRTHS

27. The total number of births for the year was 13,516 (6,932 males and 6,584 females) 4,609 of these occurred in the General, and 8,907 in the Indian population. The birth-rate was 34.5 against 34.7‰ in 1933.

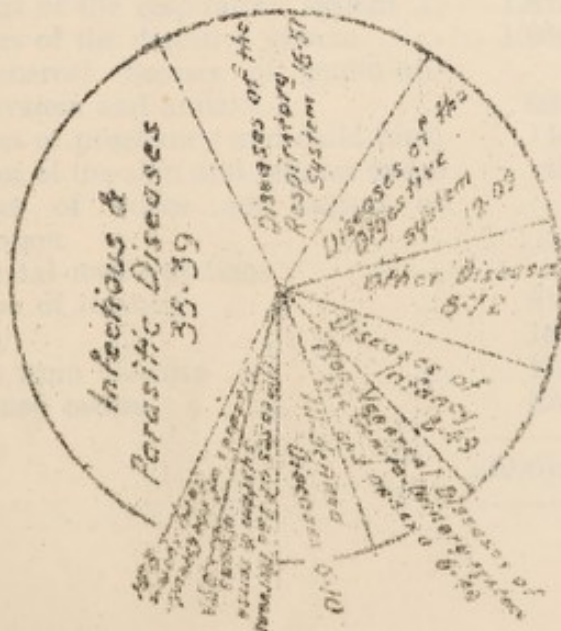
The District birth-rate and the five-year mean rate are as follows:

Districts	1930	1931	1932	1933	1934	mean
Port Louis ...	35.5	33.1	29.2	37.3	38.5	34.72
Pamplemousses ...	26.0	23.2	18.7	28.5	26.3	24.54
Rivière du Rempart ...	32.1	29.9	25.8	44.1	36.9	33.76
Flacq ...	27.2	26.6	20.9	29.4	29.8	26.78
Grand Port ...	30.0	27.6	24.9	33.8	35.5	30.36
Savanne ...	25.7	28.2	22.6	31.6	33.9	28.40
Plaines Wilhems ...	37.7	35.6	32.2	38.0	37.3	36.16
Moka ...	30.3	31.6	29.0	34.2	35.0	32.02
Black River ...	31.2	26.2	20.5	26.5	28.4	26.56
Whole Colony ...	31.5	30.2	26.2	34.7	34.5	31.42

#### DEATHS.

28. During the year 1934, the total number of deaths was 10,069 (5,301 males and 4,768 females); 2,987 in the General and 7,082 in the Indian population. This number is a decrease of 546 over the total deaths of 1933.

Percentage Classification of  
TOTAL DEATHS (9,065)  
(from Registrar General's Report)

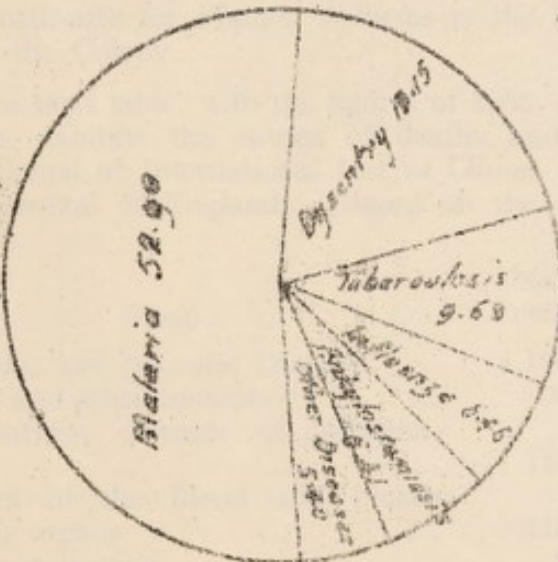


OTHER DISEASES

Cancer and other Tumours ... 1.69  
 Rheumatism & Diseases of Joints ... 1.84  
 Diseases of Blood, etc. ... 1.88  
 Diseases of Pregnancy, Child Birth, etc. ... 1.76  
 Diseases of the Eye & Ear ... 1.56  
 Senility ... 1.27  
 Deaths from violence ... 1.43  
 Diseases of Bones and Joints of Locomotion, chronic poisoning and etc. ... 1.09  
 Genital maffarations ... 1.09

TOTAL 8.72

Percentage Classification of  
DEATHS DUE TO INFECTIOUS AND  
PARASITIC DISEASES  
TOTAL (3,582)

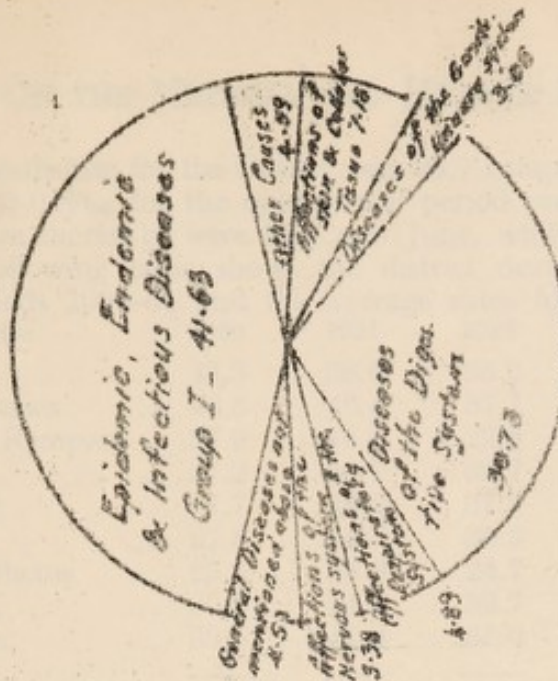


OTHER DISEASES

Septicemia ... 1.01  
 Typhoid Fever ... 1.81  
 Whooping Cough, Diphtheria, Erysipelas  
 German Spinal Fever, Tetanus, Leprosy  
 Syphilis, other Venereal Diseases,  
 Pyaemia, other Diseases due to Helminths  
 and other Infectious and Parasitic  
 Diseases ... 3.50

TOTAL 3.40

Percentage Classification of  
DISEASES IN OUT-PATIENT POPU-  
LATION TREATED AT PUBLIC DISPEN-  
SARIES.



OTHER CAUSES

Affections of the Circulatory system 1.41  
 Affections produced by External causes 1.97  
 Puerperal State, Diseases of the Genito-Urinary System, Diseases of Infancy,  
 Affections of old age and ill-defined  
 diseases ... 1.21

TOTAL 4.59



The death-rate for the Colony was 25.7 compared with 27.3‰ for 1933 and with 33.04‰ for the quinquennial period preceding 1934. The months of maximum mortality were May and June, whilst in 1933 it was March.

The following table shows the district death-rates yearly for the five yearly periods 1930-34 and the average rates for the same period:

Districts	1930	1931	1932	1933	1934	mean
Port Louis ...	43.3	38.6	33.6	28.1	25.9	33.90
Pamplemousses ...	48.3	46.6	37.1	30.3	28.3	38.12
Rivière du Rempart	37.9	45.6	29.6	24.2	22.5	31.96
Flacq ...	37.2	46.7	32.7	29.0	25.4	34.20
Grand Port ...	37.7	44.2	37.3	30.8	29.7	35.94
Savanne ...	27.8	44.7	39.3	31.5	30.6	34.78
Plaines Wilhems ...	25.6	25.8	24.7	21.6	21.2	23.78
Moka ...	30.9	34.7	32.7	28.6	28.0	30.98
Black River ...	39.5	47.2	51.0	33.5	29.1	40.06
Whole Colony ...	35.4	39.1	32.8	27.3	25.7	32.06

The death-rate for Plaines Wilhems is the lowest death-rate of all the districts of the Colony. ...

29. The next table, with the figures of 1933, inserted for purpose of easy comparison, exhibits the causes of deaths and rates classified according to the "Manual of International List of Causes of Death" adopted by the Registrar General of England. (Based on the 4th Decennial Commission, Paris, 1929).

Group	No. of deaths		Rate per ‰	
	1933	1934	1933	1934
1. Infectious and parasitic Diseases ...	4,103	3,562	10.6	9.1
2. Cancer and other tumours ...	92	70	.2	.2
3. Rheumatism, diseases of nutrition, etc. ...	117	135	.3	.3
4. Diseases of the blood and blood-forming organs ...	116	129	.3	.3
5. Chronic poisoning ...	2	3	.0	.0
6. Diseases of the nervous system and sense organs ...	462	374	1.2	1.0
7. Diseases of circulatory system ...	253	253	.6	.6
8. Diseases of the respiratory system ...	1,815	1,661	4.7	4.2
9. Diseases of the digestive system ...	1,040	1,216	2.7	3.1
10. Non-venereal diseases of genito-urinary system and annexa... ..	684	651	1.8	1.7
11. Diseases of pregnancy and child birth	146	178	.4	.4
12. Diseases of the skin and cellular tissue	48	37	.1	.1
13. Diseases of bones and organs of locomotion ...	4	4	.0	.0
14. Congenital malformations ...	5	3	.0	.0
15. Diseases of infancy ...	815	855	2.1	2.2
16. Senility ...	160	179	.4	.5
17. Deaths from violence ...	125	144	.3	.4
18. Ill-defined causes ...	628	615	1.6	1.6
	10,615	10,069	27.3	25.7

The more notable causes of deaths were as under:

Diseases	No. of deaths		Rate per ‰	
	1933	1934	1933	1934
Malaria and Malarial cachexia	2,464	1,884	6.34	4.80
Pneumonia broncho-and lobar	1,293	1,123	3.32	2.86
Influenza	256	230	.65	.58
Diseases of early infancy	815	855	2.09	2.18
Phthisis and tuberculosis	431	345	1.10	.88
Diarrhoea and enteritis	844	1,028	2.17	2.62
Bronchitis	382	413	.98	1.05
Old age and debility	493	546	1.26	1.39
Dysentery	499	682	1.28	1.74
Albuminuria, nephritis and uraemia	655	632	1.68	1.61
Heart diseases (organic)	174	182	.44	.46
The puerperal state	146	178	.36	.45

#### INFANTILE MORTALITY.

30. The infantile mortality rate is the number of deaths of infants under one year of age occurring in any year for every thousand live births registered during the same year.

The rate for 1934 was 129.77‰ as compared with 131.50‰ for 1933.

The deaths under 5 years were distributed as follows:

	Males	Females	Total
Under 1 year	976	778	1,754
1 year and under 2 years	202	183	385
2 years and under 3 years	135	134	269
3 years and under 4 years	77	92	169
4 years and under 5 years	62	54	116
	<u>1,452</u>	<u>1,241</u>	<u>2,693</u>

The following table shows the grouping of these deaths according to the causes inscribed on the death certificates:

Causes of death	1 to under	
	Under 1 year	5 years
Infectious and Parasitic diseases	337	427
Rheumatism, Diseases of nutrition etc.	25	15
Diseases of the blood and blood-forming organs	3	—
Nervous system and organs of special senses	35	57
Diseases of Circulatory system	1	5
Diseases of Respiratory system	189	124
Diseases of Digestive system	274	223
Diseases (non-venereal) of the genito-urinary system and annexa	2	20
Diseases of the skin and cellular tissue	6	3
Diseases of Bones and organs of locomotion	2	—
Malformations	1	2
Diseases of early infancy	855	—
Affections produced by external causes	1	10
Ill-defined causes	23	53
All causes	<u>1,754</u>	<u>939</u>

The distribution of the deaths attributed to the diseases of early infancy and a comparison of these figures with those of 1933 is shown below:

Designation of Diseases and accidents	1933	1934
Infantile debility ... ..	733	762
Premature birth ... ..	59	80
Atelectasis ... ..	8	8
Injuries at birth ... ..	6	1
Diseases of umbilicus, etc. ... ..	3	1
Periphigus neonatorum ... ..	1	2
Icterus neonatorum ... ..	5	—
Cyanosis ... ..	—	1
<b>Total ... ..</b>	<b>815</b>	<b>855</b>

#### STILL-BIRTHS

31. A still-birth is defined by the Registrar General as "a child born dead at or after the seventh month of pregnancy."

The number of still-births registered during 1933 and 1934 is as under:

Districts	Males		Females		Total	
	1933	1934	1933	1934	1933	1934
Port Louis ... ..	100	93	90	76	190	169
Pamplemousses ... ..	50	50	52	40	102	90
Rivière du Rempart ... ..	53	57	43	39	96	96
Flacq ... ..	117	104	79	76	196	180
Grand Port ... ..	66	99	69	103	135	202
Savanne ... ..	47	87	45	65	92	152
Plaines Wilhems ... ..	132	172	149	111	281	283
Moka ... ..	76	61	56	45	132	106
Black River ... ..	10	17	11	12	21	29
<b>Total ... ..</b>	<b>651</b>	<b>740</b>	<b>594</b>	<b>567</b>	<b>1,245</b>	<b>1,307</b>

It is equivalent to 96.7‰ of live births, for the same period as compared with 92.3‰ for 1933.

The still-births are distributed as follows for the two great classes of the population:

	Males	Females	Total
General population ... ..	158	124	282
Indian population ... ..	582	443	1,025
	<b>740</b>	<b>567</b>	<b>1,307</b>

### III.—Hygiene and Sanitation

#### INSECT-BORNE DISEASES

##### MALARIA.

32. In accordance with the present plan of campaign, active anti-malarial measures have been limited to the region in the central part of the Colony within the 600 foot contour line.

A description of these measures is given in detail in Appendix III to this report. It will suffice here to give merely a general account of the malarial situation as it appears to the writer.

33. In the coastal lowlands where the disease is endemic existing drains, channels and other works have been maintained. The length of these channels and water-courses is 1,484,772 feet. Maintenance includes the removal of impediment to the flow of the water; be it extraneous matter such as fallen trees, soil or boulders, or the removal of aquatic vegetation growing in the channel itself. The maintenance is carried out on the cantonnier system and payment is made by results. Each channel is apportioned into sections varying in length with the nature of the stream bed or other circumstances affecting its maintenance. A man, known as a "cantonnier," is placed in charge of each section and his duty is to keep his section clean of weeds or other impediment to the flow of the water, and to abolish by filling or otherwise, pools in the stream bed which might become mosquito nurseries. Arrangements are made for the regular inspection of these sections by responsible officers who are required to certify upon the paysheets of the cantonniers, that they have inspected the sections and found them clean and properly upkept. Payment is made only upon this certificate. The cantonniers are part-time employés, and have no definite hours of work. They are paid solely by results. The adoption of this system which is due to Dr. A. C. d'Arifat, has made a great saving of time and work for the supervisory staff. It is now only necessary for the supervising officer to walk along the section to enable him to gain the information which enables him to certify the pay sheets, whereas formerly, when labourers were employed by the day, time was often lost in checking the numbers at work and in hunting for gangs who always seemed to be at the most inaccessible parts of the sections when surprise inspections were made.

No claim is made that the maintenance of these works in the coastal areas is an active measure in the eradication of the endemic malaria there. The maintenance is merely a means of holding ground already gained until such time as active measures are considered desirable and feasible.

The prolonged drought in the early part of the year undoubtedly reduced the amount of malaria in the rural districts as it did elsewhere in the Colony.

34. Radical work in Port Louis has not been attempted on account of the large expenditure involved. The condition of existing works in the Intra Urban Area has been improved and they have been satisfactorily maintained. There were no heavy floods during the year so that the amount of damage sustained by the works has been trifling and the amount of gravel to be removed from the stream beds much less than usual. The work in Port Louis is conducted by the staff of the Medical Officer of Health.

Active measures for the elimination of mosquito nurseries have been confined to the district of Plaines Wilhems. It is here that there is the best prospect of obtaining results which justify the expenditure. Important areas at Curepipe have been drained and existing works have been properly maintained. But the main activities of the Malaria Branch have been the prosecution of surveys in different parts of the district and these shew that there is a good deal more indigenous malaria in the higher parts of Plaines Wilhems than one would think. It is gratifying to note that the disease appears to be so well under control at Curepipe that no indigenous cases can be ascribed to this township. Four miles from Curepipe lies the village of Vacoas, a reputedly healthy area. Nevertheless during the six months March—August 1934, 403 cases were diagnosed clinically as Malaria by the Health Officer Plaines Wilhems. In each case the blood was examined and 173 were positive. There is no doubt that Malaria is endemic in Vacoas, and this view is supported by the high spleen rate of "street children" inhabiting the village, 10.5% of them having enlarged spleens. But the interesting feature

is that between March and September three trained moustiquiers conducted a systematic search of the whole village and the surrounding neighbourhood for anopheline breeding places and only succeeded in finding one rock pool containing three larvæ of *A. costalis*.

The Malaria Officer is of opinion that the Malaria seen in Vacoas this year is the residuum of the outbreak which occurred as a result of the cyclone in 1931. From personal knowledge of the local conditions I am disposed to agree with this view.

Generally speaking, Malaria in the upper regions of the Colony has been less during the year, due undoubtedly to a reduction in the number of mosquitoes and the gradual disappearance of attacks in patients infected in former years. It is to be expected that the benefit resulting from these circumstances and from the action which has been taken by the departmental Staff in eliminating still more nurseries will extend into the future and be expressed by even more impressive results.

#### PLAGUE

35. In last year's report an account of the measure taken to regulate the storage of grain was given. The principal measure taken by the Government was the provision of the rat-proof granary and it was shown that this required to be implemented by the construction of rat-proof storage for the stocks held for trading purposes by wholesale dealers in the town. Those dealers who desired to stock more than the statutory thirty bags of grain in premises in Port Louis were required to provide a rat-proof store room in their godowns. 36 dealers have made this provision and now the only grain in Port Louis accessible to rats is the grain stored in retail shops. This amounts to quite an appreciable proportion of the total grain in the town and the longer it remains accessible to rats, the further distant will be the time when rats are reduced to safe numbers. The problem of the storage of grain in retail shops is complicated by the great congestion found there. The merchant carries a much larger stock in trade than the size of his shop really justifies. By storing his grain in bags rather than in metal bins, he finds that he can utilise the available space to his better advantage. But as the storage of grain in this way practically nullifies the other measures, an acceptable and convenient container must be found. Attention is being given to the design of such a bin.

36. Surveillance of rats is maintained as a permanent feature of the port sanitary administration. Arrangements are in force whereby the dock area is being continually trapped, while, in the part of the town surrounding the docks the rodent trapping staff is established at such a number as will enable each premises to be visited and trapped every 14 days throughout the year. Rodents trapped or found dead are examined microscopically for plague. In 1934, 12,596 rodents were trapped: of these 5,241 were examined. No plague infected rat was discovered.

There has been no case of human plague in the Colony since 1927.

#### HELMINTHIC DISEASES

##### ANKYLOSTOMIASIS

37. Hookworm disease in the Colony is becoming largely a domestic problem rather than that of the public health service so far as prevention is concerned. Though the majority of houses in the Colony now have a latrine, there is abundant evidence that for the most part, amongst the labouring population in the country districts, the latrines are not in regular use. The

primary cause of this is that the rural dweller is not yet sufficiently impressed with the necessity of using his latrine habitually as a means of preventing hookworm infection. The infection itself is insidious in its effects. It has none of the spectacular phenomena characteristic of malaria and it is only when swelling of the feet and great debility make their appearance that the patient begins to realise that he is ill at all. In a hookworm country a large proportion of the total inhabitants may harbour the infection without realising it. Nor do they realise that they are living on a health level which is considerably below par. For these reasons it is difficult to convince them that hookworm infection is an important factor in their lives and that it demands the formation of new habits for its control.

This being so, the only useful activity which can be undertaken by the health authority is to institute measures whereby the population may be treated for the infection as often and as radically as conditions allow. The staff in charge of the control of hookworm infection has accordingly been strengthened by the addition to the establishment of the posts of two medical officers, though lack of suitable candidates prevented them from being filled. At the end of the year arrangements were made for the filling of one of the posts and the extension of the campaign to the northern Districts which had not had a treatment campaign since 1928.

The campaign not only administers treatments but also conducts educational work in the area in which it is operating. Simple lectures are delivered in the vernacular to the assembled people, who are thus taught the basic facts of prevention.

#### SCHISTOSOMIASIS

38. The circumstances recorded in the report of the Pathologist printed as Appendix I of this report, explain the reasons for the lack of progress made during the year.

#### ENTERIC OR TYPHOID FEVER

39. In the absence of adequate and early notification the Sanitary Branch of the Department can do little to prevent enteric fever from spreading from the patient to other members of the household. Owing to the same cause and to the long incubation period of the disease the detection of the source of the infection is a practical impossibility. It is seldom that the patient can give any help, and the possibility of carrier infection further complicates the enquiry.

In those cases of which the Sanitary Department are notified disinfectants are supplied and those in attendance on the patient are taught their use. Even such simple measures as are taught are not always understood or practiced and it will be a long time yet before the general population will be relieved of the liability of outbreaks of typhoid and other infectious intestinal disease.

The only member of the typhoid group of bacteria isolated by the Laboratory this year has been *Bact. typhosum*.

#### GENERAL MEASURES OF SANITATION

##### NIGHT SOIL AND CONSERVANCY

40. The report of the Medical Officer of Health describes the night soil and conservancy work done by the Department in Port Louis.

The night soil service at Curepipe is also carried out by the Health Department. Some 1,140 services are performed there daily on an average. The double-bucket system is in operation throughout the Island.

In other parts of the Colony where pail services exist the work has been done either by the local authority, e.g. Rose-Hill—Beau Bassin Board of Commissioners, or by contractors working under Government supervision.

The services have been as satisfactory as prevailing conditions allow.

#### NIGHT SOIL DISPOSAL.

41. The system of night soil disposal hitherto in force in the Colony have been the bucket system, the pit latrine, and on certain premises a water-carriage system comprising a septic tank and absorption pit.

In certain areas owners of properties rather than be exposed to the undeniable unpleasantness of the pit system have applied for permission to install a water-closet and lead the effluent into a pit latrine. In fact, they have produced what is practically a leaching cesspit. A limited number of these installations has been authorised in order to ascertain how the system will work. It has the advantage of eliminating the mosquito, fly, and smell nuisance as well as inculcating the latrine habit into a section of the population who would otherwise be debarred from developing it. The disadvantage is that unless the pit is in very absorptive soil it may in time overflow and give rise to nuisance, and it is for this reason that authority has been rather sparingly given for such installations. In suitable soil they are undoubtedly more hygienic than pit latrines and will doubtless give effective service so long as care is taken not to overload the system either quantitatively or qualitatively.

#### COLLECTION AND DISPOSAL OF REFUSE

42. The Port Louis refuse is still used for reclamation, and the operations are not unduly offensive though on account of the pressing need for economy they are not conducted as they would be in more prosperous times. If a top dressing of about one foot or eighteen inches of soil could be applied to the surface of the dumps after levelling, the appearance of these dumps would be greatly improved. At the present time this is out of the question. In the townships the Boards are responsible for the conduct of the scavenging services and the work has been satisfactory. In other areas the Government undertakes the work, either directly as in the Rose Belle—Mahebourg Section, or through contractors.

#### WATER SUPPLIES.

43. The essential characters of the water supplies of the Colony were fully described in the Annual Report on the work of the Medical and Health Department for the year 1933. So far as the rural areas are concerned the situation is unchanged.

The supply from the lake known as the Mare-aux-Vacoas became the subject of study by a Committee appointed by His Excellency the Governor on March 23rd to enquire into and report on the quality of the Mare-aux-Vacoas water and to advise as to any measures which may be necessary for its improvement.

Before it is issued to consumers this water is passed through a filtration plant of slow sand filters having a total area of 108,400 square feet, and comprising 13 filters. The rate of filtration is between 40 and 50 gallons per square foot per day. The filtered water is then conducted to distributing reservoirs from which it issues as a piped supply to consumers.

For some years past it had been observed that the bacterial content of the filtered water was unsatisfactory and repeated efforts on the part of the Water Authority had failed to discover the cause or the remedy. Since, however, the catchment area was well protected from pollution there was little danger to be apprehended. But a much more serious nuisance from the

consumers' point of view was the periodic occurrence in the water of sulphuretted hydrogen, and occasionally the consumer was shocked to find numbers of *Daphnia* and other small creatures, while in addition, some parts of the system were discharging a water heavily charged with a deposit of what appeared to be rust.

44. The Committee on which the Department was represented by the Pathologist reported on June 18th, 1934. A brief summary of their findings may be given. They reported that the catchment area was reasonably safe; that the water contained no injurious mineral matters. They found, however, that the filtered water was highly charged with suspended organic matters and with living vegetable and animal organisms. They also noted that there was a growth of *Beggiatoa Alba* on the walls of the gauging chambers of the filters. The colour of the water was pale greenish yellow and there was a distinct odour of sulphuretted hydrogen. A scrutiny of the bacteriological evidence led to the conclusion that the filters "are not only not reducing the total number of bacteria contained in the raw water, but are actually adding bacteria to the water."

There was no time for the pursuit of the necessary scientific enquiries to ascertain the cause of defective filtration and in the absence of any suitable records of the working of the plant over a period of about 40 years, the Committee were led to surmise that the cause of the inefficiency of the filters was the sand used for the construction of the upper layers. They point out that slow sand filters are designed to work with quartz sand but that the sand used locally is "calcareous, soft, porous and partly soluble in water and therefore thoroughly unsuitable for purifying water by the process of slow sand filtration."

Financial and other considerations considerably limited the scope of the Committee's recommendations. The two most important were that the filtered water should be chlorinated before distribution and that the crude water should be aerated before filtration. These measures are, however, merely palliative. The real problem, namely, how to obtain efficient purification of the water with the means at our disposal has still to be investigated, but as the collection of the data will involve long and laborious research, it will be some considerable time before the Authorities are in a position to begin to study it.

It is doubtful if aeration and chlorination will provide an effective remedy for the smell and taste nuisance, which, it may be remarked, is not confined to the water of the Mare-aux-Vacoas filter beds. Usually about the same time of the year as this nuisance appears in the Mare-aux-Vacoas filtered water (I have not yet detected it in the crude water) a number of streams in the Colony become similarly affected. The nuisance in the streams has been thought to be due to the discharge into them of the waste waters from sugar factories at a time when the volume of the stream was low. But there may be some other cause at work, which may account for the simultaneous deterioration of the stream water and that of the Mare-aux-Vacoas.

45. The water of the Mare-aux-Vacoas supply is examined fortnightly, bacteriologically and chemically and it is hoped that in time there will be sufficient data accumulated to enable us to replace conjecture by knowledge in our consideration of the problem. Not only the crude and mixed filtered waters but also samples from individual filters are regularly examined.

46. In striking contrast to the results given by the Mare-aux-Vacoas purification plant are those obtained from the Grand River North West water which now supplies the greater part of Port Louis. This supply used to be

taken from the Grand River North West at a place called Pailles and distributed to consumers in the crude state. Since the river took the surface water from two densely populated districts its water could only be regarded as horrible from the hygienic point of view. But even the crude water had two advantages over that of the Mare-aux-Vacoas; it was well aerated by numerous waterfalls and by passing over a rocky bed, and its organic content was low, possibly on account of the aeration. Before it is distributed this water is now passed upwards through a scrubbing filter which removes leaves, snails, small fish and other undesirable objects. From the scrubbing filter it is passed downwards through a rapid sand filter. The result of this treatment is to remove a high proportion of the matter suspended in the water with the result that the filtered water is generally clear and sparkling. The filters are also fairly effective bacteriologically in as much as they do remove a reasonable proportion of bacteria, and they have not yet been detected in adding to the bacterial content as has been the case with the Mare-aux-Vacoas plant. After rapid filtration the water is chlorinated, passing through a mixing chamber before being sent to the distributing reservoirs in the town. The institution of chlorination has made this water the safest in the Colony—and it is significant that since this treatment was instituted the amount of notifiable intestinal disease in the town has greatly diminished, as a reference to the statistics for enteric fever will shew (p. 6). The following report taken at random from the reports of the Pathologist shews that the water now supplied leaves little to be desired:

“ 4/6/34

*Bacteriological.*

Pailles raw water	...	137 bacteria per cc. Lactose-fermenters present in 10 cc. ( <i>Escherichia</i> sp)
Monneron Tank I	...	42 bacteria per cc. Lactose-fermenters absent from 100 cc.
La Butte fountain	...	Lactose-fermenters absent from 100 cc.

*Chemical*

	<i>Raw water</i>	<i>Monneron Tank</i>
Free Ammonia (parts per 100,000)	... 0.0024	0.0016
Albuminoid ( „ „ )	... 0.005	0.003

Chlorine added was to the extent of 0.2 pts. per million.

11/6/34

*Bacteriological.*

Pailles filtered water	...	Lactose-fermenters present in 30 cc.
Monneron Tank 2	...	„ „ absent from 100 cc.
La Butte fountain	...	„ „ absent from 100 cc.

*Chemical*

	<i>Raw water</i>	<i>Monneron Tank</i>
Free Ammonia (parts per 100,000)	... 0.0025	0.002
Albuminoid ( „ „ )	... 0.004	0.0024

Chlorine added 0.2 parts per million.”

The terms Monneron Tanks (Nos. 1 and 2) refer to the distributing reservoir, and La Butte fountain is a public fountain in the town. The great waste of water which still goes on in the Town necessitates a heavier dose of chlorine than would be the case if one could store the chlorinated water for a time before delivery. As things are at present there is a constant and excessive drain from the distributing reservoirs, though, so far, the chlorination seems to have been effective, as judged from the results of examination of the water at the reservoir and from a tap in the town.

The dose of chlorine necessary to produce a water from which lactose fermenters are absent in quantities of 100 cc. varies with the quality of the raw water. Throughout the year the dosage has varied between 0.15 and 0.5 parts per million by weight.

There is only one flaw in the present technique and that is the time required by the bacteriological examination of the water. It is on the result of this examination, made approximately at fortnightly intervals, that the dosage of chlorine is determined. But the quality of the raw water changes much more rapidly than even the most expeditious bacteriological examination. It is therefore the rule to increase the dose of chlorine whenever the appearance of the crude water indicates deterioration or on the occurrence after a period of dry weather of heavy rains on the upper reaches of the river or its tributaries. This rough and ready method has been effective so far, but what would be ideal would be some simple test by which deterioration may be ascertained at once at the treatment plant and it would be of great help in determining the sterilising dose if the test could be roughly quantitative. It is doubtful, however, if such a test could be evolved.

