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

Administration Report of the Director of Medical and Sanitary Services for 1931.

(Dr. R. BRIERCLIFFE.)


SEPTEMBER, 1932.

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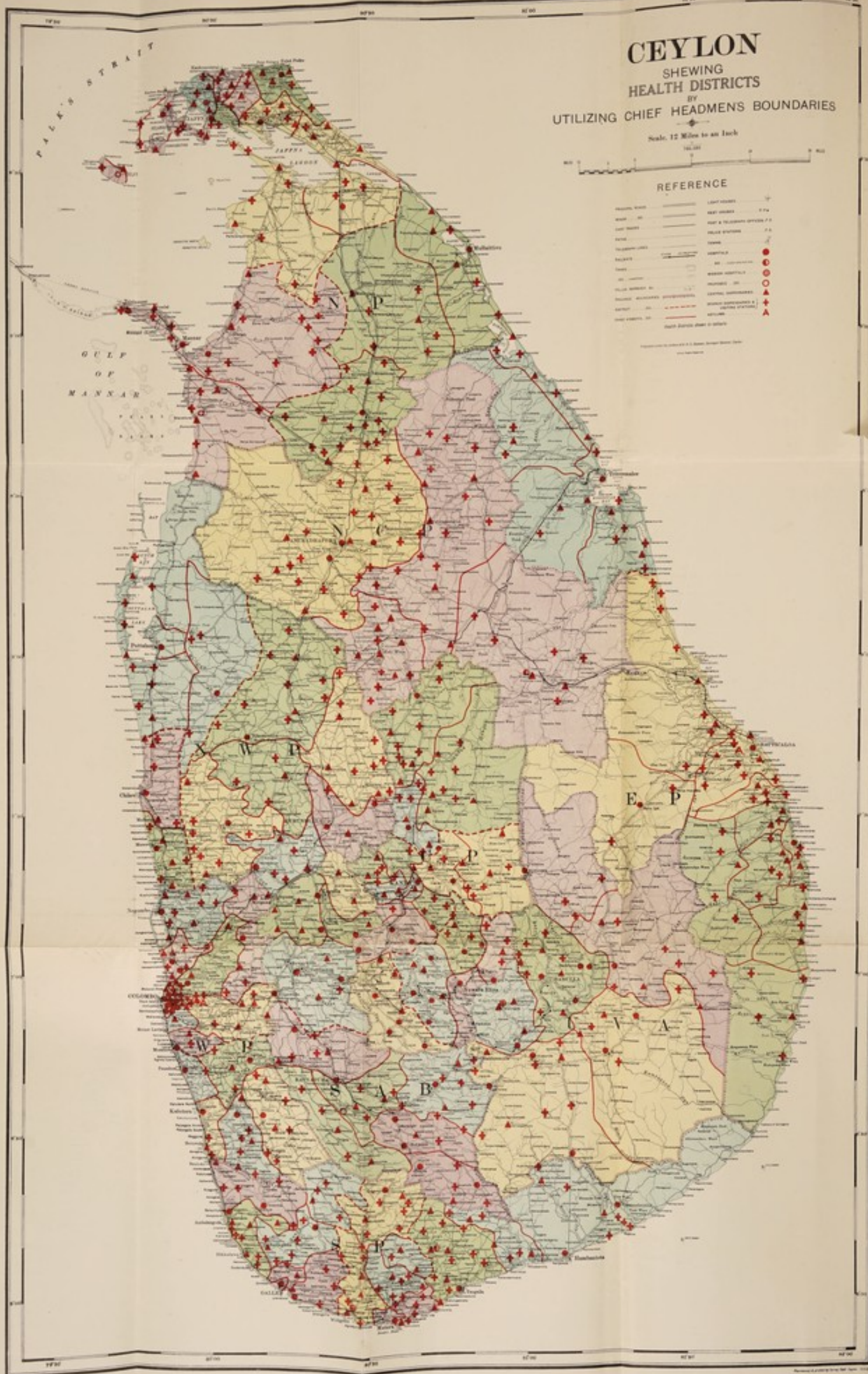
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REFERENCE

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DEPARTMENT OF MEDICAL AND SANITARY SERVICES.

REPORT OF THE DIRECTOR OF MEDICAL AND SANITARY SERVICES FOR THE YEAR 1931.

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Map of Ceylon showing Medical Institutions..		<i>Inserted loose facing page 3</i>	

I.—ADMINISTRATION.**(a) (1) Establishment (including vacancies) on December 31, 1931.***Directorate.*

- 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.
- 2 Senior Medical Officers of Health.
- 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.
- 60 Medical Officers in Grade I. (3 vacancies).
- 238 Medical Officers in Grade II. of whom 8 are women (17 vacancies).

Sanitary Side.

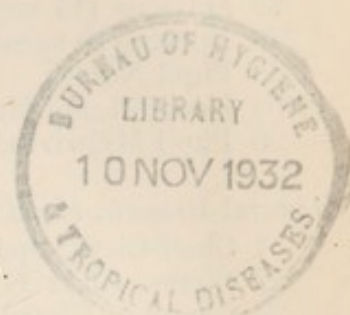
- 3 Inspecting Medical Officers of Estates.
- 3 Assistants to Inspecting Medical Officers of Estates (Medical Officers in Grade II).
- 31 Medical Officers of Health (5 vacancies).
 - 1 Superintendent, Ankylostomiasis Campaigns (Medical Officer, Grade I.).
 - 1 Superintendent, Anti-Malaria Campaign.
 - 5 Medical Officers, Anti-Malaria Campaign (Medical Officers, Grade II.).
 - 5 School Medical Officers (3 in Grade I. of Medical Officers and 2 in Grade II.).
- 1 Superintendent of Health Education Division.
- 5 Sanitary Engineers (including 3 Assistant Sanitary Engineers).
 - 1 Sanitary Superintendent (vacant).
- 38 Sanitary Inspectors, Class I.
- 229 Sanitary Inspectors, Class II. (20 vacancies).
- 4 Draughtsmen (Sanitary Engineering Division).

Laboratory Staff.

- 1 Director of Bacteriological and Pasteur Institutes.
- 1 Bacteriologist and Officer in Charge, Vaccine Establishment.
- 1 Assistant Bacteriologist (Medical Officer, Grade II.).
- 31 Laboratory Assistants (3 vacancies).
 - 1 Medical Entomologist.
- 14 Entomological Assistants (2 vacancies).
- 9 Laboratory Attendants.

*Nursing Staff.**European—*

- 8 Matrons.
- 1 Assistant Matron.
- 33 Sisters (5 vacancies).



Religious (European)—

- 7 Mothers (1 vacancy).
- 128 Sisters (19 vacancies).

Ceylonese—

- 1 Relieving Staff Nurse (1 vacancy).
- 19 Public Health Nurses (7 vacancies).
- 93 Matrons (15 vacancies).
- 236 Nurses (19 vacancies).
- 86 Pupil Nurses.
- 103 Hospital and Health Unit Midwives.
- 26 Pupil Midwives.

*Clerical Staff.**General Branch, Head Office—*

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

Financial Branch, Head Office—

- 1 Clerk, Class I.
- 37 Clerks in Classes II. and III.

Branch Offices—

- 73 Clerks in the various branch offices.

Apothecaries.

- 20 Apothecaries in Special Class.
- 100 Apothecaries in Class. I.
- 295 Apothecaries in Class II. (42 vacancies).
- 3 Acting Officers.

Vaccination.

- 9 Inspectors of Vaccination.
- 33 Male Vaccinators, Class I.
- 114 Male Vaccinators, Class II. (14 vacancies).
- 18 Female Vaccinators (1 vacancy).

Civil Medical Stores.

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

Opium Branch.

- 1 Opium Storekeeper.
- 12 Opium Clerks.
- 18 Opium Sellers (1 vacancy).

Miscellaneous.

- 3 Hospital Stewards in Special Class.
- 6 Hospital Stewards in Class I.
- 89 Hospital Stewards in Class II. (2 vacancies).
- 1 Sister, X'Ray and Electrical Branch.
- 2 X'Ray Assistants, General Hospital.
- 4 Hospital Stores Clerks.
- 7 Hospital Admitting Clerks (1 vacancy).
- 4 Bookbinders.
- 4 Telephone Operators (1 vacancy).
- 2 Head Overseers (Sanitary Engineering Division and General Hospital).
- 9 Hospital Overseers (2 vacancies).
- 1 Agricultural Overseer, Lunatic Asylum.
- 2 Motor Ambulance Drivers.

Minor Employees.

