Report of the Director of Medical and Sanitary Services / [Ceylon].

CEYLON.

PART IV.—EDUCATION, SCIENCE, AND ART (C).

Administration Report of the Director of Medical and Sanitary Services for 1929.

(Dr. J. F. E. BRIDGER, Esq.)

OCTOBER, 1930.

Ordered by His Excellency the Governor to be Printed, September 19, 1930.

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Colombo, April 15, 1930.

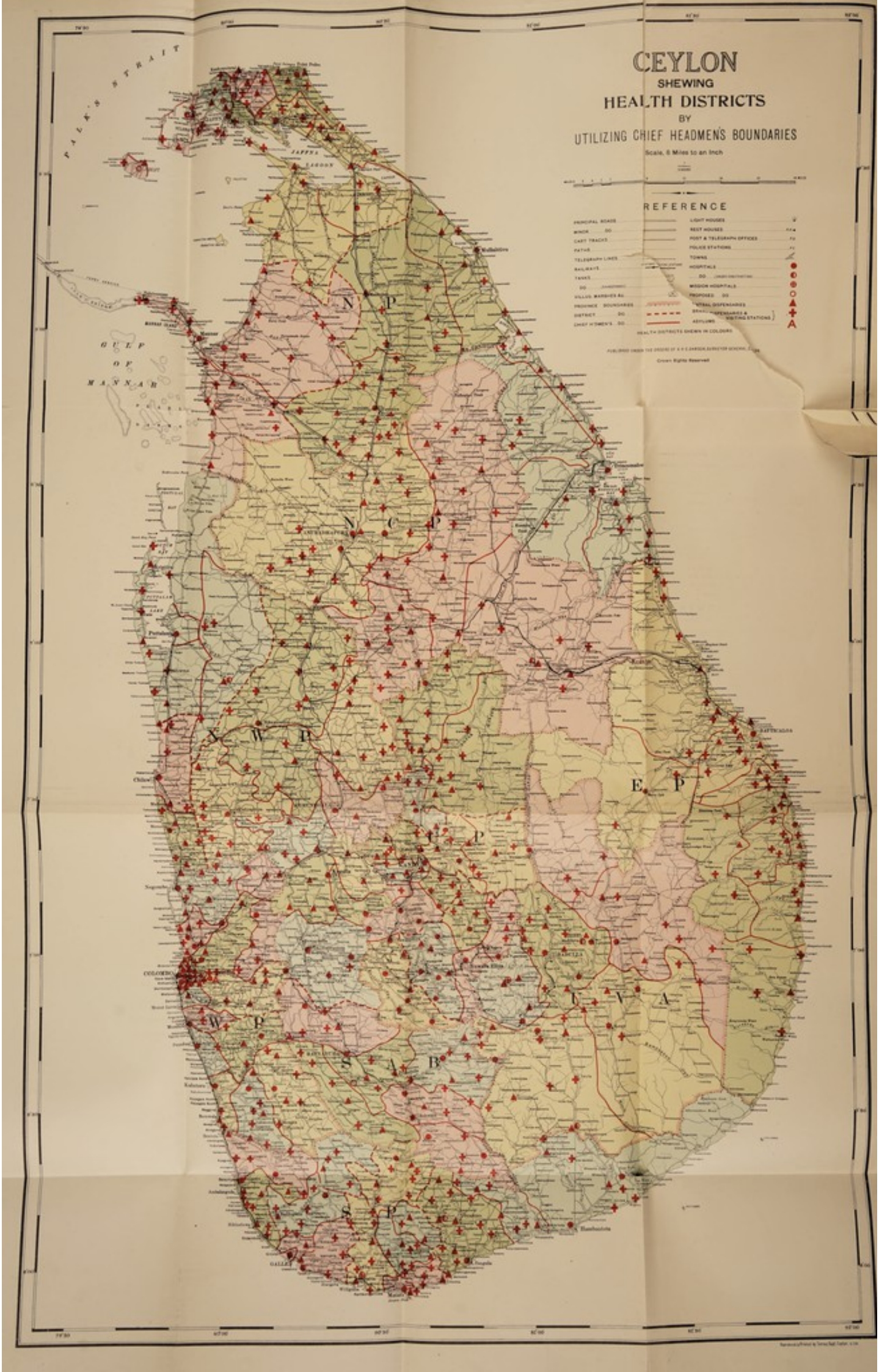
MEDICAL AND SANITARY REPORT, 1929.

SIR,—I HAVE the honour to submit for the information of His Excellency the Governor, and for transmission to the Right Honourable the Secretary of State, the medical report on the health and sanitary conditions of Ceylon for the year ending December 31, 1929, together with the returns, &c., appended thereto.

I have the honour to be, Sir,
Your obedient Servant,

J. F. E. BRIDGER,
Director of Medical and Sanitary Services.

The Hon. the Colonial Secretary.


CEYLON
SHEWING
HEALTH DISTRICTS
BY
UTILIZING CHIEF HEADMEN'S BOUNDARIES
Scale, 6 Miles to an Inch
REFERENCE
PALK'S STRAIT
GULF OF MANNAR
JAFFNA LAGOON
N P
N C P
N W P
E P
C P
U V A
W P
S A B
S P
COLOMBO
Kandy
Nuwara Eliya
Batticaloa
Hambantota
Galle

M 171/30

DEPARTMENT OF MEDICAL AND SANITARY SERVICES.

REPORT OF THE DIRECTOR OF MEDICAL AND SANITARY SERVICES FOR THE YEAR 1929.

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I.—ADMINISTRATION.

(*a*) (1) *Staff on December 31, 1929.*

1 Director of Medical and Sanitary Services.
1 Deputy Director of Medical and Sanitary Services.
1 Assistant Director of Medical Services.
1 Assistant Director of Sanitary Services.
1 Administrative Secretary.
1 Accountant.
1 Assistant Accountant.

Medical Side.

1 Medical Superintendent, General Hospital, Colombo.
1 Medical Superintendent, Lunatic Asylum, Angoda.
1 Medical Superintendent, Leper Asylum, Hendala.
1 Medical Superintendent, Civil Hospital, Kandy.
1 Medical Superintendent, Civil Hospital, Galle.
9 Provincial Surgeons.
1 Medical Officer in Charge, Anti-Tuberculosis Institute, Colombo.
1 Medical Officer in Charge, Lady Havelock and Lady Ridgeway Hospitals, Colombo.
1 Radiologist, General Hospital, Colombo.
1 Pathologist, General Hospital, Colombo.
1 Medical Officer in Charge, Dental Institute, Colombo.
65 Medical Officers in Grade I. (1 of these is a woman).
246 Medical Officers in Grade II. (8 of these are women).

Sanitary Side.

3 Inspecting Medical Officers of Estates.
3 Assistants to Inspecting Medical Officers of Estates (Medical Officers in Grade II.)
2 Senior Medical Officers of Health.
7 Medical Officers of Health, Grade I.
19 Medical Officers of Health, Grade II.
1 Superintendent, Ankylostomiasis Campaigns (Medical Officer, Grade I.).
8 Medical Officers, Ankylostomiasis Campaigns (Medical Officers, Grade II.).
1 Superintendent, Anti-Malaria Campaigns.
4 Medical Officers, Anti-Malaria Campaigns (Medical Officers, Grade II.).
5 School Medical Officers (4 in Grade I. of Medical Officers and 1 in Grade II.).
1 Superintendent of Health Education Division.
1 Medical Officer (a woman) for Maternity and Child Welfare work.
*6 Sanitary Engineers.
30 Sanitary Inspectors, Class I.
223 Sanitary Inspectors, Class II.
3 Draughtsmen (Sanitary Engineering Division).

Research.

1 Director of Bacteriological and Pasteur Institute.
1 Bacteriologist.
1 Assistant Bacteriologist (Medical Officer, Grade II.).
29 Laboratory Assistants.
1 Medical Entomologist.
14 Entomological Assistants.
9 Laboratory Attendants.

Nursing Staff.

European—

8 Matrons.
1 Assistant Matron.
32 Sisters.

Religious (European)—

6 Mothers.
95 Sisters.

Ceylonese—

5 Public Health Nurses.
76 Matrons.
146 Nurses.
151 Pupil Nurses.
87 Hospital and Health Unit Midwives.
26 Pupil Midwives.

Clerical Staff.

General Branch, Head Office—

1 Chief Clerk, Special Class.
2 Clerks, Class I.
36 Clerks in Classes II. and III.
1 Stenographer.
1 Telephone Clerk.

Financial Branch, Head Office—

2 Clerks, Class I.
44 Clerks in Classes II. and III.

Branch Offices—

10 Clerks of the Provincial Surgeons (2 in the Office of the Provincial Surgeon, Western Province).
15 Clerks of the Medical Officers of Health.
3 Clerks, General Hospital, Colombo.
20 Clerks, Civil Medical Stores.
3 Clerks, Lunatic Asylum, Angoda.
3 Clerks of the Inspecting Medical Officers of Estates.
1 Clerk, Office of the Medical Entomologist.
6 Clerks, Health Unit Offices.
1 Clerk, Dental Institute.
2 Clerks, Bacteriological Institute.
2 Clerks, Sanitary Engineer's Office.
1 Clerk, Office of the Senior Medical Officer of Health.
1 Clerk, Kandy Hospital.
1 Clerk, Office of the Superintendent, Anti-Malaria Campaigns.
1 Clerk, Victoria Memorial Eye Hospital.

Apothecaries.

15 Apothecaries in Special Class.
95 Apothecaries in Class I.
270 Apothecaries in Class II.
3 Acting Officers.

Vaccination.

1 Officer in Charge, Vaccine Establishment (Post held by Bacteriologist).
2 Laboratory Assistants (Vaccine Establishment).
7 Depôt Assistants and Cleaners.
9 Inspectors of Vaccination.
33 Male Vaccinators, Class I.
107 Male Vaccinators, Class II.
17 Female Vaccinators.

Civil Medical Stores.

1 Superintendent and Chief Storekeeper.
1 Assistant Superintendent.
1 Additional Storekeeper.
7 Overseers.

* Mr. B. R. Dyer, Sanitary Engineer in charge of the Sanitary Engineering Division, has been lent to this Government by the International Health Division of the Rockefeller Foundation for a term of 3 years.

Opium Branch.

1 Opium Storekeeper.
12 Opium Depôt Clerks.
23 Opium Sellers.

Miscellaneous.

3 Hospital Stewards in Special Class.
5 Hospital Stewards in Class I.
37 Hospital Stewards in Class II.
2 X'ray Assistants, General Hospital.
4 Hospital Stores Clerks.
5 Hospital Admitting Clerks.
4 Bookbinders.
7 Hospital Overseers.
1 Agricultural Overseer, Lunatic Asylum.

Minor Employees.

Chauffeurs
Laboratory Cleaners
Packers
Peons
Overseers
Dispensary Orderlies
Caretakers
Male Attendants
Female Attendants
Disinfecting Orderlies
Tappal Coolies
Itinerating Coolies
Latrine Coolies
Garden Coolies
Burial Coolies
Nurses' Ayahs
Barbers, Dhobies, &c.

} About 3,550.

(2) *Promotions, Appointments, &c.*

Dr. E. P. Aserappa and Dr. F. R. Alles, Provincial Surgeons; Dr. R. Pestonjee, Medical Superintendent, Leper Asylum, Hendala; and Dr. C. Somasunderam, Medical Officer, Grade II., retired from the service on pension, with effect from October 23, 1929, August 4, 1929, May 2, 1929, and November 29, 1929, respectively. Dr. W. G. Wignarajah, Medical Officer, Grade II., resigned from the service, with effect from July 1, 1929. Dr. C. Sivasithamparam was appointed Medical Superintendent, Leper Asylum, Hendala, with effect from May 2, 1929. Mr. F. Leach, C.C.S., assumed duties as Administrative Secretary on April 22, 1929, *vice* Mr. G. M. Rennie, C.C.S., who proceeded on long leave. Drs. T. Ramasamy and G. C. Philips were promoted from Grade II. of Medical Officers to Grade I., with effect from December 1, 1928, and May 2, 1929, respectively. Dr. R. W. C. Tambiah was promoted from Grade II. of Medical Officers of Health to Grade I., with effect from December 4, 1929. Mr. G. Rajadurai, B.A., A.C.A., was appointed Assistant Accountant, with effect from May 1, 1929, *vice* Mr. J. L. Stanislaus transferred to the Colonial Treasury. Mr. J. H. de Saram was appointed Superintendent of Health Education Division, with effect from October 16, 1929. Messrs. P. O. David and K. Subramaniam were appointed Assistant Sanitary Engineers, with effect from February 1, 1929, and March 7, 1929, respectively. Mr. C. F. X. Pinto was appointed Assistant Superintendent, Civil Medical Stores, with effect from February 1, 1929.

One European Nursing Sister and 1 Religious Nursing Mother retired from the service. Four European Nursing Sisters resigned after the termination of their contract period, and 4 Religicus Sisters also resigned during the year. Seven European Nursing Sisters and 7 European Religious Sisters arrived in the Island and assumed duties during the year. The death of a European Nursing Sister while on leave in England is recorded with regret.

(3) *Officers on Leave.*

Dr. E. P. Aserappa, Provincial Surgeon, who was on long leave, and Mr. H. N. Worth, Deputy Sanitary Engineer, who proceeded to America on a Rockefeller Foundation Fellowship to study Sanitary Engineering, returned to the Island and resumed duties on January 21, 1929, and September 30, 1929, respectively.

Mr. G. M. Rennie, C.C.S., Administrative Secretary, Dr. H. U. Leembruggen, Medical Superintendent, General Hospital, Colombo, and Dr. W. E. de Silva, Medical Superintendent, Kandy Hospital, proceeded on long leave to Europe on April 24, 1929, May 24, 1929, and August 17, 1929, respectively.

Twenty-one Medical Officers and 2 Medical Officers of Health were on leave in Europe at the beginning of the year, 13 Medical Officers and 3 Medical Officers of Health proceeded to Europe on leave, and 20 Medical Officers and 2 Medical Officers of Health returned to the Island during the course of the year.

Two European Nursing Sisters and 2 European Religious Sisters proceeded to Europe on leave, and 2 European Nursing Sisters returned to the Island during the year.

Six Ceylonese Nurses who proceeded to England in 1928 for training in certain hospitals at Government expense are still in training.

(*b*) *List of Ordinances affecting Public Health enacted during the Year.*

Owing to the prevalence of rabies in Ceylon (there were 1,479 cases treated in the Pasteur Institute during the year) Ordinance No. 6 of 1929—an Ordinance to amend the Rabies Ordinance, 1893—was passed and brought into operation from April 7, 1929.

Ordinance No. 17 of 1929—an Ordinance to amend and consolidate the law relating to poisons, opium, and dangerous drugs—was passed by the Legislative Council and assented to by His Excellency the Governor on October 5, 1929. It is expected that it will be brought into operation early in 1930.

The Draft Ordinance to amend the Ordinance for the better Preservation of Public Health and Suppression of Nuisances in Rural areas passed its first reading in July, 1929.

This Ordinance, when introduced, will enable this Department to enforce the Nuisances Ordinance in Rural areas with legal authority which has hitherto been absent.

The Ordinance for the Prevention of the Breeding and Harbouring of Mosquitoes passed its second reading early in 1929 and was referred to a Select Committee of the Legislative Council. The Select Committee's report was submitted in due course and was considered by the Governor in Executive Council, and it was decided to ask the Legislative Council to allow its recommittal to the Select Committee for further consideration of the question of the extent of the liability of the owner for anti-malaria measures in his premises. The Ordinance was accordingly recommitted to the Select Committee, with whom it is at present.

(c) Financial.

Revenue and Expenditure in 1928-29 Financial Year (*i.e.*, October 1, 1928, to September 30, 1929), under Head 37, Department of Medical and Sanitary Services.

Expenditure.	Rs.	c.
1. Personal Emoluments	5,479,375	74
2. Diets	1,923,811	22
3. Equipment and contingencies	576,615	21
4. Special equipment	66,960	23
5. Medicines and instruments	927,155	92
6. Travelling	648,204	47
7. Transport of stores, &c.	68,586	11
8. Rents	81,213	14
9. Grants	43,793	27
10. Epidemics	40,097	1
11. Rebates payable under the Medical Wants Ordinance	189,155	0
12. Purchase of opium, &c.	65,929	42
13. Earth filling, &c., in connection with anti-malarial measures	13,396	76
14. Payments to Municipal Council, Colombo, towards destruction of rats	17,813	92
15. Incidental expenses	10,460	0
16. Public Health Scholarships	13,098	28
17. Cultivation of land attached to the Lunatic Asylum, Angoda	7,410	12
18. Investigation of snake and other possible reptile poison	66	15
19. Purchase of radium, &c.	38,478	58
— Investigation of melioidosis in cattle	1,309	46
— Outfit allowances to nurses proceeding to England	3,537	17
Total	10,216,467	18

Revenue.	Rs.	c.
1. Hospital and dispensary receipts	441,088	69
2. Sale of drugs and medical requisites	9,878	43
3. Sale of drugs under the Medical Wants Ordinance	21,215	92
4. Medical aid dues, maintenance and visits	156,168	29
5. Sale of opium	330,013	11
6. Medical aid dues, export duties	1,689,170	69
Total	2,647,535	13

The following table shows the expenditure for the last six years:—

	Rs.	c.		Rs.	c.		Rs.	c.
1923-24	7,250,657	20	1925-26	8,598,923	3	1927-28	10,211,104	32
1924-25	7,798,824	24	1926-27	9,104,455	33	1928-29	10,216,467	18

The above figures do not include the cost of new buildings and additions and improvements to, and maintenance of, existing ones.

II.—PUBLIC HEALTH.

A.—General Remarks.

In the Western Province an outbreak of malaria occurred towards the end of the year after the north-east monsoon rains, and its incidence was most severe in the Gampaha and Avissawella areas. An epidemic of influenza prevailed during the latter part of the year chiefly in the northern half of this Province. Enteric fever occurred throughout the year and was most prevalent in the coastal towns of Kalutara, Panadure, Moratuwa, and Negombo in which the disease is endemic. There was a severe epidemic in Ingiriya and Yala areas in Kalutara District during the latter part of 1929. A severe epidemic of dysentery occurred at the end of 1929 in the Moratumulla, Panadure, and Nugegoda areas. On the whole the general health of the Province was good.

In the Central Province there was the usual outbreak of malaria fever in North Matale and Dumbara Valley after the November rains. There were two outbreaks of plague, one at Uda Pussellawa with 2 cases, one at Galaha with 12 cases. 255 cases of enteric fever were treated in hospitals during the year.

In the Southern Province malarial fever broke out in epidemic form in nearly all parts of the Province in the last quarter of the year. Measles and chickenpox occurred in various districts at different periods. Bubonic plague occurred in Galle town and septicaemic plague in Matara. In other respects the general health of the Province was satisfactory.

In the Northern Province malaria broke out in severe epidemic form during the early months of the year. Two cases of plague occurred during the year. Chickenpox and measles, influenza, enteric fever, and dysentery prevailed to a certain extent. On the whole the health of the Province was not satisfactory in 1929.

In the North-Western Province there was the usual epidemic of malaria following on the north-east rains, but it was not so severe as in 1928.

In the Province of Uva there was an outbreak of cholera in January, 1929. An outbreak of dysentery occurred at Baduluwella in December, 1929. Malaria was prevalent throughout the year, and there were mild outbreaks in the last quarter of the year.

In the Province of Sabaragamuwa cholera occurred in Ratnapura town in the early part of the year and spread to the villages on the west. A severe wave of influenza spread all over the Province during the north-east monsoon, and malaria followed in its wake. Dysentery also prevailed, especially on estates.

In the Eastern Province there was an epidemic of malaria throughout the whole Province during the first quarter of 1929. Dysentery prevailed in the second and fourth quarters of the year. The health of the Province was otherwise satisfactory.

In the North-Central Province malaria prevailed in severe epidemic form in the early months of the year but the epidemic of malaria which normally occurs in November was not so severe as was expected. The number of cases of malaria fever treated at the hospitals and dispensaries in the Province during the year was considerably larger than in 1928.

Prevalence of Sickness in the different Seasons of the Year.—The wet months during which the south-west and north-east monsoons prevailed were again the unhealthy months. During the early part of the year and during the latter part of the year malaria was bad in every Province. Particulars of the outbreaks are given under " Communicable diseases " in this section.

Relative Mortality of the different Seasons.—The figures given in this section under " Vital Statistics " show that fewer deaths occurred in the months of May, June, September, and October. The months after the north-east rains have set in, viz., January, February, and December, have a high death rate.

1.—General Diseases.

Of the diseases treated among in-patients at hospitals the most prevalent general diseases are rheumatism, intestinal disorders (diarrhoea and enteritis), bronchitis, and pneumonia. Malignant growths prevail to some extent, and year by year the number of patients who seek hospital treatment for cancer is increasing.

The following table shows the morbidity and mortality of the general diseases treated among in-patients at the hospitals in the whole Island during the years 1925 to 1929:—

	1925.	1926.	1927.	1928.	1929.
Rheumatism—					
Cases ..	4,535..	4,398..	4,365..	5,043..	5,218
Deaths ..	39..	20..	20..	22..	38
Intestinal Disorders—					
Cases ..	4,919..	4,991..	4,764..	4,664..	5,724
Deaths ..	1,186..	1,149..	1,015..	972..	1,022
Bronchitis—					
Cases ..	4,032..	4,189..	4,615..	5,220..	5,043
Deaths ..	187..	192..	175..	190..	183

	1925.	1926.	1927.	1928.	1929.
Pneumonia—					
Cases ..	5,357..	5,650..	6,168..	6,509..	6,239
Deaths ..	1,887..	2,011..	1,900..	2,548..	2,228
Malignant Growths—					
Cases ..	400..	407..	478..	687..	741
Deaths ..	63..	106..	89..	87..	126

The total number of deaths from " Cancer or Malignant Diseases " reported by the Registrar-General in respect of the whole Island was 451 during the year 1929, as compared with 551 in 1928, 540 in 1927, 509 in 1926, and 406 in 1925.

Most of the operable cases of cancer resort to the General Hospital, Colombo, for treatment; of a total of 741 cases of cancer dealt with in all the hospitals 438 were treated in the General Hospital, Colombo.

The site of the disease in the majority of cases was in the region of the buccal cavity, the commonest site being the cheek. The male genital organ and the uterus were also common sites.

The analysis of cases treated is given on page 10.

2.—Communicable Diseases.

(a) Mosquito or Insect-borne.

(1) *Malaria.*—There were 37,591 cases of malaria admitted as in-patients to hospitals during the year under review and 1,629,586 cases treated at dispensaries and out-patients departments of hospitals. Tertian malaria was most common among the hospital admissions as well as among the dispensary cases. The mortality among the hospital admissions was very low, as it was last year. Malarial cachexia comes next with a higher mortality among the hospital admissions. There were some cases of aestivo-autumnal and cerebral types with a high mortality rate among the latter.

Malaria is endemic in all the Provinces to a greater or a lesser degree and is the most prevalent disease in the Island. Several severe epidemics of malaria occurred during the year, breaking out in nearly all the Provinces after the north-east rains—in the Western Province in the Gampaha, Henaratgoda, and Avissawella areas; in the Central Province in the Matale District; in the Southern Province in Ambalangoda-Galle District and in Hambantota District; and in the Northern, North-Western, Eastern, and North-Central Provinces. In all these epidemics medical aid was rendered by special Itinerating Medical Officers and quinine distributors. Quinine was also served as a prophylactic through Vaccinators, School Managers, and Headmen.

Cancer Returns of In-patients in Hospitals for 1929.

SINHALESE.

Age.	Sex.	Cheek. C.	Cheek. D.	Tongue. C.	Tongue. D.	Penis. C.	Penis. D.	Breast. C.	Breast. D.	Uterus. C.	Uterus. D.	Palate, Jaw, and Floor of Mouth. C.	Palate, Jaw, and Floor of Mouth. D.	Skin and Extremities. C.	Skin and Extremities. D.	Stomach. C.	Stomach. D.	Caecum. C.	Caecum. D.	Rectum. C.	Rectum. D.	Liver. C.	Liver. D.	Intestines. C.	Intestines. D.	Ovary. C.	Ovary. D.	Oesophagus. C.	Oesophagus. D.	Lymph Glands. C.	Lymph Glands. D.	Other Sites. C.	Other Sites. D.	Sites not specified on Notes. C.	Sites not specified on Notes. D.	Total. C.	Total. D.
20–30	Male	7	1	—	—	9	—	—	—	—	—	2	1	8	1	—	—	—	—	1	—	1	—	—	—	—	—	—	—	1	—	12	—	—	—	41	3
	Female	2	—	1	—	—	—	4	1	10	4	—	—	2	—	—	—	2	—	—	—	—	—	—	—	1	—	—	—	1	—	—	—	—	—	23	5
31–40	Male	28	4	8	—	22	—	—	—	1	1	2	—	1	—	—	—	—	—	3	—	—	—	2	1	—	—	1	1	3	—	4	2	—	—	75	9
	Female	8	1	4	1	—	—	11	6	39	7	1	—	1	1	—	—	—	—	3	1	2	2	—	—	3	1	—	—	1	—	5	3	—	—	78	23
41–50	Male	31	14	5	2	17	2	—	—	—	—	6	1	6	—	1	1	1	1	—	—	1	1	—	—	—	—	1	—	1	—	5	2	1	—	76	24
	Female	4	—	1	—	—	—	10	—	38	5	1	—	3	1	1	—	—	—	1	1	1	—	1	—	1	1	2	—	—	—	3	1	1	—	68	9
51–60	Male	25	1	2	—	10	—	—	—	—	—	1	—	8	1	—	—	—	—	2	1	1	—	1	1	—	—	1	1	4	1	4	1	—	—	59	7
	Female	14	1	1	1	—	—	1	—	19	1	1	—	1	—	3	—	—	—	1	—	1	—	—	—	3	—	1	—	—	—	5	1	—	—	51	4
61 and upwards	Male	22	2	3	—	10	—	—	—	—	—	3	—	3	—	2	2	—	—	2	—	1	—	—	—	—	—	—	—	1	—	11	3	1	1	59	8
	Female	3	1	—	—	—	—	5	1	3	1	1	1	5	1	—	—	—	—	—	—	1	—	—	—	1	—	—	—	1	—	1	—	—	—	21	5
	Total	144	25	25	4	68	2	31	8	110	19	18	3	38	5	7	3	3	1	13	3	9	3	4	2	9	2	6	2	13	1	50	13	3	1	551	97

TAMILS.

Age.	Sex.	Cheek. C.	Cheek. D.	Tongue. C.	Tongue. D.	Penis. C.	Penis. D.	Breast. C.	Breast. D.	Uterus. C.	Uterus. D.	Palate, Jaw, and Floor of Mouth. C.	Palate, Jaw, and Floor of Mouth. D.	Skin and Extremities. C.	Skin and Extremities. D.	Stomach. C.	Stomach. D.	Caecum. C.	Caecum. D.	Rectum. C.	Rectum. D.	Liver. C.	Liver. D.	Intestines. C.	Intestines. D.	Ovary. C.	Ovary. D.	Oesophagus. C.	Oesophagus. D.	Lymph Glands. C.	Lymph Glands. D.	Other Sites. C.	Other Sites. D.	Sites not specified on Notes. C.	Sites not specified on Notes. D.	Total. C.	Total. D.
20–30	Male	3	—	3	—	2	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	—	1	—	13	—
	Female	4	1	1	—	—	—	—	—	8	3	1	—	1	—	1	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	16	5
31–40	Male	10	—	1	—	1	—	—	—	—	—	2	—	—	—	1	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	17	—
	Female	3	—	—	—	—	—	4	1	10	2	4	—	—	—	—	—	—	—	2	—	—	—	—	—	—	—	1	1	—	—	—	—	—	—	24	4
41–50	Male	4	1	1	1	2	—	—	—	—	—	3	—	—	—	—	—	—	—	—	—	1	1	—	—	—	—	—	—	—	—	2	—	1	—	14	3
	Female	4	—	1	—	—	—	1	—	6	1	3	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	16	1
51–60	Male	6	1	2	2	6	—	—	—	—	—	1	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	—	1	—	19	3
	Female	7	3	—	—	—	—	2	—	4	—	1	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	15	3
61 and upwards	Male	3	1	—	—	—	—	—	—	—	—	1	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5	1	1	—	10	3
	Female	3	—	—	—	—	—	1	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	6	—
	Total	47	7	9	3	11	—	8	1	30	6	18	1	4	—	2	1	—	—	3	—	1	1	—	—	—	—	1	1	—	—	12	1	4	—	150	22

OTHER RACES.

Age.	Sex.	Cheek. C.	Cheek. D.	Tongue. C.	Tongue. D.	Penis. C.	Penis. D.	Breast. C.	Breast. D.	Uterus. C.	Uterus. D.	Palate, Jaw, and Floor of Mouth. C.	Palate, Jaw, and Floor of Mouth. D.	Skin and Extremities. C.	Skin and Extremities. D.	Stomach. C.	Stomach. D.	Caecum. C.	Caecum. D.	Rectum. C.	Rectum. D.	Liver. C.	Liver. D.	Intestines. C.	Intestines. D.	Ovary. C.	Ovary. D.	Oesophagus. C.	Oesophagus. D.	Lymph Glands. C.	Lymph Glands. D.	Other Sites. C.	Other Sites. D.	Sites not specified on Notes. C.	Sites not specified on Notes. D.	Total. C.	Total. D.
20–30	Male	1	—	1	—	1	—	—	—	—	—	1	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3	—
	Female	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	1	—	—	—	—	—	—	—	—	1	1
31–40	Male	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	1	—	—	—	—	3	1
	Female	—	—	1	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	3	1
41–50	Male	3	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	1	1	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	6	1
	Female	—	—	—	—	—	—	2	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4	—
51–60	Male	1	1	1	—	—	—	—	—	—	—	1	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	1	—	—	5	2
	Female	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	2	—
61 and upwards	Male	—	—	—	—	—	—	—	—	—	—	—	—	1	—	2	1	—	—	1	1	—	—	—	—	—	—	—	—	1	—	2	—	—	—	7	2
	Female	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	1	—	2	—	—	—	4	—
	Total	7	1	4	—	1	—	2	—	3	—	2	—	2	—	3	1	1	1	2	1	—	—	1	—	1	1	1	—	4	1	6	1	—	—	40	7

C = Cases. D = Deaths.

The following table shows a comparison of 1929 malaria figures with the figures of 1925, 1926, 1927, and 1928:—

	1925.	1926.	1927.	1928.	1929.
Number of cases treated at dispensaries	785,903	1,061,457	865,594	1,542,029	1,629,586
Cases admitted to hospitals	22,600	29,334	25,146	44,356	37,591
Total number of deaths in hospitals	392	632	488	882	839
Total number of deaths registered for the Island	1,063	1,331	1,331	2,239	2,326

It might be stated that many deaths due to malaria are registered under pyrexia of unknown origin.

The following table shows the hospital admissions on account of malaria in the different Provinces for the past three years:—

	1927.		1928.		1929.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
General Hospital, Colombo	2,501	35	4,462	129	3,268	154
Western Province	2,121	34	5,088	97	2,806	53
Central Province	2,954	78	6,309	125	5,496	97
Southern Province	1,693	35	1,790	31	2,807	49
Northern Province	2,721	35	2,552	39	3,352	60
Eastern Province	1,000	29	1,240	17	1,589	19
North-Western Province	3,189	92	5,486	198	4,044	149
North-Central Province	1,916	40	2,095	39	2,502	49
Province of Uva	3,047	52	5,057	82	4,190	68
Province of Sabaragamuwa	3,871	58	10,157	121	7,433	132
Lunatic Asylum	73	—	120	4	104	9
	25,146	488	44,356	882	37,591	839

Further, a number of cases of malaria in villages remote from hospitals and dispensaries were treated by Itinerating Medical Officers of the Parangi Campaign whose scope of work was extended in 1927 when they were provided with drugs, &c., for the treatment of the more prevalent diseases.

14,186 lb. and 2,246,445 tablets of quinine, which cost Rs. 413,778, were issued free through various agencies for curative and preventive purposes.

The reports of the Superintendent, Anti-Malaria Campaigns, and the Medical Entomologist appear in the appendix to this report. The work done in this connection by the Sanitary Branch of this Department is given in section III. of this report.

(2) *Dengue.*—There was no severe epidemic of dengue during 1929. There were 84 cases in hospitals (of which 80 were in the General Hospital) and 73 cases were treated as out-patients during the year, as against 37 and 313 the previous year. As only a small percentage of those suffering from dengue attend a medical institution for treatment it is not possible to judge the actual prevalence of this disease from the above figures.

(*b*) *Infectious Diseases.*

(1) *Enteric.*—The following table shows the number of cases and deaths for the past five years:—

	1925.	1926.	1927.	1928.	1929.
Hospital cases	1,520	1,352	1,488	1,687	2,010
Hospital deaths	392	361	304	368	472
Total number of deaths for the Island	721	544	510	577	736

The diagnosis of the disease in each of the hospital cases was confirmed by Widal's test. The actual prevalence of the disease cannot be judged from hospital admissions as some cases resort to Ayurvedic treatment, and the number of registered deaths does not indicate the actual mortality from this disease as some deaths from enteric are undoubtedly included amongst those reported as due to pyrexia. There were 18,744 deaths due to pyrexia in 1929, as against 22,616 in 1928.

There was a severe epidemic in Kalutara District in Ingiriya and Yala areas in the Western Province, which Province contributed over a quarter of the total cases treated in hospitals.

(2) *Smallpox.*—The following table shows the number of hospital cases and deaths in the past five years:—

	1925.	1926.	1927.	1928.	1929.
Cases	28	65	27	18	7
Deaths	3	4	5	1	1

Of the total cases reported 4 were from steamers and 3 were recent arrivals from India. Six of the cases occurred in the Western Province and 1 in the Central Province. The latter case was that of an American lady visitor who came to Kandy from Bombay where she had contracted the disease, which proved fatal. It was of the confluent type.

In addition to the above 7 cases there was another non-hospital case in Kandy. The steps taken by the Sanitary Branch of this Department to deal with the cases reported to it are given in section III. and the details of cases treated at the Infectious Diseases Hospital, Angoda, are given in section VI. of this report.

(3) *Diphtheria.*—The following table shows the number of cases and deaths in the past five years:—

	1925.	1926.	1927.	1928.	1929.
Hospital cases	18	20	36	40	35
Hospital deaths	6	6	9	13	11
Total number of deaths for the Island	8	13	11	20	17

Of the 35 cases treated 11 were at the Infectious Diseases Hospital, Angoda; 4 at the Lady Havelock Hospital; 4 at the General Hospital; 9 in Kandy Hospital; 4 in Balangoda Hospital; and 3 in other outstation hospitals. Most of the cases were amongst children.

(4) *Influenza.*—The following table shows the number of cases and deaths in the past five years:—

	1925.	1926.	1927.	1928.	1929.
Number of cases treated at dispensaries	38,519	44,179	55,589	79,785	107,742
Hospital cases	5,711	5,345	6,147	7,237	4,424
Hospital deaths	91	96	112	101	94
Total number of deaths for the Island	1,532	1,090	1,756	1,958	1,918

There has been a marked decrease in the number of hospital cases during this year, and a slight decrease in deaths as compared with last year. The cases treated at dispensaries have increased very much.

(5) *Cholera.*—The following table shows the number of cases and deaths in the past five years:—

	1925.	1926.	1927.	1928.	1929.
Hospital cases	305	56	11	5	19
Hospital deaths	186	47	6*	4*	8
Total number of deaths registered for the Island	189	54	3*	3*	19†

There were in all (including those treated in Government hospitals) 28 cases of cholera with 23 deaths giving a fatality rate of 82.1 per cent.

The distribution of the cases according to locality is as follows:—

Locality.	Cases.	Deaths.
Alutnuwara in Province of Uva	16	11
Ratnapura	11	11
Colombo	1	1
	28	23

The steps taken by this Department to deal with outbreaks are given in section III. of this report.

(6) *Dysentery.*—The following table shows the number of cases and deaths in the past five years:—

	1925.	1926.	1927.	1928.	1929.
Hospital cases	5,478	5,004	5,202	6,190	7,527
Hospital deaths	1,079	862	792	1,034	1,114
Total number of deaths registered for the Island	3,723	3,514	3,144	3,446	4,258

Amoebic dysentery was the most prevalent type. 4,565 cases or 60.6 per cent. of the total number of cases were of this type. Of the bacillary type there were 1,330 cases or 17.7 per cent. of the total number of cases. The mortality rates were 14.7 per cent. and 14.8 per cent., respectively.

Of the hospital cases the following Provinces contributed the majority of the cases:—

Western Province	1,460 cases with 162 deaths	Province of Sabaragamuwa	771 cases with 31 deaths
Central Province	1,071 „ 186 „	Northern Province	665 „ 38 „
Southern Province	779 „ 132 „		

36,994 out-patients were treated for this disease during the year, as against 29,084 during 1928. The distribution of out-patient cases is as follows:—

	Cases.		Cases.		Cases.
Western Province	6,201	Northern Province	5,915	North-Central Province	4,072
Central Province	4,363	Eastern Province	4,717	Province of Uva	1,866
Southern Province	3,621	North-Western Province	3,356	Province of Sabaragamuwa	2,883

These figures show that this disease was prevalent, as in the previous year, in sporadic form in all the Provinces. The necessity for improved and protected water supplies in many districts and towns is urgent.

It is interesting to note that of the total deaths registered in the whole Island from dysentery the percentage among Indian immigrant labourers on estates has decreased considerably in recent years as the following table shows:—

	1924.	1925.	1926.	1927.	1928.	1929.
Total number of deaths registered for the Island	4,080	3,723	3,514	3,144	3,446	4,258
Total number of deaths among Indian immigrant labourers	2,402	2,470	2,132	1,926	1,723	1,384
Percentage of deaths among Indian immigrant labourers to the total number of deaths in the Island	58.8	66.3	60.6	61.2	50.0	32.5

These figures appear to show that the policy of providing protected supplies of good water on estates and the proper removal of latrine deposits are achieving satisfactory results.

(7) *Leprosy.*—During the year 1,198 cases with 86 deaths, as against 1,054 cases with 69 deaths in 1928, were treated at the Government hospitals including the 2 Asylums which are maintained in the Island for the segregation of lepers under the Leper Ordinance, No. 4 of 1901, 1 at Hendala in the Western Province and the other on the Island of Mantivu in the Eastern Province. A report on these 2 Leper Asylums and on the results of the treatment on the leper patients is given in section VII.—Prisons and Asylums.

As regards the question of the establishment of a Leper Settlement to which reference was made in last year's report a site has finally been selected at Pannichavillu in the North-Western Province, and instructions have now been received from Government for plans and estimates to be prepared.

(8) *Parangi (Yaws).*—The following table shows the number of cases and deaths in the past five years:—

	1925.	1926.	1927.	1928.	1929.
Hospital cases	4,897	4,386	3,482	2,667	2,111
Hospital deaths	19	14	11	2	4
Number of cases treated at dispensaries	42,320	39,782	36,131	34,171	24,841
Total number of deaths for the Island	15	12	12	9	10

* Some deaths may have been registered under acute diarrhoea before the disease was bacteriologically diagnosed.

† Presumably 4 deaths have not been registered as the actual number of deaths from cholera was 23.

The steady decrease in the number of admissions to hospitals and of out-patients at dispensaries and of the mortality from the disease is directly due to the success of the intensive campaigns carried out by the Itinerating Medical Officers appointed primarily for the treatment of parangi.

The distribution of the disease judged from hospital returns of cases treated is shown in the following table:—

	1926.	1927.	1928.	1929.
General Hospital, Colombo ..	305..	222..	54..	33
Lunatic Asylum, Angoda ..	— ..	1..	2..	4
Western Province ..	456..	352..	302..	225
Central Province ..	525..	499..	493..	426
Southern Province ..	633..	514..	301..	230
Northern Province ..	213..	195..	133..	71
Eastern Province ..	228..	199..	122..	125
North-Western Province ..	414..	299..	225..	161
North-Central Province	556..	257..	258..	228
Province of Uva ..	395..	431..	294..	260
Province of Sabaragamuwa ..	661..	503..	483..	348
	4,386	3,482	2,667	2,111

The dispensary cases as regards Provinces were as follows:—

	1928.	1929.
Western Province ..	1,708 ..	1,554
Central Province ..	1,515 ..	1,683
Southern Province ..	6,062 ..	4,201
Northern Province ..	252 ..	560
Eastern Province ..	1,998 ..	1,592
North-Western Province ..	10,231 ..	5,839
North-Central Province ..	8,927 ..	7,607
Province of Uva ..	793 ..	617
Province of Sabaragamuwa ..	2,685 ..	1,188

During the year under review 24,855 injections were given to 15,670 patients, as against 22,547 injections and 11,663 patients in 1928. Most of the patients attended a second and a third time for injections, but some, perhaps satisfied and contented with the immediate relief effected by the first injections, did not attend for the subsequent injections essential to obtain a radical cure.

The decrease in the number of cases treated in hospitals and at dispensaries is due to the marked decrease in the incidence of the disease. At present thirteen Itinerating Medical Officers in the various Provinces deal with this disease which is reported by them as well under control.

(9) *Plague*.—The following table shows the number of cases and deaths in the past five years:—

	1925.	1926.	1927.	1928.	1929.
Hospital cases ..	68 ..	16 ..	117 ..	67 ..	41
Hospital deaths ..	63 ..	15 ..	106 ..	60 ..	29

Of the 41 cases reported during the year, 29 were from the Colombo town (2 of which were imported), 5 from the Southern Province, 5 from Central Province (2 at Kandy, 2 at Uda Pussellawa, and 1 at Deltota), and 2 from the North-Western Province.

There have been in all (including the cases treated in hospitals) 80 cases during the year, of which 74 proved fatal, giving a fatality rate of 92.5 per cent.

The distribution of the cases according to locality is as follows:—

Locality.	Cases.	Deaths.
Colombo ..	40 ..	36
Galaha ..	12 ..	12
Galle ..	6 ..	5
Horana ..	1 ..	1
Jaffna ..	1 ..	1
Kandy ..	2 ..	2
Matale ..	1 ..	1
Matara Gravets ..	13 ..	12
Naula, Matale ..	1 ..	1
St. Margaret's, Uda Pussellawa ..	2 ..	2
Talaimannar ..	1 ..	1
	80	74

The measures taken by this Department to deal with outbreaks reported to it are given in section III. of this report.

(10) *Tubercular Diseases of the Lungs*.—The following table shows a comparison between the figures for 1929 and the figures for the previous five years:—

	1924.	1925.	1926.	1927.	1928.	1929.
Hospital cases	3,656 ..	4,155 ..	4,363 ..	4,247 ..	4,120 ..	4,239
Hospital deaths	860 ..	1,000 ..	1,074 ..	1,027 ..	1,110 ..	648
Total number of deaths registered for the Island ..	3,235 ..	3,241 ..	3,309 ..	3,353 ..	3,380 ..	3,532

Three special institutions—the Anti-Tuberculosis Institute, Colombo (outdoor), the Kandana Sanatorium, Western Province, for early cases, and the Ragama Tuberculosis Hospital, Western Province, for advanced and chronic cases—are maintained to deal with this disease. A large number of cases is also treated in the Tuberculosis Wards of the General Hospital, Colombo.

The report of the Secretary of the King Edward VII. (Memorial) Anti-Tuberculosis Fund is given in section X. of this report. The Anti-Tuberculosis Institute, Colombo, and the Kandana Sanatorium were built from money provided by that Fund.

(c) *Helminthic Diseases.*

Ankylostomiasis.—The following table shows a comparison of 1929 figures with the figures for the previous five years:—

	1924.	1925.	1926.	1927.	1928.	1929.
Number of cases treated at dispensaries ..	153,488..	147,528..	152,195..	170,818..	177,372..	178,041
Cases admitted to hospitals	11,344..	12,618..	13,040..	12,600..	12,921..	12,129
Total number of deaths in hospitals ..	1,030..	923..	897..	789..	941..	849
Total number of deaths registered for the Island	1,857..	2,119..	2,121..	1,943..	2,161..	2,172

A reference to the report of the Superintendent, Ankylostomiasis Campaigns, given in the appendix to this report will show that the Campaign Officers have covered a large portion of the Island, so far as the treatment of school children and estate labourers is concerned. The treatment of villagers is shown in the dispensary and hospital figures given above. In some districts treatment was afforded to villagers at their own doors by the Itinerating Medical Officers.

The results of the Ankylostomiasis Campaigns are now showing themselves, and some of the wards in hospitals like Lindula, Dimbulla, Dikoya, and Agrapatna are now almost empty for the greater part of the year.

B.—Vital Statistics.

	1927.	1928.	1929.
I.—Ceylonese Population (*i.e.*, the total population of the Island, less the European population and the Indian immigrant population on estates) :—			
Estimated population on December 31	4,585,490	4,695,580	4,738,531
Total births	181,223	188,377	172,796
Birth rate per thousand	39.52	40.9	36.8
Total deaths	93,454	112,426	116,819
Death rate per thousand	20.38	24.4	24.9
Infant mortality (rate per thousand births registered)	142	173	183
II.—European Population (including officials) :—			
Estimated population on December 31	11,447	8,801	8,873
Total births	168	167	147
Birth rate per thousand	13.99	19.1	16.6
Total deaths	75	88	75
Death rate per thousand	6.25	10.1	8.5
Infant mortality (rate per thousand births registered)	24	12	14
III.—Indian Immigrant Population on Estates :—			
Estimated population on December 31	691,855	717,480	731,177
Total births	24,079	24,767	25,064
Birth rate per thousand	34.8	34.5	34.3
Total deaths	19,478	19,823	18,381
Death rate per thousand	28.2	27.6	25.1
Infant mortality (rate per thousand births registered)	228	211	213

IV.—Total number of Infant Deaths under one year and Infantile Mortality Rate :—

	Total Deaths.	Mortality Rate per 1,000 Births registered.
(*a*) for the whole Island	36,963	187
(*b*) in the 35 principal towns	4,700	212
(*c*) in the rural areas	32,263	183

The registration of births and deaths is compulsory throughout the Island, but the registration of the causes of deaths cannot be totally relied on as the majority of the registering officers are non-medical men. The Registrar-General supplies figures concerning the vital statistics of the 35 principal towns in Ceylon, and these figures may be considered more reliable as regards the causes of death, as the larger portion of them is certified by Registered Medical Practitioners.

From the tables given above, it will be noted that the death rate in 1929 as compared with 1928 has increased among the first section of the Island's population, viz., Ceylonese, and that the death rate has decreased among the second and third sections, viz., Europeans and Indian immigrant labourers. The death rate among the Indian labourers continues to be greater than the rate among the Ceylonese population while the birth rate is still lower than that among the Ceylonese, 34.3, as compared with 36.8. It is regrettable that the infantile mortality rate among the Ceylonese population is higher in 1929 than in 1928, 183, as compared with 173, and among the Indian immigrant labourers, 213 in 1929, as compared with 211 in 1928.

Causation of deaths.—The following table shows the number of deaths registered amongst all classes (Ceylonese, European, and Indian immigrant populations) during the years 1927, 1928, and 1929 under the several classes of diseases :—

	1927.	1928.	1929.
I.—General Diseases—			
(*a*) Epidemic diseases	7,036	8,550	9,629
(*b*) Septic diseases	147	95	150
(*c*) Tubercular diseases	3,595	3,667	3,532
(*d*) Venereal diseases	195	235	174
(*e*) Cancer or malignant diseases	540	551	451
(*f*) Other general diseases	9,194	10,950	11,794
II.—Diseases of the nervous system and organs of special sense	16,203	18,762	19,776
III.—Diseases of the circulatory system	1,131	1,220	1,346
IV.—Diseases of the respiratory system	11,947	13,394	13,881
V.—Diseases of the digestive system	14,607	16,863	17,515
VI.—Non-venereal diseases of the genito-urinary system and annexa	1,535	1,745	1,829
VII.—The puerperal state	3,595	4,091	4,031
VIII.—Diseases of the skin and cellular tissues	9,179	11,353	10,122
IX.—Diseases of bones and organs of locomotion	22	18	15
X.—Malformations	26	33	22
XI.—Diseases of early infancy	9,579	9,894	10,236
XII.—Old age	5,154	5,599	5,952
XIII.—Affections produced by external causes	2,529	2,701	2,719
XIV.—Ill-defined diseases (including pyrexia)	16,793	22,616	22,102

The more notable causes of deaths amongst all classes (Ceylonese, European, and Indian immigrant population) were the following diseases :—

	1927.	1928.	1929.		1927.	1928.	1929.
(1) Dysentery	3,144	3,446	4,258	(14) Tetanus	293	324	320
(2) Pulmonary tuberculosis	3,353	3,380	3,229	(15) Rabies	67	76	62
(3) Infantile convulsions	13,686	16,042	16,738	(16) Cholera	3	3	19
(4) Diarrhœa	8,308	8,831	9,662	(17) Influenza	1,756	1,958	1,918
(5) Pneumonia	8,004	8,846	8,979	(18) Leprosy	58	80	95
(6) Ankylostomiasis	1,943	2,161	2,172	(19) Plague	100	60	71*
(7) Dropsy	1,580	1,952	2,048	(20) Scarlet fever	1	—	—
(8) Anæmia	2,349	2,363	2,750	(21) Anthrax	1	2	1
(9) Intestinal parasites	3,070	4,621	4,326	(22) Smallpox	5	4	2
(10) Puerperal septicæmia	1,331	1,409	1,466	(23) Diphtheria	11	20	17
(11) Malaria	1,331	2,239	2,326	(24) Parangi	12	9	10
(12) Enteric fever	510	577	736	(25) Pyrexia	13,502	18,954	18,744
(13) Rickets	3,736	4,477	4,958				

* Actual number of deaths is 74—presumably 3 not reported.

The above figures show that pyrexia and infantile convulsions continue to be the two principal causes of death, followed by diarrhoea and pneumonia. Malaria has claimed 87 victims more than last year.

The following table shows the principal causes of deaths amongst Indian immigrant population on estates:—

	1927.	1928.	1929.		1927.	1928.	1929.
(1) Dysentery	1,926	1,723	1,384	(6) Infantile convulsions	1,503	1,601	1,538
(2) Debility	2,845	2,795	2,817	(7) Dropsy	129	119	94
(3) Diarrhoea and enteritis	1,703	1,597	1,349	(8) Pulmonary tuberculosis	398	382	327
(4) Pneumonia	2,732	2,816	2,589	(9) Anaemia	41	42	63
(5) Ankylostomiasis	1,269	1,299	1,237	(10) Other diseases	6,931	7,450	6,984

From the above figures it is evident that debility, pneumonia, infantile convulsions, dysentery, and diarrhoea are the chief causes of death amongst Indian immigrant labourers.

Monthly Mortality Figures.—The following table shows the number of deaths registered in the Island in each of the years 1927, 1928, and 1929 according to months:—

Month.	Number of Deaths. 1927.	1928.	1929.	Month.	Number of Deaths. 1927.	1928.	1929.
January	10,542	15,421	16,651	September	8,774	10,134	8,977
February	9,312	12,023	13,700	October	9,578	10,752	9,781
March	8,711	10,396	11,251	November	10,282	10,981	10,881
April	7,579	8,520	10,357	December	11,632	11,765	12,936
May	8,518	9,879	9,955				
June	8,885	10,060	9,553		113,003	132,335	135,276
July	9,311	10,991	10,761				
August	9,879	11,413	10,473				

III.—HYGIENE AND SANITATION.

A.—General Review of Work done and Progress made.

The work of the Public Health Branch is increasing in volume and importance yearly and during the year under review considerable progress has to be recorded.

The following officers were appointed during the year:—Drs. S. Sivalingam, K. M. R. Swami, M. T. Fernando as Medical Officers of Health; Mr. J. H. de Saram was appointed Superintendent of Health Education Division on October 16, 1929, in place of Rev. C. E. V. Nathanielsz who resigned his post.

Drs. C. T. Williams, L. J. Kahawita, and D. M. de Silva went on study leave during the year.

Dr. R. C. W. Thambiah was promoted from Grade II. to Grade I.

Messrs. P. O. David and K. Subramaniam were appointed Assistant Sanitary Engineers.

Health Units were established at Kegalla and Trincomalee and Sanitary Surveys of the areas were started. The preliminary surveys necessary before starting an Anti-Malarial Campaign were begun at Badulla and Puttalam.

Anti-malarial work was continued at Anuradhapura, Trincomalee, Kurunegala, and Chilaw.

The Departmental Committee on Malaria held 19 meetings during the year, 10 being monthly meetings and the rest special meetings. At these meetings all routine matters connected with the work and progress of Anti-Malarial Campaigns were dealt with and also matters referred to the Departmental Committee by the Anti-Malaria Advisory Board regarding malaria prevention in general.

1.—Preventive Measures.

(a) Mosquito and Insect-borne Diseases.

Malaria.—(*a*) The report of the Superintendent, Anti-Malaria Campaigns, giving a full account of the work done by the anti-malaria division is found in the appendix to this report.

(*b*) An account of the anti-malaria drainage work carried out by the Sanitary Engineer is given in his report in the appendix.

(*c*) The Medical Entomologist's report in the appendix gives an account of anti-malaria work done by his division.

(*d*) The following is an account of the anti-malaria work done by the Sanitary Branch of this Department:—

(1) *Tenmaradchy (Northern Division).*—Quinine was distributed by three pupil vaccinators at Tenmaradchy from October, 1928, to June, 1929. Quinine was also given free to school teachers for the treatment of school children.

In areas other than those in which anti-malaria campaigns are in progress only minor anti-mosquito measures have been carried out by Sanitary Inspectors; such measures consisted of filling up hollows in compounds, draining stagnant pools, clearing rank vegetation, &c.

Lantern lectures on the mode of spread and on the prevention of malaria have been given by the Medical Officers of Health in malarious areas.

(2) *Railway Anti-Malaria Work.*—This work was done under the supervision of the Superintendent, Anti-Malaria Campaigns, and his report is found in the appendix to this report.

(b) Epidemic Diseases.

The incidence of most of the diseases has already been dealt with under Section II.—Public Health. Statements (Tables A to E) showing the total cases of and deaths from the comunicable diseases notified for the whole Island exclusive of the three Municipal towns, and their distribution according to months, provinces, revenue districts, and chief towns are given on page 16.

TABLE A.—Showing the Total Cases of and Deaths from the Communicable Diseases notified for the whole Island exclusive of the Three Municipal Towns.

Diseases.	Cases.	Deaths.	Fatality Rate.	Diseases.	Cases.	Deaths.	Fatality Rate.
Chickenpox	4,378	3	0.07	Pulmonary tuberculosis	754	209	27.72
Diphtheria	24	5	20.83	Whooping Cough	30	—	—
Dysentery	3,988	513	12.86	Cholera	26	11	42.31
Enteric	1,508	297	19.03	Plague	32	31	96.87
Measles	4,108	11	0.27	Smallpox	—	—	—
Mumps	305	—	—				

TABLE B.—Showing the Distribution of the Cases of Communicable Diseases notified by Months.

Months.	Chicken-pox.	Diph-theria.	Dy-sentery.	Enteric.	Measles.	Mumps.	Pulmonary Tuber-culosis.	Whooping Cough.	Cholera.	Smalpox.	Plague.
January	560	12	384	144	501	13	58	8	15	—	1
February	640	1	204	118	472	18	60	1	2	—	—
March	601	—	162	113	600	36	58	1	9	—	2
April	521	1	127	101	247	30	59	1	—	—	1
May	355	2	130	95	284	21	67	5	—	—	2
June	181	1	188	138	418	31	73	5	—	—	—
July	241	3	217	139	330	42	77	2	—	—	13
August	267	2	249	124	312	34	65	1	—	—	8
September	265	—	221	131	309	10	76	2	—	—	4
October	221	2	469	143	264	28	49	3	—	—	—
November	280	—	941	137	203	27	56	1	—	—	1
December	246	—	696	125	168	15	56	—	—	—	—

TABLE C.—Showing the Distribution of Communicable Diseases notified by Provinces.

Provinces.	Chicken-pox.	Diph-theria.	Dy-sentery.	Enteric.	Measles.	Mumps.	Pulmonary Tuber-culosis.	Whooping Cough.	Cholera.	Plague.	Smallpox.
Western	1,723	6	1,787	812	1,777	99	260	18	—	1	—
Central	1,115	5	177	93	710	96	53	1	—	16	—
Southern	500	7	1,127	317	460	19	162	—	—	13	—
Eastern	8	—	46	15	60	6	13	—	—	—	—
Northern	107	—	70	91	100	7	49	—	—	2	—
North-Western	279	—	232	51	566	11	45	9	—	—	—
North-Central	3	—	15	7	9	2	—	—	—	—	—
Sabaragamuwa	508	6	480	76	393	36	108	2	11	—	—
Uva	135	—	54	46	33	29	64	—	15	—	—

TABLE D.—Showing Distribution of Communicable Diseases notified by Revenue Districts.