47. No outbreaks of water-borne disease were recorded during the year.

#### LABOUR CONDITIONS

48. The general hygienic conditions under which contracted servants are housed on estates have been generally satisfactory. Indeed, a number of estates have improved their camps by substituting for thatch and ravenal buildings stout structures in stone and corrugated iron. The lay out of a number of camps has been improved in consequence.

But notwithstanding these improvements there is still a drift from the estates to the villages. The settlement of the labouring classes in villages rather than on estates is increasing the difficulties in the way of raising the standard of sanitation in the rural areas. It means, moreover, additional work for the sanitary and hospital staffs, who have already more to do than they can possibly accomplish.

The continuance of the low cost of rice, and the importation of cheap Japanese cotton goods have protected the labouring population to a very large extent from the economic effects of the drought which have proved so disastrous to the middle and upper classes of the community.

#### FOOD AND DRUGS IN RELATION TO HEALTH AND DISEASE FOOD

49. There are six public and six private abattoirs in the Colony. The public abattoirs administered by the Municipality of Port Louis, the Boards of Beau Bassin—Rose Hill and Curepipe are each controlled by a veterinary officer.

The other abattoirs are conducted under the supervision of the sanitary staff.

It may be said that on the whole, the foodstuffs marketed are wholesome and of good quality. The only condition found with any frequency in the meat trade is tuberculosis and even it is comparatively rare. Cestode infestation is practically non-existent among cattle, and it is very rare in human beings.

The only exception to this general rule is milk which is seldom retailed in its natural state. In spite of the control which is exercised and the heavy penalties inflicted upon offenders sophistication is rife and appears to be ineradicable.

## DRUGS

50. A considerable amount of the time of officers has been taken up in an attempt to control the practice of pharmacy in the Colony. It appears that for years important provisions of the pharmacy Ordinance have been completely ignored. The existing law is defective in many important respects and it is hoped that the results of the experience of its strict application will enable the Government so to amend it as to provide a reasonable guarantee against the more flagrant abuses existing at present.

## MEASURES TAKEN TO SPREAD THE KNOWLEDGE OF HYGIENE AND SANITATION

51. The Hookworm control staff deliver talks on hookworm infection and its prevention on the occasions on which mass treatments are being given. The sanitary staff have also been instructed to lose no opportunity of giving advice on hygienic subjects in the course of their routine duties. It is hoped that by entrusting sanitary duties to the Government Medical Officers of the districts, opportunity will be provided for the effective dissemination of a knowledge of elementary hygienic practice in the Colony. It is also hoped that as the Department attains its proper complement it will be able to reinforce the hygienic instruction given in the schools.

## TRAINING OF SANITARY PERSONNEL

52. The new training scheme for the sanitary personnel was inaugurated in September, 1934, by the engagement of six young men for training in sanitary duties. It may be that the standard demanded of applicants is too high, but it is a depressing fact that out of nearly two hundred applicants only six could be selected as fulfilling the requirements. Of these two were discarded after trial and two more engaged to replace them. They are at present being given practical and theoretical instruction.

## RECOMMENDATION FOR FUTURE WORK

53. The future work of the Department will be to consolidate and improve its internal organisation, to continue the trial of the Health Centre System in the district of Pamplemousses with the object of ascertaining whether this is really a suitable type of organisation for local adoption, and to improve the standard of knowledge and practice in the junior technical personnel of the Department.

## PORT HEALTH WORK AND ADMINISTRATION

54. The following table summarises the work done by the Port Sanitary Authority.

	Sailing Craft	Steamers
Vessels arriving ... ..	8	226
Crew examined ... ..	368	20,117
Passengers examined ... ..	299	3,565
Vessels given pratique on arrival ... ..	8	163
Vessels given pratique after disinfection of the dirty linen and effects of the passengers, crew, fumigation and disinfection of the fore-castle ... ..		14
Vessels given pratique after disinfection of dirty linen, etc. and claytonisation of cargo ... ..		49
Vessels arriving from infected ports ... ..		63
Vessels detained for purposes of disinfection and fumigation on account of plague, cholera and small pox ... ..		63

## MATERNITY AND CHILD WELFARE

55. There are three agencies in Mauritius devoted to the prosecution of work on behalf of mothers and babies. Two of these agencies are voluntary societies: (a) the Mauritius Child Welfare which works at present in the District of Plaines Wilhems and Grand Port, and (b) The Oeuvre Pasteur de la Goutte de Lait confining its activities to Port Louis. Both do excellent work among the labouring classes, and the Government and other public bodies have recognised the value of the work they do by contributing to their revenue by grants from public funds. The de Chazal Fund has also made substantial contribution.

The direct activities of the Government have been limited to the training of midwives (see the following paragraph) and to the provision of a trained midwife at each of the rural hospitals. The duties of the hospital midwife consist of visiting expectant and nursing mothers, giving them advice and attempting to persuade mothers to entrust the conduct of their confinement to qualified persons. Few of these midwives are of Indian race and the efforts to persuade the Indian community to abandon their traditional methods and to have their confinements conducted according to modern standards are still very disappointing. A still more disappointing feature is the apparent lack of Indian women of sufficiently good education to enable them to attain the modest standard laid down for candidates for midwifery scholarships, so that we are faced with this situation that the Indian community will not employ midwives who are not of their own race and are unable to produce suitable women of their own race for training. So long as these circumstances persist, little progress can be expected.

Moreover, the opportunity has been lost. It will be seen in the following paragraph that the Midwives Board decided to recommend to the Government the discontinuance of the training of midwives. During the past ten years women have qualified in midwifery and have been registered as Second Class Midwives in sufficient numbers to make their services available at every birth. Numbers of those women are unable to earn a livelihood in the profession in which they have been trained, and the effect of this departure on the part of the Government in its efforts to raise the standard of midwifery has been negligible.

56. Summary of the work performed by the visiting midwives in 1934.

	No. of visits made	No. of confinements conducted
Curepipe	275	57
Grand Port	1,504	188
Flacq	252	35
Rivière du Rempart	264	253
Savanne	123	62
Long Mountain	198	17

## THE MIDWIVES BOARD

57. The Board held one sitting during the year.

The composition of the Board was as follows:

- The Director, Medical and Health Department—*Chairman*.
- The Medical Superintendent, Civil Hospital.
- The Medical Superintendent, Victoria Hospital.
- Dr. A. de Chazal, F.R.C.S., M.R.C.P.
- Dr. A. Delaitre.

Four applications for registration as Midwives were considered and the Board, being satisfied that the applicants were of good character and otherwise eligible, ordered that their names be entered in the Register of Midwives.

Examinations for award of certificates as Midwives were held by the Midwives Board on the 20th February and 14th August and three candidates were granted certificates as midwives in February and five candidates in August.

The question of advisability of continuing the training of midwives was considered by the Board on 2nd February, 1934.

In view of (a) the number of Midwives and Labour attendants on the Register who, the Chairman explained, were more than sufficient to cope with the number of births in the Colony; (b) the expenditure incurred which had not yielded the desired results, it was decided that the training of Midwives should cease.

The Police have prosecuted several women for illegal practice of Midwifery and fines have been inflicted by District Magistrates upon non-registered labour attendants, ranging from R. 1 to Rs. 15.

### HOSPITALS

58. The circumstances causing a diminution in mortality have also caused a diminution of morbidity: the number of inpatients treated in the hospitals of the Colony falling from 27,689 to 27,192. The number of confinements conducted in hospitals was 1,033 against 1,004 for the previous year.

The number of Estate hospitals at the end of the year was 39.

### HOSPITAL ADMINISTRATION

59. In order to compare the expenditure of the hospitals with one another a return is required from each showing the daily expenditure incurred per patient under a number of items of the Estimates. The items were: " Travelling and Transport," " Services rendered by the Railways," " Provisions, fuel and lighting," " Drugs and Instruments " " Implements, stores and disinfectants," " Clothing, bedding uniforms and washing," and " Extra Assistance, Medical and other." These items include the greater part of the provision made on behalf of the hospitals. They do not include, however, the personal emoluments of the permanent staff. The following figures show the daily average expenditure per patient for 1934:

Hospital	Average cost per patient daily				
	Cents				
Group A—Flacq	...	...	...	...	66
Mahebourg	...	...	...	...	62
Souillac	...	...	...	...	58
Long Mountain	...	...	...	...	65
Poudre d'Or	...	...	...	...	59
Group B—Victoria	...	...	...	...	80
Civil	...	...	...	...	83
Moka	...	...	...	...	85
Group C—Leper	...	...	...	...	60
Mental	...	...	...	...	35

The hospitals have been grouped according to the work required of them. The establishments of Group A take medical and simple surgical cases, surgical operative work is restricted as much as possible; patients requiring operative treatment being drafted to the hospitals of Group B. The Group B are general hospitals with a preponderance of surgical wards. Victoria and Moka

Hospitals have wards for the reception of first class paying patients whose dietary and equipment are more expensive than those of the third class and pauper patients so that the daily average cost per patient is good deal higher than it is in hospitals of Group A. The C Group comprises the residential institutions. The figures in this group are scarcely comparable because the Mental Hospital patient-days amount to over 63,000, whereas those of the Leper Hospital number only 4,000.

60. The professional work of the hospital is summarised in the table on page 25. In the rural districts the principal causes of admission to hospital are malaria, gastro-intestinal and respiratory disease, and sepsis. It will be noted from these returns that ankylostomiasis is a noteworthy cause of death in hospital. The reason for this is that a certain proportion of cases shew a high degree of severity characterised by a grave anaemia and extreme debility. Whether these features appear suddenly or whether they are of slow development is difficult to say. It is, however, the fact that when cases of this kind are admitted to hospitals they are generally so ill that their recovery is hopeless.

The small number of patients remaining in hospital at the end of the year is owing to the fact that most people in the Colony like to be at home during the New Year, and hospital patients who might otherwise be detained for some days longer frequently apply for their discharge from hospital at this time.

61. The nursing establishment of the hospitals is still very much below a reasonable minimum. 8 additional warders and 12 additional nurses were provided in the estimates which were voted by the Council of Government in July. Unfortunately it has not been possible to fill these posts as yet. It is hoped that during the next financial year the vacancies will be filled by the engagement of suitable candidates. This will relieve the strain to some extent but the establishment will remain insufficient to provide for leave of absence or for any sudden influx of patients beyond the usual numbers.

REPORT ON HOSPITAL FOR THE YEAR 1934.

HOSPITALS	Patients remaining on 31.12.33	New Admissions	Deaths	Patients remaining on 31.12.34	No. of beds	No. of surgical operations	Particular diseases causing largest number of admissions	Particular diseases causing largest number of deaths
Civil	...	7,254	421	214	284	3,426	Malaria, Bronchitis, Ankylostomiasis, Venereal Diseases, Influenza and Dysentery.	Pneumonia, Dysentery, Enteritis, Bronchitis and Ankylostomiasis.
Port Louis Prison	1	179	—	1	16	11	Malaria, Diseases of digestive system, Influenza and Dysentery.	.....
Long Mountain	20	1,910	79	21	60	125	Ankylostomiasis and Malarial Cachexia.	Pneumonia and Ankylostomiasis.
Poudre d'Or	11	1,900	41	10	70	154	Ankylostomiasis, Malaria and Dysentery.	Ankylostomiasis and Dysentery.
Flacq	31	2,173	126	22	86	335	Malaria and Influenza.	Malaria, Pneumonia.
Mahebourg	50	2,974	147	36	108	780	Ankylostomiasis and Abscess.	Ankylostomiasis and Tuberculosis.
Souillac	30	2,188	127	28	102	323	Ankylostomiasis.	Ankylostomiasis.
Victoria	110	5,664	338	125	254	2,087	Abscess, Ankylostomiasis, Malaria, Dysentery.	Dysentery, Pneumonia, Ankylostomiasis and Malaria.
Beau Bassin Prison	3	271	4	3	32	23	Malaria, Dysentery, Enteritis and Influenza.	Enteritis.
Moka	21	2,002	87	13	77	851	Malaria, Dysentery, Appendicitis, Tonsillitis.	Dysentery.
Mental (Infirmary for physical diseases)	10	206	28	7	63	204	Malaria, Influenza, Dysentery.	Phthisis, Myocardial degeneration, Acute Enteritis.
Barkly Industrial School	—	29	—	—	12	—	Influenza and Varicella.	.....
Total	442	26,750	1,393	500	1,164	8,319		





GENERAL

RIVER RESERVES BOARD.

65. Four meetings were held and six applications were examined during 1934. The Inspector General of Police was appointed as member of the Board because the River Reserves are under the protection of the Police.

66. It is my pleasant duty to thank all members of the Department for their willing co-operation in the work recorded here.

2nd July, 1935.

J. BALFOUR KIRK,  
Director, Medical and Health Department.

Year	1931	1932	1933	1934	1935
Dysentery	307	301	351	276	314
Amoebiasis	114	52	108	79	209
Cholera	147	52	12	31	27
Subtotal	123	81	190	136	170
Other	146	77	107	144	144
Total	147	158	197	180	194
W.D.	140	151	188	175	188
W.B.	14	7	9	5	6
Total	154	158	197	180	194
W.D.	140	151	188	175	188
W.B.	14	7	9	5	6
Total	154	158	197	180	194

These figures are for the year ending 31st December 1934. They are based on the returns received from the various hospitals and dispensaries in the District. The figures for the year ending 31st December 1935 are preliminary.

REPORT ON THE WORK OF THE RIVER RESERVES BOARD FOR THE YEAR 1934.

## APPENDIX I

Annual Report of the Bacteriological Laboratory  
for the Year 1934.

## STAFF, 1934.

*Senior Pathologist and Superintendent* : A. R. D. ADAMS, M.D., D.T.M.

*Pathologist* : Vacant.

*Government Analyst* : J. A. R. STOYLE, B.Sc., A.I.C.

*Acting Assistant Bacteriologist* : LOUIS MASSON.

*Laboratory Assistant (Pathology)* : LEWIS WEBB.

*Laboratory Assistant (Chemistry)* : R. AVICE DU BUISSON.

*Clerical Assistant* : F. LEGRIGORE.

## ADMINISTRATION AND CHANGES IN STAFF

Mr. J. A. R. Stoyle arrived in the Colony on April 13th on first appointment to fill the vacant post of Government Analyst, which had been occupied for the five months preceding that date as a part-time appointment by Mr. M. J. P. de Sornay.

Mr. R. Avice du Buisson returned on October 29th from European leave, and recommenced his duties as laboratory assistant to the Government Analyst on that date.

Mr. A. Nemorin, who had held the post of Assistant in an acting capacity for some years, left the laboratory staff on June 27th to revert to his substantive appointment as Microscopist at the Civil Hospital.

Messrs. A Furlong and O. Bechet, both of whom had held junior posts in an acting capacity at the laboratory for some years, left the staff of the laboratory and the service of the Medical and Health Department on April 3rd to take up permanent posts in the Customs Department.

Mr. F. Legrigore was appointed to the staff on probation as Clerical Assistant on April 3rd, to replace one of the two men referred to above.

No European leave was granted during the course of the year.

The Laboratory buildings have received some much-needed attention during 1934 ; new and very satisfactory bench and sink accomodation were installed in the main laboratory early in the year ; and similar fittings are at present being put into the chemical laboratory under the supervision of the Analyst. The amount of unnecessary annoyance and labour such simple devices spare the staff must be experienced to be believed, and the proposed introduction of electric current and of proper bench lighting in the near future will yet further facilitate the execution of all types of examinations and analyses.

A number of places in the roofs of the buildings which proved very defective during a small cyclone in February have been attended to, and it is hoped that a similar unwanted volume of water will not again be admitted into various rooms to the great detriment of the building itself as well as of books and of valuable apparatus.

A serious infestation of the books in the laboratory library with the insect pest *Sitodnopa panicca* was a cause of much anxiety for the safety of all our available literature for a year or two. This insect had wrought great damage but, with the valued assistance of the Entomologist of the Agricultural Department, thorough fumigation with Carbon bisulphide apparently destroyed insects, eggs, and larvae, and preventive painting of the covers of all the volumes with a solution recommended by the Entomologist has averted re-infestation.

The work of the laboratory during the year, in spite of the interruption consequent on further changes in staff, has progressed smoothly. The changes in staff have resulted in permanent settlement and a consequent happier frame of mind for the persons involved. In addition to routine examinations undertaken during the year some few opportunities have arisen for interesting and original studies into local problems. These investigations alone should show the value to the colony of extra-routine work when the economic and scientific importance of but one of them is considered; a tendency to regard a laboratory merely as a factory for the production of vaccines, many of unproven value, and the execution of routine serological tests and similar analyses, is apt to create the impression that a staff just sufficient to perform that work is ample for all purposes. That this is not the case has been fully realised in most parts of the world, but with the present financial depression the longer view is apt to be clouded over by more immediately mundane considerations, and, as a result, to be followed by a short-sided policy of retrenchment which is eventually more costly. Quick and spectacular returns for financial outlay are not always possible in scientific work, and most of the really important advances in knowledge have been the result of steady and uninterrupted application to a search for facts, as opposed to the docile acceptance of theories handed down from year to year.

Early in the year much time and attention was directed to a study of the Mare-aux-Vacoas water-supply system, which was the subject of a commission of enquiry on which the Pathologist sat. Frequent, full and detailed examinations, biological, bacteriological and chemical, were made of the waters from various points in the supply; the results of these studies were presented, as far as possible, in a graphical manner to the members of the commission, and were amplified by a similar graphical presentation of the findings of the laboratory during the previous dozen years.

The general routine operations, such as the Kahn test; Widal reactions; preparations of vaccines, including both human and bovine B.C.G.; water analyses both of public supplies and for private individuals; and the examinations of milk and foodstuffs; were continued, with slight improvements in technique from time to time, broadly on the lines employed last year. No outstanding new methods were introduced, and the results obtained appeared to give satisfaction to those to whom they were submitted.

A few contributions to scientific literature were made as occasion afforded, and the volume of literature received from other workers in similar fields elsewhere greatly increased. Collections of specimens and material were made during the year for workers in Europe, and among these was a collection of certain species of Diptera for Professor Patton, of the Liverpool School of Tropical Medicine. Professor Patton has, for the last few years, been revising and redescribing many genera and species of this class of insects, and particularly wished to obtain specimens of two flies indigenous to Mauritius, *Musca albomaculata* and *M. fasciata*. Both males and females of each were sent to him. A collection of non-Lactose-fermenting bacteria isolated by us

from the stools of the inmates of Beau Bassin Prison and Reformatory, numbering 163 strains, was forwarded to Dr. J. Bamforth of St. Thomas's Hospital for his expert consideration. The examination of such material is a matter for an authority, and it was felt that the opinion of a specialist such as Dr. Bamforth would be of great value both in clarifying our own ideas and in checking our technique in the study of these organisms. In addition several other consignments of material have been sent to workers elsewhere, and the exchange of information and of knowledge in respect of specialised subjects has greatly helped in the matter of encouragement and enlightenment when dealing with local problems.

The amount of work and time devoted to the examination of the "medico-legal" exhibits, arriving at the laboratory in large numbers during previous years, has now been reduced to a minimum owing to the appointment of a full-time medical man as Police and Prison Surgeon. Numberless unnecessary investigations are now avoided by previous scrutiny of the exhibits by this officer, and the position of the laboratory is much more satisfactory in that articles arriving for examination are at least known both to have some bearing on, and some value in, the conduct of the case. This more particularly applies to the very large number of exhibits from cases of alleged rape, the great majority of which cases never reached the courts after a preliminary enquiry into the evidence and before reports of a scientific nature had been considered, although these had been prepared at the cost of much time and annoyance.

During the second half of the year a very considerable amount of time and energy was devoted to a study of the trypanosomal infections present in the local stock animals. Working in close collaboration with the Government Veterinary Surgeon field work was undertaken, and a preliminary survey of the existing situation was made. The discovery of a second trypanosome, *T. vivax*, in local stock is a matter of very great economic importance as it has, in addition to its pathological significance, a material bearing on the legislation, as it at present stands, relating to trypanosomal disease, more specially in equines. Before modification of this legislation is attempted a full and detailed study of the position should be made, and this study involves the proper use of the laboratory facilities available. The line of demarcation between human and veterinary medicine is very indeterminate, more particularly in the tropics and sub-tropics, and from close collaboration between the departments concerned nothing but good should result. A small committee is to sit to consider ways and means of best promoting an enquiry into the subject, and it is hoped shortly that greater facilities will be afforded for the fuller use of the laboratory in the investigation of a number of aspects of the situation which demand solution before knowledge can be advanced.

We are particularly indebted to various members of the staff of the Liverpool School of Tropical Medicine, to Dr. C. A. Hoare of the Wellcome Bureau of Scientific Research, to Dr. J. F. D. Shrewsbury of Birmingham University, and Dr. J. Bamforth of St. Thomas's Hospital for help and criticism on various occasions.

#### LABORATORY RECEIPTS IN THE FORM OF FEES

A new tariff of charges for examinations made at the laboratory (Government Notice No. 32 of July 7th, 1934) was introduced during the year to modify that laid down under Article 193, Section VI, paragraphs (1), (e), and (3) of the Public Health Ordinance, 1925. The modifications took

the form of a recapitulation in greater detail of the examinations which could be undertaken, a fuller statement of the prescribed charges, and a reduction in most cases of the fees payable for the commoner routine examinations. It is yet early to estimate the effect of the reductions in charge for many of the prescribed analyses, and this estimate is subject to considerable further error in view of the very great financial depression through which the colony is at present passing, and the resultant increase in the number of "free" certificates."

The following are the actual amounts collected during the year 1934, the total is slightly less than that of last year (Rs. 5,804,80).

Fees received at the laboratory	...	...	Rs. 2,594.56
Fees collected after reference to Treasury Department for action	...	...	703.82
From sale of Human B. C. G. Vaccine to the Government of Reunion	...	...	1,040.00
From sale of Bovine B. C. G. Vaccine by the Department of Agriculture	...	...	1,121.50
Total	...	...	<u>5,459.88</u>

A total of 9,633 specimens was received at the laboratory during the year for the usual laboratory diagnoses and investigations. This number is again greater than that of the preceding year (9,097), and covers a range of examinations in most branches of applied pathology.

These routine examinations are recorded under the following sub-headings

- I. PATHOLOGICAL SECTION.
- II. BACTERIOLOGICAL SECTION.
- III. MEDICO-LEGAL SECTION.
- IV. MISCELLANEOUS SECTION.
- V. RESEARCH SECTION.

The chemical, biochemical and toxicological analyses will be found in the appended Government Analyst's report. (Appendix I.a).

### I.—Pathological Section.

A.—Simple routine clinical examinations were made of the following 2,444 samples of material.

#### (a) BLOOD. (MICROSCOPICAL).

Full counts of red and white cells and haemoglobin determinations	...	...	28
Differential leucocyte counts	...	...	59
Films for malaria parasites.			
<i>Plasmodium vivax</i>	...	...	9
<i>P. falciparum</i>	...	...	17
<i>P. malariae</i>	...	...	3
No parasites found	...	...	174
Films for microfilariae.			
<i>Wuchereria bancrofti</i>	...	...	7
No microfilariae	...	...	69
Total	...	...	<u>366</u>

## (b) FAECES (MICROSCOPICAL).

Total number examined	...	...	...	1,092
<i>Helminths :</i>				
<i>Trichuris ova</i>	...	...	...	593
<i>Ascaris ova</i>	...	...	...	246
" Hookworm " ova	...	...	...	285
Strongyle larvae	...	...	...	49
<i>Enterobius vermicularis ova</i>	...	...	...	4
<i>Clonorchis sinensis ova</i>	...	...	...	3
<i>Heterodera radiculicola ova</i>	...	...	...	11
<i>Protozoa :</i>				
<i>Entamoeba histolytica</i>	...	...	...	47
<i>E. coli</i> ...	...	...	...	45
Vegetative entamoebae	...	...	...	24
<i>Endolimax nana</i>	...	...	...	29
<i>Iodamoeba butschlii</i>	..	...	...	19
<i>Giardia intestinalis</i>	...	...	...	26
<i>Trichomonas hominis</i>	...	...	...	17
<i>Chilomastix mesnili</i>	...	...	...	9
Coprozoic flagellates	...	...	...	2
<i>Blastocystis hominis</i>	...	...	...	155
No helminth or protozoal parasites	...	...	...	237

## (c) URINE. (MICROSCOPICAL).

Total number examined	...	...	...	398
Casts	...	...	...	122
<i>Schistosoma haematobium ova</i>	...	...	...	23
<i>Microfilariae</i>	...	...	...	1
<i>Trichomonas sp.</i>	...	...	...	10

## (d) SPUTUM. (MICROSCOPICAL).

Total number examined	...	...	...	349
<i>Mycobact. tuberculosis</i>	...	...	...	69
<i>Neisseria catarrhalis</i>	...	...	...	3
Pneumococci	...	...	...	5
Streptococci	...	...	...	3

## (e) CEREBRO-SPINAL FLUID. (MICROSCOPICAL).

Total number examined	...	...	...	66
Leucocyte counts	...	...	...	30
Differential leucocyte counts	...	...	...	3
Nonne Apelt globulin tests	...	...	...	18
Pneumococci	...	...	...	5
Streptococci	...	...	...	1
Estimations of albumen	...	...	...	9

## (f) THROAT AND NASAL SWABBINGS.

Total number examined	...	...	...	98
Vincent's fusiform organisms	...	...	...	16
<i>Corynebact. diphtheriae</i>	...	...	...	7
Pneumococci	...	...	...	1
<i>Mycob. leprae</i>	...	...	...	1

## (g) PUS, DISCHARGES, SCRAPINGS, ETC.

Total number examined	...	...	...	...	75
<i>Neisseria gonorrhoeae</i>	...	...	...	...	16
<i>Treponema pallidum</i>	...	...	...	...	3
<i>Corynebact. xerosis</i>	...	...	...	...	1
Pneumococci	...	...	...	...	2
Streptococci	...	...	...	...	9

B.—Morbid and histological examinations were made of 66 specimens of material. The following are the findings in some of these specimens, the remainder being normal tissues.

## (a) NEOPLASTIC TUMOURS.

## Carcinomata.

Cervix uteri	...	...	...	...	2
Body of uterus	...	...	...	...	1
Medullary of ovary	...	...	...	...	1
Breast (Medullary)	...	...	...	...	6
Breast (Scirrhous)	...	...	...	...	2
Secondary of mesentery	...	...	...	...	1
Epitheliomata of skin, mouth, and cervix uteri	...	...	...	...	5

## Sarcomata.

Round-celled of abdominal wall	...	...	...	...	1
Myxo-sarcoma of jaw	...	...	...	...	1

## (b) BENIGN TUMOURS.

Fibromata of uterus, abdominal wall, thigh, and plantar fascia	...	...	...	...	5
Adenofibromata of rectum, breast, and skin	...	...	...	...	3
Adenomata of thyroid, cervix uteri and breast	...	...	...	...	3
Papilloma of bladder	...	...	...	...	1
Fibro-cystic ovary	...	...	...	...	1
Dental cyst	...	...	...	...	1
Myxo-fibroma of wrist	...	...	...	...	1
Cheloid	...	...	...	...	1
Acute inflammatory conditions of lymph glands, Fallopian tube, pancreas, and vermiform appendices	...	...	...	...	7
Bilharzial infestation of Fallopian tubes	...	...	...	...	2
Bilharzial infestation of vermiform appendices	...	...	...	...	2
Cerebral haemorrhage	...	...	...	...	2
Products of conception	...	...	...	...	1

C.—Serological tests for complement deviation, specific agglutination, and specific tests for syphilis and other diseases were performed on 3,969 samples of material.

## (a) BLOOD SERUM.

## Kahn Test.

Negative	...	...	...	...	2,309
Doubtful reactions	...	...	...	...	118
+	...	...	...	...	159
+ +	...	...	...	...	416
+ + +	...	...	...	...	456
+ + + +	...	...	...	...	67
Unsuitable for test	...	...	...	...	118

Total ... 3,644

Positive specific agglutination reactions (to significant titre).

<i>Bact. typhosum</i> " H "	...	...	...	127
<i>Bact. typhosum</i> " O "	...	...	...	133
<i>Bact. paratyph.</i> , A. " H "	...	...	...	21
<i>Bact. paratyph.</i> , B. " H "	...	...	...	2
<i>Bact. paratyph.</i> , B. " O "	...	...	...	11
<i>Bact. paratyph.</i> , C.	...	...	...	1
<i>Salmonella enteritidis</i>	...	...	...	1
<i>Pseudomonas pyocyanea</i>	...	...	...	1
Total number of sera submitted for specific agglutination reactions...				294

#### CEREBRO-SPINAL FLUID.

Kahn test.				
Negative	...	...	...	20
+	...	...	...	1
+ +	...	...	...	7
+ + +	...	...	...	2
			<b>Total</b>	<b>30</b>

## II.—Bacteriological Section.

A.—Cultural examinations were made on the following 624 samples of material.

#### (a) BLOOD.

Total number of samples cultured	...	...	...	43
<i>Bacterium typhosum</i>	...	...	...	4
Streptococci	...	...	...	4
Other organisms (probably contaminative)	...	...	...	7

#### (b) FAECES.

Total number cultured	...	...	...	66
<i>Bacterium shigae</i>	...	...	...	1
<i>Bact. dysenteriae</i> (Flexner)	...	...	...	1
<i>Bact. dysenteriae</i> (Hiss and Russel)	...	...	...	1
<i>Bact. aertrycke</i>	...	...	...	1

#### (c) URINE.

Total number cultured	...	...	...	162
<i>Bact. typhosum</i>	...	...	...	1
<i>Bact. coli commune</i>	...	...	...	12
<i>Bact. coli communior</i>	...	...	...	15
<i>Pseudomonas pyocyanea</i>	...	...	...	2
Streptococci	...	...	...	6

#### (d) SPUTUM.

Total number cultured	...	...	...	3
-----------------------	-----	-----	-----	---

#### (e) CEREBRO-SPINAL FLUID.

Total number cultured	...	...	...	12
Pneumococci	...	...	...	4

#### (f) THROAT AND NASAL SWABBINGS.

Total numbered cultured	...	...	...	249
<i>Corynebacterium diphtheriae</i>	...	...	...	18

## (g) PUS, DISCHARGES, AND SCRAPINGS.

Total number cultured	...	...	...	89
Staphylococci	...	...	...	32
Streptococci	...	...	...	17
Pneumococci	...	...	...	2
<i>Bact. coli communior</i>	...	...	...	1
<i>Corynebacterium xerosis</i>	...	...	...	1

B.—Autogenous vaccines were prepared from the following organisms isolated, among others, from various samples, 92 in all.