Depôt Assistants and Cleaners	}	about 3,650.
Laboratory Cleaners		
Packers		
Peons		
Overseers		
Dispensary Orderlies		
Caretakers		
Male Attendants		
Female Attendants		
Opium Store Servants		
Disinfecting Orderlies		
Tappal Coolies		
Itinerating Coolies		
Latrine Coolies		
Garden Coolies		
Burial Coolies		
Nurses' Ayahs		
Barbers, Dhobies, &c.		

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

Dr. L. A. Prins was appointed Deputy Director with effect from June 5, 1931, *vice* Dr. R. G. Jayatileke retired. Dr. H. U. Leembruggen was appointed Assistant Director of Medical Services and Dr. F. Keyt, Medical Superintendent, General Hospital, with effect from June 5, 1931. Dr. L. C. Wijesinghe was promoted to the post of Provincial Surgeon with effect from December 1, 1930. *vice* Dr. M. Jinadasa retired. Dr. W. Wijegoonewardena was appointed Medical Superintendent, Kandy Hospital, with effect from June 1, 1930. Dr. C. H. K. Scharenguivel, Provincial Surgeon, retired with effect from October 31, 1931, and Dr. S. C. Paul, Senior Surgeon, General Hospital, retired with effect from May 1, 1931, and was appointed Honorary Consulting Surgeon to the General Hospital. Dr. (Mrs.) V. Chinnappa and Dr. A. K. Verghese, Lady Medical Officers, resigned with effect from February 1, 1931, and April 30, 1931, respectively. Dr. V. A. Goonetilleke, Provincial Surgeon, died on August 30, 1931, Dr. I. E. Meier died on June 17, 1931, and Dr. J. E. Felix on November 23, 1931.

(b) **Honours.**—His Majesty the King was graciously pleased to confer the following honour on the occasion of his birthday:—

Dr. L. A. Prins, Deputy Director, to be a Member of the Imperial Service Order.

(3) Officers on Leave.

Twenty-five officers of the Department, exclusive of the Nursing Staff, proceeded to Europe on long leave during the course of the year.

(4) Special Qualifications, &c.

The following Medical Officers obtained special qualifications during the year:—

1. Dr. V. E. P. Seneviratne and Dr. S. R. Gunawardena obtained the degrees of M.B., B.S. (Lond.).
2. Dr. S. Ramanathan obtained the diploma of M.R.C.P. (Lond.).
3. Dr. D. M. de Silva obtained the D. P. H. (Lond.).

Three officers of the Department obtained the diploma of M.R.C.S., L.R.C.P., and ten obtained the Scottish triple qualifications during the year.

Dr. H. O. Gunawardena was awarded the "Sir Charles Hastings Clinical Prize" by the British Medical Association for his essay on "The Stroke in High Arterial Pressure."

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

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. The Ordinance has not been proclaimed yet as certain amendments are under consideration.

The Ordinance for the Prevention of the Breeding and Harbours 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 recommitment to the Select Committee for further consideration of the question of the extent of the liability of an owner for Anti-Malaria measures on his premises. The Ordinance was accordingly recommitted to the Select Committee and, when the new Constitution came into being, was submitted for consideration to the Executive Committee of Health with whom it is at present.

The draft of a Milk and Dairies Ordinance to prevent the adulteration of milk was considered by the Executive Committee of Health and is now with the Attorney-General.

Ordinance No. 13 of 1931—an Ordinance to amend the Housing and Town Improvement Ordinance, No. 19 of 1915—was passed by the Legislative Council and assented to by His Excellency the Governor on June 17, 1931. It is expected that it will be brought into operation early next year. This Ordinance requires every habitable room to be provided with a window or windows of suitable size opening on to an external space.

(c) Financial.

Actual Revenue and Expenditure for the Financial Year ending September 30, 1931.

REVENUE.			Rs.
1.	Hospital and dispensary receipts .. ..	..	358,368
2.	Sales of drugs, &c. .. ..	..	7,504
3.	Sales of drugs, &c., under the Medical Wants Ordinance ..	..	6,598
4.	Charges for maintenance under the Medical Wants Ordinance ..	..	113,448
5.	Opium Sales .. ..	..	240,707
6.	Export duties under the Medical Wants Ordinance ..	..	1,475,310
Total ..			2,201,935
EXPENDITURE.			Rs.
1.	Personal Emoluments .. ..	..	5,789,748
2.	Hospital diets .. ..	..	1,597,393
3.	Equipment and contingencies including uniforms to Nurses, Sanitary Inspectors, &c. ..	..	440,590
4.	Special equipment for hospitals and dispensaries ..	..	16,485
5.	Medicines and instruments .. ..	..	839,640
6.	Travelling .. ..	..	480,557
7.	Transport of stores, &c. .. ..	..	50,099
8.	Rents .. ..	..	81,572
9.	Grants .. ..	..	35,919
10.	Epidemics .. ..	..	3,385
11.	Rebates payable under the Medical Wants Ordinance ..	..	234,650
12.	Purchase of opium and general expenses .. ..	..	11,618
13.	Earth filling, drainage, &c., in connection with anti-malaria measures .. ..	..	10,609
14.	Payment to Municipal Council, Colombo, towards destruction of rats .. ..	..	16,460
15.	Electric current .. ..	..	84,791
16.	Incidental expenses .. ..	..	4,760
17.	Public Health Scholarships .. ..	..	—
18.	Cultivation of land attached to the Lunatic Asylum, Angoda ..	..	2,942
19.	Expenses in connection with the training of Ceylonese Nurses in England .. ..	..	2,537
			9,703,755

The following figures show the approximate cost of each of the activities of the Department:—

Service.	Personal Emoluments. Rs.	Other Charges. Rs.	Total. Rs.
1. Administration—			
(a) Headquarters ..	234,000	13,000	247,000
(b) Provincial ..	136,000	23,000	159,000
	<u>370,000</u>	<u>36,000</u>	<u>406,000</u>
2. Medical Work—			
(a) Hospitals and Dispensaries ..	3,744,000	2,358,500	6,102,500
(b) Lunatic Asylum ..	180,000	403,000	583,000
(c) Leper Asylums ..	107,000	142,000	249,000
(d) Itinerating Medical Officers ..	8,000	3,500	11,500
(e) Civil Medical Stores ..	83,000	9,000	92,000
(f) Grants in aid to Medical Institutions ..	—	35,000	35,000
	<u>4,122,000</u>	<u>2,951,000</u>	<u>7,073,000</u>
3. Public Health—			
(a) Medical Officers of Health, Sanitary Inspectors, &c. (outside Health Units) ..	496,000	162,000	658,000
(b) Health Units ..	169,000	38,000	207,000
(c) School Medical Service ..	70,000	12,000	82,000
(d) Vaccination ..	134,000	53,000	187,000
(e) Control of Epidemics ..	—	31,000	31,000
(f) Quarantine ..	66,000	1,000	67,000
(g) Sanitary Engineering Division ..	58,000	9,000	67,000
(h) Bacteriological Laboratories ..	49,000	20,000	69,000
(i) Pasteur Institute ..	8,000	4,000	12,000
(j) Malaria Control ..	120,000	61,000	181,000
(k) Ankylostomiasis Control ..	13,500	5,000	18,500
(l) Estate Inspection ..	68,000	22,000	90,000
(m) Health Education ..	10,000	3,000	13,000
	<u>1,261,500</u>	<u>421,000</u>	<u>1,682,500</u>
4. Miscellaneous—			
(a) Opium—purchase, prepara- tion, and sale ..	36,000	12,000	48,000
(b) Medical Wants Ordinance— Rs. (i.) Rebates to estates .. 234,500 (ii.) Issue of medicines to estates 250,000	—	484,500	484,500
(c) Scholarships and Overseas Training ..	—	2,500	2,500
(d) Unclassified Expenditure ..	—	7,000	7,000
	<u>36,000</u>	<u>506,000</u>	<u>542,000</u>
Grand Total ..	<u>5,789,500</u>	<u>3,914,000</u>	<u>9,703,500</u>

The estimated and actual expenditure for the last seven years has been—

	Budget Estimate. Rs.	Actual Expenditure. Rs.
1924-25 ..	8,067,540	7,798,824
1925-26 ..	8,965,193	8,598,923
1926-27 ..	10,029,658	9,104,455
1927-28 ..	10,500,274	10,211,104
1928-29 ..	11,009,103	10,216,467
1929-30 ..	11,319,907	10,669,279
1930-31 ..	11,358,152	9,703,765

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

The revenue of the Island during the financial year ending September 30, 1931, was Rs. 87,863,541.90.

II.—PUBLIC HEALTH AND GENERAL EPIDEMIOLOGY.

A.—GENERAL REMARKS.