Revenue Districts.	Chicken-pox.	Diph-theria.	Dy-sentery.	Enteric.	Measles.	Mumps.	Pulmonary Tuber-culosis.	Whooping Cough.	Cholera.	Plague.	Smallpox.
Colombo	1,113	3	762	386	872	53	174	15	—	—	—
Kalutara	610	3	1,787	426	905	46	86	3	—	1	—
Kandy	619	4	103	63	238	64	49	—	—	12	—
Matale	382	1	70	4	401	10	3	—	—	2	—
Nuwara Eliya	114	—	4	26	71	22	1	1	—	2	—
Galle	360	—	667	174	303	3	100	—	—	—	—
Matara	129	7	276	133	150	15	52	—	—	13	—
Hambantota	11	—	184	10	7	1	10	—	—	—	—
Batticaloa	2	—	—	11	53	4	—	—	—	—	—
Trincomalee	6	—	46	4	7	2	13	—	—	—	—
Jaffna	97	—	49	80	72	7	36	—	—	1	—
Mannar	3	—	16	10	21	—	5	—	—	1	—
Mullaittivu	7	—	5	1	7	—	8	—	—	—	—
Kurunegala	210	—	163	23	348	8	32	8	—	—	—
Puttalam	69	—	69	28	218	3	13	1	—	—	—
Anuradhapura	3	—	15	7	9	2	—	—	—	—	—
Ratnapura	165	2	321	50	50	10	46	—	11	—	—
Kegalla	343	4	159	26	343	26	62	2	—	—	—
Badulla	135	—	54	46	33	29	64	—	15	—	—

TABLE E.—Showing the Distribution of Cases of Communicable Diseases notified by Principal Towns.

Principal Towns.	Chicken-pox.	Diph-theria.	Dy-sentery.	Enteric.	Measles.	Mumps.	Pulmonary Tuber-culosis.	Whooping Cough.	Cholera.	Plague.	Smallpox.
Negombo	8	—	6	8	19	3	5	—	—	—	—
Moratuwa	48	—	52	26	51	13	3	—	—	—	—
Kalutara	29	—	19	17	27	7	2	2	—	—	—
Panadure	35	1	91	34	13	3	1	1	—	—	—
Gampola	15	1	3	8	1	8	3	—	—	—	—
Nawalapitiya	10	—	—	6	7	23	—	—	—	—	—
Hatton-Dikoya	22	—	—	7	6	1	—	—	—	—	—
Matale	77	—	2	2	—	—	—	—	—	—	—
Nuwara Eliya	18	—	—	10	7	20	—	1	—	—	—
Ambalangoda	2	—	7	1	15	—	3	—	—	—	—
Matara	—	—	—	—	—	—	—	—	—	—	—
Weligama	29	—	1	10	2	—	2	—	—	—	—
Hambantota	—	—	140	6	—	—	6	—	—	—	—
Tangalla	10	—	11	—	3	1	—	—	—	—	—
Batticaloa	2	—	—	9	36	4	—	—	—	—	—
Kalmunai	—	—	—	—	—	—	—	—	—	—	—
Trincomalee	6	—	38	4	5	2	10	—	—	—	—
Jaffna	12	—	1	21	10	4	5	—	—	1	—
Mannar	—	—	—	5	2	—	5	—	—	—	—
Mullaittivu	—	—	—	—	—	—	—	—	—	—	—
Vavuniya	7	—	4	1	7	—	5	—	—	—	—
Kurunegala	2	—	6	3	5	3	—	1	—	—	—
Puttalam	—	—	—	—	—	—	—	—	—	—	—
Kalpitiya	—	—	2	—	—	—	—	—	—	—	—
Chilaw	22	—	—	3	1	—	1	—	—	—	—
Anuradhapura	3	—	15	7	8	2	—	—	—	—	—
Ratnapura	5	—	5	6	6	1	2	—	2	—	—
Kegalla	18	—	8	4	50	19	9	—	—	—	—
Badulla	15	—	3	23	1	4	3	—	—	—	—
Lunugala	—	—	—	3	5	—	—	—	—	—	—

The following information deals with the activities of the Sanitary Branch of this Department in connection with the cases and outbreaks of disease reported to it:—

Enteric Fever.—This disease continues to occur throughout the Island in more or less sporadic form. An outbreak occurred in the town of Badulla between July and November. In this outbreak there were 21 cases with 2 deaths. All precautionary measures were adopted and the spread of the disease was checked.

In the Kalutara District this disease assumed an epidemic form during the last three months of the year.

It is very gratifying to note that the people are beginning to appreciate the value of anti-typhoid inoculation and there is reason to anticipate that this means of prevention will be availed of in most cases of enteric fever.

Smallpox.—A suspected case of smallpox was reported from Mohottiwatta, Balapitiya, in November and the patient died. All precautionary measures were taken and no further case occurred.

Vaccination.—The total number of primary vaccinations performed during the year under review was 156,758; of these 143,199 were successful and 3,052 were failures. In 10,507 cases the results were not determined. The percentage of successful primary vaccinations was 99.11 in 1927, 97.5 in 1928, and 98.72 in 1929.

Vaccination is carried out throughout the year by trained male and female vaccinators. The former vaccinate in the towns, villages, and estates periodically according to a fixed programme; the latter work in the towns and villages and vaccinate Muslim women and children.

A vaccine station for the preparation of calf lymph is maintained by Government (*vide* report of the Officer in Charge, Vaccine Establishment, in section X. of this report).

Cholera.—An epidemic of cholera broke out at a village called Alutnuwara in the Province of Uva. The first case occurred on December 24, 1928, and the last case on January 31, 1929. There were 20 cases and 13 of these proved fatal. The source of infection was not traced notwithstanding the fact that strenuous inquiries and investigations were made.

Cholera occurred in sporadic form in the Ratnapura District from February 26 to April 4. The following towns and villages were chiefly affected, viz.:—Dewalagama, Kahangama, Ratnapura, Dambuluwana, Balibothgoda, Dodampe, and Elapatha. There were 11 cases and all of them proved fatal. The source of infection may have been India, from where contact carriers cross over to the Ratnapura District.

Plague.—The disease occurred in four Provinces during the year.

North-Western Province.—A case of plague was reported at Chilaw, the patient being a Coast Moor who had been in Chilaw only for three or four days. He died at Talaimannar while on his way to India. He was most probably infected in Colombo, from where he went to Chilaw. All necessary precautions were taken and there were no further cases.

Central Province.—Two cases of plague occurred at St. Margarets. Both cases proved fatal. The first case occurred on March 25, and the second case on April 4. On investigation it was found that the rats of the place were plague-infected. A rat campaign was carried out at St. Margarets, Uda Pussellawa, Ragalla, St. Leonards, and Kandapola, and 4,028 rats were destroyed.

Galaha (Kandy).—There was a severe outbreak of rat plague towards the middle of the year in the Sanitary Board town of Galaha about 18 miles from Kandy. There were 12 human cases with 12 deaths. The first case was reported on August 15 and the last died on September 25. All necessary measures, including a rat campaign, were carried out.

Matale.—One fatal case of plague occurred at Naula during the year, the patient being a Coast Moor. The infection was not traced. All precautionary measures were taken.

Southern Province.—Three cases of plague were reported from Mirissa, Wewala, and Talpe—1 from each place. Bacteriologically 2 proved positive and 1 negative. All the patients died. The necessary preventive measures were adopted and further infection was averted. The source of origin in the first instance was traced to St. Margarets, Uda Pussellawa, which was affected with plague at the time. The infection in the second case was traced to Galle.

Western Province.—In the Kalutara District, at Weligampitiya, a case of plague occurred on February 8 and the patient died on the 12th. No further cases occurred. The source of infection was Colombo.

Dysentery.—This disease chiefly occurs in sporadic form but outbreaks of it occur during the wet months of the year when rain falls on polluted soil in such quantity that it finds its way to streams, unprotected wells, or other sources of water supply in the vicinity.

Outbreaks occurred at Wahacotte in Matale District, Badulwela in Uva, Dewalagama in Kegalla District, Battuluoya in Chilaw District, and at Hambantota.

Chickenpox.—Of the notifiable diseases, this disease has contributed the largest number of cases. The number of fatalities however was negligible and death, whenever it occurred, was due to debility and old age. The disease, as usual, was most prevalent among school children.

Measles.—This disease ranks second in the list of infectious diseases reported. Schools were responsible in the majority of cases for the spread of this disease. In every case prompt measures were adopted and the schools concerned closed for such periods as were considered necessary.

In the rural areas the poor housing conditions and the inadequate arrangements for the isolation of patients are responsible for the spread of the disease in the pre-eruptive stage when it is most infectious.

(c) Helminthic Diseases.

Ankylostomiasis Campaigns.—This work is now carried out under the supervision of the Sanitary Branch as a part of its routine activities. The officers of the campaign are under immediate control of a Superintendent who directs the work from Colombo and pays visits of inspection to areas where the campaign is in progress.

A full report of the work will be found in the appendix.

2.—General Measures of Sanitation.

Conservancy: (1) *Public Latrines.*—During the financial year 1928-29, 107 public latrines were built by the Sanitary Boards and Village Committees throughout the Island as tabulated below:—

Province.	Number of Latrines.	Province.	Number of Latrines.
Western ..	.. 2	North-Central ..	.. 2
Central ..	.. 21	Uva ..	.. 3
Southern ..	.. 14	Sabaragamuwa ..	.. 25
Northern ..	.. 10		107
Eastern ..	.. 5		
North-Western ..	.. 25		

Government allowed a grant of Rs. 75,000 to the Government Agents towards the cost of these latrines for the financial year 1928-29.

(2) *Private Latrines.*—The following is a statement of the work done in this connection throughout the Island:—

(*a*) Number of notices served during the year—		(3) To convert pits into dry earth latrines	210
(1) To construct latrines ..	23,733	Total ..	29,032
(2) To repair latrines ..	5,089		

	Pit Latrines.	Dry Earth Latrines.		
(*b*) Number of Latrines—			(*c*) Number of persons who failed to comply with the requirements of the notices ..	9,324
(1) Completed ..	16,714	722	(*d*) Number of prosecutions entered ..	5,133
(2) Repaired ..	4,665	223		
(3) Pit latrines converted into dry earth latrines ..	—	107	(*e*) Number of convictions obtained ..	3,306

The figures tabulated below show the work done on latrines in the various Provinces during the year 1929:—

Province.	During 1929. Latrines completed. Pits.	Dry Earth.	Latrines repaired. Pits.	Dry Earth.	Pit Latrines converted into Dry Earth Latrines.
Western ..	6,470	221	3,357	166	59
Central ..	3,046	95	390	24	7
Southern ..	3,055	86	586	4	7
Northern ..	185	61	4	—	16
North-Western ..	1,366	115	85	7	4
Uva ..	1,073	39	53	1	12
Sabaragamuwa ..	1,519	105	190	21	2
	16,714	722	4,665	223	107

During the year under review dry earth latrines were introduced into the Sanitary Board town of Mailapitiya which hitherto had pit latrines.

In the rural areas the progress of latrine construction is encouraging.

The Village Committee of Kottegoda has installed 2 dry earth latrines in the vicinity of the markets in the bazaar area.

Dikwella, Moor street, and Walasgala, which were provided with pit latrines, have started to convert them into dry earth latrines.

At Hakmana, the existing public pit latrine has been converted into a dry earth latrine and the Village Committee is quite pleased with the working of the dry earth system.

Disposal of Night Soil.—The disposal of night soil in areas where dry earth latrines exist is by trenching on sites especially selected for the purpose; the trenching grounds are regularly supervised and maintained in good order.

In several rural towns the dry earth system has been introduced and trenching on a communal basis started; of these the following may be mentioned, viz.:—Nikaweratiya, Bandawa, Potuhera, Mawatagama, and Alawwa.

Scavenging and Disposal of Refuse.—In all Sanitary Board towns there are arrangements for the regular scavenging and proper disposal of refuse. The practice adopted in the different areas consists of (1) dumping on the banks of a river; (2) spreading over grass fields; (3) burial in trenches around coconut trees; (4) burying in selected areas; and (5) incineration.

The above-mentioned methods with the exception of incineration are bound to create nuisance by affording breeding places for flies and vermin. Fly-borne diseases are very common in Ceylon and the spread of these diseases can be traced to the inefficient system of disposal of refuse. Incineration is by far the best method and incinerators are constructed by Sanitary Board towns when funds permit and other circumstances are favourable. Though rural areas are very primitive in their method of disposal of refuse there are at present signs of improvement, as communal scavenging is being established in areas in which there is no local sanitary authority. Communal scavenging is carried out very satisfactorily in the following places, viz.:—Nikaweratiya, Bandawa, Potuhera, and Alawwa.

Drainage.—Existing drains have been improved and additional drains have been provided in the various towns, chiefly back drains and outlet drains to improve housing conditions.

Water Supplies.—A supply of pure water is essential for the maintenance of life; and further, the supply must be adequate in quantity for the various needs of the community. Such a water supply is one of the most pressing needs of many towns in Ceylon, and the demand for it from all parts of the Island is sufficient evidence of the interest taken by the local authorities concerned. Further particulars under this head will be found in the report of the Sanitary Engineer in the appendix to this report.

Public Wells.—104 public wells were built during the year as shown below:—

Province.	Number Built.	Province.	Number Built.
Western	—	North-Central	13
Central	23	Uva	8
Southern	8	Sabaragamuwa	13
Northern	13		104
Eastern	9		
North-Western	17		

Private Wells.—

(*a*) Number of inspections made ..	105,234	(*d*) Number of wells improved ..	1,839
(*b*) Number of wells found unprotected ..	67,921	(*e*) Number of persons prosecuted ..	114
(*c*) Number of notices served for improvement	595	(*f*) Number convicted	63

Examination of Water Supplies.—

Number of samples sent for—			
(1) Bacteriological examination ..	14	(2) Chemical examination ..	13
Number of samples found unfit for drinking purposes—			
(1) Bacteriologically	5	(2) Chemically	6

Necessary action has been taken to improve some sources of unsuitable supplies. Generally speaking, in the mountainous parts of the country water for human consumption is available from hill streams. In the plains water is taken from streams, rivers, and from wells when available.

The drought that prevailed for several months in the towns of Tangalla and Hambantota and surrounding areas during the year brought much hardship and suffering to the people. Wells and streams ran completely dry and water which would not ordinarily have been utilized for bathing and washing purposes was used for cooking and drinking.

Hambantota District was most unfortunate in this respect. Even during wet seasons the water obtained there is exceedingly brackish, unpalatable, and unsuitable for drinking purposes. The problem needs speedy solution by the provision of an adequate and wholesome water supply to the chief towns of the district.

Votes have been passed for pipe-borne water supplies to the following towns and villages:—Rakwana, Kiriella, Dumbara Ella, Godakawela, Eheliyagoda, Kuruwita.

The water supplies in rural areas are from shallow unprotected wells and there are no regulations to compel people to improve their wells. The little that has been done and is being done is the outcome of persuasion, tact, and education. The safeguarding of the water supply of these areas is a very important matter and a measure that should be taken in hand without delay by the introduction of the necessary legislation.

Licensed Trades.—The following is a statement of the applications for licensed trades dealt with:—

(1) *Food and Drink handling Trades.*

Name of Trade.	Number of Applications. Received.	Recommended.	Not Recommended.	Name of Trade.	Number of Applications. Received.	Recommended.	Not Recommended
(1) Bakeries ..	559	519	40	(5) Butcher stalls ..	197	186	11
(2) Tea and coffee boutiques ..	1,452	1,381	71	(6) Fish stalls ..	71	67	4
(3) Eating-houses ..	418	403	15	(7) Pork stalls ..	8	8	—
(4) Dairies ..	173	153	20	(8) Aerated water manufactories ..	10	8	2

(2) *Licensed Trade Premises.*

(1) Public galas ..	51	47	4	(13) Fibre mills ..	11	9	2
(2) Manure stores ..	31	30	1	(14) Desiccating mills ..	4	3	1
(3) Soap manufactories.	3	3	—	(15) Tanneries ..	2	2	—
(4) Hide stores ..	16	16	—	(16) Gravel quarries ..	3	3	—
(5) Lime kilns ..	25	22	3	(17) Storage of raw bones ..	1	—	1
(6) Brick kilns ..	32	31	1	(18) Fat melting ..	2	—	2
(7) Laundries ..	127	109	18	(19) Fish icing shed ..	1	1	—
(8) Cabook quarries ..	5	5	—	(20) Storage of dried fish	1	1	—
(9) Plumbago sheds ..	21	21	—	(21) Oil mills ..	1	1	—
(10) Metal quarries ..	8	6	2	(22) Taxidermist's shop	1	1	—
(11) Public bathing places	2	2	—	(23) Salt fish stalls ..	30	30	—
(12) Pits for soaking coconut husks ..	27	27	—				

Maintenance of the sanitary condition of licensed trade premises—

(*a*) Number of premises inspected ..	13,394	(*d*) Number of persons prosecuted ..	350
(*b*) Number of notices served for breach of rules	1,172	(*e*) Number convicted	309
(*c*) Number of notices voluntarily complied with	796	(*f*) Number warned and discharged ..	27

The following places have framed regulations under Village Committees' Ordinance, No. 9 of 1924, viz., Kandy, Kegalla, and Kurunegala, and it is hoped that bakeries, &c., will be improved by the enforcement of these rules.

Sanitary Inspections.—The following is a statement of inspections done:—

(*a*) *Private Premises.*

Number of inspections made during the year	754,451	Number of notices voluntarily complied with	10,055
Number of premises found insanitary	180,074	Number of persons prosecuted	1,315
Number of mosquito breeding places detected	24,627	Number convicted	1,095
Number of notices served to abate nuisance	12,329	Number warned and discharged	206

(*b*) *Railway Premises.*

(1) Of Stations.

	Inspected.	Defective.	Defects Remedied.		Inspected.	Defective.	Defects Remedied.
Premises	4,030	788	536	Water supplies	1,002	87	30
Drains	2,584	655	313	Scavenging	1,122	128	97
Latrines	2,583	386	267	Conservancy	1,328	86	71
Mosquito breeding places	317	87	85				

(2) Of Bungalows.

Premises	6,270	682	496	Water supplies	2,347	129	59
Drains	6,153	662	463	Scavenging	3,031	171	128
Latrines	5,335	440	339	Conservancy	3,101	118	106
Mosquito breeding places	462	166	165				

(3) Of Cooly Lines.

Premises	4,525	784	554	Water supplies	891	133	54
Drains	3,913	624	407	Scavenging	1,826	226	164
Latrines	2,478	641	434	Conservancy	958	151	116
Mosquito breeding places	328	116	105				

Sanitary Inspectors are repeatedly instructed to get house premises cleaned up in their presence, whenever possible, and to utilize every opportunity that presents itself for explaining to the villager the reason why premises should be kept clean.

Other Offences against Sanitary Regulations.—The following statement gives particulars of offences against sanitary regulations which have not already been dealt with in this report:—

Offences.	Prosecuted.	Convicted.	Offences.	Prosecuted.	Convicted.
Unauthorised buildings	126	101	Failing to clear rank vegetation	158	148
Failing to demolish temporary sheds	28	15	Failing to notify cases of infectious diseases	72	62
Occupying buildings after closing	22	15	Failing to provide dust bins	21	16
Occupying buildings without certificate of conformity	74	56	Burying corpse outside proclaimed cemetery	10	10
Failing to repair house	18	12	Alterations to buildings without permits	39	30
Deviating from approved plan	56	42	Failing to fill in insanitary pit	14	9
Failing to provide drains	44	31	Exposing for sale food on roadside	77	73
Faecal pollution	264	221	Failing to give samples of milk for analysis	2	2
Unlicensed trades	346	298	Insanitary latrines	2	2
Exposing for sale food unfit for human consumption	187	156	Kneading without apron	1	1
Depositing rubbish in drain	60	58	Failing to keep trade premises clean	6	5
Throwing rubbish on public road	67	63			
Sinking wells without the permission of Chairman, Sanitary Board	10	7			

3.—School Hygiene.

The School Medical Service is comprised of 5 School Medical Officers working in four centres, 2 in Colombo (1 of these a lady doctor) and 3 in outstations, *i.e.*, Kandy, Jaffna, and Galle, and 6 school nurses—3 for Colombo, 1 each for Kandy, Galle, and Jaffna. This is an increase by 1 nurse for the Colombo Centre on the cadre of nurses for 1928.

General Remarks.—(1) It is rightly admitted that the foundation of all Public Health activities should be laid in the schools, which are the most suitable nuclei for disseminating modern ideas of sanitation. A large percentage of teachers do their best to teach these lessons.

The school authorities have given their whole-hearted support to the officers and the children themselves have not shown any repugnance.

The year 1929 has been characterized by three important developments in the Colombo Centre, viz.—

(*a*) The inauguration of a School Clinic at a Municipal dispensary.
(*b*) The co-operation of the hookworm campaign in school medical work.
(*c*) The appointment of the full complement of nurses to the Colombo Centre.

The inauguration of a School Clinic for the treatment of minor ailments at the Municipal dispensary at Mutwal, Colombo, was conceded by the Municipal authorities on representations made to them that the area referred to contained a large number of children of the poorer classes who found it difficult to come to the other clinics. It is hoped in the near future to ask for an extension of this privilege, as in the ultimate scheme of things these institutions should, so far as school medical work is concerned, perform the function of sorting stations for examining all children referred for treatment from the poorer schools and passing on only those requiring specialist's treatment to the Central Government hospitals.

The normal work of the Hookworm Campaign in schools consisted of the examination and treatment of children for this disease alone and the inspection and report on the sanitary conditions obtaining in these institutions. The work of the campaign officers was amplified when in addition they were instructed to record all the defects or disabilities found in the course of their examinations—work that had hitherto been done by the School Medical Officers as a part of their ordinary routine. The records of the defects found are forwarded to the School Medical Officers who attempt to follow up these cases on their visits and provide, as far as possible, treatment for the other conditions found.

The satisfactory working of the school service in Colombo depends on an adequate staff of nurses. There was only one nurse working in this area up to February 1, 1929, and consequently results were only partly successful. The efficiency of school medical work depends entirely on the follow-up work done by the nursing service and this could not be carried out satisfactorily by a single nurse in such a large section as Colombo with about a hundred schools. The appointment of 2 extra nurses, 1 on February 1, 1929, and another on April 8, 1929, enabled the Municipal area of Colombo to be divided into three school divisions with a nurse responsible for each.

(2) An innovation during 1929 to the school medical inspections was the introduction of individual medical schedule cards for each child. Cards supplied by Government were provided for 1 or 2 schools, and other schools rapidly followed the example set and provided their own modelled on the same lines. This card is intended to be a record of the findings at the examination of the child, and at the same time to convey to the teacher the state of the child's general health and also to provide him with a form in which he should make a note of any incident in the health record of the child coming under his notice in between the visits of the Medical Officers.

Work in 1929.

	Colombo.	Galle.	Kandy.	Jaffna.	Total.
Schools inspected	181	173	167	287	808
Pupils examined	15,814	27,568	19,770	18,550	81,702
Defects noted—					
(*a*) Dental caries	834	2,404	3,182	2,706	9,126
(*b*) Defective vision	813	274	380	226	1,693
(*c*) Enlarged tonsils	419	1,425	295	1,196	4,477
(*d*) Adenoids		944	198		
(*e*) Ankylostomiasis	141	2,826	4,319	1,703	8,989
(*f*) Malaria	5	416	194	3,191	3,806
(*g*) Skin diseases	164	322	243	405	1,134
(*h*) Defective hearing	30	53	27	175	285
(*i*) Parangi	—	44	—	5	49
(*j*) Unvaccinated	—	689	144	266	1,099
(*k*) Other defects	589	979	2,905	1,104	5,577
Total defects noted	2,995	10,376	11,887	10,977	36,235

From the above figures it is apparent that 44 per cent. of the children examined suffered from defects of one kind or another. There is however a slight improvement over the 2 preceding years, the percentage in 1927 and 1928 being 45.

Dental Caries.—There is but little abatement in the incidence of dental caries. It will be seen from above table that dental caries forms about one-fourth of the total defects of school children. It has been noticed that the incidence of caries is greater among the children of the urban areas than those of the rural, which is no doubt due to the diets—meat entering into the diet of urban area children, whereas the diet of the rural area children is mostly vegetable. In English and vernacular schools in Colombo a good proportion of their pupils was treated at the Dental Institute, but outstation schools had not this advantage.

Ankylostomiasis.—Next to dental caries, ankylostomiasis is the most common ailment of the school child. The disease nowadays is much less severe than formerly. It must be borne in mind that the results of treatment, though very marked for some time, are not permanent, especially in rural areas where soil pollution is common and where the school-going children are barefooted and therefore very liable to reinfection. There has been a distinct decline in the incidence of ankylostomiasis amongst school children in 1929, as compared with the two previous years 1927 and 1928, the defects figures being 10,599 in 1927, 12,111 in 1928, and 8,989 in 1929. This is no doubt due to the intensive work carried on against this disease by the officers of the Ankylostomiasis Campaign. Teachers in village schools continue to report that children who have been treated for ankylostomiasis have improved greatly in health and consequently in their studies and such improvement no doubt dispels any prejudice there may have been against the treatment.

Full details of the work done by the Ankylostomiasis Campaign Officers appear in the appendix to this report.

Malaria.—As in past years, the incidence of this disease amongst school children was most marked in the Jaffna inspectorate; out of a total of 3,806 cases in the 4 inspectorates 3,191 were from Jaffna. The School Medical Officer, Jaffna, reports that in schools where quinine is given systematically as a prophylactic, the children are not only healthier looking than others not so treated but also are more regular in attending school, but even now there are parents who object to their children being given quinine prophylactically. The administration of quinine in schools by the teachers is checked by the Medical Inspectors.

Correction of Defects.—School Clinics were maintained for the Colombo schools at the Eye Hospital, the Dental Institute, and at the Anti-Tuberculosis Institute during the year. The figures regarding attendance are as follows:—

Eye Hospital—

Eye	1,814 cases treated
Ear, nose, and throat	269 cases treated

These figures are for the School Clinics held twice weekly on Tuesdays and Fridays at 4 P.M.

	Cases treated.		Cases treated.
Anti-Tuberculosis Institute—		Dental	3
Eye	22	Other cases	149
Ear, nose, and throat	67	Dental Institute	877

Follow-up Work.—This important work was carried out by the school nurses with appreciable co-operation on the part of the teachers. In Galle the School Medical Officer reports that the nurse made several home visits, interviewed parents, and by her persistent efforts induced the parents of several pupils, who otherwise would not have received any treatment, to have them attended to. In the rural areas too a very fair number of cases was successfully treated although there is still a lack of response on the part of parents.

School Buildings.—There has been considerable building activity during the year, mostly in English schools in Colombo and Kandy and in the outstations, but the progress made in this direction in the vernacular schools has been slow and leaves much to be desired. Overcrowding is common in a large number of village schools, the light and ventilation too are often not all that could be desired, and in many cases there is an insufficiency of latrine accommodation. In Colombo and the Western Province generally the sanitary condition of the schools is on the whole satisfactory, but the same cannot be said of the schools in the other Provinces.

Water Supply.—The water supply in many schools is not yet adequate, especially in the Northern Province, where the School Medical Officer reports that drinking water was provided in more or less suitable vessels in only 177 out of the 287 schools in the Province. The water supply in the schools of the principal town of each Province is pipe-borne generally, but in the schools in other towns it is from protected wells or from springs. A few schools in the rural areas had no arrangements for water supply at all.

Furniture.—Most of the English schools are provided with suitable furniture but not so the vernacular schools. The essential hygienic requirements of seats and desks are being observed in only a very limited number of schools.

First Aid Lectures.—Hitherto these lectures have been delivered to groups of teachers at suitable centres and the Education Department has been responsible for the arrangements. During the year it was suggested that the responsibility for the arrangements should be undertaken by the School Medical Service and courses will be arranged as demands are made.

4.—Labour Conditions.

As was stated in last year's report, manual labour in Ceylon may be considered under two main heads: immigrant and indigenous labour. For the most part immigrant labour is unskilled labour, supplying the workers for the estates in Ceylon; whereas indigenous labour includes both skilled and unskilled workers. This Department is more directly concerned with the sanitary conditions of immigrant labourers on estates than of indigenous labourers as such, because the medical wants of estates are governed by Ordinance No. 9 of 1912, whereas there is no Ordinance dealing with the medical wants of indigenous labour as such. The care of the sanitary environment of indigenous labourers is a matter that comes within the purview of the sanitary authorities of the locality in which they reside, and the hospital and dispensary facilities provided by Government for the people of the Island are at their disposal.

At present there is no legislation, analogous to the Medical Wants Ordinance, dealing with the sanitary and medical care of industrial labour, which includes, not only indigenous labour, but a large portion of imported labour, skilled and unskilled. No doubt in the future this matter will receive attention.

Before immigrant labourers come to Ceylon they are detained in quarantine at Mandapam Camp. The following reports—(1) Report on Mandapam Camp for the year 1929 and (2) Medical Wants on Estates in 1929—show that immigrant labourers are very well looked after both at Mandapam and on estates in Ceylon.

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(1) REPORT OF THE ACTING SUPERINTENDENT, MANDAPAM CAMP, FOR 1929.

(Dr. P. K. K. Naidu.)

I.—Immigration.

During the year under review 176,018 persons were passed consisting of—

Estate labourers	105,095
Miscellaneous passengers	70,923
Total ..	176,018

An unusually heavy decrease of over 10,000 in the number of arrivals in Ceylon compared with the number of departures from the Island is probably attributable to the less demand for labour in the plantations, &c., during the year than in previous years.

II.—Works.

The various buildings and roads were as usual kept in good condition.
A number of new works was completed during the year.

III.—Water Supply.

The supply of fresh water was satisfactory. Ten water coolies were employed for 6 months, from May to October. The water scheme was completed at the end of the year and the water was found to be of excellent quality. The supply should henceforth be ample and of better quality.

The supply of sea water used for flushing of latrines, &c., continues to be satisfactory.

IV.—ELECTRIC LIGHTING.

The lighting in camp was maintained in good order. The new plant is nearing completion.

V.—SEWAGE DISPOSAL.

The water-carriage system continues to work satisfactorily.

VI.—SANITATION.

The sanitation of the camp was maintained in excellent condition.

VII.—FEEDING.

The food supplied to the detenues was always ample and of good quality.

VIII.—RAINFALL.

The rainfall during the year was 46.07 inches, the last quarter alone recording about 34 inches. In April there were 6.39 inches of rain—a special feature of this year.

IX.—ASSISTED EMIGRANTS REJECTED.

1,690 persons were rejected during the year, 144 on medical grounds and the remainder by the Protector of Emigrants, including claimed and refused cases.

X.—STEAMER CREWS.

1,366 members of crews for 44 steamers, who arrived from Bombay and Calcutta, were passed after disinfection and vaccination.

XI.—GENERAL.

(*a*) *School.*—The Inspecting Officials of the Madras Educational Department have written favourably upon the work of the teachers. The number of the pupils at the end of the year was 134.

A sum of Rs. 824.75 was received as grant for the school from the Indian Government. The construction of a proper building is strongly recommended by the Inspecting Officials.

A sum of Rs. 120 was spent on the celebration of the Delhi Durbar Day and for prizes to the school children.

(*b*) *Reading Room, Library, and Sports Club.*—These institutions continue to serve a useful purpose and have been satisfactorily maintained during the year.

(*c*) *Planting.*—Some of the coconut trees have begun to bear fruit, also one or two mango trees; new plants received from Peradeniya at the end of the year have been planted.

(*d*) *Benevolent Fund.*—Forty-five stranded Ceylonese were helped from this fund at a cost of Rs. 201.41. Seven are paid a monthly allowance from this head.

(*e*) *Expenditure.*—Nineteen cents per head per diem was the cost incurred by Government on 176,018 immigrants passed to Ceylon, and 24 cents per head per diem on 52,281 passengers passed after quarantine.

XII.—VISITORS.

The following visited the camp during the year. A few extracts from their remarks are given in Annexure No. 1. One non-official visitor appointed by the Government of Madras visited the camp once :—

(*a*) *From Ceylon.*

(1) The Chairman, Board of Immigration and Quarantine.
(2) The Director of the Bacteriological Institute.
(3) The Electrical Engineer.
(4) The Deputy Government Analyst.
(5) The Government Bacteriologist.
(6) The Provincial Engineer, Northern Province.
(7) The Superintendent of Police, Jaffna.
(8) The Assistant Superintendent of Police, Jaffna.
(9) Major Scoble Nicholson.
(10) Mr. E. C. Villiers, J.P., U.P.M., Chairman, Planters' Association of Ceylon.
(11) Dr. C. A. Hewavitarne, Representative of the Low-country Products Association.

(*b*) *From India.*

(1) The Commissioner of Labour, Madras.
(2) The Ceylon Emigration Commissioner, Trichinopoly.
(3) The District Collector, Ramnad.
(4) The Sub-Collector, Ramnad.
(5) The Assistant Emigration Commissioner, Malaya.
(6) The Emigration Agent to the Government of India.
(7) The Protector of Emigrants, Madras Government.
(8) The Medical Inspector of Emigrants, Madras Government.

XIII.—MEDICAL REPORT.

The report of the Quarantine Medical Officer is annexed, *vide* Annexure No. 2. The general health was very satisfactory throughout the year as was also the treatment for ankylostomiasis. Very useful work was turned out at the newly opened Bacteriological Laboratory including water analysis.

XIV.—Staff.

Dr. P. K. K. Naidu took over charge of the camp on December 30, 1929, from Dr. H. J. de Saram, who left here on December 31 on 3 months' leave prior to retirement. Dr. T. K. Jayaram left here on transfer to Tuticorin, and was succeeded by Dr. Sam de Vos, with effect from June 22, 1929.

The whole staff worked cheerfully and loyally throughout the year.

Annexure No. 1.—Extracts from Visitors' Book.

I visited the camp and was courteously received by Captain Westland, who with Dr. Jayaram gave me ample opportunity to familiarize myself with the excellent order and highly organized simplicity of the working of the emigration of labour to Ceylon. The camp is an object lesson of highly efficient co-operation in giving effect to the Indian Emigration Act and the prevention and spread of infection.

C. A. HEWAVITARNE,
Member, Indian Immigration Board, and Representative,
Low-country Products Association.

February 1, 1929.

I have spent two days here and during that time have been all over the camp and have seen the working of all the arrangements. The organization of the camp and the daily routine in every branch of the work are marvels of efficiency. I have nothing but admiration for the cleanliness and order that prevail and for the forethought and attention to detail which are evident at every turn.

J. GRAY,
Labour Commissioner, Madras.

October 27, 1929.

Annexure No. 2.—Medical Report for 1929 by the Quarantine Medical Officer.

(Dr. S. de Vos.)

I assumed duties as Quarantine Medical Officer on June 22, 1929, relieving Dr. T. K. Jayaram, and have as my assistants Drs. A. R. Arulpragasam and M. Chelladore, who have carried out their duties ably and conscientiously.

1. *Labourers.*—The year under review has shown a considerable falling off in the number of labourers. This is due to a plentiful rainfall, the absence of famine conditions, and several projects in South India absorbing thousands of labourers; as well as to the poor market for all Ceylon produce which probably acted as a check to intensive recruitment.

The number of labourers actually examined and passed amounted to 105,095.

2. *Passengers.*—The number of passengers has reached its zenith—70,923 being passed for the year. This shows an improvement of 4,000 on the previous year's figures.

Of the 70,923—

18,642 were passed without detention.
29,517 after vaccination and disinfection.
22,764 after full quarantine.

3. *Rejections.*—144 labourers and 36 passengers (total 180) were rejected on account of leprosy, advanced tuberculosis, &c.

4. *Vaccination.*—This is carried out in the open for want of a shed for that purpose, and passengers and labourers are exposed to the elements. The total number vaccinated during the year amounted to 148,000, compared with 167,092 the previous year, viz., 101,353 labourers and 46,647 passengers.

5. *General Hospital.*—Twenty beds (males 12, females 8). Accommodation in the female ward is insufficient.

Admissions	1,090	Deaths	42

6. *Smallpox Hospital.*—Twelve beds (males 8, females 4). There were 4 cases of smallpox; mortality nil.

7. *Cholera Hospital.*—Sixteen beds (males 10, females 6). There were 10 cases of cholera out of which 2 proved fatal.

Infectious Diseases.	Cases.	Mortality.	Infectious Diseases.	Cases.	Mortality.
Plague	—	—	Mumps	17	—
Chickenpox	32	—	Measles	57	—

8. *Outdoor Dispensary.*—

First visits	7,177
Subsequent visits	733
Total ..	7,910

9. *Births and Deaths in Camp.*—

Number of deaths ..	70	Number of births	51

10. *Ankylostomiasis.*—Out of 103,684 labourers examined for ankylostomiasis, 90,442 or 87.2 per cent. were treated.

11. *Repatriates.*—201 repatriates were admitted into hospital and housed in the female observation ward for want of accommodation elsewhere. This is a grave drawback in that the observation ward cannot be used for the purpose for which it was intended. Separate accommodation should be provided for them, an additional ward being built for the purpose.

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(2) MEDICAL WANTS ON ESTATES IN 1929.

The medical wants of estates are provided for by Ordinances Nos. 9 and 10 of 1912.

Hospitals and Dispensaries.—(*a*) In 1929 the planting districts of Ceylon had 65 Government hospitals and 112 Government dispensaries scheduled to estates. The hospital figures are the same as in 1928 while the number of dispensaries has increased by 8. These hospitals are under the charge of fully qualified Medical Officers and are staffed with Matrons, Nurses, Apothecaries, and Attendants. Besides these Government institutions there were 85 estate hospitals

and 706 estate dispensaries built and maintained by proprietors of estates. The figures for 1928 were 81 estate hospitals and 684 estate dispensaries. The majority of the estate hospitals are well built and suitably equipped and are a credit to the estates concerned. As an aid to the maintenance of estate hospitals the proprietors of estates on which hospitals are situated are given by Government a rebate on the duty paid by them on the export of the products of the estates, amounting to 15 cents on every 100 pounds of tea and cacao and 75 cents on every 100 pounds of rubber exported. In the case of estates with dispensaries, a free supply of drugs to the value of 50 cents per labourer per annum is given by Government. From October, 1928, to September, 1929, Rs. 189,155 was paid by Government as rebate, as against Rs. 157,841 the previous financial year. The total cost of the drugs issued free during the financial year 1928-29 was Rs. 255,984.78, as against Rs. 247,105.53 the previous financial year.

(*b*) The Inspecting Medical Officer, Colombo, draws attention to the inadequate nursing arrangements in estate hospitals and goes so far as to say that there is no nursing. The ward attendants are wholly untrained and it often happens that a labourer from a gang is made a ward attendant when patients are admitted. Some of the larger hospitals have attendants who have been trained by the officers in charge, but even such hospitals should have at least one nurse to supervise the ward work of the attendants.

(*c*) For several years now attention has been drawn to the great need that exists for an improvement in the professional qualifications of persons employed on estates as dispensers. The majority of estate dispensers are not properly trained, but are merely " approved " dispensers who have a very limited knowledge of the rudiments of diagnosis, causation of disease, treatment, and sanitation, and it is not proper that such men should have the medical charge of a large labour force. An improvement in salaries must, however, take place before a better type of man can be attracted to those posts.

Inspecting Officers.—The work of visiting estates and inspecting lines devolves on three Inspecting Medical Officers, each of whom has an assistant. These officers are engaged all the year round in visiting estates and advising superintendents regarding the best methods of improving the sanitary conditions and housing on their estates. The total number of estates visited in 1929 was 731.

Sanitary Conditions on Estates.—The Inspecting Medical Officers report that fair progress was made during the year in the improvement of the sanitary conditions of the estates visited, despite the depression in the tea and rubber industries. Programmes were modified to some extent, but the progress of line reconstruction, considering the condition of the market, was satisfactory on the larger estates owned by companies. As usual the smaller estates carried out line construction only on compulsion and some of them discharged their Indian labourers rather than spend money. It is probable that if there is a rise in the price of tea and rubber such estates will again employ Indian labourers and house them in the wretched lines still standing.

Structure of Lines.—The Inspecting Medical Officer, Colombo, reports that on certain estates lines have been built which are an improvement on the Government plan, and mentions particularly the following types:—(1) Single-room line with chimney in partition wall, (2) Cottage line giving a front verandah, living room, kitchen and, back verandah, (3) Four-room double line with central chimney serving all the rooms and a verandah on four sides. No. 3 type is very suitable for up-country lines as the central fire-place heats the living room when cooking is going on. The windows are not placed on the same side as the door and open into the air. In the Colombo Inspectorate, the number of rooms passed as being up to requirements and sanitary conditions was 12,945 out of a total of 15,370 rooms inspected. These figures show a marked improvement over those of the previous year. In the Central Province Inspectorate, most of the 21,201 permanent line rooms visited were up to standard. Last year's report mentions the materials of which lines are usually built nowadays.

Maintenance of Lines.—On the whole the lines were kept in good repair and fairly clean. The Inspecting Medical Officer, Colombo, comments on the fact that it appears to be impossible to keep the surface of room walls in clean condition because of the daily cooking. Clean rooms are only seen where kitchens are provided or chimneys are constructed over cooking places. The evil effect of living within blackened walls does not at present seem to be appreciated by the planting community. An improvement seems to be taking place in the maintenance of line compounds. There is much less pollution of the soil by children round the lines and the planter now appears to recognize the fact that if line surroundings are not kept in good sanitary condition the health of the line inhabitants is affected.

Water Supplies.—Progress continues to be made in the matter of water supplies on estates, especially on those owned by companies. The following table shows the condition of the water supplies of the estates inspected during the year:—

Inspectorate.	Entirely protected.	Partly protected.	Unprotected Supplies.
Colombo	51 ..	176 ..	50
Central	127 ..	— ..	14
Uva	131 ..	16 ..	43
	309	192	107

It may be stated that the number of unprotected supplies has decreased considerably in recent years.

The Inspecting Medical Officer, Colombo, points out that there is an idea at present current among superintendents of the larger estates that a pipe water supply, whatever its source may be, is superior to a well supply. In low-country estates stream supplies are suspicious and streams in the midst of rubber and tea have to be carefully protected from pollution through manuring. A few contemplated pipe water supplies had to be condemned owing to the possibility of contamination. The wells found on the larger estates are generally satisfactorily protected

against impurities from without and within. The Inspecting Medical Officer, Central Province, reports that an epidemic of enteric fever occurred amongst the coolies of an estate in the Dimbulla district, and when the matter was looked into it was found that the water supply was defective. Most cases of diarrhoea, dysentery, and bowel complaints amongst coolies can be put down to defective water supplies. The necessity of supplying cooly lines with potable water is therefore apparent.

Latrines.—The Inspecting Medical Officer, Colombo, reports that a distinct advance has been made in this direction. In 1928 the number of estates without latrine accommodation in his Inspectorate was 60, but in the year 1929 only three estates were found without latrines and they were new plantations or small estates recently registered. The following table shows the latrine accommodation on the estates inspected in all the three Inspectorates during the past three years:—

Inspectorate.	Provided a sufficient Number of Latrines.			Provided an insufficient Number of Latrines.			Provided no Latrines.		
	1927.	1928.	1929.	1927.	1928.	1929.	1927.	1928.	1929.
Colombo	103	171	238	48	60	36	54	27	3
Central	22	60	160	26	86	97	52	30	6
Uva	99	123	83	124	99	92	23	—	15
	234	354	481	198	245	225	129	57	24

The labourer is certainly becoming habituated to the use of latrines, and, if every superintendent would have this department of estate sanitation carefully supervised and provide clean latrines in convenient situations, the reluctance of the labourer to use latrines would disappear. It seems, however, that on many estates latrines are not properly looked after, and far too many of them are unclean and insanitary on account of faecal pollution round the entrances, in the passage ways, and on the platforms. A good deal of soil pollution was observed last year in the immediate vicinity of cooly lines and was attributable to smaller children.

Accommodation.—Improvement in the provision of adequate accommodation for estate labourers was continued in 1929. The following table gives the figures for the past three years:—

Inspectorate.	Not Overcrowded.			Slightly Overcrowded.			Overcrowded.		
	1927.	1928.	1929.	1927.	1928.	1929.	1927.	1928.	1929.
Colombo	7	239	262	—	—	11	61	19	4
Central	102	117	256	14	37	—	45	22	7
Uva	134	159	168	40	63	21	72	—	1
	243	515	686	54	100	32	178	41	12

It will be observed that overcrowding still exists on small estates, and it is hoped that early steps will be taken to remedy this defect.

New Rules regarding Cooly Lines.—As stated in last year's report, orders were received from Government that Rule 1A (regarding back to back lines) was to remain in abeyance until further orders were received from Government. After full consideration of the matter by His Excellency the Governor in Executive Council it was decided not to amend the rule, which reads as follows:—

> "Lines shall be constructed so as to consist of a single row of rooms (hereinafter referred to as single lines). Provided, however, that the Director of Medical and Sanitary Services may, if satisfied that the nature of the ground and the available sites make it impracticable to construct single lines, permit the construction of lines consisting of two rows of rooms back to back (hereinafter referred to as "Back to back lines"). Every decision of the Director of Medical and Sanitary Services under this rule shall be subject to appeal to the Governor in Executive Council."

and the rule was put into force with effect from October 18, 1929.

Vital Statistics.—The infantile mortality rate in 1929 was 213 as compared with 211 in 1928 and 228 in 1927. In 1929, 2,924 male infants and 2,414 female infants died on estates, a total of 5,338, as against a total of 5,215 in 1928. The infant death rates of the different estate districts for 1927, 1928, and 1929 are given below—

	1927.	1928.	1929.		1927.	1928.	1929.
Kandy	250	219	229	Colombo	221	205	134
Matale	231	230	235	Kalutara	150	140	144
Nuwara Eliya	259	220	240	Galle	228	172	169
Badulla	216	228	231	Matara	250	152	231
Ratnapura	208	185	184	Kurunegala	256	363	215
Kegalla	177	172	147				

The chief causes of death during the past 3 years are as follows:—

Causes.	Infant Deaths under one Year.			Percentage of Deaths to Total Infant Deaths on Estates.			Corresponding Percentage for the Island.		
	1927.	1928.	1929.	1927.	1928.	1929.	1927.	1928.	1929.
Convulsions	769	945	1,008	17.7	18.1	18.9	29.3	28.3	29.2
Tetanus	1	3	6	.02	.06	.1	.1	.2	.1
Diarrhoea	83	69	60	1.5	1.3	1.1	1.4	1.3	1.6
Bronchitis	111	121	123	2.0	2.3	2.3	.7	.7	.8
Pneumonia	313	196	239	5.7	3.8	4.5	2.7	2.3	2.3
Enteritis	10	14	8	.2	.3	.1	.7	.7	.9
Debility	2,845	2,795	2,817	51.8	53.6	52.8	22.3	19.7	20.9
Prematurity	791	748	783	14.4	14.24	14.7	6.4	5.8	3.3
Other causes	366	324	294	6.7	6.2	5.5	36.4	41.0	76.9

It will be seen that debility and convulsions are again the chief causes of death. The causes of high infantile mortality among children on estates are: (1) the ignorance of the mother chiefly as regards feeding and clothing, (2) the shifting of gangs from estate to estate; expectant mothers and infants are exposed to great hardships, (3) the exposure to the severe cold in the high hills of Ceylon of infants born in the hot plains of India, (4) the want of sufficient clothing for infants born in the hill country of Ceylon, (5) ankylostomiasis in the mother. Many infants die from debility caused often by the starvation of the infant in the first week of life by the lack of milk in the mother as the result of the treatment received from the line Dhai. The Inspecting Medical Officer, Colombo District, considers that as there is an insufficiency of trained midwives, line Dhais should receive a 6 months' course of training in district hospitals where there are matrons qualified in midwifery, and gives it as his opinion that if line Dhais were taught the value of cleanliness the mortality rate would be halved. At present, he states, the treatment given to pregnant mothers by line Dhais is too harrowing to be described in detail. As regards the food given to mother and child, he states that soon after the birth of an infant a decoction sufficient for 10 days is made of 27 ingredients consisting of herbs, seeds, grain, and roots, and for 3 days after the birth of the child the mother is given no nourishment beyond four cups of this nauseous decoction sweetened with " juggery," and an occasional cup of coffee or thin rice conjee. Thereafter the decoction is continued up to the tenth day with increasing quantities of food of little nutritive value.

The infant is given a little powdered nutmeg obtained by grating it against the curry-stone " to cut the phlegm " and with it disease-bearing germs are introduced into the infant's stomach. Frequent doses of castor oil and sugar are further administered to irritate the intestinal tract of the infant, who is kept away from the breast for three days. It is unnecessary to describe here the various unhygienic things done; sufficient to say that this treatment of the mother and the child has a debilitating effect on both, and it is no surprise to find that a large number of the infants die of debility and that mothers so enfeebled fall easy victims to septic infection.

The presence of a well-trained and tactful midwife would prevent the drastic treatment thus meted out to mother and child. Under her skilled attention the mother would be kept clean and nature would do the rest. The management of a natural confinement is a matter of cleanliness and common sense. The labourer's wife at the present time lacks both.

It is regretted that more use is not made of the Maternal and Child Welfare Clinics held at district hospitals where an expectant mother can be examined by a Medical Officer and a trained nurse and instructed regarding the action she should take during the ante-natal period of her child's life. It is here suggested that if sufficient interest in this subject were shown by the wives of planters the attendance of estate labourers' wives at such clinics would be better than it has been in the past. Not only that, it would be possible to arrange for a few lectures on general ante-natal hygiene to be given at district hospitals to planters' wives interested in the subject and prepared to pass on to estate mothers the hints given at such lectures. There can be no doubt that if planters' wives, armed with the knowledge obtained at such lectures, took an interest in each expectant mother on the estate, the infantile and maternal mortality rate would be speedily reduced.

Figures showing the principal causes of deaths among Indian immigrant labourers on estates are given in Section II., Vital Statistics. It will be seen that the chief causes of death are debility, pneumonia, infantile convulsions, and dysentery.

The high death rate due to pneumonia is usually attributed to extreme climatic changes. No doubt that cause is the chief one but more precautions should be taken to guard against it. Estates should have drying rooms in which wet blankets could be rapidly dried, and every Indian labourer working at an elevation of over 2,000 feet should have two blankets. The food of the up-country labourer should be improved by the addition of dhal to every meal to increase the nitrogenous content.

Medical Attendance on Estates.—The Inspecting Medical Officer, Colombo, reports that he has noticed that many estates are content to have their sick attended to by their dispensers and do not always call in a Medical Officer in serious cases of illness or accident as they should do. An examination of figures for last year shows that 40 per cent. of labourers who died on estates received no qualified medical aid during their sickness, and this state of affairs is probably largely due to the estate dispenser's inability to recognize a serious case of illness. It is hoped that estate superintendents will give attention to this matter and take steps to ensure that a Medical Officer is called in all serious cases of illness or accident.

Ankylostomiasis.—An account of the work done on estates by the Ankylostomiasis Campaign officers is given in the report of the Superintendent, Ankylostomiasis Campaigns, in the appendix to this report. 67,145 labourers were treated by the campaign officers on estates in the Sabaragamuwa, Western, Central, and North-Western Provinces; 143,763 labourers were reported to have been treated by the estate staffs; and 184 labourers were treated by the Kalutara Badda Health Unit in 1929.

The Inspecting Medical Officers report that this disease does not prevail to the same extent as before, but some advanced cases are still to be seen. The Inspecting Medical Officer, Colombo, states that time after time he has met with untreated advanced cases with marked symptoms and considers that any estate dispenser worth his pay should diagnose such cases at an early stage and give treatment.

Epidemic Diseases.—No cases of cholera or smallpox occurred on the estates visited in 1929. An epidemic of enteric fever occurred amongst the coolies of an estate in the Dimbulla district. Malaria was worse than usual in the Dumbara Valley, Matale, and Galagedera districts in the Central Province. A few cases of plague occurred in Uda Pussellawa district, but they were confined to the kaddies and no cooly lines were affected. There were also a few cases in the Deltota district in the Galaha kaddies. In this outbreak one case occurred on an estate as the result of the outbreak in the kaddies.

5.—Housing and Town Planning.

The usual procedure for enforcing the provisions of the Housing Ordinance, No. 19 of 1915, was carried out during the year under review and the following is a statement of work done under the Housing Ordinance:—

(1) *New and Reconstructed Buildings.*

	New.	Reconstruction and Repairs.
Number of applications received and dealt with in respect of—		
(*a*) Dwelling houses ..	1,207	593
(*b*) Other buildings ..	901	181

(2) *Insanitary Buildings.*

	Reconstruction and Repairs.
(*a*) Number of insanitary buildings reported upon during the year ..	322
(*b*) Number of closing orders obtained ..	97
(*c*) Number of buildings improved ..	32
(*d*) Number of demolition orders obtained ..	67
(*e*) Number of buildings demolished ..	61

6.—Food in Relation to Health and Disease.

There is a general provision in the law by which food unfit for human consumption can be seized and dealt with, but for the efficient control of food a specific Pure Food Act is needed and is long overdue.

All food handling establishments in areas controlled by local authorities have to be licensed and such licences are granted on the recommendation of the Medical Officers of Health whose duty it is to see that they conform with the requirements of the by-laws.

A statement relating to the work done in this connection is given under licensed trades.

Milk Supply.—The existing law in regard to milk is defective and it is regretted that all efforts on the part of local sanitary authorities to improve the milk supply are frustrated owing to ineffective control of the trade. The chief reasons for this are—

(*a*) Ignorance of the general public regarding the importance of a pure and unadulterated milk supply.

(*b*) Apathy of even the educated classes who still persist in buying from the unlicensed vendors for the sake of cheapness, and their reluctance to give evidence in a court of law.

(*c*) Absence of suitable legislation.

At present analysis of milk is carried out only in Colombo. Considerable difficulty has been encountered in dispatching to Colombo samples taken in distant places.

The control of the milk supply in rural areas is an equally urgent necessity but owing to the lack of suitable legislation nothing can be done.

The following is a statement of work done in connection with milk control:—

(*a*) Number of samples taken and sent for analysis ..	290	(*e*) Number of persons prosecuted ..	183
(*b*) Number of samples found adulterated ..	189	(*f*) Number convicted ..	139
(*c*) Percentage of water varied from ..	5 to 80 per cent.	(*g*) Number warned and discharged ..	7
(*d*) Average adulteration ..	39.8 per cent.	(*h*) Amount of fines realized ..	Rs. 2,059

Meat Inspection.—All cattle slaughtered in areas controlled by local bodies are inspected before slaughter, which takes place in slaughterhouses provided by the local authority. The meat is sold in licensed stalls. A fair number of slaughterhouses has been built in rural areas as a result of persuasion.

For the sale of meat, fish, vegetables, and fruits, markets are generally provided in areas under local bodies. The sanitary condition of these markets has been supervised and maintained by the Inspectors in charge of towns where they exist.

All foodstuffs exposed for sale were regularly inspected and prompt action was taken, where necessary, under the provisions of the general law dealing with food unfit for human consumption.

The storage of rice is controlled by specific regulations in certain towns as a precautionary measure against plague.

B.—Measures taken to Spread the Knowledge of Hygiene and Sanitation.

1. *Health Lectures.*—A series of 12 lectures on rural sanitation was delivered during the year to the teachers of the Anglo-vernacular and vernacular schools in the following towns:—Colombo, Panadure, Kalutara, Gampaha, Padukka, Galle, Matara, Tangalla, Kandy, and Matale. The course was arranged in consultation with and with the active co-operation of the Education Department.

The classes commenced in May and continued for three months. An examination was held in October and a certificate signed by the Heads of the Department of Medical and Sanitary Services and the Education Department will be given to those who pass it.

Lectures were also delivered to school children at Chilaw, Jaffna, Ratnapura, and to the Police at Kandy and to the students of Gampaha Government Training School.

Lectures illustrated with lantern slides were delivered at many centres throughout the Island as a part of the routine work of the Medical Officers of Health.

Lectures illustrated with cinema films on malaria, hookworm, and maternity and child welfare were delivered in several towns and attracted a large audience.

The Department participated in the Mirigama Agricultural and Industrial Exhibition and at the Siyane Korale East school exhibition at Kirindiwela. A Public Health Exhibition was organized at these exhibitions and in it were displayed models, charts, posters, &c. Leaflets were also distributed. Competitions were also held amongst the senior and junior pupils and the teachers who exhibited health posters, health slogans, health verses and songs.

2. *Health Articles to the Press.*—Fifty-two articles on health subjects were published weekly in the local newspapers, both English and vernacular.

3. *Radio Talks.*—Health talks in English and Sinhalese were broadcasted weekly on Fridays and Tuesdays, respectively.

4. *Health Units.*—A summary of work done at the Health Units during the year is included in the appendix.

5. *Cinema Films.*—The Department possesses three cinema films: one on Malaria, one called "Unhooking the Hookworm," and the third "Romanis." The first two were prepared in America by the Rockefeller Foundation. As regards the third the Department broke new ground. It was desired to have a film with "local colour" in it, and arrangements were accordingly made in 1928 to produce a film which would deal with child welfare in a manner that would be interesting to and easily understood by the people of this country. After steady and persistent efforts the film "Romanis" was completed and in the early part of 1929 it was released for public exhibition. This is the first educational film of this kind to be produced by a Government Department in Ceylon, and the results of the Department's efforts in this direction are encouraging. The actors in the film were either officers of the Department or villagers, and when their lack of training in film work is considered their success is all the more remarkable. The majority of the scenes were "shot" in the Kalutara Health Unit area.