## (a) BLOOD.

<i>Bacterium typhosum</i>	...	...	...	2
Streptococci	...	...	...	4
Staphylococci	...	...	...	2
Other organisms	...	...	...	1

## (b) URINE.

<i>Pseudomonas pyocyanea</i>	...	...	...	3
<i>Bact. coli commune</i>	...	...	...	12
<i>Bact. coli communior</i>	...	...	...	3
Other organisms	...	...	...	25

## (c) SPUTUM.

Sundry	...	...	...	4
--------	-----	-----	-----	---

## (d) NASAL AND THROAT SWABBINGS.

Streptococci	...	...	...	1
--------------	-----	-----	-----	---

## (e) PUS, DISCHARGES, AND SCRAPINGS.

<i>Neisseria gonorrhoeae</i>	...	...	...	3
Streptococci	...	...	...	12
Staphylococci	...	...	...	17
Other organisms	...	...	...	3

C.—Stock vaccines, prepared from mixtures of strains imported from the Lister Institute and strains isolated locally, were prepared for the use of the medical profession in the island. Among others the following were prepared and issued.

T.A.B. Vaccine for prophylaxis	...	7,500 cc.
Edo dysentery vaccine	...	350 cc.
B.C.G. vaccine (Human)	...	4,500 cc.
B.C.G. vaccine (Bovine)	...	3,500 cc.
Besredka's antiviral from staphylococci	...	1,800 cc.
Besredka's antiviral from streptococci	...	2,300 cc.

## D.—Water analyses and examinations on 446 samples.

Fortnightly examinations of at least six, and usually eight to ten, samples of water from various parts of the Mare-aux-Vacoas water supply system were made; these studies embraced the usual standard full bacteriological examinations of the samples and provided data of every considerable value in the determination of the defects in the system. While there is no doubt that the filters are, and have been for many years, inefficient for their specific purpose of removing bacteria, it is abundantly evident that the source is a good one

in so far as danger from excremental contamination is concerned. The total number of organisms is very undesirably high at certain periods of the year, and the fluctuation in the number from time to time is a feature of the system to which attention has repeatedly been directed on previous occasions. The common causes of complaint from consumers are those usually more particularly observed by the laity, viz. colour, turbidity, and odour. The raw water is from a shallow lake heavily charged with organic material, and containing a profusion of algid growths and other low forms of life. The filters rapidly become charged with this material, and allow much of it to pass. The collecting chambers from each of the individual filters have profuse growths of *Beggiatoa alba* on their walls, and the sulphuretted hydrogen given off by this fungus causes an almost overpowering odour at times. The combination of this odour with the breaking down in tanks and pipes of the organic matter passed through the filters is responsible for the unpleasant product frequently emerging from the delivery pipes of the system. In the writer's opinion the first matter to be attended to is the removal of the organic material in the raw water, and a satisfactory solution of this problem would be a very great step forward in the general improvement of the whole supply.

Weekly examinations were made of the Pailles supply system to Port Louis. Once a month a fuller study of a number of samples was made, and the results throughout the year have shewn the very satisfactory and safe way in which this excellent river water is treated.

A number of other examinations of public and private supplies were made; and the abominable nature of the fluids consumed in certain camps and villages was clearly evident, where a local stream was utilised as the water-supply, washing-place, and casual latrine.

#### E.—Milk examinations.

Numbers of samples of milk from the Government Dairy at Curepipe were examined quarterly. Certain of these were taken from the freshly-obtained mixed milks prior to bottling, other were procured from bottled milk delivered at a consumer's door. The quality of these milks was immensely superior, both bacteriologically and chemically speaking, to that of a number of samples collected from small milk purveyors in various parts of the island. The total number of bacteria per c.c of Government Dairy milk was invariably low, but on occasions the number of lactose-fermenting organisms present just precluded the samples being placed in the category "Certified."

### III.—Medico-Legal Section.

Owing to the more discriminate manner in which material is submitted to the laboratory for examination the number of exhibits has fallen considerably. The following are the figures for the year, shewing the numbers of specimens examined for stains of various kinds. Toxicological exhibits are included in the Analyst's report.

Rape	...	...	47 articles in 8 cases
Murder	...	...	16 articles in 5 cases
Wounds	...	...	10 articles in 3 cases
Sodomy	...	...	4 articles in 1 case
Attempt on chastity	...	...	4 articles in 1 case
			— —
	Total	...	81 18
			— —

The standard procedure for the determination of the presence of blood has been a preliminary application of the Benzidine test to all suspected areas. If this is negative the investigation has not been pursued further. In cases where this test has proved positive confirmation has been sought by Teichmann's test and by the Haemochromogen test, and further by spectroscopic examination where this has been possible. A definite report of the presence of blood has only been submitted to the legal authorities on the actual finding of corpuscles; and on occasions the precipitin reactions have been employed to determine the actual type of blood involved when a special request was made.

The routine for the determination of the presence of seminal fluid has rested on preliminary testing with the Florence reaction, and confirmation by a modification of Barberio's test; where these have proved positive a positive report on a stain has only been submitted on the finding of intact spermatozoa.

#### IV.—Miscellaneous.

The following specimens and cases are considered as being of more outstanding interest among those investigated by the laboratory during the course of the year. We are once again greatly indebted to a number of private practitioners in the island for their kindness in submitting interesting material for examination, and in permitting the pathologist to examine and study a number of unusual cases.

1. —*Bilharzial Salpingitis*.—Two specimens of Fallopian tubes and ovaries which proved to be heavily infested with ova of *S. haematobium*, were received during the year. The first of these came in April from Dr. Cantin of the Civil Hospital and consisted of a swollen and inflamed tube with its attendant ovary, removed at operation from an Indian woman aged 30 years. The diagnosis accompanying the specimen was "tuberculous salpingitis," and the external appearance of the tumour tended to confirm this in view of the large number of pseudo-tubercles to be seen on the surface of the tube, and those to a lesser degree on the ovary itself. On section these tubercles proved to contain large numbers of terminal-spined eggs, and the adjacent tissues were altered to the granuloma-like character accompanied by large giant-cell formation often associated with schistosomal infestation.

The second specimen consisted of a fibrous-looking mass about the size of a walnut, which proved to be a tube removed at operation from an Indian girl of 18 years. No pseudo-tubercles were to be seen on this tumour, but on section very large numbers of terminal-spined eggs were found throughout the tissue.

In neither case, it is interesting to note, was there either a history or suspected diagnosis of previous or present bilharzial disease.

2. *Bilharzia*.—An Indian boy of 14 years of age was temporarily given employment on the laboratory staff on 22/12/33 as he had been found particularly heavily infested with *S. haematobium*, and proved practically an ideal case for certain investigations then current at the laboratory. He was observed daily during his stay here for several months and was regularly passing urine which looked like pure blood and which contained in addition much epithelium, pus, and enormous numbers of *S. haematobium* eggs, most of which proved to be viable. The number of eggs in certain consecutive well-mixed samples of urine taken over a period of some hours was estimated

by counting to be between 1,500 and 2,500 per cubic centimetre of the whole sample. On 19/5/34 the lad after two or three days malaise developed a sharp attack of malaria with a temperature of about 105 F, and on finding *P. falciparum* present in large numbers in his blood he was given Quinine Sulphate, 45 grs. a day for three days, which satisfactorily finished his attack. On recovery from the fever it was immediately noticed that his urine had cleared as regards colour and turbidity, and examination shewed that within a few days it was of normal colour, and only but slightly turbid with a little pus and a trace of blood and epithelium, while the hitherto numerous eggs had almost entirely disappeared but a few damaged non-viable ova being recovered on long search. This condition of affairs obtained until the boy was discharged from our service as being of no use for our immediate needs six or seven weeks later. Dr. André, to whose care the boy returned, informed us that two months later he was still, to all intents and purposes, relieved of his bilharzia, but he was then lost sight of. It is interesting to note that a leucocyte count done on 22/5/34, shortly after the febrile attack, gave the figures:—

Neutrophils	...	...	...	43.0%
Eosinophils	...	...	...	27.0%
Lymphocytes	...	...	...	20.1%
Monocytes	...	...	...	9.9%

Stool examinations at this time, and for several weeks before, shewed the presence of a large number of hookworm eggs, in addition to *Trichuris* and a few *Ascaris* ova.

Whether this "cure" was attributable to the fever or to the quinine dosage, or merely coincided with both these occurrences, is a matter for speculation; personal opinion inclines to the belief that the high fever was the most likely influential factor.

3. *Davainea spp.*—An entire worm with head, obtained from a native boy and suspected to be *Davainea madagascariensis*, was very generously presented to the laboratory by Dr. Duvivier, a local practitioner. The worm was carefully studied and the opinion reached that in a number of essentials it markedly differed from the anatomical characters of *D. madagascariensis*. Segments of another similar worm were sent to the laboratory during the year by Dr. Madge from a child in the neighbouring island of Rodrigues. No head was on this worm, but the anatomy of the segments was that of the worm, already mentioned. On looking through the small collection of cestodes already in the possession of the laboratory a bottle containing cestodes from a rat was encountered. There were five specimens, each complete with head, in this vessel, and on study the conclusion was reached that these worms were exactly similar to the two referred to above from man. In all the worms the heads, where present, were without hooks; the anatomical shape of the heads was not that of *madagascariensis*; and the segments presented striking differences, of which the position of the genital pores in the centres of each segment rather than anteriorly as is the case with this species, was the most obvious.

As *Davainea madagascariensis* has never hitherto been recorded from the rat, and as the worms recovered from man were similar to those recovered from the rat and also, in our opinion, very distinctly identifiable as specifically different from this species, all the parasites, after careful study here, were forwarded to Dr. T. Southwell of the Liverpool School of Tropical Medicine for his authoritative opinion on the matter. A reply has been received that he is going into the question and that so far his investigations entirely confirm our observations.

4. *Ascariasis of the Liver*.—An unusual and interesting specimen was received from Dr. du Vergé of the Victoria Hospital, recovered at a post-mortem made by Dr. Maingard at his request. The patient, a Mauritian Creole aged 73, came to hospital with a history of sudden acute illness of three days' duration. On examination he was found to be suffering from acute abdomen; a provisional diagnosis of "perforation or volvulus" was made; and the man was taken to the theatre as soon as possible. On opening the abdomen large quantities of bile poured out; no lesion of the gut could be found; and, as the patient was *in extremis*, after the insertion of a drain the abdomen was closed. The man died within twelve hours, and a post-mortem examination was made. At autopsy on re-opening the abdomen much bile again emerged, and nothing abnormal could be seen in the gut or other abdominal organs until the liver area was reached. Here part of a worm that proved to be an adult *Ascaris lumbricoides* was observed protruding from a small tear in the hepatic bile duct immediately above its junction with the gall-bladder duct to form the common duct. This lesion was held to account for the cause of death. The gall-bladder on inspection was found to be enlarged and thickened; and on opening it no bile was found, but seven adult *Ascaris*. An incision into the liver substance revealed further worms in the body of that organ, and it was brought to the laboratory and carefully dissected, when ten adult *Ascaris*, six male and four female, were removed. These worms were lying in the smaller bile vessels, and some within an inch of the margin of the right lobe. Section of the affected portions of the organ shewed that there were very numerous ova, both fertile and infertile, lying in most of the ducts, and that there was a mild subacute cholangitis unaccompanied by any abscess formation.

5. *Scarabiasis of intestine*.—Beetles were sent to the laboratory by Dr. Bouloux from Long Mountain, with the history that they had been captured by the mother of an Indian infant from whose stools they emerged and flew away immediately after passage. Mr. Jepson, the entomologist attached to the Agricultural Department, very kindly identified these as adult *Onthophagus bifasciatus*, a coprophagous beetle which has, among other species of the same genus, been recorded by numerous authors in India and Ceylon as causing true intestinal scarabiasis. Close enquiry into the history of Dr. Bouloux's case, and careful cross-examination of the parent of the child, give reason to believe that this is a true case of the condition, and is not merely one where coprophagous insects have rapidly alighted on freshly-passed stools and through defective observation been credited with having been passed with the stool *per anum*.

6. *Sprue*.—In the last annual report reference to an indigenous case diagnosed as Sprue was made. This year another case of a local man of Creole descent was investigated by courtesy of Dr. Rémy. The case presented almost all the classical signs and symptoms of the disease including an eight months history during which the body weight had fallen from 140 to 80 lbs; characteristic diarrhoea with the passage of typical stools macroscopically, microscopically, and on chemical analysis; a blood picture conforming to the text-book descriptions of the disease; sore tongue over a period of two and a half months; and the intestinal and abdominal signs usually found in that disease. The patient almost immediately responded in a marked manner to a milk diet treatment, and has improved steadily since it was initiated.

A second case diagnosed as a milder form of Sprue was seen by courtesy of Dr. du Vergé at Victoria Hospital. The patient, a European ship's carpenter, had been landed sick from his vessel, and on examination shewed many of the physical signs of Sprue. Blood-counts and stool examinations confirmed the diagnosis made on the clinical findings and treatment proved efficacious, the patient making a good recovery and reaching England ultimately in very good health.

7. *Rat-bite Fever*.—A case of this disease in a Chinaman with a fifty days history was seen under the care of Dr. Cantin of the Civil Hospital. The man presented most of the classical symptoms and signs of the disease, and his history amply confirmed the diagnosis. Repeated examination of his blood and a single gland puncture failed to reveal the presence of *Spirillum minus*, and massive inoculation of guinea-pigs with blood also failed to shew the presence of the causative virus. Unfortunately when the patient came under observation in hospital his fever was rapidly declining and with it the local lesions were clearing. If he had afforded us the opportunity earlier for search there is little doubt but that the *Spirillum* would have been recovered.

8. *Pseudomonas pyocyanea*.—A naval stoker was landed and taken to the British Military Hospital under the care of Major Armstrong R.A.M.C. At the latter's request endeavours were made to ascertain the cause of a daily fever which the man ran for, roughly, three months. There were almost no symptoms or physical signs other than a small amount of pus in the urine throughout the period, and the daily temperature often reached 104 F. Blood examination and culture proved repeatedly negative; agglutination reactions against standard agglutinable suspensions of Typhoid, the Paratyphoids, and numbers of other organisms, failed to indicate any present or past infection with these, although the "H" titres of Typhoid and its associates shewed that the individual had received prophylactic immunisation against them. Culture of the urine on several occasions resulted in almost pure growths of *Ps. pyocyanea*, and the plates were interesting in that they showed profuse growths of both rough and smooth varieties of colonies of this organism. The patient's serum was found to agglutinate the smooth forms of the organism to a diagnostic titre and so from these was made a vaccine for inoculation; administration of this was shortly afterwards followed by falling of the temperature and a return to normal condition of the patient, who was able to return to his station. *Ps. pyocyanea* has been stated to be of some pathological importance, more particularly in the tropics, and this man's serum had been found to agglutinate the smooth forms of his own strain to a diagnostic titre; it would appear that the specific treatment may reasonably be assumed to have had an effect on what was eventually regarded by a process of elimination as being the causative organism of the condition. The case appears of sufficient clinical and bacteriological interest to warrant its record.

9. *General*.—Among other specimens obtained at post-mortem examinations or submitted by various medical men for examination may be mentioned the following:

An abscess of the neck due to a breaking-down gland which ruptured into the trachea of an inmate of Beau-Bassin Prison immediately below the thyroid cartilage, and caused death within a few minutes.

A traumatic rupture of the anterior wall of the right ventricle of the heart, due to the victim's being crushed by a motor-waggon.

A large non-malignant tumour arising in the female internal genitalia adherent to the whole of the adjacent bony pelvis and causing death by general peritonitis. This lesion was possibly originally of bilharzial origin and probably arose first in the cervix uteri, but was so matted and septic when seen at post-mortem that it was difficult to determine the precise cause and origin.

Larvae, identified by Mr. Jepson as those of the flour moth *Ephestia* sp., were recovered from the stools of natives of Rodrigues by Dr. Madge. These people use Maize flour as a staple article of diet, and it is probable that the larvae were ingested and passed through the gut in this material.

Eighty-nine vermiform appendices removed by Dr. du Vergé at the Victoria Hospital were sectioned; of these only one was found infiltrated with ova of *S. haematobium*, in this case (Indian 28 years) there was a definite history of appendicular trouble, but none of Bilharzia. Many more appendices were received subsequently, but owing to shortage of staff these are still awaiting examination; it is hoped that opportunity may shortly be found to deal with them.

## V.—Research.

### (a) *Bilharzia*.

As recorded in the last annual report definite evidence pointing to the incrimination of *Bulinus (Pyrgophysa) forskali* as the local molluscan vector of *Schistosoma haematobium* was obtained. This evidence was based on the following observations:

- (i) *B. (P) forskali* was the only snail of many species tested which exerted a definite attractive action on freshly-hatched miracidia.
- (ii) The miracida were actually seen vigorously to attack specimens of this species of snail.
- (iii) Penetration was observed *in vivo* under experimental conditions.
- (iv) This was subsequently confirmed by fixation of snails after a short period of exposure to infestation, and section; when it was seen that enormous numbers of miracidia had gained entrance into their bodies.
- (v) Developmental forms of the larval stages of the worms were readily found on dissection after about two weeks in every snail of this species exposed to infestation; none were recovered from snails of other species.
- (vi) After a period of three weeks characteristic sporocysts were found in the liver glands, containing bifid-tailed cercariae true to type.
- (vii) Within twenty-eight days from initial exposure to infestation every snail so exposed was found on dissection to contain sporocysts with characteristic cercariae in large numbers, and at the end of this period usually a large number of cercariae were being emitted naturally from the affected molluscs.
- (viii) No other type of furcocercous cercaria has so far been found in any snails dissected at the laboratory, in spite of the fact that many hundreds have been dissected during the last ten years; "wild" *forskali* obtained from the canals which we utilise for our material have not so far been found naturally infested, although a specific search on a large scale for naturally-infected snails has not yet been undertaken in places where there is a greater possibility of their acquiring the infection naturally.

During the early part of the year but little time could be devoted to this study owing to the pressure of other work, but a brief survey of the distribution of *forskali* in the Plaines Wilhems area was undertaken. The whole course of the Plaines Wilhems river, and each of its tributaries, was found to contain this snail. Several cases where it was possible to determine with reasonable accuracy the precise locality where infection had taken place were investigated. In every instance a visit to the spot resulted in the discovery of *forskali* inhabiting the stream. Two or three searches in the waters of the small streams in the neighbourhood of Port Louis, the Pouce, Vallée Pitot, and Latanier's streams, resulted in the discovery of *forskali* as inhabitants of these waters. Cases where infection justifiably could be assumed to have occurred in these streams were also seen, and in the case of a number of small infants the exact spot where infection had occurred could be indicated with considerable precision. In so far as our observations have proceeded it would appear that *Bulinus (P) forskali* does not favour stagnant water in pools, but prefers to live in fairly swift-running streams where it is found attached to the underside of stones, palm fronds, or leafy branches. Attempts to keep them alive in tanks at the laboratory have been consistently unsuccessful. It is often very noticeable that *forskali* placed in the open canal outside the laboratory are usually concentrated near the pipe supplying water to the conduit, and are not found in the silt on the bottom as is the case with *Physa borbonica* and some other snails, while search in a number of ponds and other collections of stagnant water has consistently failed to reveal the presence of the snail, although other species were abundantly represented.

Animal infection experiments were attempted unsuccessfully on several occasions with cercariae obtained from experimentally-infected *forskali*. Fears of overinfestation, with resultant early deaths of the animals, caused us to expose animals to but few cercariae; but after months had elapsed we found that the numbers of cercariae used in a large number of experiments were quite inadequate to produce any infection at all. The cercariae were applied in water through an inverted funnel to the shaved skins of 10 guinea-pigs; on no occasion were more than about a hundred cercariae applied at one time, though in the case of several of these animals the applications were repeated on several occasions. No infection with schistosomes could be demonstrated on dissecting these ten guinea-pigs after a period of three or four months. A further 4 guinea-pigs about the same time were exposed to infection by placing freshly-crushed infected *forskali* under their tongues; these animals also failed to become infected. Into 8 guinea-pigs small quantities of cercariae were inoculated intra-peritoneally; these animals also failed to become infected. Three mice were immersed in waters containing small numbers of cercariae but did not become infected; while into the peritoneum of another mouse was inoculated the crushed infected liver-gland of a *forskali* with a like result. Two old monkeys (*Macacus cynomolgus*), which had been at the laboratory for about eight years, were tethered on the banks of the small artificial canal containing varying numbers of infected *forskali*. After nine months one of these animals was seen to be losing weight and condition rapidly, while the other was in apparently good health. Regular examinations of the urine and stools of these animals had failed to show the presence of schistosome ova, but the sick animal was destroyed and dissected at the end of a year; no sign of infestation with schistosomes was found, but there were a large number of caseous nodules in the liver and spleen attributable to tuberculous infection.

A recent paper by Gordon, Davey, and Peaston (1934)\* points out the small percentage of cercariae applied to small animals that give rise to mature worms recoverable at post-mortem. These workers applied cercariae in numbers very greatly exceeding those employed here, and the number of worms recovered by them is extraordinarily small. It would appear that in our attempts to infect animals we have not submitted the animals to the massive infestation that is apparently necessary to obtain satisfactory results, and the matter is being further pursued with this in mind. In spite of the failure so far to produce the adult worms in animals, and consequent doubt which is cast on the validity of the deductions drawn from the previous work, the writer is convinced that the solution of the problem of the intermediate host of the local schistosome worm submitted is the correct one, and that full confirmation will be obtained in due course.

(b) TRYPANOSOMIASIS OF STOCK.

The disease "Surra" was probably introduced into Mauritius in a consignment of cattle brought here from India via the Persian Gulf in September, 1901. It rapidly spread throughout the island causing great mortality among bovines and equines, particularly the latter, and was responsible for a grave emergency in handling the sugar-crop at that time. Since the first two or three years when the disease was particularly rife and of a very virulent type it has remained in enzootic form, and has been the subject of several campaigns to control, and eventually to eradicate it from the colony. These have met with a certain amount of success, and the present measures in force include the prohibition of importation of cattle from known trypanosomiasis-infected areas; the quarantine segregation of all imported live-stock for certain periods of observation; the routine examination of the peripheral bloods of cattle generally throughout the island; and the isolation and treatment of bovines found infected with surra, and the destruction of equines similarly infected. Up to the present no trypanosome other than that regarded as *T. evansi* has been found in stock in Mauritius.

During the early months of 1934 a request was received from a well-known European protozoologist for slides containing large numbers of parasites from local strains of *T. evansi*. To comply with this request the Government Veterinary Surgeon was asked to inform this laboratory of all cases of surra detected by his staff during the routine examination of the large number of cattle undertaken by them annually. A number of cases were as a result notified to us by the courtesy of these gentlemen, and members of the laboratory staff visited the cases and inoculated the bloods of the infected animals into a considerable number of guinea-pigs. None of the small animals became infected with trypanosomes, and the observation that these and several other varieties of small laboratory animals, usually regarded as being highly susceptible to infection with *T. evansi*, were resistant to infection with blood known to contain trypanosomes opened up a field of enquiry which was

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\* Gordon R. M., Davey T. H., and Peaston H. (1934) Ann. Trop. Med. and Parasitol XXVIII 323.

followed up. Morphological and animal-infection investigations led to the opinion that the trypanosomes which had been found in the cattle reported as being infected with "Surra" were not *T. evansi* but that they belonged to a different species and were *T. vivax*, an African trypanosome causing "N'gana" in stock. Fuller studies into the matter amply confirmed this opinion, and slides submitted to eminent authorities in Europe were examined by them and reported as being confirmatory to the diagnosis reached locally. The position in regard to trypanosomiasis of stock in Mauritius thus becomes somewhat involved, and it is abundantly evident that instead of a single trypanosomal disease, there are at least two distinct trypanosomal diseases, the first of which is Surra of Indian origin and the second N'gana, almost certainly of African origin.

Work has already been in progress some months on the incidence of these two diseases, and of the first seventeen cases of trypanosomiasis of stock reported to this laboratory twelve have been cases of *T. vivax* infestation, and only five *T. evansi*. Of these latter five one case was a mule, all the others, both *vivax* and *evansi*, were cattle. Goats can be readily infected with both trypanosomes, as has been demonstrated at the laboratory, but no cases of natural infection with either trypanosome has so far been reported in these animals or in sheep or pigs. Horses also are susceptible to infection with each; surra is rapidly fatal to equines unless immediately and vigorously treated, while a *T. vivax* infection of equines is probably of less moment than the same infection in a bovine. From careful and discreet enquiry among leading members of the planting community it would appear that for some years past occasional cases of trypanosomal infection have been noticed by them among their horses, and that these animals have not only survived the immediate effects of these infections but are at work and in apparently perfect health some years afterwards. That these infections if they were indeed trypanosomal could have been due to *T. evansi*, more especially as the animals received no suitable treatment, is incredible; and the conclusion is reached that they were probably cases of *T. vivax* infestation. Other enquiries in various fields lead to the belief that *T. vivax* infection has been prevalent in the island for some years at least, and this belief is largely confirmed by the present wide distribution of the parasite which has been found by the laboratory this year in Pamplemousses, Quatre Bornes, Highlands, Curepipe, and in Mahebourg area. That the infection is acquired locally is shewn by the fact that every case of infestation demonstrated by us has been in a locally bred and reared animal. That it can very readily be missed is well-known, and has been well-demonstrated by our own researches into the subject. Known *T. vivax* infested cattle with large numbers of parasites present in the peripheral blood may within twenty-four hours be completely negative in so far as diagnosis is based on examination of the blood, and may not show circulating parasites for a week or two, and then for only twenty-four or forty-eight hours. Elimination of the presence of *T. vivax* infection can not rest alone on blood examination where this is negative, but must be made on gland-puncture, repeated on several occasions if necessary. Blood-examination on two or three occasions is sufficient to eliminate or to confirm *T. evansi* infestation, but quite inadequate for *T. vivax* where the parasite is at best very rarely present in large numbers, and usually is to be found either in very small numbers or not at all for long periods.

Three strains of *T. vivax* from local sources are at present being studied in animals at the laboratory. Our preliminary examinations tend to show that the infection is not a lethal one, and that animals kept under good conditions of housing and feeding, and resting all the time, soon recover from heavy experimental infections. It is hoped to pursue these observations further, and to extend them to a degree where information of practical value can be obtained; at present no equines have been infected, and the above remarks apply solely to cattle and goats.

As the matter is of such immediate economic importance locally, and also is of very considerable scientific interest, it is perhaps well here to summarise the salient points on which the diagnosis of *T. vivax* rests.

- (i) The trypanosomes were recovered from several locally-bred oxen which were not very obviously ill; they had been found to be infected on casual routine examination of the peripheral blood during the work of the veterinary section of the Agricultural Department.
- (ii) These trypanosomes repeatedly and consistently failed to infect any one of a very large number of small laboratory animals, including dogs, white mice, guinea-pigs, rabbits, and monkeys (*Macacus cynomolgus*) when injected in large numbers intraperitoneally. All these animals were found to be very susceptible to infection with the local strains of *T. evansi*, which were invariably fatal to them.
- (iii) The parasites, however, were readily inoculable into cattle and goats, where the resultant infections ran a prolonged course.
- (iv) Morphologically, and in their movements when alive, they conformed to the characters of the *vivax* group of African trypanosomes.
- (v) Clinically the type of infection resulting from experimental inoculation was quite unlike that produced by similar inoculation with the local *T. evansi*. Parasites were never present in the peripheral blood of experimentally-infected animals in very large numbers; they regularly disappeared entirely, as judged by prolonged daily examinations of wet-films, for days or even weeks at a time; the animals were, seemingly, not seriously incommoded by their infections after the first week or so following the inoculation, when there was a certain degree of irregular fever and diarrhoea; and, in the case of at least two goats and two oxen, trypanosomes became regularly more difficult to find over a period of four or five months until, finally, they have not been recovered for over three months, and the animals appear to have recovered from the infection entirely.
- (vi) Full courses of arsenical medication, repeated in some cases on two or three occasions, entirely failed to eradicate infection with this type of trypanosome, while similar courses have been efficacious in local *T. evansi* infections.
- (vii) Opportunity for the introduction of some of the less virulent African trypanosomes into Mauritius must have been fairly frequent over a period of many years, as South Africa is the usual source of pedigree and higher-grade stock for this island.

The shortage of funds and of suitable accommodation, of rapid transport and of outside staff, for the proper conduct of an enquiry normally rather outside the sphere of the departmental medical laboratory has been realized, and steps are being taken to enquire into the most suitable methods and lines to be followed in investigating trypanosomiasis of local stock in a thorough and efficient manner. That the distribution, virulence, methods of spread, and possible treatment of these diseases should be established is of fundamental economic importance to the colony, as well as being of the utmost scientific interest; while the fact that one African trypanosome has managed to establish itself in the island in the complete absence of its normal biological vectors, *Glossina* spp., makes it eminently possible that other African trypanosomes may have done the same. *T. congolense*, a close associate of *T. vivax* in Africa, has modified itself in Zanzibar to transmission by biting flies other than tsetse in the total absence of the latter, but apart from an isolated and rather incomplete observation of a similar performance on the part of *T. vivax* in French Guiana this latter trypanosome has not before been demonstrated conclusively to be able to flourish under such conditions.

#### CONCLUSION

I have once more to record the loyal co-operation of all members of the staff in the execution of the various duties falling to their lot. Owing to a variety of circumstances, among which reduction in the actual number of persons on the staff is the most significant, the amount of work to be performed by each individual is steadily increasing; the result of this is that more time has to be spent "out of office hours" to carry out the many small investigations which become of interest from time to time. That these extra-routine duties have been performed with enthusiasm speaks for itself.

A. R. D. ADAMS,

7th February, 1935.

Senior Pathologist and Superintendent.

#### PUBLICATIONS

The following papers were published in scientific journals by members of the laboratory staff during the course of the year.

Adams, A. R. D. and Webb, Lewis. (1934) A survey of the protozoal and helminthic infestation-rates of the male prison and reformatory inmates of Beau Bassin Prison, Mauritius. *Ann. Trop. Med. & Parasitol* XXVIII. 25

Adams, A. R. D. (1934) Studies on *Bilharzia* in Mauritius. I. The experimental infection of *Bulinus* (*Pyrgophysa*) *forskali* with *Schistosoma haematobium*. *Ibid.* XXVIII. 195.

Two further papers are at present in the press.