The Western Province suffered from a number of sharp but localized outbreaks of benign tertian malaria from April to June in villages lying in the valleys of the Kelani river and Maha-oya and their tributaries. The Hewagam, Hapitigam, Alutkuru, and Siyane korales were particularly affected and itinerating apothecaries were detailed to distribute quinine. The outbreaks were attributed to the drought in the early part of the year which produced a fall in the river levels with the formation of pools in which *Anopheles culicifacies* found favourable breeding places. There was rather less enteric fever than in 1930 but the disease was still unduly prevalent. There was a definite decrease in the amount of dysentery and the disease was milder in character than in 1930.

In the Central Province there was much less malaria than in 1930 but as usual the disease occurred in the dry zones during the last quarter of the year after the north-east monsoon rains had set in. An epidemic of malaria which was at its worst in August broke out in the Dumbura Valley.

The Southern Province enjoyed a healthy year. There was a very great reduction in the amount of malaria as compared with recent years and, except at Galle, Matara, Deniyaya, and Balapitiya, there was practically no enteric fever. In the town of Galle itself the decrease in the typhoid rate was considerable, thanks to energetic action on the part of the Medical Officer of Health of the Municipal Council. There was rather more influenza than usual in the Province.

In the Northern Province malaria while much less common than in 1930, assumed epidemic proportions at the beginning of the year and accounted for nearly half the patients treated at dispensaries. During the fourth quarter of the year, dysentery and other bowel complaints were prevalent.

The North-Western Province is one of the most malarious provinces of the Island, and the number of cases of malaria rises rapidly after the rains of each monsoon, particularly in the early part of the year after those of the north-east monsoon. There were, however, fewer cases than in 1930.

In the Province of Uva there was a long drought from May to October and as the result of the drying-up of the Badulla-oya and the formation of stagnant pools, a severe epidemic of malaria occurred in the neighbourhood of the river during August and September and staff was specially detailed to treat patients in their homes. There was as much malaria as in 1930. Influenza prevailed in epidemic form in various parts of the Province.

The Province of Sabaragamuwa suffered from a severe epidemic of influenza and the number of cases of malaria showed little diminution as compared with 1930. In this Province also the malaria was associated with the drought and occurred principally in the vicinity of rivers and streams. There was less dysentery than in the previous year but rather more typhoid.

In the Eastern Province malaria was endemic throughout the year and there were epidemics associated with the north-east monsoon rains in the last quarter. There was, however, much less malaria than in 1930. A small outbreak of small-pox occurred in Trincomalee at the end of the year, the first case having acquired the infection in India. There were few cases of enteric fever but dysentery was moderately prevalent.

In the North-Central Province the heavy rains at the end of the previous year were followed by the usual outbreak of malaria reaching its peak in January, but the outbreak was less severe than those of recent years.

1.—GENERAL DISEASES.

The most prevalent general diseases of hospital in-patients have been rheumatism, intestinal disorders (diarrhoea and enteritis), bronchitis, and pneumonia. Year by year the number of patients who seek hospital treatment for cancer is increasing.

The following table shows the numbers of cases and deaths of these diseases dealt with in hospitals throughout the Island during the years 1927 to 1931:—

		1927.		1928.		1929.		1930.		1931.
Rheumatism—										
Cases	..	4,365	..	5,043	..	5,218	..	4,996	..	3,418
Deaths	..	20	..	22	..	38	..	42	..	26
Intestinal disorders—										
Cases	..	4,764	..	4,664	..	5,724	..	4,790	..	3,589
Deaths	..	1,015	..	972	..	1,022	..	861	..	640
Bronchitis—										
Cases	..	4,615	..	5,220	..	5,043	..	4,552	..	3,904
Deaths	..	175	..	190	..	183	..	214	..	193
Pneumonia—										
Cases	..	6,168	..	6,509	..	6,239	..	5,592	..	6,431
Deaths	..	1,900	..	2,548	..	2,288	..	2,069	..	2,195
Malignant growths—										
Cases	..	478	..	687	..	741	..	819	..	896
Deaths	..	89	..	87	..	126	..	107	..	93

The total number of deaths from “ Cancer or Malignant Diseases ” reported by the Registrar-General in respect of the whole Island was 468 during the year 1931, as compared with 460 in 1930, 451 in 1929, 551 in 1928, and 540 in 1927.

Most of the operable cases of cancer resort to the General Hospital, Colombo, for treatment; of a total of 896 cases of cancer dealt with in all the hospitals, 519 were treated in the General Hospital.

On account of the prevalence of betel chewing the site of the disease in the majority of cases was in the region of the buccal cavity, usually the cheek.

The analysis of cases treated is given on page 12.

2.—COMMUNICABLE DISEASES.

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

		1927.		1928.		1929.		1930.		1931.
Hospital cases	..	117	..	67	..	41	..	23	..	33
Hospital deaths	..	106	..	60	..	29	..	19	..	14

Of the 33 hospital cases during the year, 31 were from Colombo town, 1 from Kegalla, and 1 from Talaimannar (a case remaining from 1930).

There have been in all (including the cases treated in hospitals) 50 cases during the year, of which 48 proved fatal giving a fatality rate of 96.0 per cent.

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

Locality.	Cases.	Deaths.
Colombo (Municipality)	47	45
Rambukkana	1	1
Panadure	1	1
Kegalla	1	1
	50	48

As in the previous year the disease did not assume epidemic form.

Colombo.—When compared with the incidence of this disease in the previous year which was 40 cases and 38 deaths it will be seen that there was an increase this year. Of the cases, 29 were bubonic, 16 septicaemic, 1 bubonic with secondary pulmonary symptoms, and 1 primary pneumonia.

Rambukkana.—The case occurred in the person of a Muslim trader in February. It was of the septicaemic type. The infection was acquired in Colombo.

Panadure.—The case occurred in the person of a Muslim hawker at Pettah, Colombo, in April in a village known as Totawatta in Panadure district. The exact source of infection was not traceable but it was probably Pettah, Colombo. This case was of the bubonic type.

Cancer Returns of In-patients in Hospitals for 1931.

SINHALESE.

Age.	Sex.	Cheek.		Tongue.		Penis.		Breast.		Uterus.		Palate, Jaw, and Mouth.		Skin and Extre- mities.		Stomach.		Caecum.		Rectum.		Liver.		Intestines.		Ovary.		Oeso- phagus.		Lymph Glands.		Other Sites.		Sites not specified on Notes.		Total.		
		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.	C.	D.	C.	D.	
20-30	Male	4	—	—	—	—	—	—	—	—	—	—	—	4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	Female	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
31-40	Male	36	1	6	1	15	1	1	—	21	2	1	—	3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	Female	7	—	2	—	—	—	18	3	47	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
41-50	Male	46	4	6	1	19	—	—	—	—	—	6	1	8	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	Female	7	3	1	—	—	—	15	1	56	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
51-60	Male	29	1	9	—	19	—	9	—	31	2	—	—	3	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	Female	4	—	3	—	6	—	—	—	6	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
61 and upwards	Male	28	1	4	—	6	—	8	—	—	—	—	—	3	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	Female	8	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total		171	10	33	3	66	1	51	7	161	8	16	1	27	3	12	4	2	1	7	3	13	9	5	2	11	2	5	4	9	1	15	4	33	10	637	73	

TAMILS.

Age.	Sex.	Cheek.		Tongue.		Penis.		Breast.		Uterus.		Palate, Jaw, and Mouth.		Skin and Extre- mities.		Stomach.		Caecum.		Rectum.		Liver.		Intestines.		Ovary.		Oesophagus.		Lymph Glands.		Other Sites.		Sites not specified on Notes.		Total.	
		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.	C.	D.		
20-30	Male	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	Female	4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
31-40	Male	33	3	—	—	4	—	—	—	10	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	Female	7	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
41-50	Male	17	1	2	—	7	—	—	—	10	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	Female	9	—	1	—	—	—	6	—	13	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
51-60	Male	11	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
	Female	2	—	1	—	—	—	4	—	3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
61 and upwards	Male	3	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
	Female	5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Total		93	5	5	—	17	—	13	—	36	1	21	2	5	—	5	3	1	1	1	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	

OTHER RACES.

Age.	Sex.	Cheek.		Tongue.		Penis.		Breast.		Uterus.		Palate, Jaw, and Mouth.		Skin and Extre- mities.		Stomach.		Caecum.		Rectum.		Liver.		Intestines.		Ovary.		Oesophagus.		Lymph Glands.		Other Sites.		Sites not specified on Notes.		Total.	
		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.	C.	D.		
20-30	Male	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	Female	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
31-40	Male	9	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
	Female	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
41-50	Male	4	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
	Female	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
51-60	Male	3	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
	Female	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
61 and upwards	Male	3	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
	Female	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Total		19	4	3	—	1	—	1	—	6	3	2	—	2	—	3	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	

C = cases.

D = deaths.