6. *Health and Baby Weeks.*—Health and Baby Weeks as a means of Health Propaganda are well recognized. In 1927 the first Health and Baby Week was held at Kurunegala by the Kurunegala Social Service League. This consisted chiefly of lectures on health subjects delivered each evening with the aid of the lantern and the cinema. A certificate of merit was awarded by the Baby Week Council in England. In 1928 a Health Lecture Week was held at Kalutara by the Health Unit.

In 1929 during March a Health Week was held at Jaffna. This consisted of a large number of day and night lectures on health subjects and of a Health Exhibition. Great enthusiasm was displayed. The exhibition created much interest and the lectures were very well attended.

In April, a complete Health and Baby Week organized and conducted on approved lines, the first of its kind in the Island, was held from the 21st to 27th at Kalutara totamune. It provided an example for other areas to copy as regards the method of organization and activities. It was such a conspicuous success that it was awarded the Imperial Challenge Shield for the best Health and Baby Week held during the year within the British Empire exclusive of the British Isles.

Briefly the method of organization consisted in the formation of a representative Health and Baby Week Committee for the area, composed of both officials and unofficials appointed at a public meeting held for the purpose. At the same meeting all the Committees needed to carry out the various activities were appointed. The following were the Committees appointed:—General Committee, Executive Committee, Programme and Publicity Committee, Health Exhibition Committee, Baby Show and Clinic Committee, School Hygiene Committee, and Competition Committee.

The activities carried out consisted of Sunday health talks in churches and Sunday schools, health exhibition, health lectures, baby show, dramatic performances, school processions, public meeting on the last day, and competitions. The competitions held consisted of the following:—For schools: best-kept school, best health play, best health song, best health poster, best drill squad, best school procession, mothercraft, fathercraft; for clinics: champion baby, second best baby, best breast-fed baby, best artificially-fed baby, best child welfare clinic, mothercraft; open: best health poster, best-kept premises, best bakery, best tea kiosk, best eating-house, best dairy.

Being impressed by the activities of the Week and realizing the immense possibilities of educating the masses through Health and Baby Weeks, Mr. M. F. P. Gooneratne, a public-spirited citizen of Kalutara North, offered the Department a Challenge Shield worth Rs. 500 to be competed for annually by the various areas in the Island. This offer has been accepted and the shield is now on order.

7. *Special Reports.*—Special reports were submitted by officers of the Department on the following subjects:—Epidemics, water supplies, festivals, pilgrimages, housing, cemeteries, sites for public latrines, general health of districts, &c.

C.—Training of Sanitary Personnel.

No training class for Sanitary Inspectors was held during the year under review.

D.—Recommendations for Future Work.

The appointment of a Medical Officer of Health for Batticaloa District and a third Medical Officer of Health to the Southern Province, where work is developing at a rapid rate, is under consideration.

It is proposed to utilize the services of Medical Officers of Ankylostomiasis Campaigns for the supervision of latrine construction in rural areas, thereby combining mass treatment for hookworm infestation with permanent measures adopted for the prevention of soil pollution, which is the chief cause of re-infection after treatment. A scheme for this purpose has been drawn up and will be introduced at an early date.

As the work of Health Units has proved a success the Department's policy of establishing one Health Unit each year will be continued if funds permit. In addition to the benefits accruing to the area from intensive health work systematically carried out, Health Units serve as an example to the whole district and are of great educational value.

As repeated attempts to recruit Public Health Nurses from among Hospital Nurses had failed, a scheme for recruitment of suitable women for training as Public Health Nurses has been drawn up and the proposals are now before Government. As stated in the report for last year, until the services of trained Public Health Nurses are available, maternity and infant welfare work in Health Unit areas cannot be efficiently done.

The appointment of more Sanitary Inspectors to rural areas is urgently needed if health work is to be developed. Much interest is now being evinced in health matters, mainly as a result of propaganda work, and the time is therefore opportune for the extension of health work into areas hitherto untouched owing to lack of personnel.

The course of lectures in rural sanitation to teachers of vernacular schools in the Western, Central, and Southern Provinces has become very popular and will be gradually extended to other Provinces.

IV.—PORT HEALTH AND ADMINISTRATION.

Colombo Port.

During the year 3,213 British and foreign vessels and 206 Indian sailing craft called at this Port, as against 3,002 and 274, respectively, in 1928.

Infected Vessels.—Three vessels arrived infected with smallpox, 2 with cholera, 5 with scarlet fever during the year. They were kept in strict quarantine until the usual control measures were carried out. Three cases of smallpox, 1 case of cholera carrier, and 1 case of scarlet fever were landed and sent to the Infectious Diseases Hospital, Colombo.

The following tabular statement gives the number of cases of infectious diseases which occurred on vessels in this port :—

	Smallpox.	Chicken-pox.	Measles.	Mumps.	Scarlet Fever.	Whooping Cough.
Number of cases	3	68	46	25	5	10
Number of infected vessels	3	25	21	13	5	8
Number sent to Infectious Diseases Hospital ..	3	5	—	1	—	—

Suspected Vessels.—Three vessels which had landed cases of smallpox at Singapore arrived at this port and they were kept in strict quarantine until the usual control measures were taken.

Cholera.—Two vessels arrived at this port having landed cases of cholera at Madras. One vessel arrived at this port with cases of acute diarrhoea suspected to be choleraic. This ship also was kept in strict quarantine until all precautionary measures were taken and the cases proved to be non-infectious.

Plague.—One vessel arrived from Bombay with a suspected case of plague and she was kept in strict quarantine, but the case proved to be negative.

During the year under review plague prevailed in sporadic form in the town of Colombo. There has been no relaxation of the measures taken against plague at this port. Regular trapping of rats was carried out in all warehouses and Customs premises and periodical fumigation of all lighters used in the Harbour was done throughout the year.

No vessels arriving at this port reported any mortality among rats. All vessels reported the regular use of rat traps and poison baits to keep down rats.

Periodical fumigation for deratization purposes was found to have been practised in most of the vessels calling at foreign ports. Fumigation was an exception in the case of India coasting vessels calling at this port.

At this port, in the year under review, 12 vessels were fumigated with SO2 by the Clayton Apparatus.

Water Boats.—These have been regularly cleaned and cement-washed every three months. They were regularly inspected and passed by the Port Surgeon before being used.

Under the rules of the Quarantine Ordinance, No. 3 of 1897, 25 prosecutions were entered against boats kept in an insanitary condition during the year and Rs. 245 was recovered in fines and credited to Government.

8,588 cargo boats were fumigated with sulphur and 1,216 rats destroyed, against 6,144 and 919, respectively, in 1928.

Vaccination.—550 persons were vaccinated during the year, as against 433 during the previous year. These were mostly arrivals from India *viâ* Tuticorin and Mandapam. Vaccinations were done in the case of smallpox-infected and suspected vessels, and also in the case of steerage and third class passengers bound for Australia and United States.

Disinfection.—Disinfection of 199,052 persons and their clothing was carried out during the year, as against 211,468 in 1928.

These comprise third class passengers, cargo coolies, coal coolies working on ships, tally clerks, ships' crews, and dhobies.

Venereal Clinic.—A report of the work done at the Port Venereal Clinic for Seamen is given in section VI. of this report.

Galle Port.

Seventy-eight steamers and 20 sailing vessels called at this port during the year under review and were inspected by the Port Surgeon, as against 91 steamers and 25 sailing vessels in the previous year. Of these, 9 steamers and 19 sailing vessels were granted free pratique and 69 steamers and 1 sailing vessel were placed in simple quarantine. Not a single infected vessel arrived at this port during the year. No vessel was placed in strict quarantine.

Disinfection.—9,375 persons and their clothing were disinfected during the year, as compared with 9,036 the previous year. 478 cradles of soiled linen from quarantined vessels were lso disinfected.

Water Boats.—These boats were regularly inspected during the year.

V.—MATERNITY AND CHILD WELFARE.

The statistics of the Island relating to infant mortality are as follows:—

Table showing Infant Deaths and Infant Mortality Rates for the whole Island for Eleven Years, 1919 to 1929.

Year.	Infant Deaths.	Mortality Rates.	Year.	Infant Deaths.	Mortality Rates.
1919	35,941	223	1925	33,221	172
1920	29,792	182	1926	36,024	174
1921	35,325	192	1927	32,959	160
1922	33,803	188	1928	37,792	177
1923	38,467	212	1929	36,963	187
1924	33,350	186	Median	35,325	186

The infant mortality rate for the year under review (1929) is 187, which is higher than the rates for the previous 5 years, and is the highest since 1923, when the rate was 212. In 1927 the lowest rate was recorded and during the last 2 years the rate has shown a tendency to increase.

The number of infant deaths in 1929, however, has decreased by 829, compared with the figures for 1928, but it is higher than the average by 1,638.

Table showing Infant Deaths and Infant Mortality Rates in the Urban Areas (Proclaimed Towns) of the Island for Eleven Years, 1919-1929.

Year.	Infant Deaths.	Mortality Rates.	Year.	Infant Deaths.	Mortality Rates.
1919	4,263	259	1925	4,401	216
1920	4,285	228	1926	4,544	208
1921	5,324	238	1927	4,159	191
1922	4,574	240	1928	4,649	197
1923	5,073	258	1929	4,700	212
1924	4,385	235	Median	4,544	228

The above table shows that in the urban areas the infant deaths of 1929 exceed those of 1928 by 51 and the average by 156. Although there is an increase in the death rate over that of the previous year, yet it is below the average for the 11 years.

Table showing the Infant Deaths and Infant Mortality Rates in the Rural Areas (exclusive of the Proclaimed Towns) compared with those of the Urban Areas for Three Years, 1927-1929.

Year.	Infant Deaths.		Infant Mortality Rates.	
	Urban.	Rural.	Urban.	Rural.
1927	4,159	28,802	191	157
1928	4,649	33,145	197	175
1929	4,700	32,263	212	183

The above table shows that in the rural areas the 1929 infant deaths have decreased by 88% as compared with those of 1928, while in the urban areas there is an increase of 51 in 1929.

The urban mortality rate (212) is higher than the rural rate (183) by 29, but the 1929 figures for the two sections are higher than those of 1928.

Table Comparing the Infant Mortality Rates of the Ceylonese (*i.e.*, the whole Population of the Island less the Indian Immigrants on Estates and Europeans), Indian Immigrant (Estate) and the European Populations for Three Years, 1927-1929.

Year.	Ceylonese.	Indian Immigrant.	Europeans.
1927	142	228	24
1928	173	211	12
1929	183	213	14

The 1929 figures show an increase in the rates of the 3 groups as compared with those of 1928, the increase in the Ceylonese rate being the highest.

Table showing Causes of Infant Mortality according to Age Groups and the Percentage each Cause forms of the Total for the Year 1929, compared with the Percentage for 1928.

Causes.	Under Three Months.	Three Months and under one Year.	Total.	Percentage each is of Total, 1929.	Percentage each is of Total, 1928.
Convulsions	7,118	3,687	10,805	29.2	28.3
Tetanus	50	8	58	0.2	0.2
Diarrhoea	127	475	602	1.6	1.3
Bronchitis	137	153	290	0.8	0.7
Pneumonia	222	646	868	2.3	2.3
Enteritis	131	204	335	0.9	0.7
Debility	—	—	7,716	20.9	19.7
Prematurity	—	—	2,320	6.3	5.8
Other causes	—	—	13,969	37.8	41.0

Convulsions and debility as in the previous year continue to be the chief causes of infant deaths—the increase in the number of deaths in 1929 over 1928 being 131 and 200, respectively, from these causes.

As in 1928, there has been a heavier incidence of malaria than usual all through the malarious parts of the Island during 1929. The figures for the three years are—

	1927.	1928.	1929.
Total deaths	113,003	132,337	135,275
Deaths due to malaria	1,331	2,239	2,326
Deaths due to pyrexia	13,502	18,954	18,744

It is believed that the increase in the infant death rate, due largely to convulsions and other causes, has been caused by the increased incidence of malaria.

The Statistics of the Island Relating to Maternal Mortality.

Table showing Maternal Deaths and Maternal Death Rates (per 1,000 Live Births) for the whole Island for the Eleven Years, 1919-1929.

Year.	Maternal Deaths.	Live Births.	Maternal Death Rate	Year.	Maternal Deaths.	Live Births.	Maternal Death Rate.
1919	3,664	161,403	22.7	1925	3,576	193,261	18.5
1920	2,893	163,719	17.7	1926	3,951	206,888	19.0
1921	3,862	183,917	21.0	1927	3,595	205,469	17.0
1922	3,650	179,856	20.3	1928	4,091	213,311	19.2
1923	3,912	181,437	21.6	1929	4,031	198,007	20.3
1924	3,417	178,867	19.2	Median	3,664	183,917	19.2

The above table shows that the year 1927 has to its credit the lowest maternal mortality rate for the last eleven years, viz., 17 per 1,000 living births. The same year also recorded the lowest infant mortality rate. In 1929 the maternal mortality rate has gone up to 20.3, which is higher than the rate for 1928 and the average for the last 11 years. The number of maternal deaths in 1929 has been less than that of the previous year by 60.

Table showing Maternal Deaths and Maternal Death Rates in the Urban Areas (Proclaimed Towns) for Eleven Years, 1919-1929.

Year.	Maternal Deaths.	Live. Births.	Maternal Death Rate.	Year.	Maternal Deaths.	Live Births.	Maternal Death Rate.
1919	406	16,479	24.6	1925	540	20,400	26.5
1920	385	18,762	20.0	1926	663	21,830	30.0
1921	625	21,908	28.5	1927	606	21,773	28.0
1922	498	19,022	26.2	1928	693	28,675	24.2
1923	498	19,664	25.3	1929	730	22,172	32.9
1924	478	18,674	25.6	Median	540	20,400	26.2

There has been a decided increase in the urban maternal mortality rate over that of the previous year; the 1929 rate being 32.9, as compared with 24.2 in 1928.

Table showing Maternal Deaths and Maternal Death Rate in Rural Areas (exclusive of the Proclaimed Towns) for Eleven Years, 1919-1929.

Year.	Maternal Deaths.	Live Births.	Maternal Death Rate.	Year.	Maternal Deaths.	Live Births.	Maternal Death Rate.
1919	3,258	144,994	25.3	1925	3,036	172,861	17.6
1920	2,508	144,957	17.3	1926	3,288	185,058	17.8
1921	3,237	162,009	19.3	1927	2,989	183,696	16.3
1922	3,152	160,834	19.6	1928	3,393	184,636	18.4
1923	3,414	161,773	21.1	1929	3,301	175,835	18.7
1924	2,939	160,193	18.3	Median	3,237	162,009	18.4

The rural maternal mortality rate for 1929 has increased by 0.3, as compared with the rate for 1928. From the foregoing three tables it will be apparent that—

(1) The average figures for 11 years, 1919-1929, are as follows:—

	Whole Island.	Urban.	Rural.
Maternal deaths	3,664	540	3,237
Maternal death rate	19.2	26.2	18.4

(2) The figures for 1929 are—

Maternal deaths	4,031	730	3,301
Maternal death rate.	20.3	32.9	18.7

(3) The maternal death rate in the rural areas is lower than that in the urban areas. This is no doubt due to the incorrect certification of the causes of death in the rural areas.

Table showing Causes of Maternal Mortality and the Percentages that each Cause forms of the Total.

	Number.	Percentage.		Number.	Percentage.
Accidents of pregnancy	110	2.74	Puerperal convulsions	1,881	46.66
Puerperal haemorrhage	131	3.25	Puerperal albumenorria	3	.07
Puerperal septicaemia	1,466	36.37	Other accidents of child birth	433	10.74
Phlegmasia alba dolens	7	0.17			

Puerperal convulsions and puerperal septicaemia have been the chief causes of maternal deaths as in previous years.

Table showing Stillbirths, Live Births, and the Ratio that Stillbirths form of the Live Births for Eleven Years, 1919-1929.

Year.	Stillbirths.	Live Births.	Ratio of Stillbirths to Live Births.	Year.	Stillbirths.	Live Births.	Ratio of Stillbirths to Live Births.
1919	955	16,479	5.8	1925	1,443	20,400	7.0
1920	1,182	18,672	6.3	1926	1,574	21,830	7.2
1921	1,493	21,908	6.8	1927	1,631	21,773	7.5
1922	1,433	19,022	7.5	1928	1,770	28,675	6.1
1923	1,444	19,664	7.3	1929	1,786	22,172	8.0
1924	1,274	18,674	6.8	Median	1,444	20,400	7.0

The above statement refers only to the urban areas as there is no record of stillbirths in the rural section. On an average there are 7 stillbirths to every 100 live births.

Ante-Natal and Baby Clinics.

Ante-natal care has been provided at the clinics held at the De Soysa Lying-in Home in Colombo. As the figures indicate, the number of expectant mothers seeking assistance shows an increase every year.

	1926.	1927.	1928.	1929.
Mothers	948	1,589	1,702	1,903
Visits	1,038	1,741	1,760	2,194

Combined ante-natal and baby clinics have been held weekly at the 18 places mentioned below and the statistics in connection with them are as follows:—

Locality.	No. of Clinics.	Expectant Mothers.	Visits by Infants.	Pre-school Children.
Siduwa	49	67	546	106
Munnakkarai	52	—	856	269
Gampaha	11	—	22	4
Imbulgoda	2	1	6	2
Welikada	47	2	284	65
Kirillapone	12	—	10	42
Nuwara Eliya ..	44	108	179	353
Ratnapura	49	—	519	—
Nikaweratiya	4	—	35	—
Jaffna	6	27	25	7
Badulla	51	—	672	—
Kegalla	1	—	24	—
Trincomalee	48	52	707	—
Dehiwala-Mt. Lavinia ..	4	1	7	9
Health Units:—				
Kalutara totamune ..	510	268	3,195	3,447
Weudawili hatpattu ..	111	21	423	558
Matara Gravets and Wellaboda pattu ..	55	45	1,224	2,044
Paranakuru korale ..	11	4	62	42
	1,067	596	8,796 ..	6,948

It will be seen that there have been 1,067 clinics held at which visits have been as follows:—

By expectant mothers ..	596	By pre-school children ..	6,948
By infants	8,796		

Trained Assistance at Labour and the Training and Control of Midwives.

Trained midwives are provided at Government hospitals, in Health Units, and in areas under local authorities. In Health Units and under local authorities they work in the homes of the people.

The following is a statement of trained midwives employed by Government:—

	1927.	1928.	1929.		1927.	1928.	1929.
Government hospitals ..	58	64	64	Health Units ..	3	13	23

The above are in addition to trained midwives who are doing private work.

The training of midwives continues to be carried out at the De Soysa Lying-in Home, Colombo, the course being for a period of six months. Training for midwives is also provided at the McLeod Hospital at Inuvil in the Jaffna Peninsula, and the candidates after the training take up an examination in Colombo for the certificate granted by the Department.

The number of midwives passed out from the Lying-in Home during the past three years is as follows:—

Year.	Stipend and Paying Midwives.	Nurses given Midwifery Training.	Total.	Year.	Stipend and Paying Midwives.	Nurses given Midwifery Training.	Total.
1927. ..	51	12	63	1929 ..	52	16	68
1928 ..	47	13	60				

Ordinance No. 26 of 1927 provides for the registration and control of midwives in the Island. It was proclaimed in 1928 and the sections dealing with midwives have been put into operation in the city of Colombo during 1929, and a register of midwives has been prepared.

Maternity Beds in Hospitals.

The policy of the Department to provide all its district hospitals with maternity beds has been continued during the year and the hospitals at Dikoya and Tangalla were provided with necessary accommodation totalling 10 beds. At Horana a new maternity block was donated by Mr. C. E. A. Dias. This contains 6 beds.

Training of Public Health Nurses.

The Medical Officer for Maternity and Child Welfare, who was attached to the Kalutara Totamune Health Unit, was transferred during the year to the Dehiwala-Mount Lavinia area by arrangement with the Urban District Council of the locality for the purpose of developing child welfare work there and to train Public Health Nurses.

The recruiting of Public Health Nurses from the nurses on the hospital side having proved unsatisfactory, proposals to recruit them direct and to give them a training of 2½ years' duration are now before Government.

Voluntary Associations and Child Welfare.

According to the way child welfare work is being developed in the Island, the assistance of voluntary associations is very essential. These organizations under the names of Social Service Leagues, Health Leagues, Child Welfare Associations, &c., are actively engaged in the work at the various centres at which clinics are being held. They are doing very useful work.

Propaganda Work.

For propaganda work in connection with maternity and child welfare see under Health and Baby Weeks in section III. of this report.

VI.—HOSPITALS, DISPENSARIES, AND VENEREAL CLINICS.

General Remarks.—The whole Island is very generously provided by the State with medical facilities. There were 88 Government hospitals in the outstations providing accommodation for 6,955 beds. No new hospital was opened during the year. In addition to these 88 outstation hospitals the following special hospitals were maintained:—General Hospital, Colombo, with 859 beds, a Lying-in Home with 100 beds, an Eye Hospital with 58 beds, a Women's Hospital with 45 beds, a Children's Hospital with 82 beds, a Female Venereal Hospital with 29 beds, a Police Hospital with 31 beds, a Tuberculosis Hospital (for chronic cases) with 349 beds, a Tuberculosis Sanatorium with 72 beds, and an Infectious Diseases Hospital with 168 beds.

The number of Central and Branch Dispensaries and Visiting Stations maintained by Government increased from 575 in 1928 to 601 in 1929, and in addition to these the following special institutions were maintained for the treatment of out-patients:—King Edward VII. (Memorial) Anti-Tuberculosis Institute, Colombo; Grenier Ear, Nose, and Throat Infirmary, Colombo; Dental Institute, Colombo; and special dispensaries at Kandy, Galle, Jaffna, Batticaloa, and Badulla for the treatment of eye diseases. The Ophthalmic annexe at the last named place was built through the munificence of Mrs. H. P. Joseph in memory of her husband Dr. H. P. Joseph, late Surgeon-in-Charge, Victoria Memorial Eye Hospital, Colombo, and was also equipped with nearly all the surgical instruments at her expense.

During the year under review there was considerable increase in the number of estate hospitals and estate dispensaries maintained by proprietors of estates; 81 hospitals and 684 dispensaries in 1928 increased to 85 and 706 respectively in 1929.

In accordance with the policy of the Department to provide expert medical aid in Provincial towns an Eye Surgeon was appointed to the Badulla Hospital with effect from November 13, 1929. Six out of the nine Provinces are now provided with Eye Surgeons.

A total of 210,547 in-patients with 13,625 deaths, giving a mortality rate of 6.47 per cent., was treated in the various Government hospitals. The figures for the previous year were 224,850, 14,066, and 6.26, respectively. In the Government dispensaries and out-patient departments attached to Government hospitals 3,626,606 patients who paid 5,407,588 visits were treated during the year, as against 3,482,691 patients and 5,169,488 visits the previous year.

Some of the more important buildings that were completed during the year are given hereunder: a noisy ward, Lunatic Asylum, Angoda; a maternity ward and dispensary at Horana; a hospital at Kayts, a two-storey ward, Jaffna hospital; a female ward and a maternity annexe, Tangalla hospital; a hospital at Tanamalwila; two permanent wards to Buttala hospital; dispensary and apothecary's quarters at Ronorawewa, Wiraketiya, Mannampitiya, Nilaveli, Kalamadawachchi, Kalawewa, Siyabalanduwa, Rambukkana; a dispensary at Kumbukwewa, an ophthalmic annexe at Badulla hospital; a branch public health laboratory at Kurunegala; apothecary's stewards', and attendants' quarters at Anti-Tuberculosis Hospital, Ragama; quarters for:—Visiting Apothecary, Maturata; District Medical Assistant, Dimbulla; Religious Nursing Sisters, Nawalapitiya (upstair bedroom block with bathrooms); Jail Apothecary, Anuradhapura; Medical Officer, Hiniduma; Medical Superintendent, Galle; minor employees, Deniyaya hospital; Provincial Surgeon, Batticaloa; Medical Officer, Valaichchenai; Medical Officer, Muthur; Apothecary and Nurses, Kalmunai; Medical Officer, Maho; House Surgeon, Badulla; District Medical Officer, Deraniyagala; and a Chapel for Religious Nursing Sisters, Anti-Tuberculosis Hospital, Ragama.

Many other buildings were begun during the year under review as well as in the previous year but have not yet been completed.

The following are some of the major improvements that were also carried out:—Water service to Galagedara and Gammaduwa dispensaries, and additions and improvements to General Hospital, Colombo, Galle hospital, Mantivu Leper Asylum, Bandarawela dispensary hospital buildings at Nuwara Eliya, Gampola, Ramboda, Dolosbage, Dimbulla, Dikoya, Hendala Leper Asylum (a semi-temporary ward), Pimbura hospital (maternity ward), and Madulkele hospital (maternity ward and nurses' quarters).

Report on Colombo Hospitals.

A brief summary of the work done in the chief Colombo hospitals is given below:—

General Hospital, Colombo.—The following is a summary of the chief features of the report of the Medical Superintendent, General Hospital, Colombo:—

At the end of 1928 there were 822 patients in the hospital (58 paying and 764 non-paying patients). During 1929 18,342 patients (1,720 paying and 16,623 non-paying) were admitted to hospital.

The total treated in the hospital during 1929 was 19,164 (1,778 paying and 17,387 non-paying patients) as compared with 21,273 (1,781 paying and 19,492 non-paying) in the previous year. Of these 19,164 cases, 14,383 were medical cases and 4,781 were surgical cases, as against 16,438 medical and 4,835 surgical in 1928.

The following table shows the discharges, deaths, &c., in the General Hospital during 1929:—

	Discharges.	Deaths.	Remaining in Hospital on December 31, 1929.	Daily Average in Hospital.
Paying section	1,609	93	76	87.57
Non-paying section	14,379	2,167	840	829.28
Total	15,988	2,260	916	916.85

The maximum and minimum number of patients in hospital on any one day during the year was as under:—

	Maximum.	Minimum.
Paying section	96 on April 14, 1929	60 on July 10, 1929
Non-paying section	952 on December 19, 1929	716 on April 14, 1929

The total number of operations performed was 2,809, of which 2,380 were performed in the hospital and 429 (minor operations) at the Out-Patients' Department, as against a total of 2,749 (2,477 in hospital and 272 on out-patients) in the previous year.

The total number of patients treated at the Out-Patients' Department amounted to 29,666, as compared with 33,990 in 1928. The number of visits paid by patients was 173,931 with a daily average of 476.52.

The following table gives comparative figures for the past three years of the cases under treatment in hospital in the paying and non-paying sections:—

Year.	Cases under Treatment.	Daily Average Sick.	Deaths.	Mortality Percentage.
Paying Section.				
1927	1,691	81.64	117	6.9
1928	1,771	82.8	111	6.2
1929	1,778	87.57	93	5.2
Non-paying Section.				
1927	18,952	863.42	1,973	10.41
1928	19,502	854.65	2,125	10.89
1929	17,387	829.28	2,167	12.48

A statement is given below of cases treated for the under-mentioned diseases, showing their prevalence and mortality during the past three years:—

	1927.		1928.		1929.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Malaria	2,445	27	4,162	90	3,436	154
Ankylostomiasis	533	71	1,046	172	889	89
Parangi	232	—	54	—	33	—
Dysentery	343	55	445	83	457	80
Pulmonary tuberculosis	750	276	698	250	817	184
Enteric fever	330	79	385	77	453	114
Pneumonia	1,055	300	979	380	683	156
Appendicitis	189	3	181	9	202	18

The above figures show that in 1929 as compared with 1928 there has been a decrease in the number of cases of malaria, ankylostomiasis, parangi, and pneumonia, whereas dysentery, pulmonary tuberculosis, enteric fever, and appendicitis show an increase.

Malaria shows a decrease of 726 cases as compared with 1928. There were however a great many cases of a malignant type of malaria; many of these occurred among residents of Colombo but the infection was not considered to have been derived from within the Municipal area. The severity of the type of disease is indicated by the fact that the deaths numbered 154 as compared with 90 in 1928.

Pneumonia shows a decrease of 296 cases as compared with 1928 with a much lower death rate of 22 per cent.

Pulmonary tuberculosis shows an increase of 119 cases and 66 deaths. Although the cases are treated in "open wards," *i.e.*, wards the external walls of which are only 3 feet high, it would be in the public interest if they could be excluded entirely from the General Hospital. The existing accommodation however of the Tuberculosis Hospital and Sanatorium is not sufficient to permit of such an ideal policy.

Enteric fever cases are still being sent to this hospital instead of to the Infectious Diseases Hospital at Angoda which has all the facilities for treating them. Sixty-eight cases more than in 1928 were treated.

Buildings.—Only two floors of the new three-storeyed block which was constructed have been used for the admission of cases during the year. It is hoped that the third floor will be available as soon as the passenger lift which is in course of erection is completed. The old male Medical I. Ward which was partly demolished to be replaced by the new kitchen and milk room has been re-equipped with 20 beds, with four extra beds for male radium cases. The old isolation room at the end of the Accident Ward has been converted into a radium ward for females, with 4 beds.

General.—The following remarks were made by Professor Voronoff regarding the General Hospital, Colombo, which he visited on November 21, 1929:—

"This morning I went all over the General Hospital, Colombo, for two hours and I was greatly impressed—You should be proud of your hospital. Such an institution would be a credit to Paris itself. Everything was so splendidly laid out, everything was so beautifully clean—Mostly I was impressed with this great cleanliness. All the time I was there I smelt nothing

that was unclean. This in a hospital is astounding—and the kitchens. They were most excellent because they were most clean. The wide airy and most spacious rooms for the patients impressed me greatly. I have no hesitation in saying that the standard set by this hospital is immeasurably superior to the general run of hospitals in Europe."

Pathological Department.—The staff consists of a full-time Pathologist and two qualified assistants. The following number of specimens was examined and reported upon:—

	Specimens.		Specimens.
Urine	13,322	Smears	526
Faeces	9,640	Surgical (General Hospital)	344
Gastric contents	676	Microscopic examinations from outstations	88
Sputum	2,278	From post-mortem room	78
Blood	5,605		
Cerebro spinal fluid	218		32,893
Ascitic and pleural fluids	118		

The total number of specimens examined during the year 1929 was 32,893, as against 30,292 in 1928 and 21,027 in 1927.

X'Ray Department, General Hospital, Colombo.—During the year 2,553 patients in the non-paying section and 321 patients in the paying section, making a total of 2,874 patients, underwent x'ray examination as against a total of 2,489 last year. 385 patients more have been examined this year than last year. On the electro-therapeutic side 6,109 sittings were given to non-paying patients (including patients from the paying wards of the hospital from whom no charges have hitherto been made) and 74 sittings to paying patients who came from outside, making a total of 6,183 as compared with a total of 3,702 the previous year. This shows the increase in demand for electrical treatment and justifies the recent appointment of two x'ray assistants to the staff. Practically every modern method of electrical treatment is now available to patients in the hospital.

During the year the radium indented for last year was delivered and already 103 cases have received treatment. The majority of these have been cases of cancer.

Dental Institute, Colombo.—This institute is in the third year of its existence and has proved to be of immense benefit to poor patients, who are seeking treatment in large numbers.

13,755 patients were treated during the year under review as against 11,893 in 1928. The total number of visits made by patients was 27,044.

The number of patients was made up as follows:—

Patients sent from different hospital wards	387	Other patients	11,904
Children below school age	262		
School children who attended school clinic	1,202		13,755

The following are among the causes for which treatment was obtained:—

Extraction	7,632	Alveolar abscess	63
Cleaning and filling	5,411		

Twenty-seven cases were operated on at the institute.

The professional staff of this hospital consists of one qualified Dental Surgeon and two unqualified assistants. The nursing staff at first consisted of two Religious Sisters, but they were replaced during the year by a Ceylonese Matron and Nurse.

The following entries in the Visitors' Book were made by distinguished visitors to the Island:—

> Sir John Bland Sutton, Bart., Consulting Surgeon, Middlesex Hospital, London. "Admirably organized."
>
> Dr. Selwyn Clark, M.D., D.P.H., Chief Health Officer, Federated Malay States, "Dr. Balendra very kindly showed me over this splendid Dental Institution (thanks to the courtesy of the D. M. S. S., Hon. Dr. J. F. E. Bridger). It is quite the best equipped and organized Dental Institution I have ever seen in any part of the Tropics I have visited and is one to be very proud of."

De Soysa Lying-in Home.—The urgency of increased accommodation to enable the work to be carried out on improved lines is once more emphasized. The present position in this respect is explained under section X. (6) Medical Requirements.

The number of cases under treatment in 1929 was 5,123, as against 5,125 the previous year and 4,349 in 1927. The daily average for the year under review was 108.94 and the mortality rate was 3.14 as compared with 129.97 and 2.65, respectively, the previous year. There were 161 maternal deaths during the year, and of these 61 were due to accidents of childbirth, 9 to puerperal causes, and 91 to general causes, such as ankylostomiasis, pulmonary thrombosis, pneumonia, pulmonary embolism, &c.

The number of live births was 3,048. Of these infants, 2,847 left the hospital alive while 201 died after delivery, as against 3,255 and 148, respectively, in 1928. 296 obstetric operations were performed during the year, necessitating the use of forceps in 144 cases, craniotomy in 39 cases, embryotomy in 1 case, decapitation in 7 cases, bipolar podalic version in 46 cases, abdominal section in 2 cases, episiotomy in 2 cases, Caesarean section in 4 cases, and manual extraction of placenta in 51 cases. Labour was classified as normal in 3,125 cases. There were 1,037 cases with other presentations. In 45 cases of placenta praevia 15 infants were born alive, 29 were born dead and 1 was undelivered; 41 mothers recovered and 4 died. In 119 cases of puerperal eclampsia 68 mothers recovered; 27 left hospital before delivery and 24 died; 38 infants were born alive, 54 were born dead, and 27 were not delivered.

This institution continued to be the training ground for midwives for the whole Island. The professional staff consisted of 1 Medical Superintendent, 1 Assistant Obstetrician, and 3 qualified House Officers.

The Victoria Memorial Eye Hospital and the Grenier Ear, Nose, and Throat Infirmary.—There are 7 beds and 1 cot (paying section), and 43 beds and 5 cots (non-paying section) in this hospital.

27,922 patients were treated during the year as against 26,979 patients in 1928. Of the cases treated during the year 23,066 were eye, 3,578 ear, 423 nose, and 855 throat cases.

There were 78 in-patients remaining in hospital at the beginning of the year and 1,765 patients were admitted during the year as compared with 92 and 1,581, respectively, the previous year. Of these, 1,773 were discharged and 6 died—the chief factor being marasmus (with keratomalacia).

The total number of ophthalmic operations performed on in-patients during the year was 626 and on out-patients 2,919—the corresponding figures for the previous year being 630 and 1,491, respectively. 303 individual cases of cataract were operated on during the year. 2,118 refraction cases were attended to in 1929 as against 2,043 in 1928.

Keratomalacia still continues to be the chief cause of blindness amongst children. A new line of treatment adopted is exposure to ultra violet radiation. The method appears promising.

The Slit lamp and Red Free lamp have proved very useful. The giant magnet has arrived and will be installed shortly.

The school clinics continued to be well attended. 1,814 eye cases and 269 ear, throat, and nose cases received treatment. 141 tonsils and adenoids cases were operated on.

This institution was visited on December 19, 1929, by Dr. Adalbel Fuchs, Professor of Ophthalmology, Vienna, who made the following entry in the Visitors' Book:—"This Eye Hospital makes a most splendid impression, specially the way how it is run and the splendid spirit of the staff is very remarkable, and I am most indebted to Dr. Arndt, the Surgeon-in-Charge, for his kindness and courtesy in showing me round."

The Lady Havelock Hospital for Women and Lady Ridgeway Hospital for Children.—The total number of patients admitted during the year was 3,463, and with 117 patients remaining from 1928 3,580 patients (women 1,625, children 1,955) were treated in 1929, as against 3,448, 114, and 3,562 patients, respectively, in 1928. The number of patients treated is increasing every year.

The daily average sick was 127.9 as against 124.6 in 1928 and 113.8 in 1927. The number of paying patients treated was 158, which is 52 more than in 1928.

The total number of deaths was 585; of these 93 were women and 492 were children, showing a mortality rate of 5.7 per cent. for women and 25 per cent. for children. The high death rate in the case of children was due to the fact that many children were brought to the hospital in a moribund condition and died within a few hours of admission.

The following statement shows some of the principal diseases treated and the number of deaths in 1929:—

Diseases.	No. of Cases.	No. of Deaths.	Diseases.	No. of Cases.	No. of Deaths.
Enteric fever	59	8	Pneumonia	312	150
Malaria	196	9	Puerperal septicaemia	112	21
Congenital syphilis	33	19			

The majority of enteric cases were transferred to the Infectious Diseases Hospital at Angoda. The congenital syphilis cases were all children and were treated with intra-muscular injections of N. A. B.

All the pneumonia deaths occurred a few hours after admission. Most of the cases of puerperal septicaemia were admitted in a very critical condition.

All patients in the non-paying section were treated with oil of chenopodium and carbon tetrachloride as a matter of routine before they were discharged.

The number of surgical operations performed was 780. Of these, 618 were major and 162 minor operations. The operation mortality rate was 3.4 per cent. as against 2.8 per cent. in 1928.

In the training school for nurses there were 60 pupils in training, of whom 32 were new pupils admitted for training during the year. The professional staff of this hospital consisted of the qualified Lady Doctor-in-Charge and 2 qualified Lady Assistants.

The Police Hospital, Borella.—There are 31 beds in the hospital, of which 3 are intended for European Police Sergeants and the remainder for Ceylonese Police Sergeants and Constables and minor officers of the Prisons Department.

The total number of in-patients treated during the year was 1,503 as against 1,801 in 1928. During the year there were 4 deaths, of which 3 were from pneumonia and 1 from dysentery. The principal diseases treated during the year were influenza 323 cases and malaria 161 cases.

During the year under review 6,226 patients who paid 8,434 visits were treated at the Out-patients' Department of the hospital. Influenza, malaria, respiratory, digestive, skin, and rheumatic diseases were the more prevalent ailments treated. The professional staff of this hospital consists of a Police Surgeon and Assistant Police Surgeon. The Police Surgeon, Dr. H. E. Schokman, was transferred after 5 years' service there and was succeeded by Dr. A. C. A. Fernando.

The Infectious Diseases Hospital (Angoda), Colombo.—During the year under review there was no outbreak of smallpox or plague. Three cases of imported smallpox were sent by the Port Surgeon from ships and 2 cases of smallpox occurred among the new arrivals from India. Plague occurred sporadically in Colombo. Two imported cases of cholera were admitted, 1 from ships and the other a passenger from India. Chickenpox occurred in an epidemic form throughout the year as usual. Measles was in an epidemic form during the early part of the year. Mumps occurred more or less in an epidemic form throughout the year as can be seen from the number of cases treated. Enteric has been occurring throughout the year.

There remained 51 patients at the end of 1928 and 1,931 patients were admitted during the year, making a total of 1,982, as against 2,136 during the previous year. Of these, 100 cases proved fatal, making a mortality of 5.04 per cent., as against 3.74 per cent. during the previous year.

Smallpox.—It is noteworthy that there was no outbreak of smallpox during the year. One case of smallpox remained at the end of 1928 and 5 cases were admitted during the year, making a total of 6, as against 12 during the previous year. Of the 5 cases 3 were steamer cases and 2 were new arrivals from South India who developed smallpox within a few days of arrival. Of the 5 cases 3 were confluent, 1 discrete, and 1 modified. Of the 3 confluent cases 1 was from a steamer, the other 2 were new arrivals from India. Of the latter 1 was an infant of 4 months, not vaccinated, and the other an adult, who was primarily vaccinated successfully at the Quarantine Camp in Mandapam. This case, though vaccination took effect, developed the confluent type of smallpox, proving that vaccination done in late incubation period does not protect against smallpox. This shows the necessity of keeping under surveillance the new arrivals who have not completed the full period of quarantine in the camps in India.

Plague.—Seventeen cases of bubonic and 2 suspected cases of septicaemic were treated during the year, making a total of 19 with 16 deaths with a recovery of 15.2 per cent., as against 22 cases with 17 deaths during the previous year. Of the 19 cases 17 were males and 2 females, and all the cases were from Colombo. Of 17 bubonic, 12 had groin buboes, 4 cervical, and 1 axillary. Of the 3 recovered cases 2 had groin buboes and 1 parotid.

Enteric.—Eleven cases of enteric remained at the end of 1928 and 151 were admitted during the year, making a total of 162, as against 147 during the previous year. Of the 151 cases admitted 93 were males and 58 females. Again 34 were from Municipal limits, 117 were from outside. Seventy-six were sent by the Out-Patients' Department, General Hospital, 43 were from Lady Havelock Hospital, 20 sought admission voluntarily, and 6 were sent by the Public Health Department of Colombo Municipality. Of the 162 cases 42 proved fatal, making a mortality of 28.3 per cent., as against 19.7 per cent. during the previous year. The fact has to be mentioned that several serious cases were admitted during the year, which accounts for the increased death rate during the year.

Cholera.—Two cases of imported cholera were treated during the year and those recovered. One cholera-carrier was segregated from a steamer. It is very remarkable that Colombo kept free from cholera though it was raging at certain seasons in the adjoining country—India.

Diphtheria.—Eleven cases were treated during the year as against 23 during the previous year. Of the 11 cases 4 proved fatal. Of the 11 cases 3 were from Municipal limits. Again of the 11 cases 9 were faucal and 2 nasal. All the cases were among children excepting 1 adult.

Chickenpox.—Chickenpox, which is epidemic, occurred throughout the year. Sixteen cases remained at the end of the year and 1,145 patients were admitted during the year, making a total of 1,161, as against 1,273 during the previous year. In spite of the apparent relationship noticed between chickenpox and Herpes Zoster by certain authorities, so far the Medical Officer of the Infectious Diseases Hospital has not been able to trace any connection.

Measles.—Measles appeared in an epidemic form towards the beginning of the year. Eight cases remained and 177 were treated making a total of 185, as against 197 during the previous year. Four cases developed broncho-pneumonia and proved fatal.

Mumps.—The incidence of mumps has been very marked during the year. Six cases remained at the end of 1928 and 128 cases were admitted during the year making a total of 134, as against 69 during the previous year. As mumps is not a notifiable disease, the total cases of mumps that occurred in the town cannot be ascertained. The incidence of mumps and measles during the year proves the " periodicity factor " as regards the epidemiology of the infectious diseases.

Whooping Cough.—Twenty cases were treated during the year as against 28 during the previous year. Complications developed in 4 cases and proved fatal.

Scarlet Fever.—Two cases were treated during the year.

Contacts.—Eighty-seven plague contacts and 53 smallpox contacts were segregated in the camp.

Kandy Hospital.

The hospital is in administrative charge of a Medical Superintendent.

Staff.—There has been no change in the personnel of the visiting staff consisting of Dr. S. Somasunderam, Physician; Dr. F. N. Spittel, Surgeon; and Dr. A. F. Seneviratne, Eye Surgeon. Besides these officers there are four House Officers on the staff.

There are two other Medical Officers—one a visiting Medical Officer for all the estate work in the district, and the other a relieving Medical Officer who assists the Eye Surgeon, when not on relief duty. There are also three apothecaries.

Nursing School.—There were 82 pupils under training during the year. Regular courses of lectures were given by the Physician, Surgeon, and Eye Surgeon, and the practical work was taught in the wards by the Sisters. Fifteen pupils passed out of a possible of 28.

Buildings.—The present state of overcrowding has been under the consideration of Government for some time and the question of either making additions to the present buildings or building an entirely new hospital has not yet been finally decided.

Statistics.—There were 10,654 admissions in 1929 as compared with 11,125 in 1928. Of these 9,945 were cured and discharged, 709 died; the corresponding figures for 1928 were 10,362 and 665, respectively. The daily average sick in hospital was 448.61 as against 454.2 in 1928; the percentage of deaths to total treated was 6.79 as against 5.76 in 1928.

Diseases treated.—The following table gives the principal diseases treated and the number of deaths:—

	Admission.	Deaths.		Admission.	Deaths.
Enteric fever	64	21	Influenza	108	—
Malaria	1,392	6	Plague	2	1
Dysentery	198	37	Smallpox	1	1
Parangi	13	—	Ankylostomiasis	660	67
Diphtheria	9	2	Pneumonia	181	82

Malaria has been the most prevalent disease—6 cases were cerebral, 5 of which proved fatal. There were 36 cases of the amoebic type of dysentery. Two cases of bubonic plague were traced to Galaha. One case of smallpox—1 of a party of tourists—occurred, which ended fatally. Ankylostomiasis continues to claim its heavy toll, but it is hoped that the systematic hookworm treatment will make the disease less prevalent in future years. The high death rate of pneumonia cases is due to the patients being brought in too late when they are in an exhausted condition and unable to respond to treatment.

Operations.—There were 431 operations performed—237 major and 194 minor with 14 and 7 deaths, respectively.

Cancer.—There were 28 cases of cancer in 1929 with 6 deaths. The majority of these cases was found to be inoperable and was treated in the usual way.

The Eye Institute.—This is becoming a very popular institution and the Eye Surgeon is kept fully occupied till 2 or 3 P.M. every day. Two wards are allotted for eye cases and these are always overcrowded.

The number of operations performed in this institution was 520 during 1929.

Galle Hospital.

This hospital is situated in Mahamodera, a suburb of Galle, and is near the sea. It has at present accommodation for 272 beds.

The present staff consists of 1 Medical Superintendent, a Visiting Physician, a Visiting Surgeon, an Eye Surgeon, and 3 House Officers. During the year this hospital was also made a training centre for nurses with the advent of a European Matron and 2 Nursing Sisters.

Total number of in-patients treated during the year was 8,626 with a daily average of 229.5. Out of these 503 died giving a percentage of 5.93 deaths. The admissions were 8,407 which include 477 paying patients, 7,765 non-paying patients, and 165 estate labourers.

In the casualty room 850 cases were attended to and 661 injections were given for parangi and syphilis.

In the laboratory 9,882 specimens were examined; of these 394 were blood and 313 sputa.

In the Eye Institution 5,742 cases (14,333 visits) were treated, and 360 operations were carried out.

The following were the chief diseases treated:—Dysentery 310 cases with 63 deaths; pulmonary tuberculosis 103 cases with 11 deaths; ankylostomiasis 490 cases with 19 deaths; malaria fever 679 cases with 15 deaths; plague 3 cases with 3 deaths; typhoid fever 179 cases with 46 deaths; and parangi 29 cases.

There were 293 surgical operations performed during 1929.

Medical Institutions Aided by Government.

The following institutions were aided by Government during the year:—(1) The Victoria Home for Incurables; (2) Wiseman Hospital, Welimada; (3) McLeod Hospital, Inuvil; (4) Green Hospital, Manipay; (5) Jevon's Dispensary, Puttur; (6) The Wesleyan Medical Mission Hospital, Batticaloa; (7) The Wesleyan Medical Mission Branch Dispensary at Kattankudy; and (8) The Denepitiya Medical Mission Hospital, Southern Province.

Numbers (1) and (8) are for males and females, numbers (2) to (6) are for females and children only. Details of the work carried out at these institutions during the year may be obtained at this office, if desired.

Venereal Clinics.

There are 3 venereal clinics in the town of Colombo, viz., 1 at the General Hospital (outdoor), 1 at the Port Surgeon's Office (outdoor), and the other at the Female Branch Hospital (outdoor).

Venereal Diseases Clinic, General Hospital, Colombo.—The following table provides comparative figures of the cases treated at the clinic for the past 3 years:—

Cases.	1927.	1928.	1929.
Syphilis	877	852	840
Soft sores	43	37	47
Gonorrhoea	423	619	825
Yaws	29	7	64
	1,372	1,515	1,776

From the above figures it will be seen that syphilis cases have slightly decreased since last year, while the number of cases of gonorrhoea has considerably increased. The cases of yaws have increased this year.

Port Venereal Clinic for Seamen.—The clinic is held in a special room at the Port Surgeon's Office.

109 persons attended the clinic last year. These were cases of primary syphilis mostly. Intravenous injections of Neo-Salvarsan are given. The drug is supplied by Government and no charge is made for the injection or for any medical attendance on venereal cases.

A few cases of gonorrhoea attended last year. Irrigation treatment, though there are facilities for it, has not been resorted to by the patients.

Vaccine treatment had been given to these cases. The injection given is free; but a charge is made for the cost of the vaccine if obtained at the clinic. In some cases the vaccines used to be brought from ships by the patients.

After injections are given a card is given to the patient with an entry showing the date of the injection and the dosage, and the patient is advised to continue treatment at the next port of call.

The cases are diagnosed by clinical examination only. There are no facilities for bacteriological examination. Occasionally smears are sent to the Bacteriological Institute. In such cases the actual fees charged are recovered and paid.

Venereal Clinic at the Female Branch Hospital.—The cases treated in the clinic for the past 3 years were as follows:—

Cases.	1927.	1928.	1929.
Syphilis	233	242	242
Gonorrhoea	327	536	464
Rheumatism (gonorrhoeal)	3	—	—
Other venereal diseases	9	7	—
	572	785	706

Most of the cases of venereal diseases come originally to the out-patients' department of the hospital either frankly as such or as some obscure gynaecological ailment. 186 such cases of syphilis and 292 cases of gonorrhoea were seen and referred to the clinic.

The clinic is held two evenings a week—Tuesdays and Fridays. Most of the cases attending the clinic are married women and many of them are cases of chronic gonorrhoeal infection. The existence of the clinic is well known among the hospital class of patients, who have no objection to injections or any line of treatment and who are on the whole very appreciative and willing to carry out instructions.

Besides the particulars given in respect of the three clinics, 6,997 in-patients (with 105 deaths) in the various hospitals and 22,072 out-patients at dispensaries and out-patients' department of hospitals in the Island were treated for venereal diseases during the year as against 7,267, 111, and 15,780, respectively, in 1928.

Charts, Hospital Returns, &c.

Charts.—The following charts are given at the end of this report, *vide* Table IV. (A)-(D):—

(*a*) Chart showing the general systemic and preventable diseases treated at the Government hospitals during the year 1929.

(*b*) Chart showing deaths from general systemic and preventable diseases treated at the Government hospitals during the year 1929.

(*c*) Chart showing cases of infectious diseases treated at the Government hospitals during the year 1929.

(*d*) Chart showing deaths from infectious diseases treated at the Government hospitals during the year 1929.

Hospital Returns.—The following hospital returns, extracts from the Ceylon Blue Book for 1929, are given at the end of this report:—

(I.) Details regarding hospitals (patients, attendants, &c.) in each Province.
(II.*a*) Return of diseases—cases treated according to districts.
(II.*b*) Return of diseases—cases treated according to diseases.
(III.) Special diseases.
(IV.) Water supply, &c., at hospitals.

Table.—Table III. gives a return of diseases (out-patients).

VII.—PRISONS AND ASYLUMS.

PRISONS.

During the year 1929 11 prisons were maintained by Government in the following places:—Central prisons at Welikada (Colombo), Bogambara (Kandy), Mahara (14 miles east of Colombo), and Jaffna; local prisons at Anuradhapura, Badulla, Batticaloa, Galle, and Negombo; remand prisons at Hultsdorp (Colombo) and Kandy (old prison).

On December 31, 1928, there were in all the prisons a total of 3,125 convicted prisoners (3,057 males and 68 females). During the year under review 8,342 males and 289 females were admitted and 8,403 males and 300 females were discharged. Thirty-nine male prisoners died and there were no deaths among females. On December 31, 1929, 2,957 male and 57 female convicted prisoners remained in all the prisons.

During the year the number of hospitals exclusively maintained for prisoners remained unchanged. The following are the ten hospitals so maintained:—

	Beds.		Beds.
The Prison Hospital, Welikada ..	180	The Anuradhapura Prison Hospital ..	12
Female Jail Hospital, Welikada ..	12	The Badulla Prison Hospital ..	4
The Mahara Prison Hospital ..	53	The Batticaloa Prison Hospital ..	5
The Negombo Prison Hospital ..	16		
The Bogambara (Kandy) Prison Hospital.	35	Total ..	341
The Jaffna Prison Hospital ..	12		
The Galle Prison Hospital ..	12		

Amoebic dysentery was prevalent throughout the year in Jaffna Prison, and diarrhoea and dysentery were the chief diseases in the Mahara and Welikada Prisons. On the whole, however, the health of the prisoners in all the prisons was good. It may be noted that after anti-malaria control measures were adopted at Mahara Prison the incidence of malaria has steadily diminished. There were 3,377 cases of malaria in 1922, as compared with 162 cases during the year under review.

The sanitary condition of all the prisons was on the whole satisfactory, but the Medical Officer in charge, Mahara Jail, reports that the fly-proofing in the kitchen needs repair, and the main latrine of the prison is in a dilapidated condition. He considers that the increase in the incidence of dysentery and diarrhoea during the year was largely due to those defects. He also reports that most of the drains are unsatisfactory and require attention.

All new admissions in the Mahara Jail, 1,106 cases in all, and all the prisoners in Batticaloa Prison who needed it were treated for ankylostomiasis during the year.

The following is a brief statement concerning each prison :—

Name of Prison.	Daily Average in Prison.	Daily Average Sick in Hospital	Total Number of In-Patients treated.	Total Number of Out-Patients treated.	Total Number of Deaths.	Death Rate Per Cent. of In-Patients in Hospital.	Chief Diseases treated (for meaning of figures, please see table below.)
Prison Hospital, Welikada ..	1,099.99 ..	79.96 ..	2,729	12,768	36 ..	1.31 ..	1, 2, 3, 4, 5, 10
Female Jail Hospital, Welikada	44.10 ..	5.98 ..	61		2 ..	3.28 ..	1, 3, 6, and 7
Mahara	789.06 ..	13.49 ..	538 ..	1,490 ..	6 ..	1.08 ..	1, 2, 3, and 5
Bogambara	446.62 ..	15.46 ..	707 ..	9,562 ..	5 ..	.70 ..	1, 2, 3, 5, 8, 10
Jaffna	384.60 ..	14.68 ..	419 ..	2,063 ..	4 ..	.95 ..	1, 2, and 3
Negombo	81.41 ..	11.86 ..	195 ..	686 ..	4 ..	2.05 ..	1, 2, and 3
Galle	59.85 ..	1.19 ..	168 ..	473 ..	— ..	— ..	1 and 7
Anuradhapura	115.35 ..	8.95 ..	321 ..	390 ..	6 ..	1.87 ..	1 and 3
Badulla	31.19 ..	.21 ..	12 ..	120 ..	— ..	— ..	1 and 3
Batticaloa	49.37 ..	.94 ..	48 ..	— ..	— ..	— ..	1, 3, and 8
Total ..	3,100.54	152.72	5,198	27,552	63	1.21	

Table X.

1. Malaria	5. Influenza	9. Chickenpox	13. Abscess
2. Diarrhoea	6. Bronchitis	10. Skin disease	14. Pulmonary Tuberculosis
3. Dysentery	7. Enteritis	11. Enteric	
4. Eye diseases	8. Conjunctivitis	12. Mumps	

A statement showing the cause of each death is given hereafter—

Name of Prison Hospital.	Dysentery.	Pulmonary Tuberculosis.	Malaria.	Diarrhoea.	Abscess.	Mumps.	Typhoid Fever.	Pneumonia.	Epilepsy.	Enteritis.	Stricture of Urethra.	Sprue.	Asthma.	Heart Trouble.	Infantile Convulsions.	Congenital Debility.	Total.	Death Rate Per Cent. of Persons treated in Hospital.
Prison Hospital, Welikada ..	13	3	2	6	1	1	1	6	1	1	1	—	—	—	—	—	36	1.31
Female Jail Hospital, Welikada	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	1	2	3.28
Mahara Hospital	—	—	—	1	—	—	—	3	—	—	—	—	—	2	—	—	6	1.08
Bogambara Hospital ..	1	1	—	1	—	—	1	1	—	—	—	—	—	—	—	—	5	.70
Jaffna Hospital ..	—	2	—	—	—	—	2	—	—	—	—	—	—	—	—	—	4	.95
Negombo Hospital ..	1	—	—	—	—	—	—	—	—	—	—	1	2	—	—	—	4	2.05
Anuradhapura Hospital ..	5	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	6	1.87
Galle, Badulla, and Batticaloa Hospitals ..	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total ..	20	6	2	8	1	1	5	10	1	1	1	1	2	2	1	1	63	1.21

ASYLUMS.

(a) *Lunatic Asylum and the House of Observation, Angoda.*

There is one Lunatic Asylum in the Island at Angoda, about six miles from Colombo. The Asylum and the House of Observation contain 1,830 beds.

Asylum.—The year opened with 1,338 males and 668 females. During the year 634 males and 299 females were admitted, as against 596 males and 259 females in 1928. The total number treated for the year is 1,972 males and 967 females, against 1,729 males and 878 females in 1928. During the year 340 males and 112 females were discharged, compared with 250 males and 148 females in 1928. Of these, 164 males and 54 females were recoveries giving a rate of 25.86 per cent. for males and 18.06 per cent. for females on the admissions, as against 27 per cent. and 35 per cent., respectively, for the previous year. The average recovery rate is 23.9 per cent. for both sexes, compared with 29 per cent. in 1928. There were 171 deaths among males and 88 among females, compared with 141 males and 62 females, respectively, in 1928. The percentage of deaths to the total number treated is 8.67 for males and 9.1 for females, against 8.15 and 7.06, respectively, for males and females in the year 1928.