## APPENDIX I.A.

Annual Report of the Government Analyst  
for the Year 1934.

## STAFF 1934.

*Government Analyst* : J. A. R. STOYLE, B.Sc., A.I.C.*Laboratory Assistant* : R. AVICE DU BUISSON.

Mr. J. A. R. Stoyle arrived in the Colony on April 13th on first appointment to fill the vacant post of Government Analyst, which had been held, temporarily, for the five months preceding that date by Mr. M. J. P. de Sornay as a part time appointment.

Mr. R. Avice du Buisson returned from European leave on October 29th and recommenced his duties on that date.

Towards the end of the year two of the old benches in the laboratory were replaced with new and more satisfactory benches equipped with proper laboratory sinks. At the same time some much needed laboratory equipment, such as additional shelving, a stout laboratory table, a bookcase, a cupboard with a Yale lock for forensic samples and a desk, was installed. It is hoped shortly to have a supply of electricity laid on to the laboratory as this would be of very great assistance in many directions and would considerably mitigate the handicap caused by the absence of a gas supply.

*Routine Examinations.*

During the year, analyses were carried out on 1,715 samples as compared with 1,480 for the preceding year. The work done comprised routine services for the Medical and Health, Public Works, and Police and Customs Departments.

For purposes of comparison with previous annual reports, the routine examinations are recorded under the broad headings previously employed.

## I.—Bio-chemical Section.

Qualitative or quantitative analyses were made on the following 1,093 specimens as compared with 995 for the previous year.

## (a) BLOOD

Van den Bergh reaction	...	...	...	1 specimen
Quantitative estimation of urea	...	...	...	525 specimens
Quantitative estimation of glucose	...	...	...	46 specimens
Quantitative estimation of chlorides	...	...	...	24 specimens
				<hr/>
				596 specimens

## (b) URINE.

General qualitative clinical analyses	...	...	on	267 specimens
Qualitative test for acetone	...	...	on	31 "
Qualitative test for biliary pigments	...	...	on	3 "
Erlich's diazo reaction	...	...	on	1 "
Quantitative estimation of sugar	...	...	on	132 "
" " of albumen	...	...	on	43 "
" " of urea	...	...	on	6 "
" " of uric acid	...	...	on	4 "
" " of chlorides	...	...	on	5 "
Urinary calculus for composition	...	...	on	1 "
				<hr/>
				493 specimens

## (c) FAECES.

Quantitative estimation of total fats, split and unsplit fats      on 1 specimen  
 Qualitative test for bile salts      ...      ...      ... on 1 ,,

## (d) GASTRIC CONTENTS.

Qualitative examination for free HCl in a single case.

## II.—Medico-Legal Section.

## (a) PUBLIC HEALTH.

The following 471 samples were received for analysis under this heading as compared with the samples for the preceding year.

Fresh Milk	...	...	...	...	285 samples
Water	...	...	...	...	174 ,,
Butter	...	...	...	...	4 ,,
Vegetable Ghee	...	...	...	...	1 ,,
Wine	...	...	...	...	1 ,,
Vinegar	...	...	...	...	2 ,,
Medicinal Tinctures, Prescriptions etc.	...	...	...	...	3 ,,
Banana Sap	...	...	...	...	1 ,,
					471 samples

*Milk.*—Of the 285 samples examined 73 were found to be skimmed and 87 contained added water. Eleven samples had been boiled, two samples contained cane sugar and two formalin.

On August 4th, the Milk Trade Regulations, 1934, came into force under the Public Health Ordinance of 1925 and raised the legal limit for milk fat in fresh milk from 2.5 per cent to 3.0 per cent by volume at 20°C. As this latter figure more nearly approaches the percentage of milk fat in normal milk, the raising of the limit has resulted, as might be expected, in a sensible reduction in the practice of slightly skimming fresh milk before sale, which was formerly much in vogue.

It was suspected that the milk supplied to a Government Hospital was adulterated with banana sap and an investigation was undertaken of the best means of identifying such adulteration. A satisfactory chemical test was devised which would detect less than 0.1% of banana sap in milk but no samples, thus adulterated, have yet been received.

*Water.*—Weekly chemical examinations were initiated, from May onwards, of Port Louis water supply and the results were very satisfactory as far as the Pailles chlorination plant was concerned, all the samples examined being of uniformly good quality.

In addition, monthly chemical analyses of samples of the Mare-aux-Vacoas supply were also carried out but here the results showed a large periodic variation in the quality of the mixed filtered waters. Although the figures for free ammonia were uniformly low, the mean figure for albuminoid ammonia, during the eight monthly period May to December, was slightly higher than 0.008 parts per 100,000 calculated as Nitrogen, and in the summer months this rose to 0.011 – 0.013 parts N<sub>2</sub> per 100,000 which is an undesirably high figure for a filtered public supply and points to a considerable degree of vegetable contamination.

A number of other analyses were also carried out on other water supplies and on samples in connection with chlorination experiments on the Mare-aux-Vacoas supply.

*Butter.*—Three of the four samples examined were found to be heavily adulterated with water. A sample of vegetable ghee coming from Holland, examined for presence of animal fats, was found to consist wholly of vegetable fats as declared.

*Medicinal preparations.*—Only one of the three samples examined, was found to have been incorrectly dispensed.

*Wine.*—A sample sold locally as wine was found to be a synthetic alcoholic beverage, coloured with coal tar dye and flavoured to a slight resemblance to genuine wine.

(b) FORENSIC.

One hundred and forty-six articles of evidence, drugs and other substances, were referred for chemical examination by the Judicial Authorities at the request of the Police and Revenue Departments as compared with 96 for the preceding year.

The examinations were called for in connection with the following offences.

Illicit distillation	...	...	...	46 exhibits in 25 cases
Poisoning	...	...	...	45 exhibits in 7 cases
Possession of Gandia	...	...	...	36 exhibits in 12 cases
Possession of Prepared Opium and Dross	...	...	...	20 exhibits in 5 cases
Possession of dangerous Drugs	...	...	...	3 exhibits in 2 cases
Possession of Liquor	...	...	...	2 exhibits in 2 cases
			Total	146 exhibits in 53 cases

*Poisoning.*—Four cases of human deaths by suspected poisoning occurred during the year. Poison was isolated from the organs of the deceased in only two of these cases, arsenic being found in one case and strychnine in the other.

*Prepared Opium and Opium Dross.*—Owing to the nature and mode of preparation of Opium for smoking, much time and valuable material is consumed in isolating and identifying one of the Opium alkaloids as, with these preparations, the meconic acid reaction is seldom definite enough, by itself, to be satisfactory evidence of the presence of Opium.

### III—Miscellaneous Section.,

Only five samples are grouped under this heading. They comprise :

Silk fabric	...	...	1 sample.
Hemp cordage	...	...	1 sample.
Vermouth Francais essence	...	...	1 sample.
White drill cloth	...	...	2 samples.

The first three samples were received from the Customs Department for classification. True hemp (*Cannabis sativa*) is taxed for Customs purposes at a much lower rate than other fibres including other kinds of hemp. The differentiation of true hemp from other varieties of hemp is often a matter of considerable difficulty and necessitates an exhaustive microscopical and chemical examination.

*White Drill cloth.*—A consignment of this material was issued for Police uniforms and after a preliminary steeping in water for shrinking purposes, it was found on drying to have developed numerous grey stains. As it was suspected that the stains might be due to the cloth being of inferior quality, samples of the original and stained material were sent to the laboratory where investigation showed that the stains were due to iron caused most probably by the presence of iron debris in the steeping tank.

16th January, 1935.

J. A. R. STOYLE,  
Government Analyst.

## APPENDIX II

Annual Report of the Hookworm Branch  
for the Year 1934

## STAFF AND ADMINISTRATION

There has been no change in the staff or in the methods employed.

## ACTIVITIES

Mass treatment has been continued in the Southern and Central Districts, viz. —Grand Port, Savane, Plaines Wilhems, Moka, Black River and treatment with microscopic examination at the Central Hookworm Dispensary, Curepipe Road.

The number of treatments obtained for each quarter and for the year are given and compared below with the number obtained during the previous year.

		1933	1934
January-March	... ..	16,628	17,928
April-June	... ..	18,477	16,888
July-September	... ..	16,989	17,174
October-December	... ..	12,189	14,327
Total	... ..	64,283	66,317

During the second quarter, the Sugar Estates of the Southern districts were treated. The falling off of the number of treatments during that quarter reflects the state of anxiety of the Managers brought about by the prolonged drought which prevailed and the prospects of a deficit on the crop. The villages of Plaines Wilhems and Moka, however, responded so well during the last quarter that the totals show an increase of 2,034 in the number of treatments for 1934.

*Remarks.*—The total population of the five districts treated is 218,519 and the number of persons treated (see First Treatments in the Statistical Table) was 50,011. Thus 23 per cent of the population of those districts received treatment during the year.

Curepipe Road,  
January 10th, 1935.

LEWIS J. MCGREGOR,  
*Medical Officer in charge, Hookworm and Malaria Branch.*

## STATISTICAL REPORT FOR THE YEAR 1934

## EXAMINATIONS AT CENTRAL DISPENSARY

*Preliminary*

Examined	... ..	... ..	... ..	3,445
Positive for Hookworm	... ..	... ..	... ..	1,556
Percentage of infection	... ..	... ..	... ..	45.1
Other helminths:				
Ascaris	... ..	... ..	... ..	1,619
Trichocephalus	... ..	... ..	... ..	2,440
Oxyuris	... ..	... ..	... ..	77
Tænia	... ..	... ..	... ..	1

*After treatment*

Examined	...	...	...	215
Negative for Hookworm	...	...	...	178
Percentage of Cures	...	...	...	82.7

## TREATMENTS

	First	Second	Third	Fourth	Total
Central Dispensary	5,518	2,320	963	555	9,356
Plaines Wilhems	14,678	3,037	156	—	17,871
Savane	12,239	3,287	683	14	16,223
Grand Port	10,816	3,204	753	13	14,786
Moka	6,477	1,240	81	—	7,798
Black River	255	—	—	—	255
Pamplemousses	28	—	—	—	28
<b>Total</b>	<b>50,011</b>	<b>13,088</b>	<b>2,636</b>	<b>582</b>	<b>66,317</b>

## APPENDIX III

## Annual Report of the Malaria Branch for the Year 1934

## ADMINISTRATION AND STAFF

The Medical Officer in charge has been appointed on probation as from July the 1st, 1934, and has been gazetted as a Sanitary Authority on December the 5th, 1934.

Mr. S. Gébert, Entomologist to the Branch, has been given the special charge of the Moustiquiers and of research work on Medical Entomology. The Hon. Director has kindly allowed him a small laboratory at the Civil Hospital, Port Louis, for the latter purpose.

Mr. R. Philogène, Secretary to the Branch, returned from European leave and resumed duty on July 23rd, 1934.

Mr. L. Dorval, Microscopist to the Branch, has been confirmed on December 5th, 1934.

One headman of cantonniers has been promoted to a post of moustiquier and another has been dismissed for neglect of duty; they have not been replaced.

The policy during the year has been to attend specially to the towns and villages of Plaines Wilhems by

(a) taking blood films at all the medical centres in the district in order to be able to estimate the amount, kind and seasonal variation of malaria in the district and to know where it is endemic;

(b) visiting the towns and villages, road by road and yard by yard, to obtain knowledge as to the number of actual and potential breeding places offered to anopheline and other mosquitoes on private nuisances;

(c) restricting the activities of the Labour Gangs to the district, the Plaines Wilhems gang being specially affected to the Southern half and the Moka gang to the Northern half of the district.

## SURVEY OF PLAINES WILHEMS

(a) *Survey of Water Nuisance.*— Curepipe had already been surveyed as regards nuisances in 1933. The Survey was extended during the year to the Vacoas and Quatre Bornes regions and later to the Rose Hill and Beau Bassin region.

The search for nuisances has been carried out by nine moustiquiers thus: Curepipe, 2; Vacoas—Phoenix, 3; Quatre Bornes, 1; Rose Hill—Beau Bassin, 3. Their findings are summarised below. The Nuisance Index is new; it is found by dividing the number of nuisances found by the number of premises visited. It gives a valuable method of comparing the sanitary condition of different localities.

Locality	Number of premises visited	Number of Nuisances found	Nuisance Index
Curepipe, South	... 265	10	0.04
Curepipe, North	... 737	257	0.35
Vacoas, South	... 998	187	0.19
Vacoas, North	... 1,306	601	0.46
Quatre Bornes	... 1,447	1,072	0.74
Rose Hill	... 598	695	1.16
Beau Bassin, South	... 900	350	0.39
Beau Bassin, North	... 511	400	0.78
Whole District	... 6,762	3,572	0.53

Since October, the Medical Officer in charge having been given the necessary powers, a trial of notification has been made in Curepipe. Of 178 nuisances dealt with, 40 were done away with by persuasion, 67 by notification. The delays allowed for the rest have not expired. The success obtained has encouraged us to extend the work of abolition of nuisances to the lower (Northern) parts of Plaines Wilhems. Mrs. Knight, Hon. Secretary to the Child Welfare, has kindly obtained the consent of the Child Welfare Committee to allow us the use of their office at Rose Hill for the purpose.

(b) *Survey of Malaria*.—Blood films have been taken during the year at:

- (i) Curepipe, Hookworm Dispensary, during the whole year.
- (ii) Vacoas Dispensary, since 1.3.34.
- (iii) Victoria Hospital, since 1.9.34.

(i) *Curepipe*.—Of 107 blood films taken, 35 were positive. Of these 21 showed *Plasmodium vivax*, 9 *P. malariae* and 5 *P. falciparum*. All the cases had been contracted elsewhere and there has been no evidence of locally contracted malaria in Curepipe during the year.

(ii) *Vacoas Dispensary*.—The patients come from Vacoas, Phoenix, Henrietta, Highlands, Camp Fouquereaux, Réunion, Solférino, Bonne Terre, etc.

Month	Blood films Number of	Positive Number	Indigenous			Imported		
			MT	BT	Q	MT	BT	Q
March	106	47	21	12	13	0	0	1
April	74	32	14	7	9	2	0	0
May	89	37	12	10	7	1	6	1
June	45	18	5	6	6	1	0	0
July	54	23	4	9	8	1	1	0
August	35	16	3	2	3	3	1	4
September	31	15	0	3	4	2	6	0
October	44	22	4	3	5	3	5	2
November	28	14	2	2	2	1	4	3
December	16	7	2	1	0	2	1	1
Total	522	231	67	55	57	16	24	12

These figures show a gradual diminution of indigenous cases during the cool season and a slight increase of imported cases, the latter being due to labourers who work in the coastal belt during the sugar cane crop. Although there has been a diminution of cases during these ten months, it is only at the end of the present warm season that it will be possible to state whether the malaria in this region is endemic or not.

Anopheline larvae (2 only) have been found only once in the region. The spleen rate varies from 5.1 to 16.6 and is 10.5 for the whole region.

The percentage of the three kinds of malaria amongst the indigenous cases is:

Malignant Tertian	...	...	37.4%
Benign Tertian	...	...	30.7%
Quartan	...	...	31.8%

(iii) *Lower Plaines Wilhems (Victoria Hospital)*.—The patients come from: Quatre Bornes, Rose Hill, Beau Bassin, Palma, Bassin, Trianon, Ebène, Chebel, etc. Blood films could only be taken on two out of three dispensary days a week. The findings were:

Month	Blood films Number of	Positive Number	Indigenous			Imported		
			MT	BT	Q	MT	BT	Q
September	90	27	8	10	4	2	2	1
October	80	22	4	5	5	2	6	0
November	80	22	6	9	3	1	1	2
December	96	25	4	4	3	3	8	3
Total	346	96	22	28	15	8	17	6

The percentage of the three kinds of malaria amongst indigenous cases was:

Malignant Tertian	...	...	34%
Benign Tertian	...	...	43%
Quartan	...	...	23%

#### ANOPHELINE FINDINGS

(a) *Plaines Wilhems*.—In this district larvae of *Anopheles costalis* only were found during the year. They were distributed thus: Curepipe, 2; Vacoas, 1; Quatre Bornes, 4; Rose Hill, 2; Beau Bassin, 2; Total, 11.

(b) *Moka*.—*Anopheles costalis* larvae were found 30 times and those of *A. funestus* once. *Anopheles maculipalpis* was not found at all. There seems to have been a real diminution of Anophelism in the zone since the rise in 1931, which was due to the great hurricane of that year; the diminution in the anopheline population was accelerated in 1933 by the drought that prevailed. The figures for four years are shown below:

Year	<i>A. costalis</i>	<i>A. funestus</i>	<i>A. maculipalpis</i>	Total
1931	143	26	17	186
1932	107	6	7	120
1933	53	5	3	61
1934	41	1	0	42

#### ANTIMALARIAL MEASURES

##### A. MINOR

1. *Oiling*.—The three oiling men, on account of the rarity of anopheline findings, have been attached to the working gangs, whence men are detached for oiling when necessary.

2. *Use of Larvivorous fish*.—Arrangements have been made to supply larvivorous fish, "millions," *Labristes (Girardinus) poeciloides* and "gold-fish," *Carassius auratus*, to proprietors of premises where ponds exist. These are numerous in Quatre Bornes, Rose Hill and Beau Bassin. It is hoped thus to convert these breeding places into traps for mosquitoes.

##### B. MAJOR

1. *Curepipe, Camp Caval*.—Tatamaka River. Canalization of the river and conversion of all side drains into subsoil drains.

2. *Curepipe, Ruisseau Lamy*.—Regrading on 50 feet and conversion of a side drain into a subsoil drain.

3. *Curepipe, River Eau Bleue*.—Removal of stones, gravels and earth obstructing its course after the cyclone of January.

4. *Curepipe, Head of River Sèche, above Colin Street*.—The marshy head of the river has been canalized and all side springs have been converted into subsoil drains. This work was interrupted during the shooting season at the request of the lessee of the land and resumed afterwards. It is not completed as yet.

5. *Curepipe Road, River du Mesnil*.—Regrading of main side drains and conversion of all lesser drains into subsoil drains.

6. *Curepipe, River Sèche, below Colin Street*.—Removal of obstructions.

7. *Curepipe, River Gros Cerf*.—Removal of obstructions and repairs to banks.

The Moka Gang has been engaged at:

1. *Réduit, River Cascade*.—(a) Cutting a path, consisting of 754 steps, in the precipitous bank of the river to allow access to this part of the river for the purpose of control, oiling and performance of necessary works; (b) Draining a large rock pool in the bed of the river.

2. *Trianon, River Plaines Wilhems*.—(a) Repairing damages to works already done at the junction of this river with River Sèche; (b) Rough canalization of the river from its junction with River Sèche down to Trianon Bridge; (c) Abolition, by filling in, of all pools on the banks of this portion of the river; (d) making a breakwater at the junction of the two rivers to prevent damage to the works by floods; (e) Rough canalization of the river beyond Trianon Bridge down to Bassin Loulou.

Curepipe Road,  
31st January, 1935.

LEWIS J. MCGREGOR,  
*Medical Officer in charge, Hookworm and Malaria Branch.*

APPENDIX IV

Annual Report of the Medical Officer of Health,  
Port Louis, for the Year 1934.

ADMINISTRATION

The Sanitary Staff was composed of three Inspectors and two Guards. The Inspector in charge of the section which includes the Docks and Wharves has the additional duty of supervising the sanitary measures imposed on the incoming ships.

PUBLIC HEALTH

No epidemics were recorded during the year under review ; the health generally has been good with the lowest death rate recorded since 1925.

VITAL STATISTICS

The area of Port Louis is about 16 square miles. The estimated population was 54,459 on the 1st January and 54,876 on the 31st of December. The estimated population on the same dates in 1933 was 54,143 and 54,459 respectively.

BIRTHS

<i>In 1933 :</i>						
Total	...	...	...	...	...	2,019
Birth-Rate per 1,000 of population	...	...	...	...	...	37.2
Still Births	...	...	...	...	...	190
<i>In 1934 :</i>						
Total	...	...	...	...	...	2,104
Birth-Rate per 1,000 of population	...	...	...	...	...	38.5
Still Births	...	...	...	...	...	169

DEATHS

<i>In 1933 :</i>						
Intra-Urban	...	...	...	...	...	1,320
Extra-Urban	...	...	...	...	...	200
Total	...	...	...	...	...	1,520
Crude Death-Rate per 1,000 of population	...	...	...	...	...	28
<i>In 1934 :</i>						
Intra-Urban	...	...	...	...	...	1,256
Extra-Urban	...	...	...	...	...	163
Total	...	...	...	...	...	1,419
Crude Death-Rate per 1,000 of population	...	...	...	...	...	25.9

INFANTILE MORTALITY

<i>In 1933 :</i>						
Under one year	...	...	...	...	...	270
Between the age of one and five	...	...	...	...	...	112
Infantile mortality rate per 1,000	...	...	...	...	...	138.5
<i>In 1934 :</i>						
Under one year	...	...	...	...	...	242
Between the age of one and five	...	...	...	...	...	90
Infantile mortality rate per 1,000	...	...	...	...	...	115

Year	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934
Crude Death-rate	26.1	28	27.7	32.1	35	43.3	38.5	33.6	28	25.9
Birth-rate	...	42	39.5	36	38.4	35.6	35.5	32.8	29.2	37.2

## COMMUNICABLE DISEASES

## MALARIA

The number of reported deaths from malaria and cachexia of malarial origin was 97 as against 149 in 1933 and 239 in 1932, a decrease of 52 on 1933 and 142 on 1932.

The total number of patients treated at the Civil Hospital was 863 in 1934, 1,032 in 1933, 1,156 in 1932 and 1,441 in 1931.

The case mortality was 8.9% in 1934, 6.9% in 1933 and 4.4% in 1932.

The actual number of malaria patients treated at the Civil Hospital is certainly less than the figures given above, as the blood is not examined for parasites, and the diagnosis based on symptoms.

## PLAGUE

No sign of plague, whether in man or rat, has been detected since 1927.

## FILARIASIS

Nine cases were diagnosed at the Civil Hospital and fourteen at the Eastern Dispensary.

## INFECTIOUS DISEASES

DISEASES				CASES
Diphtheria	...	...	...	5
Enteric fever	...	...	...	8
Erysipelas	...	...	...	11
Puerperal Sepsis	...	...	...	11

## HYGIENE AND SANITATION

## PLAGUE

(a) *Rat-proof Granary* : Grain imported into the Colony is stored in the Granary which was designed to hold a maximum of 300,000 bags. In cases of emergency more grain can be stored temporarily on the top floor which can accommodate 120,000 bags.

Wholesale dealers are allowed to stock a maximum of 1,500 bags in their stores on condition that the latter be made rat-proof and maintained in rat-proof condition.

(b) *Rat-Surveillance* : Sanitary surveillance over the rodent population in the harbour area and the strip of town bordering on the harbour was pursued throughout the year.

The animals caught or found dead are examined microscopically :

Rats caught	...	...	...	12,596
Flea-rate per rat	...	...	...	4.1
Gravid females caught	...	...	...	293
Number of young recorded	...	...	...	1,216
Fecundity index	...	...	...	4.15

The expected dispersal of rats from the grain store area following on the rat-proof storage of grain has made itself felt and a large number of inhabitants living outside the rat-surveillance zone have complained that their houses are being invaded by rats and have applied for rat traps. These are lent for a fortnight at a time on condition that the rats caught will be taken to the Sanitary Clerk of the Medical Officer of Health's Department for examination.

(c) *Port Sanitary Measures* : On the arrival of healthy ships from plague-infected ports, the luggage of passengers is disinfected at the Harbour Disinfecting Station and all cargo fumigated by means of the Clayton apparatus prior to breaking bulk.

Passengers are put under surveillance.

It may not be out of place to state here that the risk of introduction of plague from Madagascar is now more serious than ever as ocean-going ships are brought alongside the deep water quays at Tamatave.

#### MALARIA

Within the limits of the town, the beds of the streams which flow from the surrounding hills to the sea are paved. Most of this paved portion had been wrecked by the floods of 1929. Last year the bed of the Pouce stream was completely repaired and during 1934 the remaining streams were attended to.

Though all the paved beds have now been reconstructed, the banks of the streams composed of gravel and boulders are constantly scoured by the rushing waters from the hills during heavy showers of rain. The pools thus formed are ideal breeding places for *Anopheles costalis* ; but immediate filling up prevents larvae reaching the adult stage.

The anti-malaria problem in the extra-urban area of Port Louis is more difficult. Lataniers Streams on the Eastern side and Dayot Canal and Saint Louis Stream in the Western are the chief sources of malaria. Drastic measures are out of the question owing to the present financial crisis and one must be content with palliative action such as oiling pools, keeping the banks free from weeds and algæ and preventing stagnation of water.

The number of breeding places detected during the year in the intra and extra urban areas was as follows :

#### *Anophelini.*

<i>A. costalis</i>	...	...	...	...	...	48
<i>A. maculipalpis</i>	...	...	...	...	...	—
<i>A. funestus</i>	...	...	...	...	...	—
<i>A. mauritianus</i>	...	...	...	...	...	—

#### *Culini.*

<i>Stegomyia</i>	...	...	...	...	...	11
<i>Culex</i>	...	...	...	...	...	32
<i>L. tigripes</i>	...	...	...	...	...	1

### GENERAL MEASURES OF SANITATION

#### NIGHT SOIL CONSERVANCY SYSTEM

*Sewerage System* : 276 more premises were connected with the sewerage system, this leading to the abolition of 363 pail services.

*Pail Latrines* : At the end of the year there were still 590 pail services in the urban area, and 95 in the extra urban area.

The night soil buckets are collected in special motor lorries supplied by a Contractor and the contents disposed of at the Cassis and Paul and Virginie Tipping Chambers which connect with the sewerage system.

*Pit Latrines* : In Cassis, Roche Bois and Sainte Croix, pit latrines are used for the disposal of excreta.

#### COLLECTION AND DISPOSAL OF REFUSE

This work performed by the Sanitary Department was quite satisfactory. The refuse is collected daily in motor lorries belonging to Government and is used for the filling of hollows at Roche Bois and Plaine Lauzun.

The Staff consists of one Dump Overseer, seven Sectional Overseers and 143 labourers.

## WATER SUPPLY

There are four sources of water supply in Port Louis i.e.

## 1. Grand River North West:

(a) From "La Digue" Dam the water is conveyed by two water mains known as the Municipal (18 inch pipe) and Rectification (19 inch pipe) Canals to Pailles filter beds. The filtered water is then chlorinated by means of a Paterson's chloronome and stored in the Monneron and Signal Mountain reservoirs. The chlorinated water supply is limited to the intra urban area and is supplied to shipping.

(b) At a spot nearer to the sea than "La Digue" where Dayot canal starts. This supplies the Cassis District and ends at Récoute Street. The remaining portion up to Pouce Street is dry.

2. Calebasses River: Water impounded by a dam near Bois Marchand Cemetery is brought to the Abattoir, Sainte Croix, Terre Rouge and part of Roche Bois.

3. Lataniers Stream: The water is conveyed by pipe to Vallée des Prêtres from a dam near the river source.

4. Mare-aux-Vacoas: This water supply reaches Port Louis through an eight inch piping from a reservoir at Petite Rivière and renders available a distribution of approximately a million gallons daily in the town area. It is also supplied to shipping.

Grand River North West and Mare-aux-Vacoas are now constant water supplies throughout the day.

## MARKETS

The three markets of the town are under the direct supervision of the Municipality. They have now fallen into a state of disrepair and are no longer fly-proof.

## SLAUGHTER HOUSE.

The slaughter house at Roche Bois is managed by the Municipality, and all carcasses are examined by a Veterinary Surgeon.

## CEMETERIES

Two of the three cemeteries belong to the Municipal Corporation; a third, the Chinese Cemetery, is under the control of the Sanitary Department.

## MILK SUPPLY.

The control of milk was conducted by Sanitary Inspectors Louis and Tanguy working together.

The following is a summary of the action taken in this connection.

No. of milk sellers whose milk was tested	...	651
„ samples tested	... ..	29
„ „ found genuine	... ..	2
„ „ „ to be sophisticated	... ..	27
„ „ altered	... ..	—
„ contraventions established	... ..	27
„ convictions	... ..	19
Imprisonment	... ..	2
Length of time	... ..	5 months.

1st May, 1935.

L. M. J. R. PILOT,

M.B., B.S., (Lond.) D.T.M. & H. (Lond.)

*Medical Officer of Health, Port Louis and Port Health Officer.*

## APPENDIX V

## Report on the Mental Hospital for the Year 1934

The total number of certified insane persons in the Colony on 31st December, 1934 was 926 compared with 895 on 31st December, 1933.

2. The following table shows the distribution of the 926 certified insane persons in the Colony on 31st December, 1934:

	GENERAL			INDIAN			CHINESE			TOTAL	
	M.	F.	T.	M.	F.	T.	M.	F.	T.		
At Mental Hospital ...	194	198	392	192	116	308	16	1	17	717	
On probation leave ...	39	42	81	74	32	106	2	—	2	189	
On leave under G.N. 239/24 ...	...	5	4	9	9	2	11	—	—	—	20
Total ...	238	244	482	275	150	425	18	1	19	926	

3. The percentage sex-distribution of the 926 certified insane persons was males 57.34 and females 42.66, compared with males 50.73 and females 49.27 for the estimated population of the Island on 31st December, 1934.

4. The following table gives the insane-rates per 10,000 of the population of the Island, calculated on the number of certified insane persons in the Colony on 31st December, 1934:

	M.	F.	T.
General population ...	41.8	38.7	40.1
Indian population ...	20.0	11.6	16.0
Chinese population ...	31.2	3.8	22.7
Total population ...	26.5	20.3	23.5

The above table shows that insanity is more prevalent among males than females. The total insane-rate for the "General" population is more than twice that for Indians.

5. The following table gives the estimated population of the Island on December 31st of the years 1924 to 1934; also the total number of certified insane persons and the total insane-rate per 10,000 of the population of the Island for these years:

Years	Population of Colony on December 31st.	Total number of certified insane on December 31st.	Insane-rate per 10,000 of population.
1924 ...	387,743	686	17.6
1925 ...	393,708	700	17.7
1926 ...	398,236	719	18.0
1927 ...	401,693	729	18.1
1928 ...	404,802	748	18.4
1929 ...	405,549	759	18.7
1930 ...	404,458	833	20.5
1931 ...	391,044	834	21.3
1932 ...	388,400	855	22.0
1933 ...	390,697	895	22.9
1934 ...	393,733	926	23.5

The rise in the incidence of insanity still continues and is undoubtedly attributable in part, to the financial crisis through which the Colony is passing. With the advent of prosperity and the consequent disappearance or mitigation of such adverse factors as unemployment, privation and worry one hopes to see a swing of the pendulum in the other direction.