Kegalla.—The case occurred in September in the person of a Sinhalese trader. It was of the septicaemic type. The source of infection was traced to Pettah, Colombo.

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

	1927.	1928.	1929.	1930.	1931.
Hospital cases ..	11 ..	5 ..	19 ..	— ..	4
Hospital deaths ..	6 ..	4 ..	8 ..	— ..	2
Total number of deaths registered for the Island ..	3 ..	3 ..	19 ..	— ..	6

There were in all including those treated in Government hospitals 6 cases of cholera with 6 deaths. In 1930 not a single case of cholera occurred. Of the 6 cases in 1931, 3 occurred in Colombo town, 2 at Pesalai, and 1 at Talaimannar.

Pesalai.—The 2 cases occurred in May in the persons of 2 Ceylon Tamil fisherman chiefs. The first case acquired infection by direct contact with a case of cholera in Ramnad district in South India and the second case was infected by the first.

Talaimannar.—The case occurred in June in the person of a Ceylon Tamil fisherman. He was detained at Talaimannar Infectious Diseases Hospital with 3 others when on their way to Pesalai, as they were known to be direct contacts of a fatal case of cholera which occurred at Thangachchimadam in South India.

Colombo.—One case occurred in August in the person of an Indian Muslim. He was a contact of a case that developed cholera at Mandapam. The other two cases occurred in November in the persons of a Tamil and Sinhalese. The source of infection was not traced.

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

	1927.	1928.	1929.	1930.	1931.
Cases ..	27 ..	18 ..	7 ..	41 ..	9
Deaths ..	5 ..	1 ..	1 ..	6 ..	3

There were 9 cases with 3 deaths during the year, compared with 41 cases and 6 deaths in the previous year. The fatality rate is 33.3 per cent. which is 18.7 per cent. higher than that of 1930. Of the 9 cases, 2 occurred in Colombo, 1 at Kayts, 5 at Trincomalee with 2 deaths, and 1 at Mullaittivu with 1 death.

Colombo.—The first port case occurred in January in the person of a lascar fireman in ss. "Umzumbi" which came from Rangoon. This case was treated at the Infectious Diseases Hospital, Angoda. It was of a discrete type. The second case occurred in April in the person of another lascar fireman in ss. "Linaria" which arrived here from Calcutta. This case was also of the discrete type. It was isolated at the Infectious Diseases Hospital. Both cases recovered.

Kayts.—The case occurred in March in the person of a Ceylon Tamil seaman on the sailing vessel "Sri Viyalachimi Ammal" which came into Kayts from Coconada in the latter part of February with a foul Bill of Health. The schooner was kept under observation as Coconada was a smallpox infected area then. The case was of discrete type and ended in recovery.

Trincomalee.—The only epidemic this year was at Trincomalee. The first case of this outbreak occurred in a Brahmin priest who arrived from Madura in South India in November. He was first treated for measles. During the last stage of the disease when certain suspicious signs and symptoms appeared it was suspected to be smallpox. The case ended fatally. The second case was his daughter who recovered. The third case was a washerman who had washed clothes for the family of case No. 1 and it proved fatal. The fourth case was a labourer who had worked in the infected area. The case has recovered. The fifth case was a carpenter for whom the case No. 3 had washed clothes. This case also recovered.

Mullaittivu.—The case occurred in a brother of case No. 4 of the Trincomalee outbreak. He had gone to Trincomalee to visit the sick brother and by some means had escaped vaccination and detention, and returned to Mullaittivu. He fell ill in December and was found sick in his house by a Sanitary Inspector who although he had not previously seen a case of smallpox, suspected the disease and immediately brought the District Medical Officer to see the patient. This prompt action combined with a very vigorous vaccination campaign in the district prevented the occurrence of further cases.

(4) **Chickenpox.**—4,324 cases, as compared with 5,061 cases in 1930, were reported to the Sanitary Branch during the year with 1 death giving a fatality rate of 0.02 per cent. Of these cases 38.3 per cent. occurred in the Western Province, 28.9 per cent. in the Central Province, 13.6 in the Southern Province, and 11.5 in the Province of Sabaragamuwa. On an average 360 cases were reported each month with the maximum (582) in January and the minimum (186) in July. The incidence shows two peaks, one during the early part of the year and the other during the latter part.

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

	1927.	1928.	1929.	1930.	1931.
Hospital cases ..	36 ..	40 ..	35 ..	34 ..	27
Hospital deaths ..	9 ..	13 ..	11 ..	9 ..	11
Total number of deaths for the Island ..	11 ..	20 ..	17 ..	19 ..	18

Of the 27 cases treated, 15 were at the Infectious Diseases Hospital, Angoda, 4 at the Lady Havelock Hospital, 1 each in Kandy, Matale, Badulla, Buttala, Balangoda, Kahawatta, Karawanella, and Kegalla hospitals. Most of the cases were amongst children.

Forty-one cases, as compared with 52 cases in 1930, were reported to the Sanitary Branch during the year with 12 deaths giving a fatality rate of 29.27 per cent. Of these cases 75.6 per cent. occurred in the Western Province. All the cases were of the faucal variety. On an average 3 cases were reported monthly with the maximum (8) in January and the minimum (1) in April, August, and October.

(6) **Measles.**—279 cases, as compared with 741 in 1930, were reported to the Sanitary Branch during the year with 1 death giving a fatality rate of .35 per cent. Of the cases 20.07 per cent. occurred in the Western Province and 64.5 per cent. in the Central Province. On an average 23 cases per month have been reported with the maximum (64) in December and the minimum (4) in September.

(7) **Mumps.**—199 cases, as compared with 542 in 1930, were reported. Of these cases 50.2 per cent. occurred in the Western Province. On an average 16 cases were reported monthly, the incidence being high in the months of February and March.

(8) **Whooping Cough.**—166 cases, as compared with 309 cases in 1930, were reported with 3 deaths giving a fatality rate of 1.8 per cent. Of these cases 78.9 per cent. occurred in the Western Province. The incidence shows a rise in the months of July and December.

On an average 13 cases were reported monthly with the maximum (29) in December and the minimum (2) in February.

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

	1927.	1928.	1929.	1930.	1931.
Hospital cases ..	1,488 ..	1,687 ..	2,010 ..	2,478 ..	2,354
Hospital deaths ..	304 ..	368 ..	472 ..	601 ..	631
The total number of deaths for the Island ..	510 ..	577 ..	736 ..	843 ..	796

The actual prevalence of the disease cannot be judged from hospital admissions since many cases resort to ayurvedic treatment and the majority of cases probably are not notified. 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 16,553 deaths due to pyrexia in 1931 as against 19,106 in 1930.

2,317 cases were notified in 1931 to the Sanitary Branch of this Department, as compared with 2,535 in 1930, with 467 deaths giving a fatality rate of 20.15 per cent. Of these cases 49.4 per cent. occurred in the Western Province; and 19.9 per cent. in the Southern Province. On an average 193 cases were notified per month but the incidence during the year shows a wave from May to December, with the peak during October. Investigation of outbreaks points to the existence of carriers and contact infection. Anti-typhoid inoculation was administered as follows:—

1st dose ..	3,690
2nd dose ..	1,779

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

	1927.	1928.	1929.	1930.	1931.
Hospital cases ..	5,202	6,190	7,527	7,242	6,320
Hospital deaths ..	792	1,034	1,114	1,052	742
Total number of deaths registered for the Island ..	3,144	3,446	4,258	3,616	2,496

3,229 cases or 52.2 per cent. of the total number of cases were stated to be amoebic and 1,656 cases or 26.2 per cent, bacillary. The mortality rates were 11.3 per cent. and 11.0 per cent. respectively. These figures, however, are not of great value since the distinction was often made on clinical grounds. Only a small percentage of the cases were submitted to complete laboratory investigation and among them the bacillary type greatly preponderated (*vide* Section IX.).

The following provinces contributed the majority of the hospital cases:—

Western Province ..	..	2,992 cases with 356 deaths
Province of Sabaragamuwa ..	..	607 cases with 61 deaths
Northern Province ..	..	634 cases with 32 deaths
Central Province ..	..	751 cases with 125 deaths

27,301 out-patients were treated for this disease during the year, as against 40,365 during 1930. The distribution of out-patient cases is as follows:—

	1929.	1930.	1931.
Western Province ..	6,201	13,706	4,006
Central Province ..	4,363	3,996	3,554
Southern Province ..	3,621	2,843	2,472
Eastern Province ..	4,717	4,232	4,003
Northern Province ..	5,915	6,015	5,241
North-Western Province ..	3,356	2,633	2,400
North-Central Province ..	4,072	2,872	2,291
Province of Uva ..	1,866	1,247	1,219
Province of Sabaragamuwa ..	2,883	2,821	2,115

These figures show that this disease was prevalent, as in the previous year, in sporadic form in all the provinces, but has decreased in every province.