Causes of Death.—The chief causes of death among patients of the Asylum were as follows:—

	Number of Deaths.	
	Males.	Females.
Dysentery ..	55	31
Pulmonary tuberculosis	35	16
Enteritis ..	13	2
Psycho nephritis	9	1
Heart failure	2	9
Pneumonia	5	5
Epilepsy ..	5	3
Senile debility (including debility and general debility)	14	8
Malaria ..	4	2
Diarrhoea ..	5	1

House of Observation.—The year opened with 84 males and 51 females, as against 88 males and 32 females in 1928. These figures are misleading because cases that have been adjudicated upon are not transferred to the Asylum owing to delay in the receipt of His Excellency the Governor's orders. During the year 1,118 males (being 1,217 cases) and 527 females (being 573 cases) were admitted, compared with 888 males (being 984 cases) and 377 females (being 414 cases) in 1928. Of the persons observed 534 males and 258 females were transferred to the Asylum, compared with 518 males and 250 females in 1928; 526 males and 235 females were discharged (355 males and 97 females in 1928); 27 males and 18 females died, compared with 19 males and 11 females in 1928. There were in all 45 deaths in the House of Observation in 1929, compared with 30 deaths in 1928. The chief causes of death are given below—

	Number of Deaths.	
	Males.	Females.
Dysentery ..	5	2
Diarrhoea and debility	2	0
Pulmonary tuberculosis	7	1
Heart failure	1	1
Pneumonia	3	5
Ankylostomiasis and heart failure ..	1	1
Enteritis ..	2	0
Ulcerative stomatitis and heart failure ..	—	2

There were 115 males and 67 females in the House of Observation at the end of the year.

The figures for both institutions are given below:—

	Asylum.		House of Observation.	
	Males.	Females.	Males.	Females.
Remained on December 31, 1928	1,338	668	84	51
Admitted during 1929	634	299	1,118	527
Total treated	1,972	967	1,202	578
Discharged ..	340	112	1,060	493
Died	171	88	27	18
Remaining on December 31, 1929	1,461	767	115	67

The largest number simultaneously resident in the Asylum was 2,239, compared with 2,013 in 1928 and 1,769 in the year 1927; and the lowest number was 1,994, compared with 1,718 in 1928 and 1,572 in the year 1927.

The largest number for both institutions was 2,412, compared with 2,142 in 1928 and 1,870 in 1927; while the lowest for both institutions together was 2,140, compared with 1,859 in 1928 and 1,647 in 1927. The daily average number resident was 1,404.22 for males (1,227.21 in 1928 and 1,093.45 in 1927) and 727.11 for females (657 in 1928 and 576.58 for 1927).

For the House of Observation the average number resident was 86.53 for males (89.87 in 1928 and 50.49 in 1927) and 49.10 for females (43.48 in 1928 and 23.43 in 1927). The daily average for both institutions was 1,490.75 for males (1,317.08 in 1928 and 1,116.52 in 1927) and 776.21 for females (700.48 in 1928 and 600.24 in 1927).

Infectious Diseases.—The following table shows the number of cases of infectious diseases occurring during the year:—

	Inmates.				Attendants.			
	1929.		1928.		1929.		1928.	
	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.
Dysentery ..	236	181	185	115	13	2	2	4
Chickenpox	334	69	16	—	54	13	4	—
Pulmonary tuberculosis	73	61	56	62	—	—	—	3
Influenza ..	22	17	49	52	1	2	11	11
Erysipelas ..	—	3	1	—	—	—	—	—
Enteric fever	2	—	—	—	—	—	—	—
Parangi ..	2	—	—	—	1	—	—	—

During the year 611 males were vaccinated, all successful; and 226 females, 185 successful.

Accidents.—The number of cases of injury to patients by themselves was 46, by other patients 55, and by attendants nil.

Restraint and Seclusion.—There have been no restraint and seclusion during the year under review.

Official Visitors.—The following were the official visitors for the year 1929:—The Hon. Mr. R. N. Thaine, Government Agent, Western Province; the Hon. Mr. L. Macrae, Director of Education; Messrs. G. Furse Roberts, Registrar-General; D. V. Altendorff, Deputy Inspector-General of Police; H. E. Newnham, Mayor of Colombo; A. F. G. Walker, Inspector-General of Prisons.

They visited in rotation on 12 occasions and submitted reports on 438 males and 63 females, the reports being duly forwarded to Government.

Occupation and Amusements.—An average of 100.36 males was employed in gardening, 41.32 in trade, and 172.35 in household work. Of the women, an average of 43.30 was employed in weeding the grounds and in outdoor work, 26.35 in sewing and rope making, and 99.26 in house work. The following garments were made during the year under the supervision of the Matron and the seamstress assisted by working patients:—

	Pieces.
Patients' clothing	2,846
Ward linen	388
Attendants' uniforms	686
Total ..	3,920
For the Lady Havelock Hospital	1,157
Victoria Memorial Eye Hospital	710
Grand Total ..	5,787

The male patients did the following work during the year:—

2,670 lb. coir string.	598 wooden pegs.	5 sign boards.
16 coir brooms.	6 racks.	1 wooden box.
3 coir rugs.	2 planks.	1 game board.
2 paper baskets.	5 squares.	1 door.
43 yards of coir matting.	42 mallets.	10 curtain poles.
4 wooden spittoons.		

A great deal of good work has been put in by the patients on the grounds also. This work was supervised by Mr. Ramanayake, one of the Overseers, and consisted in the making of roadways and paths, cutting drains, weeding and platforming a portion of the grounds and excavating a hillside in preparation for a cemetery for the use of this institution.

Plans and estimates for a dairy were prepared but unfortunately owing to financial stringency the funds could not be obtained, although a saving of Rs. 5,000 per annum on the milk supply was shown.

Cricket matches were played on 4 occasions, 2 matches being won by the Asylum team. The small pavilion on the grounds was put up entirely out of private funds and a cricket scoring board was generously donated by Mr. C. H. Figgs.

The installation of wireless facilities for the patients is still a matter for the future.

Newspapers.—Newspapers and magazines were supplied by Government for the staff and inmates.

Special Committee.—During the year the Special Asylum Wants Committee appointed by His Excellency the Governor submitted its report. The Committee consisted of the Hon. Mr. Macrae, Director of Education, as Chairman, with Mr. Woodeson, Chief Architect, and the Superintendent of the Lunatic Asylum as members. Its chief recommendation was that a new Asylum should be built up-country to relieve the present congestion and to make provision for the future. Although the accommodation at the present Asylum was increased during the year by the completion of a Noisy Ward for 102 patients which was occupied on March 18, 1929, the Asylum is still overcrowded to the extent of more than 400 patients, and further accommodation is very necessary.

Agricultural Work.—The agricultural work proceeded steadily under the Agricultural Overseer and the chief work done was the planting of 440 coconut palms in the eastern valley in the Asylum grounds after the valley had been cleared of jungle, terraced, and drained for the purpose. The following fruit trees were planted in the Asylum grounds:—

Papaws	207	Jak	5
Billing	15	Kew pines	3,383
Jumboos	15	Mangoes (grafted)	16
Goraka	6	Shaddocks (grafted)	5
Mangosteen	15	Naval oranges	6
Lime	343	Guavas	9
Mulberry	14	Shade and timber trees	112
Bull's heart, custard apple, &c.	44	Fodder grass—	
Cherry	3	Napier 1,500 cuttings.	
Australian chestnuts	1	Guinea 500 cuttings.	
Durians	8	Vegetables—	
Num-num	1	Cassava 5,000 and a number of brinjals, yams, beans, spinach, arrowroot, &c.	

22,747 lb. of vegetables and 8,396 coconuts were delivered to the Asylum kitchen; the value at contract rates was Rs. 1,299.90.

(*b*) *Leper Asylums.*

There are two Leper Asylums in the Island, one at Hendala, some 10 miles from Colombo, and the other on the island of Mantivu, some 3 miles from Batticaloa in the Eastern Province.

Hendala: Administration.—The staff consists of a Medical Superintendent, 2 Assistant Medical Officers, 2 Apothecaries, a Steward-Clerk, a Mother Superior, and 10 Religious Sisters, 2 overseers, 46 male attendants, 9 female attendants, 1 office peon, a gatekeeper, a dhoby, 4 cooks, and 43 coolies.

Dr. R. Pestonjee after 20 years' meritorious service in charge of this institution retired on May 2, 1929, and was succeeded by Dr. C. Sivasithamparam.

The statistics of the Asylum are given below:—

	Mixed Races.		Indians.		Total.
	Males.	Females.	Males.	Females.	
Remaining on December 31, 1928 ..	395	112	62	21	590
Admitted during 1929 ..	185	18	49	13	265
Discharged during 1929 ..	119	13	42	14	188
Died during 1929 ..	55	9	1	3	68
Remaining on December 31, 1929	406	108	68	17	599

Of the 265 admissions, 192 were new cases and 73 were absconders readmitted. Amongst the new admissions 145 were Ceylonese and 47 were Indian immigants and they were in the following stages of the disease:—

Anaesthetic	46
Nodular	46
Mixed	100
	192

The new admissions were from the following Provinces:—

	Mixed Races.		Indians.		Total.		Grand Total.
	Males.	Females.	Males.	Females.	Males.	Females.	
Western ..	50	6	4	1	54	7	61
Southern ..	38	4	2	—	40	4	44
Central ..	14	4	20	11	34	15	49
Sabaragamuwa ..	13	4	6	1	19	5	24
Northern ..	4	—	—	—	4	—	4
North-Western ..	3	—	1	—	4	—	
North-Central ..	2	—	—	—	2	—	2
Eastern ..	2	—	—	—	2	—	2
Uva ..	1	—	1	—	2	—	2
	127	18	34	13	161	31	192

From the above admissions it will be seen that 75 per cent. were Ceylonese and 25 per cent. Indian immigrants. Leaving the latter out of account, Western, Southern, Central, and Sabaragamuwa Provinces contributed the largest number, viz., 69 per cent., the Western Province leading with a percentage of 29.

Of the 188 patients discharged, 48 were discharged as non-infective after 3 consecutive bacteriological examinations, 1 was given home-isolation, 26 were repatriated to India, 9 were transferred to Mantivu Asylum, 6 overstayed their leave, and 98 were absconders.

Deaths.—The number of deaths during the year was 68, 56 males and 12 females. The percentage of deaths to total treated was 7.95.

Garden Produce.—The total amount realized by the sale of garden produce during the year was Rs. 1,469.86, which was credited to revenue.

The School.—The school was established in 1920. The number on the roll is 80, of whom 33 are boys and 47 adults. There is an average attendance of about 48. English is taught up to the 5th Standard, Tamil to the 4th, and Sinhalese to the 6th. During the year the school was examined by the Government Inspectors, who reported favourably on the work of the school.

The General Condition of the Patients.—Special attention is given to exercise and good food, which are two of the most important adjuncts to treatment. Patients are encouraged to do some manual work. This keeps them occupied, besides being a healthy exercise. There are fitters, carpenters, masons, tailors, and shoemakers. There are some who turn ornamental flower pots out of cement and sand. Most of these pots are sold and the patients derive some pecuniary benefit. Carpenters are occupied in effecting repairs to Asylum furniture; tailors in the making of garments and the mending of old clothes; shoemakers in the repairing of sandals, &c. Patients trained as barbers do work among the patients. They all receive a small sum from the Government for any work done for the Asylum. There are some who do vegetable gardening and others occupy their time in flower gardening. However, these are only a minority when compared with the large number who lead a more or less lazy life.

Food is ample, good, and wholesome.

Specific Treatment of Leprosy: Drugs used.—During the year 1929 the drug E.C.C.O. was mainly used. This is a mixture of the Ethyl Ester of Hydnocarpus oil with Creosote and Camphor in Olive oil. A drug called Durotan, a German preparation, sent to this institution by Messrs. Volkart Bros., was tried on 1 patient. This is a solution of Chaulmugra oil with terpene and camphor in oil in ampules of 1 c.c. to be given intramuscularly.

Technique of Treatment.—The method of subcutaneous infiltration was adopted and given in the deltoid and gluteal regions and the outer side of the thighs, twice a week, commencing with ½ c.c. and going up to 5 c.c. increasing by ½ c.c. each time.

Treatment.—Of the 600 patients in this Asylum, 441 (342 males and 99 females) have availed themselves of the E.C.C.O. treatment during the year. There has been an increase of 178 patients taking treatment, as compared with the figures of the previous year. The patients are undoubtedly appreciating the beneficial effects of the injection treatment. The treatment is not compulsory.

The patients receiving treatment are of varying ages, from 6 to 60 years, and represent all types of the disease—nodular, anaesthetic, and mixed, with or without ulceration and deformities—the duration of the disease varying from a few months to several years. It is impossible to get very good results in an institution like this, where most of the patients are admitted after the disease has progressed for several years. Even in these cases the drug is doing some good in arresting the further progress of the disease. The early cases show very encouraging results.

The tables given below show the progress of treatment:—

Table A.—*Males 342.*

Number of Injections.	Number of Patients.	Marked Improvement.	Slight Improvement.	No Improvement.
Over 50	45	11	9	25
26 to 50	110	17	15	78
1 to 25	187	5	26	156
Total ..	342	33	50	259

Table B.—*Females 99.*

Number of Injections.	Number of Patients.	Marked Improvement.	Slight Improvement.	No Improvement.
Over 50	24	3	4	17
26 to 50	44	5	9	30
1 to 25	31	—	3	28
Total ..	99	8	16	75

Table C.—*Progress of Treatment according to Type of Disease.*

Type of Disease.	Marked Improvement.	Slight Improvement.	No Improvement.	Total.
Anaesthetic ..	26	35	74	135
Mixed	12	28	206	246
Nodular	3	3	54	60
Total ..	41	66	334	441

Untoward Symptoms after Treatment.—During the treatment and after a careful watch is kept on the patients receiving injections for any symptoms of reaction which may arise. The more important symptoms noticed were fits of coughing, dizziness, tight feeling in the chest, and choking, which are usually due to the solution entering a vein.

The following cases developed severe broncho-pneumonia:—(1) Sellamuttu, aged 35 years, male, after 25 injections; (2) Aiyathu, aged 33 years, female, after 21 injections; (3) W. Babun Appu, aged 51 years, died.

The death of this patient a few hours after an injection of E.C.C.O. is reported with regret. He had 37 injections during the year and was having the maximum dose of 5 c.c. for some time. On August 17, 1929, after receiving an injection of 5 c.c. in the gluteal region, he developed a fit of coughing for which he was given the necessary treatment. He was fairly comfortable till about 3.30 P.M. when he developed a convulsive fit and severe coughing of blood-stained frothy sputum, and the patient died shortly after. A post-mortem examination was held the next day and revealed the following:—All the internal organs were highly congested, the lungs in particular showed signs of acute oedema. Death was due to acute oedema of the lungs consequent on pulmonary embolism.

The other cases who showed other symptoms were—(1) Miskin, aged 40 years, had a severe epileptiform fit; (2) Emelyhamy, aged 25 years, had several convulsive fits.

Number Discharged from the Asylum.—Patients who have shown improvement were examined three times by the Assistant Bacteriologist of the Bacteriological Institute, Colombo, and of these 48 were found to be negative, *i.e.*, free from Bacillus Leprae on three successive examinations. They were discharged on condition that they reported themselves every 3 months to the nearest Medical Officer.

Of the patients discharged during the year, 3 have returned to the Asylum with fresh outbreak of ulcers.

Public Interest.—Special mention must be made of the members of the Colombo Ladies League, who have paid regular monthly visits with gifts for the patients, which are very much appreciated by them. Thanks are also due to the different religious societies for having entertained the inmates on the various festivals during the year, the Editors of the Ceylon daily newspapers for the free copies of the papers sent for the use of the patients, and the ladies and gentlemen who sent books and magazines.

Mantivu.—The following particulars are given for Mantivu Leper Asylum for the year 1929:—

	Males.	Females.
Number of lepers admitted during 1929 (new cases 38 and 1 re-admission—a male)	32	7
Number of lepers died	10	4
Number of lepers discharged	14	2
Number of lepers absconded	2	—
Number of lepers remaining on December 31, 1929 ..	109	35
Daily average	139.98	
Percentage of deaths	6.51	

Specific Treatment.—Because of the severe reaction it produces in some patients Potassium Iodide treatment is not much appreciated by them. It is therefore only used for diagnostic purposes for patients who are to be discharged.

Trichloracetic acid is used for painting nodules and anaesthetic patches.

Chronic sores are treated with eucalyptus oil, tincture of iodine; poultices are used mostly for acute abscesses.

Chaulmugra oil is given orally to those whose digestion is not upset by it.

E.C.C.O. is given mostly intra-cellularly and at times intra-muscularly twice a week, starting from ½ c.c. to 5 c.c. and in some selected cases to 10 c.c. Patients appreciate this treatment, though it is a painful and tedious course to undergo. Below is a tabulated summary of the results of treatment with E.C.C.O.:—

Number of Injections.	Got Worse.		No Improvement.		Slight Improvement.		Improvement.		Marked Improvement.	
	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.
Below 25 ..	9	1	35	7	4	3	1	—	—	—
26 to 50 ..	—	—	6	3	21	5	7	2	—	—
over 50 ..	—	—	—	—	3	1	2	—	2	1
Total ..	9	1	41	10	28	9	10	2	2	1

Number of days injections were given in 1929 = 63.

The importance of exercise is impressed on every patient. Patients who are able to do work are given work as garden coolies and attendants, when the minor employees go on leave. They are paid 30 cents per diem. The work is usually given to those who have dependants at home.

During the X'mas treat, prizes are also given for flower gardens and neat cottages. This gives a certain amount of stimulus to the patients to work. Many new footpaths have been cut in the Island for patients to take long walks. Some patients play cricket and football.

The health of the inmates has been fairly satisfactory.

VIII.—METEOROLOGY.

The following report was prepared by the Superintendent, Colombo Observatory :—

Rainfall.—The chief features of 1929 were the heavy inter-monsoon rains of April and deficient south-west monsoon rainfall. Depressional activity was not at all well marked.

The totals for the year were in deficit nearly everywhere, the chief exceptions being the eastern flank of the main hill range and a district that can roughly be described as the Puttalam-Anuardhapura Mannar triangle.

The highest total was 219.41 inches at Kenilworth. Padupola came next with 197.58. The highest averages at stations with over 10 years' readings are Carney 230.8, Kenilworth 220.6, and Watawala 219.3. Blackwater and Ingoya have averages of over 230 inches, derived from 8 and 7 years' readings, respectively. The lowest totals in 1929 were Kayts 33.25, and Puvarasankulam 33.33. Marichchukkaddi still holds the lowest average (34.9) followed by Ponparippu (37.2).

Temperature.—The temperatures in 1929 were slightly above average at nearly all stations, though there were a few exceptions in the north. The rather wet month of April stands out as one in which temperatures were consistently in deficit. The stations with the highest and lowest mean shade temperature for 1929 were Mannar with 82.3° F, and Nuwara Eliya with 59.0° F. The figures for Colombo and Kandy were 80.1° F and 76.6° F, respectively. The highest shade temperature in air recorded during the year was 97.1° F at Batticaloa on July 25, the highest on record is 103.7° F at Trincomalee on May 12, 1890. The lowest this year was 27.3° F at Nuwara Eliya on January 14, at which station 27.1° F was recorded in 1914. The highest shade temperature in Colombo in 1929 was 91° F on February 22, and the lowest 63.3° F on January 14. The mean daily range for 1929, *i.e.*, the difference between the mean of the maximum and the mean of the minimum, was highest at Badulla, 18.5° F, and lowest at Galle and Jaffna, 9.3° F each. At Colombo and Kandy it was 11.3° F and 16.1° F, respectively. The absolute range for the year, *i.e.*, the difference between the highest and the lowest readings actually recorded at any one station, was greatest at Nuwara Eliya, 48.7° F, and lowest at Galle, 22.8° F.

Returns.—Meteorological returns are given at the end of this report for the towns of Colombo, Jaffna, Galle, Nuwara Eliya, Kandy, and Batticaloa—Table II., (*a*) to (*f*).

IX.—SCIENTIFIC.

(1) *Government Bacteriological and Pasteur Institutes.*

The report of the Director, Dr. L. Nicholls, for the year 1929 is as follows :—

A.—BACTERIOLOGICAL INSTITUTE.—The number of specimens examined (including the number of vaccines prepared) during the year 1929 was 24,222 and the fees received totalled Rs. 7,088.14. The character of the examinations carried out is shown in the following table :—

Nature of Specimens.	Official.	Private.	Total.	Positive.	Negative.
Blood for examination for typhoid	2,568	37	2,605	872	1,733
Blood for examination for paratyphoid A.	1,608	24	1,632	1	1,631
Blood for examination for paratyphoid B.	1,608	18	1,626	—	1,626
Blood for examination for Wassermann test	2,581	192	2,773	—	—
Blood for examination for malarial parasites	19	18	37	7	30
Human material for *B. pestis*	82	—	82	33	49
Rats for examination for *B. pestis*	951	243	1,194	23	1,171
Sputa for tubercle bacilli	177	25	202	50	152
Sputa for pneumococci	3	—	3	1	2
Urine for bacteriological examination	86	4	90	—	—
Urine for chemical examination	14	5	19	—	—
Secretions for gonococci	19	9	28	9	19
Secretions for diphtheria bacilli	86	28	114	38	76
Faeces for amoebae	21	50	71	10	61
Faeces for *B. dysenteriae*	17	1	18	1	17
Faeces for ova	2	8	10	—	10
Secretions for *B. leprae*	550	2	552	282	270
Evacuations for cholera vibrio	241	—	241	20	221
Scrapings for spirochaetes	2	12	14	2	12
Miscellaneous specimens	197	11	208	—	—
Water for bacteriological examination	80	27	107	—	—
Swabs for meningococci	—	38	38	—	—
Autogenous vaccines prepared	69	17	86	—	—
T. A. B. vaccine (doses)	5,774	550	6,324	—	—
Gonococcal vaccine (doses)	3,341	—	3,341	—	—
Anti-cholera vaccine (doses)	1,845	181	2,026	—	—
Anti-plague vaccine (doses)	307	—	307	—	—
Staphylococcal vaccine (doses)	271	—	271	—	—
B. coli vaccine (doses)	169	—	169	—	—
Pneumococcal vaccine (doses)	10	—	10	—	—
Tuberculin vaccine (doses)	24	—	24	—	—
Total	22,722	1,500	24,222	—	—

B.—PASTEUR INSTITUTE.—The number of patients who were treated at the Pasteur Institute during the year 1929 was 1,479, there being a slight increase of 31 over the previous year. The number of dogs examined for rabies during 1929 was 437, which is an increase of 51 over the previous year. The amount of fees received during the year totalled Rs. 6,842.02.

There can be no doubt that rabies has been on the increase during the last year. Table I. shows the Provinces from which the patients came for treatment and Table II. shows the Provinces from which the dogs were received with the result of their examinations.

Table I.

Western Province ..	812	Uva Province	32
Central Province .	304	North-Central Province ..	—
Southern Province ..	108	Eastern Province ..	—
Sabaragamuwa Province	107		
Northern Province ..	71	Total ..	1,479
North-Western Province ..	45		

Table II.

Province.	Total.	Positive.	Negative.	Unfit for Examination.
Western	171	101	53	17
Central	178	81	77	20
Southern	18	10	6	2
Sabaragamuwa ..	28	12	7	9
North-Western ..	22	10	7	5
Uva	14	7	6	1
Northern	6	—	2	4
Eastern	—	—	—	—
North-Central ..	—	—	—	—
Total ..	437	221	158	58

C.—BRANCH LABORATORIES.—The number of specimens examined at each of the branch laboratories in the Island during the year 1929 is given in the following table :—

Kurunegala	10,002	Badulla	4,010
Galle	8,410	Batticaloa	3,845
Kandy	6,317	Chilaw	2,903
Ratnapura	6,279	Mandapam Camp ..	1,781
Anuradhapura ..	5,872	Victoria Memorial Eye Hospital	
Jaffna	5,192	(Colombo)	1,680
Lying-in Home (Colombo) ..	4,474		

D.—GENERAL.—The fees received during the year and credited to revenue totalled Rs. 13,930.16.

The Bacteriological Institute was built 30 years ago by Mr. J. W. Charles de Soysa and donated to Government.

The Pasteur Institute was started in a building which had been used as offices for the Sanitation Department.

These buildings have been for many years past unsuitable for the proper organization of the amount of routine work which is done by these departments.

The only publication which was issued from these laboratories during the year was—" The Identification of the Land Snakes of Ceylon "—Ceylon Journal of Science (Medical Section, Vol. II.) Part 3.

(2) *Interesting Hospital Cases, &c.*

General Hospital, Colombo.—(i.) Dr. Lucian de Zilwa, First Physician, General Hospital, reports—

(1) Several cases of advanced cancer of the cervix have been treated with radium with marked benefit. As a routine 49 M. G. was introduced and the needles were left for 72 hours. The radical extirpation of the uterus by Wertheinis method is still performed in cases where cancer is diagnosed fairly early.

(2) A case of foreign body in the cavernous sinus. A man of 40 was admitted with fever of 10 days' duration. He stated that some time ago a frond of the coconut palm fell on his head and there was a wound just above the inner canthus of the left eye caused by an ekel (the hard mid-rib of a leaflet of the coconut palm) for which he was treated in the Eye Hospital. He had fever for several days and later became so ill that he was admitted to the General Hospital in a drowsy state. He had bilateral proptosis, the left pupil widely dilated and the right of normal size. There was no paralysis. His coma deepened and he died within a few hours.

Post-mortem examination revealed that there was septic meningitis with a thin layer of pus over both hemispheres—more anteriorly and on the left. There was thrombosis of the left cavernous sinus with pieces of ekel (one measured ½ inch to ¾ inch) embedded in the thrombus. Along the floor of the left orbit there were slight extravasation of blood and small broken bits of ekel. The orbital contents were not damaged. The passage of the ekel must have been through the orbit, through the sphenoidal fissure into the cavernous sinus.

(ii.) Dr. E. C. Alles, Surgeon, General Hospital, reports—

(1) A case of myeloma of the lower end of the radius occurring in a policeman, aged 24 years, who noticed the swelling for only 6 months. A local excision was done with good results. X'ray examination before he left showed a deposit of new bone in the lower end of the radius.

(2) Four cases of elephantiasis of the scrotum and penis (in one Sinhalese and three Maldivians). Skin of the penis and scrotum was excised and the raw area was skin-grafted later. A case of elephantiasis of the labia was also successfully excised.

(3) Three cases of aneurysm. A cirsoid aneurysm of the scalp was treated by ligation of the superficial temporal arteries. An aneurysm of the right common iliac artery ruptured into the abdomen and was followed by sudden death. A varicose aneurysm of the brachial following a gunshot injury was treated by complete excision, medically.

(4) A case of multiple neurofibromata of the feet of 8 years' duration in a woman of 50 years. Some of the larger swellings were excised.

(5) A case of hygroma of the side of the neck of 3 years' duration in a girl of 6 years. It was successfully removed.

(iii.) Dr. M. A. Paul, late Surgical Registrar, reports—

(1) Two cases of breast carcinoma with metastases in the opposite breast. (*a*) A dyspnoeic and wasted woman, aged 35, was admitted under Dr. A. M. de Silva. In each breast a dusky red leathery skin was adherent to a hard nodular lump which was fixed to the muscle beneath. Numerous secondary nodules of the size of peas, or smaller, were scattered over the abdomen, chest, thighs, and arms; but none were found below the knees or elbow. Legs and vulva were oedematous. P. V. a hard fixed mass was felt but the cervix was not ulcerated. There was no blood on the examining finger. Patient died in hospital. (*b*) A wasted and jaundiced woman, aged 40, was admitted under Dr. Gabriel. In each breast a hard nodular lump fixed to the skin was found. On the right the lump was not attached to the muscle but glands were hard and movable. On the left the lump was fixed to the pectorals, skin showed the peau d'orange appearance and the axillary and supraclavicular glands were hard and fixed. The liver was hard and could be felt four fingers below the costal margin. Ascites was present. Patient died in hospital.

(2) A case under the care of Dr. V. Gabriel of a Sinhalese boy, aged 4, who had swallowed an iron nail 2½ inches long. The nail was seen in the oesophagus by X'rays and in the stomach 13 days later. It passed per vias naturales 2 days later.

(3) A case under the care of Dr. V. Gabriel of a girl of 16 years who had swallowed a needle. Seven days later the patient vomited a rusty needle. No needle was seen in the X'ray picture of the stomach.

(4) A case of solitary neurofibroma of the median nerve in a man, aged 64, admitted under Dr. J. H. F. Jayasuriya. A laterally-movable but vertically-fixed lump of the size of a walnut was found in the arm. A tingling sensation was experienced on pressure. The lump was found on operation to be attached to the median nerve.

(5) A case of white myeloma in the lower end of the radius in a Tamil, aged 25, admitted under Dr. E. C. Alles. Distended veins and a shiny skin were found over the swelling. Fluctuation was present but not egg-shell-crackling. X'rays showed an expansion of the lower end of the radius. There was no loss of sensation in the hand. The excised lower end showed on microscopic section a typical myeloma.

(iv.) Dr. R. L. Spittel, Surgeon, General Hospital, reports—

(1) Two cases in which arthroplasties, involving the refashioning of the ankylosed bones and the intervention of pedicled flaps, were performed on the elbow and hip with excellent results.

(2) A series of 125 consecutive appendicectomies was performed without a single death. In several cases the appendix was gangrenous and perforated, and was complicated by peritonitis. Operations were performed on all acute cases as soon as they were diagnosed and the temporizing Oschner-Sherren treatment was not adopted even in the dangerous third and fourth days. But if the appendix was difficult to find and was buried in a friable mass of caecal adhesions not shut off from the peritoneal cavity, a drain was inserted, continuous proctoclysis administered and the removal of the appendix left to a later period, if necessary.

(v.) Dr. G. S. Sinnatamby, Visiting Surgeon, Out-patients' Department, reports—

Three cases of cutaneous human anthrax which occurred in adults who were previously quite healthy. All three were cultivators who gave a history of a superficial skin lesion in the form of a scratch. There were pain, redness, and swelling. Soon extensive brawny induration and a solid oedema developed involving the arm, shoulder, lower part of the neck, and upper part of the chest. The patient became rapidly toxic, collapsed, irrational, and restless. Glands were enlarged and painful. The temperature varied between 97° and 98° F. and the pulse became feeble and thready. A central black eschar with surrounding small vesicles developed in two cases but a definite pustule was present only in one case. B. *Anthrax* was identified in the smear and in the peripheral blood in all cases. All three cases died within a short time. Post-mortem examination was performed only in one case and showed a soft pulpy spleen and highly congested viscera. B. *anthrax* was found in the smear taken from the cut spleen.

The interest of these cases lies in the following facts: Human anthrax has not been reported before in Ceylon. The three patients were farm labourers. B. *anthrax* was inoculated on a superficial skin lesion. The cases were mistaken for acute erysipelas, septic cellulitis, and bubonic plague, respectively.

(vi.) Dr. M. C. M. Kaleel, Medical Registrar, General Hospital, reports—

(1) A case of pseudo-hypertropic muscular dystrophy in a boy (about 11 years). There was characteristic bilateral hypertrophy of groups of muscles, chiefly the glutei, the calf-muscles, and the infra-spinati, with corresponding atrophy of certain other groups, such as the pectorals and biceps. The patient gradually became weak with paralysis of the affected muscles. The electrical reactions were normal but the muscles responded sluggishly.

No family history could be traced though this point was carefully inquired into.

(2) A case of Mikulicz's syndrome. The patient, a female 18 years of age, was admitted with a history of swelling of the face and eyelids of three months' duration. The patient looked very ill. Examination showed bilateral enlargement of the parotid and lachrymal glands. The spleen was just palpable below the costal margin. The blood picture was normal except for a slight diminution in the number of red-cells. Three days after admission the patient made an apparent recovery and her general condition greatly improved. Three weeks after admission there was a release and the parotid and lachrymal glands began to enlarge once more. The patient complained of difficulty in swallowing and the tonsils were found to be enlarged. Tonsillectomy was performed but the patient gradually sank and died. The condition was apyrexial throughout.

Kandy Hospital.—(i.) The Acting Medical Superintendent, Kandy Hospital, reports—

(1) Successful results from the treatment of pneumonia with injections of Pneumococcal Immunogen, given subcutaneously in 5 minim doses daily. All cases admitted early and where the pneumonia was confined to one lung only recovered. The temperature came down by lysis about the fourth day.

Amongst 50 cases thus treated there were 16 deaths, 14 of these showed involvement of both lungs. One showed apical pneumonia, admitted after the fifth day of illness, and in the other the post-mortem revealed double pneumonia with pericarditis.

(2) A case of Cerebello-pontine tumour diagnosed from the following symptoms—Vomiting and giddiness of 5 months' duration, with ataxia and a tendency to fall towards the left; paresis and exaggerated reflexes in the limbs; slight facial paralysis with weakness of external rectus on the left side, and nystagmus. Both discs showed marked papilloedema.

A positive Wasserman reaction of the blood proved this to be of syphilitic origin and after two months' specific treatment patient left hospital greatly improved.

(3) A case of aneurism of the ascending aorta in an Australian (aged 56) who was admitted complaining of a gnawing cough and pain over the sternum. There were signs of increasing pressure in the chest. The Wasserman reaction was negative and therefore the treatment was symptomatic. The patient suddenly became orthopnoeic and died. At the post-mortem the aneurism was found to have ruptured into the pericardial sac.

(ii.) Dr. F. N. Spittel, Surgeon, Kandy Hospital, reports—

(1) A case of a left-sided appendix with partial absence of the large gut, and early tuberculosis, in a lady admitted with symptoms of chronic appendicitis. On abdominal section the greater part of the colon was found to be absent and the hard infiltrated appendix 4 inches long ½ inch thick was on the left side. Two little miliary tubercles were found on a very mobile caecum. A small hard mass on the appendix showed "chronic fibrosis and areas of caseation." Recovery was uninterrupted and the patient gained two stones in weight.

(2) A case of strangulated hernia in a plague patient, B. *pestis* being found on gland puncture. A chronic inguinal hernia got strangulated. At operation a congested loop and effusion into the sac were found. A post-mortem next day revealed typical and extensive haemorrhages in the internal organs.

(3) A case of a male hermaphrodite of 40 years of age brought up as a Tamil estate cooly woman for the treatment of prolapse of the rectum. The husband of the patient had deserted her. The penis was small, hypospadic and capable of erection. The scrotum was divided into two-folds which contained small testicles. A minute passage below the urinary meatus took the place of an extremely narrow vaginal orifice. General formation of the body was of the male type, with a slight growth of hair on lip and chin. The voice was low-pitched and slight enlargement of the breast just below the nipple was present. The prolapse of the rectum was highly suggestive in the absence of a vaginal opening, but the only history available was the absence of sexual desire for either sex. Masturbation was admitted.

Galle Hospital.—(i.) Dr. G. W. Wickramasuriya, Surgeon, Galle Hospital, reports—

(1) Two cases of large vesico-vaginal fistulae successfully treated by operative repair. One fistula admitted 3 fingers easly. Repair was performed by a vulvo-vaginal incision and division of the levator ani and the ischio-rectal fatty tissue. This procedure gave easy access to the fistula and much laxity to the extensive flaps of the vesico-vaginal dissection. The bladder mucosa was closed by non-perforating stitches in two tiers and the vaginal wall was restored. The first fistula was cured in a fortnight, and the second was made very much smaller in spite of several previous unsuccessful attempts at closure elsewhere.

(2) A case of ovarian cyst complicating parturition at term. Nothing abnormal was detected by a careful examination on admission except round-worm ova in the faeces. Great pain and distress during labour necessitated a hypodermic injection of morphia but no obstruction to delivery was discovered. After the delivery of a full-term child and the placenta, abdominal examination revealed a cystic swelling. The temperature rose and the patient's condition rapidly grew worse. Laparotomy was consented to after much persuasion and an ovarian cyst with bruised and partially necrosed walls and adhesions to the intestines and parietes was found. The cyst, with its fishy-smelling contents, was removed with difficulty. Patient recovered after a stormy convalescence.

(3) A case of a uterine fibroid incarcerated in the pelvis along with a large suppurating ovarian cyst. On admission an elderly woman with a hectic temperature was found to have a cystic swelling with indurated walls filling up the pelvis. Laparotomy under spinal anaesthesia revealed a suppurating ovarian cyst with thick walls and dense adhesions around it. The cyst was tapped and the wall partially excised and the cavity was marsupialised. A big fibroid incarcerated in the pelvis was not removed because of the poor general condition of the patient. The patient was discharged relieved of her symptoms.

(4) Ten cases of procidentia uteri treated with complete success by operation. The prolapse was of several years' duration and the patients were all young women. Anterior colporrhapy, high amputation of the cervix and repair of the perineum were performed. Ventro fixation was done only in one case in this series. All the cases were preceded by child-bearing unattended by qualified medical men.

(5) A case of typhoid perforation operated on after at least 48 hours. General peritonitis had set in. At laparotomy the first healthy intestinal coil was tapped and the intestines were completely emptied of much gas and faecal matter. An ileal perforation was closed and the peritonial cavity mopped dry. Bowels opened normally after the administration of Pituitarin and Eserine and distension did not recur. Recovery was uninterrupted except for some cellulitis of the abdominal wall which cleared up soon.

(ii.) Dr. W. Samarasinghe, Galle Hospital, reports—

Two cases of haemorrhagic typhoid fever out of a series of 179 cases of typhoid fever treated in the hospital. The prognosis in such cases is always grave and both the cases ended fatally.

(a) The first case was that of a boy about 8 years, admitted with a history of continuous fever of 19 days' duration, commencing with headache. There was bleeding from the gums and nasal mucus membrane. The urine also contained blood. The patient looked very ill with a rapid low-tension pulse. Widal reaction was positive for typhoid. The following day patient became very feeble and died.

(b) The second case was that of an adult male (about 31) admitted with continuous fever of 21 days' duration. The patient was dull and apathetic with temperature 104 and pulse 110 of fair tension and volume. There were no rose-spots or petechii. The day after admission patient began to bleed from the gums and blood also appeared in the urine, and on the third day the patient died with a severe intestinal haemorrhage.

De Soysa Lying-in Home.—Dr. S. L. Navaratnam, Assistant Obstetrician, Lying-in Home, reports—

(1) A case of parturition in a primigravida with a Naegle's oblique pelvis, cervix was closed and vertex was presenting. Hardly any disproportion was detected. Labour was induced resulting in the normal delivery of an asphyxiated child who revived in 10 minutes. Puerperium was uneventful. The good results in this type of deformity, which is rare in Ceylon, are attributed to ante-natal supervision and the timely induction of labour.

(2) A case of a woman of 18 years admitted two weeks after delivery for the treatment of pain along the sciatic nerve and in the left sacro-iliac joint. P. V. a retroverted subinvoluted uterus was found. A sanious discharge was present. Hot vaginal douches and injection of rectified spirit into the sciatic nerve were followed by relief.

(3) A woman aged 30 years admitted with labour pains in her fifth pregnancy. The first 3 children were born normally and alive. At the fourth confinement she was brought to the Lying-in Home with a child's head which had been out of the vulva for two hours. The dead child was extracted and weighed 10 lb. On the 8th day she suddenly developed a hemiplegia, inability to speak and incontinence of urine and faeces. The next day the right side of the face was paralyzed. Five days later sensation in the limbs began to return. When discharged 23 days after delivery hemiplegia was still present. At the fifth confinement a marginal placenta praevia was detected. Four hours later an anencephalic monster was born. Placenta was removed manually about 1½ hours later. Puerperium was uneventful. Hemiplegia and inability to articulate still persisted. The interest of this case lies in the variety of the complications which followed her fourth confinement.

Lady Havelock Hospital.—Dr. (Miss) Catherine Anderson, Medical Officer, Lady Havelock Hospital, reports—

(1) A case of toxaemia in the seventh month of pregnancy with severe vomiting, marked oedema and albuminurea, and a systolic blood pressure of 180. She was treated with potassium citrate and magnesium sulphate orally, with rectal sodium bicarbonate, and gastric lavage. But albuminuric retinitis and blindness developed and induction of labour was attempted by drugs. Failing this, Caesarian section was performed under ether and the patient made a quick recovery.

(2) Four cases of malarial splenomegaly which were treated by splenectomy. The spleens weighed 3¾ lb., 1¾ lb., 2 lb., and 3 lb. Recovery was uneventful except for the development of bronchitis in the one case where adhesions were present.

(3) A case of ectopia vesicae treated by Maydl's operation. The abdominal wound was allowed to granulate. The apposition of the recti along with lateral incisions failed because the sutures gave way. Patient gained the control of urine in a fortnight and the abdominal wound healed up in a few days.

(4) Two cases of large vesico-vaginal fistulae, each about the size of a rupee. At operation the bladder mucosa was separated and sutured with silk and the vaginal opening closed with catgut. The bladder was drained by a self-retaining catheter and a urotropine mixture was given by mouth. The patients left hospital cured.

(5) A case of ectopic pregnancy with bilateral ovarian cysts in a woman of 35 years. At the first examination a large, tender, irregular swelling filled the lower abdomen. On abdominal section bilateral broad-ligament-cysts were found with another cyst at the ampullary end of the right fallopian tube containing a two-months-foetus. Cysts were removed along with the body of the uterus. Recovery was uneventful.

(3) *Clinical Laboratory (General Hospital, Colombo).*

In the Clinical Laboratory, General Hospital, 33,036 specimens were examined during the year, as compared with 30,292 in the previous year and 21,027 in 1927.

(4) *Special Reports.*

The following reports are given in the appendix:—

(1) Report of Dr. A. T. Kuriyan, Superintendent, Ankylostomiasis Campaigns, for the year 1929.
(2) Report of Mr. H. F. Carter, Medical Entomologist, for the year 1929.
(3) Report of Dr. K. J. Rustomjee, Superintendent, Anti-Malarial Campaigns, for the year 1929.
(4) Report on Health Unit Work by Dr. S. F. Chellappah, Senior Medical Officer of Health, for the year 1929.
(5) Report of Mr. B. R. Dyer, Sanitary Engineer, for the year 1929.

X.—MISCELLANEOUS.

(1) *Ceylon Medical College.*

The following extracts from the report of the Registrar of the Ceylon Medical College for the year 1929 are given below—the academic year is October, 1928, to September, 1929:—

The Ceylon Medical College provides the complete course of instruction required for the practice of modern Medicine, Surgery, and Midwifery. Including the course of preliminary or pre-registration work in Physics, Chemistry, and Biology which is provided by arrangement at the University College, Colombo, the whole course takes 6 years. At the end the Diploma in Medicine, Surgery, and Midwifery is conferred and under the designation of L.M.S. (Ceylon) is recognized by the General Medical Council of the United Kingdom which entitles the holder to be registered and to practise his profession in Great Britain and throughout the British Empire.

In addition to the complete medical curriculum the College provides a course of instruction for a minor grade of medical practitioners known as Apothecaries. These receive a two years' course of instruction in Anatomy, Physiology, Chemistry, Pharmacy, Pharmacology and Dispensing, Elementary Medicine, Surgery and Midwifery, both theoretical and clinical, and Surgical Dressing, and in Hygiene and Public Health.

The College is staffed by two whole-time Professors in Anatomy and Physiology and a large number of part-time lecturers mostly drawn from the officers of the Department of Medical and Sanitary Services.

General.—Dr. F. O. B. Ellison, Registrar and Professor of Physiology, returned from long leave in the United Kingdom and resumed the administration of the College on January 9, 1929.

The year has been an uneventful one, the working of the College proceeding with regularity and smoothness. The most noteworthy feature of the year is the increased entry, especially of women students.

Mr. M. J. de Silva, the Sub-Assistant in Physiology, retired during the year under review, having served the Department in various capacities for nearly 38 years. An appreciation of his meritorious services is herein recorded.

Number of students who joined during the year having passed the pre-medical examination ..	34	Total number of medical students in the College on September 30, 1929	101
Number of students who qualified L.M.S. (Ceylon)	13	Total number of apothecary students in the College on September 30, 1929 ..	78
Number of apothecaries qualified ..	21		

A small number of students generally discontinue study in the Ceylon Medical College and go to United Kingdom to complete their studies.

Results of Examinations (Medical).

	December, 1928.		March, 1929.		July, 1929.		Total.	
	Sat.	Passed.	Sat.	Passed.	Sat.	Passed.	Sat.	Passed.
Final ..	20	5	19	4	15	4	54	13
Second Professional ..	—	—	16	9	14	3	30	12
First Professional ..	—	—	12	8	10	8	22	16
	September, 1929.							
Pre-medical ..	29	12	56	24	—	—	85	36

Results of Examinations (Apothecary Students).

	December, 1928.		March, 1929.		July, 1929.		Total.	
	Sat.	Passed.	Sat.	Passed.	Sat.	Passed.	Sat.	Passed.
Second Apothecaries ..	4	2	19	5	33	14	56	21
First Apothecaries ..	—	—	12	10	26	19	38	29

Results of Examination (Pharmacists).

	September, 1929.							
	Sat.	Passed.						
Pharmacists ..	169	136	—	—	—	—	169	136

(2) *King Edward VII. (Memorial) Anti-Tuberculosis Fund.*

The report of the Acting Secretary of the Fund for the year 1929 is as follows:—

Propaganda Work.—The set of seven leaflets issued by the National Association for the Prevention of Tuberculosis, London, revised by the Medical Officer of the King Edward VII. (Memorial) Anti-Tuberculosis Institute, Colombo, to suit local conditions, were printed in English, Sinhalese, and Tamil, and were forwarded to the Director of Medical and Sanitary Services, and the Medical Officer of the Institute, for distribution.

Lantern slides dealing with tuberculosis have also been purchased from the above Association, for propaganda use.

New Sanatorium at Kankesanturai.—The construction of the Sanatorium at Kankesanturai which was given out on contract is progressing satisfactorily.

The Sanatorium will provide accommodation for 12 paying patients (6 males and 6 females) and 32 non-paying patients (16 males and 16 females), and it is expected that the building will be completed by the end of June, 1930.

A special wing for tubercular prisoner patients is proposed to be added to the Sanatorium at Government expense. This is to be a detached building surrounded by a wall and situated midway between the kitchen and the mortuary. The site plan of Kankesanturai Sanatorium showing the general layout of the buildings required by the Inspector-General of Prisons is now before the Sub-Committee for approval.

A proposal to plant flowering trees alongside the north, west, and south drives at Kankesanturai Sanatorium was considered by the Sub-Committee, and an estimate of Rs. 825 was sanctioned for this work.

The planting of the grounds has, however, been postponed until October on the advice of the Provincial Engineer, Northern Province.

Finance.—The accounts of the Fund have been audited by the Colonial Auditor's Department, and a certified statement of receipts and payments showing the working of the Fund during the year 1929, together with a statement of receipts and payments from the inception of the Fund up to December 31, 1929, is attached.

KING EDWARD VII. ANTI-TUBERCULOSIS FUND.

Statement of Receipts and Payments for the Year ended December 31, 1929.

RECEIPTS.	Rs.	c.	PAYMENTS.	Rs.	c.	Rs.	c.
Balance on December 31, 1928 ..	121,921	42	Director of Public Works in connection with the new sanatorium at Kankesanturai			60,000	0
Interest on current account ..	261	9	Balance—Cash at Bank—				
Interest on fixed deposit	4,901	54	Current account ..	51,172	5		
			Fixed deposit ..	15,912	0		
						67,084	5
	127,084	5				127,084	5

Audited and found correct:
F. G. MORLEY,
Colonial Auditor.

IAN STEWART,
Honorary Treasurer.

KING EDWARD VII. ANTI-TUBERCULOSIS FUND.

Statement of Receipts and Payments up to December 31, 1929.

RECEIPTS.	Rs.	c.	PAYMENTS.	Rs.	c.
Donations, subscriptions, and sundry collections	392,194	12	Erection of hospital, sanatoriums, apparatus, fittings, &c.	472,389	51
Interest on—			Honorarium to Secretary, bonuses to clerks for auditing and clerical work ..	4,398	62
Current account .. 8,064 14			Advertising, printing, stationery, travelling expenses, &c.	2,424	21
Fixed deposits .. 68,328 47			Balance—Cash at Bank—		
Donation by the late J.N. and Mrs. Campbell .. 77,657 24			Current account .. 51,172 5		
Advance to contractor .. 52 42			Fixed deposit .. 15,912 0		
	154,102	27		67,084	5
	546,296	39		546,296	39

Audit Office,
Colombo, January, 1930.

F. G. MORLEY,
Colonial Auditor.

(3) *Civil Medical Stores.*

The report of the Superintendent, Civil Medical Stores, is given below. A word may be said here about the most pressing need of the Civil Medical Stores—increased accommodation. As pointed out in last year's report, increased accommodation is urgently required, especially in the Dispatch Department. The figures given in the Superintendent's report show that the work of the Dispatch Department is now much heavier than it was in 1927, and if this increase is maintained it will soon be impossible to comply promptly with requisitions from hospitals and estates. The present site of the Stores is so crowded with buildings that it is impossible to find room for any further additions. Even to rebuild some of the present buildings would be difficult on account of the congestion and the difficulty of carrying on the work of the Stores while alterations are in progress. The best plan appears to be to acquire additional land outside the present site on the same side as the present Dispatch Department. At the time of writing (April, 1930) steps are being taken to investigate the possibility of such an acquisition with a view to putting the matter before Government:—

REPORT.

General.—During the year the work in all sections has increased considerably and larger supplies of drugs have been indented for and issued to institutions.

The following figures show how the issue of certain drugs has increased in two years:—

Drugs.	1927.	1928.	1929.	Drugs.	1927.	1928.	1929.
Liq. Ammon Acet.	3,827	4,714	4,843	Spt. Ether Nit.	6,895	7,091	7,566
Magnes Sulph.	216,750	276,457	275,640	Spt. Chlorof.	4,432	4,852	5,543
Ol. Recini	137,704	153,448	157,256	Tr. Calumbae	1,989	2,136	2,487
Paraff. Molle	8,093	8,115	9,250	Tr. Gentian	4,363	5,745	6,617
Pot. Brom.	1,615	1,768	1,857	Tr. Cinchona Co.	2,575	3,615	4,942
Sodii Salicyl.	3,645	4,351	4,632				

The weight of drugs and instruments that passed through the Dispatch Section during the past 3 years is:—

1927.				1928.				1929.			
Tons	cwt.	qt.	lb.	Tons	cwt.	qt.	lb.	Tons	cwt.	qt.	lb.
340	6	2	13	560	11	0	1	486	1	3	25

This increased output was possible only by the rearrangement of stock and improvement in the Dispatch Section. This section has now reached its saturation point and any further increase in the number of institutions or in their requirements must result in delay in complying with these requisitions.

Preparation Room.—Great economy was brought about by manufacturing a certain amount of spirituous preparations on these premises. This will be further developed during the present year. The system of purchasing sera was altered with the result that the same brand of sera was obtained at a saving of £380. A further saving of Rs. 2,500 was effected by replacing the proprietary Antiphlogistine by the B.P.C. product Cataplasma Kaolin.

Drugs and Instruments.—Drugs and instruments were purchased at a cost of Rs. 912,338. A sum of Rs. 489,489 was expended on quinine and Rs. 81,508 on quinine tablets. 14,185 lb. of quinine and 2,246,445 tablets were issued. It has been arranged to obtain all further supplies of quinine tinted pink. The tablets will in addition be embossed with an arrow in order to reduce the possibility of misuse.

Drugs and instruments supplied to other departments amounted to Rs. 15,066. The requisition form relating to other departments was revised with satisfactory results.

The value of drugs supplied to estates amounted to Rs. 255,984.

Drugs to the value of Rs. 14,589 were supplied to estates on payment.

Opium.—Opium and its preparations were purchased to the value of Rs. 60,179 and the amount recovered by sales amounted to Rs. 3,922.

Cannabis Indica.—Cannabis Indica sales amounted to Rs. 30.

Miscellaneous.—The storage tanks for rectified spirit are almost completed and should be in use soon.

The Repair Section was transferred to a new building erected in the yard and the space vacated was used for packing purposes.

A bottle-washing machine was imported to expedite the work in the preparation room. This machine would be of still greater service if a higher water pressure could be obtained.

Office Work.—The new office system was introduced under the supervision of the clerk in charge and the working of the Clerical Section improved.

The system of registering requisitions was revised with satisfactory results.

The general Inventory Books which were found to be in an unsatisfactory state were put in order and the system of section issues introduced.

The Estate Branch Ledger was found to be unsatisfactorily kept and an improved system was adopted.

Requirements.—There are two very weak points in the organization of this Establishment: the lack of system in the accounting of stocks and the lack of accommodation in the Dispatch Department. It is imperative that these be corrected as early as possible.

I am in consultation with the Colonial Storekeeper on the former matter and hope to instal the new stock-keeping system in October next. As regards the latter matter I am putting up a scheme to the Head Office.

(4) *Government Vaccine Establishment.*

The following is the report of the Officer-in-Charge:—

The number of calves received on hire from the contractor amounted to 449.

During the 12 months 443 calves were used for vaccination, and of these 431 were returned to the contractor.

As in previous years, considerable difficulty was experienced in obtaining calves of a quality suitable for vaccination.

Seed lymph for the vaccination of calves was obtained at intervals from the Lister Institute of Preventive Medicine, London. A certain amount was also prepared in this Establishment.

The glycerinated calf lymph was issued to vaccinators in sealed glass capillary tubes. Lymph was also issued in collapsible metal tubes to those stations where a large number of vaccinations are carried out daily.

The total number of tubes of calf lymph issued during the year amounted to 177,003 which is sufficient for the vaccination of approximately 531,009 persons. Of this number 2,385 were sold, realizing a sum of Rs. 2,131.50, 65,500 were issued to Mandapam Camp, 20,400 to Tataparai Camp, Tuticorin, and 944 to various ships in harbour. A large quantity of lymph was also stored in bulk as a reserve supply.

The weekly returns of Vaccinators received at this office show that a successful case percentage of 98.72 (primary vaccinations) was obtained with the lymph issued during the year.

(5) *Sale of Opium to Registered Consumers and Vedaralas.*

Steps were taken to close down 1 depôt, but the actual closing was not done till early in 1930. There are now 51 depôts in existence. No new consumers were registered during the year.

The total number of registered consumers served from the depôts in the Island during the year was 5,636, as against 6,061 in the previous year and 6,591 in 1927.

5,181 consumers obtained eating opium and 455 obtained smoking opium, as against 5,552 and 509, respectively, in 1928, and 6,042 and 549, respectively, in 1927.

3,206 vedaralas purchased eating opium, as compared with 3,101 in 1928 and 3,064 in 1927.

2,605 lb. of eating opium and 301 lb. of smoking opium, which realized Rs. 273,639.16 and Rs. 42,174.18, respectively, were sold to consumers and vedaralas during the year, as compared with 2,992 lb. of eating and 345 lb. of smoking opium sold in 1928, which realized Rs. 314,381.81 and Rs. 48,312.14.

The total amount realized by the sale of eating and smoking opium was Rs. 315,813.34, as against Rs. 362,693.95 in 1928. The decrease in the sales is due to the 5 per cent. annual reduction in the opium allowed to consumers and to deaths among opium consumers.

The selling price of opium—eating opium 1½ cents per grain and smoking opium 2 cents per grain—remained unchanged.

The above figures show clearly that the number of consumers and the quantity consumed are decreasing year by year, but there is an increase in the number of vedaralas to whom opium is issued for purely medical purposes.

(6) *Medical Requirements.*

The position as regards the five constructional schemes referred to in my reports for last year and the year before remained very much the same.

The first three-storey block forming part of the reconstruction scheme at the General Hospital has been completed. The first and second floors are occupied but the third floor has not been put into use for want of a lift which has not yet been installed.

Provision for a new Nurses' Home and Training School was made in the 1928-29 Estimates, but no building operations were started during that year. The matter was brought up for consideration before the Select Committee on the Budget, 1929-30, which was of opinion that the estimate was too high and referred it back for the preparation of a revised plan and estimate. These have now been prepared and submitted to Government, whose decision in the matter is awaited. The result of the delay in arriving at a decision on this important question is that not only can no improvement be effected in the training of nurses but other necessary additions to the General Hospital, *e.g.*, a Casualty Department, are held up.

Plans for the extension of the Lying-in Home not involving any further acquisition of land are in course of preparation.

A site in Torrington square has been selected for the Public Health Laboratories and plans have been prepared by the Director of Public Works. The estimated cost is Rs. 260,000 and the item has been included in the proposals for 1930-31.

The report of the Select Committee of the Legislative Council appointed in 1928 to consider the recommendations of the Committee appointed by Government to advise what the hospital policy of Government should be is still awaited.

(7) *General Remarks.*

I have little to add to what I said last year under this heading, as the remarks then made were a summing up of the progress made in the past few years, and during the year under review progress was continued, along the lines therein indicated, in matters medical and sanitary.