## 6. HOSPITAL POPULATION.

There were 723 persons in hospital (males 406, females 317) on 31st December, 1934. Of these, 4 males and 2 females were under interim detention pending a decision as to their mental state, so that the total number of certified insane persons in hospital on the above date was 717 (males 402, females 315) compared with 662 (males 372, females 290) on 31st December, 1933. Included in the 717 certified insane were 12 male and 18 female paying patients.

The daily average number resident was 724 (males 409, females 315) compared with 690 for 1933, 681 for 1932, 680 for 1931, 654 for 1930, 619 for 1929, 612 for 1928 and 1927 and 582 for 1926.

The maximum daily number resident during the year was 751 (males 422, females 329) compared with 706 (males 404, females 302) in 1933.

## 7. CRIMINAL MENTAL PATIENTS.

	M.	F.	T.
In hospital on 31st December, 1933	17	—	17
Admitted during 1934...	4	—	4
Readmitted from probation leave	2	—	2
Discharged or dealt with under Art. 60 of Ord. 23/1906	6	—	6
Died during 1934	—	—	—
Remaining on 31st December, 1934	17	—	17

Of the 4 criminal mental patients admitted during the year, one, R..... O....., an Indian aged 30, was sent here from Central Prisons, Port Louis, where he was serving a sentence for larceny. He is an alcoholic feeble-minded.

Another, L.....B....., an Indian aged 26, committed on 16th May, 1934, for wounds and blows, suffered from petit mal.

The third criminal mental patient, M.....X.....F....., a Creole aged 36, showed signs of insanity while in prison awaiting trial for vagrancy. He is also a feeble-minded.

The last case, that of B.....S....., an Indian aged 38, developed acute mania while undergoing imprisonment for larceny. He is now well and out on probation.

8. The following table shows the duration in hospital to 31st December, 1934, of the 717 certified resident patients:

	M.	F.	T.
One year or less	69	49	118
Between 1 and 2 years	32	34	66
"  2  "  3  "	18	24	42
"  3  "  4  "	24	17	41
"  4  "  5  "	17	23	40
"  5  "  6  "	27	12	39
"  6  "  7  "	15	13	28
"  7  "  8  "	15	9	24
"  8  "  9  "	19	11	30
"  9  "  10  "	22	7	29
"  10  "  15  "	59	32	91
"  15  "  20  "	22	37	59
"  20  "  25  "	21	23	44
"  25  "  30  "	16	8	24
Over 30 years	26	16	42
Total	402	315	717

It will be seen from the above table that more than half of the total number of patients have been in hospital 5 years or more, the prognosis in the majority of these cases being hopeless.

## 9. ADMISSIONS.

	1933			1934		
	M.	F.	T.	M.	F.	T.
1st admissions, certified patients ...	62	46	108	71	38	109
2nd admissions, certified patients ...	10	5	15	11	7	18
3rd admissions, certified patients ...	3	2	5	—	1	1
4th admissions, certified patients ...	—	—	—	1	2	3
Readmissions from probation leave	32	30	62	43	31	74
Readmissions from leave under G. N. 239/24 ...	43	34	77	85	53	138
Admitted under interim detention, later found not to be proper per- sons to be kept in hospital and accordingly released ...	27	14	41	17	23	40
Admitted under interim detention but not certified or released on 31.12.34.	2	1	3	4	2	6
Admitted under interim detention and died whilst so detained ...	1	2	3	—	1	1
Readmitted from Victoria and Civil Hospitals ...	2	—	2	1	1	2
Readmitted after escape ...	1	—	1	—	—	—
Total ...	183	134	317	233	159	392

The above table shows that in 1934 a total of 131 patients (males 83, females 48) were admitted into the Mental Hospital as certified insane. (1st, 2nd, 3rd, and 4th admissions) and are hereunder referred to as direct admissions.

10. Table showing the districts whence came the 131 direct admissions, and the insane-rate per 10,000 of the population of such districts:

Districts	Estimated populations of districts on 31 st December, 1934.	No. of direct admissions.	Insane-rate per 10,000 of population.
Plaines Wilhems ...	99,619	51	5.1
Port Louis ...	54,876	27	4.9
Moka ...	29,522	11	3.7
Pamplemousses ...	35,412	12	3.3
Savanne ...	30,217	9	2.9
Rivière du Rempart	31,340	5	1.6
Grand Port ...	47,704	7	1.4
Flacq ...	51,567	6	1.1
Black River ...	13,476	1	0.7
Total ...	393,733	129	3.2
Rodrigues ...	—	2	—

The above table shows that insanity is more prevalent in the urban and residential districts as compared with the agricultural districts.

11. The following table shows the probable causes of insanity in the case of the 131 direct admissions:

CAUSES		M.	F.	T.
Heredity, insane	...	15	17	32
Heredity, epileptic	...	—	1	1
Heredity, neurotic	...	1	—	1
Feeble-mindedness	...	4	0	4
Climacteric	...	—	1	1
Puberty and Adolescence	...	4	1	5
Senility	...	—	1	1
Puerperium	...	—	3	3
Lactation	...	—	1	1
Mental Stress: sudden	...	5	7	12
„ „ : prolonged	...	20	9	29
Privation	...	1	1	2
Injuries	...	1	—	1
Epilepsy	...	9	4	13
Convulsions	...	1	2	3
Syphilis	...	7	1	8
Alcohol	...	7	—	7
Sepsis	...	1	1	2
Typhoid Fever	...	1	1	2
Phthisis	...	1	1	2
Chronic nephritis	...	1	—	1
Anaemia and cachexia	...	—	1	1
Arteriosclerosis	...	2	—	2
Drugs, gandia, opium, cocaine, etc.	...	—	—	—

In examining the above table it should be borne in mind that one or more of the causes enumerated therein may be responsible for the production of the mental illness; hence the excess of the aggregate of such causes over the number of patients considered. Heredity, mental stress, syphilis, epilepsy and alcohol are, as usual, prominent etiological factors.

## 12. DISCHARGES

The total number of discharges during the year was 307 as against 279 for 1933.

The following table shows the classification of discharges for 1933 and 1934:

	1933			1934		
	M.	F.	T.	M.	F.	T.
Discharged recovered	1	3	4	4	—	4
„ relieved	75	62	137	81	40	121
„ not improved	—	4	4	2	3	5
„ on leave under Govt. Notice 239/24	56	34	90	82	52	134
Alleged mental patients found sane and released	27	14	41	17	23	40
Transferred to Civil or Victoria Hospital	1	1	2	1	2	3
„ to Leper Asylum	1	—	1	—	—	—
Escapes	—	—	—	—	—	—
Total	161	118	279	187	120	307

The percentage of discharges (recovered, relieved and not improved) to admissions (direct admissions plus readmissions from probation) was 63.4 (males 69.0, females 54.4) compared with 76.3 (males 71.0, females 83.1) for 1933.

During the year 65 patients (males 39, females 26), out on probation leave, were found cured and finally discharged.

### 13. DEATHS.

During the year there were 28 deaths (males 14, females 14), as against 35 in 1933 and 49 in 1932. Of these, 4 took place within one month of the patients' admission at the Mental Hospital and were mainly due to their poor state of health. The death-rate, calculated on the daily average number of patients resident, was 3.86% (males 3.42%, females 4.44%) compared with 5.07% (males 6.09%, females 3.71%) for 1933. The following table gives the causes of death and the number of deaths from each cause:

CAUSES	M.	F.	T.
Phthisis ... ..	—	5	5
General paralysis of the insane ...	3	—	3
Myocardial degeneration ... ..	2	1	3
Acute enteritis ... ..	—	3	3
Broncho-pneumonia ... ..	—	2	2
Lobar pneumonia ... ..	1	—	1
Senile debility ... ..	—	1	1
Acute encephalomyelitis ... ..	—	1	1
Tuberculous glands of neck ... ..	—	1	1
Rupture of aortic aneurysm ... ..	1	—	1
Chronic bronchitis ... ..	1	—	1
Aortic regurgitation ... ..	1	—	1
Acute pleurisy ... ..	1	—	1
Epilepsy ... ..	1	—	1
Chronic nephritis ... ..	1	—	1
Ascariasis with intestinal perforation and peritonitis ... ..	1	—	1
Enteric fever ... ..	1	—	1
Total ... ..	14	14	28

Five postmortem examinations were made, giving a percentage of 17.8 of total deaths.

### 14. PREVALENCE OF SICKNESS

The following table gives the number of cases treated in both infirmaries, the daily average of sick and the sick-rate for the years 1933, 1934:

	1933			1934		
	M.	F.	T.	M.	F.	T.
Number of cases treated in infirmaries						
Daily average of sick in infirmaries	5.85	3.13	8.98	4.80	2.47	7.27
Sick-rate per cent calculated on daily average number of patients to hospital	1.48	1.05	1.30	1.17	0.78	1.00

15. Table of monthly admissions in the two infirmaries, total stay therein and average stay per patient for the years 1933, 1934:

	1933			1934		
	M.	F.	T.	M.	F.	T.
January	20	3	23	13	1	14
February	16	11	27	12	3	15
March	21	4	25	23	6	29
April	21	12	33	11	8	19
May	38	4	42	6	10	16
June	16	10	26	12	3	15
July	15	7	22	9	4	13
August	13	8	21	14	8	22
September	13	12	25	12	3	15
October	16	3	19	15	5	20
November	17	6	23	8	7	15
December	17	8	25	9	4	13
<b>Total</b>	<b>223</b>	<b>88</b>	<b>311</b>	<b>144</b>	<b>62</b>	<b>206</b>
<b>Total stay in days</b>	<b>2,137</b>	<b>1,144</b>	<b>3,281</b>	<b>1,755</b>	<b>904</b>	<b>2,659</b>
<b>Average stay per patient</b>	<b>9.58</b>	<b>13.00</b>	<b>10.54</b>	<b>12.18</b>	<b>14.58</b>	<b>12.90</b>

The above table shows that physical diseases during the year were less prevalent than in 1933.

16. The following table shows the monthly admissions in both infirmaries for the commoner diseases:

Diseases	January	February	March	April	May	June	July	August	September	October	November	December	Total
Malaria	2	1	4	4	1	—	—	2	1	3	2	1	21
Influenza	—	—	1	3	1	—	—	3	2	5	3	1	19
Dysentery— amoebic	2	—	1	1	—	—	—	1	1	—	—	—	6
Dysentery— other types	3	3	3	3	2	—	—	—	—	—	—	—	14
Epilepsy	—	1	1	1	—	1	—	—	2	2	—	1	9
Hookworm	2	2	2	—	1	2	3	—	—	—	—	—	12
Phthisis	1	—	1	1	—	—	—	2	—	1	1	—	7
Chronic nephritis	—	2	—	—	—	1	2	2	—	—	—	—	7
Ascariasis	—	1	1	—	2	—	—	1	—	1	—	—	6
Ulcers	—	—	3	—	—	—	—	1	1	—	1	—	6
Boils	—	—	2	1	1	—	1	—	1	—	—	—	6
Cellulitis	1	—	1	—	—	—	1	—	1	—	1	—	5
Abscesses	—	—	1	1	1	—	—	—	—	1	1	—	5
Acute enteritis	—	—	—	—	1	—	—	1	1	1	1	—	5

17. INFECTIOUS AND ALLIED DISEASES.

There were 20 cases of dysentery 6 of which were of the amoebic type. There were no cases of bacillary dysentery. Influenza cases numbered 19 as against 46 in 1933. Malaria accounted for 21 cases as against 37 in 1933. During the year 7 cases of phthisis needed active treatment 5 of whom died. There were 2 cases of enteric fever with one death. No patient suffered from the exanthemata.

18. VIOLENCE, ESCAPES ETC.

There were no cases of suicide or homicide. No patient escaped during the year. The number of cases of injury to patients was as follows:

Self-inflicted	...	...	9
Inflicted by attendants	...	Nil	
Inflicted by other patients	...	95	
Accidental	...	...	92

The above injuries were of a trivial nature except:

- (i) a Colles's fracture due to an accidental fall ;
- (ii) a simple fracture of the lower jaw of an epileptic patient who fell down in a fit.

Members of the staff were injured by patients on 15 occasions but in no case was the injury of a serious nature.

19. Table showing the classification of the 717 certified patients in hospital on 31st December, 1934 according to the type of mental disease.

TYPES OF MENTAL DISEASE				M	F	T
Primary dementia	...	...	...	70	25	95
Senile dementia	...	...	...	7	5	12
Terminal dementia	...	...	...	121	101	222
Amentia with epilepsy	...	...	...	18	14	32
Amentia without epilepsy	...	...	...	24	12	36
Mania, recent	...	...	...	20	31	51
„ , recurrent	...	...	...	9	10	19
„ , chronic	...	...	...	6	18	24
„ , acute delirious	...	...	...	—	—	—
Melancholia, recent	...	...	...	26	23	49
„ , recurrent	...	...	...	—	1	1
„ , chronic	...	...	...	8	6	14
Alternating insanity	...	...	...	9	12	21
Paranoia	...	...	...	5	1	6
Paraphrenia	...	...	...	11	13	24
Non-systematised delusional insanity	...	...	...	10	9	19
Acute confusional insanity	...	...	...	6	1	7
Epileptic insanity	...	...	...	37	31	68
General paralysis of the insane	...	...	...	4	—	4
Moral insanity	...	...	...	4	1	5
Insanity with gross brain lesions	...	...	...	6	1	7
Undiagnosed	...	...	...	1	—	1
Total				402	315	717

20. OCCUPATIONAL TREATMENT

During the year a daily average of 46 patients, mostly Indians, attended to the vegetable gardens. All the laundry work of the hospital was done by female patients and this, together with ward work, darning, the upkeep of

the hospital grounds and piggery, mattress-making, carpentry and the manufacture of hospital tinware gave employment daily to an average of 207 male and 136 female patients.

The estimated value of the work done by patients during the year, including institution garden produce, was Rs. 17,244.61 compared with Rs. 17,121.42 for 1933.

#### 21. RESTRAINT AND SECLUSION

During the year mechanical restraint—strait-jacket—was resorted to in the case of 4 males and 3 females and seclusion in the case of 5 males and 1 female. The greatest duration, in any single instance, for mechanical restraint or seclusion was 10 hours.

#### 22. RECREATION

During 1934 the Police Band played 12 times at the hospital. Twelve cinematograph performances were given as well as 3 treats consisting of cakes, fruit, lemonade and other delicacies. Gramophone music is played during the week and always on Sundays. Cards, draughts, dominoes, chess and lotto are favourite games.

Our Soccer team plays some local team every fortnight and not infrequently beats the visitors. French and English periodicals were sent us by people interested in the welfare of the patients; in this connection thanks are due to the Mayor of Port Louis and to Toc H who also sent cigarettes.

#### 23. COST OF MAINTENANCE

The items making up the average weekly cost per head are given in the following table for the period 1st July, 1933 to 30th June, 1934

ITEMS	Rs.	c.
Provisions, fuel and light not including institution garden produce	77,712.33	
Personal emoluments	94,812.89	
Clothing, bedding, uniforms and washing requisites	14,491.91	
Drugs, dressings, surgical instruments etc.	1,505.64	
Implements, stores, sundries	2,322.38	
Fees for District Commissioners of Lunacy	1,700.00	
Fees for Member of Central Board	200.00	
Recreation for patients	792.86	
Telephone: rental and calls	163.36	
Travelling and transport	788.20	
Total	194,489.57	
Less fees from private patients	Rs. 11,814.79	
Less sale price of pigs	Rs. 479.10	
Less	12,293.89	
Net total expenditure	182,195.68	
Average weekly cost per head	4.94	

The following table gives the average weekly cost per head, the net yearly total expenditure and the daily average number of patients in hospital for the financial years 1926-27 to 1933-34:

Years.	Net total expenditure.	Daily average number of patients in hospital.	Average weekly cost per head.
1926-27	Rs. 245,637.69	601	Rs. 7.86
1927-28	Rs. 256,831.02	623	Rs. 7.92
1928-29	Rs. 249,134.07	606	Rs. 7.90
1929-30	Rs. 226,910.87	637	Rs. 6.85
1930-31	Rs. 219,809.08	674	Rs. 6.27
1931-32	Rs. 198,170.07	681	Rs. 5.59
1932-33	Rs. 183,883.90	688	Rs. 5.14
1933-34	Rs. 182,195.68	702	Rs. 4.94

The above table shows that the weekly cost of maintenance has again been reduced.

#### 24. STAFF

The staff of the hospital consists of :

- 1 Medical Superintendent.
- 1 Assistant Medical Superintendent.
- 1 Steward and Accountant who also acts as Head Attendant.
- 1 Dispenser and Storekeeper.
- 1 Matron.
- 1 Assistant Matron.
- 12 Male Nurses or Warders.
- 8 Female Nurses.
- 1 Gatekeeper.
- 1 Seamstress.
- 69 Male servants.
- 45 Female servants.

The Matron, Miss I. Rogers, returned to the Colony from leave in Europe on 24th November, 1934 and resumed duty on 12th December, 1934. Warder P. Auffray's services were dispensed with on 30th April, 1934 on account of physical unfitness ; he was replaced on 21st May, 1934 by Mr. L. Lebrasse.

Mr. L. R. M. Duval's temporary and provisional appointment as warder, Mental Hospital, was terminated on 30th September, 1934.

Storekeeper and Dispenser G. d'Assonville was retired from the service on 31st October, 1934 after five years service at the Mental Hospital. His efficiency, integrity and punctuality were beyond reproach.

Warder H. N. Cimiotti was promoted Storekeeper and Dispenser on 1st November, 1934 and his place taken on 10th December, 1934 by Warder A. Letandrie from Moka Hospital.

Nurse M. Fitzgerald resigned on 31st December, 1934.

#### 25. ACCOMMODATION

The hospital is still overcrowded, especially on the female side. Steps are being taken to have two new wards built at an early date to relieve this congestion.

## 26. VISITS

On 29th March, 1934, His Excellency the Governor visited the hospital. During the year the Central Board of Commissioners of Lunacy held 12 monthly meetings and on each occasion visited the hospital.

Apart from his monthly visits with the Central Board, the Honourable Medical Director also called at the hospital on 4 other occasions..

Three boards of survey were held and our accounts and stores were checked 9 times by an Audit Inspector and once by the Accountant, Medical and Health Department. No irregularities were found.

## 27. RELIGIOUS SERVICES

During the year mass was said on 12 occasions. There were also 2 Church of England services. An average of 40 patients attended each Roman Catholic service and 7 each Anglican service.

## 28. ACKNOWLEDGMENTS

In conclusion I wish to thank the Honourable Medical Director and the members of the Central Board of Commissioners of Lunacy for their valuable help and advice. It is also a pleasure for me to express here my indebtedness to the other members of the staff of the Institution for their steady co-operation and assistance.

J. D. DYSON, M.B., B.S., Lond. ; D.P.M.,  
*Medical Superintendent, Mental Hospital.*

Beau Bassin,  
28 February, 1935.

## APPENDIX VI

## Annual Report on the Leper Hospital for the Year 1934

The number of patients, admissions, discharges and deaths for 1934 is given by the following table:

			Males	Females
Remaining on 1st January, 1934	...	...	36	11
Admissions during 1934	...	..	6	5
			—	—
			42	16
			—	—
Discharges during 1934	...	...	3	3
Deaths	...	...	2	2
			—	—
			5	5
			—	—
Remaining on 31st December, 1934	...	...	37	11
			—	—

Of the admissions 6 were nerve, and 4 cutaneous cases. One admission was a 2-year-old non-leper sickly hydrocephalic child of a leper mother.

The cause of death in our 4 cases was:

2 cases Broncho-pneumonia and heart-failure, consecutive to Influenza.

2 cases of exhaustion, due to extensive cutaneous leprosy.

## GENERAL REMARKS

Dr. Hermann André *M.B.E.* left the Colony and proceeded on leave to Europe on 3rd September, 1934, being replaced by myself.

No feature of outstanding interest has to be placed on record; the health of our inmates has improved steadily, if slowly; we have not been troubled with much Malaria.

The scheme for the voluntary paid employment of able-bodied patients on work at the Leper Hospital has worked very well.

The patients have been provided with congenial occupation. They were supplied with seeds, plants and manure to the value of Rs. 31.20 cs., and carpentry tools, planks, wire-netting to the value of Rs. 48.50 cs.; the money being provided by the interest on the F. Rouillard-Legacy.

## TREATMENT

Creosoted (5%) Hydnocarpus Oil is mainly used. Infiltration of nodules and injection into the subcutaneous fat are both employed.

Avenyl is injected subcutaneously in those cases which have a positive Kahn.

Tri-chloroacetic acid is used locally.

A trial has quite recently been given in a limited number (six) of cutaneous cases to the intravenous injection of 1% Solution of Methylene Blue in dist. water; but it is too early yet to say whether the method is giving better results than the other modes of treatment.

## VISITORS

In March last, Mr. F. Payne visited the Institution in the company of 7 other members of Toc H.

In December last Mr. A. D. Porter and Mr. F. Payne, two members of Toc H visited the Hospital.

Mrs. Edesse Lagesse and Widow Oscar Mamet are entitled to our sincere gratitude for the great treat which they provided for our patients, at their own expense, on 28th December, 1934.

Our sincere thanks go to the Inspector General of Police for sending us the Police Band in December last.

The Leper Hospital,  
Powder Mills.  
23rd January, 1935.

FRANCE A. J. BOULOUX, L.R.C.P., M.R.C.S.

## APPENDIX VII

## Annual Report of Radiologist for the Year 1934.

In the absence of Dr. Dupré it falls to me to present the report on the work of our branch for the year 1934.

In June of that year I was appointed to the newly created post of Assistant Radiologist. And, thanks to Dr. Dupré's coaching, it has been possible for me to act as Radiologist since his departure on leave in December of the same year.

The appointment of an Assistant Radiologist might prove to be a further step towards the establishment of another Radiological and Electrological centre at Civil Hospital.

During the year under consideration, 413 patients underwent X ray examination at Victoria Hospital. The majority of these were paupers, but the fees contributed by paying patients came up to Rs. 383.08 Cs.

The fees collected from patients undergoing various electrical treatments amounted to Rs. 400.30 Cs. making a total of Rs. 783.38 Cs. The amount paid during the year to the General Electric Supply for Electrical Energy was Rs. 236.75 Cs.

The figures for the year 1933 were:

Fees collected	...	...	Rs. 424.45 Cs.
Electrical Energy bill	...	...	Rs. 128.00 Cs.

835 cases were radioscoped at Moka Hospital during the year, of these 437 were chest cases. The remaining 398 were examined for gastro-intestinal disorders.

Here again the majority were paupers, but Rs. 617.25 Cs. were collected as fees from paying patients. The expenditure amounted in all to Rs. 279.91 Cs.

The figures for 1933 were:

Number of patients examined...	...	836
Fees collected	...	Rs. 797.88 Cs.
Expenditure	...	Rs. 280.57 Cs.

154 patients underwent Ultra Violet light therapy at Civil Hospital. The total number of sittings amounted to 1,990 and the fees collected to Rs. 89.

As far as I am aware, no case of sufficient scientific interest to deserve special mention has cropped up during the year, but there has been abundant confirmation of the beneficial action of combined infra red and ultra violet light irradiation in the treatment of carbuncles and other staphylococcal infections of the skin to which attention was first drawn by Dr. Dupré in the 1933 report.

RENE PIERRE.

## APPENDIX VIII

## RETURN OF DISEASES AND DEATHS (IN PATIENTS) FOR THE YEAR 1934

DISEASES	Remaining in Hospital at end of 1933	Yearly Total		Total cases treated	Remaining in Hospital at end of 1934
		Admis- sions	Deaths		
<i>1.—Epidemic, Endemic and Infectious Diseases</i>					
1. Enteric Group—					
(a) Typhoid Fever ... ..	4	65	15	69	1
(b) Paratyphoid A. ... ..	—	—	—	—	—
(c) Paratyphoid B. ... ..	—	—	—	—	—
(d) Type not defined ... ..	—	—	—	—	—
2. Typhus ... ..	—	—	—	—	—
3. Relapsing Fever ... ..	—	—	—	—	—
4. Undulant Fever ... ..	—	—	—	—	—
5. Malaria—					
(a) Tertian ... ..	7	856	18	833	10
(b) Quartan ... ..	1	290	3	291	2
(c) Aestivo-autumnal ... ..	—	15	—	15	—
(d) Cachexia ... ..	10	602	32	612	6
(e) Blackwater ... ..	1	19	3	20	—
(f) Unclassified ... ..	5	941	23	946	11
6. Smallpox—					
Alastrim ... ..	—	—	—	—	—
7. Measles ... ..					
8. Scarlet Fever ... ..					
9. Whooping Cough ... ..					
10. Diphtheria ... ..					
11. Influenza ... ..					
12. Miliary Fever ... ..					
13. Mumps ... ..					
14. Cholera ... ..					
15. Epidemic diarrhoea ... ..					
16. Dysentery—					
(a) Amœbic ... ..	4	699	54	703	4
(b) Bacillary ... ..	1	257	38	258	4
(c) Undefined or due to other causes .. ...	4	357	13	361	2
17. Plague—					
(a) Bubonic ... ..	—	—	—	—	—
(b) Pneumonic ... ..	—	—	—	—	—
(c) Septicæmic ... ..	—	—	—	—	—
(d) Undefined ... ..	—	—	—	—	—
18. Yellow Fever ... ..					
Total carried over ... ..	42	4,990	219	5,032	47

DISEASES	Remaining in Hospital at end of 1933	Yearly Total		Total cases treated	Re- main- ing in Hospital at end of 1934
		Admis- sions	Deaths		
Brought forward ..	42	4,990	219	5,032	47
<i>I.—Epidemic, Endemic and Infectious Diseases.—(Contd.)</i>					
19. Spirochætosis ictero-hæmorrhagica ... ..	—	—	—	—	—
20. Leprosy ... ..	—	6	—	6	—
21. Erysipelas ... ..	2	38	5	40	1
22. Acute Poliomyelitis ... ..	—	—	—	—	—
23. Encephalitis Lethargica ... ..	—	1	—	1	—
24. Epidemic Cerebro-spinal Fever ... ..	—	—	—	—	—
25. Other Epidemic Diseases—					
(a) Rubeola (German Measles) ..	—	—	—	—	—
(b) Varicella (Chicken-pox) ..	—	8	—	8	—
(c) Kala-azar ... ..	—	—	—	—	—
(d) Phlebotomus Fever ... ..	—	—	—	—	—
(e) Dengue ... ..	—	—	—	—	—
(f) Epidemic Dropsy ... ..	—	—	—	—	—
(g) Yaws ... ..	—	—	—	—	—
(h) Trypanosomiasis ... ..	—	—	—	—	—
26. Glanders ... ..	—	—	—	—	—
27. Anthrax ... ..	—	—	—	—	—
28. Rabies ... ..	—	—	—	—	—
29. Tetanus ... ..	2	44	15	46	—
30. Mycosis ... ..	—	3	—	3	—
31. Tuberculosis Pulmonary and Pharyngeal ... ..	23	566	74	589	17
32. Tuberculosis of the Meninges or Central Nervous System ..	—	—	—	—	—
33. Tuberculosis of the Intestine or Peritoneum ... ..	—	27	5	27	—
34. Tuberculosis of the Vertebral Column ... ..	1	12	—	13	2
35. Tuberculosis of Bones and Joints ..	1	13	1	14	2
36. Tuberculosis of other organs—					
(a) Skin or Subcutaneous Tissue (Lupus) ... ..	—	4	—	4	—
(b) Bones ... ..	—	4	—	4	1
(c) Lymphatic System ... ..	—	14	2	14	—
(d) Genito-Urinary ... ..	—	1	—	1	—
(e) Other Organs ... ..	—	1	—	1	—
37. Tuberculosis disseminated—					
(a) Acute ... ..	—	—	—	—	—
(b) Chronic ... ..	—	—	—	—	—
Total carried over ...	71	5,732	321	5,803	70

DISEASES	Remaining in Hospital at end of 1933	Yearly Total		Total cases treated	Remaining in Hospital at end of 1934
		Admis- sions	Deaths		
Brought forward ...	71	5,732	321	5,803	70
<i>I.—Epidemic, Endemic and Infectious Diseases— (Contd.)</i>					
38. Syphilis—					
(a) Primary ... ..	1	77	—	78	3
(b) Secondary ... ..	—	68	—	68	—
(c) Tertiary ... ..	1	144	9	145	2
(d) Hereditary ... ..	3	42	13	45	—
(e) Period not indicated ...	—	59	—	59	—
39. Soft Chancre ... ..	3	121	—	124	8
40. A.—Gonorrhœa and its compli- cations ... ..	5	184	—	189	7
B—Gonorrhœal Ophthalmia ..	—	10	—	10	—
C—Gonorrhœal arthritis ... ..	—	26	—	26	—
D—Gonorrhœal Venereum ..	—	—	—	—	—
41. Septicæmia ... ..	—	7	5	7	1
42. Other Infectious Diseases—					
(a) Trypanosomiasis ... ..	—	—	—	—	—
(b) Filariasis ... ..	4	43	—	47	2
(c) Other ... ..	—	3	—	3	—
<i>II.—General Diseases not mentioned above</i>					
43. Cancer or other malignant Tumours of the Buccal Cavity ... ..	—	7	2	7	1
44. Cancer or other malignant Tumours of the Stomach or Liver ... ..	1	8	5	9	—
45. Cancer or other malignant Tumours of the Peritoneum, Intestines, Rectum ... ..	—	10	4	10	—
46. Cancer or other malignant Tumours of the female Genital Organs ...	1	81	13	82	3
47. Cancer or other malignant Tumours of the Breast ... ..	—	16	3	16	—
48. Cancer or other malignant Tumours of the Skin ... ..	—	10	—	10	—
49. Cancer or other malignant Tumours of Organs not specified ... ..	2	10	2	12	—
50. Tumours non-malignant ... ..	2	91	2	93	9
51. Acute Rheumatism ... ..	4	171	—	175	2
52. Chronic Rheumatism ... ..	—	207	1	207	7
53. Scurvy (including Barlow's Disease)	—	—	—	—	—
54. Pellagra ... ..	—	—	—	—	—
Total carried over ...	98	7,127	380	7,225	115