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:—

	1927.	1928.	1929.	1930.	1931.
Total number of deaths registered for the Island ..	3,144	3,446	4,258	3,616	2,496
Total number of deaths among Indian immigrant labourers ..	1,926	1,723	1,384	1,028	706
Indian immigrant labourers to the total number of deaths in the Island ..	61.2	50.0	32.5	28.4	28.2

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 continuing to achieve satisfactory results.

2,961 cases as compared with 3,814 in 1930 were notified to the Sanitary Branch of this Department during the year with 383 deaths giving a fatality rate of 12.96 per cent. Of these cases 56.03 per cent. occurred in the Western Province, 17.76 per cent. in the Southern Province. On an average 246 cases were reported monthly—the largest number (538) in September and the smallest (130) in March. The type of dysentery that occurred was largely of the bacillary type and investigations carried out point to carriers and contacts as the chief factors in the spread of infection.

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

	1927.	1928.	1929.	1930.	1931.
Number of cases treated at dispensaries ..	55,589	79,785	107,742	114,056	169,125
Hospital cases ..	6,147	7,237	4,424	4,374	7,877
Hospital deaths ..	112	101	94	96	178
Total number of deaths for the Island ..	1,756	1,958	1,918	2,074	2,393

(12) **Tuberculosis of the Lungs.**—The following table shows a comparison between the figures for 1931 and the figures for the previous four years:—

	1927.	1928.	1929.	1930.	1931.
Hospital cases ..	4,247	4,120	4,239	3,985	4,245
Hospital deaths ..	1,027	1,110	648	1,056	1,071
Total number of deaths registered for the Island ..	3,353	3,380	3,532	3,318	3,174

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 fourth institution, the Kankesanturai Sanatorium, in the north of the Island, where the climate is dry and mild, of 44 beds, has been completed and opened in January, 1932. A large number of cases are also treated in the Tuberculosis Wards of the General Hospital, Colombo. The number of cases treated at the outdoor dispensaries in the Island was 1,786.

(13) **Leprosy.**—During the year 1,163 cases with 68 deaths, as against 1,083 cases with 98 deaths in 1930, were treated at the Government hospitals including the two Asylums which are maintained in the Island for the segregation of lepers under the Leper Ordinance, No. 4 of 1901. A report on these two Asylums is given in Section VII.

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

	1927.	1928.	1929.	1930.	1931.
Hospital cases ..	3,482	2,667	2,111	1,640	1,200
Hospital deaths ..	11	2	4	5	4
Number of cases treated at dispensaries ..	36,131	34,171	24,841	23,684	24,708
Total number of deaths for the Island ..	12	9	10	10	4

During the year under review 14,086 injections were given to 6,862 patients as against 19,426 injections and 9,985 patients in 1930. 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 cure.

The continued and great decrease in the number of cases treated testifies to the success of the work of the Itinerating Medical Officers (of whom there are 4 now as against 13 in 1930 in the various provinces) who have dealt with this disease, which is now well under control everywhere and has almost disappeared in certain provinces.

The following tables show the total cases and deaths from the communicable diseases notified for the whole Island inclusive of the three municipal towns, and their distribution according to months and provinces:—

Disease.	Cases.	Deaths.	Fatality Rate, 1931.	Fatality Rate, 1930.
Chickenpox ..	4,324	1	0·02	0·04
Diphtheria ..	41	12	29·2	23·07
Dysentery ..	2,961	383	12·9	16·15
Enteric fever ..	2,317	467	20·1	22·52
Measles ..	279	1	·3	0·54
Mumps ..	199	—	—	—
Pulmonary tuberculosis ..	2,039	736	36·0	39·0
Whooping cough ..	166	3	1·8	1·3
Cholera ..	6	6	100·0	—
Plague ..	50	48	96·0	91·3
Smallpox ..	9	3	33·3	14·63

Table showing the Distribution of the Communicable Diseases Notified by Months.

Months.	Chicken-pox.	Diphtheria.	Dysentery.	Enteric Fever.	Measles.	Mumps.	Phthisis.	Whooping Cough.	Cholera.	Plague.	Small-pox.
January	582	8	232	205	15	11	161	7	—	6	1
February	509	3	182	188	16	27	158	2	—	15	—
March	546	5	130	209	40	37	147	12	—	8	1
April	386	1	174	158	7	17	125	5	—	3	1
May	318	8	222	244	21	27	155	6	—	3	—
June	216	6	135	175	4	21	156	18	1	1	—
July	186	4	223	195	29	13	185	27	—	5	—
August	290	1	261	190	21	11	214	16	1	3	—
September	265	2	538	199	4	10	215	11	—	3	—
October	323	1	246	207	18	5	191	16	—	2	—
November	371	—	303	172	40	14	163	17	2	1	—
December	332	2	315	175	64	6	169	29	—	—	5

Table Showing the Distribution of the Communicable Diseases Notified by Provinces.

Province.	Chicken-pox.	Diphtheria.	Dysentery.	Enteric Fever.	Measles.	Mumps.	Phthisis.	Whooping Cough.	Cholera.	Plague.	Small-pox.
Western	1,657	31	1,659	1,146	56	100	1,477	131	—	48	2
Central	1,253	3	222	297	180	12	92	9	—	—	—
Southern	590	—	526	462	6	44	172	9	—	—	—
Eastern	11	2	50	22	4	—	11	5	—	—	5
Northern	84	—	182	63	2	21	64	—	3	—	2
North-Central	10	—	8	—	2	1	2	3	—	—	—
North-Western	153	1	99	41	13	10	95	5	—	—	—
Sabaragamuwa	499	4	206	255	14	5	121	4	—	2	—
Uva	67	—	9	31	2	6	5	—	—	—	—

3.—VACCINATION.

The total number of primary vaccinations performed during the year under review was 149,428; of these 131,603 were successful and 3,274 were failures. In 14,551 cases the results were not determined. The percentage of successful primary vaccinations was 98.7 in 1929, 98.3 in 1930, and 98.1 in 1931.

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* Section IX. of this report).

B.—VITAL STATISTICS.

The following table summarizes the more important vital statistics for the Island since 1871:—

	Average Annual Estimated Population (Mid-year Estimates for 1922-1931).	Average Annual Number of Births registered (Actual Numbers for 1922-1931).	Average Annual Number of Deaths registered (Actual Numbers for 1922-1931).	Excess of Registered Births over Deaths.	Excess of Immigrants over Emigrants.	Average Annual Birth Rate per 1,000 (Annual Rates for 1922-1931).	Average Annual Death Rate per 1,000 (Annual Rates for 1922-1931).	Average Annual Infant Mortality, <i>i.e.</i> , Deaths of Children under 1 Year of Age per 1,000 Births (Annual Rates for 1922-1931).
8 71-1880	2,584,780	70,815	58,836	11,979	23,862	27.4	22.4	—
881-1890	2,888,104	83,664	69,238	4,426	10,398	28.9	24.0	158
8 91-1900	3,295,279	112,204	89,664	22,540	34,070	34.1	27.2	169
9 01-1910	3,838,750	145,962	110,347	35,615	17,735	38.0	28.7	180
9 11-1920	4,311,328	164,807	132,866	31,941	9,225	38.2	30.8	196
9 21-1930	4,920,028	194,611	128,916	65,695	14,880	39.5	26.2	182
1922	4,603,034	179,856	126,820	53,036	28,236	39.1	27.5	188
1923	4,684,306	181,437	141,891	39,546	41,726	38.7	30.3	212
1924	4,765,578	178,867	122,958	55,909	25,363	37.5	25.8	186
1925	4,846,850	193,261	117,543	75,718	5,554	39.9	24.2	172
1926	4,928,122	206,888	124,884	82,004	732*	42.0	25.3	174
1927	5,009,394	205,469	113,003	92,466	11,194*	41.0	22.6	160
1928	5,090,666	213,308	132,334	80,974	298	41.9	26.0	177
1929	5,171,938	198,005	135,274	62,731	18,541	38.3	26.1	187
1930	5,253,210	205,106	133,708	71,398	9,874	39.0	25.4	175
1931	5,325,354	199,170	117,453	81,717	31,531*	37.4	22.1	158

* Excess of emigrants over immigrants.