The success of the Health and Baby Weeks held in 1929 is a very encouraging feature, and I would direct attention to the outstanding success that attended the Health and Baby Week held in Kalutara in April, 1929—the award of the Imperial Challenge Shield for the best Health and Baby Week held during the year within the British Empire exclusive of the British Isles—*vide* section III. B. 6. of this report.

Health Units continue to show that in them we have a sound method of propagating health ideas and of carrying out health work through the co-operation of the people. One of their special features is that they enable private individuals as well as community organizations to take a hand in the work.

It was pointed out in my General Remarks last year that " the absence of statutory powers has so much hampered the work of the Department in its Anti-Malaria Campaign that unless the Anti-Mosquito Ordinance is passed without emasculation it may be necessary for the Anti-Malaria Advisory Board to modify its programme and policy." I regret to say that the draft Ordinance has been so emasculated by the Select Committee that much of the value of the Bill has been lost, and I sincerely trust that it will be restored to something approaching its former strength before it finally becomes law.

In 1928 Government approved of a proposal to send Ceylonese nurses to England for a course of further training as hospital nurses and for an additional period of 6 months' training to get the Certificate of the English Midwives Board (C.M.B.) with a view to their employment on their return, if found suitable and as vacancies occurred, in the posts at present held by the sisters recruited from Europe. Six nurses were accordingly selected and sent to England for the necessary training—4 were sent on August 2, 1928, and 2 on August 15, 1928. Two nurses went to Guy's Hospital, two to the Royal Sussex Hospital, Brighton, and two to the General Hospital, Birmingham. Very favourable reports have been received regarding the work and conduct of those nurses during 1929.

In section III. B. 5. of this report reference is made to the locally produced film entitled " Romanis " dealing with child welfare work. This film is the first to be produced by any Government department in Ceylon, and the success that attended the Department's efforts in this direction has been so encouraging that it is hoped, as funds become available, to make other educational films of this nature in the near future.

J. F. E. BRIDGER,
Director of Medical and Sanitary Services.

April 15, 1930.

The following reports are given in the Appendix:—

(1) Report of the Superintendent, Ankylostomiasis Campaigns, for the year 1929.
(2) Report of the Medical Entomologist for the year 1929.
(3) Report of the Superintendent, Anti-Malaria Campaigns, for the year 1929.
(4) Report on the Health Unit Work for the year 1929.
(5) Report of the Sanitary Engineer for the year 1929.

APPENDIX.

1.—Report of the Superintendent, Ankylostomiasis Campaigns, for the Year 1929.

Introduction.—In its seventh annual report the International Health Board of the Rockefeller Foundation states: "Hookworm is one of the most serious of the disabling diseases of man. It is not for this reason, however, that the Board has selected it for so large a share in its scheme of operations. Its control, easily justifiable on its own account, is much more important as a means to a larger end. The disease lends itself readily to purposes of demonstration. It affects fundamentally the welfare of mankind over vast regions and yet in its cause, its cure, its mode of transmission and means of prevention, it is so simple and tangible that the layman—even the illiterate—may be made to see and understand it. Demonstrations in the control of this one disease, while bringing relief to hundreds of suffering people and increasing the efficiency of communities and countries, are having a more important effect in creating a popular interest in public health and in promoting the development of permanent agencies for the control of this and other preventive diseases."

Hookworm work in Ceylon, acting as the advance agent of preventive medicine for the last 13 years, has played its part in the development of an interest on the part of the people in the establishment of a permanent system of intensive public health work. Its propaganda work has aided in the creation of a favourable sentiment for sanitary control. The treatment has checked soil infestation to a large extent by killing millions of worms. The result of treatment in the individual may be summarized as follows:—Removal of the worms enables the blood soon to become normal both in quantity and quality, and this is accompanied by a return of strength and vigour in the person treated; children after treatment begin to grow rapidly and to become healthy and strong, while their minds become alert, and they are then able to make good progress at school; in adults, treatment causes the feeling of indolence to disappear and enables them to resist disease and to do more and better work.

The Director of Medical and Sanitary Services in his annual report for 1928 states:—"The results of the Ankylostomiasis Campaign are now beginning to show themselves. It is very encouraging to record that in some districts of the Central Province the treatment has been so successful that overcrowding of hospitals no longer exists, and in fact some of the wards in Dikoya, Dimbula, Lindula, Maskeliya, Bogawantalawa, and Agrapatna hospitals are almost empty for the greater part of the year."

Some of the hospitals and dispensaries in the Island are standing monuments of the primitive sanitary habits of the communities they serve. The present rate of progress of hookworm control is so marked that the day may not be far off when they may be closed for the treatment of the sick. It is hookworm that kills a good number of children on estates and drives their elders to hospitals. When proper latrines—the graves of hookworm—are established and soil pollution prevented, a different class of institutions ought to take the place of the ordinary hospital, viz., Ante-natal Clinics, Maternity Homes, Baby Clinics, &c. As the labourers are under control it should not demand superhuman effort on the part of estate agents and planters to achieve this end.

Campaign Programme.—The Island-wide programme of treatments, educational work, and laboratory examinations has been in force during the last 3 years, and thousands of people have come directly in contact with the work of the hookworm campaigns. The response of the people on the whole has been satisfactory. In some places officers of Social Service Leagues accompanied the medical officers of the campaign to the different centres of treatment in their sphere of influence and exhorted the people to take the treatment. Joint petitions have been received from the villagers asking to send the campaign staff again to continue treatments. School teachers have applied in advance for treatment of the school children in their respective charges. Estate labourers and villagers ask for chenopodium when they visit hospitals and dispensaries.

In addition to the work of the campaign, officers of the Medical and Sanitary Services gave routine treatment to estate labourers and villagers at Government hospitals and dispensaries, at Health Unit centres, and at Mandapam Camp; and many estates have carried out mass treatments by their own medical staff.

During the year under review, the second round of treatment which was started in the previous year for estate labourers was completed and a large portion of the Island was covered in the third round of treatment for villagers and school children. A survey of infection was also conducted in the Provinces visited in the third round.

At the end of the year arrangements were made for the medical inspection of school children by the campaign medical officers, who visit in their itinerary all the schools in the Island. They have to examine the school children before treatment. At their visit they will have to note down the defects and disabilities of the children and pass on the results of such examination to the school medical officers. These officers will thus get valuable statistics and at their next visit to the school could follow up cases reported for treatment.

Administrative Organization.—The total strength of the campaign staff is as follows:—

One Superintendent with office in Colombo.
Eight Field Medical Officers in charge of eight units itinerating in the Island.
Two clerks attached to the Superintendent's office in Colombo.
Six microscopists in the Central Laboratory in Colombo.
Thirty-four dispensers, 4 attached to each unit and 2 stationed in Mandapam Camp.
Eleven peons and caretakers.
One latrine cooly.

Dr. E. Jayatilleke, after serving for about 5 years, and Dr. C. D. Amarasingha, after about 2 years' service, reverted to the Medical Branch, their places being taken up by Dr. H. T. Anthonisz and Dr. S. D. Ratnapala, respectively.

The whole organization is worked under the direct control of the Assistant Director of Sanitary Services.

Table 1.—Total Ankylostomiasis Treatments by all Agencies in 1929.

Agencies.	Census.	Treatments. First.	Subsequent.	Total.
Campaign Units.				
School units	221,543(a)	114,168	—	114,168
Estate units	99,705(b)	67,145	—	67,145
Central office	—	52	9	61
Total for campaign	321,248	181,365	9	181,374
Other Agencies.				
Government hospitals and dispensaries	4,936,136	748,177	149,177	897,354
Mandapam Camp	103,684	90,442	—	90,442
Health units	—	3,382	—	3,382
Estate staff	508,881(b)	143,763	33,119	176,882
Total for Other Agencies	5,548,701	985,764	182,296	1,168,060
Grand Total	5,869,949	1,167,129	182,305	1,349,434

(a) Census represents average daily attendance during preceding 3 months.
(b) Census figures are duplicated in part.

Treatments by Campaign Staff.—In school campaigns, almost the whole Island was covered, some Provinces receiving the second round of treatments and others the third round under the Island-wide programme inaugurated in 1926.

In estate campaigns, the second round of treatments was completed by visiting Sabaragamuwa, North-Western, and Western Provinces, and the portion of the Central Province left untreated in 1928. On these visits several days' work was lost to the campaign because the superintendents of some estates cancelled the treatment when it was too late to rearrange the programme of medical officers' visits. The following are some of the reasons assigned for cancelling:—

(*a*) Labourers are treated by the estate dispenser.
(*b*) Not a suitable day for treatment.
(*c*) Very busy season.
(*d*) Coolies will be treated at Government dispensary.
(*e*) Hookworm disease is not very prevalent.
(*f*) Unsafe to treat in rainy weather.
(*g*) Unable to make arrangements.
(*h*) Do not propose to have treatment this year.
(*i*) Coolies do not like to take treatment.
(*j*) Change of staff.
(*k*) Treatment not necessary.
(*l*) Estate dispenser is thoroughly conversant with the methods of treatment.
(*m*) No hookworm on estate.

From some estates no intimation at all was received and when the campaign staff visited them it was found that they were not ready.

It should also be stated that the majority of the planters realize that hookworm treatment is of great benefit to the labourers and to their estates. They carry out mass treatments annually through their own staff or utilize the services of the campaign staff.

(*a*) *Schools.*

Western Province.—Six medical officers of the campaign conducted the second round of treatments in the Western Province. The response in Mirigama, Veyangoda, Gampaha, and Minuwangoda sections was, as in previous years, very unsatisfactory.

Number of schools visited	726	Number of school children treated	22,915
Average egg-count per gram per person	692	Number of others treated	4,308
Percentage infected	86.1	Total treatments	27,223

Central Province.—The second round of treatment having been completed in the Central Province, the third round was started and progressed through Matale and Nuwara Eliya as far as the areas round about Kandy.

Number of schools visited	165	Number of school children treated	12,789
Average egg-count per gram per person	664	Number of others treated	1,382
Percentage infected	85.1	Total treatments	14,171

Southern Province.—Except for Hiniduma area in Galle District and certain portions of Matara and Hambantota Districts, the entire Province was covered in a third round of treatment. The Sanitary Inspectors have been of assistance in getting many of the villagers treated. Towards the end of the year an unfortunate incident occurred, a schoolboy of Hapugala Government Boys' School, Gintota, dying a few hours after treatment. The child was examined before treatment, and the correct dosage was prescribed and given, but untoward symptoms developed ending in death in spite of all after-treatment. Post-mortem examination by the Judicial Medical Officer, Galle, showed that the internal organs were normal. The cause of death was, in all probability, due to the idiosyncrasy of the child to chenopodium and no one could be blamed for what took place. As the treatments would not have been satisfactory in this area as a result of this unfortunate occurrence the units working there moved to Matara and Hambantota Districts. Millions are treated annually but such deaths are extremely rare.

Number of schools visited ..	201	Number of school children treated ..	10,094
Average egg-count per gram per person.	691	Number of others treated ..	2,664
Percentage infected ..	86.0	Total treatments	12,758

Sabaragamuwa Province.—A second round of treatments in this Province was completed during the year. The treatment in Kegalla District was fairly satisfactory.

Number of schools visited ..	144	Number of school children treated ..	8,792
Average egg-count per gram per person	603	Number of others treated ..	1,174
Percentage infected	83.7	Total treatments	9,966

North-Western Province.—This Province was covered in a third round of treatments.

Number of schools visited ..	282	Number of school children treated ..	16,523
Average egg-count per gram per person.	655	Number of others treated ..	3,489
Percentage infected ..	85.4	Total treatments	20,012

Province of Uva.—A third round of treatments was given in this Province.

Number of schools visited ..	77	Number of school children treated ..	3,814
Average egg-count per gram per person.	707	Number of others treated ..	1,135
Percentage infected ..	89.4	Total treatments	4,949

Northern Province.—Mannar and Mullaittivu Districts and about a half of the Jaffna Peninsula were visited for the third time.

Number of schools visited ..	162	Number of school children treated ..	6,272
Average egg-count per gram per person.	513	Number of others treated ..	1,937
Percentage infected	78.7	Total treatments	8,209

Eastern Province.—A third round of treatments in Trincomalee District and a second round of treatments in Batticaloa District were completed.

Number of schools visited ..	196	Number of school children treated ..	8,383
Average egg-count per gram per person.	681	Number of others treated ..	3,351
Percentage infected	88.5	Total treatments	11,734

North-Central Province.—This was the third visit paid to this Province for the purpose of treatment.

Number of schools visited ..	79	Number of school children treated ..	3,750
Average egg-count per gram per person.	603	Number of others treated ..	1,396
Percentage infected	84.9	Total treatments	5,146

Table 2.—Treatments by School Units in 1929.

Province.	Census.	Treatments. School Children.	Others.	Total.
Western ..	98,077	22,915	4,308	27,223
Central ..	19,420	12,789	1,382	14,171
Southern ..	26,795	10,094	2,664	12,758
Sabaragamuwa ..	15,385	8,792	1,174	9,966
North-Western ..	30,382	16,523	3,489	20,012
Uva ..	6,560	3,814	1,135	4,949
Northern ..	9,329	6,272	1,937	8,209
Eastern ..	11,830	8,383	3,351	11,734
North-Central ..	3,765	3,750	1,396	5,146
Total ..	221,543	93,332	20,836	114,168

(*b*) *Estates.*

Central Province.—The planting districts in the Central Province that were not treated in 1928 were visited during this year.

Number of estates visited ..	194	Percentage infected	82.3
Average egg-count per gram per person.	683	Number of labourers treated ..	36,048

Western Province.—Estates in Kalutara and Avissawella Districts were treated.

Number of estates visited ..	95	Percentage infected	82.3
Average egg-count per gram per person.	633	Number of labourers treated ..	6,931

Province of Sabaragamuwa.—The whole Province was covered during the year but the response on the part of the planting community was not satisfactory except in the Kelani Valley.

Number of estates visited ..	119	Percentage infected	80.7
Average egg-count per gram per person.	623	Number of labourers treated ..	21,200

North-Western Province.—Some of the coconut estates in Chilaw District and the rubber estates in Kurunegala and Ridigama area were treated during the year.

Number of estates visited ..	34	Percentage infected	84.8
Average egg-count per gram per person.	708	Number of labourers treated ..	2,966

Table 3.—Treatments done by Estate Units in 1929.

Province.	Census.	Number treated.	Province.	Census.	Number treated.
Central ..	49,649 ..	36,048	North-Western ..	4,273 ..	2,966
Western ..	10,721 ..	6,931			
Sabaragamuwa ..	35,062 ..	21,200	Total ..	99,705 ..	67,145

(c) *Central Office.*

Sixty-one treatments were given at the Central Office. The cases treated here were persons residing in Colombo and its suburbs. It was found during the examinations that some of the heaviest infections existed in Colombo, one case having had the highest of all the egg-counts noted during recent years, viz., 21,500 per gram of faeces. This means that this particular case harboured about 1,000 hookworms.

Treatments by other Agencies: (a) *Government Hospitals and Dispensaries.*—As usual the largest number of treatments was given by these institutions. Apart from the daily treatment, 1 day in a week might be fixed as a special " Anky day " in every institution, and the neighbouring headmen induced to send there the villagers for hookworm treatment on such days. Records of each village should be kept and the work of the headmen in this respect might be adequately recognized. In this manner still larger numbers could be reached and the treatments made more popular.

Table 4.—Hookworm Treatments given at Government Hospitals and Dispensaries by Provinces in 1929 and the Intensity of Infection.

Province.	Total Attendance.	First Treatments.	Subsequent Treatments.	Total.	Average Egg count per Gram per Person.	Percentage Treated to Total Attendance.
Northern ..	513,215 ..	41,782 ..	9,655 ..	51,437 ..	513 ..	10.2
Sabaragamuwa ..	419,233 ..	80,550 ..	14,821 ..	95,371 ..	603 ..	22.7
North-Central ..	260,743 ..	21,902 ..	2,920 ..	24,822 ..	603 ..	9.5
North-Western ..	843,798 ..	121,604 ..	16,808 ..	138,412 ..	655 ..	16.3
Central ..	548,601 ..	118,517 ..	18,750 ..	137,267 ..	664 ..	25.2
Eastern ..	443,545 ..	94,904 ..	29,315 ..	124,219 ..	681 ..	28.1
Southern ..	925,428 ..	126,783 ..	23,740 ..	150,523 ..	691 ..	16.2
Western ..	823,349 ..	120,225 ..	29,320 ..	149,545 ..	692 ..	18.2
Uva	158,226 ..	21,910 ..	3,848 ..	25,758 ..	707 ..	16.8
Total ..	4,936,138	748,177	149,177	897,354	656	18.2

(b) *Mandapam Camp.*—90,442 persons out of 103,684 arrivals were treated by the Quarantine Medical Staff here.

(c) *Health Units.*—The Health Unit areas of Kalutara, Matara, and Kegalla were excluded from the programme of the campaign; certain estates belonging to the Kurunegala Unit and the whole area of the Trincomalee Unit were treated.

Table 5.—Treatments administered by Health Units in 1929.

Unit.	Villagers.	Estate Labourers.	Total.
Kalutara Badda	1,706 ..	184 ..	1,890
Matara	743 ..	— ..	743
Kurunegala	749 ..	— ..	749
Kegalla	— ..	— ..	—
Total ..	3,198	184	3,382

(d) *Estate Staffs.*—It is very pleasing to note that the number of estates carrying on mass treatments by their own staff is increasing year by year.

Table 6.—Ankylostomiasis Treatments reported as given by Estate Staffs during 1929.

Number of estates reported nil treatments ..	512	Treatments—	
Number of estates reported treatments ..	1,219	First	.. 143,763
Census as reported by the estates ..	508,881	Subsequent ..	.. 33,119
		Total	.. 176,882

Educational Work.—Through chart lectures in schools, and lantern lectures for the general public at convenient centres, the story of the hookworm was related to 344,408 persons during the year under review. The procedure was the same as that described in my last year's report. As the same story has been repeated during the last three years and pamphlets on hookworm have been widely distributed, the general public has now a good knowledge of the cause and prevention of the disease. At school lectures pupils nowadays answer correctly and readily any question asked about the hookworm.

Table 7.—Number of Lectures given by School Units with their Attendance and Literature distributed in 1929 by Provinces.

Province.	Lantern.		School.		General.		Total.		Number of Pieces Literature distributed.
	No.	Attendance.	No.	Attendance.	No.	Attendance.	No.	Attendance.	
Western ..	133..	39,546..	737..	108,828..	— ..	— ..	870..	148,374..	23,060
Central ..	11..	2,580..	151..	19,599..	— ..	— ..	162..	22,179..	4,686
Southern ..	52..	12,668..	185..	27,605..	— ..	— ..	237..	40,273..	3,526
Sabaragamuwa ..	18..	6,745..	148..	19,944..	— ..	— ..	166..	26,689..	6,940
North-Western ..	59..	15,665..	283..	33,454..	4..	465..	346..	49,584..	10,190
Uva ..	15..	2,795..	67..	7,215..	— ..	— ..	82..	10,010..	1,837
Northern ..	40..	6,521..	163..	11,964..	5..	405..	208..	18,890..	2,928
Eastern ..	33..	7,705..	147..	11,208..	— ..	— ..	180..	18,913..	5,250
North-Central ..	12..	3,150..	69..	5,996..	1..	350..	82..	9,496..	1,095
Total ..	373	97,375	1,950	245,813	10	1,220	2,333	344,408	59,512

Treatment, After-care, and Drugs used.—The anthelmintics used were carbon tetrachloride and oil of chenopodium; and as a purgative magnesium sulphate solution or castor oil was given. Treatments were usually given on an empty stomach. Those who had had light morning meals were also treated after a lapse of 2 or 3 hours without any untoward effect.

Estate labourers were kept under observation at the place of treatment until the bowels had acted well, tea and rice cunjee being provided for them on estate account. In some schools either the head teacher or the headman of the place provided tea for the treated children; in others the children and their parents were given minute directions about diet, &c., and sent home after treatment.

In all the treatment places the dispensers stayed for 24 hours after treatment to attend to any emergency case. It is their duty to report at once to the medical officer regarding all cases which develop untoward symptoms, and it is the duty of the medical officer to visit such cases promptly.

Central Laboratory: General Methods used.—The dispensers attached to the field units on visiting a school on the day of lecture issued specimen tins properly labelled to the school children and collected them on the next day. This work is the most difficult of all the campaign duties, because the children as a rule abhor the idea of filling the tins with faeces and carrying them to school. Roughly 75 per cent. of the tins were either brought back empty or with only a streak of the specimen; some tins contained a paste of ground saffron and chillies. The dispenser after selecting those that were good for examination, dispatched them packed in air-tight tins to the laboratory with the record forms properly filled in. Most of the parcels were sent by train. At the Central Laboratory they were examined in the order of their receipt. Besides the above, large collections were sent by the various Health Units in the Island; private individuals also sent specimens for examination for intestinal parasites.

Two methods of examination are followed in the laboratory—the Stoll dilution method, and in case of those found negative by this method, the Willis salt flotation method is used. In the first method, till the end of 1928 the technique of weighing the faeces was followed and only one slide per specimen was examined; from the beginning of 1929, instead of weighing the samples, the technique of displacement in special graduated flasks was adopted and two slides per specimen were examined. This gave more accurate results and the slightly higher figures in 1929 are attributed to the adoption of this new method.

One laboratory assistant was trained during the year in the methods of faecal examination at the request of the Director, Bacteriological Institute. Two others were trained for employment in the laboratory itself in the event of any vacancy occurring in the future.

Table 8.—Microscopical Examinations made during 1929 using Stoll's Egg-count Method only; before and 15 Days after Treatment.

	Before Treatment.					After Treatment.				
School Children.	No. of Persons examined.	Total Egg-count.	Average Per Gram per Person.	Positives.	Percentage Infected.	No. of Persons examined.	Total Egg-count.	Average Per Gram per Person.	Positives.	Percentage infected.
Western Province ..	3,935..	27,231..	692..	3,388..	86.1..	126..	390..	309..	81..	64.3
Central Province ..	1,408..	9,553..	664..	1,198..	85.1..	— ..	— ..	— ..	— ..	—
Southern Province ..	1,433..	9,901..	691..	1,233..	86.0..	373..	1,443..	386..	234..	62.7
Province of Sabaragamuwa ..	937..	5,657..	603..	784..	83.7..	223..	627..	281..	134..	60.1
North-Western Province	3,873..	25,369..	655..	3,308..	85.4..	457..	2,011..	440..	273..	59.7
Province of Uva ..	735..	5,201..	707..	657..	89.4..	— ..	— ..	— ..	— ..	—
Northern Province (mainland) ..	550..	3,044..	553..	436..	79.3..	255..	808..	316..	162..	63.5
Jaffna Peninsula ..	360..	1,625..	452..	280..	77.8..	134..	392..	292..	67..	50.0
Eastern Province ..	1,176..	8,008..	681..	1,041..	88.8..	— ..	— ..	— ..	— ..	—
North-Central Province	1,522..	9,178..	603..	1,292..	84.9..	— ..	— ..	— ..	— ..	—
Health Unit, Kalutara	828..	5,985..	723..	724..	87.4..	37..	79..	213..	24..	64.9
Health Unit, Kurunegala	533..	2,735..	513..	427..	80.1..	18..	28..	156..	12..	66.7
Health Unit, Matara	457..	3,258..	713..	414..	90.6..	47..	52..	110..	35..	74.5
Total ..	17,747	116,544	656	15,182	85.5	1,670	5,830	349	1,022	61.2
Estate Labourers.										
Central Province ..	829..	5,552..	669..	683..	82.3..	16..	52..	325..	11..	68.8
Western Province ..	516..	3,265..	633..	431..	83.5..	344..	827..	240..	204..	59.3
Province of Sabaragamuwa ..	672..	4,187..	623..	542..	80.7..	495..	1,726..	348..	271..	54.7
North-Western Province	796..	5,642..	708..	675..	84.8..	— ..	— ..	— ..	— ..	—
Health Unit, Kalutara	18..	90..	500..	15..	83.3..	— ..	— ..	— ..	— ..	—
Total ..	2,831	18,736	662	2,346	82.9	855	2,605	304	486	56.8
Villagers (scattering)	278	1,972	709	238	85.6	49	108	220	30	61.2
Grand Total ..	20,856	137,252	658	17,766	85.2	2,574	8,543	332	1,538	59.7

Table 9.—Intestinal Parasites found in the Course of Microscopical Examinations made in Central Laboratory in 1929.

	Before Treatment.		After Treatment.	
Total examinations, 26,802	Number.	Percentage infected.	Number.	Percentage infected.
Persons examined	23,911 ..	— ..	2,891 ..	—
Infected with hookworm	20,416 ..	85.4 ..	1,756 ..	60.7
Infected with Ascaris Lumbricoides	20,552 ..	86.0 ..	2,202 ..	76.2
Infected with Trichuris Trichuria	17,675 ..	73.9 ..	1,934 ..	66.9
Infected with Enterobius Vermicularis (Oxyuris) ..	419 ..	1.8 ..	37 ..	1.3
Infected with Taenia	16 ..	.1 ..	— ..	—

Table 10.—Multiple Parasitic Infection.

	Before Treatment. Analysis of 23,911 Examinations.		After Treatment. Analysis of 2,891 Examinations.	
	Number.	Percentage.	Number.	Percentage.
Habouring no parasite ..	599	2.5	259	9.0
With one kind of parasite	2,461	10.3	566	19.6
With two kinds of parasite	5,880	24.6	957	33.1
With three kinds of parasite	14,704	61.5	1,097	37.9
With four kinds of parasite	267	1.1	12	.4
Total infected with some kind of parasite	23,312	97.5	2,632	91.0

Sanitation.—The medical officers of the campaign during their visits to schools inspected the school latrines and furnished reports about their types, number and maintenance and about soil pollution around them, &c. These reports were collected and sent to the medical officers of health concerned, for necessary action.

Table 11.—Sanitation Information reported by School Units at Schools in various Provinces in 1929.

Province.	No. of Schools visited.	Latrines. No.	Pit.	Bucket.	Others.	Used.	Maintained.	Soil Pollution.
Western	667	611	506	82	23	594	589	20
Central ..	128	112	97	13	2	111	107	6
Southern	186	177	165	12	—	172	169	1
Sabaragamuwa	145	141	129	11	1	141	141	2
North-Western	342	308	266	34	8	294	284	12
Uva ..	74	69	58	11	—	64	56	5
Northern	164	114	104	10	—	93	94	—
Eastern ..	188	129	112	17	—	84	81	2
North-Central	68	51	49	2	—	51	51	17
Total ..	1,962	1,712	1,486	192	34	1,604	1,572	65

Survey of Infection.—In the Central, North-Western, Uva, and Southern Provinces, Trincomalee District and Jaffna Peninsula a survey of infection, before the third round of treatment, was made, after an interval of 1 year following the second round of treatment.

Table 12.—Result of Survey of Infection 12 Months after Treatment.

	1928. Before Treatment. Number examined.	Average Egg-count.	Per Cent. infected	1928. After Treatment. Number examined.	Average Egg-count.	Per Cent. infected.	1929. One Year after Treatment. Before Treatment. Number examined.	Average Egg-count.	Per Cent. infected.
Central ..	1,805	697	93.2	39	330	51.3	1,408	664	85.1
North-Western	2,676	695	89.0	274	275	59.5	3,873	655	85.4
Uva ..	391	1,088	94.4	—	—	—	735	707	89.4
Southern	3,056	740	91.8	387	269	58.4	1,433	691	86.0
Trincomalee District	341	557	89.1	89	195	52.8	283	548	84.5
Jaffna Peninsula	3,772	455	78.2	1,183	161	46.3	360	452	77.8

The long spell of dry weather and the consequent destruction of larvae in the soil account for the low figures obtained for Jaffna Peninsula.

Table 13.—Table showing Results in Areas which are not influenced by Sanitation and where no Treatments were done for Two Years.

	1927. Before Treatment. Number examined.	Average Egg-count.	Per Cent. infected.	1927. After Treatment. Number examined.	Average Egg-count.	Per Cent. infected.	1928. One Year after Treatment. Number examined.	Average Egg-count.	Per Cent. infected.	1929. Two Years after Treatment. Number examined.	Average Egg-count.	Per Cent. infected.
Northern mainland ..	578	456	73.5	97	167	49.5	1,542	315	69.5	550	553	79.3
North-Central ..	498	882	92.9	475	185	56.2	1,366	479	77.0	1,522	603	84.9

Table 14.—Average and Percentage for whole Ceylon, 1924-25 Survey and for the last Three Years.

Year.	Average Egg-count per Gram per Person.	Percentage infected.
1924–25 Survey ..	1,102	90.5
1927 ..	685	87.7
1928 ..	615	85.6
1929 ..	658*	85.2
1927–29 Average ..	652	86.2

* The slightly higher figures for 1929 are the result of the new technique adopted in 1929 for microscopical examinations.

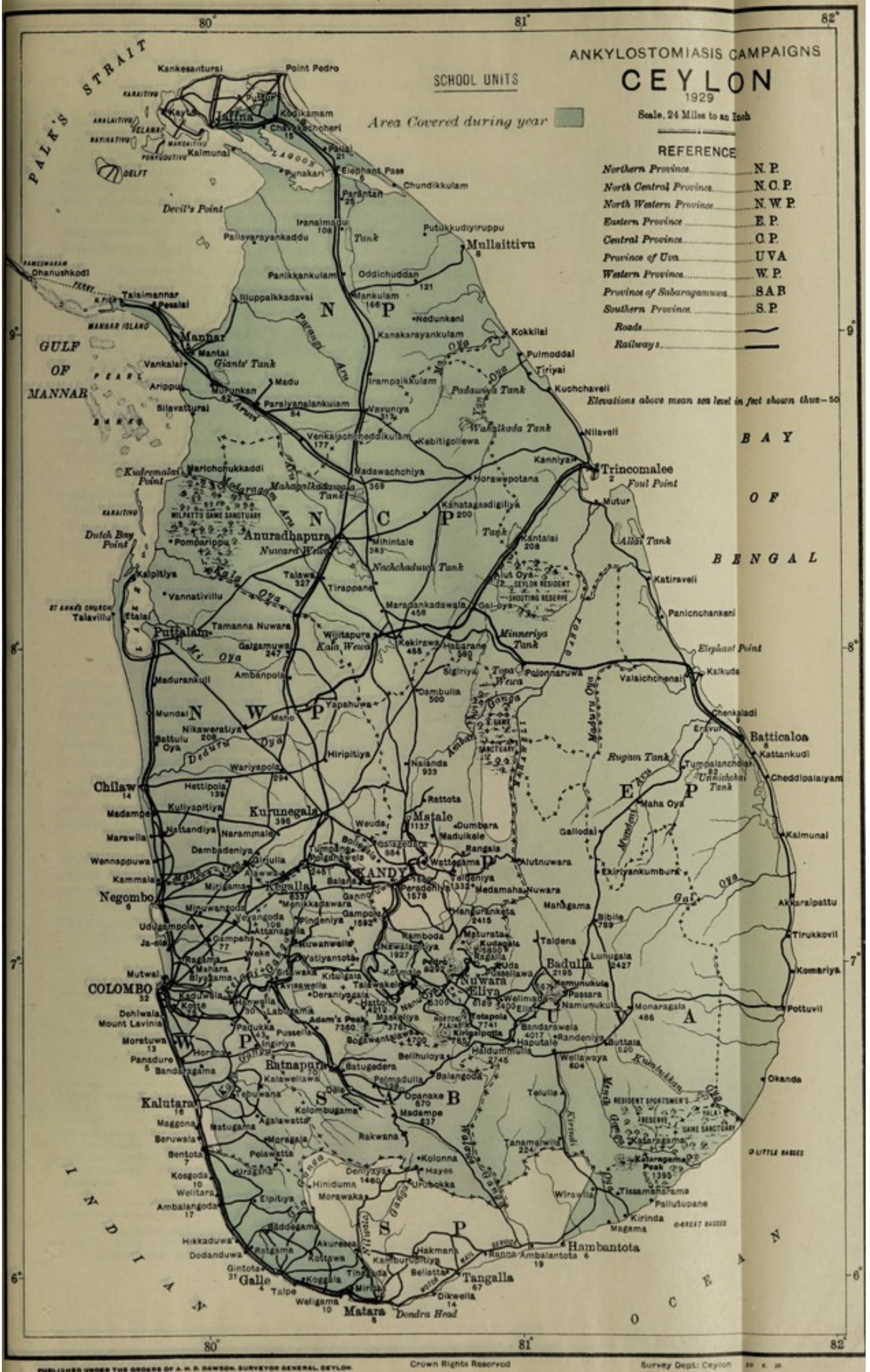
The above figures show that as regards intensity of infestation and the incidence rate a certain level of equilibrium of infestation has been reached in the Island. Treatment, however thorough and intensive, always leaves some infection behind and has little effect on the level of equilibrium. The treatments at present carried out do not reach every member of a house. Therefore if the different areas are left undisturbed the soil infestation would increase and reach the original level more or less in two or three years—see Table 13. The continuous spell of wet weather in most parts of the Island, the habit of pollution on the floors and in the immediate vicinity of the houses by young children and further out by older children and adults, even in places where latrines are established, the scattering of the infection by dogs, pigs, and fowls, and the absence of foot-gear are the factors that determine this level of equilibrium. There is no control over climatic conditions and the enforcement of universal shoe wearing is not practicable. The progress of household or family sanitation which is the key to the solution of the problem must be slow and it cannot keep pace with the treatment campaigns, however energetic and enthusiastic the sanitarian may be. The situation to-day may be thus described—on many a front, the hookworm has lost its strongholds and irreparable breaches have been made in other places; its losses could be counted in millions; its allies, the soil pollutors, are being won over in large numbers and the advancing army of sanitarians is making good progress but the country is not yet conquered and there is still considerable fight left in the enemy. It should be the object of vigilant watch in places where it is secure, while slow and steady advance is registered in all other places.

Acknowledgments.

Our thanks are due to the following who co-operated with us in the campaigns and helped us in many ways: the various Government Agents and Assistant Government Agents, the chief and minor headmen, the Director of Education, the headmasters, teachers, and local managers of schools, the Surveyor-General and the officers of the Medical and Sanitary Services. The valuable advice and guidance of the Assistant Director of Sanitary Services are also gratefully acknowledged.

A. T. KURIYAN,
Superintendent, Ankylostomiasis Campaigns.

February 21, 1930.



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CEYLON
ESTATE UNITS
REFERENCE
COLOMBO
KANDY
GALLE
TRINCOMALEE
JAFFNA
BATTICALOA
MANNAR

2.—Report of the Medical Entomologist for the Year 1929.

Staff.—The Medical Entomologist, 2 Laboratory Assistants (Grade II.), 1 Laboratory Assistant (Grade III.), 3 Laboratory Attendants, 8 Field Assistants, 6 Field Attendants, 1 Clerk (Class III.), 1 peon, and 2 coolies.

The proposal to extend malaria control work to two additional towns, and entomological survey and investigations work to Health Unit areas in 1930, necessitated an increase in staff towards the close of the year. In November, 6 additional field assistants and 6 field attendants were appointed.

During the year the field staff were engaged upon survey and investigation work in connection with malaria control measures at the towns of Anuradhapura, Kurunegala, Chilaw, Trincomalee, Puttalam, and Badulla.

Visitors.—The following gentlemen visited the laboratories:—Sir Malcolm Watson and Major Lockwood Stevens (Ross Institute), Dr. P. Heiser, Dr. W. P. Jacocks, and Sir John Bland Sutton, Bart., Dr. P. Russell of the Rockefeller Foundation, Dr. Serge Voronoff, Mr. A. Duncum, and Lieut.-Col. W. W. Clemesha of the Malaria Control Scheme.

Sir Malcolm Watson's visit extended over a period of several days, during which visits were made to Anuradhapura, Kurunegala, and Trincomalee where the methods of control adopted were demonstrated.

In May some 50 members of the Engineering Association of Ceylon visited the laboratories. A number of exhibits had been arranged, and salient facts regarding the bionomics of mosquitoes, the indigenous malaria-carrying anophelines, the malaria parasites, &c., were demonstrated. The nature and principles of malaria prevention with special reference to local conditions, the methods of making and charting mosquito and malaria surveys, and the methods of control adopted at the various campaign centres were also explained.

Training Classes.—From October to December a series of lectures and demonstrations on mosquitoes and malaria prevention was given. The gentlemen attending these classes included Medical Officers, Sanitary Inspectors, and Field Assistants (Entomological) newly appointed to the malaria division, assistants selected in connection with the scheme for the training of technicians for district laboratories, and assistants attached to the Malaria Control Scheme under Lieut.-Col. W. W. Clemesha.

Publications.—The following papers have been prepared for publication in the Ceylon Journal of Science, and are now in the Press:—

(1) Further Observations on the Transmission of Malaria by Anopheline Mosquitoes in Ceylon.

(2) Observations on Epidemic Malaria in the South-Western Lowlands of Ceylon.

Malaria Control.—The Departmental Committee on malaria consisting of the Assistant Director of Sanitary Services, the Sanitary Engineer, and the Medical Entomologist, held 19 meetings during the year. The business transacted included the consideration of several important matters of policy, the mosquito Ordinance, and all matters relating to the administration of the various malaria campaigns. Reports on the work of this Committee and on the progress of the malaria campaigns are given, respectively, in section III. and in the Appendix of the departmental report.

In addition to the above work associated with the Departmental Committee, visits were made every 3 months throughout the year to all the campaign centres for the purpose of inspecting and reporting upon the progress of preventive and control measures. Entomological surveys and investigations directly connected with the malaria campaigns are discussed below.

Research.—(1) *Malaria Infections in Anopheline Mosquitoes.*—Work on this subject was continued on the same lines as in previous years. Collections of anopheline mosquitoes from houses and cooly lines in various parts of the country were made, and the specimens dissected and examined in Colombo.

During the year a total of 1,468 mosquitoes, including 7 different species of *Anopheles* was examined; malaria parasites were found in 38 specimens, all of which were *A. culicifacies*.

The results are given in the following table:—

Natural Infection of Anopheline Mosquitoes, January-December, 1929.

Place.	Date.	Dissections.						Infections.		
		Totals—All Anopheles.			A. culicifacies.			A. culicifacies.		
		No.	Guts.	Glands	No.	Guts.	Glands	No.	Guts.	Glands
Chilaw (coconut estate)	January-December	745	742	717	711	708	684	16	7	11
Chilaw (constructional works) ..	October-November	532	525	509	397	393	376	22	10	15
Anuradhapura District—Kahatagasdigiliya	January ..	145	145	143	17	17	17	—	—	—
Cooly lines (Public Works Department), Eastern Province ..	November ..	46	46	44	35	35	33	—	—	—
		1,468*	1,458	1,413	1,160	1,153	1,110	38†	17	26

* Anophelines other than *A. culicifacies* were: *A. subpictus* (294), *A. listoni* (6), *A. fuliginosus* (2), *A. barbirostris* (3), *A. hyrcanus* (2), and *A. tessellatus* (1).

† Infections of both the gut and salivary glands were found in 5 specimens.

The investigations at the coconut estate, Chilaw, were commenced in December, 1927, and included a comprehensive survey of malaria conditions there. The results obtained up to the end of 1928 were given in the report for that year. During 1929 the monthly visits to the estate were continued, and a further examination of the river was made in August when conditions were very hot and dry and no ground water was present on the estate itself. The catching rate for Anophelines per man hour in the lines varied from 0.4 in June to 31.4 in December; it was highest in the months of January (24.0), February (20.8), August (30.6), and December (31.4). Infected mosquitoes (*A. culicifacies*) were found in all months excepting June, July, August, and October, the highest sporozoite rate (5.3 per cent.) being obtained in February. The examination of the river was limited to that portion adjacent to the cooly lines (within approximately 200 yards). The volume of water present was greatly reduced, and isolated or semi-isolated pools in the river bed were numerous. Larvae were abundant along the river margin and in the associated pools, the average rate per 100 samples being 160.0. A total of 730 larvae were obtained, 89 per cent. of which were either *A. culicifacies* or *A. funestus* var *listoni*. The effect in this instance of sunlight and shade upon the distribution of the larvae of these two Anophelines was very pronounced. *A. culicifacies* showed a very strong preference for situations which were completely exposed to the sun, whereas *A. funestus* var *listoni* showed a distinct preference for shaded situations, the larval catching rates (per 100 samples) being respectively 14.0 (shaded) and 104.4 (exposed), and 77.5 (shaded), and 40.3 (exposed).

A. culicifacies and *A. subpictus* were the only species of Anophelines found with frequency in the cooly lines, although larvae of at least eight species were present, at one time or another, in the vicinity. Night catching and the use of human and animal traps was resorted to in an endeavour to obtain other species of Anophelines, but without success.

In October and November investigations were made at the site of certain constructional works, situated about 3½ miles from the above coconut estate and 1½ miles north of Chilaw town. The cooly lines were of a temporary nature (formed of interlaced coconut leaves) and were built near the river and in the immediate vicinity of some brick works. Spleen rates of 89.0 per cent. (children) and 36.4 per cent. (adults), and parasite rates of 33.3 per cent. (children) and 36.4 per cent. (adults) were obtained from the occupants of the lines. Anopheline larvae were prevalent along the river margin and in the pits cut for brick making; *A. culicifacies* and *A. subpictus* were the predominant species. Mosquitoes were collected—by hand-catching and trapping—from the lines and neighbouring huts and were subsequently dissected. A total of 532 mosquitoes (*A. culicifacies* 397, *A. subpictus* 134, *A. listoni* 1) were examined, and malaria parasites were found in 22. All the infected mosquitoes were *A. culicifacies;* gut infections were present in 10 specimens, and gland infections in 15 specimens. The sporozoite rate for the period was 4.0 per cent., but varied considerably among batches of mosquitoes caught at different times during the two months. At the second visit in October, 7 out of 34 specimens of *A. culicifacies* were infected, the oöcyst rate being 9.1 per cent. and the sporozoite rate 19.4 per cent.

(2) *The Indigenous Anopheline Mosquitoes.*—Two species of the "*fuliginosus*" group of Anopheles, not previously recorded from Ceylon, have been identified during the year. These are *A. ramsayi*, Covell, and *A. pallidus*, Chris. The former species—recently described by Covell—has at present only been obtained from Chilaw, where it was breeding in the tank (Munneswaram). *A. pallidus*, Chris., was previously included under *A. fuliginosus*, Giles; it is more abundant and widely distributed than the latter, and breeds especially in paddy fields, permanent or semi-permanent swamps, and pools containing vegetation. The characters given for the larvae of *A. fuliginosus* in 1925 (Ceylon Journal of Science, I., page 49) in reality apply to the larvae of *A. pallidus;* the larva of *A. fuliginosus* is practically indistinguishable from that of *A. jamesi*.

(3) *Mosquito Surveys.*—(Larval)—Minor surveys were carried out at Ambepussa and Mirigama in May and June, and major surveys were commenced at Anuradhapura, Badulla, and Puttalam in November when additional field staff became available.

At Ambepussa (Government Farm) conditions were not favourable for survey work owing to heavy rains; much ground water was present and many of the potential breeding places examined were overflowing. The area will be resurveyed when opportunity allows.

At Mirigama the area surveyed included the site for the proposed Training School for youthful offenders, and private lands in the vicinity. Anopheline mosquitoes were breeding prolifically in the majority of the situations examined. The predominant species were *A. pallidus*, *A. hyrcanus*, *A. listoni*, and *A. maculatus; A. culicifacies* was not found. *A. listoni* and *A. maculatus* larvae were most numerous in streams, wells, and unbuilt drains, but the former also occurred in paddy fields adjoining the site. Spleen and blood examinations of children resident within a radius of approximately 4 miles of the site indicated that generally speaking malaria was moderately prevalent within this area, and that endemicity increased in a northerly and north-westerly direction. Kindiwela village, the nearest village to the site, gave a spleen rate of 15.4 per cent. Anti-mosquito measures at the site must be directed chiefly towards reducing or eliminating the breeding of Anopheline in the streams, seepage, and swampy areas in the valleys, and should be instituted *before* constructional work is commenced. Control measures on adjoining private lands (especially at Kindiwela) will also be necessary, but unless —or until—the Anti-Mosquito Ordinance is passed it is extremely doubtful whether such measures can be carried out efficiently.

The surveys at Anuradhapura, Badulla, and Puttalam will, it is hoped, be completed by April, 1930, when the results will be analysed and large scale maps showing the positions of, and species of *Anopheles* breeding in, all the situations examined will be prepared.

(4) *Entomological Work at Malaria Campaign Centres.*—The entomological work directly associated with the Anti-Malaria Campaigns at Anuradhapura, Kurunegala, and Chilaw consisted of (*a*) the routine examination of Anopheline breeding places after treatment by the anti-malaria labour force and (*b*) investigatory work.

The routine examinations referred to under head (*a*) above were introduced with a view to checking the efficiency of the treatment adopted. A trained field assistant is appointed to each of the towns in question solely for this work. He works to a detailed programme, and examines all potential breeding places (or in the wet season not less than 60 per cent.) at least once every two weeks. In the case of situations treated with oil or Paris green, the examinations are made two days after the last treatment. Detailed records of the findings (*i.e.*, the presence or absence of *Anopheles* larvae, and if present their size and relative abundance) are kept and are submitted to the officer in charge of the station each week. Charts, showing the results in relation to the type of treatment applied, for each section of the town are prepared and are posted in the local office every Monday; and copies of the charts are forwarded to the Colombo office together with an explanatory report from the officer in charge of the station on any irregularities or partial failures which may have been revealed. At present a minimum " efficiency rate "* of 80 per cent. for oiling and 60 per cent. for Paris green treatment is demanded. Every endeavour is being made to raise these standards, and in at least two of the stations the average " efficiency rate " for oiling is 90 per cent. The difficulties in regard to Paris green have been considerable and much time has been devoted by the Sanitary Engineer to improving this method of control. The use of slaked lime—after thorough preparation—as a vehicle in place of coir dust promises much more satisfactory results, and it is hoped that, when this method is properly established at the campaign centres, greater efficiency will be obtained.

The investigatory work done under head (*b*) above involved the continued examination of particular types of Anopheline breeding places, and of mosquito (adult and larval) catching stations in the under-mentioned selected localities—(*a*) to (*f*)—within and outside the controlled areas. The same places in each category were examined regularly every two weeks throughout the year September, 1928-August, 1929; several of the sites selected within the controlled area were reserved from treatment—

(*a*) Comparative results from catching and dipping stations situated within and outside the control areas at Anuradhapura, Kurunegala, and Chilaw.—The results of this work—particularly in regard to adult prevalence—were inconclusive; there was, however, very definite evidence of the effect of control measures in respect of the numerical abundance of Anopheline larvae. At all three stations the prevalence of a larvae was much less in the controlled than in the uncontrolled areas.

(*b*) Breeding of Anophelines in trenches in coconut plantations at Kurunegala and Chilaw.—At both towns old trenches with little or no vegetable débris acted more often as breeding places, and produced greater numbers of larvae than old trenches with much débris. Newly cut trenches without débris were in this series of examinations more prolific sources of *Anopheles* larvae at Kurunegala than at Chilaw; at the latter station they were definitely less productive of *Anopheles* than old trenches with little or no débris. At Kurunegala *A. listoni* was the predominant species in all except newly cut trenches; *A. culicifacies* occurred in all types of trenches excepting those with a considerable amount of débris. At Chilaw, *A. listoni* and *A. culicifacies* larvae were present in all types of trenches; the former was found frequently and in fair numbers, the latter less frequently and in small numbers.

(*c*) Breeding of Anopheline mosquitoes in paddy fields and irrigation channels at Anuradhapura, Kurunegala, and Chilaw—

Anuradhapura.—Anopheline larvae were very prevalent in the paddy fields whenever the latter contained water; they were particularly abundant in January and February when the fields were under rice. *A. listoni* and *A. culicifacies* larvae were not found often or in large numbers, the predominant species being *A. hyrcanus* and *A. subpictus*. Larvae were most prevalent during the early stages of growth of the crop (¼ to ½ grown). At the commencement of this period, *A. subpictus* was the predominant species, but later as the rice plants increased in height and size *A. hyrcanus* took precedence, and when the crop was full grown was practically the only species found. The rates (per 100 samples) for *A. subpictus* and *A. hyrcanus* respectively in relation to the conditions of the fields were:—fallow 12.2 and 3.2; ploughed 11.6 and 0.7; ¼-½ grown 17.7 and 22.2; ¾-fullgrown nil and 36.3. In November and December larvae of all species were considerably more numerous in the centre of the fields than along the edges. No marked differences in specific prevalence was observed in fields situated at varying distances from the larger irrigation channels. *A. listoni* was the predominant species in the irrigation channels and was consistently present. *A. culicifacies* was next in order of prevalence, but was much less abundant than *A. listoni* and occurred irregularly; it was most prevalent in December. *Anopheles* larvae were distinctly more numerous in the smaller (field owner's) channels than in the larger Government channels.

Kurunegala.—At this town larvae were most abundant in the fields during January and February, and least prevalent in November and May when the water was flowing after recent irrigation. *A. culicifacies* and *A. listoni* larvae were frequently present and together formed

* The " efficiency rate " is the percentage of situations in which no (or in the case of Paris Green only 1st instar) *Anopheles* larvae are found after treatment. It is liable to be a severe test of efficiency as the presence of a single larva in a given situation renders the latter positive.

13.4 per cent. of identified larvae. The general prevalence of *Anopheles* larvae did not, in this case, show any considerable variation with reference to the conditions of the fields, but specific variation in respect of *A. hyrcanus* occurred. This species again showed a progressive increase in prevalence with growth of the crop. *A. subpictus* was found only in fallow fields. *Anopheles* larvae were found as consistently in the centre of the fields as along the margin, and were slightly more abundant in the former situation. *A. listoni* larvae were definitely more prevalent in fields adjoining the larger irrigation channels at this station. Breeding in irrigation channels was less prolific than at Anuradhapura. *A. listoni* was predominant in both the major and minor channels and constituted 86.7 per cent. of the larvae obtained from the former type. Larvae of *A. hyrcanus* and of the "*A. jamesi-fuliginosus*" group were also prevalent in the minor channels. *A. culicifacies* was not frequently found and was very scanty in the larger channels. Larvae were least prevalent in May and from October to December.

Chilaw.—At Chilaw (Munneswaram) breeding in the fields was most active from April to July. The predominant species present were *A. hyrcanus* and the "*A. jamesi-fuliginosus*" group; *A. listoni* larvae were not uncommon during November and December, and formed 7.4 per cent. of the larvae identified during the year. *A. culicifacies* was not found. Larvae of all species except *A. listoni* were most prevalent in fallow fields. The *Anopheles* fauna of the irrigation channels at this station was similar to that of the fields; *A. listoni* was not the predominant species and formed only 12.7 per cent. of all larvae identified.

(*d*) Breeding of Anopheline mosquitoes in tanks at Anuradhapura, Kurunegala, and Chilaw—

Anuradhapura.—Examinations along the margins and of pools and swampy areas in the beds of Tissawewa and Basawakulam tanks were made throughout the year. Larvae were very scanty in the main bodies of water forming the tanks proper, but were numerous in the pools, &c., present in the beds at certain periods of the year. The most abundant species were *A. subpictus* the "*A. jamesi-fuliginosus*" group, and *A. barbirostris; A. culicifacies* and *A. listoni* larvae were scanty.

Kurunegala.—Breeding was not prolific in Kurunegala tank and the highest rate (per 100 samples) obtained was 26.1 in January. The predominant Anophelines were *A. hyrcanus* and members of the "*A. jamesi-fuliginosus*" group. *A. culicifacies* was rarely found, and *A. listoni* occurred irregularly and in variable numbers. A very definite rise in the prevalence of larvae of the latter species took place in April and August; this increase was present in all the dipping stations and in view of the very extensive nature of the swampy marginal areas is a disturbing factor.

Chilaw—(Munneswaram).—Throughout the greater part of the year this tank was a most prolific breeding place of Anophelines. The average larval rate obtained (96.2) for the year was very high, and the monthly rates varied from 3.0 to 225.0 per 100 samples. The rates exceeded 100.0 in no less than six different months, viz., February and March and May to August. The predominant species in this tank was *A. hyrcanus;* it formed 86.0 per cent. of all larvae obtained. *A culicifacies* was not found, and *A. listoni* occurred infrequently and in small numbers.

(*e*) Breeding of Anopheline mosquitoes in rivers and streams at Anuradhapura, Kurunegala, and Chilaw—

Anuradhapura—Malwatu-oya.—The prevalence of larvae varied considerably throughout the year; they were most numerous during the period January to March and June to October, when the flow was slow to moderate. Sandbanks and pools in the bed rarely occurred in the portion of the river under observation. *A. listoni* was the predominant species and formed over 87.0 per cent. of the larvae collected; *A. culicifacies* was usually present, but occurred only in small numbers.

Kurunegala—Bu-ela.—Except during, and for short periods after flooding (in October, November, and April), this stream was a prolific breeding place of Anophelines. *A. listoni* predominated greatly and formed 95.0 per cent. of the larvae obtained. *A. culicifacies* and *A. hyrcanus* larvae were found in small numbers at most of the examinations. *A. listoni* was also present in considerable numbers in pools between rocks in certain portions of the stream.

Chilaw—Wattakalai Odai.—This stream, for purposes of examination, was divided into three sections. The first section was connected with the lagoon and was subject to tidal action, the second section although not tidal contained water of varying degrees of salinity, and the third section contained fresh water. Very few Anopheline

larvae (*A. subpictus*) were found in the first section of the stream, the larval rate for the year being 0.6 per 100 samples. In the second or intermediate section breeding was moderate (18.0 per 100 samples) and a greater variety of *Anopheles* was present. *A. subpictus* was predominant, but *A. hyrcanus*, *A. jamesi*, and *A. barbirostris* were not uncommon, and *A. culicifacies* and *A. listoni* were also occasionally found. Larvae were much more prevalent (52.0 per 100 samples) in the third section of the stream. *A. subpictus* was again the predominant species, but the relative prevalence of the other species—including *A. culicifacies* and *A. listoni* had increased considerably. A number of pools, trenches, and seepage areas associated with this stream were examined in each of the sections mentioned above. The results obtained were similar to those found for the different sections of the stream itself. Larval prevalence showed a very definite progressive increase in pools, &c., in the sections distant from the lagoon, and was highest in the third section. *A. subpictus* and *A. culicifacies* were relatively more abundant in the pools, &c., than in the stream.

(*f*) Breeding of Anopheline mosquitoes in ponds and pools at Chilaw—

This investigation was undertaken with a view to determining whether anti-malaria drainage was necessary for the elimination of a series of large ponds and pools (most of which were below sea level) in the town of Chilaw. Detailed observations were made on these pools, and nearly 6,000 larvae were collected and identified. The results showed that Anophelines were breeding prolifically in these pools from December to March (larval rates 27.7 to 84.5 per 100 samples), and that during the remaining months of the year larval prevalence was considerably reduced (rates 5.6 to 11.5 per 100 samples). The predominant species of *Anopheles* present were *A. subpictus*, the "*A. jamesi-fuliginosus*" group, *A. hyrcanus* and *A. barbirostris* in the order given. *A. listoni* and *A. culicifacies* larvae were found irregularly and usually in very small numbers. In view of the very low prevalence of the last two species it was considered that—unless conditions changed—large expenditure on major drainage works was not justified from the malaria point of view; and that a less costly form of control (oiling or Paris green distribution) should be employed.

5. *Miscellaneous.*—(*a*) Blood sucking Midges: The minute black midge *Lasiohelea Stimulans*, Meii., appears at certain seasons in considerable numbers and bites persistently. This little fly is somewhat difficult to capture, and is usually mistaken for the "Eye-Fly" (*Siphunculina funicola*, Meii.)—a fact which has given rise to the popular belief that "eye-flies" are capable of biting. Definite records are meagre at present, but specimens have been obtained from the Moneragala, Kandy, and Badulla districts (Mr. F. P. Jepson) at altitudes varying from 600 ft. to 3,000 ft.

(*b*) Blistering Beetles: The small, usually black and red, Staphylinid beetles of the genus *Paederus* are found in many parts of Ceylon, and not infrequently cause great annoyance and pain to planters and others, particularly in the moist lowland areas. In those "outbreaks" of blistering which have been investigated the chief difficulty has been to incriminate definitely the insect responsible. The persons affected have rarely been able to associate any particular insect with the blisters, the general impression being that the latter were caused by "hairy caterpillars," certain spiders, or Meloid beetles. The difficulty of association is due to the fact that the reaction following contact of the vesicating fluid—emitted by the beetle—with the skin, is considerably delayed. Experiments with *P. alternans*, Walk., indicate that the reaction may be delayed as long as 3 days. Mr. G. M. Henry of the Colombo Museum informs me that 8 different species of these beetles have been recorded from Ceylon. While all of these are probably capable of causing vesication, 2 only have been found responsible for epidemics of dermatitis. *P. peregrinus*, Er., is a well known pest in Java, and *P. alternans*, Walk. identified by Mr. M. Cameron of the British Museum), is the species associated with the recent outbreaks in the Kalutara District. It may be noted that these beetles do not attack man intentionally; they are strongly attracted by bright lights, and at night fly aimlessly about verandahs and rooms. When prevalent, they frequently alight upon persons sitting near lamps, and if touched or rubbed exude the vesicating fluid. Indirect contamination of the skin—especially near the eyes—may result from subsequent conveyance of the vesicating fluid on the finger tips. Unfortunately, no information on the life-histories of these beetles appears to be available, and it is, therefore, not possible to say whether a practicable method of reducing their numbers can be devised. Residents in localities where the beetles are prevalent should employ light traps or arrange one or two powerful lights in verandahs and rooms situated at some distance from the shaded lights which they intend to use. In removing any small insects which alight on the skin, care should be taken that no crushing or rubbing effect is produced.