DISEASES	Remaining in Hospital at end of 1933	Yearly Total		Total cases treated	Remaining in Hospital at end of 1934
		Admis- sions	Deaths		
Brought forward ...	98	7,127	380	7,225	115
II.— <i>General Diseases not mentioned above.—(Contd.)</i>					
55. Beri-Beri ... ..	—	3	1	3	—
56. Rickets ... ..	—	—	—	—	—
57. Diabetes (not including Insipidus)...	1	77	10	78	2
58. Anæmia—					
(a) Pernicious ... ..	—	26	9	26	1
(b) Other Anæmias and Chlo- rosis ... ..	1	279	21	280	11
59. Diseases of the Pituitary Body ...	—	—	—	—	—
60. Diseases of the Thyroid Gland—					
(a) Exophthalmic Goitre ... ..	—	—	—	—	—
(b) Other Diseases of the Thyroid Glands, Myxœdema ... ..	—	1	—	1	—
61. Diseases of the Para-Thyroid Glands ... ..	—	—	—	—	—
62. Diseases of the Thymus ... ..	—	—	—	—	—
63. Diseases of the Supra-Renal Glands ... ..	—	—	—	—	—
64. Diseases of the Spleen ... ..	—	11	—	11	—
65. Leukœmia—					
(a) Leukœmia ... ..	—	—	—	—	—
(b) Hodgkin's Diseases ... ..	—	—	—	—	—
66. Alcoholism ... ..	—	14	1	14	—
67. Chronic poisoning by mineral substances (lead, mercury, etc.) .	—	1	—	1	—
68. Chronic poisoning by organic substances (Morphia, Cocaine, etc.)	—	—	—	—	—
69. Other General Diseases—					
Auto-intoxication ... ..	—	—	—	—	—
Purpura-Hæmorrhagica ... ..	—	—	—	—	—
Hæmophilia ... ..	—	—	—	—	—
Diabetes Insipidus ... ..	—	3	—	3	—
Coma ... ..	—	1	1	1	—
III.— <i>Affections of the Nervous System and Organs of the Senses</i>					
70. Encephalitis (not including En- cephalitis Lethargica) ... ..	—	4	1	4	—
71. Meningitis (not including Tuber- culous Meningitis or Cerebro- spinal Meningitis) ... ..	1	20	14	21	—
Total carried over ...	101	7,567	438	7,668	129

DISEASES	Remaining in Hospital at end of 1933	Yearly Total		Total cases treated	Remaining in Hospital at end of 1934
		Admis- sions	Deaths		
Brought forward ..	101	7,567	438	7,668	129
<i>III.—Affections of the Nervous System and organs of the senses.—(Contd.)</i>					
72. Locomotor Ataxia ... ..	—	1	—	1	—
73. Other affections of the Spinal Cord...	—	1	—	1	—
74. Apoplexy—					
(a) Hæmorrhage... ..	—	30	13	30	—
(b) Embolism ... ..	—	1	—	1	—
(c) Thrombosis ... ..	—	5	2	5	—
75. Paralysis—					
(a) Hemiplegia ... ..	1	39	—	40	3
(b) Other Paralyses ... ..	1	29	2	30	1
76. General Paralysis of the Insane ...	1	2	3	3	0
77. Other forms of Mental Alienation ...	—	12	—	12	—
78. Epilepsy ... ..	1	66	1	67	1
79. Eclampsia, Convulsions (non- puerperal) 5 years over ... ..	—	3	2	3	—
80. Infantile convulsions ... ..	—	3	—	3	—
81. Chorea ... ..	—	5	1	5	—
82. A.—Hysteria ... ..	—	11	—	11	—
B.—Neuritis ... ..	—	29	—	29	—
C.—Neurasthenia ... ..	—	5	—	5	—
D.—Vertigo ... ..	—	—	—	—	—
E.—Neuralgia ... ..	—	—	—	—	—
83. Cerebral softening ... ..	—	1	—	1	—
84. Other affections of the Nervous Sys- tem, such as paralysis Agitans, etc.	1	79	3	80	2
85. Affections of the Organs of Vision—					
(a) Diseases of the eye ... ..	1	139	—	140	—
(b) Conjunctivitis ... ..	1	111	—	112	1
(c) Trachoma ... ..	—	—	—	—	—
(d) Tumours of the eye ... ..	—	—	—	—	—
(e) Other affections of the eye ...	5	315	—	320	12
86. Affections of the Ear or Mastoid Sinus	2	140	1	142	1
<i>IV.—Affections of the Circulatory System</i>					
87. Pericarditis ... ..	—	3	2	3	—
88. Acute Endocarditis or Myocarditis ...	—	11	5	1	—
89. Angina Pectoris ... ..	—	—	—	—	—
Total carried over ...	115	8,608	473	8,723	150

DISEASES	Remaining in Hospital at end of 1933	Yearly Total		Total cases treated	Remaining in Hospital at end of 1934
		Admis- sions	Deaths		
Brought forward ...	115	8,608	473	8,723	150
IV.— <i>Affections of the Circulatory System.</i> —(Contd.)					
90. Other Diseases of the Heart—					
(a) Valvular—					
Mitral ... ..	2	108	27	110	3
Aortic ... ..	—	11	1	11	—
Tricuspid ... ..	—	—	—	—	—
Pulmonary ... ..	—	—	—	—	—
(b) Myocarditis ... ..	—	81	19	81	—
91. Diseases of the Arteries—					
(a) Aneurism .. ..	—	5	1	5	1
(b) Arterio-Sclerosis ... ..	—	53	1	53	4
(c) Other Diseases ... ..	—	1	—	1	—
92. Embolism or Thrombosis (non-cerebral) ... ..	—	—	—	—	—
93. Diseases of the Veins—					
Hæmorrhoids ... ..	1	199	2	200	3
Varicose Veins ... ..	—	3	—	3	1
Phlebitis ... ..	—	8	—	8	—
94. Diseases of the Lymphatic System—					
Lymphangitis... ..	—	96	—	96	1
Lymphadenitis, Bubo (non-specific) ... ..	1	181	—	182	5
95. Hæmorrhage of undetermined cause	—	—	—	—	—
96. Other affections of the Circulatory System ... ..	2	32	3	34	1
V.— <i>Affections of the Respiratory System</i>					
97. Diseases of the Nasal Passages—					
Adenoids ... ..	—	12	—	12	—
Polipus ... ..	—	11	—	11	—
Rhinitis ... ..	—	15	—	15	—
Coryza . ... ..	—	1	—	1	—
Undefined ... ..	—	29	—	29	1
98. Affections of the Larynx—					
(a) Laryngitis ... ..	—	7	1	7	1
(b) Acute œdema of the Larynx...	—	1	1	1	—
99. Bronchitis—					
(a) Acute ... ..	4	492	23	496	3
(b) Chronic ... ..	4	278	31	282	1
(c) Unclassified ... ..	1	40	—	41	2
Total carried over ..	130	10,272	583	10,402	177

DISEASES	Remaining in Hospital at end of 1933	Yearly Total		Total cases treated	Remaining in Hospital at end of 1934
		Admis- sions	Deaths		
Brought forward ...	130	10,272	588	10,402	177
<i>V.—Affections of the Respiratory System.—(Contd.)</i>					
100. Broncho-Pneumonia ...	4	91	37	95	1
101. Pneumonia—					
(a) Lobar ... ..	3	168	33	171	2
(b) Unclassified ... ..	8	235	101	243	4
102. Pleurisy, Emphysema ... ..	2	56	9	58	2
103. Congestion of the Lungs ... ..	—	40	7	40	1
104. Gangrene of the Lungs ... ..	—	3	1	3	—
105. Asthma ... ..	4	235	6	239	3
106. Pulmonary Emphysema ... ..	1	8	—	9	—
107. Other affections of the Lungs— Pulmonary Spirochætosis ... ..	—	24	3	24	1
<i>VI.—Diseases of the Digestive System</i>					
108. A.—Diseases of teeth or gums— Caries, Pyorrhœa, etc. ... ..	—	181	—	181	1
B—Other affections of the Mouth—					
Stomatitis ... ..	1	34	2	35	—
Glossitis, etc. ... ..	—	16	2	16	—
109. Affections of the Pharynx or Tonsils—					
Tonsilitis ... ..	—	323	—	323	1
Pharyngitis ... ..	—	5	—	5	—
Other affections ... ..	—	—	—	—	—
110. Affections of the Œsophagus ... ..	—	3	—	3	—
111. A.—Ulcer of the Stomach ... ..	—	62	6	62	2
B.—Ulcer of the Duodenum ... ..	—	90	8	90	1
C.—Ulcer Pyloric ... ..	—	3	—	3	—
112. Other affections of the Stomach—					
Gastritis ... ..	2	76	—	78	1
Dyspepsia, etc. ... ..	4	342	13	346	1
113. Diarrhœa and Enteritis— Under two years ... ..	—	119	22	119	1
114. Diarrhœa and Enteritis— Two years and over ... ..	6	296	38	302	5
Colitis ... ..	—	33	1	33	2
Ulceration ... ..	—	—	—	—	—
114a Sprue ... ..	—	1	—	1	—
115. Ankylostomiasis ... ..	19	2,254	108	2,273	31
Total carried over ...	184	14,970	980	15,154	237

DISEASES	Remaining in Hospital at end of 1933	Yearly Total		Total cases treated	Remaining in Hospital at end of 1934
		Admis- sions	Deaths		
Brought forward ..	184	14,970	980	15,154	237
VI.— <i>Diseases of the Digestive System</i> —(Contd.)					
116. Diseases due to Intestinal Parasites—					
(a) Cestodia ( <i>Tænia</i> ) ... ..	—	3	—	3	—
(b) Trematoda (Flukes) ... ..	—	—	—	—	—
(c) Nematoda (other than ankylostoma)—					
<i>Ascaris</i> ... ..	1	146	6	147	—
<i>Trichocephalus dispar</i> ..	—	—	—	—	—
<i>Trichinia</i> ... ..	—	—	—	—	—
<i>Dracunculus</i> ... ..	—	—	—	—	—
<i>Strongylus</i> ... ..	—	5	—	5	—
<i>Oxyuris</i> ... ..	—	1	—	1	—
(d) <i>Coccidia</i> .. ..	—	—	—	—	—
(e) Other parasites ... ..	—	58	—	58	—
(f) Unclassified ... ..	4	43	—	47	1
117. Appendicitis ... ..	3	329	7	332	7
118. Hernia .. ..	1	152	2	153	2
119. A.—Affections of the Anus, Fistula, etc. ... ..	—	112	1	112	1
B.—Other affections of the Intestines—					
Enteroptosis ... ..	—	—	—	—	—
Constipation ... ..	1	48	—	49	1
Unclassified .. ..	—	17	2	17	—
120. Acute yellow atrophy of the Liver..	—	—	—	—	—
121. Hydatid of the Liver ... ..	—	—	—	—	—
122. Cirrhosis of the Liver—					
(a) Alcoholic ... ..	—	2	—	2	—
(b) Other forms ... ..	2	78	11	80	—
123. Biliary Calculus ... ..	—	9	1	9	1
124. Other affections of the Liver—					
Abscess... ..	1	18	5	19	—
Hepatitis ... ..	—	109	3	109	1
Cholecystitis ... ..	1	67	4	68	—
Jaundice ... ..	1	29	2	30	1
125. Diseases of the Pancreas .. ..	—	9	—	9	—
126. Peritonitis (of unknown cause)	—	6	2	6	—
127. Other affections of the Digestive System .. ..	2	101	9	103	16
Total carried over ... ..	201	16,312	1,035	16,513	268

DISEASES	Remaining in Hospital at end of 1933	Yearly Total		Total cases treated	Remaining in Hospital at end of 1934
		Admis- sions	Deaths		
Brought forward ..	201	16,312	1,035	16,513	268
VII— <i>Diseases of the Genito-urinary System (non-Venereal)</i>					
128. Acute Nephritis ... ..	10	214	24	224	7
129. Chronic Nephritis ... ..	3	200	28	203	—
130. A.—Chyluria ... ..	—	1	—	1	—
B.—Schistosomiasis ... ..	—	60	—	60	—
131. Other affections— Pyelitis, etc. ... ..	—	45	10	45	—
132. Urinary Calculus ... ..	1	28	—	29	—
133. Diseases of the Bladder— Cystitis ... ..	2	136	1	138	4
134. Diseases of the Urethra— (a) Stricture ... ..	—	66	4	66	4
(b) Other ... ..	1	83	—	84	—
135. Diseases of the Prostate— Hypertrophy ... ..	—	—	—	—	—
Prostatitis ... ..	1	12	—	13	—
136. Diseases (non-Venereal) of the Genital Organs of Man— Epididymitis ... ..	—	13	—	13	—
Orchitis ... ..	2	91	—	93	4
Hydrocele ... ..	3	254	—	257	2
Ulcer of Penis... ..	—	17	—	17	1
Other diseases... ..	2	20	—	22	—
137. Cysts or other non-malignant Tumours of the Ovaries ... ..	—	14	1	14	—
138. Salpingitis ... .. Abscess of the Pelvis ... ..	2	122	2	124	5
139. Uterine Tumours (non-malignant)	—	9	—	9	—
140. Uterine Hæmorrhage (non- puerperal) ... ..	—	40	—	40	—
141. A.—Metritis ... ..	1	34	—	35	1
B.—Other affections of the Female Genital Organs— Displacements of Uterus ... ..	2	63	—	65	—
Menorrhagia ... ..	—	18	—	18	—
Amenorrhœa ... ..	—	19	—	19	—
Dismenorrhœa ... ..	—	11	—	11	—
Leucorrhœa ... ..	—	79	—	79	4
Fibroma of Uterus ... ..	—	14	1	14	1
Unclassified ... ..	—	32	—	32	—
Total carried over ...	231	18,007	1,106	18,238	301

DISEASES	Remaining in Hospital at end of 1933	Yearly Total		Total cases treated	Remaining in Hospital at end of 1934
		Admis- sions	Deaths		
Brought forward ...	231	18,007	1,106	18,238	301
VII.— <i>Diseases of the Genito-urinary System (non-Venereal)</i> —(Contd.)					
142. Diseases of the Breast (non-puerperal)—					
Mastitis ... ..	1	45	—	46	—
Abscess ... ..	1	167	—	168	2
VIII.— <i>Puerperal State</i>					
143. A. (i)—Normal Labour ... ..	8	918	10	926	6
A. (ii)—Difficult Labour ... ..	1	23	—	24	—
B.—Accidents of Pregnancy—					
(a) Abortion ... ..	1	97	5	98	—
(b) Ectopic Gestation ... ..	—	6	1	6	1
(c) Other accidents of Pregnancy	1	45	6	46	—
144. Puerperal Hæmorrhage ... ..	—	1	1	1	—
145. Other accidents of Parturition ... ..	—	9	—	9	—
146. Puerperal Septicæmia ... ..	—	22	12	22	—
147. Phlegmasia Dolens ... ..	—	—	—	—	—
148. Puerperal Eclampsia ... ..	—	4	3	4	—
149. Sequelæ of Labour ... ..	—	10	4	10	—
150. Puerperal affections of the Breast ...	3	72	—	75	—
150 bis. Gestatio, etc. ... ..	8	579	6	587	18
IX.— <i>Affections of the Skin and Cellular Tissues</i>					
151. Gangrene ... ..	3	37	7	40	3
152. Boil—					
Carbuncle ... ..	2	125	2	127	3
153. Abscess—					
Whitlow ... ..	1	39	—	40	1
Cellulitis ... ..	18	247	6	265	3
Unclassified ... ..	55	1,479	31	1,534	39
154. A.—Tinea ... ..	—	—	—	—	—
B.—Scabies ... ..	2	331	—	333	3
155. Other Diseases of the Skin—					
Brythema ... ..	—	6	—	6	—
Urticaria ... ..	—	34	—	34	—
Eczema ... ..	1	95	—	96	3
Herpes ... ..	—	2	—	2	—
Psoriasis ... ..	—	26	—	26	—
Elephantiasis ... ..	2	17	—	19	—
Myiasis ... ..	—	2	—	2	—
Chigœs ... ..	—	—	—	—	—
Cutaneous Leishmaniasis ... ..	—	2	—	2	—
Unclassified ... ..	6	388	—	394	14
Total carried over ..	345	22,835	1,200	23,180	397

DISEASES	Remaining in Hospital at end of 1933	Yearly Total		Total cases treated	Remaining in Hospital at end of 1934
		Admis- sions	Deaths		
Brought forward ...	345	22,835	1,200	23,180	397
<i>X.—Diseases of the Bones and Organs of Locomotion (other than Tuberculous)</i>					
156. Diseases of Bones—					
Osteitis ... ..	1	31	—	32	1
157. Diseases of Joints—					
Arthritis ... ..	1	158	7	159	12
Synovitis ... ..	—	31	—	31	1
158. Other Diseases of Bones or Organs of Locomotion ... ..	4	72	2	76	9
<i>XI.—Malformations</i>					
159. Malformations—					
Hydrocephalus ... ..	—	—	—	—	—
Hypospadias ... ..	—	—	—	—	—
Spina Bifida, etc. ... ..	—	19	1	19	—
<i>XII.—Diseases of Infancy</i>					
160. Congenital Debility ... ..	—	53	38	53	2
161. Premature Birth ... ..	—	58	31	58	1
162. Other affections of Infancy ... ..	—	11	8	11	—
163. Infant neglect (infants of three months or over) ... ..	—	—	—	—	—
<i>XIII.—Affections of Old Age</i>					
164. Senility—					
Senile Dementia, etc. ... ..	2	127	17	129	—
<i>XIV.—Affections produced by External     Causes</i>					
165. Suicide by Poisoning ... ..	—	2	—	2	—
166. Corrosive Poisoning (intentional) ... ..	1	10	1	11	—
167. Suicide by Gas Poisoning ... ..	—	—	—	—	—
Total carried over ...	354	23,407	1,305	23,761	423

DISEASES	Remaining in Hospital at end of 1933	Yearly Total		Total cases treated	Remaining in Hospital at end of 1934
		Admis- sions	Deaths		
Brought forward ...	354	23,407	1,305	23,761	423
XIV.— <i>Affections produced by External Causes.—(Contd.)</i>					
168. Suicide by Hanging or Strangulation ...	—	—	—	—	—
169. Suicide by Drowning ...	—	—	—	—	—
170. Suicide by Firearms ...	—	—	—	—	—
171. Suicide by cutting or stabbing Instruments ...	—	—	—	—	—
172. Suicide by jumping from a height ...	—	—	—	—	—
173. Suicide by crushing ...	—	—	—	—	—
174. Other Suicides ...	—	1	—	1	—
175. Food Poisoning—					
Botulism ...	—	3	—	3	—
176. Attacks of poisonous animals—					
Snake Bite ...	—	—	—	—	—
Insect Bite ...	—	—	—	—	—
177. Other accidental Poisonings ...	—	7	—	7	—
178. Burns (by fire) ...	1	74	17	75	3
179. Burns (other than by fire) ...	2	26	5	28	—
180. Suffocation (accidental) ...	—	1	1	1	—
181. Poisoning by Gas (accidental) ...	—	—	—	—	—
182. Drowning (accidental) ...	—	3	—	3	—
183. Wounds (by Firearms, war excepted) ...	2	13	—	15	—
184. Wounds (by cutting or stabbing Instruments) ...	6	467	1	473	7
184 bis. Wounds by blunt instruments ...	18	303	12	321	16
185. Wounds (by fall) ...	1	91	7	92	1
186. Wounds (in mines or quarries) ...	—	—	—	—	—
187. Wounds (by machinery) ...	1	9	2	10	—
188. Wounds (by crushing <i>e.g.</i> railway accidents, etc.) ...	6	70	6	76	1
189. Injuries inflicted by animals, Bites, Kicks, etc. and other wounds ...	2	144	3	146	2
190. Wounds inflicted on Active Service ...	—	—	—	—	—
191. Executions of civilians by belligerents ...	—	—	—	—	—
192. A—Over Fatigue ...	—	—	—	—	—
B—Hunger or Thirst ...	—	—	—	—	—
193. Exposure to cold, Frost bite, etc. ...	—	—	—	—	—
194. Exposure to heat—					
Heatstroke ...	—	—	—	—	—
Sunstroke ...	—	—	—	—	—
Total carried over ...	393	24,619	1,353	25,012	453

DISEASES	Remaining in Hospital at end of 1933	Yearly Total		Total cases treated	Remaining in Hospital at end of 1934
		Admis- sions	Deaths		
Brought forward ...	393	24,619	1,353	25,012	453
<i>XIV.—Affections produced by External Causes.—(Contd.)</i>					
195. Lightning Stroke ...	—	—	—	—	—
196. Electric Shock ...	—	—	—	—	—
197. Murder by Firearms ...	—	—	—	—	—
198. Murder by cutting or stabbing Instruments ...	—	—	—	—	—
199. Murder by other means ...	—	—	—	—	—
200. Infanticide (Murder of an infant under one year) ...	—	—	—	—	—
201. A—Dislocation ...	—	41	1	41	1
B—Sprain ...	1	75	—	76	—
C—Fracture ...	14	390	14	404	15
202. Other external Injuries ...	2	307	3	309	4
203. Death by violence of unknown cause	—	—	—	—	—
<i>XV.—Ill-Defined Diseases</i>					
204. Sudden Deaths [cause unknown]—	—	—	—	—	—
205. A.—Diseases not already specified or ill-defined—					
Ascites ...	2	81	6	83	4
Edema ...	—	6	1	6	—
Asthenia ...	—	5	1	5	—
Shock ...	—	—	—	—	—
Hyperpyrexia ...	—	9	—	9	—
B.—Malingering ...	2	47	—	49	—
C.—Others	16	531	19	547	5
<b>Total ...</b>	<b>430</b>	<b>26,111</b>	<b>1,398</b>	<b>26,541</b>	<b>482</b>

## SUMMARY

DISEASES	Remaining in Hospital at end of 1933	Yearly Total		Total cases treated	Remaining in Hospital at end of 1934
		Admis- sions	Deaths		
I.—Epidemic, Endemic and Infectious Diseases ... ..	88	6,516	348	6,604	93
II.—General Diseases not mentioned above ... ..	12	1,027	75	1,039	36
III.—Affections of the Nervous System and Organs of the Senses ...	15	1,051	43	1,066	21
IV.—Affections of the Circulatory System ... ..	6	792	61	798	19
V.—Affections of the respiratory System	31	1,746	253	1,777	22
VI.—Diseases of the Digestive System	49	5,180	255	5,229	77
VII.—Diseases of the Genito-Urinary System ( <i>non-venereal</i> ) ... ..	32	1,907	71	1,939	35
VIII.—Puerperal State ... ..	22	1,786	48	1,808	25
IX.—Affections of the Skin and Cellular Tissues ... ..	90	2,830	46	2,920	69
X.—Diseases of Bones and Organs of Locomotion ( <i>other than Tuberculous</i> )	6	292	9	298	23
XI.—Malformations ... ..	—	19	1	19	—
XII.—Diseases of Infancy ... ..	—	122	77	122	3
XIII.—Affections of Old Age ... ..	2	127	17	129	—
XIV.—Affections produced by external Causes ... ..	57	2,037	67	2,094	50
XV.—Ill-defined Diseases ... ..	20	679	27	699	9
<b>TOTAL</b> ... ..	<b>430</b>	<b>26,111</b>	<b>1,398</b>	<b>26,541</b>	<b>482</b>

## RETURN OF BIRTHS

	Number	Deaths
Born alive at term ... ..	815	48
Prematurely born ... ..	63	44
Still-born... ..	155	155
<b>Total</b> ... ..	<b>1,033</b>	<b>247</b>

## RETURN OF SURGICAL OPERATIONS

Operations	Number	Deaths
Tumours ... ..	45	5
Evacuation of abscesses ..	2,712	38
Operations on :—		
Blood Vessels ... ..	4	—
Lymphatic Glands... ..	112	—
Skin and Subcutaneous Tissues ... ..	380	2
Bones ... ..	118	4
Nerves ... ..	12	—
Joint ... ..	48	6
Muscles and Tendons ...	39	—
Skull and Brain ... ..	8	2
Eye ... ..	240	—
Ear ... ..	56	1
Head and Face ... ..	290	3
Chest ... ..	41	—
Abdominal Cavity ... ..	649	37
Spleen ... ..	5	1
Rectum and Anus ... ..	199	6
Urinary system ... ..	54	4
Male Generative Organs ...	377	2
Female Generative Organs...	339	9
Amputation ... ..	80	4
Obstetric Operations ... ..	128	4
Other Operations ... ..	2,481	—
Total ..	8,417	128

## APPENDIX IX

## RETURN OF DISEASES (OUT PATIENTS) FOR THE YEAR 1934

DISEASES	Cases		Attendances	
	Male	Female	Male	Female
<i>1.—Epidemic, Endemic and Infectious Diseases</i>				
1. Enteric Group—				
(a) Typhoid Fever	—	—	—	—
(b) Paratyphoid A.	—	—	—	—
(c) Paratyphoid B.	—	—	—	—
(d) Type not defined	—	—	—	—
2. Typhus	—	—	—	—
3. Relapsing Fever	—	—	—	—
4. Undulant Fever	—	—	—	—
5. Malaria—				
(a) Tertian	9,122	9,997	11,117	12,731
(b) Quartan	748	618	1,076	908
(c) Aestivo-autumnal	354	407	389	455
(d) Cachexia	1,468	1,702	1,954	1,990
(e) Blackwater	4	1	4	10
(r) Other	10,705	11,013	13,244	13,550
6. Smallpox—				
Alastrim	—	—	—	—
7. Measles				
8. Scarlet Fever	1	—	1	—
9. Whooping Cough	72	98	88	127
10. Diphtheria	3	3	4	4
11. Influenza	8,114	8,178	9,651	11,169
12. Miliary Fever				
13. Mumps	5	3	5	12
14. Cholera				
15. Epidemic diarrhoea	155	213	271	330
16. Dysentery—				
(a) Amœbic	1,356	1,258	2,978	2,231
(b) Bacillary	349	299	539	519
(c) Undefined or due to other causes	928	954	1,630	1,488
17. Plague—				
(a) Bubonic	—	—	—	—
(b) Pneumonic	—	—	—	—
(c) Septicæmic	—	—	—	—
(d) Undefined	—	—	—	—
18. Yellow Fever				
Total carried over	33,382	34,744	42,951	45,524

DISEASES	Cases		Attendances	
	Male	Female	Male	Female
Brought forward ...	33,382	34,744	42,951	45,524
<i>I.—Epidemic, Endemic and Infectious Diseases.—(Contd.)</i>				
19. Spirochaetosis ictero-haemorrhagica ... ..	—	—	—	—
20. Leprosy ... ..	—	2	—	2
21. Erysipelas ... ..	9	12	10	13
22. Acute Poliomyelitis ... ..	—	—	—	—
23. Encephalitis Lethargica ... ..	—	—	—	—
24. Epidemic Cerebro-spinal Fever ...	—	—	—	—
25. Other Epidemic Diseases—				
(a) Rubeola (German Measles) ...	—	—	—	—
(b) Varicella (Chicken-pox) ... ..	—	1	—	1
(c) Kala-azar ... ..	—	—	—	—
(d) Phlebotomus Fever ... ..	—	—	—	—
(e) Dengue ... ..	—	—	—	—
(f) Epidemic Dropsy ... ..	—	1	—	1
(g) Yaws ... ..	—	—	—	—
(h) Trypanosomiasis ... ..	—	—	—	—
26. Glanders ... ..	—	4	—	4
27. Anthrax ... ..	8	3	20	27
28. Rabies ... ..	—	—	—	—
29. Tetanus ... ..	3	4	3	4
30. Mycosis ... ..	1	—	1	—
31. Tuberculosis Pulmonary and Pharyngeal ... ..	943	655	1,735	1,365
32. Tuberculosis of the Meninges or Central Nervous System ... ..	—	—	—	—
33. Tuberculosis of the Intestine or Peritoneum ... ..	4	1	4	1
34. Tuberculosis of the Vertebral Column ... ..	1	1	1	1
35. Tuberculosis of Bones and Joints ..	1	3	1	4
36. Tuberculosis of other organs—				
(a) Skin or Subcutaneous Tissue (Lupus) ... ..	—	1	—	1
(b) Bones ... ..	1	3	1	4
(c) Lymphatic System ... ..	12	12	15	16
(d) Genito-Urinary ... ..	3	1	3	1
(e) Other Organs ... ..	2	1	4	2
37. Tuberculosis disseminated—				
(a) Acute ... ..	6	1	9	2
(b) Chronic ... ..	19	22	30	38
Total carried over ...	34,395	35,472	44,788	47,011

DISEASES	Cases		Attendances	
	Male	Female	Male	Female
Brought forward ...	34,395	35,472	44,788	47,011
<i>I.—Epidemic, Endemic and Infectious Diseases— (Contd.)</i>				
38. Syphilis—				
(a) Primary ... ..	107	84	149	130
(b) Secondary ... ..	78	39	228	96
(c) Tertiary ... ..	385	118	1,086	351
(d) Hereditary ... ..	34	23	49	30
(e) Period not indicated ...	203	133	957	411
39. Soft Chancre ... ..	230	27	414	56
40. A.—Gonorrhœa and its compli- cations ... ..	763	123	1,504	295
B—Gonorrhœal Ophthalmia ...	8	3	14	7
C—Gonorrhœal arthritis ... ..	66	21	71	24
D—Gonorrhœal Venereum ... ..	12	6	23	14
41. Septicæmia ... ..	—	—	—	—
42. Other Infectious Diseases—				
(a) Filariasis ... ..	41	33	68	53
(b) Bilharziasis ... ..	2	1	2	1
<i>II.—General Diseases not mentioned above</i>				
43. Cancer or other malignant Tumours of the Buccal Cavity ... ..	—	1	—	4
44. Cancer or other malignant Tumours of the Stomach or Liver ... ..	4	3	4	3
45. Cancer or other malignant Tumours of the Peritoneum, Intestines, Rectum ... ..	—	—	—	—
46. Cancer or other malignant Tumours of the female Genital Organs ...	—	2	—	2
47. Cancer or other malignant Tumours of the Breast ... ..	12	22	14	23
48. Cancer or other malignant Tumours of the Skin ... ..	—	—	—	—
49. Cancer or other malignant Tumours of Organs not specified ... ..	1	2	1	2
50. Tumours non-malignant ... ..	24	13	25	13
51. Acute Rheumatism ... ..	1,015	1,008	1,394	1,354
52. Chronic Rheumatism ... ..	1,077	1,185	1,497	1,629
53. Scurvy (including Barlow's Disease)	2	—	4	—
54. Pellagra ... ..	—	—	—	—
Total carried over ...	38,459	38,319	52,292	51,509