The following table gives the statistics of population, number of births and deaths with their rates, and infant mortality rate, according to provinces for the year 1931:—

	Population.	Number of Births.	Number of Deaths.	Birth Rate per 1,000 of the Population.	Death Rate per 1,000 of the Population.	Infant Mortality Rate per 1,000 Births Registered.
Western Province ..	1,451,700	44,835	27,629	30.9	19.0	132
Central Province ..	961,300	37,168	20,556	38.7	21.4	171
Southern Province ..	774,500	31,846	16,892	41.1	21.8	131
Northern Province ..	299,700	13,905	10,209	34.8	25.5	190
Eastern Province ..	213,100	9,726	6,090	45.6	28.6	201
North-Western Province ..	548,900	20,905	14,006	38.9	26.0	205
North-Central Province ..	97,400	4,225	3,430	43.4	35.2	266
Province of Uva ..	305,600	13,194	7,424	43.2	24.3	155
Province of Sabaragamuwa ..	581,900	23,366	11,216	40.2	19.3	128

The following return gives the statistics of population (estimated) for the Island for the year 1931, based on the Census taken on February 26, 1931:—

	Europeans.	Ceylonese including other Races than European and Indian Immigrants.	Indian Immigrants on Scheduled Estates.	Total.
Number of inhabitants (mid-year 1931) ..	9,188*	4,630,639	685,527	5,325,354
Number of births during the year 1931 ..	160	175,569	23,441	199,170
Number of deaths during the year 1931 ..	71	103,150	14,231	117,452
Number of immigrants during the year 1931 ..		114,785	68,337	183,122
Number of emigrants during the year 1931 ..		138,837	75,866	214,203

* In the estimation of the European population for 1931 emigration figures have not been taken into account.

The following are the vital statistics by communities for the Island for the year 1931, compared with those for 1929 and 1930:—

	1929.	1930.	1931.
I.—Ceylonese population (i.e., the total population of the Island, less the European population and the Indian immigrant population on estates):—			
Estimated population ..	4,738,531	4,767,181	4,630,639
Total births ..	172,796	180,130	175,569
Birth rate per thousand ..	36.8	38.1	37.9
Total deaths ..	116,819	117,295	103,150
Death rate per thousand ..	24.9	24.8	22.3
Infant mortality (rate per thousand births registered).	183	172	155
II.—European population (including officials):—			
Estimated population ..	8,873	8,969	9,188
Total births ..	147	164	160
Birth rate per thousand ..	16.6	18.4	17.4
Total deaths ..	75	68	71
Death rate per thousand ..	8.5	7.6	7.7
Infant mortality (rate per thousand births registered).	14	18	25

	1929.	1930.	1931.
III.—Indian immigrant population on estates :—			
Estimated population ..	731,177 ..	733,981 ..	685,527
Total births ..	25,064 ..	24,813 ..	23,441
Birth rate per thousand ..	34.3 ..	33.5 ..	34.2
Total deaths ..	18,381 ..	16,346 ..	14,231
Death rate per thousand ..	25.1 ..	22.1 ..	20.8
Infant mortality (rate per thousand births registered) .	214 ..	194 ..	184

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 ..	.. 31,440 ..	158
(b) in the 35 principal towns ..	.. 4,195 ..	188
(c) in the rural areas ..	.. 27,245 ..	154

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 not 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 since the larger portion of them is certified to by Registered Medical Practitioners.

From the tables given above, it will be noted that the death rate in 1931 was rather less than in 1930 among each section of the population. For the second time the death rate among the Indian labourers was less than the rate among the Ceylonese population. While the infantile mortality rates among the Ceylonese and Indian populations are still high, the decline, as compared with 1930 is satisfactory, viz., 155 in 1931 as compared with 172 in 1930 for the Ceylonese population, and among the Indian immigrant labourers 184 in 1931—the lowest rate yet recorded—as compared with 194 in 1930. The rate among the European population was higher, 25 in 1931, as compared with 18 in 1930.

Causation of Deaths.—The following table shows the number of deaths registered amongst all classes (Ceylonese, European, and Indian immigrant populations) during the year 1929, 1930, and 1931 under the several classes of diseases :—

	1929.	1930.	1931.
I.—Epidemic, Endemic, and Infectious Diseases—			
(a) Epidemic diseases ..	9,629 ..	9,234 ..	7,633
(b) Septic diseases ..	150 ..	155 ..	122
(c) Tuberculous diseases ..	3,532 ..	3,586 ..	3,516
(d) Venereal diseases ..	174 ..	239 ..	202
II.—General Diseases—			
(a) Cancer or malignant diseases ..	451 ..	460 ..	468
(b) Other general diseases ..	11,794 ..	11,438 ..	9,643
III.—Diseases of the nervous system and organs of the senses ..	19,776 ..	18,580 ..	14,927
IV.—Diseases of the circulatory system ..	1,346 ..	1,331 ..	1,273
V.—Diseases of the respiratory system ..	13,881 ..	12,741 ..	12,497
VI.—Diseases of the digestive system ..	17,515 ..	17,293 ..	14,507
VII.—Non-venereal diseases of the genito-urinary system ..	1,829 ..	2,130 ..	1,971
VIII.—The puerperal state ..	4,031 ..	4,381 ..	4,142
IX.—Diseases of the skin and cellular tissues ..	10,122 ..	10,446 ..	9,367
X.—Diseases of bones and organs of locomotion ..	15 ..	19 ..	24
XI.—Malformations ..	22 ..	23 ..	20
XII.—Diseases of early infancy ..	10,236 ..	10,073 ..	9,129
XIII.—Old age ..	5,952 ..	6,390 ..	6,001
XIV.—Affections produced by external causes ..	2,719 ..	2,710 ..	2,695
XV.—Ill-defined diseases (including pyrexia) ..	22,102 ..	22,480 ..	19,316

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

	1929.	1930.	1931.
(1) Dysentery	4,258	3,616	2,496
(2) Pulmonary tuberculosis	3,229	3,318	3,174
(3) Infantile convulsions	16,788	15,445	12,135
(4) Diarrhoea	9,662	9,428	6,930
(5) Pneumonia	8,979	7,963	7,626
(6) Ankylostomiasis	2,172	2,330	2,247
(7) Dropsy	2,048	2,101	1,738
(8) Anaemia	2,750	2,711	1,787
(9) Intestinal parasites	4,326	4,159	3,995
(10) Puerperal septicaemia	1,466	1,597	1,474
(11) Malaria	2,326	2,387	1,661
(12) Enteric fever	736	843	796
(13) Rickets	4,958	4,629	3,860
(14) Tetanus	320	338	333
(15) Rabies	62	58	47
(16) Cholera	19	—	6
(17) Influenza	1,918	2,074	2,393
(18) Leprosy	95	108	68
(19) Plague	71	42	48
(20) Scarlet fever	—	—	—
(21) Anthrax	1	2	—
(22) Smallpox	2	6	3
(23) Diphtheria	17	19	18
(24) Parangi	10	10	4
(25) Pyrexia	18,744	19,106	16,553

The above figures show that pyrexia and infantile convulsions continue to be the two principal causes of death, followed by diarrhoea and pneumonia.

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

	1928.	1929.	1930.	1931.
(1) Dysentery	1,723	1,384	1,028	706
(2) Debility	2,795	2,817	2,661	2,398
(3) Diarrhoea and enteritis	1,597	1,349	1,080	846
(4) Pneumonia	2,816	2,589	2,077	1,949
(5) Ankylostomiasis	1,299	1,237	1,186	1,019
(6) Infantile convulsions	1,601	1,538	1,166	1,023
(7) Dropsy	119	94	74	60
(8) Pulmonary tuberculosis	382	327	306	283
(9) Anaemia	42	63	45	60
(10) Other diseases	7,450	6,984	6,723	5,887

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

III.—HYGIENE AND SANITATION.

A.—GENERAL REVIEW OF WORK DONE AND PROGRESS MADE.

Colombo District C Division was divided into 2 areas and each area placed in charge of a Medical Officer of Health with Dehiwala and Moratuwa as headquarters. At the request of the Urban District Councils of these towns the Medical Officer of Health was appointed an executive officer of the Council with the approval of Government and placed in charge of all public health work of the town subject to the administrative control of the Chairman of each Council.

By this arrangement considerable impetus has been given to public health activities in these Urban District Council areas and the standard required by the Department in regard to sanitation has been maintained.

The health work in the two divisions is being developed on Health Unit lines and all the activities in Health Unit areas are being gradually introduced.

In the other provinces and districts Medical Officers of Health did a certain amount of school medical work and gave mass treatment for hookworm infestation in addition to their other duties. General sanitation has been maintained satisfactorily throughout and special attention has been paid to health education both by Medical Officers of Health and Sanitary Inspectors.

There was much demand for the services of the Sanitary Engineering Division from Local Bodies in connection with water supplies, drainage, disposal of refuse, town improvement schemes, &c. This division is doing the work of the Sanitary Engineer and staff whose appointment was recommended by the Commission on Local Government in order to act in an advisory capacity to Local Bodies. In the absence of this advisory staff Local Bodies would be considerably handicapped in their attempts to improve the general sanitation of their areas. The Sanitary Engineering division in addition to its work for the department was therefore of great use to Local Bodies. Its usefulness could be enhanced if its staff and equipment could be increased.