Routine.—The routine examination work associated with the various Anti-Malaria Campaigns and connected investigations exceeded in amount that of any previous year. Nearly 70,000 examinations and identifications of mosquitoes, their larvae, blood films, &c., were made and much time was occupied in recording and mapping the results. Whenever possible the preparation and arrangement of specimens, drawings, &c., for the formation of a Museum were continued.

HENRY F. CARTER,
Medical Entomologist.

March 29, 1930.

3.—Report of the Superintendent, Anti-Malaria Campaigns, for the Year 1929.

In the reports for the years 1927 and 1928 a detailed account was given of the malaria work done in the past, the machinery for planning, organizing, and carrying out future anti-malarial measures in Ceylon, together with the malaria epidemiological work done at the various centres of operation prior to the institution of anti-malarial measures. The last mentioned phase of work was repeated in 1929 and is embodied in this report.

Present Staff.—Dr. K. J. Rustomjee, Superintendent, Anti-Malaria Campaigns.

The Medical Officers attached to the Campaign were Dr. G. Jeremiah, who reverted to the medical side proper in April, 1929; Dr. I. J. Fernando, who has since been appointed District Medical Officer, Embilipitiya; Dr. S. G. Jackson, who was transferred from the Anti-Malaria Campaign to the post of House Surgeon, Kurunegala Hospital, in October, 1929; and Dr. O. G. Weerasinghe, who is still attached to the Campaign. The three vacancies mentined above were filled by Drs. P. L. F. de Livera, S. A. Hunt, and G. R. Handy.

Sanitary Inspectors attached to the Campaigns: Anuradhapura.—Messrs. Poulier and Vincent de Silva were transferred to the Sanitary Service proper in 1929 and their places filled by Messrs. Sittampalam and K. C. de Silva respectively.

Chilaw.—Sanitary Inspectors Batcha and Benjamin.

Kurunegala.—Sanitary Inspectors Wanigasekera, Vansanden, and E. A. Fernando.

Trincomalee.—Mr. N. Candiah is in charge of the maintenance measures in this town.

Since the adoption of anti-malaria work at Railway Stations by the Departmental Committee on Malaria, Sanitary Inspector Seymour da Silva was appointed in charge of the work.

Activities of the Anti-Malaria Division in 1929.—(*a*) Malaria control work was continued at the centres of Kurunegala, Chilaw, and Anuradhapura; (*b*) the maintenance of past work at Trincomalee and Mahara Jail; (*c*) special precautionary measures at Kataragama during the Esala festival; (*d*) anti-malaria work around the Railway Stations of Polgahawela, Rambukkana, and Potuhera; (*e*) the epidemiological study of the incidence of malaria at the centres of Kurunegala, Chilaw, Anuradhapura, and Trincomalee; (*f*) the establishment of two additional anti-malaria centres, Puttalam and Badulla, in October, 1929. Work done during 1929 under (*f*) consisted of an Anopheline Survey conducted by the Medical Entomologist. No anti-malaria work was done at either Badulla or Puttalam during October-December, 1929.

Kurunegala.

A description of the town given in my Administration Report for 1928 need not be recounted here.

Incidence of Malaria.—The most accessible method, namely, the examination of young children at schools, was made during February and September, 1929. The subsequent examination was confined to children who were examined at the first index only, *i.e.*, in February. Anti-malaria measures were commenced in the latter part of 1927, and it will be interesting to mention here the spleen rates as determined by the examination of school children living in Kurunegala town and under 12 years of age. In February, 1927, the rate was 37.0 per cent., whilst in February, 1928 and 1929, the rates were 31.7 per cent. and 18.1 per cent., respectively. The numbers examined were 418,570 and 530 respectively. The reduction is definitely appreciable and could be taken to indicate some control in the transmission of the disease in question. This assumption is not entirely unfounded when it is considered that school children in the same age group, *i.e.*, under 12 years of age, but living outside the town area, gave spleen rates of 35.3 per cent., 34.9 per cent., and 31 per cent. during the same period of examination as mentioned above.

For purposes of comparison the spleen indices as found by the examination of school children in 1927-28-29 are tabulated in Table I. The reduction in the younger age group is gratifying, and it is unfortunate that no spleen survey was possible in June, 1929, and that the numbers examined at other times were small. It must be emphasized that the vast majority of the children examined initially in February, 1927, were examined repeatedly at each of the periods shown in Table I.

Table I.

Spleen Indices as found by the Examination of School Children (under 12 Years) in 1927, 1928, and 1929.

Year.	Month.	Number examined.	Number positive.	Spleen Rate.
1927	February	418	155	37.0
	June	396	120	30.3
	October	344	79	22.9
1928	February	570	181	31.7
	June	569	190	33.3
	October	362	80	22.0
1929	February	530	96	18.1
	June	No survey made.		
	October	461	71	15.4

The number examined in February, 1927, was 418, and in February, 1928, 570. The difference is due to new schoolboys being admitted and to those who were absent on the day of examination in February, 1927. It will, therefore, be seen that an attempt has been made to examine and re-examine the same group of school children except at the first index of a new year when newcomers and previous absentees are also included for spleen palpation.

The degree of splenomegaly produced by malaria is subject to various modifying factors. It is not possible to expect constant factors in the course of malariometry, and in the surveys under discussion the two constant factors throughout any given year are (*a*) the examiner and (*b*) the subject. It is well known that repeated infections result in a greater degree of splenomegaly than one single infection so that a definite mathematical relationship exists betwen the frequency of attack and the size of the spleen. It is, therefore, to be seen that splenic enlargement is a

fluctuating quantity, such variations depending upon several factors which need not be enumerated in this report. In order to show this fluctuation in splenomegaly under conditions as reliable as possible Table II. has been compiled, which shows an analysis of enlarged spleens as found in a group of school children under 12 years of age and subject to repeated examinations at definite periods of a year.

It would serve very little useful purpose in adding to the table the results found in those over 12 years.

TABLE II.

Spleen Analysis (Kurunegala) of School Children under 12 Years of Age.

Year.	Month.	Number enlarged.	Spleen sizes (fingers-breadth below costal margin).			
			1	2	3	4 and over.
1927	February	155	84	38	20	13
	June	120	59	40	14	7
	October	79	32	24	11	12
1928	February	181	64	55	35	27
	June	190	54	64	39	33
	October	80	33	32	8	7
1929	February	96	49	26	14	7
	June		No survey made.			
	October	71	38	23	7	3

It is clear that during February and June the condition of splenomegaly in all size groups is definitely increased. The spleens in the category of one finger would remain relatively high for some little time as several of the spleens of F2 and F3 would, in the expected process of retrogression, come within the category of F1 spleen. The decrease would therefore be proportional from year to year. It is possible to give the exact numbers which helped to maintain the numbers in F1 size from the standpoint of primary infections and those due to retrogressive changes in the volume of the spleen. This will, however, take up too much space and is therefore omitted from the report.

Geographical Distribution of Malaria in Kurunegala Town.—Throughout the entire series of examinations (1927-29) the lowest spleen rate was obtained in section 6 of the town, *i.e.*, the central area, comprising the commercial and chief residential area. Sections 4 and 7 lived up to their reputation in the past as being the most severely affected areas. The rate obtained, however, in February, 1929, for section 7 was only 24.6 per cent., as against 54.8 per cent. in February, 1927. It must be emphasized that the results are based upon the examination of the same children together with any new introductions in the months of February. Table III. shows the spleen rates obtained by the examination of children under 12 years of age in relation to their residence.

TABLE III.

Spleen Rates (School Children under 12 Years) for each Section of the Town.

Section.	1928.			1929.		
	February.	June.	October.	February.	June.	October.
1	33.8	34.0	21.5	19.0	No survey made.	12.9
2	26.6	38.2	25.9	42.7		17.5
3	54.1	52.0	29.4	18.1		22.2
4	37.5	40.8	13.3	25.0		33.3
5	28.2	34.2	32.0	11.9		17.5
6	20.2	34.2	12.9	9.0		10.9
7	41.4	33.7	25.8	24.6		12.1
8	52.9	51.7	47.6	36.8		22.2
9	22.2	33.3	16.6	17.9		13.8

The high rate of 33.3 per cent. for section 4 is not strictly correct as the numbers examined were few. This section, however, is more malarious than several other areas of the town as evidenced by the earlier findings.

Anti-Malaria Work at Kurunegala.—During the year under review temporary measures such as were carried out in 1928 were continued. Special attention was paid to improving the efficiency of oiling and Paris green work. The standard Knapsack oil sprayers were tried out with rubber, copper, and steel hoses. The last two proved unsatisfactory. Paris green work was at first done by English powder distributors which were replaced by the lighter and distinctly better Italian sprayers.

The labour force attached to oiling and Paris green work were regarded as special coolies and were paid 5 cents more than the rest. They were trained to do the work skilfully and economically.

By means of cost sheets remodelled (by the Sanitary Engineer) upon the plans suggested by the Director of Medical and Sanitary Services, it was possible to obtain valuable information upon details of cost and work done. Stringent examinations for efficiency in oiling and Paris green work together with the introduction of cost sheets have made the campaign work more intensive and open to stricter supervision.

No permanent measures other than filling—which was discontinued in October, 1929—were done. Such permanent measures as the reconstruction of the Wella-Ella are under consideration by the Sanitary Engineer.

The work at this centre is in charge of a Medical Officer assisted by 3 Sanitary Inspectors (Malaria) and 1 Entomological Assistant who is detailed to carry out efficiency tests of the oiling and Paris green work done. The labour force varies from 45 to 60 coolies.

Oiling Work.—Force of 1 overseer, 1 kangany, 6 spraying coolies, 2 cleaners, and one transport cooly. Considerable oiling work has been done during the year under review. During the latter half of the year, situations which received Paris green treatment in the past were made suitable for oiling treatment. The men are paid special wages and are carefully and

continuously supervised in the field. The oil used has been kerosene and fuel in the proportion of 1 to 4. During the rainy months oiling work is considerably increased and it is not uncommon to augment the regular brigade by coolies from less important gangs. The efficiency of oiling work, as will be seen from the Medical Entomologist's report, has been very satisfactory.

Table IV.

The Number of Times Applications of Oil were made and its Approximate Cost for 1929.

Sections.	Number of Times Application of Oil made.	Quantity of Oil Mixture used. Gallons.	Cost of Labour. Rs. c.	Cost of Materials. Rs. c.
1A, 1B, 2A ..	4,527..	850..	303 20..	280 50
2B, 3A, 3B, 4A ..	4,144..	749..	270 65..	247 17
4B, 4C ..	3,497..	718..	287 5..	236 94
5A, 5B, 6A, 6B, 7B	3,999..	858..	307 47..	283 14
8A, 8B ..	4,511..	806..	299 35..	265 98
9A, 9B, 7A ..	4,002..	834..	299 10..	275 22
Total ..	24,680	4,815	1,766 82	1,588 95

The cost of labour and materials depends upon the number of oilers employed, the general type of breeding places oiled, and the method of oiling. These facts will be clearly seen if the above table be compared with the table for oiling at Chilaw.

Paris Green.—A force of 1 kangany, 7 spraying coolies, 4 sifters, and 4 transport coolies. This larvicide was used almost exclusively to control breeding in paddy fields and irrigation channels. During the latter part of the year coir dust was replaced by slaked lime. The Italian distributors were used in preference to the English powder distributors. The distribution of the powder in the field was made by specially trained coolies in a systematic manner over paddy fields within the control area. The strength of the mixture—when used with slaked lime—is 1 per cent. by weight; with coir dust 2 per cent by weight. Special sifters were designed to sift the vehicle in use. Road dust was given a trial and found to be impracticable. The superficial layers of paddy field mud and mud obtained from the bed of a large tank were got with a view to determining their value as a vehicle of Paris green powder in the field. A total of 16,495 lb. of the mixture was sprayed during the year at a cost of Rs. 2,114.12 for labour. The acreage of paddy field in the town of Kurunegala is about 500. Some of the fields are rain-fed whilst others are irrigated by supplies from tanks.

Filling, Clearing, and Maintenance.—Filling was done on private lands for a short time during 1929, when it was decided to discontinue it until the Ordinance is made law.

Cleaning and Maintenance.—The force consisted of 20 coolies and 2 kanganies. The clearing of all breeding places in the oiling list prior to oiling was done systematically throughout the year. Maintenance of such work and the proper care of drains, &c., cost approximately Rs. 1,412. A total of 732,062 linear feet of drains was attended to.

Miscellaneous.—(*a*) The fish nursery was maintained and distribution of fish to Chilaw, Potuhera, Welimada, and Pamban was made. A few wells in the town, which were baled out by the owners, were stocked with fish.

(*b*) Quinine distribution was effected in the town schools throughout the year. An average of 924 pupils was treated weekly and a total of 355,787 grains of quinine was administered.

(*c*) Collection of fever statistics from the local hospital, which will be treated fully in the Administration Report for 1930.

(*d*) A visit to this centre of work by Sir Malcolm Watson, Principal of the Malaria Division, Ross Institute, London.

Chilaw.

The nature of investigation work done at this centre was similar to that done in Kurunegala.

Incidence of Malaria.—In 1928 examinations of school children—on the principles outlined for Kurunegala—were performed in February, June, and October. In 1929 they were made in February and June. Children under 12 years of age examined in February, 1927, gave a spleen rate of 20.8 per cent., in February, 1928, 12.8 per cent., while in 1929, February, it was 22.3 per cent. It must be stated here that owing to objections raised by field owners no gala wells were treated from the latter part of 1928 and throughout the whole of 1929. Gala wells are known to be dangerous breeding grounds of Anophelines, and I have no doubt that the greater incidence of fever as shown by the results obtained in February, 1929, was in no little measure due to the prevention of treatment of gala wells by field owners. In Table V. it will be seen that the results obtained at the various indices varied more than in the case of Kurunegala town, where conditions of anti-malaria work are of a more difficult nature.

Table V.

Spleen Indices as found by the Examination of School Children (under 12 Years) in 1927, 1928, and 1929.

Year.	Month.	Number examined.	Number positive.	Spleen Rate.
1927 ..	February ..	611 ..	127 ..	20.8
	August ..	531 ..	41 ..	7.7
	December ..	328 ..	37 ..	11.2
1928 ..	February ..	746 ..	96 ..	12.8
	June ..	727 ..	166 ..	22.8
	October ..	401 ..	73 ..	18.2
1929 ..	February ..	706 ..	158 ..	22.3
	June ..	508 ..	82 ..	16.1

There is not the slightest doubt that unless gala wells are treated the results of anti-malaria measures will be considerably lessened. The question of filling up the gala wells and installing tube wells is now receiving the attention of the local authorities of Chilaw.

From the table showing the analysis of enlarged spleens it will be noticed that conditions in February, 1929, were, if anything, as bad as or worse than those in February, 1927. Considerable increases are noted in the large-sized spleens, which is definitely opposite to the conditions found in Kurunegala. It is futile to expect the maxima of results of anti-malaria work when a very large number of breeding places (*i.e.*, gala wells) cannot be dealt with owing to objections raised by the tobacco cultivators.

TABLE VI.

Spleen Analysis of School Children under 12 Years of Age.

Year.	Month.	Enlarged.	Spleen Sizes. 1	2	3	4 and over.
1927	February	127	87	28	9	3
	August	41	21	10	7	3
	December	37	18	8	6	5
1928	February	96	40	25	18	13
	June	166	69	46	30	21
	October	73	51	8	9	5
1929	February	158	82	30	22	24
	June	82	57	19	5	1

The numbers found among the two fingers and upwards sized spleens in June, 1929, are small, due to the fact that 198 children less were examined in June as compared with February, 1929. Several of the children with large-sized spleens were absent on the day of examination.

Geographical Distribution of Malaria in Chilaw Town.—The gala wells are mainly found in section 4 of the town and a few in sections 3 and 5. In February, 1929, 41.1 per cent. of the enlarged spleens found in children under 12 years of age were derived from sections 4 and 3 collectively. In June of the same year 43.9 per cent. was the rate got for the same two sections. These two sections contributed 43.7 per cent., 34.3 per cent., and 49.3 per cent., respectively, towards the enlarged spleens discovered in February, June, and October, 1928. Sections 6 and 7, which are more or less in the centre of the town, gave a spleen rate of only 9.8 per cent. in June, 1929, whilst sections 3 and 4 gave 54.6 per cent.

Anti-Malaria Work at Chilaw.—With the exception of gala wells, of which there are 124, all breeding places of Anophelines are treated weekly with oil or Paris green.

The principles of work outlined in the case of Kurunegala apply to Chilaw as well. The inability to treat gala wells with Paris green has, I have no doubt, vitiated the results of our work, and measures to fill them up one by one are under consideration. The presence of these wells in the heart of the town is a distinct menace, and no satisfactory results can be hoped for if Anopheline breeding is to be allowed to go on unchecked.

The staff consisted of 1 Medical Officer, 2 Sanitary Inspectors, and 2 Entomological Assistants. The minor staff consisted of 1 overseer, 3 kanganies, 39 coolies, and 1 peon.

Oiling.—The force consisted of 1 overseer, 1 kangany, 6 spraying coolies, 4 cleaners, and 2 transport coolies. The work of the brigade was reorganized during 1929. Special pay and special coolies were appointed to the task. An average of 6 sprayers and 4 cleaners per week worked throughout the year. The oil used was kerosene and fuel oil in the proportion of 1 to 4.

TABLE VII.

The Number of Times Applications of Oil were made for each Section and its Approximate Cost for 1929.

Sections.	Number of Times Application of Oil made.	Quantity of the Oil Mixture used. Gallons.	Cost of Labour. Rs. c.	Cost of Materials. Rs. c.
8A and 8B	4,465	1,000	434 5	330 0
6A-C, 3A-C	2,569	1,180	408 5	393 40
7A-B, 1A-C	2,840	1,127	416 30	372 8
4A-B, 5A	3,426	1,270	399 35	419 10
7C-D, 2A-D	2,304	885	410 75	292 5
5B-5C	3,306	1,142	422 90	377 3
Total	18,910	6,604	2,491 40	2,183 66

The months of August and September were very dry and very few applications of oil were made. With the exception of one area, the applications during August and September were less than a hundred. On the other hand, during October, 1928, to January, 1929, *i.e.*, the wet season, the number of applications reached as high as 825 for sections 8A and 8B alone. The quantity of oil used varied according to the number of situations treated and their type and size. It might appear from the above table that more oil has at times been used for a lesser number of applications. This is due to the fact that certain types of breeding places are sprayed more intensively than others, *e.g.*, a drain overgrown with weeds and grass, a small swamp, &c. The cost of labour for oiling has not fluctuated very much during the year as it does not necessarily depend upon the number of applications made, the whole staff of oilers proceeding daily to treat a definite area of the town. A total of 18,910 applications entailed a consumption of 6,604 gallons of the mixture at an approximate cost of Rs. 2,491.40 for labour and Rs. 2,183.66 for the oil mixture. The cost can only be given approximately as it is difficult to estimate the cost of all transport (rail and road) repairs and spare parts for equipment, &c., for each month. In view of the fact that no permanent measures were possible, *e.g.*, filling—until the Mosquito Ordinance is made law—and drainage of the large ponds, &c., which is considered too expensive and not very necessary by the Sanitary Engineer—these charges would be of a recurrent nature and at the best of times the method of control is only a palliative and temporary expedient. The results obtained by oiling are satisfactory as will be seen in the report of the Medical Entomologist.

Paris Green.—A force of 1 overseer, 1 kangany, 3 distributors, 2 sifters, and 1 transport cooly. The use of Paris green applications in Chilaw is not very great except for the control of Anopheline breeding in gala wells. Since objections were raised to the treatment by the cultivators, the consumption and cost of Paris green work are not heavy. Coir dust has been

used throughout the year as a vehicle for the very fine Paris green powder. The quality of Paris green used in 1929 has been tested and found not very satisfactory. It is therefore proposed to employ a better grade (the granular kind) of Paris Green, known as 606D. Coir dust has also proved unsatisfactory and it is proposed to replace it by slaked lime. The English sprayers have been discarded in favour of the Italian type. The latter are lighter, cheaper, and more efficient. The work of Paris green distribution is done by men specially trained at a slightly higher rate of pay than the wages of an ordinary cooly.

Table VIII.

Summary of Paris Green Work during 1929 (Chilaw.)

Sections.	Number of Applications made.	Paris Green Mixture used. lb.	Cost of Labour. Rs. c.	Sections.	Number of Applications made.	Paris Green Mixture used. lb.	Cost of Labour. Rs. c.
7A-B, 1A-C ..	465	656	259 85	3A-C, 6A-C ..	733	1,063	257 50
4A, 4B, 5A ..	656	1,093	259 70				
7C, 7D, 2A-D ..	929	1,300	258 90	Total ..	4,937	5,913	1,556 90
5B-5C ..	1,105	913	255 80				
8A, 8B ..	1,049	888	265 15				

Filling, Clearing, and Maintenance.—The force comprised 1 overseer, 1 kangany, and 21 coolies.

(*a*) The practice of filling hollows, &c., in private lands was discontinued from the middle of 1929 until such time as the Mosquito Ordinance is made law. The filling done prior to this decision consisted of small pools, swamps, &c., being filled up with earth. In all a total of 567 cubes was utilized, the labour for this process costing Rs. 346 and the earth Rs. 2,551.50.

(*b*) *Initial Clearing* was carried out systematically in the various sections of the town. A total of 26,884 square yards was cleared at a total cost of Rs. 2,065.35. A great deal of clearing was done along the channel known as the Wattakalai-odai.

(*c*) *Maintenance.*—Under this head all work of a recurrent nature is included. Such consists of (*a*) the preliminary clearing of coconut trenches, pools, borrow pits, &c., prior to oiling; (*b*) clearing of drains and ditches wherever practicable; (*c*) clearing the edges of the large ponds in the town, &c.

A total of 551 trenches, 487 pools, 312 borrow pits, and 493 drains were maintained in good condition at a total cost of Rs. 3,055.25.

Miscellaneous.—(*a*) Minor work of some importance was done in the Railway Station area where a small channel leading into the lagoon was reconstructed and adequately maintained.

(*b*) The Wattakalai-odai, in its second portion, was reconstructed by straightening out bends and keeping the channel free of vegetation.

(*c*) A fish nursery was completed and stocked with larvivorous fish.

(*d*) Investigations into the efficiency of Esanophile in reducing enlarged spleens and preventing relapses were commenced in October.

(*e*) A spleen census of those living around the waterworks site (1 mile from Chilaw town) was carried out in December, the examination revealing a very high spleen and parasite rate. Suitable control measures were adopted.

(*f*) Quinine distribution was performed regularly at the schools during the fever season and lectures and demonstrations on malaria and mosquitoes were given at the schools in the town.

(*g*) The collection of fever statistics from the local hospital. From the figures available, the incidence of fever in the town compares favourably with that outside the town area. As discrimination of fever patients living in the town and those living outside the town was made only from September, 1929, it is proposed to deal with this phase of malaria study more comprehensively in 1930.

Anuradhapura.

The campaign in this town has now reached the seventh year of its activities. The measures adopted in the past have been improved upon by the general reorganization scheme of work for all centres.

The three main activities have been (*a*) oiling, (*b*) Paris green distribution, (*c*) maintenance of the Halpanu-ela. A further permanent measure in the reconstruction of the Tothuwila channel is under the consideration of the Sanitary Engineer.

Incidence of Malaria.—Only one census was possible during 1929. During the year 1923 a spleen survey of the town gave a spleen rate of 50.2 per cent., in 1927 18.1 per cent., in 1928 11.4 per cent., and in 1929 21.8 per cent. The rate among children (under 12 years) living outside the town in 1929 was 50.0 per cent., as against 21.8 per cent. among those in the town.

Anti-Malaria Work at Anuradhapura.—The work is in charge of 1 Medical Officer and 2 Sanitary Inspectors. There are also stationed at this centre members of the staff of the Medical Entomologist who are engaged in the survey of Anopheline breeding places and checking up the efficiency of oiling and Paris green work. The area of malaria control was reduced from November 18, 1929, as it was found impracticable to cover the entire area efficiently with the funds and labour at our disposal.

Paid labour as well as prison labour was employed during the year under review, the former being engaged in oiling and Paris green chiefly, the latter, in the general maintenance of the Halpanu-ela and initial clearing. As filling was discontinued the greatest attention was paid to oiling and Paris Green distribution. The latter was used exclusively on paddy fields and irrigation channels. In 1930 it is proposed to undertake treatment of certain areas of the large tanks and the control of breeding in the Malwatu-oya.

Oiling.—The force consisted of 1 overseer, 1 kangany, 4 oilers 2 cleaners, and 1 transport cooly. The types of breeding places treated by oiling are pools, borrow pits, stone quarries, drains, disused wells, and trenches. Oiling was further extended to some of the swampy areas as the efficacy of Paris green treatment was found to be poor. The work is supervised by the Sanitary Inspector in the field, and daily surprise visits in the field are made by the Medical Officer in charge.

TABLE IX.

The Number of Times Applications of Oil were made for each Section and its Approximate Cost for 1929.

Sections.	Number of Times Application of Oil made.	Quantity of Oil Mixture used. Gallons.	Cost of Labour. Rs. c.	Cost of Materials. Rs. c.
2C, 4A, 4C ..	4,188..	701..	178 82..	231 33
1A, 1C, 1D, 3A-C	9,341..	1,506..	267 73..	496 98
1B, 1E, 8A, 9A, 9D, 10A, 10B..	5,228..	1,172..	240 95..	386 76
2B, 2E, 8B, 8C, 7A, 7B ..	4,851..	1,034..	218 45..	341 22
2A, 2F, 5A, 5B ..	6,407..	1,212..	231 85..	399 96
2D, 4B, 5C, 5D .	6,275..	913..	233 95..	301 29
Total ..	36,290	6,538	1,371 75	2,157 54

Paris Green.—The force consisted of 1 kangany, 4 distributors, 3 mixers, and 2 transport coolies. This method of treatment was adopted for paddy fields and irrigation channels. During the year experiments were tried with a mixture of Paris green and slaked lime. Further trials are being made with slaked lime before its full use can be recommended at other centres. The results of Paris green with coir dust have proved to be unsatisfactory. An average of 600 acres of paddy fields is treated weekly.

TABLE X.

Summary of Paris Green Work done at Anuradhapura, 1929.

Number of Applications made.	Area of Paddy Fields treated. Acres.	Length of Irrigation Channels treated. ft.	Number of Swamps treated.	Paris Green Mixture consumed. lb.	Cost of Labour. Rs. c.
22,419 ..	4,840 ..	151,995 ..	86 ..	24,430 ..	1,608 77

The paddy fields in the town are dry for about 4 months in the year and it is not uncommon to find dry and wet fields side by side. The method of irrigation (by tanks) makes this condition possible. The acreage treated during the year is therefore not in proportion to the acreage of paddy fields within the control area.

General Maintenance and Clearing.—This work has been maintained systematically by 1 kangany and 14 coolies. The work consists of clearing of pools, pits, &c., prior to oiling and maintenance of work done in the past. 1,788,698 feet of drains were kept clear of vegetation, 2,029 visits were made for the clearing of pools, and 1,296 for clearing of borrow pits at a total cost of Rs. 2,538.10. The drains kept clean were those which were originally made by the campaign during the earlier years of its work. At present no clearing or any other work likely to alter the grading of drains belonging to the Local Board or the Public Works Department is undertaken by the malaria division. Such drains are in a very bad state and control of Anopheline breeding is carried out by intensive oiling.

Maintenance of Halpanu-ela.—One kangany and 10 coolies performed the maintenance work along this channel. Prison labour as well was utilized for the purpose. A few of the lateral drains were turfed and strengthened. The channel has withstood in good condition the floods and rains. The sum of Rs. 1,822.61 was spent in the maintenance of this channel.

Miscellaneous.—(1) The maintenance in good condition of a fish nursery. (2) During the year 4,248 5-grain tabloids and 1,891 3-grain tabloids were administered at the schools. (3) Special experimental work on the efficacy of Paris green distribution and oiling treatment was conducted during August and a part of September. In consequence of the findings of this special work the area of malaria control was reduced. (4) During the year 68 places were filled with 209 cubes of earth at a total cost of Rs. 628.35. (5) An average of 34 convicts with 6 guards was employed for 309 days during the year. They were engaged chiefly in (*a*) repairing, turfing, fencing, and filling low-lying areas along the Halpanu-ela; (*b*) filling borrow pits and hollow areas; (*c*) clearing of scrub jungle in pools, channels, and compounds. (6) The drinking, bathing, and washing ponds were periodically cleaned. (7) A visit to this centre was made by Sir Malcolm Watson in April.

Trincomalee.

In spite of minor labour discontent among the coolies engaged in anti-malaria maintenance work, work was done without any very serious interruptions.

The spleen survey conducted in June, 1929, gave a spleen rate of 12.2 per cent. (in children under 12 years of age), as against 7.0 per cent. in 1928. The number examined in June, 1929, was 610. Of the 75 enlarged spleens (June, 1929), 41 were obtained from Divisions 5, 8, and 9, collectively.

Maintenance Work:—

1. *Drains.*—All anti-malarial drains maintained at present are located in Divisions Nos. 2, 3, 4, 9, and 11. They are all within the limits of the Local Board. The total number of all anti-malaria drains lying both in and out of the Local Board limits is 282. These are maintained by a gang of coolies and an overseer who are under the supervision of the Sanitary Inspector. Maintenance work includes cutting the sides, weeding, clearing, and regrading these drains. During wet weather, which last from September to February, the most important part of the maintenance works lies in the removal of silt and other rubbish which lies at the bottom, and also in regrading the basins of these drains so as to facilitate the flow of storm water. The chief causes contributing to the falling in of the sides of these drains, especially during this time of the year, are (1) erosion, due to the rapid flow of storm water and tidal action, (2) cattle, people, carts, and other vehicles passing over them.

2. *Oiling.*—The whole town is divided into four divisions for the purpose of oiling, viz., Town, Maniaveli, Uppuveli, and Railway. During the wet weather, *i.e.*, from September to February, oiling work takes 4 days at a stretch, and even 5 days (during the month of December). The oiling area in the town proper is the largest of these and includes various types of breeding places, such as swamps, tanks, marshes, pools, kernies, borrow pits, and disused wells. All such places are cleaned up just before they are treated with oil.

3. *Maniaveli.*—This is a vast jungle area. Here are some 40 quarry pits belonging to the Public Works Department. There are also about 80 pools and numerous water collections. The thick jungle growth round these pits and pools is cleared and they are kept clean for oiling. All these pits and water collections are cleaned up and are treated with oil once in every 7 days. The Public Works Department defrays the cost of oil and labour for the work done in this area.

4. *Uppuveli.*—Although there is not much maintenance work in this division it requires careful attention, especially during the wet season, when almost the whole area is a large sheet of water. Most of the lands in this division are very low-lying, except a few lands along the sea-shore. Oil consumption in this particular area equals that consumed in the town area.

5. *Railway Area.*—Here are about 70 pools and most of these are pits lying on either side of the railway line to a distance of about a mile and a half. These water collections too are cleaned up and treated with oil. The Railway Department pays for the cost of oil and labour.

6. *Tanks.*—There are altogether 5 tanks: Dhobies' Pond, Kandankulam, Horse Pond, Sivan Tank, and Thamaraikulam. All these are within the Local Board limits. Out of these, Kandankulam dries up during severe drought. The rest hold water all the year round. Maintenance work, such as cutting of the edges weeding of the bunds, chopping of the low hanging branches of all trees growing round the tanks, and removing all dirt, débris, &c., from the tanks, is done systematically. Oiling is also done in these tanks once in every 7 days, except in the Dhoby Pond and Kandankulam (which are lying side by side), as the water in these is used by the dhobies for washing purposes.

7. *Kernies.*—There are 2 kernies, one of which is treated with oil once in every 7 days, and the other is treated with fish as the water is utilized for temple purposes.

8. *Fish Nursery.*—This is situated at Maniaveli. It was repaired last June. A new shed has been put up and is in very good condition. Fish thrive very well in this nursery.

9 *Fish Introduction into Wells lying within the Local Board Limits.*—All wells have been stocked with fish during the months of February, March, and April. Each well is breeding these fish and investigation work which has been done from time to time during last year shows that the fish thrive very well. About 584 wells which contained fish proved negative to Anopheline larvae. There were nearly 100 wells that did not breed fish and most of them proved positive. Fish were introduced at once into these wells.

10. *Jungle Clearing and Weeding.*—This work was done in the Residency area, round Sivan Tank, in lands belonging to the Local Board, and small patches of jungles and overgrowth of rank vegetation in divisions 1, 2, 3, 4, 5, and 9. A distance of 4 feet around all the Public Works Department quarry pits at Maniaveli too was cleared of jungle and rank vegetation.

11. *Quinine Distribution.*—Quinine distribution was done in September and October in 8 schools within the town. The teachers reported a decided improvement in the attendance of the school children. Later the quinine distribution was taken over by the Medical Officer of Health, Health Unit, Trincomalee. The amount administered to the school children is 2,800 5-grain pills and 1,500 3-grain pills.

12. *Cochineal Introduction.*—This work was done in the most thickly grown cactus area at Uppuveli, in the Residency area, and in certain parts of the town where the cactus grew in small patches. This work met with complete success.

13. *Finance.*—The Local Board voted Rs. 4,000 for the maintenance of anti-malaria works for the year 1929. The expenditure for each month is given below. The total includes the cost of labour, oil, repairs to tools, purchase of tools (and other necessary materials) and minor expenditure.

No.	Month.	Cost of Labour.	Cost of Oil.	Cost of repairs to Tools.	Purchase of Tools, &c.	Minor Expenditure.	Total.
		Rs. c.	Rs. c.	Rs. c.	Rs. c.	Rs. c.	Rs. c.
1	December 28	270 57	—	—	36 90	32 0	339 47
2	January 29	279 17	212 90	7 50	4 50	60 26	564 33
3	February 29	184 33	—	4 0	—	—	188 33
4	March 29	164 20	—	—	—	—	164 20
5	April 29	155 14	142 29	—	9 15	—	306 58
6	May 29	261 49	—	1 80	—	—	263 29
7	June 29	210 37	—	—	—	—	210 37
8	July 29	234 12	144 50	37 48	—	—	416 10
9	August 29	240 93	—	—	7 0	—	247 93
10	September 29	228 91	24 20	—	3 39	—	256 50
11	October 29	227 61	—	—	1 50	—	229 11
12	November 29	271 9	96 10	—	6 75	—	373 94
						Total	3,560 15

14. *Labour.*—During the wet season, which lasts from October till February, the strength of the labour force was 19. Out of these, 6 and sometimes 7 are detailed for oiling work. The rest of the coolies form the maintenance gang. During the dry season, which lasts from March till September, the strength of the labour force was 14. As there is not much work for the oiling gang during this season, only 5 are detailed for this work and the rest for maintenance.

Railway Anti-Malaria Work.

There has been no change to report in the staff or the nature and extent of anti-malaria work carried out at the stations of Polgahawela, Rambukkana, and Potuhera. As in 1928 the work was confined to these three stations, which have now reached a stage of maintenance. Sanitary Inspector da Silva is in charge of the work with a force of 9 men and 1 kangany. The following is a summary of the work done:—

Station.	Area of Premises cleared of all Weeds, Jungle, &c.	No. of Pits and low-lying Areas filled.	Cubical Capacity of Pits, &c. filled.	Length of Drains maintained in good condition.	Area oiled.	Total Expenditure (Wages of Minor Staff Subsistence Salary of Sanitary Inspectors, &c.)
	Sq. ft.		C. ft.		Sq. ft.	Rs. c.
Polgahawela	123,826	30	125,11¼	34,366	26,274	—
Rambukkana	21,036½	31	21,374	16,965	10,978	5,940 57
Potuhera	18,970	52	6,242¾	13,176	17,121	—

Kataragama.

Anti-malaria measures were established as usual before and continued during the pilgrimage period. The measures included quinine distribution, clearing, and systematic oiling of the banks of the river and the few water collections in the village. Information obtained from estates from which coolies attended the pilgrimage indicated that the pilgrims were in good health after the arduous journey to Kataragama and back. It is proposed to commence anti-malaria work at least 2 months before the pilgrimage in 1930.

Maintenance of Anti-Malaria Work at Mahara Jail.

Malaria control measures which were established at this jail in 1922 were maintained in splendid condition and regularly inspected by the Superintendent, Anti-Malaria Campaigns. The ela and quarry drains were kept in good repair.

A new quarry opened is kept free of all hollows likely to hold water as the greater part of the digging for metal is above the ground level.

The data obtained from the hospital and general register indicate a very low monthly average rate of 1.7 per cent. of fever among the prisoners during 1929, as against 37.4 per cent. in 1922 and 4.6 per cent. in 1925.

Central Office, Torrington Square.

During the year under review several important changes were effected in the general organization and working of the campaigns. (1) A new set of instructions for the use of Sanitary Inspectors engaged in anti-malaria work was compiled and supplied to each field officer. Non-compliance with any of the rules and instructions set down is dealt with severely. The instructions deal with every phase of field and office work and with general discipline. (2) A very important forward step has been the introduction and use in the field of cost sheets reframed by the Sanitary Engineer on the drafts suggested by the Director of Medical and Sanitary Services. The sheets are extremely informative and easy to handle. A type of work, *e.g.*, oiling, has a special sheet upon which all the useful details are recorded. It is proposed to alter slightly the cost sheets for use in 1930. (3) The regular supply of materials such as oil, coir dust, &c., from Colombo has proved unsatisfactory; delays are frequent and loss of work in the field is the inevitable result of such failure to supply materials in time. With a view to eliminating delays and assuring a steady supply, the Sanitary Engineer has undertaken to handle all supplies according to a definite system of cards and records for a few months before passing on the scheme to the Superintendent, Anti-Malaria Campaigns. (4) Special training classes were held for members of the Malaria Control Scheme. Newly appointed Sanitary Inspectors for malaria work were also given training in malaria and its prevention. Such training consisted of lectures and demonstrations in the laboratory for 14 days with a further period of field training at one of the anti-malaria centres. (5) It has been frequently observed that repairs to field equipment take a long time and, in order to obviate such delays, a repair shed has been installed at the offices in Torrington square. Minor repairs are effected quickly, the work, of course, being under the supervision of the staff members of the Sanitary Engineering Division. Major repairs are not done as neither the materials for repair nor skilled men are available. (6) Blood films have been examined from time to time and such work done upon the Esanophile experiments (now in progress) at Chilaw will be submitted in 1930. (7) Visits to the office were paid by Sir Malcolm Watson and Professor Serge Voronoff during the year under review.

K. J. RUSTOMJEE,
Superintendent, Anti-Malaria Campaigns.

March 4, 1930.

4.—Report on Health Unit Work for the Year 1929.

CONTENTS.

Annual Report on Health Unit Work, 1929.

At the end of 1928 3 Health Units were in operation at the following places:—Kalutara totamune in the Western Province, Weudawili hatputtu in the North-Western Province, and Matara Gravets and Wellaboda pattu in the Southern Province.

During 1929 2 more Units were established: 1 at Paranakuru korale in the Kegalla District of the Province of Sabaragamuwa in May and the other at Trincomalee District in the Eastern Province in September.

It will thus be seen that 5 out of the 9 Provinces have been provided with a Unit each. Provision has been made for the establishment of a sixth Health Unit during the current financial year, thus leaving 3 Provinces unprovided with a Health Unit.

The area in which Health Unit work was done during the year is 779 square miles compared with 122 in the previous year; and the population dealt with has been 224,736 as compared with 140,443 in 1928.

The personnel engaged in Health Unit work during 1929 as compared with that in 1928 is as follows:—

Designation.	1928.	1929.	Designation.	1928.	1929.
Medical Officers of Health in charge	3	5	Midwives	13	23
Medical Officers of Health in training	1	6	Clerks	4	6
Medical Officer	1	1	Peons	3	5
Sanitary Inspectors	19	27	Coolies	4	6
Public Health Nurses	1	4			

The personnel in 1929 was distributed as follows:—

Designation.	Kalutara Totamune.	Weudawili Hatpattu.	Matara Gravets, Wellaboda Pattu.	Paranakuru Korale.	Trincomalee District.	Total.
Medical Officers of Health in charge	1	1	1	1	1	5
Medical Officers of Health in training	5	—	1	—	—	6
Medical Officer	—	1	—	1	—	1*
Sanitary Inspectors	10	5	4	4	4	27
Public Health Nurses	2-3	1	1	—	—	4
Midwives	9	4	3	3	4	23
Clerks	2	1	1	1	1	6
Peons	1	1	1	1	1	5
Coolies	2	1	1	1	1	6

The Units were in charge of the following Medical Officers of Health:—

Kalutara totamune—
January–May .. Dr. H. A. Direkze, Dr. W. T. de Silva
June–December .. Dr. B. C. Das Gupta

Weudawili hatpattu—
January–May .. Dr. A. M. Samarasinghe
June–December .. Dr. M. W. M. de Silva

Matara Gravets and Wellaboda pattu—
January–July .. Dr. W. G. Wickramasinghe
August–December .. Dr. S. Sivalingam, Dr K. M. R. Swami

Paranakuru korale .. Dr. H. A. Direkze
Trincomalee District .. Dr. V. Nadarajah

The plan of work originally established and detailed in the report for 1928 has been followed.

Salient Points Relating to Each Unit.

Kalutara Totamune Health Unit.—This Unit is in the Kalutara District of the Western Province and is the first one established. It includes the Urban District Council area of Kalutara, two Sanitary Board towns, and a Rural area. The rural area is under two Village Committees and within it are several estates. The whole area is 52.37 square miles in extent.

The work was inaugurated in July, 1926, in the upper 25 square miles of the area with a population of 32,941. In June, 1928, the work was extended to cover the remainder of the area.

The population of the whole area estimated for 1929 is 82,758, of which 83 per cent. is rural and 17 per cent. urban.

* This one officer worked in one Unit for the first part of the year and in the other Unit for the rest of the year.

The birth rate of the whole area is 35.8 as compared with 38.0 in 1928. The birth rate for Kalutara town is 38.7 as against 36.4 for 1928.

The death rate of the whole area is 24.8 as compared with 24.2 in 1928, while that for Kalutara town is 36.4 which is the same as in 1928.

The chief causes of death have been convulsions, dysentery, typhoid fever, pulmonary tuberculosis, and causes incidental to childbirth.

Infant mortality for the whole area is 129. The rate for Kalutara town is 142 as compared with 160 in 1928. The town rate has decreased from the time of the inauguration of Health Unit work as follows:—

1925	..	164	1927	..	180	1929	.. 142
1926	..	192	1928	..	160		

This decrease is significant in view of the fact that in the case of other towns where no child welfare work is being done the rate is increasing, especially in the case of the neighbouring town of Panadure.

The rate for the whole area for previous years is not available for comparison.

The infant deaths form 18.6 per cent. of the total deaths in the area, and the chief cause of death is convulsions.

Maternal mortality rate for the whole area is 22.9 while that for Kalutara town is 32.9, as against 35 in 1928 and 38 in 1927. The chief cause of death has been puerperal convulsions.

No death occurred amongst mothers confined by the Health Unit midwives.

The staff during the year consisted of the following:—

Medical Officer of Health	1	Clerks	2
Sanitary Inspectors	10	Peon	1
Public Health Nurses	2–3	Coolies	2
Midwives	9		

During the year 5 Medical Officers of Health have been attached to this Unit for training. One of them was a doctor from Burma.

The Medical Officer for Maternity and Child Welfare who was attached to this Unit for the training of Public Health Nurses was transferred to the Dehiwala-Mount Lavinia area during the year for the same purpose.

At the early part of the year the work of the Unit was looked after by 3 Medical Officers, but when Dr. B. C. Das Gupta assumed charge all the work and the whole area were placed under his single control.

The total expenditure of this Unit has been Rs. 68,139.43, contributed as follows:—

	Rs. c.		Rs. c.
Government ..	.. 38,210 15	Sanitary Board of Kalutara District ..	6,415 27
Urban District Council of Kalutara	.. 23,514 1		

The *per capita* cost is 82 cents contributed as follows:—

	Cents.		Cents.
Government	45.9	Sanitary Board	7.7
Urban District Council	28.4		

During the first quarter of the year preparations were made for the holding of the first Health and Baby Week of its kind in the Island. The week was held from April 21-27 and His Excellency the Governor graced the occasion with his presence. It was very successful from every point of view, and it had the rare distinction of being awarded the Imperial Challenge Shield offered for competition within the British Empire, exclusive of the British Isles, by the Baby Week Council of England.

The health survey of the lower area was completed, 4,016 homes being surveyed during the year.

Hookworm treatment was given during the months of July, August, September, October, and November, the whole area being covered. In all 1,890 received treatment, 1,364 being children and 526 adults.

Vaccination against smallpox was carried out during the period that hookworm treatment was being done. The area was divided into two, and while hookworm treatment was carried out in one area vaccination was done in the other, and *vice versâ*. In all 3,264 primary vaccinations were done.

Inoculation against typhoid fever was carried out on a larger scale than in the previous years and the response to it has been encouraging. During the year 547 first doses and 167 second doses were given, whereas in 1928 only 19 inoculations were administered.

The chief acute communicable diseases that cause the largest number of deaths in the area are dysentery and enteric. Of the latter disease 132 cases were notified and of the former 188. These two diseases have been scattered more or less evenly throughout the whole area. Enteric fever which caused a small epidemic in the village of Gamagoda was investigated. Although the source of infection could not be determined, the mode of transmission was found to be by contact. A successful inoculation campaign was carried out in this village. There is better notification of communicable diseases in the area.

There is reason to believe that Maternity and Child Welfare work in this area is beginning to show results. The drawback in the proper development of this work is the lack of Public Health Nurses. The reduction in the infant and maternal mortality rates of Kalutara town has already been commented on.

Weudawili Hatpattu Health Unit.—This Unit is located in the Kurunegala District of the North-Western Province and includes the Urban District Council area of Kurunegala where the office is situated. The remainder of the area is rural. The total area within this Unit is 174½ square miles, but only 40 square miles comprising Tiragandahaye korale and Kurunegala town have been taken up for work.

This Unit was inaugurated on November 26, 1927, and the work here is in its second year. The staff consists of—

1 Medical Officer of Health.	1 Clerk.
5 Sanitary Inspectors.	1 Peon.
1 Public Health Nurse.	1 Cooly.
4 Midwives.	

The Medical Officer attached to this Unit after completion of his school medical inspection was transferred to the Kegalla Unit.

The cost of working this Unit for the year has been Rs. 77,926.96, of which amount the local authority's expenditure has been Rs. 59,122.25 and the Government contribution Rs. 18.804.71. The *per capita* cost is Rs. 2.73¼, which is the highest of all the Units and is contributed as follows:—

	Rs.	c.
Local authority	2	2
Government	0	71¼

The high cost is due to the heavy expenditure on scavenging and conservancy and to a sum of Rs. 10,000 included as interest on the water supply loan.

The vital statistics of the area for 1929 are:—

(Population: 28,498, of which 11,785 are Urban and 16,713 Rural.)

Total births	805	Infant deaths	200
Birth rate	28.2	Infant death rate	248
Total deaths	886	Maternal deaths	23
Death rate	31.1	Maternal death rate ..	28.6

In the field of health education, lantern lectures, school talks, and talks with villagers have been carried out.

There has been an outbreak of chickenpox in the rural section, the disease having been introduced from an adjoining village. There have also been 17 cases of dysentery and 5 cases of typhoid fever.

Vaccination against smallpox was carried out throughout the area, 490 primary vaccinations being done.

With regard to immunization against typhoid fever 59 first doses and 12 second doses were given.

A hookworm campaign was also carried out during July, August, and September. 749 took the treatment.

The Maternity and Child Welfare work in this Unit does not appear to be getting on well. 421 new latrines have been built and the pipe-borne water supply for the town is nearing completion.

Matara Gravets and Wellaboda Pattu.—This Unit is located in the Matara District of the Southern Province and includes within its area two Mudaliyars' divisions and the Urban District Council town of Matara, the whole being 110 square miles in extent. Of this area 30 square miles composed of Matara Gravets (excluding the town of Matara) and Dondra, Kapugama, Wauwa, and Gandara in Wellaboda pattu are being worked.

This was inaugurated on May 16, 1928, and it may be considered as in the second year of working.

The staff consists of—

1 Medical Officer of Health in charge	3 Midwives.
1 Medical Officer of Health in training.	1 Clerk.
4 Sanitary Inspectors.	1 Peon.
1 Public Health Nurse.	1 Cooly.

The Medical Officer of Health in charge was in July detailed for special work at Galle in connection with the outbreak of plague—not a very satisfactory arrangement as far as the work at the Unit was concerned. He was away till the end of the year. Dr. Sivalingam who was in training at this Unit took over the work till October and later, on his appointment to Kalutara District, was relieved by Dr. Swami.

The cost of this Unit for the year has been Rs. 27,007.45, of which Rs. 22,570.79 has been incurred by Government and Rs. 4,436.66 by the local authority. The *per capita* cost is 89 cents contributed as follows:—

Government	74 cents
Local Authority	15 cents

The population estimated for the year is 31,365, which is wholly rural. The birth rate for the area is 39.6, the death rate 19.6, infant mortality rate 154, and the maternal death rate 11.3.

During the year the work of this Unit was fully organized.

With regard to health education, a series of lectures with the aid of lantern slides was delivered in various parts of the area, a course of lectures to teachers was given and a Health Exhibition conducted at Dondra during the fair in July.

This Unit dealt promptly with an outbreak of pneumonic plague in July and an outbreak of dysentery in November, in both of which infection was introduced from outside. Typhoid fever has been prevalent in the area, the majority of cases occurring between June and September.

A Maternity and Child Welfare clinic was started at Walgama, and later in the year two others were organized, one at Dondra and the other at Talpawila, making three in all.

The children in the majority of the schools have been medically examined, and training in health habits has been introuced into the schools.

Hookworm treatment was carried out in the schools, 902 taking treatment.

Vaccination against smallpox was undertaken, 1,295 vaccinations being done.

Anti-typhoid inoculation has also been given, 48 first doses and 11 second doses.

Latrine construction has been pushed forward, 648 new latrines were built and 50 existing ones were made sanitary.

Paranakuru Korale Health Unit.—This Unit is located in the Kegalla District of the Province of Sabaragamuwa. It includes the Local Board town of Kegalla, where the Health Unit office is located. The remainder of the area is rural, with 49 estates, in addition to villages, in it.

The area that is being worked is 57 square miles in extent. It was originally intended that it should form one Unit with Beligal korale, but it would appear that it would form a more compact Unit, and one more easily worked, with Kinigoda and Galboda korales.

The inaugural meeting was held on May 1 and the Unit has been in operation for eight months.

The staff consists of—

1 Medical Officer of Health.	3 Midwives.
1 Medical Officer assisting in School Medical Inspection.	1 Clerk.
4 Sanitary Inspectors.	1 Peon.
	1 Cooly.

The cost of the Unit for the eight months has been Rs. 19,906.42, of which Rs. 14,605.15 has been contributed by Government and Rs. 5,301.27 by the local authority.

The *per capita* cost of 39½ cents is contributed as follows:—

Government	29 cents
Local Authority	10½ cents

The population estimated to the middle of 1929 was 50,271, of whom 3,947 are urban and 46,324 rural; the latter figure includes an estate population of 6,580.

The birth rate (average for 4 years 1925-1928) is 59.14 while that for 1929 based on the births of the second half of the year is 46.74. The birth rate (average for 5 years 1924-28) for Kegalla town is 28.17 while that for 1928 based on the figures for the second half of the year is 27.86.

The death rate (average for 4 years 1925-1928) for the whole area is 25.92 while that for 1929 based on the deaths of the second half of the year is 22.32. The death rate for Kegalla town (average for 5 years 1924-1928) is 17.23 while that for 1929 based on the figures for the second half of the year is 25.33.

The chief causes of deaths in the area are pneumonia, convulsions, infantile debility, rickets, and enteric fever. The diseases returned as enteric fever need investigation.

The infant mortality rate (average for 4 years 1925-1928) for the whole area is 144 while that for 1929 based on the infant deaths for the second half of the year is 143. The rate for Kegalla town (average for 5 years 1924-1928) is 166 while that for 1929 based on the figures for the second half of the year is 254.

The maternal mortality rate for the whole area for 1929 based on the figures for the second half year is 12.8.

The work carried out has consisted chiefly of the organization of the different activities and the carrying out of the health survey. A detailed survey of 7,860 homes was done.

A series of lectures has been delivered throughout the area as part of the health education programme.

In dealing with communicable diseases the routine has been set up and proper notification of cases introduced.

A certain amount of child welfare work through clinics has been commenced but nothing very serious can be attempted till the appointment of nurses. A Child Welfare Association for the town has been organized.

School Medical Inspection has been commenced and 655 children have been examined and a spleen survey of all the schools has been carried out.

In the field of sanitation the scavenging and conservancy work in the town of Kegalla has been organized on a better footing. 107 new latrines were built during the year.

Trincomalee District Health Unit.—This Unit is located in the Trincomalee District of the Eastern Province. It includes the whole of the Trincomalee District with the Local Board town of Trincomalee where the Health Unit office is situated. The whole area is 1,048 square miles, but only 599 square miles, within which are included the town, town division, Tamblegam pattu, and Kottiyar pattu, have been taken up for work.

The work was inaugurated on September 2, 1929, and the Unit has been in operation for a period of four months.

The population of the area taken up for work is 31,844 of whom 9,920 are urban and 21,924 rural.

The staff consists of—

1 Medical Officer of Health.	1 Clerk.
4 Sanitary Inspectors.	1 Peon.
4 Midwives.	1 Cooly.

Vital statistics of the area under operation for 1929 calculated on the basis of the figures collected for four months are as follows:—

Birth rate	33.3
Death rate	26.5
Infant death rate	190
Maternal death rate	10.3

These figures require revision.

The work done during the four months consisted in organizing the activities and carrying out a portion of the health survey.

Comments on Data relating to the different Health Units.

Health Units and Provinces.—There are 5 Health Units in operation in 5 separate Provinces, thus leaving 4 more Provinces to be provided with a Health Unit each before a second is given to any Province.

Year of Operation.—Of the five Units, one, viz., the Kalutara Totamune Unit, is in its fourth year of operation; two, viz., Weudawili hatpattu and Matara Gravets and Wellaboda pattu, are in their second year of operation; while the remaining two, Paranakuru korale and Trincomalee District Units, are in their first year, being in operation 8 months and 4 months, respectively.

Health Unit Area.—The total area of the 5 health districts in which Health Unit work is carried out is 1,605 square miles or about 1/16th of the total area of the Island, as compared with 337½ square miles or about 1/74th of the total area in 1928. Of the total area only 779 square miles or a little less than half of it is being worked, as compared with 122 square miles in 1928.

Population.—The population in the areas worked is 224,736 which is 1/24th of the total population of Ceylon, as compared with 140,433 in 1928 which was 1/37th of the total population. Of this population 39,758, or 17.5 per cent., are urban and 184,978, or 82.5 per cent., are rural. The term " urban population " is used in the sense that the Registrar-General employs it, viz., the population of the 35 principal towns.

Vital Statistics.—The total births registered in all the Health Unit areas are 6,536. The birth rate varies from 28.2 at Weudawili hatpattu to 46.7 at Paranakuru korale with an average of 35.8.

The total deaths registered in all the Health Unit areas are 4,402. The death rate varies from 19.6 at Matara Gravets and Wellaboda pattu to 31.1 at Weudawili hatpattu, with an average of 24.8.

The total infant deaths registered in all the Health Unit areas are 1,011, giving a rate of 154. This means that 1 out of every 6 babies born dies before it reaches the first year of life. The rate varies from 129 at Kalutara totamune to 248 at Weudawili hatpattu.

The total maternal deaths registered in all the Health Unit areas are 127, giving a maternal death rate of 19.1 per 1,000 live births. The rate varies from 10.3 in Trincomalee District to 28.6 at Weudawili hatpattu.

It will be noticed that Weudawili hatpattu Unit has—

the lowest birth rate,
the highest death rate,
the highest infant mortality rate,
the highest maternal mortality rate.

This is due to the malaria problem here which overshadows the whole health picture.

Expenditure.—The expenditure on all the Units during the year has been Rs. 206,519.99, of which Government has contributed Rs. 100,538.23 and the local authorities Rs. 105,981.76.

The *per capita* cost for all Health Unit work is 92 cents while that for each Unit is as follows:—

	Rs. c.		Rs. c.
Kalutara totamune	0 82	Paranakuru korale	0 39½
Weudawili hatpattu	2 73½	Trincomalee District ..	0 42½
Matara Gravets and Wellaboda pattu ..	0 89		

The last two Units have worked only for 8 months and 4 months, respectively.