DISEASES	Cases		Attendances	
	Male	Female	Male	Female
Brought forward ...	38,459	38,319	52,292	51,509
II.— <i>General Diseases not mentioned above.</i> —(Contd.)				
55. Beri-Beri ... ..	6	2	7	2
56. Rickets ... ..	5	—	5	—
57. Diabetes (not including Insipidus)...	62	71	97	125
58. Anæmia—				
(a) Pernicious ... ..	44	54	58	84
(b) Other Anæmias and Chlorosis ... ..	818	1,350	1,444	1,962
59. Diseases of the Pituitary Body ...	—	—	—	—
60. Diseases of the Thyroid Gland—				
(a) Exophthalmic Goitre ... ..	—	—	—	—
(b) Other Diseases of the Thyroid Glands, Myxœdema ... ..	—	1	—	1
61. Diseases of the Para-Thyroid Glands ... ..	—	—	—	—
62. Diseases of the Thymus ... ..	—	—	—	—
63. Diseases of the Supra-Renal Glands ... ..	—	—	—	—
64. Diseases of the Spleen ... ..	410	291	492	376
65. Leukœmia—				
(a) Leukœmia ... ..	—	—	—	—
(b) Hodgkin's Diseases ... ..	—	—	—	—
66. Alcoholism ... ..	1	—	1	—
67. Chronic poisoning by mineral substances (lead, mercury, etc.) ...	—	—	—	—
68. Chronic poisoning by organic substances (Morphia, Cocaine, etc.)	—	—	—	—
69. Other General Diseases—				
Auto-intoxication ... ..	—	—	—	—
Purpura-Hæmorrhagica ... ..	—	—	—	—
Hæmophilia ... ..	—	—	—	—
Diabetes Insipidus ... ..	8	15	8	15
Others ... ..	164	208	182	280
III.— <i>Affections of the Nervous System and Organs of the Senses</i>				
70. Encephalitis (not including Encephalitis Lethargica) ... ..	—	—	—	—
71. Meningitis (not including Tuberculous Meningitis or Cerebro-spinal Meningitis) ... ..	1	2	1	2
Total carried over ...	39,978	40,308	54,587	54,356

DISEASES	Cases		Attendances	
	Male	Female	Male	Female
Brought forward ..	39,978	40,308	54,587	54,356
<i>III.—Affections of the Nervous System and organs of the senses.—(Contd.)</i>				
72. Locomotor Ataxia ... ..	—	—	—	—
73. Other affections of the Spinal Cord..	9	21	18	36
74. Apoplexy—				
(a) Hæmorrhage .. .. .	2	3	2	3
(b) Embolism ... .. .	—	—	—	—
(c) Thrombosis ... .. .	—	—	—	—
(d) Unclassified .. .. .	10	19	15	21
75. Paralysis—				
(a) Hemiplegia ... .. .	62	21	84	31
(b) Other Paralyses ... .. .	36	22	46	28
76. General Paralysis of the Insane ...	—	—	—	—
77. Other forms of Mental Alienation .	4	1	13	1
78. Epilepsy ... .. .	123	91	209	182
79. Eclampsia, Convulsions (non- puerperal) 5 years or over ..	11	7	12	10
80. Infantile convulsions ... .. .	73	62	114	90
81. Chorea ... .. .	—	—	—	—
82. A.—Hysteria ... .. .	—	15	—	22
B.—Neuritis ... .. .	116	135	161	196
C.—Neurasthenia ... .. .	4	6	6	8
83. Cerebral softening ... .. .	1	—	3	—
84. Other affections of the Nervous Sys- tem, such as paralysis Agitans, etc.	490	610	629	780
85. Affections of the Organs of Vision—				
(a) Diseases of the eye ... .. .	175	180	219	244
(b) Conjunctivitis ... .. .	722	658	923	974
(c) Trachoma ... .. .	—	—	—	—
(d) Tumours of the eye .. .. .	7	8	10	14
(e) Other affections of the eye ...	434	404	576	498
86. Affections of the Ear or Mastoid Sinus	677	650	907	861
<i>IV.—Affections of the Circulatory System</i>				
87. Pericarditis ... .. .	—	1	—	1
88. Acute Endocarditis or Myocarditis...	9	3	10	5
89. Angina Pectoris ... .. .	—	—	—	—
Total carried over ...	42,943	43,225	58,544	58,361

DISEASES	Cases		Attendances	
	Male	Female	Male	Female
Brought forward ...	42,943	43,225	58,544	58,361
IV.— <i>Affections of the Circulatory System.</i> —(Contd.)				
90. Other Diseases of the Heart—				
(a) Valvular—				
Mitral ... ..	164	194	219	275
Aortic ... ..	9	5	12	6
Tricuspid ... ..	—	—	—	—
Pulmonary ... ..	—	—	—	—
(b) Myocarditis ... ..	144	240	221	344
(c) Other ... ..	64	87	97	159
91. Diseases of the Arteries—				
(a) Aneurism ... ..	—	1	—	1
(b) Arterio-Sclerosis ... ..	286	354	386	457
(c) Other Diseases ... ..	42	62	79	90
92. Embolism or Thrombosis (non-cerebral) ... ..	—	—	—	—
93. Diseases of the Veins—				
Hæmorrhoids ... ..	204	99	297	154
Varicose Veins ... ..	7	3	8	4
Phlebitis ... ..	13	13	16	13
94. Diseases of the Lymphatic System—				
Lymphangitis... ..	37	42	48	63
Lymphadenitis, Bubo (non-specific) ... ..	60	43	70	46
95. Hæmorrhage of undetermined cause.	8	15	11	18
96. Other affections of the Circulatory System ... ..	109	139	119	157
V.— <i>Affections of the Respiratory System</i>				
97. Diseases of the Nasal Passages—				
Adenoids ... ..	6	2	18	18
Polipus ... ..	5	6	5	6
Rhinitis ... ..	52	52	92	94
Coryza .. ... ..	78	113	100	133
Other ... ..	10	5	22	17
98. Affections of the Larynx—				
Laryngitis ... ..	122	152	168	215
99. Bronchitis—				
(a) Acute ... ..	1,534	1,225	1,752	1,320
(b) Chronic ... ..	1,154	888	1,471	1,232
(c) Other... ..	214	235	319	377
Total carried over ..	47,265	47,200	64,074	63,560

DISEASES	Cases		Attendances	
	Male	Female	Male	Female
Brought forward ...	47,265	47,200	64,074	63,560
<i>V.—Affections of the Respiratory System.—(Contd.)</i>				
100. Broncho-Pneumonia . . . . .	51	51	81	71
101. Pneumonia—				
(a) Lobar . . . . .	22	13	24	17
(b) Unclassified . . . . .	219	123	327	194
102. Pleurisy, Emphysema . . . . .	38	16	47	27
103. Congestion of the Lungs . . . . .	47	31	72	61
104. Gangrene of the Lungs . . . . .	—	—	—	—
105. Asthma . . . . .	1,149	837	1,884	1,389
106. Pulmonary Emphysema . . . . .	24	18	79	60
107. Other affections of the Lungs—				
Pulmonary Spirochætosis . . . . .	—	—	—	—
Unclassified . . . . .	13	10	13	10
<i>VI.—Diseases of the Digestive System</i>				
108. A.—Diseases of teeth or gums—				
Caries, Pyorrhœa, etc. . . . .	4,624	4,457	5,568	4,960
B.—Other affections of the Mouth—				
Stomatitis . . . . .	297	289	391	400
Glossitis, etc. . . . .	37	39	108	79
109. Affections of the Pharynx or Tonsils—				
Tonsillitis . . . . .	241	336	394	526
Pharyngitis . . . . .	119	131	153	173
110. Affections of the Œsophagus . . . . .	1	—	1	—
111. A.—Ulcer of the Stomach . . . . .	38	13	43	16
B.—Ulcer of the Duodenum . . . . .	7	1	7	1
112. Other affections of the Stomach—				
Gastritis . . . . .	1,019	1,074	1,281	1,327
Dyspepsia, etc. . . . .	1,796	2,032	2,245	2,496
113. Diarrhœa and Enteritis—				
Under two years . . . . .	674	621	854	808
114. Diarrhœa and Enteritis—				
Two years and over . . . . .	1,295	1,065	1,652	1,346
Colitis . . . . .	164	213	246	309
Ulceration . . . . .	—	—	—	—
114a Sprue . . . . .	—	—	—	—
115. Ankylostomiasis . . . . .	9,704	10,610	13,544	15,548
Total carried over . . . . .	68,844	69,180	93,088	93,378

DISEASES	Cases		Attendances	
	Male	Female	Male	Female
Brought forward ..	68,844	69,180	93,088	93,378
VI.— <i>Diseases of the Digestive System.</i> —(Contd.)				
116. Diseases due to Intestinal Parasites—				
(a) Cestodia (Tænia) ... ..	—	1	—	1
(b) Trematoda (Flukes) ... ..	—	—	—	—
(c) Nematoda (other than ankylostoma)—				
Ascaris ... ..	3,451	3,395	4,644	4,704
Trichocephalus dispar ..	1	—	1	—
Trichinia ... ..	—	2	—	2
Dracunculus ... ..	—	—	—	—
Strongylus ... ..	—	—	—	—
Oxyuris ... ..	23	16	37	21
(d) Coccidia ... ..	—	—	—	—
(e) Other parasites ... ..	61	55	96	97
(f) Unclassified ... ..	376	312	633	541
117. Appendicitis ... ..	64	58	89	95
118. Hernia ... ..	126	11	146	12
119. A.—Affections of the Anus, Fistula, etc. ... ..	58	21	78	28
B.—Other affections of the Intestines—				
Enteroptosis ... ..	—	—	—	—
Constipation ... ..	1,019	1,466	1,292	1,810
Unclassified ... ..	17	15	29	33
120. Acute yellow atrophy of the Liver..	—	—	—	—
121. Hydatid of the Liver ... ..	—	—	—	—
122. Cirrhosis of the Liver—				
(a) Alcoholic ... ..	—	—	—	—
(b) Other forms ... ..	20	14	21	14
123. Biliary Calculus ... ..	1	4	1	5
124. Other affections of the Liver—				
Abscess... ..	28	3	40	59
Hepatitis ... ..	135	127	307	216
Cholecystitis ... ..	69	53	80	65
Jaundice ... ..	71	58	103	96
125. Diseases of the Pancreas ... ..	—	—	—	—
126. Peritonitis (of unknown cause)	—	—	—	—
127. Other affections of the Digestive System ... ..	706	635	865	756
Total carried over ...	75,120	75,460	101,550	101,938

DISEASES	Cases		Attendances	
	Male	Female	Male	Female
Brought forward ..	75,120	75,460	101,550	101,933
VII— <i>Diseases of the Genito-urinary System (non-Venereal)</i>				
128. Acute Nephritis ... ..	264	296	379	389
129. Chronic Nephritis ... ..	295	206	382	280
130. A —Chyluria ... ..	—	—	—	—
B —Schistosomiasis ... ..	218	83	372	179
131. Other affections— Pyelitis, etc. ... ..	82	76	123	115
132. Urinary Calculus ... ..	3	—	3	—
133. Diseases of the Bladder— Cystitis ... ..	379	260	493	376
134. Diseases of the Urethra— (a) Stricture ... ..	16	1	21	1
(b) Other ... ..	22	2	27	2
135. Diseases of the Prostate— Hypertrophy ... ..	29	—	36	—
Prostatitis ... ..	10	—	30	—
136. Diseases (non-Venereal) of the Genital Organs of Man— Epididymitis ... ..	10	—	15	—
Orchitis ... ..	238	—	300	—
Hydrocele ... ..	190	—	268	—
Ulcer of Penis... ..	25	—	38	—
Others ... ..	18	—	19	—
137. Cysts or other non-malignant Tumours of the Ovaries ... ..	—	3	—	17
138. Salpingitis ... ..	—	—	—	—
Abscess of the Pelvis .. ..	—	80	—	105
139. Uterine Tumours (non-malignant)	—	5	—	5
140. Uterine Hæmorrhage (non- peral) ... ..	—	393	—	444
141. A.—Metritis ... ..	—	53	—	71
B.—Other affections of the Female Genital Organs— Displacements of Uterus .. ..	—	10	—	11
Amenorrhœa ... ..	—	429	—	543
Dismenorrhœa ... ..	—	200	—	257
Leucorrhœa ... ..	—	990	—	1,931
Others ... ..	—	144	—	203
Total carried over ...	76,919	78,691	104,056	106,862

DISEASES	Cases		Attendances	
	Male	Female	Male	Female
Brought forward ...	76,919	78,691	104,056	106,862
<i>VII — Diseases of the Genito-urinary System (non-Veneral) — (Contd.)</i>				
142. Diseases of the Breast (non-puerperal) —				
Mastitis ... ..	—	62	—	79
Abscess ... ..	—	234	—	996
<i>VIII.—Puerperal State</i>				
143. A. (i)—Normal Labour ... ..				
B.—Accidents of Pregnancy—				
(a) Abortion ... ..	—	24	—	24
(b) Ectopic Gestation ... ..	—	—	—	—
(c) Other accidents of Pregnancy, etc.	—	138	—	204
144. Puerperal Hæmorrhage ... ..	—	—	—	—
145. Other accidents of Parturition ...	—	—	—	—
146. Puerperal Septicæmia ... ..	—	—	—	—
147. Phlegmasia Dolens ... ..	—	—	—	—
148. Puerperal Eclampsia ... ..	—	—	—	—
149. Sequelæ of Labour ... ..	—	—	—	—
150. Puerperal affections of the Breast...	—	—	—	—
<i>IX.—Affections of the Skin and Cellular Tissues</i>				
151. Gangrene ... ..	—	1	—	1
152. Boil—				
Carbuncle ... ..	451	317	559	393
153. Abscess—				
Whitlow ... ..	124	116	310	190
Cellulitis ... ..	1,186	829	4,384	3,887
Unclassified ... ..	602	370	1,666	1,025
154. A.—Tinea ... ..				
B.—Scabies ... ..	2,847	2,197	3,662	2,784
155. Other Diseases of the Skin—				
Brythema ... ..	2	—	2	—
Urticaria ... ..	37	45	40	49
Eczema ... ..	572	535	783	721
Herpes ... ..	29	18	29	18
Psoriasis ... ..	104	90	158	151
Elephantiasis ... ..	24	28	31	34
Myiasis ... ..	—	—	—	—
Chigœs ... ..	—	—	—	—
Cutaneous Leishmaniasis ... ..	—	—	—	—
Others ... ..	1,207	751	1,604	1,083
Total carried over ...	84,111	84,752	117,290	118,807

DISEASES	Cases		Attendances	
	Male	Female	Male	Female
Brought forward ...	84,111	84,752	117,290	118,807
<i>X.—Diseases of the Bones and Organs of Locomotion (other than Tuberculous)</i>				
156. Diseases of Bones—				
Osteitis ... ..	9	1	13	1
157. Diseases of Joints—				
Arthritis ... ..	199	197	262	245
Synovitis ... ..	22	16	32	30
158. Other Diseases of Bones or Organs of Locomotion ... ..	17	13	21	15
<i>XI.—Malformations</i>				
159. Malformations—				
Hydrocephalus ... ..	2	—	2	—
Hypospadias ... ..	—	—	—	—
Spina Bifida, etc. ... ..	3	1	3	1
<i>XII.—Diseases of Infancy</i>				
160. Congenital Debility ... ..	70	73	95	111
161. Premature Birth ... ..	—	1	—	1
162. Other affections of Infancy ... ..	40	26	45	32
163. Infant neglect (infants of three months or over) ... ..	—	—	—	—
<i>XIII.—Affections of Old Age</i>				
164. Senility—				
Senile Dementia, etc. ... ..	146	161	236	245
<i>XIV.—Affections produced by External Causes</i>				
165. Suicide by Poisoning ... ..	—	—	—	—
166. Corrosive Poisoning (intentional) ... ..	—	—	—	—
167. Suicide by Gas Poisoning ... ..	—	—	—	—
Total carried over ...	84,619	85,241	117,999	119,488

DISEASES	Cases		Attendances	
	Male	Female	Male	Female
Brought forward ...	84,619	85,241	117,999	119,488
XIV.— <i>Affections produced by External Causes.—(Contd.)</i>				
168. Suicide by Hanging or Strangulation ... ..	—	—	—	—
169. Suicide by Drowning ... ..	—	—	—	—
170. Suicide by Firearms ... ..	—	—	—	—
171. Suicide by cutting or stabbing Instruments ... ..	—	—	—	—
172. Suicide by jumping from a height	—	—	—	—
173. Suicide by crushing ... ..	—	—	—	—
174. Other Suicides ... ..	—	—	—	—
175. Food Poisoning—				
Botulism ... ..	—	—	—	—
176. Attacks of poisonous animals—				
Snake Bite ... ..	—	—	—	—
Insect Bite ... ..	4	1	6	1
177. Other accidental Poisonings ..	3	—	3	—
178. Burns (by fire) ... ..	33	27	75	77
179. Burns (other than by fire) ...	30	26	61	44
180. Suffocation (accidental) ... ..	—	—	—	—
181. Poisoning by Gas (accidental) ...	—	—	—	—
182. Drowning (accidental) ... ..	—	—	—	—
183. Wounds (by Firearms, war excepted) ... ..	60	25	300	120
184. Wounds (by cutting or stabbing Instruments) ... ..	655	377	1,102	625
185. Wounds (by fall) ... ..	302	150	398	467
186. Wounds (in mines or quarries) ...	—	—	—	—
187. Wounds (by machinery) ... ..	11	2	15	3
188. Wounds (by crushing <i>e.g.</i> railway accidents, etc.) ... ..	3	—	19	—
189. Injuries inflicted by animals, Bites, Kicks, etc. ... ..	92	57	199	98
190. Wounds inflicted on Active Service	—	—	—	—
191. Executions of civilians by belligerents ... ..	—	—	—	—
192. A—Over Fatigue ... ..	—	—	—	—
B—Hunger or Thirst ... ..	—	—	—	—
193. Exposure to cold, Frost bite, etc. ...	—	—	—	—
194. Exposure to heat—				
Heatstroke ... ..	—	—	—	—
Sunstroke ... ..	—	—	—	—
Total carried over ..	85,812	85,906	120,177	120,923

DISEASES	Cases		Attendances	
	Male	Female	Male	Female
Brought forward ...	85,812	85,906	120,177	120,923
<i>XIV.—Affections produced by External Causes.—(Contd.)</i>				
195. Lightning Stroke ... ..	—	—	—	—
196. Electric Shock ... ..	—	—	—	—
197. Murder by Firearms ... ..	—	—	—	—
198. Murder by cutting or stabbing Instruments ... ..	—	—	—	—
199. Murder by other means ... ..	—	—	—	—
200. Infanticide (Murder of an infant under one year) ... ..	—	—	—	—
201. A—Dislocation ... ..	23	13	38	13
B—Sprain ... ..	52	34	66	43
C—Fracture ... ..	75	30	149	69
202. Other external Injuries ... ..	949	401	2,262	585
203. Death by violence of unknown cause				
<i>XV.—Ill-Defined Diseases</i>				
204. Sudden Deaths [cause unknown]—				
205. A.—Diseases not already specified or ill-defined—				
Ascites ... ..	38	32	60	48
Edema ... ..	26	27	28	28
Asthenia ... ..	19	4	29	19
Shock ... ..	—	—	—	—
Hyperpyrexia ... ..	—	—	—	—
Unclassified ... ..	175	166	205	177
B.—Malingering ... ..	119	25	133	29
<b>Total ... ..</b>	<b>87,288</b>	<b>86,638</b>	<b>123,147</b>	<b>121,934</b>

## SUMMARY

DISEASES	Cases		Attendances	
	Male	Female	Male	Female
I.—Epidemic, Endemic and Infectious Diseases ... ..	36,324	36,083	49,353	48,479
II.—General Diseases not mentioned above ... ..	3,653	4,223	5,233	5,875
III.—Affections of the Nervous System and Organs of the Senses ... ..	2,957	2,915	3,948	4,001
IV.—Affections of the Circulatory System ... ..	1,156	1,301	1,593	1,793
V.—Affections of the respiratory System	4,738	3,777	6,474	5,241
VI.—Diseases of the Digestive System	26,292	27,161	34,949	36,544
VII.—Diseases of the Genito-Urinary System ( <i>non-venereal</i> ) ... ..	1,799	3,527	2,506	6,004
VIII.—Puerperal State ... ..	—	466	—	532
IX.—Affections of the Skin and Cellular Tissues ... ..	7,192	5,299	13,234	10,338
X.—Diseases of Bones and Organs of Locomotion ( <i>other than Tuberculous</i> )	247	227	328	291
XI.—Malformations ... ..	5	1	5	1
XII.—Diseases of Infancy ... ..	110	100	140	144
XIII.—Affections of Old Age ... ..	146	161	236	245
XIV.—Affections produced by external Causes ... ..	2,292	1,143	4,693	2,145
XV.—Ill-defined Diseases ... ..	377	254	455	301
<b>TOTAL</b> ... ..	<b>87,288</b>	<b>86,638</b>	<b>123,147</b>	<b>121,934</b>

## APPENDIX X

**Abridged Report of Government Medical Officer,  
Rodrigues, for the Year 1934.**

- I.—GENERAL.
- II.—HOSPITAL AND DISPENSARIES: WORKS AND STATISTICS.
- III.—THE EPIDEMIC AND OTHER DISEASES.
- IV.—LEPROSY, TUBERCULOSIS, AND VENEREAL DISEASE.
- V.—SANITARY AND PROPHYLATIC WORK.
- VI.—INVESTIGATIONS AND REPORTS.
- VII.—DEATH RATE, CAUSES OF DEATH, INFANTILE MORTALITY.
- VIII.—CONCLUSION AND RECOMMENDATIONS.

## I.—GENERAL

It is no exaggeration to say that the year 1934 will be remembered in the chronicles of Rodrigues as "the year of epidemics." During the period under review, the island has been visited by no less than six epidemics, a cyclone, and a partial famine. The year started badly. The lack of rain which was felt during the latter third of 1933 caused, early in 1934, an acute economic situation which had a profound effect on the health of the population. During the early months there was an extensive epidemic of Gastro-Enteritis, intensified by the fact that to infective factors was the added disadvantage of very unsuitable diet during convalescence. There were, while the disease was in the epidemic form till the end of May, 262 cases. The total for the whole year was 328, and the number of fatal cases 24, the majority being due to relapses.

On commenting on the death-rate it was mentioned in the Annual Report for 1933 that "one must take into account the fact that 770 healthy persons emigrated to Reunion during the second half of the year. Had they stayed in Rodrigues it is probable that the death-rate would have been lower." It was hardly anticipated at that time that 687 of them would come back in 1934, bringing with them numerous cases of Beri-Beri and of Malaria, and would introduce into the island diseases like Typhoid Fever, Bacillary Dysentery, and Measles, all of which were not met with in 1933. The return of the emigrants threw, in addition, a tremendous strain on the already semi-starving population and had far-reaching consequences, the effects of which were felt until the end of the year.

A severe cyclone on February 27th ruined the acacia trade and submitted the unfortunate inhabitants to further material and nutritional hardships. It was not till November that approximately normal conditions were re-established. Typhoid Fever and Bacillary Dysentery raged from February till June, and were followed by a sharp recrudescence of the former in August and September. An epidemic of Catarrhal Jaundice followed in their wake, and lastly, the usual seasonal outbreaks of Influenza, together with an epidemic of Chicken-pox, closed this unhappy series. An epidemic of measles, several cases of which were among the returned emigrants, was fortunately avoided by quarantine measures.

In spite of a certain briskness in trade many families in Rodrigues are still feeling the strain of the past ten months. The general effect on the population has been a marked, though temporary, deterioration in the health of many people; the death-rate jumped from 12.7 last year to 20.3, and the expenditure incurred in the Medical and Health and Poor Law Departments has been considerably increased.

## II.—HOSPITALS AND DISPENSARIES

## WORK AND STATISTICS

The main features to be noted here are: (1), the temporary re-opening of Mount Lubin Hospital, rendered necessary by the large number of persons among the returned labourers needing hospital treatment; (2) the construction of an operating room at Port Mathurin Hospital; and (3) the temporary appointment of an extra warder for six months at Port Mathurin.

127 patients have been accommodated at Mount Lubin Hospital from 20th February to its official closure on 30th June. Between this date and 31st December, 34 persons have been treated there when, owing to lack of space, accommodation could not be found at Port Mathurin Hospital. These patients provided their own diet and were treated at no extra expense to Government. This policy might, with advantage, be continued for some time, pending further extensions at Port Mathurin Hospital.

The operation room at Port Mathurin was completed in November. It has already amply justified its construction, and will admirably serve its purpose. Certain repairs have also been carried out to the rest of the building, and the male ward has been repainted in less gloomy colours. Further repairs and repainting will, however, be necessary within a year.

The work done in the Hospitals and Dispensaries is summarized below:

## 1. MAIN DISEASES FOR WHICH HOSPITALISATION HAS BEEN NECESSARY

(Port Mathurin and Mount Lubin Hospitals) :

Abscesses	...	...	...	...	55
Asthma and Bronchitis	...	...	...	...	27
Ascariasis	...	...	...	...	15
Beri-Beri	...	...	...	...	6
Broncho-pneumonia	...	...	...	...	7
Dysentery (Amœbic)	...	...	...	...	7
Dysentery (Bacillary)	...	...	...	...	22
Debility and Anaemia	...	...	...	...	32
Eye diseases	...	...	...	...	6
Empyema and Pulmonary abscess	...	...	...	...	2
Enteritis	...	...	...	...	13
Gastritis	...	...	...	...	23
Gastro-Enteritis	...	...	...	...	12
Hysteria	...	...	...	...	6
Influenza	...	...	...	...	17
Jaundice, Catarrhal	...	...	...	...	4
Measles	...	...	...	...	3
Malaria	...	...	...	...	30
Meningitis	...	...	...	...	3
Observation cases	...	...	...	...	25
Tuberculosis	...	...	...	...	14
Pleurisy and Pleural Effusion	...	...	...	...	6
Obstetric and Gynaecological cases	...	...	...	...	10
Renal Diseases	...	...	...	...	9
Syphilis	...	...	...	...	4
Scurvy and Avitaminosis	...	...	...	...	3
Skin diseases	...	...	...	...	10
Typhoid Fever	...	...	...	...	69
Wounds and Injuries	...	...	...	...	24
Miscellaneous	...	...	...	...	100

The total number of patients admitted to both Hospitals was 583, of these, 139 provided their own diet, and were admitted for treatment only. There was an increase of 229 admissions over 1933.

2. *Deaths in Hospital were caused by :*

Acute Bronchitis	...	...	...	...	2
Acute Enteritis	...	...	...	...	1
Acute Nephritis	...	...	...	...	1
Athrepsy	...	...	...	...	2
Ascariasis	...	...	...	...	1
Bacillary Dysentery	...	...	...	...	3
Beri-beri	...	...	...	...	1
Gastro-Enteritis	...	...	...	...	3
Hepatic Cirrhosis	...	...	...	...	1
Meningitis	...	...	...	...	1
Prematurity	...	...	...	...	1
Pneumonia	...	...	...	...	1
Rheumatic Carditis	...	...	...	...	1
Tetanus Neonatorum	...	...	...	...	2
Tuberculosis	...	...	...	...	3
Typhoid Fever	...	...	...	...	19
Miscellaneous	...	...	...	...	5
Total deaths in Hospitals	...	...	...	...	48

3. *Operations. (Port Mathurin and Mt. Lubin Dispensary).*

Minor operations	...	...	...	...	229
Major operations	...	...	...	...	8
Total	...	...	...	...	237

*Major operations were performed for :*

Caesarian Section for Cervical Atresia	...	...	...	...	1
Craniotomy and Cephalotripsy...	...	...	...	...	1
Curettage	...	...	...	...	1
Epididymo-orchidectomy for chronic suppurative hydrocele	...	...	...	...	1
Fistula in Ano	...	...	...	...	1
Inguinal Hernia, Radical Cure	...	...	...	...	2
Laparotomy for Entero-Colic Intussusception	...	...	...	...	1
Total	...	...	...	...	8

Operative Mortality: Nil.

4. *Hypodermic Medication :*

	Port Mathurin	Mt. Lubin	Total
Injections to Lepers	950	281	1,231
N.A.B. injections	26	10	36
Biniodide of Mercury	140	74	214
Other injections	101	49	915
Injections to Indoor Patients	573	342	915
	1,790	756	2,546

There has been an increase of 1,405 injections over the number done in 1933.



TABLE SHOWING THE NUMBER OF DISPENSARY ATTENDANCES AT PORT MATHURIN HOSPITAL

Disease	January	February	March	April	May	June	July	August	September	October	November	December	Total
Ascariasis	42	17	36	27	33	24	15	20	15	28	25	19	291
Amoebic Dysentry	...	170	106	89	...	...	1	1	...	3	1	...	13
Anaemia and Debility	63	170	106	89	64	86	50	56	46	72	85	65	952
Bacillary Dysentry	...	12	23	66	70	41	30	6	7	10	18	7	290
Beri-beri	...	47	27	5	5	5	2	...	...	...	1	...	92
Catarrhal Jaundice	...	...	...	3	12	29	20	7	1	...	...	...	72
Eye Diseases	...	2	2	4	2	1	1	1	2	4	2	3	31
Syphilis	3	4	1	3	1	3	2	2	5	4	7	3	38
Gonorrhoea	5	4	2	2	2	3	2	4	1	3	2	...	30
Gastritis and Dyspepsia	85	59	60	55	96	77	73	40	80	97	77	95	894
Gastro-Enteritis	10	21	28	26	34	10	5	3	3	5	7	6	158
Influenza	126	96	261	100	118	142	243	219	75	200	83	46	1,709
Heart and Vascular System	1	3	1	...	1	4	3	3	9	2	2	2	31
Malaria	3	41	24	8	3	4	2	2	...	3	2	...	92
Sinusitis	3	1	2	1	3	4	1	4	1	8	3	3	34
Skin Diseases	21	25	25	13	20	19	21	16	14	18	19	46	257
Asthma, Bronchitis and Tonsillitis	18	20	38	10	8	12	18	12	15	32	30	24	237
Tuberculosis	7	8	4	1	2	4	1	3	8	12	4	9	63
Unclassified Diseases	157	191	339	303	277	201	201	177	118	205	203	152	2,524
Total	544	721	961	718	751	671	692	580	400	709	571	480	7,798

There were 1,137 Dispensary Attendances less than in 1933.