1.—PREVENTIVE MEASURES.

(a) MOSQUITO OR INSECT-BORNE DISEASES.

(1) **Malaria.**—Malaria is the most prevalent disease in the Island. The diminution in the amount of malaria which started during the last quarter of 1930 was generally maintained throughout 1931. Only in the Western and to a less extent in the Central, Uva, and Sabaragamuwa Provinces was there a number of sharp outbreaks as the result of the drought, in villages bordering on rivers and streams. There were 27,714 cases admitted as in-patients to hospitals and 1,419,807 cases treated at dispensaries and out-patient departments of hospitals. Benign tertian malaria was the common form of the disease. The mortality among the hospital admissions was very low, as it was last year. There were 615 deaths from the disease in its acute stages—usually the cerebral type of malignant tertian malaria—and 141 deaths were attributed to malarial cachexia.

The number of malaria cases treated annually in hospitals and dispensaries for the last ten years is as follows:—

Year.	Cases treated in Hospitals.	Percentage to the Total Number of Patients treated in the Hospitals.	Cases treated in Dispensaries.	Percentage to the Total Number of Patients treated in the Dispensaries.
1922	29,377	18.0	956,810	40.3
1923	34,522	18.3	1,193,225	43.5
1924	26,856	15.2	925,476	37.0
1925	22,600	12.0	785,903	33.3
1926	29,334	14.2	1,061,457	36.9
1927	25,146	12.5	865,594	31.4
1928	44,356	19.7	1,542,029	44.2
1929	37,591	17.8	1,629,586	44.6
1930	36,901	18.0	1,722,210	45.2
1931	27,714	14.4	1,419,807	30.1

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

	1929.		1930.		1931.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
General Hospital, Colombo	3,268	154	2,742	151	623	45
Western Province	2,806	53	3,634	72	2,774	72
Central Province	5,496	97	5,541	86	3,869	73
Northern Province	3,352	60	3,210	53	2,266	50
Eastern Province	1,589	19	1,243	20	876	16
Southern Province	2,807	49	3,088	85	2,474	61
North-Western Province	4,044	149	3,895	157	2,702	90
North-Central Province	2,502	49	1,851	33	1,468	26
Province of Uva	4,190	68	4,391	54	4,280	52
Province of Sabaragamuwa	7,433	132	7,236	126	6,334	125
Lunatic Asylum	104	9	70	4	48	5
	37,591	839	36,901	841	27,714	615

Many 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 prevalent diseases.

13,409 lb. and 2,269,775 tablets of quinine, which cost Rs. 263,934, were issued free through various agencies for curative and preventive purposes.

(i.) **Anti-Malaria Campaigns.**—The main activities consisted of—(a) the continuance of anti-malaria work at Anuradhapura, Kurunegala, Chilaw, Puttalam, Badulla and the maintenance of past work at Trincomalee and Mahara Jail, (b) special precautionary measures at Kataragama during the Esala festival, (c) anti-malaria work around the railway stations of Polgahawela, Potuhera, Rambukkana, and, since November 1, at Maho.

Anuradhapura.—The campaign is now in its ninth year. The incidence of malaria was determined by two spleen surveys made in February and October among school children in the town and under 12 years of age. A spleen rate of 23.1 per cent. was got in February among 377 examined and 17.6 per cent. among 284 examined in October. A spleen survey was also made of non-school-going children living in the town and under 12 years of age. A total of 260 gave a spleen rate of 26.5 per cent. The spleen rate in February, 1930, among school children was 34.6 per cent.

The total number of applications of oil as an anti-larval measure made in the year totalled 39,793, the cost of labour being Rs. 1,604.48 and cost of materials being Rs. 7,379.13, making a total cost of Rs. 8,983.61. To this must be added the cost of transport, &c., which is difficult to compute. The efficiency rate varied from 77.8 per cent. to 100 per cent. Paris Green distribution as an anti-larval measure was discontinued pending trials with various diluents.

5,714 inspections were made of drains aggregating 2,185,835 feet and 3,604 borrow pits, pools, &c., were generally attended to.

The Halpanu-ela has served a very useful purpose during the heavy floods in December, 1931. About 50 feet of the channel were stone-built and lime-plastered. The cost of all work done on this channel amounted to Rs. 1,927.69. A new channel—the Toluwila canal—was built under the supervision of the Sanitary Engineer and is functioning remarkably well.

53 minor breeding places were filled using a total of 158 cubes of earth obtained by the gradual levelling of surrounding high land. 6,482 and 11,251 five-grain and three-grain tablets respectively of quinine were distributed at the schools.

Kurunegala.—The incidence of malaria was determined by two spleen surveys made in February and October. A spleen rate of 14.8 per cent. among 705 examined was obtained in February and a spleen rate of 11.0 per cent. among 563 examined in October. The corresponding rates for 1930 were 11.9 per cent. and 12.8 per cent. One spleen survey of non-school-going children was made in town. The subjects examined were under 12 years of age. Among 357 examined a spleen rate of 22.4 per cent. was obtained.

The total number of applications of oil made was 182,219 at a total cost of Rs. 2,982.54 for labour and Rs. 3,164.94 for materials, making a total of Rs. 6,147.48 for this anti-larval measure. The efficiency rate ranged from 86.3 per cent. to 100 per cent.

Paris Green work was discontinued at this centre as well.

Earth drains were regularly inspected and maintained. A total of 508,337 feet was maintained at a cost of Rs. 2,104.73. A cumulative total of 299,324 square yards was cleared around breeding places at a cost of Rs. 2,664.92. Several minor breeding places were filled at a cost of Rs. 923.72. The total filling done amounted to 115,613 cubic feet.

Quinine distribution was carried out among school children. 347,498 grains were distributed. Fish distribution into wells has been taken in hand and should prove a useful measure in controlling breeding in wells.

Chilaw.—The incidence of malaria was determined by two spleen surveys made in February and October. The total examined in February was 675, which gave a spleen rate of 12.1 per cent. and in October 674, which yielded a spleen rate of 7.6 per cent. The rate obtained in February, 1930, was 12.3 per cent. Among 46 non-school-going children examined a rate of 13.0 per cent. was obtained.

The number of applications of oil was 43,428, labour costing Rs. 2,657.95 and materials Rs. 3,261.63, making a total cost of Rs. 5,919.58. The efficiency rate varied between 37.5 per cent. and 100 per cent. The distribution of Paris Green was recommenced in December. 114 applications were made and $\frac{3}{4}$ lb. of pure Paris Green was consumed. 438 small borrow pits were filled at a cost of Rs. 3,640.75.

14,460 five-grain and 8,075 three-grain tablets of quinine were distributed for the year at the several schools in town.

A well-attended exhibition of public health activities with special prominence given to malaria was held from October 15 to 17.

Puttalam.—The spleen survey examination held in March and October gave spleen rates of 17.5 per cent. and 9.1 per cent. respectively. The rate obtained in February, 1930, was 49.5 per cent. Among the non-school-going children a rate of 20.0 per cent. was obtained.

The number of applications of oil totalled 24,472. The cost of labour was Rs. 1,587.25 and materials Rs. 2,848.68. The general maintenance of drains, borrow pits coconut trenches, &c., cost of Rs. 2,925.25. 778 breeding places were filled at a cost of Rs. 1,705.35.

74,016 grains of quinine were distributed at the schools. Fish distribution into all pottery and other wells has been effected and good results may be expected of this measure.

Badulla.—A spleen rate of 8.4 per cent. was got in February and 3.8 per cent. in November. The non-school-going children gave a rate of 2.8 per cent. Oiling is the only anti-larval measure adopted in this town and it is specifically directed against the breeding places of *A. culicifacies*. The cost of labour was Rs. 4,647.96 and of materials Rs. 2,702.47. 18,955 applications were made during the year. 10,778 three-grain tablets and 18,206 five-grain tablets of quinine were distributed in the year under review.

Kataragama.—The usual preventive measures were adopted in this village prior to and during the Esala festival. Oiling of the river and distribution of quinine were the more important steps taken.

Trincomalee.—Maintenance of anti-malaria measures carried out in past years formed the chief work at this centre.

Drains, channels, kernies, and such places were weeded, cleared, regraded, or otherwise maintained in good condition.

The town area, with the exception of the tanks and ponds, was regularly oiled. The efficiency rate for oiling varied from 69 per cent. to 92 per cent.

In November, just after a prolonged drought of about four months, all the wells in the town were restocked with larvivoracious fish (Millions) and the fish were subsequently found to be thriving well.