Although the *per capita* cost of the Kalutara Totamune Unit has risen from 81 cents in 1928 to 82 cents in 1929, it has to be realized that in 1928 the personnel for the lower half worked only for half the year. The high *per capita* cost of the Weudawili Hatpattu Unit has been explained earlier.

Health Education.—To educate the public 68 lectures, 69 lantern talks, 10 cinema shows, and 26 school talks have been given, and two Health Exhibitions have been held. The estimated attendance at all these five units has been 48,174. Of the two Health Exhibitions held, one was at Kalutara totamune and the other at Dondra in the Matara Gravets Unit area. The former exhibition was part of the Health and Baby Week which won the Imperial Challenge Shield.

Saturday conferences with the Health Unit staff have been a feature at all the Units. 153 such conferences were held with a total attendance of 1,386.

Conferences with others include meetings with minor headmen, ayurvedic physicians, school teachers, committees of local authorities, &c. Fifty-seven such conferences were held. The lectures delivered at the Matara Gravets Unit include a series delivered to school teachers.

Health Survey.—A total of 14,859 homes have been surveyed during the year as follows: Kalutara totamune 4,016, Paranakuru korale 7,860, and Trincomalee District 2,983.

Acute Communicable Diseases.—The following is a statement of the incidence of the acute communicable diseases reported in the five Units:—

Diseases.	Kalutara Totamune.		Weudawili Hatpattu.		Matara Gravets and Wellaboda Pattu.		Paranakuru Korale.		Trincomalee District.		Total.	
	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.
Chickenpox ..	183	—	63	—	10	—	35	—	1	—	292	—
Diphtheria ..	2	1	—	—	—	—	—	—	—	—	2	1
Dysentery ..	188	36	17	2	53	2	23	2	9	1	290	43
Influenza ..	—	—	1	—	3	—	—	—	—	—	4	—
Measles ..	187	2	12	—	7	—	138	—	2	—	346	2
Mumps ..	32	—	2	—	14	—	19	—	2	1	69	1
Typhoid Fever ..	132	25	5	2	61	14	6	3	2	1	206	45
Whooping Cough ..	2	—	1	—	—	—	1	—	—	—	4	—
Pneumonia ..	—	—	5	1	3	1	—	—	—	—	8	2
Plague ..	—	—	—	—	13	12	—	—	—	—	13	12
	726	64	106	5	164	29	222	5	16	3	1,234	106

C = cases. D = deaths.

1,234 cases of the acute communicable diseases have been reported in all the Units; as yet the reporting is poor, but both at Kalutara totamune and Matara Gravets and Wellaboda pattu it is improving, and a good start has been made at Paranakuru korale. In the majority of reported cases isolation of the patients has been in their homes and concurrent disinfection has been stressed and practised.

The following is a statement showing the distribution of all the cases reported in all the Units by months with the exception of influenza and pneumonia:—

Months.	Chickenpox.		Diphtheria.		Dysentery.		Measles.		Mumps.		Typhoid Fever.		Whooping Cough.		Plague.	
	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.
January ..	37	—	—	—	16	4	28	—	—	—	8	2	—	—	—	—
February ..	23	—	—	—	11	1	14	1	4	—	3	—	1	—	—	—
March ..	41	—	—	—	25	—	3	1	11	—	6	2	—	—	—	—
April ..	51	—	—	—	1	1	16	—	13	—	10	3	—	—	—	—
May ..	21	—	—	—	8	2	23	—	2	—	11	4	—	—	—	—
June ..	6	—	—	—	5	—	71	—	12	—	30	5	—	—	—	—
July ..	21	—	1	1	11	2	45	—	12	—	25	4	1	—	13	12
August ..	16	—	—	—	4	2	27	—	4	—	12	3	—	—	—	—
September	4	—	—	—	18	3	79	—	1	—	22	7	1	—	—	—
October ..	11	—	1	—	41	6	8	—	2	1	28	7	—	—	—	—
November	39	—	—	—	92	12	14	—	5	—	19	2	1	—	—	—
December	22	—	—	—	58	10	18	—	3	—	32	6	—	—	—	—
Total ..	292	—	2	1	290	43	346	2	69	1	206	45	4	—	13	12

Chickenpox.—292 cases have been reported, of which more than half (183) have been at Kalutara totamune, 63 have occured in the rural section of the Weudawili Hatpattu Unit, and 35 at the Paranakuru Korale Unit.

Diphtheria.—Two cases with 1 death have been reported from the Kalutara Totamune Unit. These cases have been unrelated and the source of infection has not been determined. Both cases were confirmed bacteriologically.

Dysentery.—290 cases with 43 deaths giving a fatality rate of 14.7 per cent. have been reported. Of these cases 188 or 64 per cent. have occurred in the Kalutara totamune, 53 at Matara Gravets and Wellaboda Pattu Unit, and 23 in the Paranakuru Korale Unit. Most of the cases have been of the bacillary variety and transmission has been chiefly by contact.

At Kalutara totamune the cases are scattered throughout the area, while at the Matara Gravets and Wellaboda Pattu Unit a sharp outbreak of 26 cases occurred in November in the village of Wewahamanduwa as the result of infection introduced from an adjoining village outside the Health Unit area. Prompt measures taken by the Health Unit staff caused the epidemic quickly to subside. Transmission was by contact.

Influenza.—There is very little reporting in this connection. In all the Units only four cases have been reported.

Measles.—A total of 346 cases with 2 deaths have been reported. Of these cases 187 occurred in the Kalutara Totamune Unit and 138 in the Paranakuru Korale Unit. Of the latter 86 per cent. occurred during the month of September and all the cases (50) that occurred in Kegalla town were connected with the Kegalla convent. The Medical Officers of Health of both Units comment on the spread of infection being chiefly through the schools.

Mumps.—Sixty-nine cases with 1 death have been reported. Of these cases 32 have occurred in the Kalutara Totamune Unit, 14 at Matara Gravets and Wellaboda Pattu Unit, and 19 at Paranakuru korale. The fatal case is from the Trincomalee District Unit. The Paranakuru korale cases occurred in the Kegalla Convent in the month of June.

Typhoid Fever.—A total of 206 cases with 45 deaths giving a fatality rate of 17.3 per cent. has been reported. These cases have chiefly occurred in the Kalutara Totamune Unit, 132 cases with 25 deaths, and in the Matara Gravets and Wellaboda Pattu Unit, 61 cases with 14 deaths. In the Kalutara Totamune Unit, with the exception of one village (Gamagoda), where an outbreak of 11 cases occurred, the cases are scattered throughout the area. There is endemic typhoid in the area and the mode of spread has been by contact. The Medical Officer of Health of this Unit has successfully launched mass anti-typhoid inoculation. This is the only method of dealing with the disease.

The Matara gravets and Wellaboda pattu cases are confined chiefly to the villages of Tudawa and Madihe. Over 50 per cent. of the cases have occurred in the 5-15 age group. They have occurred from April to November, the peak being in June. Here again there is endemic typhoid and the mode of transmission in the cases investigated has been by contact.

Whooping Cough.—Four cases have been reported: 2 from Kalutara totamune, 1 from Weudawili hatpattu, and 1 from Paranakuru korale.

Pneumonia.—This is the most important cause of death in the Island and still it is difficult to get cases notified. Eight cases with 2 deaths have been notified in all the units.

Plague.—Thirteen cases with 12 deaths have been reported from the Matara Gravets and Wellaboda Pattu Unit during July.

These 13 cases occurred as follows: 11 at Badahalgoda and 2 at Naimana. The latter 2, both acquired their infection at Galle and after developing the disease there, were removed to this village. Both were bubonic and one proved fatal.

The infection was introduced into Badahalgoda by a youth from Galle. He was missed and when two other deaths had occurred information was given of an outbreak in the village, which on investigation turned out to be an outbreak of pneumonic plague. The youth, no doubt, was a case of bubonic plague with secondary pneumonia which gave rise to pneumonia in the subsequent cases. In all 11 cases occurred in this outbreak, all of which proved fatal. The last case in the outbreak was bubonic, the bubo being a cervical one. The infection was inhaled, and probably arrested by the tonsil, caused infection of the cervical glands. All the cases occurred in one village among one set of people who were related to each other. The presence of a health organization on the spot enabled the situation to be promptly and suitably handled without spread of infection. This is the first occasion in which pneumonic plague has occurred outside Colombo. This outbreak will always piont out the absolute necessity of keeping in mind the possibility of pneumonic outbreaks when dealing with bubonic cases.

Immunization: Anti-Typhoid.—With typhoid fever endemic in at least two of our Units the only chance of dealing with it is by immunizing the population against it. Any procedure that causes pain and is followed by a reaction is not favoured by the people, but the Medical Officers of Health realizing that immunization is the only effective weapon for use against typhoid fever have employed it more widely during the year.

A total of 940 first doses and 328 second doses have been administered, as compared with 44 and 13 in 1928. They were given in all the Units, and Kalutara Totamune Unit has 547 first and 167 second doses to its credit, while the Trincomalee District Unit comes next with 275 first and 133 second doses.

Anti-Smallpox.—Vaccination against smallpox was carried out in the three old Units. A total of 5,049 vaccinations were done, all being primary. Of this the largest number was done in the Kalutara Totamune Unit, while Matara Gravets and Wellaboda pattu did 1,256 and Weudawili hatpattu did 490.

Of the total performed, 236 were unknown and 4,813 were inspected with the following results:—

Successful ..	4,178 or 86.8 per cent.	Unsuccessful ..	635 or 13.2 per cent.

Hookworm Treatment.—Hookworm treatment was carried out at three of the Units. No work in this direction was done in the two newly established ones. In all 3,541 treatments were given as follows: Kalutara totamune 1,890, Weudawili hatpattu 749, and Matara Gravets and Wellaboda pattu 902.

4,741 examinations of faeces was done before treatment and 3,478 or 73.3 per cent. were found infected.

Only in the Kalutara Totamune Unit has examination of sufficient samples been done before and after treatment. The infection rate before treatment in this Unit was 78.1 per cent. and after treatment 58.1 per cent., while the average egg-count before treatment was 1,095 and after treatment 360.

Laboratory Examinations.—A total of 5,008 laboratory examinations has been carried out, 4,867 in Colombo and 141 locally. In Colombo the examinations have been chiefly of faeces in connection with the Hookworm Treatment Campaign. Other examinations carried out in Colombo have been of blood for widal, throat swabs for diphtheria, water samples, milk, and dog's brain for rabies. Locally examinations have been of urine, faeces, blood for malaria, sputum for bacillus tuberculosis, &c. The advantage of a local laboratory was demonstrated, when with its assistance the Medical Officer of Health at Matara Gravets and Wellaboda pattu was able to take action to deal with the outbreak of pneumonic plague before his local findings were confirmed in Colombo.

Tuberculosis Control.—An effort in this direction has been commenced in three of the Units. In all 42 notifications had been received, of which 36 have been examined and 35 have been found to be positive. In this connection 81 home visits have been made and 164 contacts kept under observation. Fourteen of these have been placed in institutions. Notifications in this connection generally come from the Anti-Tuberculosis Institute where these people have been for treatment. Very few are notified locally.

Anti-Malaria Work.—In two of the Units, viz., Weudawili hatpattu and Trincomalee District, anti-malaria work is carried out by a separate organization under the Departmental Committee on malaria. The work in these Units is done at Kurunegala and Trincomalee. The Health Units have done no work beyond distribution of quinine at schools as a prophylactic measure and at villages as a curative one. This has been done at the Weudawili Hatpattu Unit.

Maternity Infant and Pre-school Hygiene.—Nineteen centres for child welfare work have been established in the 5 Units. The 13 centres that existed at Kalutara totamune were reduced to 9 during the year. The number of clinics held at these centres has been 702, of which 510 have been at the Kalutara Totamune Unit. Child welfare work is very greatly handicapped by the lack of public health nurses. That the most important work is in the homes of the people is quite realized, but lack of nurses hinders the proper development of it.

The following statement shows the number of clinics held and the attendance at them:—

Area.	Clinics held.	Total Attendance.	Attendance per Clinic.
Kalutara totamune	510 ..	6,910 ..	13
Weudawili hatpattu	111 ..	1,002 ..	9
Matara Gravets and Wellaboda pattu ..	55 ..	3,156 ..	57
Paranakuru korale	11 ..	108 ..	9
Trincomalee District	15 ..	289 ..	19

It would be seen that the attendance at Matara Gravets and Wellaboda pattu is very high.

The visits to the clinics have been as follows:—

Area.	By Expectant Mothers.	By Infants.	By Pre-school Children.	Total.
Kalutara totamune ..	268	3,195	3,447	6,910
Weudawili hatpattu ..	21	423	558	1,002
Matara Gravets and Wellaboda pattu ..	5	1,146	2,005	3,156
Paranakuru korale ..	4	62	42	108
Trincomalee District ..	10	279	—	289
Total ..	308	5,105	6,052	11,465

Public Health Nurses were available only at 3 Units, viz., Kalutara totamune, Weudawili hatpattu, and Matara Gravets and Wellaboda pattu—2 at the first named and 1 each at the other two. Their *home visits* have been as follows:—

Area.	No. of Nurses.	Expectant Mothers.	Infants.	Pre-school Children.	Totals.
Kalutara totamune ..	2	761	3,459	1,360	5,580
Weudawili hatpattu ..	1	352	685	78	1,115
Matara Gravets and Wellaboda pattu	1	2,112	900	814	3,826
Paranakuru korale ..	—	6	—	—	6
Trincomalee District ..	—	—	—	—	—
Total ..	4	3,231	5,044	2,252	10,527

A total of 10,527 home visits have been made, the largest being at Kalutara totamune. Matara Gravets follows next with 3,826, and Weudawili hatpattu third with 1,115. Some of the visits to expectant mothers at Matara Gravets and Wellaboda pattu have been by midwives.

There are 24 midwives attached to the 5 Health Units. They have conducted a total of 1,428 confinements as follows:—

Area.	No. of Midwives.	Confinements conducted.	Confinements per Midwife.
Kalutara totamune	9	650	72
Weudawili hatpattu	4	277	69
Matara Gravets and Wellaboda pattu	3	320	106
Paranakuru korale	4	136	—
Trincomalee District	4	45	—
	24	1,428	

School Hygiene.—School medical inspection has been carried out at two Units, viz., Matara Gravets and Wellaboda pattu and Paranakuru korale.

In all 3,122 children, of whom 1,835 or 58.7 per cent. were defective with defects amounting to 4,230 or 2.3 defects per defective child, were examined.

There is no possibility at present of correcting defects beyond administering hookworm treatment and vaccinating against smallpox. Dental defects are numerous and by the employment of a dental surgeon a good response in the correction of dental defects can be obtained.

Latrine Construction.—The construction of latrines has been carried out in four of the Units. In the Trincomalee District the work done has been the Health Survey. Owing to the nature of Health Unit work the progress of latrine construction has of necessity to be slow.

Leaving out Trincomalee District and Tumpalata east of Paranakuru korale in which the Health Survey has not been completed there are about 33,219 houses in all the Units provided with 10,082 latrines, which is one latrine to 3 houses. The state of latrine construction in the various Units is as follows:—

Unit.	Total Houses.	Latrines existing.	Percentage of Houses provided with Latrines.	New Latrines Built.	Latrines restored to Sanitary Type.
Kalutara totamune	15,814	4,992	31.5	368	390
Weudawili hatpattu ..	4,688	1,181	25.1	421	86
Matara Gravets and Wellaboda pattu	5,583	1,922	34.4	648	50
Paranakuru korale	7,134	1,987	27.8	107	15

The Matara Unit shows the largest percentage of houses provided with latrines and the largest number of new latrines built during the year.

Inspections of latrines carried out are as follows:—

Unit.	Latrines existing.	Total Inspections.	Inspections per Latrine.
Kalutara totamune	4,992	9,721	1.9
Weudawili hatpattu	1,181	5,423	4.5
Matara Gravets and Wellaboda pattu	1,922	5,889	3.0
Paranakuru korale	1,987	2,525	1.2

Weudawili hatpattu has done the largest number of inspections per latrine, followed closely by Matara Gravets and Wellaboda pattu.

Water Supply Wells.—The pipe-borne water supply for Kurunegala town was nearing completion at the end of the year.

A pipe-borne supply for Kalutara Town was under investigation. A similar supply for Kegalla is also under investigation. The subject of the water supply for Trincomalee appears to have been laid aside for the present.

At present the supply for all the areas is from wells. In the areas where the Health Survey has been completed (*i.e.*, excepting Trincomalee District Unit and Tumpalata East of the Paranakuru Korale Unit) there is a total number of 9,588 wells, most of which are unprotected from pollution. These wells have received 16,228 inspections or 1.5 per well. 37 new wells have been constructed, 122 have been partially improved, and 13 radically improved.

Licensed Trades.—The licensed trades that have been dealt with in the area are bakeries, tea and coffee boutiques, eating houses, aerated water manufactories, meat stalls, fish stalls, vegetable stalls, dairies, laundries, galas and cattle-sheds, soap manufactories, and lime and brick kilns. All trade premises have been inspected and defects rectified as far as was possible. The defects have been in construction and equipment as well as in methods.

The following is a statement of the licensed trades existing in the 3 old Units and the inspections they have received. The number of inspections done in the 2 new Units is not available.

Licensed Trades.	Kalutara Totamune.		Weudawili Hatpattu.		Matara Gravets and Wellaboda Pattu.	
	Existing.	Inspections.	Existing.	Inspections.	Existing.	Inspections.
Bakeries	51	1,184	9	258	4	49
Tea and coffee boutiques	152	2,282	83	1,788	38	827
Eating-houses	57	824	45	987	9	
Aerated water manufactories	3	91	2	48	—	—
Meat stalls	19	2,784	10	941	—	
Fish stalls	20	3,994	6	622	2	222
Vegetable stalls	38	4,558	22	2,044	1	
Dairies	12	237	—	—	—	—
Laundries	6	60	15	301	21	171
Galas	2	18	5	121	1	11
Soap manufactories	—	—	2	3	—	—
Lime and brick kilns	10	308	—	—	1	14

Food Inspections.—Animals for slaughter are inspected at four of the Units. This work is not done at the Matara Gravets Unit as no slaughter takes place there. At the other 4 Units, with the exception of Weudawili hatpattu, the animals are inspected by the Medical Officer of Health. During the year the Medical Officer of Kurunegala has continued to inspect the cattle in that area. There has been some difficulty in getting this function turned over to the Medical Officer of Health but action to do so has been taken.

7,873 heads of cattle were inspected and 7,525 were passed; 5,773 goats were inspected and 5,746 were passed.

Only 3 samples of milk were taken at one Unit, viz., at Weudawili hatpattu. No other samples of food have been dealt with although all foodstuffs have been systematically inspected. Owing to the absence of a pure food Act difficulty is experienced in dealing with an article like milk, for which there is no standard.

Housing.—81,040 inspections of private premises have been done, and 22,883 or 28.2 per cent. have been found defective. Of these 10,008 or 43 per cent. were attended to.

There are 177 schools in the 5 Units and 143 of these have been inspected. In one school at Kalutara totamune a latrine has been installed.

294 applications for new buildings have been received and 245 have been reported on; 301 for additions and alterations and 244 have been reported on; and 97 for certificate of conformity and 109 have been reported on. In the certificates of conformity a larger number than were received during the year have been reported on, the excess being some not reported on at the end of 1928.

Anti-Rat Measures.—No work in this connection has been done. This is a piece of work that should always be borne in mind and as much as is possible done, because with endemic plague in Colombo there is always the possibility of its introduction into other localities in the Island.

Prosecutions.—These are merely recorded here to show people who still level the charge that if a Health Unit is established there will be a large number of prosecutions. The following are the prosecutions entered at the instance of the Medical Officers of Health of the different Health Units:—

Nature of Offence.	Kalutara Totamune.	Weudawili Hatpattu.	Matara Gravets and Wellaboda Pattu.	Paranakuru Korale.	Trincomalee District.	Total.
Failing to provide dust bin	—	—	—	1	—	1
Building without permit	—	9	—	4	—	13
Failing to provide latrine	—	14	4	1	—	19
Trading without licence	—	—	—	3	—	3
Occupation without certificate of conformity	—	2	—	—	—	2
Insanitary premises	—	3	—	—	—	3
Adulterated milk	—	5	—	—	—	5
					Total	46

There have been a total of 46 prosecutions in all the 5 Units. In addition to these the Medical Officer of Health, Health Unit, Kalutara totamune, states that a number of prosecutions have been entered by the Chairman of the Urban District Council and the Chairman of the Sanitary Board for offences against the Housing Ordinance and for trading without licence.

Of the 5 Units 2 have entered no prosecutions; of the remaining 3 the largest number amounting to 32 has been entered at Kurunegala in the Weudawili hatpattu. When this number is compared with the number of prosecutions entered in 1926 and 1927 before the establishment of the Health Unit, viz., 278 and 249, respectively, the difference is striking.

Results.—A total of 1,544 new latrines have been installed in the areas in addition to 2 public and 1 school latrine and 651 latrines have been restored to sanitary type.

Thirty-seven new wells have been constructed, 13 have been improved radically, and 122 partially.

One dairy has been radically improved. This has been in the Kalutara totamune area.

552 food handling establishments have been partially improved and 8 radically.

10,008 premises have been cleared up, 17 cattle sheds rendered sanitary, and 112 nuisances have been abated.

A point to be borne in mind is that the above work was carried out without resorting to prosecutions.

Collateral Matters.

Public Health Nursing.—The greatest need of all the Health Units is Public Health Nursing. Kalutara totamune has 2 nurses, Weudawili hatpattu has 1 nurse, Matara Gravets and Wellaboda pattu 1 nurse, while Paranakuru Korale and Trincomalee District Units have no nurses at all. Even the Units that have nurses are inadequately staffed. Money is available for their appointment but suitable candidates are not forthcoming. Another difficulty with regard to public health nursing that has not been surmounted is the matter of the nurses' mode of travel. Three of them use rickshaws, while one uses a buggy. Rickshaws are satisfactory if work is done in a town within a restricted area, but when long distances have to be travelled the rickshaw as well as the buggy is too slow, with the result that a greater portion of the nurses' time is consumed in travel. What appears as the most suitable conveyance for the nurse doing Health Unit work and having to get out into the rural area for work is a small " baby " car if the nurse herself can drive it.

Maternity and child welfare work is a phase of Health Unit work which appeals to the public and with adequate personnel results can be shown quite soon.

The recruiting of public health nurses from among hospital nurses not proving satisfactory, a scheme for recruiting direct for the work and for giving them the necessary training is before Government at the present time. As stated earlier the training of these nurses has been shifted from the Kalutara Health Unit to the Dehiwala-Mount Lavinia Urban District Council area.

Community Organizations.—The services of community organizations in child welfare work have been found necessary. Such organizations called Social Service Leagues are functioning successfully at Kalutara and Beruwala in the Kalutara Totamune Unit, at Kurunegala in the Weudawili Hatpattu Unit, and at Matara in the Matara Gravets and Wellaboda Pattu Unit. During the year a Child Welfare League was organized at Kegalla in the Paranakuru Korale Unit; at Trincomalee a Health League was already functioning when the Unit there was established.

Medical Society.—The Kalutara Totamune Medical Society does not appear to have exerted itself very much during the year.

The Kurunegala Medical Society was established in the Weudawili Hatpattu Unit during the year.

Proposals for 1930.—During this year it is proposed to organize one Health Unit. It has been assigned to the Jaffna Maniagar's Division which includes the Urban District Council area of Jaffna, as the result of repeated requests by the Urban District Council. At the time of writing (April, 1930), opposition to its establishment having been shown it has been recommended to Government that the Unit be not established here, as opposition is not the atmosphere in which a Health Unit which is a co-operative undertaking can thrive best. Other areas will be investigated and a decision arrived at later.

Government is also being asked to provide for another Health Unit during 1930-31 and to make provision for the extension of the work in the Weudawili Hatpattu and Matara Gravets Health Units.

Conclusion.—That Health Unit work is sound and quite suitable to our needs becomes more and more apparent. It is a method of organization of health work which is based on co-operation and which offers an opportunity for individuals as well as community organizations to take a hand in the work. The spirit of the work is service.

S. F. CHELLAPPAH,
Senior Medical Officer of Health.

May 6, 1930.

5.—Report of the Sanitary Engineer for the Year 1929.

Staff.—The staff consists of 1 Sanitary Engineer loaned by the International Health Division of the Rockefeller Foundation, 1 Deputy Sanitary Engineer, 1 Chief Assistant Sanitary Engineer, 3 Assistant Sanitary Engineers, 1 Head Overseer, Grade II., 3 Draughtsmen, 2 Clerks, 1 Telephone Operator, 1 Office peon, 1 Office cooly, and 24 Survey coolies.

Mr. H. N. Worth, Deputy Sanitary Engineer, returned from study leave on September 30 and resumed duties. Mr. W. G. McCarthy, District Engineer, Public Works Department, seconded to this division for duty, was transferred to the division of Sanitary Engineering as Chief Assistant Sanitary Engineer.

Mr. K. Subrahmanyam assumed duties as Assistant Sanitary Engineer (one year's probation) on March, 1929.

Mr. P. David assumed duties as Assistant Sanitary Engineer (three years' probation) on February, 1929.

Mr. R. Lopiesz, Draughtsman, was promoted to the new post of Overseer, Grade II.

Mr. C. D. Fernando, Senior Draughtsman, retired, and Mr. D. J. Abeywardene and Mr. M. P. E. Cooray were appointed draughtsmen on one year's probation.

Organization.—The Sanitary Engineers are now specializing in the different phases of engineering for which they show the most aptitude. It is the aim of the division to have specialized engineers for certain branches of work, but the specialized men are to remain in sufficiently close touch with all phases of the work for them to be able to assume the duties of any officer who may be absent from his post.

Training of Staff.—The training of the staff continues, but is now specialized for certain of the engineers. Laboratory work was discontinued due to lack of space.

Malaria.—Anti-malaria work in the old centres has now reacned the stage where success will depend on systematizing the work, perfecting the personnel, and an adequate Mosquito Ordinance.

The Medical Entomologist and the Sanitary Engineer carried out extensive experiments with different types of Paris green and various diluents. The results were corroborated by the work in the field.

Lime is to replace coir dust as a diluent, because it is cheaper (counting transportation charges) and more efficient. This division believes that after many experiments a satisfactory sifter and method of drying have been evolved. The Sanitary Engineering Division has undertaken the task of systematizing the shipping of stores, and has established a shop to repair equipment.

The question of perfecting the personnel is proving rather difficult. The officers in charge of anti-malaria work in each station must have pride in their work, must have personal contact with every part of the work, and use their own reasoning power to solve small difficulties.

Lack of a Mosquito Ordinance nullifies much of the effect of the field work and imposes an additional financial burden on Government.

Surveys are being carried out in two new centres, Puttalam and Badulla. These two towns present two different types of problems.

Anti-Malaria Drainage.—The anti-malaria drainage of Trincomalee is nearly finished.

Construction of the proposed anti-malaria drainage schemes in Kurunegala and Anuradhapura has not been started.

General Drainage.—Complete plans for drainage of Buller's road section in Colombo and the Bandarawela esplanade have been submitted.

Field investigations are being carried out for drainage schemes of Negombo and the Tea Research Institute.

The method of soil surveys for drainage is somewhat more extensive than generally used. For built surface drains the soil survey is not so detailed as for subsoil drainage, but it has been found that in certain areas of the Island the results of a soil survey have altered considerably the original design of the surface drains.

Water Supplies.—The reconstruction of the Haputale water supply has been practically finished and the chlorinator for this plant has arrived.

The plans for the improvement of the Dikoya hospital water supply are being made and a chlorinator is to be installed.

During the recent drought the water supply of Kandy became exhausted and it became necessary to use the contaminated water from Kandy Lake. The Chloronome was tapped into the main and after the adjustment of the chlorine dose, the water from Kandy Lake was clearer and bacteriologically purer than from the reservoir. There was no smell or taste of chlorine. Chlorination by manual control machines was introduced into the Colony less than 2 years ago and it has demonstrated its value for the sterilization of tropical waters. Some of the water investigations made were at Mandapam Camp, Puttalam, Dambulla, Ragama, Tea Research Institute, and Nawalapitiya.

Plans have been finished for the sterilization of the water for the new Galle Face baths.

Emphasis is again laid on the importance of regulations for water supplies. It is the opinion of this divsion that it is a positive menace to public health to construct water supplies without adequate provision for making the water potable, without proper training of the plant personnel and without proper supervision and records.

Attention is invited to the indiscriminate manufacture of aerated waters. Without any effective control in many of the small towns, aerated waters are manufactured from contaminated waters.

Detailed experiments with regard to the feasibility of tube wells for irrigation purposes were carried out. A separate report has been submitted.

Sewage and Latrines.—Experiments are being carried out with regard to the suitability of bored latrines for different types of soil. Attention has been paid principally to soils with a more or less high water table. Depths of holes have been determined by height of water table and hardness of strata. In every case the hole has been bored to a depth that will ensure that there is some water in the hole during the whole year.

The depths of the holes vary from 7 ft. to 20 ft. and the type of soil from light sand to cabook. All types of soil were encountered. Boring in some areas was stopped as the bottom sand was so loose that it constantly filled the bottom part of the hole.

The bore holes were fitted with reinforced concrete squatting plate 2 ft. 6 in. square with holes 1 ft. 4 in. long and tapered from 9 in. to 7 in. or holes 14 in. long and tapered from 7 in. to 5¼ in. The smaller holes are the more satisfactory. It was found that a heavy oil should be poured into the holes to prevent mosquito breeding. Eleven-bored latrines were installed in the Colombo District, 10 in Kalutara and 10 in Gampaha.

Users report that the bored latrines are far more satisfactory than the ordinary pit latrine as there is no smell and the latrine can be placed closer to the dwelling. A complete report will be submitted when all data have been gathered and correlated.

The cost of boring per foot varied from 11 cents for soft earth to 60 cents for very hard laterite. No attempt has been made to investigate the possibility of contamination of the wells from the latrines, in view of the fact that the surface surrounding the wells is contaminated.

An additional 10 bored latrines will be installed and regular inspections will be made.

A sewage system has been worked out for Ratmalana and this division is now designing an activated sludge plant for the same place. Very many requests for type plans of septic tanks have been received.

Desiccating Mills.—Experiments have been conducted for the disposal of waste water from desiccating mills and an experimental plant has been installed by the Municipal Analyst at Ja-ela.

Office.—During the year the draughting office turned out 428 cross sections, 130 long sections, 4 detailed enlargements of maps, 118 sheets of level plottings, and 158 tracings. Work was also done for the Medical Entomologist and other members of the Department.

The activities of this Division were distributed over the following places during the year:—Mandapam Camp, Trincomalee, Anuradhapura, Puttalam, Dambulla, Chilaw, Kurunegala, Kandy, Negombo, Colombo, Kalutara, Nuwara Eliya, Badulla, Diyatalawa, Kegalla, Polgahawela, Talawakele, Nawalapitiya, Ramboda, Bandarawela, Haputale, Gampaha, Ratnapura, Panadure, Ja-ela. In the different towns noted the work consisted of malaria, water supplies, sewage or drainage, and often a combination of the several types of work.

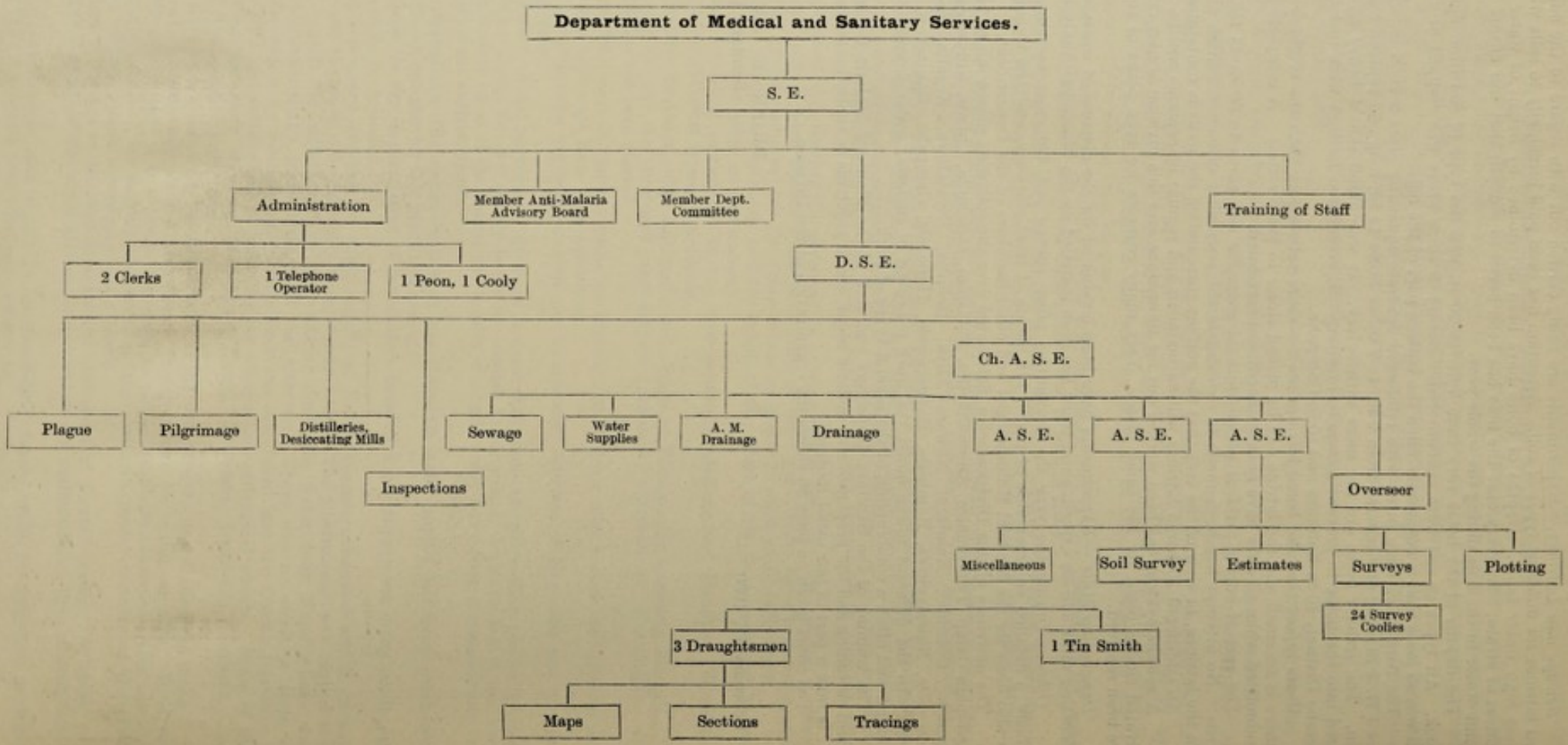
The training of the Sanitary Inspectors and staff of the Planters' Malaria Control Scheme in field sketching and the preparation of malaria maps, small problems in septic tanks, incineration, &c., is now a part of our usual routine.

The chart given on page 86 shows the organization of the Division.

BRIAN R. DYER,
Sanitary Engineer.

February 11, 1930.

ORGANIZATION CHART OF THE DIVISION OF SANITARY ENGINEERING, 1929.



Tables and Returns.

The following tables and returns are annexed:—

Table I.—Return of Statistics of Population for the year.
Table II.—(*a*) to (*f*)—Meteorological Returns.
Table III.—Returns of Diseases (Out-Patients).
Table IV.—Charts:—

(*a*) Chart showing the general systemic and preventable diseases treated at the Government hospitals during the year 1929.
(*b*) Chart showing deaths from general systemic and preventable diseases treated at the Government hospitals during the year 1929.
(*c*) Chart showing cases of infectious diseases treated at the Government hospitals during the year 1929.
(*d*) Chart showing deaths from infectious diseases treated at the Government hospitals during the year 1929.

Hospital Returns (as given in the Ceylon Blue Book for 1929).

(1) Details regarding hospitals (patients, attendants, &c.,) in each Province.
(2*a*) Return of diseases—cases treated, according to districts.
(2*b*) Return of diseases—cases treated, according to diseases.
(3) Special diseases.
(4) Water supply, &c., at hospitals.

TABLE I.

Return of Statistics of Population (estimated) for the Year 1929.

	Europeans.	Ceylonese, including Other Races than Europeans and Indian Immigrants.	Indian Immigrants on Scheduled Estates.	Total.
Number of inhabitants on December 31, 1928	8,801	4,695,580	717,480	5,421,861
Number of births during the year 1929	147	172,796	25,064	198,007
Number of deaths during the year 1929	75	116,819	18,381	135,275
Number of immigrants during the year 1929	—	—	105,095	105,095
Number of emigrants during the year 1929	—	—	101,228	101,228
Number of inhabitants on December 31, 1929	8,873*	4,738,531	731,177	5,478,581
Increase of population	72	42,951	13,697	56,720

* In the estimation of the European population for 1929 emigration figures—which were not available—have not been taken into account.

TABLE II. (*a*).

Colombo.

Meteorological Return for the Year 1929.

Month.	Temperature.					Rainfall.	Degree of Humidity.		Wind.		
	Mean Solar Maximum.	Mean Minimum on Grass.	Mean Shade Maximum.	Mean Shade Minimum.	Mean Temperature.	Amount in Inches.	Means of 9.30 A.M. and 3.30 P.M.	Means of Max. and Min.	General Directions.		Average Daily Mileage.
	°	°	°	°	°	in.	Per Cent.	Per Cent.	A.M.	P.M.	Miles.
January	153.9	66.4	84.9	70.7	77.8	6.61	70	79	NE	WNW	102
February	156.2	68.1	86.4	71.7	79.0	1.78	72	78	NE	W	96
March	153.3	70.1	87.1	73.5	80.3	6.69	72	80	Var.	W	93
April	151.5	73.3	87.3	74.5	80.9	18.66	75	83	Var.	WSW	89
May	147.0	75.6	86.8	77.5	82.2	15.46	78	81	SW	SW	140
June	146.0	74.9	85.2	77.1	81.2	9.62	78	81	SW	SW	163
July	145.0	74.2	84.7	77.1	80.9	2.00	78	80	SW	WSW	159
August	147.7	74.0	85.2	76.6	80.9	0.31	75	78	SW	SW	156
September	149.6	74.1	85.8	76.3	81.0	10.02	75	80	SW	WSW	147
October	151.2	71.7	85.5	74.5	80.0	4.74	74	81	WSW	WSW	122
November	149.2	70.9	85.1	73.2	79.2	9.32	78	84	Var.	Var.	101
December	147.8	68.1	85.2	71.2	78.2	5.01	74	80	NE	NW	101
						Total.					
Mean	149.9	71.8	85.8	74.5	80.1	90.22	75	80			122

TABLE II. (*b*).

Jaffna.

Meteorological Return for the Year 1929.

Month.	Temperature. Mean Solar Maximum. °	Mean Minimum on Grass. °	Mean Shade Maximum. °	Mean Shade Minimum. °	Mean Temperature. °	Rainfall. Amount in Inches. in.	Degree of Humidity. Means of 9.30 A.M. and 3.30 P.M. %	Means of Max. and Min. %	Wind. General Directions. A.M.	P.M.	Average Daily Mileage. Miles.
January	150.6	62.9	83.4	71.5	77.4	1.01	74	82	E	ENE	82
February	154.3	64.3	85.7	70.8	78.2	0.00	64	76	E	ENE	79
March	158.6	70.2	88.3	74.7	81.5	0.00	70	74	ESE	NE	109
April	154.8	75.9	88.8	78.3	83.6	6.08	79	76	SE	Var.	150
May	148.9	79.4	87.1	81.2	84.2	0.71	84	84	SW	SW	363
June	148.3	77.5	85.9	79.7	82.8	0.17	82	82	SW	SW	367
July	—	77.7	85.6	79.1	82.4	0.01	80	80	SW	SW	328
August	—	77.4	85.9	78.2	82.0	0.12	84	82	SSW	SSW	256
September	153.1	76.2	85.4	77.5	81.4	3.64	82	82	SW	SW	258
October	—	75.7	85.0	77.6	81.3	6.92	81	81	SSW	SW	197
November	—	70.5	83.7	74.5	79.1	17.46	83	85	Var.	N	51
December	—	64.5	82.4	72.3	77.4	11.82	79	83	ENE	NE	50
						Total.					
Mean	152.7	72.7	85.6	76.3	80.9	47.94	79	81			191

TABLE II. (*c*).

Galle.

Meteorological Return for the Year 1929.

Month.	Temperature. Mean Solar Maximum. °	Mean Minimum on Grass. °	Mean Shade Maximum. °	Mean Shade Minimum. °	Mean Temperature. °	Rainfall. Amount in Inches. in.	Degree of Humidity. Means of 9.30 A.M. and 3.30 P.M. %	Means of Max. and Min. %	Winds. General Directions. A.M.	P.M.	Average Daily Mileage. Miles.
January	—	69.5	85.3	72.0	78.6	1.25	72	78	NE	Var.	125
February	—	71.7	85.6	73.2	79.4	5.14	76	80	Var.	S & W	108
March	—	72.6	86.9	74.8	80.8	5.08	75	79	Var.	Var.	108
April	—	74.6	86.2	75.0	80.6	9.22	81	84	Var.	Var.	118
May	—	76.8	85.1	78.1	81.6	4.69	83	84	W	W	210
June	—	75.5	83.9	76.8	80.4	6.62	85	82	W	WNW	294
July	—	75.2	83.1	76.5	79.8	3.99	86	84	WNW	WNW	272
August	—	75.5	82.3	76.1	79.2	2.48	87	86	WNW	WNW	204
September	—	75.2	82.9	76.0	79.4	13.81	84	85	WNW	WNW	237
October	—	73.8	84.0	75.5	79.8	6.40	80	80	W	W	181
November	—	72.6	83.1	73.5	78.3	19.27	86	88	Var.	Var.	103
December	—	70.5	83.7	72.4	78.0	8.59	82	85	Var.	Var.	104
						Total.					
Mean	—	73.6	84.3	75.0	79.7	86.54	81	83			172

TABLE II. (*d*).

Nuwara Eliya.

Meteorological Return for the Year 1929.

Month.	Temperature. Mean Solar Maximum. °	Mean Minimum on Grass. °	Mean Shade Maximum. °	Mean Shade Minimum. °	Mean Temperature. °	Rainfall. Amount in Inches. in.	Degree of Humidity. Means of 9.30 A.M. and 3.30 P.M. %	Means of Max. and Min. %
January	—	35.4	69.2	40.7	55.0	0.22	59	74
February	—	37.6	69.5	42.4	56.0	2.52	56	74
March	—	43.2	70.2	47.6	58.9	6.02	70	78
April	—	47.1	70.0	50.4	60.2	9.68	76	80
May	—	49.8	70.9	53.1	62.0	7.43	74	82
June	—	54.0	65.3	55.7	60.4	9.89	84	86
July	—	52.6	64.7	54.8	59.8	9.45	84	86
August	—	49.5	66.6	52.8	59.7	3.08	79	82
September	—	49.6	67.1	52.8	60.0	10.96	83	84
October	—	45.7	68.9	49.3	59.1	2.05	72	80
November	—	47.5	68.6	50.4	59.5	10.16	78	82
December	—	45.6	66.8	48.8	57.8	10.51	76	82
						Total.		
Mean	—	46.5	68.2	49.9	59.0	81.97	74	81

TABLE II. (*e*).

Kandy.

Meteorological Return for the Year 1929.

Month.	Temperature. Mean Solar Maximum.	Mean Minimum on Grass.	Mean Shade Maximum.	Mean Shade Minimum.	Mean Temperature.	Rainfall. Amount in Inches.	Degree of Humidity. Means of 9.30 A.M. and 3.30 P.M.	Means of Max. and Min.
	°	°	°	°	°	in.	%	%
January	—	61.0	85.0	64.8	74.9	0.49	58	70
February	—	60.7	87.3	65.5	76.4	0.42	54	66
March	—	65.9	87.4	68.8	78.1	4.78	67	72
April	—	68.1	86.7	69.1	77.9	11.77	77	80
May	—	69.3	87.0	70.9	79.0	2.44	72	79
June	—	68.9	82.5	70.8	76.6	11.89	76	80
July	—	68.6	81.4	71.0	76.2	7.25	76	79
August	—	66.5	83.1	69.9	76.5	1.66	70	76
September	—	67.0	84.3	69.7	77.0	6.52	72	78
October	—	65.0	85.4	67.3	76.4	2.67	66	76
November	—	66.7	83.9	68.2	76.0	12.51	76	80
December	—	64.4	82 4	67.0	74.7	7.43	70	78
						Total.		
Mean	—	66.0	84.7	68.6	76.6	69.83	70	76

TABLE II. (*f*).

Batticaloa.

Meteorological Return for the Year 1929.

Month.	Temperature. Mean Solar Maximum.	Mean Minimum on Grass.	Mean Shade Maximum.	Mean Shade Minimum.	Mean Temperature.	Rainfall. Amount in Inches.	Degree of Humidity. Means of 9.30 A.M. and 3.30 P.M.	Means of Max. and Min.	Wind. General Directions A.M.	General Directions P.M.	Average Daily Mileage.
	°	°	°	°	°	in.	%	%			Miles.
January	146.0	69.2	82.7	73.1	77.9	0.44	76	82	Var.	NE	174
February	145.2	70.4	82.7	73.0	77.8	7.33	76	82	WNW & NE	NE	180
March	149.3	73.3	85.1	75.0	80.0	2.66	80	84	Var.	NE	176
April	148.2	73.5	87.5	75.4	81.4	3.92	76	82	Var.	E	135
May	143.8	75.0	90.2	76.9	83.5	0.38	74	78	SSW	E	128
June	147.0	73.1	92.4	77.0	84.7	0.41	62	67	SSW	ESE	113
July	149.4	71.9	93.6	76.1	84.8	0.06	58	63	W	ESE	149
August	148.7	71.7	90.7	75.2	83.0	2.52	64	69	WSW	ESE	140
September	146.7	72.0	89.3	74.9	82.1	7.11	68	74	SW	ESE	145
October	144.6	72.7	87.0	74.5	80.8	4.14	72	78	Var.	E	134
November	143.9	72.4	84.0	73.6	78.8	13.12	83	86	W	Var.	137
December	140.0	71.6	82.0	72.7	77.4	17.32	84	87	W	NE	171
						Total.					
Mean	146.1	72.2	87.3	74.8	81.0	59.41	73	78	—	—	149

TABLE III.

Return of Diseases (Out-Patients).

I.—INFECTIOUS DISEASES.

Enteric Fevers	599
Fevers of obscure causation	5,862
Malarial Fevers	1,532,500
Cerebral Malaria	1,183
Malarial Cachexia	95,685
Malarial Cirrhosis	218
Smallpox	—
Measles	638
Whooping Cough	1,158
Diphtheria	2,267
Influenza	107,742
Mumps	310
Cholera	—
Dysentery (all forms)	36,994
Amoebic Hepatitis and Liver Abscess	141
Plague	—
Leprosy	10
Erysipelas	161
Chickenpox	117
Dengue	73
Yaws	24,841
Hydrophobia	1,482
Tetanus	31
Pulmonary Tuberculosis	1,795
Other Tubercular Diseases	507
Syphilis (all varieties)	4,911
Soft Chancres	155
Gonorrhoea (acute and chronic)	12,087
Gonorrhoeal Complications (arthritis, rheumatism, &c.)	4,919
Filarial Diseases	549
Acute Rheumatic Fever	1,760
Puerperal Fever	2,450
Other Infectious Diseases	14,426

II.—GENERAL DISEASES.

Malignant Tumours—Carcinoma, Sarcoma	55
Non-malignant Tumours	462
Chronic Rheumatism	196,628
Arthritis (acute and chronic)	5,736
Diabetes Mellitus	579
Anaemias (of unknown causation)	19,431
Goitre	31
Leukaemias	2,410
Acute Poisonings	127
Other general diseases	39,778

III.—LOCAL DISEASES.

Diseases of the Nervous System		22,621
Do.	Eye	63,649
Do.	Ear	33,940
Do.	Heart and Blood Vessels	4,322
Do.	Lungs and Pleura	149,865
Do.	Gastro-intestinal Tract—	238,492
	Sprue	58,384
	Ankylostomiasis	178,041
	Other Intestinal Parasites	278,066
Do.	Liver and Gall Bladder	4,924
Do.	Urinary System	16,805
Do.	Generative System	24,168
Do.	Spleen	7,625
Do.	Lymphatic System	5,478
Do.	Skin and Cellular Tissues	140,090
Do.	Bones and Joints	4,026
Ulcers		161,030
General Injuries		21,144
Local Injuries		89,474
Other Local diseases		25,963

TABLE IVA

CHART SHOWING
THE GENERAL SYSTEMIC AND PREVENTABLE DISEASES
treated at the GOVERNMENT HOSPITALS during the Year

1929

Total Cases — 210,527

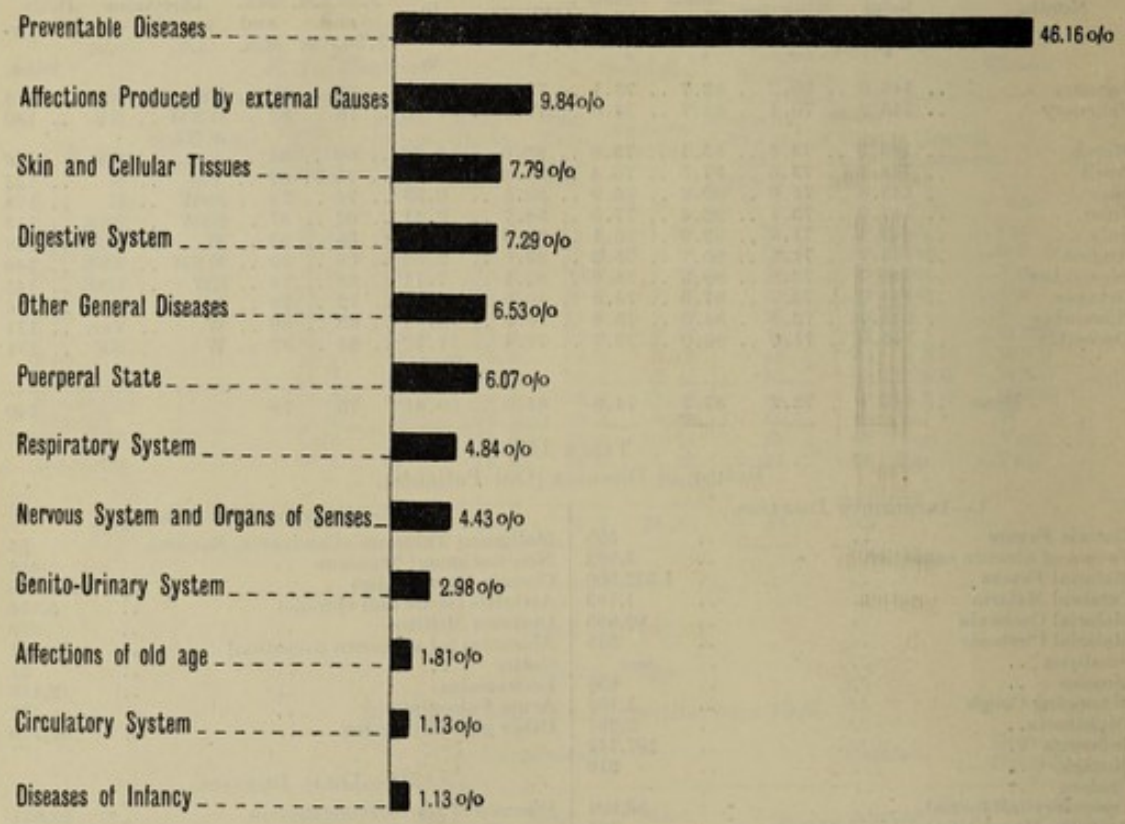


TABLE IVB

CHART SHOWING DEATHS
FROM GENERAL SYSTEMIC AND PREVENTABLE DISEASES

treated at the GOVERNMENT HOSPITALS during the Year

1929

Total Deaths — 13,645

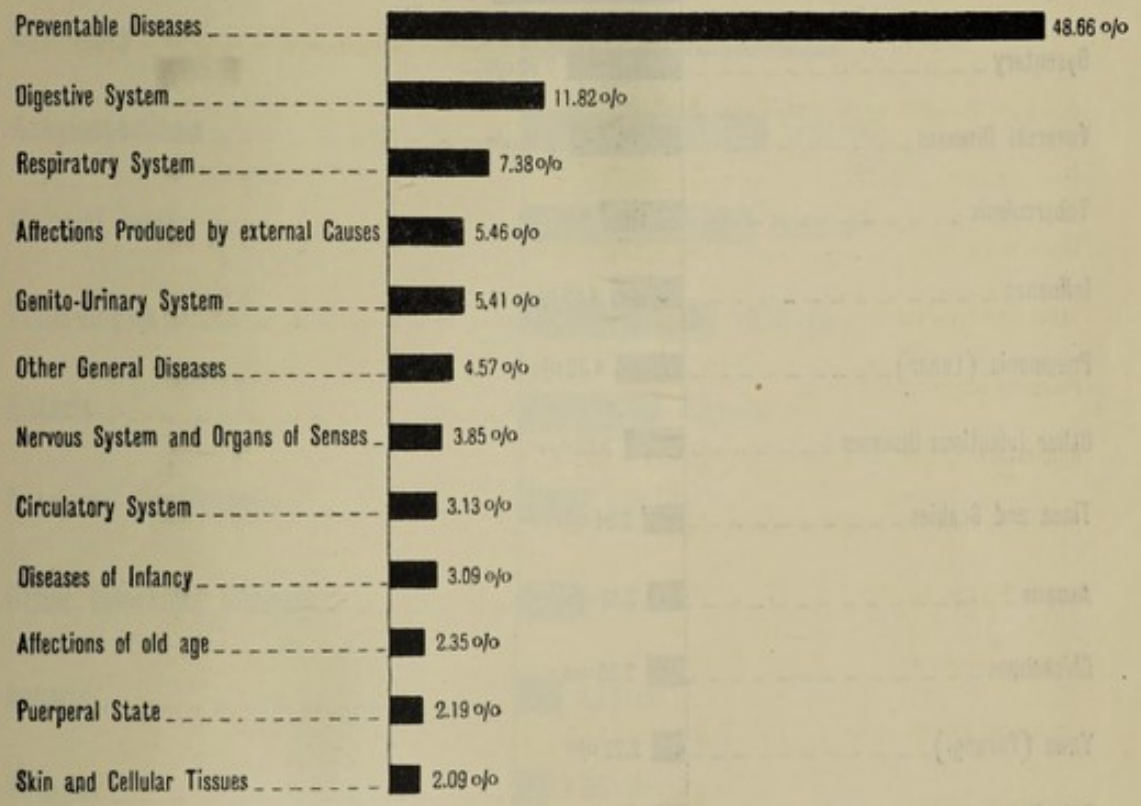


TABLE IVc

CHART SHOWING
CASES OF INFECTIOUS DISEASES
treated at the GOVERNMENT HOSPITALS During the Year
1929

Total Cases — 95,176

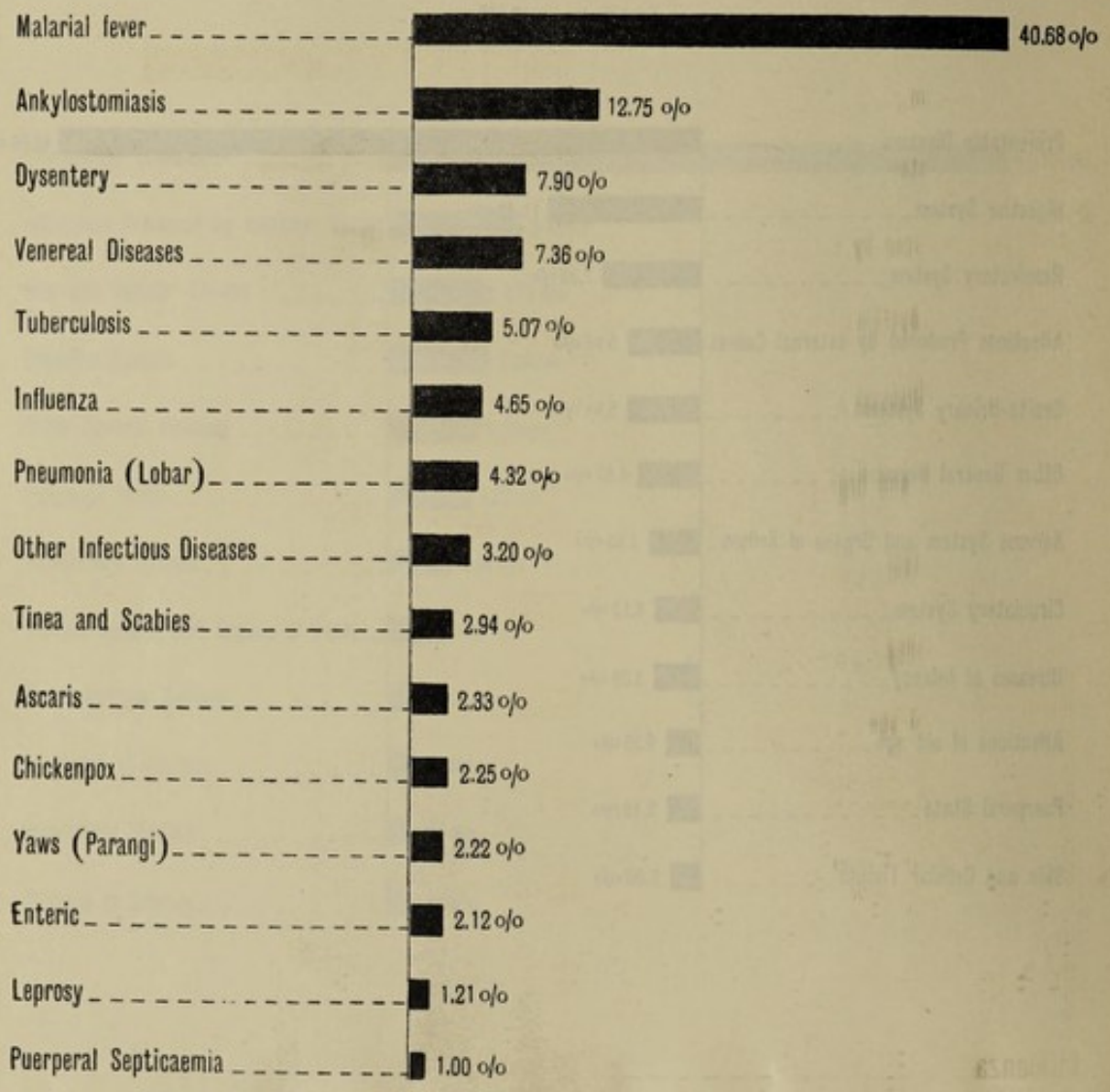
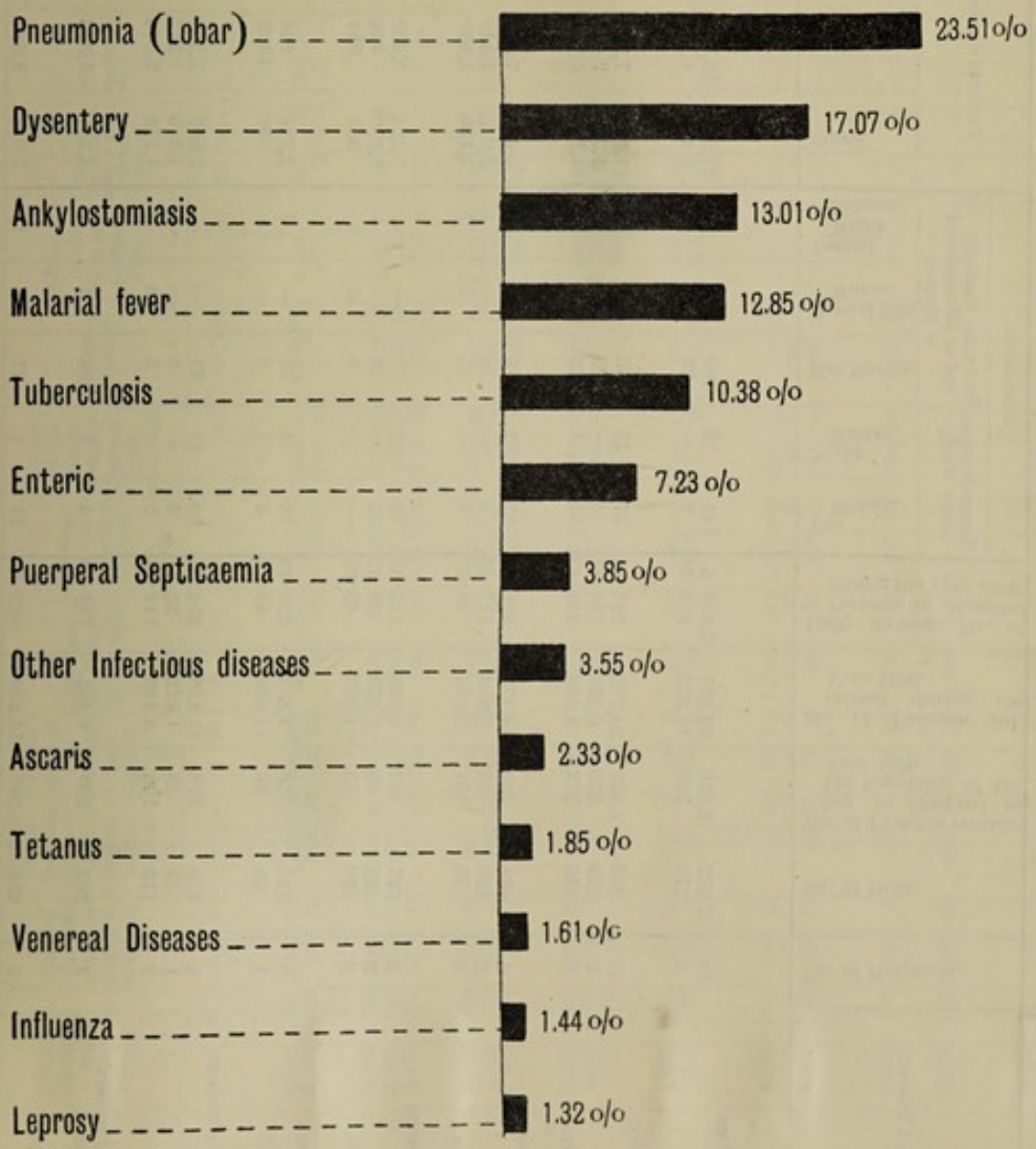


TABLE IVD

CHART SHOWING
DEATHS FROM INFECTIOUS DISEASES
treated at the GOVERNMENT HOSPITALS during the Year
1929

Total Deaths—6,526



HOSPITAL RETURNS.