## MOUNT LUBIN DISPENSARY

Disease	January	February	March	April	May	June	July	August	September	October	November	December	Total
Ascariasis	50	65	59	98	59	42	29	22	21	19	30	24	518
Amoebic Dysentery	2	3	17	10	—	—	—	1	—	1	—	1	35
Anaemia, Debility	48	89	123	100	59	38	42	46	61	67	62	70	805
Bacillary Dysentery	—	—	—	134	118	51	26	15	9	9	13	10	385
Beri-beri	—	5	14	2	5	3	2	1	—	1	—	5	38
C. Jaundice	—	—	—	—	3	19	19	8	1	—	—	—	50
Eye Disease	6	6	2	4	3	2	7	2	8	7	7	3	57
Syphilis	1	1	2	5	1	1	1	1	4	4	4	3	28
Gonorrhoea	3	—	—	—	—	—	—	—	1	—	—	—	4
Gastritis	29	37	69	87	96	97	43	47	37	57	32	46	677
Gastro Enteritis	17	28	54	41	30	8	5	—	5	4	5	3	200
Influenza	120	65	299	227	158	206	266	291	85	192	93	44	2,06P
Heart and Vasc. System	2	—	—	1	1	4	4	5	1	—	2	—	20
Malaria	—	14	18	1	4	6	2	3	—	1	1	3	53
Sinusitis	7	1	4	1	3	4	2	4	10	7	4	5	52
Skin Diseases	15	27	32	7	12	13	9	17	15	13	13	19	192
Tonsilitis, Bronchitis, Asthma	25	18	38	22	18	40	27	22	14	36	18	21	299
Tuberculosis	17	11	14	10	6	12	8	7	6	8	4	4	107
Unclassified Diseases	170	156	258	380	205	149	106	160	142	168	189	166	2,249
<b>Total</b>	<b>512</b>	<b>526</b>	<b>1,003</b>	<b>1,130</b>	<b>731</b>	<b>695</b>	<b>618</b>	<b>652</b>	<b>420</b>	<b>594</b>	<b>477</b>	<b>427</b>	<b>7,885</b>

There were 315 attendances less than in 1933.

## III.—THE EPIDEMIC AND OTHER DISEASES

1. *Gastro-Enteritis* : This epidemic has already been mentioned in Section I and lasted from January to May. Sporadic cases occurred later during the year. There was a total of 328 cases, with 24 deaths, a case-mortality of 7.4 per 100 cases. It was the commonest cause of death during the year, particularly among young children. The disease was more virulent than last year inasmuch that the number of relapses was greater and the undernutrition most of the patients were suffering from was an important predisposing factor. A good many of the later cases were undoubtedly due to infection by the Dysentery organisms.

2. *Typhoid Fever* : There were 73 cases of Typhoid Fever, with 19 deaths, a case-mortality of 26 per 100 cases. All Typhoid cases, except 4, were treated in the Hospitals. The exogenous origin of the disease, the chief causes of spread, and the main epidemiological and clinical features of the outbreak have been summarized in a review of the first 49 cases, addressed to the Director of the Medical and Health Department, on June 6th. The last case occurred on 16th October.

The chief characteristics of the epidemic were :

- (a) Its undoubted exogenous origin,
- (b) The extreme virulence of the early cases, and the relatively low virulence of the later cases,
- (c) A recrudescence of the disease in September before it finally died out,
- (d) The sporadicity of the early cases, and the grouping of the later cases to a definite area, and
- (e) The relatively high mortality.

These points have been fully discussed in the Report referred to.

3. *Bacillary Dysentery* : Like Typhoid, Bacillary Dysentery was unknown in 1933. There have been 468 cases in 1934, with 9 deaths, a case—mortality of 1.9 per 100 cases. The deaths occurred mostly among aged persons and debilitated children. The infection appeared to be due to a bacillus belonging to the Flexner group rather than to the more virulent Shiga strain. A few cases have become chronic and are a continual source of danger. There was a slight recrudescence during November and December, and a further, if less extensive, outbreak is anticipated during the next four months.

There have been rather more cases of Amoebic Dysentery than last year, and one case of Liver Abscess.

4. *Catarrhal Jaundice* : This is the third epidemic disease which was unknown in 1933, and which has appeared in Rodrigues this year. It was undoubtedly due to extensive soil pollution the result of the Typhoid Fever and Dysentery epidemics. There were 113 cases with one death, a case mortality of .9 per 100 cases. Children between 5 and 15 were the chief victims, adults being very rarely affected. The disease was usually associated with fairly high fever, and in one case immediately preceded an attack of Typhoid Fever. Thorough investigation of the more severe cases, in so far as this was possible in Rodrigues, failed to reveal any evidence of leptospiral infection.

The table below shows the monthly incidence of the four preceding epidemics and also the typical lag in the incidence of Catarrhal Jaundice, a further proof of its infective character, and of its association with diarrhoeic diseases.

The figures show the actual number of cases:

Disease	January	February	March	April	May	June	July	August	September	October	November	December	Total
Gastro-Enteritis	24	41	73	65	59	18	10	2	8	7	10	9	328
Bacillary Dysentery	—	9	12	124	147	76	40	14	11	11	14	10	468
Typhoid Fever	—	4	13	28	4	5	3	8	6	2	—	—	73
Catarrhal Jaundice	—	—	—	3	12	47	35	14	2	—	—	1	113

5. *Influenza* : A glance at the Dispensary tables will show that there is little change from last year, except that there were, on the whole, fewer cases. Pulmonary complications have been less frequent, but there have been many more cases of sinusitis, the majority being infections of the frontal sinus. There was one death due to meningitis the result of empyema of the sphenoidal sinus. The condition, in view of the frequency of infection of the accessory nasal sinuses, was undoubtedly caused by influenza. There were eleven deaths due to influenza, excluding the case mentioned above.

6. *Chicken-Pox* : There was a fairly extensive outbreak of Chicken-Pox during September and October. The disease was, on the whole, quite mild, but pulmonary complications with high fever were present in a few. Only one adult was affected. There were half a dozen cases of Herpes Zoster early during the epidemic. This observation is now classical.

7. The following are notes on some diseases which have called for comment :

*Anaemia* : There has been a definite increase in this condition particularly during the latter half of the year. A certain proportion of the cases is undoubtedly due to Ankylostomiasis. Examination of stools showed more frequent infection than last year, but the number of specimens examined is not sufficient to permit generalisations. Pressure of other work prevented a more extensive enquiry.

*Avitaminosis* : Apart from the imported cases of Beri-beri, there have been a few cases of a Scurvy-like condition, characterized by sore tongue, dryness of the skin and eruptions. Bleeding from the gums was present in a few cases. The disease undoubtedly resulted from the almost total lack of fresh fruit which followed the drought and the cyclone.

*Erysipelas* : No case of Erysipelas was seen in 1933. There have been six cases this year, with no deaths.

*Puerperal Sepsis* : One case to report, with recovery. The incidence of this condition is thus one case in 394 confinements an extremely low incidence, in view of local conditions.

*Umbilical Sepsis* : This is common, and has been responsible for two fatal cases of Tetanus Neonatorum. Certain recommendations are made in Section VIII, paragraph 6, which, it is hoped, will help to reduce neo-natal mortality and morbidity.

*Soft Chancre, Inguinal Granuloma, Diphtheria, Tapeworm, and Shistosomiasis* are still unknown in Rodrigues.

#### IV.—LEPROSY TUBERCULOSIS AND VENEREAL DISEASES

1. *Leprosy* : The leprosy situation in Rodrigues is summarized in the Synoptic table below. There are now 22 known lepers in the island, excluding two apparently cured cases who have emigrated to Mauritius, and including two new cases detected early this year. One of these was a girl under observation since August, 1933, who developed clear signs of leprosy this year. Her nasal smear is now negative. The other patient was a nodular case of three months duration, and who has considerably improved under treatment. Two cases, who were greatly improved, has relapsed, one as a result of the strain of childbirth, and the other for no apparent reason.

Of the 22 lepers, 11 are males, and 11 females, nine are burnt out, or apparently cured, and 7 have positive nasal smears and are infective. Sixteen are under treatment.

In spite of the fact that two new cases have been discovered this year, and the number of cases with positive nasal smears has risen from four to seven, the Leprosy situation in Rodrigues is satisfactory. The favourable attitude of the population towards the disease pointed out in last year's report, and the keenness of the patients on treatment, continues unabated. One patient, living well over an hour's walk up the hills, and who was having bi-weekly injections, attended 97 times out of a possible 104. The attendances of the other patients do not fall very short of this high percentage.

A total of 1231 injections was done to lepers during the year, an increase of 402 over last year's figure. Better results have been obtained with E.C.C.O. than with Alepol.

There was one meeting of the Leprosy Board in December. It was not found necessary to recommend any transfer to Mauritius, but a close watch should be kept on the contacts to certain cases.

To facilitate comparison, the patients in the table following have been placed in the same order as in last year's report.

TABLE SHOWING NUMBER, INFECTIVITY AND PRESENT CONDITION OF LEPERS IN RODRIGUES

No.	Initials	Age	Sex	Type	Grade		Infectivity on clinical grounds	Nasal Smear	Treatment	Remarks and present condition
					1933	1934				
1.	F.R.	26	M	Nodular	B3	B2	+	+	Yes	Progressing satisfactorily.
2.	J.E.	19	M	Nodular	B2	B1	+	+	Yes	Doing very well.
3.	R.L.	24	M	Nervous	A1	A1	0	.	No	In Mauritius.
4.	B.M.	18	M	Nervous	A2	A1	V. slight	.	Yes	Doing very well.
5.	S.A.	31	M	Nodular	B3	B3	+	+	Yes	In Statu Quo.
6.	M.C.	36	F	Nodular	B3	B2	+	+	Yes	Progressing satisfactorily.
7.	N.B.	? 61	M	Nervous	A1	A1	0	.	No	Burnt out.
8.	E.R.	? 41	F	Nodular	A1	A3	+	+	Yes	Relapsed (Parturition).
9.	C.P.	31	F	Nervous	A1	A1	0	.	No	Apparently cured.
10.	O.E.	50	M	Nodular	A1	A1	0	.	No	In Mauritius.
11.	T.P.	17	F	Mixed	B1	B3	+	+	Yes	Relapsed.
12.	L.P.	31	F	Nervous	A1	A1	0	-	Yes	Apparently cured.
13.	L.L.	55	M	Mixed	A1	A1	0	.	No	Burnt out.
14.	L.L.	29	F	Mixed	A1	A1	0	-	No	Apparently cured.
15.	A.R.	50	M	Nervous	A1	A1	0	-	Yes	" "
16.	D.R.	40	M	Nervous	A2	A1	V. slight	-	Yes	Progressing satisfactorily.
17.	M.M.	? 46	M	Mixed	A1	A1	0	.	No	Apparently cured.
18.	E.A.	25	F	Nervous	A1	A1	0	.	No	" "
19.	F.L.	51	M	Nervous	A2	A1	V. slight	-	Yes	Progressing satisfactorily.
20.	J.L.	13	M	Nervous	A2	A1	0	-	Yes	Doing very well.
21.	O.P.	21	F	Nervous	A2	A1	0	-	Yes	Apparently cured.
22.	L.L.	14	F	Nervous	A2	A1	V. slight	-	Yes	Doing very well.
23.	Mrs. H.M.	48	F	Nodular	.	B1	+	+	Yes	Progressing satisfactorily.
24.	A.R.	13	F	Mixed	.	B2	+	-	Yes	" "

Nos. 23 and 24: New cases detected this year. No 24 was under observation last year.  
Nos. 3 and 10 have emigrated to Mauritius.

2. *Tuberculosis* : Although Tuberculosis has been the commonest but one cause of death during 1934, the number of attendances for this disease, and, practically speaking, the number of actual cases, has been less than half the number during 1933. (170 attendances, as compared to 343 in 1933).

The majority of deaths from Pulmonary Tuberculosis has taken place among cases already detected last year. In spite of the unfavourable conditions obtaining in 1934, it is refreshing to be able to report that so far there does not appear to be any evidence of an impending serious outbreak.

Of the 20 deaths due to Tuberculosis, 15 were due to Pulmonary Tuberculosis, one to the acute Miliary form, one to Cachexia the result of Spinal caries, one to tracheo-bronchial Adenopathy, and two to Tuberculosis Peritonitis.

#### VENEREAL DISEASE

1. *Syphilis* : There is little change to report in respect to this disease. The number of Dispensary attendances was 95 as compared to 108 last year, excluding attendances for injections etc. There was one death due to Syphilitic Gangrene of the leg in an old tertiary case.

2. *Gonorrhoea* : There were only 34 attendances this year as compared to 84 last year. I do not think that this diminution can be attributed to concealment of cases, the practical absence of complications of untreated gonorrhoea being a useful index to the general situation.

#### V.—SANITARY AND PROPHYLACTIC WORK

1. *Water Supply* : The water supply of Port Mathurin has again been unsatisfactory. An additional source to Cascade Pigeon Reservoir prevented the latter from drying up completely, but the main problems of the water-supply remain the same, and are, if anything, more acute in view of the abnormal sanitary conditions.

While examining the various streams of the island, I was struck by the fact that the "protected" supplies are, in fact, only relatively so. Human dejecta were frequently seen, particularly in Solitude and Cascade Pigeon valleys. Hundreds of people swarm up the latter during the acacia season, and daily pollution is almost certain to take place. This emphasizes the need for further protection by storing and filtration.

The situation regarding the water-supply of other parts of the island, particularly at La Ferme, remains unchanged.

A small cyclone with abundant rainfall on 31st December solved the water-supply problem, as far as quantity is concerned, for the time being.

2. *Typhoid and Bacillary Dysentery Prophylaxis* : An intensive campaign has been carried out during several months in an attempt to make the population protect themselves by avoiding soil pollution and by taking such measures as boiling drinking-water, avoiding sick people, etc. The Rodriguean however, seems at present incapable of appreciating the value of such prophylaxis. A small number have built latrines, but the majority have done nothing at all.

The only measure which has been effective, and to which the population subscribed with enthusiasm, has been prophylactic inoculation with T.A.B.

Vaccine. This was carried out practically continuously since the beginning of the Typhoid epidemic. The following figures show how far it has been responsible for the checking of the disease:

Estimated Population of Rodrigues on 31.12.34	...	...	8,999
Total number of persons inoculated	...	...	5,940
		No. of cases of Typhoid	No of Deaths
Number of persons vaccinated once only	...	590 ... 7	... 1
"    "    twice "	...	5,350 ... 1	... 0
"    unvaccinated persons	...	3,059 ... 65	... 18
		—	—
Total	...	8,999	73 ... 19
		—	—

of the 3,000 odd, unvaccinated persons, it is estimated that at least two-thirds are outside the age limits (5 to 50) for T.A.B. inoculations, and are relatively insusceptible to Typhoid Fever. If this is correct, there only remain in Rodrigues about 1,000 persons, i.e. one-ninth of the total population seriously liable to the disease. The outlook for the immediate future is thus definitely favourable.

One person, inoculated twice, was reported from Mauritius as having suffered from a mild attack.

3. *Cattle Pen* : The construction of the cattle-pen, as recommended in last year's report, represents a definite advance in the sanitation of Port Mathurin. It will function as from the early days of 1935, and should prove of considerable sanitary value.

4. *Meat Inspection, Abattoir* : There is nothing to add to last year's report in this respect. Bovine Tuberculosis and infection of pigs by Tape-worm are still unknown.

5. *Examination of Schools* : The main item to report under this heading is the prophylactic inoculation of all the school children as soon as possible during the Typhoid epidemic. The general situation, as outlined for 1933, is unchanged, though, as a result of the partial famine at the beginning of the year, a good many children suffered from Debility. No case of Leprosy was detected among them.

## VI.—INVESTIGATIONS AND REPORTS

1. *Labourers returned from Reunion* : Two reports, dated 30th February, and 11th April, respectively, have been forwarded on this subject. The following figures show the condition of the returned emigrants on landing:

Total number of rapatriated labourers	...	...	687
Total number of cases of Beri-beri	...	...	73
As follows: Early cases	...	...	56
Fairly advanced	...	...	18
Advanced (with paraplegia)	...	...	9
Cases of actual malarial fever on landing	...	...	28
"    Measles	...	...	2
"    Typhoid Fever (died next day)	...	...	1

There were a certain number suffering from Dysentery, and also many cases of Scabies, Scrotal Dermatitis and Glossitis. Approximately one half of the first 450 persons who returned from Reunion, including those mentioned

above, showed definite deterioration in their health. Those who came in smaller batches later during the year were in much better condition.

It is with pleasure that one records that all the cases of Beri-beri, except two who died, and one who arrived in November, have recovered and are now fit for manual labour. The great majority of Malaria cases are apparently cured. It is an excellent tribute to the vitality and recuperative powers of the Rodriguean that the ex-sufferers are by now indistinguishable from their fellows.

2. An investigation to ascertain the proportion of vaccinated persons in Rodrigues has been carried out at the request of the Director of the Medical and Health Department. The results of this investigation are shown below:

Number of persons with none, or with unsatisfactory marks	...	758
"    "    one good vaccination mark	...	2,332
"    "    two " " marks	...	257
"    "    three " " "	...	91
"    "    four " " "	...	4
"    "    five " " "	...	1
		—
	Total	... 3,443
		— —

Children below three years old were not examined. The figures indicate a fair immunity among the population. In the unlikely event of an outbreak of Small-pox, however, re-vaccination will have to be carried out to a certain extent.

3. In a Report on Typhoid Fever in Rodrigues, to the Director of Medical and Health Department, dated 6th June, the result of treatment with Antityphoid serum and with fractional doses of T.A.B. vaccine were summarised. The results arrived at, though necessarily inconclusive in view of the small number of cases show that:

- (a) Treatment with Anti-typhoid serum is definitely beneficial ;
- (b) Treatment with fractional doses of T.A.B. appears to diminish toxæmia, and to shorten the pyrexial period ; and
- (c) The suggestion is put forward that a combination of the two methods would probably give good results.

4. In view of the relatively large number of persons in the infective stage of Malaria who came from Reunion, and to ascertain whether Anopheline mosquitoes have been introduced into the island since the last survey (Mc.Gregor, 1923) a mosquito survey has been undertaken since September. Special attention was paid to places favourable to the development of the Anopheline tribe. Forty-seven such places, along the course and estuaries of ten main streams were examined, with consistently negative results. Twenty-eight treeholes and numerous rockholes were also examined. The only mosquitoes detected were those found by Mc.Gregor, namely:

- Culex Simpsoni, mostly in marshes and ponds ;
- Culex Fatigans, " " " domestic " breeding places ;
- Aedes Argenteus, " " " rockholes, treeholes etc.

On 14th November, a child aged five, who had never left the island, was found to be suffering from Malaria. Blood films were positive for the Benign Tertian parasite: this was confirmed at the Bacteriological Laboratory. In spite of an extensive search in the vicinity of the patient's house (Camp de Paul), extending along the whole course and estuary of Port Sud Est river, and including a spring and seepage waters about a quarter of a mile away, no anopheles were detected. Mosquitoes caught in the house on two different occasions were identified as *Culex Fatigans*. Several persons living a few yards away came from Reunion, and one of them had an attack of malaria, with a positive blood film, on 21st June. There is no clinical or microscopic evidence that any of these persons are at present carriers of parasites. There have been no other cases of indigenous Malaria up to date. The conclusion has therefore been reached that the child was either mechanically infected by a culicine mosquito or other insect, or that, if *Anopheles* exist in Rodrigues, they are, at present at any rate, very scarce. Further work in this direction will be necessary before a definite conclusion is reached.

5. The researches of Dr. R. D. Adams at the Bacteriological Laboratory having brought to light the fact that a certain river snail is probably the responsible agent for the transmission of Schistosomiasis in Mauritius, I was requested by the Director of the Medical and Health Department to attempt to determine whether this snail exists in Rodrigues. The mollusc in question was not found in any of the twelve streams examined. The following fresh water snails were kindly identified by Dr. Adams:

Thiara Amarula,	Septaria Barbonica,
Thiara Scabra,	Gyraulus Mauritianus,
Melanoides Tuberculata,	? Young immature Viviparus Zonatus
Neritina Gagates,	(adults not found).
Neritana Longispina,	

None of these being vectors of Schistosomiasis, it is likely that Rodrigues will remain free from Endemic Haematuria for some years to come.

I take this opportunity to thank Dr. Adams and his Staff for the preparation of the large amount of T.A.B. Vaccine used in Rodrigues this year, and for having carried out many pathological examinations.

#### VII.—DEATH RATE, CAUSES OF DEATH, INFANTILE MORTALITY

*Death Rate:* There were 183 deaths during the year as compared to 103 in 1933. The increase is due partly to economic factors, and partly to the outbreak of disease following the return of the labourers from Reunion, about fifteen of whom died within four months of their arrival. The well-marked increase in the number of deaths during the six months following their arrival is evident in the table below. During April and May, the number of deaths exceeded the number of births.

Deaths from Typhoid Fever, Bacillary Dysentery, Beri-beri, Cirrhosis of the Liver (the result of Catarrhal Jaundice), were unknown in 1933, while the increased number of fatalities from Gastro-Enteritis, from Post-Typhoid Tuberculosis (2 cases), and from Marasmus and Debility can also be attributed, at least in part, to the same cause.

Eleven persons died of old age, as compared to one in 1933 ; three were 100 years old or over, three 90 or over, and four were over 80. The "youngest" was 78.

Disease	January	February	March	April	May	June	July	August	September	October	November	December	Total
Gastro-Enteritis ... ..	2	1	—	9	11	1	—	—	—	—	—	—	24
Bronchitis and Broncho-pneu- monia ... ..	2	—	3	4	1	2	2	—	1	2	—	—	17
Ascariasis ... ..	1	—	—	—	3	2	1	—	—	1	—	1	9
Tuberculosis ... ..	1	—	2	1	1	2	2	5	—	2	1	3	20
Infantile Convulsions ... ..	—	1	1	—	—	—	—	1	1	—	1	—	5
Influenza ... ..	1	1	2	2	—	1	1	3	—	—	—	—	11
Typhoid Fever ... ..	—	1	4	10	—	1	—	1	1	1	—	—	19
Prematurity ... ..	—	1	—	1	1	1	—	—	—	—	—	1	5
Acute Enteritis ... ..	—	—	1	3	2	1	3	—	—	—	—	—	10
Infantile Debility ... ..	—	—	—	1	1	1	—	—	1	—	—	—	4
Bacillary Dysentery ... ..	—	—	—	2	3	2	1	1	—	—	—	—	9
Old Age ... ..	—	—	—	—	2	2	2	2	1	1	1	—	11
Miscellaneous ... ..	1	3	3	4	7	—	4	5	3	3	3	3	39
<b>Total ... ..</b>	<b>8</b>	<b>8</b>	<b>16</b>	<b>37</b>	<b>32</b>	<b>16</b>	<b>16</b>	<b>18</b>	<b>8</b>	<b>10</b>	<b>6</b>	<b>8</b>	<b>183</b>

TABLE SHOWING CHIEF CAUSES OF DEATH, AND MONTHLY INCIDENCE

Among the 39 deaths from Miscellaneous Causes, the following are worthy of note: Acute Nephritis 1, (only case during the last two years); Neoplasm, 2; Rheumatic Carditis, 1; Diabetes, 1; Cirrhosis of Liver, 3; Meningitis, 3; Encephalitis, 1.

*Death Rate.* The death rate was 20.3 as compared to 12.7 last year, an increase of 7.6 per 1,000 deaths.

2. *Infantile Mortality:* The following table shows the Infantile Mortality, the general age-incidence of deaths, and the deaths due to the three chief causes of death this year. Infantile Mortality has been, in proportion, slightly lower than last year, the number of deaths below 5 years having been 51.9% of the total as compared to 56.3% last year.

TABLE SHOWING INFANTILE MORTALITY AND AGE-INCIDENCE OF DEATHS

	Gastro- Enteritis	Typhoid fever	Tuber- culosis	Other Causes
6 weeks or under ... ..	—	—	—	20
Under 1 year but over 6 weeks	8	—	—	26
1 to 2 years ... ..	9	—	1	14
2 to 3 ,, ... ..	4	—	—	8
3 to 5 ,, ... ..	—	—	1	4
5 to 10 ,, ... ..	2	5	4	6
10 to 20 ,, ... ..	—	6	3	3
20 to 50 ,, ... ..	—	8	9	15
50 to 70 ,, ... ..	—	—	2	7
Over 70 ,, ... ..	1	—	—	17
<b>Total ... ..</b>	<b>24</b>	<b>19</b>	<b>20</b>	<b>120</b>

The following were the chief causes of death among children:

Acute Enteritis	...	...	...	10
Acute Bronchitis and Broncho-pneumonia			...	11
Bacillary Dysentery	...	...	...	3
Ascariasis	...	...	...	7
Gastro-Enteritis	...	...	...	23
Infantile Convulsions	...	...	...	4
Influenza	...	...	...	9
Marasmus and Debility			...	14
Prematurity	...	...	...	5
Tuberculous Peritonitis	...	...	...	1
Tuberculous Tracheo-Bronchial Adenopathy			...	1
Tetanus Neonatorum	...	...	...	2
Miscellaneous	...	...	...	5
				—
			Total	95
				—

*Births*: There were 383 live births during the year, an increase of three over 1933. The number of still births was the same (eleven).

#### VIII.—CONCLUSION AND RECOMMENDATIONS

1. *Compulsory Latrines*: In view of the extensive soil pollution, of the increase of Ankylostomiasis, and of the fact that Bacillary Dysentery is now endemic in the island, it is necessary to enforce a safer and more regular disposal of human excreta than has so far been the practice. Persuasive methods will take too long to be effective and have lamentably failed up to now. Further and more extensive soil-pollution can only be prevented by prompt action in this direction.

Where a regular night-soil service cannot be maintained, pit latrines are the only solution. These are not always possible because of the nature of the subsoil, e.g., water at Camp du Roi and Acacia, and rock in some parts of Oyster Bay, but they are quite feasible in the majority of cases. I suggest that the building of a satisfactory latrine be made a *sine qua non* for any residential lease, and that help in kind from Government be granted if necessary. I do not think that enforcing the building of a pit-latrine, which, in the majority of cases need only consist of a hole of requisite depth, and of a light screen round it, can be considered a hardship. More difficulty is to be anticipated in places like Port Mathurin, where the inhabitants cannot always afford the night-soil fee, and where pit-latrines are not possible; in this case, the projected building of public latrines will help to solve the problem.

2. *Housing*: It is with concern that one views the conversion of certain dilapidated houses in Port Mathurin into tenements which, as a rule, very markedly depart from the usual standard of cleanliness observed in individual

huts. These, the future slums of the town, are nuclei for further sanitary problems. The erection of separate huts should be encouraged, and any houses in such bad condition that they are unfit for human habitation be certified as such, and their occupation prohibited until they are repaired. I understand however, that in the present state of the law relating to Rodrigues, legislation will be necessary before the problem can be satisfactorily tackled.

3. *Repairs to Hospital* : Further repairs to Port Mathurin Hospital will be necessary within a year, and, if possible, extension of the building, as already advocated last year. The Hospital latrines, in particular, require re-modelling. In their present condition it is difficult to keep them clean.

4. *Appointment of Temporary Warder to be made permanent* : The temporary appointment of an extra warder at Port Mathurin Hospital will soon be at an end. The staff of Port Mathurin and Mount Lubin Hospitals have been of considerable help in some of the investigations mentioned in Section VI. Further search for Anopheles will be necessary during the coming year ; one of the Dispensers at Port Mathurin Hospital might be trained for this work and should prove a valuable help to the G.M.O. For this reason, as well as other reasons mentioned in last year's report, and in view of this year's events, I recommend that the present temporary appointment be made permanent.

5. *Provision of Motor-Boat for G.M.O. and Magistrate* : The lack of a motor-boat and of rapid means of transport in the Dependency has been keenly felt during the year, especially during the epidemics.

6. *The question of local "Midwives"* : The present system of confinements by local "midwives" is unsatisfactory. The majority are very ignorant, and though maternal mortality in Rodrigues has been very low during the last two years, the midwives are badly in need of instruction, particularly as regards the care of the newborn. Umbilical Sepsis is common, and there have been two fatal cases of Tetanus Neonatorum this year. In at least one other case, still-birth has been the result of the midwife's inefficiency. Though every opportunity is taken to teach them, this can only result in their grasping the barest elements of obstetric knowledge.

After two years' experience of their work, I have come to the conclusion that:

1. All persons practising midwifery should attend a course of instruction, and satisfy the G.M.O. that they have attained at least the standard of Labour Attendant in Mauritius ;
2. The number of midwives should be adequately limited after a while, and a Register kept.

Before the above measures can be taken adequate legislation will probably be necessary.

7. *Conclusion* : Sanitary conditions in Rodrigues cannot be said to have been satisfactory during the greater part of the year. It is at least some comfort to reflect that the chief causes for this have been introduced from outside, and, under the circumstances, were not locally preventible. During the last two months, however, there have been definite signs of improvement, and the population seems to be well on the way to the original high standard of health.

It has been my privilege to witness normal sanitary conditions in the island in 1933, and an entirely different state of affairs in 1934. The effect of this year's events has been to bring out the salient weaknesses of the island from the Medical and Sanitary point of view; it is in an attempt to strengthen or otherwise favourably modify these weaknesses that the above recommendations are made. It is hoped that some of them will be capable of execution during the coming year.

It is with pleasure that I render thanks to all who have assisted me during the past year, notably, to the late Magistrate for Rodrigues, R. Brouard Esq., for his unfailing interest in medical affairs; to Fathers Le Gault and Mc. Govern, and the Staff of La Ferme School for their able help during the Typhoid Fever epidemic; and to my Staff, whose work has been excellent throughout. I wish to record my deep appreciation of the services rendered by Dispensers F. Larché, and L. Joseph who, during the six months following the return of the labourers from Reunion have tackled the situation in a way which does credit to their ability and to their high sense of devotion to duty.

20th January, 1935.

E. H. MADGE,

*Government Medical Officer, Rodrigues.*

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