I.—Hospital Returns.

Province and District.	No. of Hospitals.	No. of Beds.	No. of Patients remaining in Hospital at the beginning of the Year 1929.	No. of Patients Admitted during the Year 1929.	Daily Average No. of Patients in Hospital during the Year 1929.	Attendants.				Patients discharged.			No. of Patients who died in 1929.	Average stay of Patients, who			Specify the Longest Period for which any one Inmate has stayed.
						Nurses doing no other Work.		Servants Partially or not at all employed as Nurses.									
						Day Nurses.	Night Nurses.	Not Nurses.	Partial Day Nurses.	Partial Night Nurses.	Cured.	Relieved.	Not improved.	Died in 1929.	Were discharged in 1929.	Were remaining in 1929.	
Western Province.																	
Colombo ..	19	2,972	2,632	49,527	2,833·6	184	16	300	236	70	27,041	13,328	2,211	4,321	27·27	34·49	46·97	1,900
Kalutara ..	5	379	300	10,558	313·36	9	—	22	24	2	5,450	4,132	219	706	12·48	12·80	10·90	94
Central Province.																		
Kandy ..	13	986	1,035	24,702	981·91	57	12	106	14	5	11,304	7,996	1,791	1,650	11·75	15·58	15·19	365
Matale ..	2	229	255	6,162	194·82	4	—	23	—	5	3,308	2,427	80	380	11·80	10·93	12·20	212
Nuwara Eliya ..	8	446	382	9,556	441·47	14	1	33	—	2	4,106	4,744	166	584	10·79	14·46	15·23	281
Southern Province.																		
Galle ..	6	474	450	14,175	420·81	27	2	58	2	1	4,856	7,854	666	800	11·62	16·56	13·45	158
Matara ..	2	130	97	3,994	117·13	4	—	14	—	1	2,078	1,540	54	272	10·88	10·43	10·37	122
Hambantota ..	3	75	101	3,074	84·57	6	—	15	3	1	1,135	1,656	39	190	11·02	12·73	12·68	136
Northern Province.																		
Jaffna ..	5	297	182	7,046	215·52	10	2	35	—	—	3,134	3,452	157	265	8·36	13·7	10·18	107
Mannar ..	3	128	66	2,578	69·82	2	—	26	—	—	1,877	444	64	177	9·33	12·67	11·04	90
Mullaittivu ..	2	90	53	1,637	45·60	—	—	6	10	—	952	581	24	78	10·23	9·27	7·33	94
Eastern Province.																		
Batticaloa ..	5	350	256	3,511	257·45	16	4	21	—	1	2,114	946	147	183	239·12	363·23	117·57	2,959
Trincomalee ..	1	58	38	1,689	42·38	2	1	9	—	—	569	1003	43	74	10·56	8·03	5·25	227
North-Western Province.																		
Kurunegala ..	4	356	378	11,420	354·95	10	11	37	—	—	2,897	7,294	279	938	11·30	11·67	10·56	199
Puttalam ..	1	58	53	1,422	25·71	2	—	8	—	—	1,170	112	4	141	7·25	12·94	11·26	105
Chilaw ..	2	115	108	3,466	114·34	2	—	3	14	2	1,118	2,044	58	259	12·33	12·10	12·72	153
North-Central Province.																		
Anuradhapura ..	4	202	207	6,485	158·83	4	1	28	1	1	4,757	1,585	74	384	5·37	9·83	9·48	107
Province of Uva.																		
Badulla ..	10	655	546	15,809	489·15	14	1	37	25	13	5,014	9,687	336	859	9·88	8·35	12·04	365
Province of Sabaragamuwa.																		
Ratnapura ..	7	512	437	15,953	449·45	12	1	54	—	4	8,811	6,001	162	976	8·50	9·10	9·22	213
Kegalla ..	6	531	374	14,891	457·32	15	—	31	17	26	7,599	6,241	272	722	9·29	11·38	11·73	684

II.—Cases treated.

(a) According to Districts.

Province and District.	Epidemic, Endemic, and Infectious Diseases. 1		General Diseases not mentioned in column 1. 2		Affections of the Nervous System and Organs of the Senses. 3		Affections of the Circulatory System. 4		Affections of the Respiratory System. 5		Diseases of the Digestive System. 6		Diseases of the Genito-Urinary System (non-venereal). 7		Puerperal State. 8		Affections of the Skin and Cellular Tissues. 9		Diseases of Bones and Organs of Locomotion (other than Tuberculosis). 10		Malformations. 11		Diseases of Infancy. 12		Affections of Old Age. 13		Affections produced by External Causes. 14		Ill-defined Diseases. 15		Total.	
CEYLON.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.
WESTERN PROVINCE.																																
Colombo ..	16,553	1,151	2,343	158	3,351	114	1090	169	4,581	857	7,007	791	1,582	169	6,915	273	2,528	72	343	8	37	1	673	129	546	102	4,374	302	236	25	52,159	4,321
Kalutara ..	2,880	188	609	13	227	25	75	12	768	124	1,768	138	340	40	787	41	873	14	25	—	1	—	257	37	434	25	1,793	46	21	3	10,858	706
CENTRAL PROVINCE.																																
Kandy ..	6,739	365	1,262	37	1,766	85	261	52	1,548	285	3,735	337	920	113	1,375	67	2,969	40	62	2	2	—	125	36	151	20	2,842	84	1,980	127	25,737	1,650
Matale ..	2,781	114	368	22	103	8	19	3	327	86	851	75	109	18	145	13	898	14	9	—	—	—	225	8	13	2	552	10	17	7	6,417	380
Nuwara Eliya ..	2,455	102	1,372	39	498	33	104	21	921	144	1,509	106	327	53	288	19	914	10	37	—	1	—	43	8	275	9	929	31	265	9	9,938	584
SOUTHERN PROVINCE.																																
Galle ..	3,192	225	1,673	65	893	41	190	28	806	131	2,471	143	613	25	777	40	1,970	26	81	—	3	—	88	6	512	20	1,339	50	17	—	14,625	800
Matara ..	1,176	66	119	3	129	17	54	9	247	52	661	45	172	13	223	18	418	8	44	—	1	—	8	2	36	4	598	29	205	6	4,091	272
Hambantota ..	1,403	46	89	5	63	7	27	3	244	55	262	15	100	3	83	12	406	11	12	—	—	—	21	10	26	6	393	15	46	2	3,175	190
NORTHERN PROVINCE.																																
Jaffna ..	2,736	60	491	22	436	13	77	7	377	45	910	45	228	13	315	10	626	15	30	—	1	—	18	7	103	11	872	14	8	3	7,228	265
Mannar ..	1,415	60	36	1	32	2	18	7	245	54	247	22	63	3	68	3	172	3	18	—	—	—	31	6	10	9	125	2	164	5	2,644	177
Mullaittivu ..	821	25	46	—	143	9	12	3	123	19	207	14	28	2	40	3	165	1	1	—	—	—	—	—	4	—	99	2	1	—	1,690	78
EASTERN PROVINCE.																																
Batticaloa ..	1,590	67	218	12	155	1	13	1	227	38	409	33	100	11	45	1	609	1	15	—	—	—	5	1	50	2	326	12	5	3	3,767	183
Trincomalee ..	810	12	47	2	21	2	20	3	90	19	226	24	27	2	22	—	203	2	11	1	—	—	—	—	59	6	191	1	—	—	1,727	74
NORTH-WESTERN PROVINCE.																																
Kurunegala ..	4,126	214	334	13	183	23	64	21	879	261	1,517	189	405	44	376	29	1,907	25	34	—	—	—	215	57	135	19	1,336	38	287	5	11,798	938
Puttalam ..	716	47	13	—	18	2	9	3	144	40	106	16	38	9	32	5	189	4	5	—	—	—	2	2	52	6	150	6	1	1	1,475	141
Chilaw ..	1,064	56	230	19	63	11	18	4	235	62	429	46	106	19	289	12	551	7	1	—	—	—	49	—	62	12	463	9	14	2	3,574	259
NORTH-CENTRAL PROVINCE.																																
Anuradhapura ..	3,613	141	154	2	105	7	49	14	481	99	807	40	106	10	210	10	470	8	37	3	—	—	51	17	272	24	333	9	4	—	6,692	384
PROVINCE OF UVA.																																
Badulla ..	6,229	272	1,062	38	685	29	118	16	1,350	177	2,287	146	423	73	337	29	1,975	11	43	1	—	—	109	28	242	11	1,263	28	229	—	16,355	859
PROVINCE OF SABARAGAMUWA.																																
Ratnapura ..	6,985	274	979	39	492	32	103	11	1,101	165	2,621	259	511	75	520	33	1,635	13	39	3	1	—	229	36	108	13	1,000	15	66	8	16,390	976
Kegalla ..	4,124	154	1,262	20	379	53	101	19	1,148	156	2,407	131	505	47	869	38	1,569	19	54	1	2	—	235	19	713	19	1,780	45	117	1	15,265	722

C = The number of Cases treated in Hospital.

D = The number of Deaths in Hospital.

II.—Cases treated—*contd.*

(*b*) According to Diseases.

Diseases.	* Remaining in Hospital at end of 1928.	Admissions in 1929.	Deaths in 1929.	† Total Cases treated in 1929.	‡ Remaining in Hospital at end of 1929.
I.—Epidemic, Endemic, and Infectious Diseases.					
Enteric Group—					
(*a*) Typhoid Fever	74	1,302	307	1,376	84
(*b*) Paratyphoid A.	2	115	25	117	—
(*c*) Paratyphoid B.	—	57	10	57	—
(*d*) Type not defined	36	424	130	460	39
Relapsing Fever	1	135	9	136	21
Undulant Fever	—	4	2	4	—
Malaria—					
(*a*) Tertian	816	28,978	349	29,794	897
(*b*) Quartan	206	3,175	61	3,381	57
(*c*) Aestivo-autumnal	15	540	10	555	5
(*d*) Cerebral Malaria	3	516	176	519	5
(*e*) Cachexia	83	3,871	217	3,954	119
(*f*) Remittent	—	511	26	511	21
Smallpox	1	6	1	7	—
Measles	36	445	1	481	5
Whooping Cough	4	184	8	188	6
Diphtheria	—	35	11	35	—
Influenza	98	4,326	94	4,424	186
Mumps	21	387	2	408	11
Cholera	4	15	8	19	—
Dysentery—					
(*a*) Amoebic	137	4,427	674	4,564	204
(*b*) Bacillary	56	1,274	197	1,330	35
(*c*) Undefined or due to other causes	57	1,576	243	1,633	60
Plague—					
(*a*) Bubonic	—	26	21	26	—
(*b*) Pneumonic	—	2	2	2	—
(*c*) Septicæmic	—	3	3	3	—
(*d*) Undefined	—	10	3	10	—
Leprosy	747	451	86	1,198	755
Erysipelas	2	185	31	187	5
Acute Poliomyelitis	1	16	—	17	2
Encephalitis Lethargica	—	3	1	3	—
Epidemic Cerebro-spinal Fever	—	1	—	1	—
Other Epidemic Diseases—					
(*a*) Rubeola (German Measles)	—	4	—	4	—
(*b*) Varicella (Chickenpox)	48	2,094	1	2,142	91
(*c*) Dengue	—	84	8	84	—
(*d*) Yaws	62	2,049	4	2,111	49
Rabies	15	174	38	189	30
Tetanus	8	331	121	339	10
Tuberculosis, Pulmonary and Laryngeal	605	3,634	648	4,239	645
Tuberculosis of the Meninges or Central Nervous System	—	7	3	7	—
Tuberculosis of the Intestines or Peritoneum	—	7	3	7	1
Tuberculosis of the Vertebral Column	—	6	—	6	—
Tuberculosis of Bones and Joints	—	14	—	14	—
Tuberculosis of other organs—					
(*a*) Skin or Subcutaneous Tissue (Lupus)	6	99	—	105	—
(*b*) Bones	—	6	—	6	—
(*c*) Lymphatic System	2	288	8	290	33
(*d*) Genito-urinary	—	4	—	4	—
(*e*) Other organs	1	11	1	12	—
Tuberculosis disseminated—					
(*a*) Acute	—	8	—	8	—
(*b*) Chronic	2	120	15	122	1
Syphilis—					
(*a*) Primary	61	1,486	23	1,547	59
(*b*) Secondary	29	684	7	713	40
(*c*) Tertiary	8	187	14	195	13
(*d*) Hereditary	5	148	39	153	7
(*e*) Period not indicated	4	87	—	91	2

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‡ The figures in this column to be carried on to the next year's Return.

II.—Cases treated—*contd.*

(*b*) According to Diseases—*contd.*

Diseases.	*Remaining in Hospital at end of 1928.	Admissions in 1929.	Deaths in 1929.	†Total Cases treated in 1929.	‡Remaining in Hospital at end of 1929.
I.—EPIDEMIC, ENDEMIC, AND INFECTIOUS DISEASES—*contd.*					
Soft Chancre	1	44	—	45	3
A.—Gonorrhoea and its complications	118	3,411	18	3,529	142
B.—Gonorrhoeal Ophthalmia	2	15	—	17	—
C.—Gonorrhoeal Arthritis	14	689	4	703	18
D.—Granuloma Venereum	—	4	—	4	—
Septicaemia	2	154	49	156	1
Filarial Diseases	—	14	—	14	—
Acute Rheumatic Fever	2	145	7	147	15
Other Infectious Diseases	11	255	2	266	7
II.—GENERAL DISEASES NOT MENTIONED ABOVE.					
Cancer or other malignant Tumours of the Buccal Cavity	3	86	16	89	3
Cancer or other malignant Tumours of the Stomach or Liver	—	32	10	32	—
Cancer or other malignant Tumours of the Peritoneum, Intestines, Rectum	—	31	5	31	—
Cancer or other malignant Tumours of the Female Genital Organs	6	132	5	138	2
Cancer or other malignant Tumours of the Breast	1	42	9	43	—
Cancer or other malignant Tumours of the Skin	—	52	5	52	—
Cancer or other malignant Tumours of Organs not specified	13	410	54	423	30
Tumours non-malignant	18	572	38	590	16
Chronic Rheumatism	136	5,082	38	5,218	126
Scurvy (including Barlow's Disease)	60	974	25	1,034	32
Pellagra	—	2	—	2	—
Rickets	7	206	65	213	6
Diabetes (not including Insipidus)	17	373	56	390	28
Anaemia—					
(*a*) Pernicious	3	340	24	343	10
(*b*) Other Anaemias and Chlorosis	13	722	28	735	16
Diseases of the Pituitary Body	1	3	—	4	—
Diseases of the Thyroid Gland—					
(*a*) Exophthalmic Goitre	—	3	1	3	—
(*b*) Other diseases of the Thyroid Gland, Myxoedema	1	20	—	21	—
Diseases of the Para-Thyroid Glands	—	19	—	19	—
Diseases of the Supra-Renal Glands	—	3	—	3	—
Diseases of the Spleen	1	59	5	60	—
Leukaemia—					
(*a*) Leukaemia	—	105	5	105	—
(*b*) Hodgkin's Disease	—	12	—	12	—
Alcoholism	—	66	1	66	8
Corrosive Acids	—	44	7	44	—
Metallic Poisons	—	6	—	6	—
Vegetable Alkaloids	—	50	3	50	—
Ptomaine Poisoning	—	29	—	29	—
Other Acute Poisonings	—	53	8	53	—
Other General Diseases—					
Auto-intoxication	47	1,144	30	1,191	35
Purpura Haemorrhagica	—	2	2	2	—
Diabetes Insipidus	16	357	26	373	17

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‡ The figures in this column to be carried on to the next year's Return.

II.—Cases treated—*contd.*

(*b*) According to Diseases—*contd.*

Diseases.	*Remaining in Hospital at end of 1928.	Admissions in 1929.	Deaths in 1929.	†Total Cases treated in 1929.	‡Remaining in Hospital at end of 1929.
III.—AFFECTIONS OF THE NERVOUS SYSTEM AND ORGANS OF THE SENSES.					
Encephalitis (not including Encephalitis Lethargica)	—	12	9	12	—
Meningitis (not including Tuberculous Meningitis or Cerebro-spinal Meningitis)	1	107	47	108	2
Locomotor Ataxia	2	4	—	6	—
Other affections of the Spinal Cord	1	78	8	79	1
Apoplexy—					
(*a*) Haemorrhage	—	60	32	60	1
(*b*) Embolism	1	10	6	11	—
(*c*) Thrombosis	1	77	11	78	8
Paralysis—					
(*a*) Hemiplegia	28	381	88	409	19
(*b*) Other Paralysis	21	285	39	306	15
General Paralysis of the Insane	1	4	—	5	—
Other forms of Mental Alienation	4	185	20	189	4
Epilepsy	13	365	38	378	14
Eclampsia, Convulsions (non-puerperal) 5 years or over	3	37	10	40	—
Infantile Convulsions	2	279	132	281	—
Chorea	1	19	1	20	—
A.—Hysteria	9	251	3	260	6
B.—Neuritis	18	343	1	361	6
C.—Neurasthenia	8	240	11	248	4
Cerebral Softening	—	8	—	8	—
Other affections of the Nervous System, such as Paralysis Agitans	10	537	48	547	16
Affections of the Organs of Vision—					
(*a*) Diseases of the Eye	55	1,396	5	1,451	75
(*b*) Conjunctivitis	46	2,117	—	2,163	53
(*c*) Trachoma	—	10	—	10	—
(*d*) Tumours of the Eye	—	11	—	11	—
(*e*) Other affections of the Eye	92	1,603	9	1,695	62
Affections of the Ear or Mastoid Sinus	11	573	8	584	16
IV.—AFFECTIONS OF THE CIRCULATORY SYSTEM.					
Pericarditis	1	169	60	170	4
Acute Endocarditis or Myocarditis	1	129	46	130	7
Angina Pectoris	1	25	2	26	—
Other Diseases of the Heart—					
(*a*) Valvular—Mitral	14	594	154	608	19
Aortic	—	21	6	21	—
Tricuspid	—	44	18	44	1
Pulmonary	—	22	8	22	—
(*b*) Myocarditis	1	53	29	54	3
Diseases of the Arteries—					
(*a*) Aneurism	—	71	2	71	4
(*b*) Arterio-Sclerosis	4	30	4	34	—
(*c*) Other diseases	—	20	10	20	1
Embolism or Thrombosis (non-cerebral)	—	77	21	77	4
Diseases of the Veins—					
Haemorrhoids	17	456	17	473	14
Varicose Veins	—	95	1	95	—
Phlebitis	—	35	1	35	1
Diseases of the Lymphatic System—					
Lymphangitis	2	127	5	129	5
Lymphadenitis, Bubo (non-specific)	9	123	2	132	2
Haemorrhage of undetermined cause	1	25	3	26	1
Other affections of the Circulatory System	10	281	37	291	30

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‡ The figures in this column to be carried on to the next year's Return.

II.—Cases treated—*contd.*

(*b*) According to Diseases—*contd.*

Diseases.	*Remaining in Hospital at end of 1928.	Admissions in 1929.	Deaths in 1929.	†Total Cases treated in 1929.	‡Remaining in Hospital at end of 1929.
V.—AFFECTIONS OF THE RESPIRATORY SYSTEM.					
Diseases of the Nasal Passages—					
Adenoids	1	75	2	76	5
Polypus	2	64	—	66	—
Rhinitis	1	51	—	52	1
Coryza	1	77	—	78	2
Affections of the Larynx-Laryngitis	1	146	11	147	10
Bronchitis—(*a*) Acute	102	3,195	115	3,297	67
(*b*) Chronic	67	1,679	68	1,746	39
Broncho-Pneumonia	37	1,610	570	1,647	49
Pneumonia—(*a*) Lobar	122	3,979	1,535	4,101	125
(*b*) Unclassified	6	485	123	491	—
Pleurisy, Empyema	17	452	39	469	15
Congestion of the Lungs	—	7	1	7	—
Gangrene of the Lungs	—	9	5	9	—
Asthma	52	1,750	55	1,802	55
Pulmonary Emphysema	—	37	8	37	—
Pneumothroax	—	13	1	13	—
Other affections of the Lungs—Pulmonary Spirochaetosis	2	241	9	243	3
VI.—DISEASES OF THE DIGESTIVE SYSTEM.					
A.—Diseases of Teeth or Gums—					
Caries, Pyorrhoea, &c.	7	424	5	431	11
B.—Other affections of the Mouth—					
Stomatitis	7	359	25	366	18
Glossitis, &c.	1	23	1	24	1
Affections of the Pharynx or Tonsils—					
Tonsillitis	36	548	21	584	21
Pharyngitis	—	103	2	103	—
Affections of the Oesophagus	—	5	1	5	—
A.—Ulcer of the Stomach	1	79	9	80	2
B.—Ulcer of the Duodenum	—	8	1	8	1
Other affections of the Stomach—					
Gastritis	22	648	26	670	7
Dyspepsia, &c.	15	1,256	1	1,271	24
Diarrhoea and Enteritis—					
Under two years	34	1,327	193	1,361	42
Diarrhoea and Enteritis—					
Two years and over	122	3,531	734	3,653	104
Colitis	6	670	93	676	19
Ulceration	—	34	2	34	—
Sprue	1	14	5	15	—
Ankylostomiasis	473	11,656	849	12,129	407
Diseases due to Intestinal Parasites—					
(*a*) Cestoda (Taenia)	—	75	10	75	—
(*b*) Nematoda (other than Ankylostoma)—					
Ascaris	53	2,166	152	2,219	57
Trichocephalus Dispar	—	1	—	1	—
Trichina	—	20	4	20	—
Dracunculus	—	1	—	1	—
Oxyuris	1	6	—	7	—
(*c*) Other parasites	2	185	1	187	—
(*d*) Unclassified	—	15	—	15	—
Appendicitis	15	400	26	415	18
Hernia	16	605	55	621	10
A.—Affections of the Anus Fistula, &c.	8	213	22	221	1
B.—Other affections of the Intestines—					
Enteroptosis	2	164	13	166	3
Constipation	20	1,423	24	1,443	20
Acute Yellow Atrophy of the Liver	—	3	2	3	—

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II.—Cases treated—*contd.*

(*b*) According to Diseases—*contd.*

Diseases.	*Remaining in Hospital at end of 1927.	Admissions in 1928.	Deaths in 1928.	†Total Cases treated in 1928.	‡Remaining in Hospital at end of 1928.
VI.—DISEASES OF THE DIGESTIVE SYSTEM—*contd.*					
Cirrhosis of the Liver—					
(*a*) Alcoholic	6	223	57	229	11
(*b*) Other forms	8	150	56	158	2
Biliary Calculus	1	4	—	5	—
Other affections of the Liver—					
Abscess	2	176	26	178	2
Hepatitis	8	354	39	362	2
Cholecystitis	1	30	1	31	1
Jaundice	1	149	19	150	2
Diseases of the Pancreas	1	53	2	54	—
Peritonitis (of unknown origin)	5	167	74	172	4
Other affections of the Digestive System	104	2,443	111	2,547	67
VII.—DISEASES OF THE GENITO-URINARY SYSTEM (non-Venereal).					
Acute Nephritis	92	1,707	402	1,799	92
Chronic	35	824	180	859	32
Other affections of the Kidneys, Pyelitis, &c.	3	283	37	286	8
Urinary Calculus	—	71	—	71	1
Diseases of the Bladder-Cystitis	8	322	14	330	4
Diseases of the Urethra—					
Stricture	9	308	24	317	17
Diseases of the Prostate—					
Hypertrophy	3	47	1	50	—
Prostatitis	8	130	2	138	—
Diseases (non-venereal) of the Genital Organs of Man—					
Epididymitis	4	281	4	285	4
Orchitis	11	163	—	174	2
Hydrocele	5	237	12	242	18
Ulcer of Penis	2	103	5	105	3
Cysts or other non-malignant Tumours of the Ovaries	4	131	13	135	6
Salpingitis—					
Abscess of the Pelvis	2	77	3	79	3
Uterine Tumours (non-malignant)	2	65	13	67	1
Uterine Haemorrhage (non-puerperal)	1	53	2	54	—
A. Metritis	3	110	2	113	2
B.—Other affections of the Female Genital Organs—					
Displacement of Uterus	16	454	1	470	9
Amenorrhoea	4	173	21	177	11
Dysmenorrhoea	5	119	—	124	1
Leucorrhoea	5	211	1	216	3
Diseases of the Breast (non-puerperal)—					
Mastitis	2	71	—	73	—
Abscess of Breast	4	111	1	115	11

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II.—Cases treated—*contd.*

(*b*) According to Diseases—*contd.*

Diseases.	*Remaining in Hospital at end of 1928.	Admissions in 1929.	Deaths in 1929.	†Total Cases treated in 1929.	‡Remaining in Hospital at end of 1929.
VIII.—PUERPERAL STATE.					
A.—Normal Labour	302	7,933	58	8,235	301
B.—Accidents of Pregnancy—					
(*a*) Abortion	18	657	29	675	12
(*b*) Ectopic Gestation	—	5	2	5	1
(*c*) Other accidents of Pregnancy	40	1,042	53	1,082	57
Puerperal Haemorrhage	1	104	12	105	—
Other accidents of Parturition	8	340	41	348	14
Puerperal Septicaemia	31	916	248	947	35
Phlegmasia Dolens	—	12	2	12	—
Puerperal Eclampsia	5	178	64	183	5
Sequelae of Labour	47	1,975	29	2,022	44
Puerperal affections of the Breast	3	102	10	105	4
IX.—AFFECTIONS OF THE SKIN AND CELLULAR TISSUES.					
Gangrene	66	998	77	1,064	56
Boil—					
Carbuncle	16	1,129	30	1,145	51
Abscess—					
Whitlow	65	2,220	14	2,285	83
Cellulitis	185	3,135	140	3,320	132
A.—Tinea	5	132	—	137	1
B.—Scabies	90	2,578	6	2,668	109
Other Diseases of the Skin—					
Brythema	16	431	2	447	6
Urticaria	2	148	—	150	4
Eczema	67	1,565	7	1,632	62
Herpes	5	86	—	91	—
Psoriasis	5	181	5	186	3
Elephantiasis	—	67	—	67	1
Myiasis	—	222	1	222	11
Chigoes	36	1,601	5	1,637	58
Cutaneous Leishmaniasis	180	3,991	4	4,171	121
X.—DISEASES OF BONES AND ORGANS OF LOCOMOTION (OTHER THAN TUBERCULOUS).					
Diseases of Bones—Osteitis	2	55	4	57	4
Diseases of Joints—Arthritis	22	384	6	406	8
Synovitis	5	198	6	203	4
Other Diseases of Bones or Organs of Locomotion	11	234	3	245	5
XI.—MALFORMATIONS.					
Malformations—Hydrocephalus	—	6	—	6	—
Hypospadias	—	1	1	1	—
Spina Bifida, &c.	—	38	—	38	—
XII.—DISEASES OF INFANCY.					
Congenital Debility	35	1,324	172	1,359	37
Premature Birth	—	165	99	165	2
Other affections of Infancy	36	464	99	500	14
Infant neglect (infants of three months or over)	8	342	52	350	6
XIII.—AFFECTIONS OF OLD AGE.					
Senility—Senile Dementia	116	3,684	320	3,800	132

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II.—Cases treated—*contd.*

(*b*) According to Diseases—*contd.*

Diseases.	*Remaining in Hospital at end of 1928.	Admissions in 1929.	Deaths in 1929.	†Total Cases treated in 1929.	‡Remaining in Hospital at end of 1929.
XIV.—Affections produced by External Causes.					
Suicide by Poisoning	—	18	18	18	—
Corrosive Poisoning (intentional)	—	27	8	27	—
Other Suicides (attempted)	—	1	—	1	—
Food Poisoning—Botulism	—	52	7	52	—
Attacks of Poisonous Animals—					
Snake Bite	1	36	1	37	1
Insect Bite	1	65	3	66	—
Other accidental Poisonings	4	164	12	168	2
Burns (by Fire)	36	926	134	962	32
Burns (other than by Fire)	2	100	7	102	—
Suffocation (accidental)	—	16	1	16	—
Drowning (accidental)	5	29	3	34	1
Wounds (by Firearms)	9	283	42	292	7
Wounds (by cutting or stabbing instruments)	142	3,971	111	4,113	105
Wounds (by Fall)	87	3,330	58	3,417	74
Wounds (in Mines or Quarries)	1	46	1	47	—
Wounds (by Machinery)	19	901	44	920	44
Wounds (crushing, *e.g.*, Railway accidents, &c.)	14	348	15	362	15
Injuries inflicted by Animals, Bites, Kicks, &c.	25	759	22	784	24
A.—Over fatigue	1	21	1	22	—
B.—Hunger or Thirst	3	54	—	57	2
Exposure to Heat—					
Heatstroke	—	12	—	12	—
Sunstroke	—	84	10	84	—
Lightning Stroke	—	3	—	3	—
Electric Shock	—	26	—	26	—
Murder by cutting or stabbing instruments	—	6	6	6	—
A.—Dislocation	6	189	2	195	5
B.—Sprain	8	355	—	363	3
C.—Fracture	122	2,156	182	2,278	90
Other external Injuries	137	6,093	57	6,230	151
XV.—Ill-defined Diseases.					
A.—Diseases not already specified or ill-defined—					
Ascites	13	452	33	465	7
Oedema	1	47	3	48	3
Asthenia	13	1,528	171	1,541	71
Shock	—	87	20	87	—
Hyperpyrexia	—	11	—	11	—
B.—Malingering	13	546	1	559	17

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III.—Special Diseases.

Table of Cases of Yellow Fever or other Endemic Fever, Plague, Typhus, Smallpox, Scarlatina, Cholera, Enteric (or Typhoid Fever), Erysipelas, or Pyaemia occurring amongst patients, and also amongst officers.

Hospital and Name of Diseases.	Occurring amongst Patients. Number of Cases.	Number of Deaths.
Western Province.		
Lying-in Home, Colombo :—		
Enteric (or Typhoid Fever) ..	1 ..	—
Lady Havelock and Ridgeway Hospitals, Colombo :—		
Enteric (or Typhoid Fever) ..	59 ..	8
Police Hospital, Borella :—		
Endemic Fevers ..	162 ..	—
Erysipelas	3 ..	—
Prison Hospital, Colombo :—		
Enteric (or Typhoid Fever) ..	9 ..	1
Lady Manning Hospital, Gampaha :—		
Enteric (or Typhoid Fever) ..	6 ..	—
Pyaemia	1 ..	—
Infectious Diseases Hospital, Angoda :—		
Plague	19 ..	16
Smallpox	6 ..	—
Scarlatina	2 ..	—
Cholera	3 ..	—
Enteric (or Typhoid Fever) ..	162 ..	46
Erysipelas	2 ..	1
Negombo Hospital :—		
Enteric (or Typhoid Fever) ..	16 ..	7
Erysipelas	3 ..	—
Negombo Jail :—		
Enteric (or Typhoid Fever) ..	1 ..	—
Watupitiwela Hospital :—		
Endemic Fever ..	249 ..	10
Enteric (or Typhoid Fever) ..	13 ..	4
Erysipelas*	2 ..	—
Pyaemia	1 ..	1
Kalutara Hospital :—		
Enteric (or Typhoid Fever) ..	88 ..	19
Erysipelas	1 ..	—
Neboda Hospital :—		
Enteric (or Typhoid Fever) ..	18 ..	3
Erysipelas	1 ..	—
Central Province.		
Dolosbage Hospital :—		
Enteric (or Typhoid Fever) ..	2 ..	—
Kandy Hospital :—		
Plague	2 ..	2
Malarial and Endemic Fevers ..	1,493 ..	15
Enteric (or Typhoid Fever) ..	66 ..	21
Erysipelas	13 ..	2
Smallpox	1 ..	1
Nawalapitiya Hospital :—		
Endemic Fevers ..	338 ..	—
Enteric (or Typhoid Fever)* ..	26 ..	5
Erysipelas	5 ..	2
Pussellawa Hospital :—		
Enteric (or Typhoid Fever) ..	2 ..	—
Erysipelas	1 ..	—
Teldeniya Hospital :—		
Enteric (or Typhoid Fever) ..	9 ..	1
Watawala Hospital :—		
Enteric (or Typhoid Fever) ..	1 ..	—
Erysipelas	2 ..	—
Matale Hospital :—		
Enteric (or Typhoid Fever) ..	6 ..	1
Erysipelas	1 ..	—
Maturata Hospital :—		
Enteric (or Typhoid Fever) ..	3 ..	—
Mulhalkele Hospital :—		
Malaria Fever ..	143 ..	1
Ramboda Hospital :—		
Enteric (or Typhoid Fever) ..	8 ..	2

* 1 case among resident officers.

III.—Special Diseases—*contd.*

Hospital and Name of Disease.	Occurring amongst Patients. Number of Cases.	Number of Deaths.
Southern Province.		
Balapitiya Hospital :—		
Enteric (or Typhoid Fever) ..	16 ..	5
Deniyaya Hospital :—		
Enteric (or Typhoid Fever) ..	35 ..	6
Pyaemia	1 ..	—
Matara Hospital :—		
Enteric (or Typhoid Fever)* ..	48 ..	11
Erysipelas	1 ..	—
Tissamaharama Hospital :—		
Enteric (or Typhoid Fever) ..	1 ..	—
Northern Province.		
Chavakachcheri Hospital :—		
Erysipelas	3 ..	—
Jail Hospital, Jaffna :—		
Enteric (or Typhoid Fever) ..	2 ..	2
Point Pedro Hospital :—		
Enteric (or Typhoid Fever) ..	22 ..	5
Mannar Hospital :—		
Enteric (or Typhoid Fever) ..	13 ..	—
Talaimannar Hospital :—		
Enteric (or Typhoid Fever) ..	8 ..	—
Talaimannar Infectious Diseases Hospital :—		
Plague	1 ..	1
Eastern Province.		
Batticaloa Hospital :—		
Enteric (or Typhoid Fever) ..	13 ..	4
Erysipelas	4 ..	2
Maha-oya Hospital :—		
Enteric (or Typhoid Fever) ..	4 ..	1
Erysipelas	1 ..	—
Trincomalee Hospital :—		
Enteric (or Typhoid Fever) ..	2 ..	1
North-Western Province.		
Kurunegala Hospital :—		
Enteric (or Typhoid Fever) ..	15 ..	9
Erysipelas	11 ..	4
Pyaemia	3 ..	3
Ridigama Hospital :—		
Malarial and Endemic Fevers†	624 ..	20
Puttalam Hospital :—		
Erysipelas	1 ..	—
North-Central Province.		
Anuradhapura Hospital :—		
Enteric (or Typhoid Fever) ..	22 ..	8
Erysipelas	1 ..	1
Jail Hospital, Anuradhapura :—		
Enteric (or Typhoid Fever) ..	1	—
Province of Uva.		
Badulla Hospital :—		
Enteric (or Typhoid Fever) ..	40 ..	4
Erysipelas	3 ..	1
Buttala Hospital :—		
Enteric (or Typhoid Fever) ..	1 ..	—
Koslanda Hospital :—		
Enteric (or Typhoid Fever) ..	5 ..	1
Lunugala Hospital :—		
Enteric (or Typhoid Fever) ..	5 ..	5
Province of Sabaragamuwa.		
Balangoda Hospital :—		
Enteric (or Typhoid Fever) ..	3 ..	1
Erysipelas	2 ..	—
Kolonna Hospital :—		
Malarial and Endemic Fevers‡	537 ..	7
Ratnapura Hospital :—		
Cholera	2 ..	2
Enteric (or Typhoid Fever) ..	35 ..	10
Aranayake Hospital :—		
Enteric (or Typhoid Fever) ..	4 ..	2
Erysipelas	1 ..	1
Eheliyagoda Hospital :—		
Enteric (or Typhoid Fever) ..	19 ..	2
Pyaemia ..	1 ..	—
Kegalla Hospital :—		
Enteric (or Typhoid Fever) ..	25 ..	5
Kitulgala Hospital		
Endemic Fevers† ..	258 ..	—
Enteric (or Typhoid Fever) ..	14 ..	1
Erysipelas	1 ..	—

* 1 case and 1 death among resident officers.
† 5 cases among resident officers.
‡ 12 cases among resident officers

IV.—Water Supply, &c.

Hospital.	Water available for each Patient every Day.	Source of Supply.	Quality of Water.	Arrangements as to Baths and Lavatories.	System of Sewerage.	Condition of Privies.
WESTERN PROVINCE.						
Angoda Infectious Diseases Hospital	Ample ..	Reservoir ..	Good ..	A bath and separate fly-proof lavatory to each ward	Dry-earth system	Satisfactory
Avissawella ..	do. ..	do. ..	do. ..	A bath and lavatory to each ward	do. ..	—
Colombo.						
Borella Branch Hospital	do. ..	do. ..	do. ..	1 bathroom and 5 lavatories	Water carriage system	Good
Borella Police Hospital ..	do. ..	do. ..	do. ..	2 bathrooms and 2 lavatories	do. ..	Satisfactory
Borella Prison Hospital ..	do. ..	do. ..	do. ..	2 bathrooms and 2 lavatories to each ward	do. ..	do.
De Soysa Lying-in Home	do. ..	do. ..	do. ..	Baths and shower baths ..	do. ..	Good
General Hospital ..	do. ..	do. ..	do. ..	Sufficient ..	do. ..	Satisfactory
Lady Havelock and Lady Ridgeway Hospitals	do. ..	do. ..	do. ..	10 bathrooms ..	do. ..	do.
Victoria Memorial Eye Hospital	do. ..	do. ..	do. ..	10 bathrooms and 10 lavatories	do. ..	Very clean
Gampaha Lady Manning Hospital	do. ..	From wells	do. ..	Satisfactory ..	Dry-earth system	—
Hendala Leper Asylum ..	do. ..	Reservoir, for cooking and drinking purposes	do. ..	28 bathrooms adjoining the wards, supplied with hot and cold water	do. ..	Clean
Ingiriya ..	do. ..	Spring water led into a reservoir	do. ..	7 bathrooms attached to wards and fly-proof lavatories	do. ..	Satisfactory
Kalutara ..	do. ..	From wells	Satisfactory ..	Bathrooms attached to wards	do. ..	—
Kandana Sanatorium ..	30 to 40 gallons	do. ..	do. ..	Baths and lavatories attached to wards	do. ..	Good
Mahara (jail) ..	Ample ..	From Ragama reservoir pipe borne	Wholesome ..	Satisfactory ..	do. ..	Satisfactory
Moratuwa ..	Limited and insufficient	From a well	Slightly brackish	4 baths and 6 latrines ..	do. ..	—
Neboda ..	20 gallons (approximately)	From a well pumped to a storage tank	Good ..	4 bathrooms and 8 lavatories	do. ..	Satisfactory
Negombo ..	Sufficient for drinking only, no water available for bathing	From a well	do. ..	A bathroom and lavatory attached to each ward, water for bathing not available on the premises	do. ..	—
Negombo Jail ..	2 gallons	do. ..	do. ..	Water pumped into a tank	do. ..	—
Panadure ..	Unlimited ..	do. ..	Satisfactory ..	2 baths and 2 latrines ..	do. ..	Clean
Pimbura ..	4 gallons (approximately)	do. ..	Very unsatisfactory	Bathrooms and lavatories are connected to wards	do. ..	—
Ragama Tuberculosis Hospital	Very insufficient. Often runs short	Pumped from a large well and stored in two tanks	do. ..	Bathroom and lavatory in fly-proof room	do. ..	Clean
Watupitiwala ..	Ample ..	From a well	Satisfactory ..	Baths attached to wards	do. ..	Satisfactory
CENTRAL PROVINCE.						
Agrapatana ..	Ample ..	Natural spring water	Good, but muddy during rainy season	2 bathrooms and 2 lavatories for each ward	Dry-earth system	Good
Bogambara Jail ..	do. ..	Reservoir ..	Good ..	do. ..	do.	do.
Bagawantalawa ..	do. ..	Natural spring	do.	do. ..	do. ..	Satisfactory
Dambulla ..	3 gallons ..	From a well	do. ..	Bathrooms and tubs provided in each ward, patients who can walk bathe in a stream	do. ..	do.
Deltota ..	Ample ..	Natural spring water	Good and clean	A bathroom near each ward tap and zinc baths provided, 2 latrines	do. ..	Fair
Dikoya ..	do. ..	Reservoir ..	Impure contained	8 bathrooms ..	do. ..	Satisfactory
Dimbula (Kotagala) ..	do. ..	Natural spring water	Good and wholesome	A bathroom attached to each ward	do. ..	Clean
Dolosbage ..	do. ..	do. ..	do. ..	3 bathrooms connected to wards	do. ..	Satisfactory

IV.—Water Supply, &c.—*contd.*

Hospital.	Water available for each Patient every Day.	Source of Supply.	Quality of Water.	Arrangements as to Baths and Lavatories.	System of Sewerage.	Condition of Privies.
Central Province—*contd.*						
Gampola ..	15 gallons (approximately)	Reservoir ..	Good and wholesome	2 bathrooms in each ward provided with zinc baths	Dry-earth system	Satisfactory
Kandy ..	Ample ..	do. ..	do. ..	Bathrooms and lavatories attached to each ward	do. ..	Clean
Lindula ..	do. ..	Natural spring water	do. ..	A bath and lavatory in each ward	do. ..	Satisfactory
Madulkele ..	do. ..	Pipe borne spring water	do. ..	9 bathrooms and 13 lavatories	do. ..	do.
Maskeliya ..	do. ..	do. ..	Pure ..	4 bathrooms ..	do. ..	Good
Matale ..	do. ..	Reservoir .	Good ..	Baths and latrines attached to each set of wards	do. ..	do.
Maturata ..	do. ..	Natural spring water	do. ..	1 bathroom to each ward and 2 latrines	do. ..	do.
Mulhalkele ..	do. ..	From irrigation channel	Filtered ..	3 lavatories and 2 bathrooms	do. ..	Satisfactory
Nawalapitiya ..	do. ..	Mountain stream pipe borne	Good ..	A bath and lavatory in each ward	do. ..	do.
Nuwara Eliya ..	do. ..	Reservoir ..	Pure ..	do. ..	do. ..	—
Pussellawa ..	do. ..	Natural spring water	Good ..	3 bathrooms ..	do. ..	Good
Ramboda ..	do. ..	do. ..	Unsatisfactory during rainy seasons	6 bathrooms and 6 lavatories	do. ..	—
Teldeniya ..	Abundant in rainy season and scanty in dry season	Reservoir ..	Good ..	Bathrooms and lavatories separate for males and females connected to wards	do. ..	—
Uda Pussellawa ..	Ample ..	Natural spring water, filtered	do. ..	do. ..	do. ..	Clean
Watawala ..	do. ..	Reservoir ..	do. ..	Baths and lavatories connected to wards by a covered passage	do. ..	Good
Southern Province.						
Balapitiya ..	Ample ..	Pumped out from a well	Satisfactory ..	2 bathrooms, convalescents prefer seabaths	Dry-earth system	—
Deniyaya ..	do. ..	Natural spring water	Good ..	8 bathrooms and 12 latrines	do. ..	Satisfactory
Elpitiya ..	11½ gallons ..	From a well	do. ..	2 baths and 2 lavatories in each ward	do. ..	—
Galle ..	Limited, but just sufficient	Reservoir ..	do. ..	Bathrooms and lavatories in each ward	do. ..	Good
Galle (jail) ..	Ample ..	do.	do.	1 well for baths; 1 lavatory	do. ..	do.
Hambantota ..	Sufficient for drinking purposes	From wells through a contractor	Fair ..	1 bathroom and 2 fly-proof latrines	do. ..	—
Matara ..	Ample ..	Public wells	Chalky and unsatisfactory	Bathrooms attached to latrines	do. ..	—
Tangalla .	Hardly two gallons	do. ..	Very poor and unsatisfactory	A bathroom and lavatory in each ward	do. ..	Satisfactory
Tissamaharama ..	Unlimited, except for 2 months of the year	do. ..	Hard and poor, boiled and filtered	A bathroom and lavatory attached to each ward	do. ..	do.
Udugama .	Ample ..	From a well and reservoir	Good ..	2 lavatories and 2 bathrooms for two wards and 1 each for the other wards	do. ..	Good
Unawatuma Bathfield House Hospital	do. ..	From a well	do. ..	2 wells; water drawn out for those unable to do so	do. ..	—
Northern Province.						
Chavakachcheri ..	Ample ..	From 2 wells	Good ..	A bath attached to each ward	Dry-earth system	—
Jaffna ..	do. ..	Well water	do. ..	Separate bathrooms and latrines for males and females in respective wards	do. ..	Clean
Jaffna (jail) ..	6 gallons ..	Wells ..	do. ..	Special cisterns are built and fly-proof latrines provided	do. ..	do.

IV.—Water Supply, &c.—*contd.*

Hospital.	Water available for each Patient every Day.	Source of Supply.	Quality of Water.	Arrangements as to Baths and Lavatories.	System of Sewerage.	Condition of Privies.
NORTHERN PROVINCE—*contd.*						
Kilinochchi ..	10 gallons ..	From a well and tank	Fresh and good	Baths and lavatories connected to each ward	Dry-earth system	Clean and good
Mannar ..	Ample ..	From wells; pipe borne	Good and palatable	6 bathrooms and 5 latrines	do. ..	—
Mantota ..	do. ..	do. ..	Fairly good ..	Bathrooms and latrines separately for males and females	do. ..	In good order
Mullaittivu ..	do. ..	From wells, in the premises	do. ..	4 bathrooms, 4 latrines 2 for each sex	do. ..	Satisfactory
Point Pedro ..	do. ..	do. ..	Clean and wholesome	5 bathrooms and 8 latrines connected to wards	do. ..	Good
Talaimannar ..	do. ..	From wells, pipe borne	Good ..	Baths and lavatories adjoin wards	do. ..	—
Vavuniya ..	do. ..	From wells in the premises	Fair ..	4 bathrooms and 5 latrines	do. ..	Good
EASTERN PROVINCE.						
Batticaloa ..	Ample ..	From wells, pipe borne	Good ..	4 bathrooms and latrines	Dry-earth system	Good
Batticaloa Jail ..	do.	do.	do.	Open tanks for baths; lavatories	do.	do.
Kalmunai ..	Unlimited except during November and December	do. ..	do. ..	A separate bathroom and latrine to each ward	do. ..	Clean
Mahaoya ..	Ample ..	do. ..	Unsatisfactory; filtered before use	2 bathrooms ..	do. ..	Satisfactory
Mantivu Leper Asylum..	do. ..	Reservoir with pipe system	Good ..	Latrines and bathrooms provided to each ward and a set of latrines and bathrooms for a group of five cottages	do. ..	—
Trincomalee ..	do. ..	From a well outside the premises for drinking	do. ..	2 Bathrooms, convalescents and skin cases bathe in the sea; 2 permanent and 1 portable latrines	do. ..	Dark and out of date
NORTH-WESTERN PROVINCE.						
Chilaw ..	Sufficient for drinking	From a well	Good ..	Convalescents bathe in the public baths or in the river	Dry-earth system	Satisfactory
Dandagamuwa ..	Limited ..	do. ..	do. ..	5 bathrooms and 5 latrines	do. ..	—
Kurunegala ..	Ample ..	From wells in the premises	do ..	Sufficient number of latrines; bathrooms provided with tubs, the stream is preferred by patients	do. ..	—
Marawila ..	do. ..	do. ..	do. ..	2 bathrooms and 2 lavatories	do. ..	—
Nikaweratiya ..	do. ..	do. ..	Very hard ..	Baths and 6 lavatories, patients prefer to bathe in the irrigation channel	do. ..	Clean
Puttalam ..	do. ..	Reservoir ..	Unsatisfactory	6 bathrooms and 8 latrines	do. ..	—
Ridigama ..	12 gallons ..	From a well	Good ..	Baths and lavatories adjoin the wards	do. ..	Satisfactory
NORTH-CENTRAL PROVINCE.						
Anuradhapura ..	Unlimited except during dry season	From wells	Hard	Lavatories and bathrooms attached to wards	do. ..	—
Anuradhapura Jail ..	Ample ..	The drinking pond	Brackish ..	2 bathrooms and 4 latrines	do. ..	—
Mihintale ..	do. ..	From a well	Poor ..	3 bathrooms, latrines attached to wards	do. ..	Fair
Ratmale ..	Sufficient except during dry whether	do.	Fair ..	2 bathrooms and 2 sets lavatories	do. ..	—
PROVINCE OF UVA.						
Alutnuwara ..	Ample ..	From a well and the river	Fair ..	Bathrooms and latrines to each ward	Dry-earth system	—
Badulla ..	do. ..	From a mountain spring	Good ..	9 bathrooms and lavatories with water service	do. ..	—
Badulla Jail ..	do. ..	do. ..	do. ..	Detached lavatories and open cement bath	do. ..	—

IV.—Water Supply, &c.—*contd.*

Hospital.	Water available for each Patient every Day.	Source of Supply.	Quality of Water.	Arrangements as to Baths and Lavatories.	System of Sewerage.	Condition of Privies.
Province of Uva—*contd.*						
Buttala ..	Ample ..	From a well and river water	Unsatisfactory	2 sets of bathrooms and lavatories	Dry-earth system	—
Haputale ..	do. ..	From a mountain stream	Good ..	Water service by means of pipes	do. ..	Good
Koslanda ..	do. ..	do. ..	do. ..	4 bathrooms and 6 latrines	do. ..	—
Lunugala ..	do. ..	do. ..	do. ..	5 bathrooms ..	do. ..	—
Medagama ..	do. ..	From a well for drinking	Fair ..	No proper baths, the stream is used by patients	do. ..	Good
Monaragala ..	Sufficient in wet weather. 1 gallon in dry weather	Pipe borne supply from a mountain and rain water	Soft and impure	Baths and latrines attached to the ward	do. ..	Clean
Passara ..	Ample ..	From a mountain stream	Wholesome	2 bathrooms for males and 3 bathrooms for females	do. ..	—
Province of Sabaragamuwa.						
Aranayaka ..	8 gallons in wet weather and 2 gallons in dry weather	From a well	Good ..	A bathroom and lavatory in each ward	Dry-earth system	Satisfactory
Balangoda ..	Ample ..	From a spring	do. ..	Taps and tubs provided in bathrooms	do. ..	Clean
Eheliyagoda ..	do. ..	From wells	Unsatisfactory	A bathroom and lavatory in each ward	do. ..	Satisfactory
Embilipitiya ..	do. ..	do. ..	Good ..	Baths and lavatories provided to each block of ward	do. ..	do
Kahawatta ..	do. ..	From a natural spring	Satisfactory ..	2 bathrooms and 2 latrines attached to each ward	do. ..	Good
Kaltota ..	do. ..	Irrigation channel	Good ..	—	do. ..	do.
Karawanella ..	do. ..	From a well and river	Pure ..	Separate bathrooms for males and females, river baths by convalescents	do. ..	—
Kegalla ..	do. ..	From a well	do. ..	Pipe borne supply of water to bathrooms and lavatories	do. ..	Satisfactory
Kitulgala ..	do. ..	Reservoir ..	Excellent ..	11 bathrooms with water service	do. ..	Clean
Kolonna ..	do. ..	Stream boiled and filtered for drinking	Usually hard	Convalescents bathe in the stream	do. ..	do.
Rakwana ..	do. ..	Well ..	Good ..	Bathrooms in each ward, and patient bathe in the stream near by	do. ..	—
Ratnapura ..	do. ..	Reservoir ..	do. ..	Bathrooms and lavatories for males and females, patients bathe in the river also	do. ..	—
Undugoda ..	do. ..	From a natural spring	Pure ..	Bathrooms with water service	do. ..	—