The total cost of the campaign at this station amounted to Rs. 3,246.88.

Mahara Jail.—Anti-malaria works at this jail were maintained in very good condition.

The monthly average rate of malaria cases among the prisoners was 1.0 per cent. as against 1.5 per cent. in 1930, 1.7 per cent. in 1929, 4.6 per cent. in 1925, and 37.4 per cent. in 1922.

Railway.—Maintenance work was performed at the stations of Polgahawela, Potuhera, and Rambukkana; and Maho was established as a new centre of anti-malaria operations. Work at the last-mentioned station will be of an intensive nature combined with the improvement of the general sanitation of the town.

(ii.) **Medical Entomology.**—The entomological field staff was engaged upon investigation and checking ("efficiency") work in connection with Malaria Control measures and Health Unit operations at the towns of Anuradhapura, Badulla, Chilaw, Kegalla, Kurunegala, Puttalam, and Trincomalee.

Malaria Control.—The Departmental Committee on Malaria consisting of the Assistant Director of Sanitary Services, the Medical Entomologist, the Sanitary Engineer, and the Superintendent, Anti-Malaria Campaigns, held 12 meetings during the year. The business transacted included the consideration of several

important questions of policy, and all matters relating to the administration of the various malaria campaigns.

* In October a Committee consisting of the Medical Entomologist, the Medical Officer of Health (Colombo), the Advisory Health Officer, and the Superintendent, Anti-Malaria Campaigns, was appointed to consider the draft bill for the prevention of mosquito breeding, &c. This Committee issued a report in which attention was drawn to the defects in the draft bill, and suggestions were offered for the revision of several of the clauses.

Research, &c.—The entomological work at the Malaria Campaign and Health Unit centres was conducted on lines similar to those described in the reports for 1929 and 1930. It involved the collection and identification of approximately 130,000 larvae and adults of anopheline mosquitoes, and the examination of over 3,000 potential breeding places. Investigations were also made at the Irrigation Department's camp at Akathimurippu, and at the Leper Colony at Mantivu.

Recommendations for control measures based upon the entomological findings in the several investigations were submitted to the Malaria Departmental Committee.

An analysis of the records of the recent work at Badulla (2,500 ft.) showed that over 80 per cent. of the potential breeding places (approximately 1,200) in the town contained larvae of *Anopheles* mosquitoes. Twelve species were found of which *A. subpictus* var. *vagus*, *A. hyrcanus*, *A. maculatus*, *A. minimus* (*varuna*), *A. jamesi*, *A. pallidus*, *A. culicifacies*, and *A. barbirostris* were the most prevalent. Paddy fields were a prolific source of *Anopheles*, the predominant species breeding therein being *A. subpictus* var. *vagus*, *A. hyrcanus*, and *A. minimus*; but larvae of *A. maculatus* were sometimes present in considerable numbers. *A. maculatus* and *A. minimus* larvae were also prevalent in the rivers (Badulla-oya and Kuda-oya), streams, and irrigation channels, and in unbuilt drains, pits, and low-lying swampy areas. *A. culicifacies* were breeding chiefly in the rivers and their associated pools, and in pits which had been formed for purposes of brick making; it was found infrequently and usually in small numbers in other types of breeding places. Considerable variation in the numerical prevalence of the larvae of different species of *Anopheles* occurred in almost every situation during the period of observation. *A. minimus*, *A. culicifacies*, and *A. maculatus* all showed definite periods of increased prevalence. Larvae of the first named species were most numerous in July, when they were especially prevalent in the paddy fields, and in August when they were abundant in the rivers and the river pools. *A. culicifacies* larvae were most numerous in August and September and *A. maculatus* larvae in December and January. The results obtained from bi-monthly examinations of selected houses and huts (27 in number) for adult mosquitoes over a period of eight months were disappointing and very few *Anopheles* were captured. Night trapping has now been instituted. At present *A. culicifacies* is the only species which is definitely known to be an active carrier of malaria at Badulla. *A. maculatus* and *A. minimus* (*varuna*) have not been incriminated, and the epidemiological evidence available appears to indicate that the former species at least is not seriously concerned in transmission. The data collected showed that the rivers during the dry season (June to August or September), and the clay pits were factors of great importance in the production of malaria in the town.

Investigations at Puttalam showed that control measures must be directed primarily against *A. culicifacies*. At this town the species was breeding in a relatively wide range of situations thus reducing in value the control principle of species sanitation. Wells, cement tanks in mosque, borrow pits, and streams were, however, particularly favoured as breeding places.

With a view to providing efficient mosquito-proofing for hospital wards, experiments on the passage of mosquitoes through wire gauze of different types and apertures were commenced in September. The initial experiments were performed with *Aedes* (*Stegomyia*) *albopicta*, and an interim report on the subject was submitted to Government.

(2) **Dengue.**—There was no epidemic of dengue during 1931. 24 cases were admitted to hospital (of which 18 were in the General Hospital) and 33 cases were treated as out-patients during the year, as against 43 and 29 the previous year.

(3) **Filariasis.**—21 cases of filarial diseases were admitted to hospitals and 449 cases were treated as out-patients (of which 88 were in the Eastern Province, 201 in the Province of Uva, 96 in the North-Western Province, and 64 in the other provinces) during the year 1931.

(b) **HELMINTHIC DISEASES.**

Ankylostomiasis.—The following table shows a comparison of the 1931 figures with the figures for the previous five years:—

	1926.	1927.	1928.	1929.	1930.	1931.
Number of cases at dispensaries ..	152,195..	170,818..	177,372..	178,041..	171,375..	246,620
Cases admitted to hospitals ..	13,040..	12,600..	12,921..	12,129..	10,288..	9,902
Total number of deaths in hospitals ..	897..	789..	941..	849..	857..	724
Total number of deaths registered for the Island ..	2,121..	1,943..	2,161..	2,172..	2,330..	2,247

Ankylostomiasis Campaign.—The efforts which have been made during the past fifteen years have reduced considerably the damage caused by ankylostomiasis. The disease, however, is still endemic in all parts of the Island, 79 per cent. of the population being infested with the hookworm, *Necator americanus*. There have been two main lines of attack on the disease—(a) sanitation to prevent pollution of the soil and (b) mass treatment to reduce the degree of infestation.

Mass treatment has been applied to certain groups of the population, viz., (a) hospital and dispensary patients, (b) estate population, (c) school children, (d) villagers, and (e) immigrant labourers passing through Mandapam Camp. Nearly one-quarter of the population of Ceylon received treatment during 1931.

In the past, the agencies carrying out treatment have been Government hospitals and dispensaries, the Itinerating Units of the Ankylostomiasis Campaign, Health Units, Mandapam Camp, and Estate Medical Staffs. As a measure of retrenchment the eight Itinerating Units, each consisting of a Medical Officer, 4 dispensers, and a caretaker, were disbanded at the end of December, 1930, only the dispensers being retained as part of the campaign staff, and the work hitherto done by the units was distributed as far as possible among other branches of the Department. The reorganization has resulted in a saving of Rs. 88,264, which means a reduction of nearly 7 cents in the cost of each treatment. The total number of treatments given by all agencies exceeded the number given in 1930 by 112,475 and was the third highest recorded for any year, the figures for the past twelve years being as follows:—

1920 ..	290,732	1924 ..	1,167,605	1928 ..	1,547,173
1921 ..	237,292	1925 ..	1,153,937	1929 ..	1,349,434
1922 ..	356,011	1926 ..	1,357,901	1930 ..	1,293,931
1923 ..	831,577	1927 ..	1,573,955	1931 ..	1,406,406

The following table shows in detail the agencies and the number of treatments given by each of them in 1931 and 1930:—

Agencies.	Treatments.			
	First.	Subsequent.	1931. Total.	1930. Total.
Government Institutions ..	882,428	114,820	997,248	773,750
Campaign Staff—				
(1) School children ..	87,571	—	87,571	75,217
(2) Villagers ..	48,559	—	48,559	13,255
(3) Estate labourers ..	23,396	—	23,396	152,693
Health Units—				
(1) School children ..	10,916	—	10,916	8,006
(2) Villagers ..	5,557	—	5,557	—
(3) Estate labourers ..	1,216	—	1,216	1,118
Mandapam Camp ..	64,086	—	64,086	80,401
Estate Staff ..	138,420	29,437	167,857	189,491
Total ..	1,262,149	144,257	1,406,406	1,293,931

Government Institutions.—Persons treated under this heading were mostly the out-patients of hospitals and dispensaries, of whom as many as possible were given standard anthelmintic treatment in addition to the treatment they received for their particular complaints. Campaign dispensers when attached to a hospital or dispensary have given talks on hookworm disease to the waiting out-patients and by this means have induced many persons to take treatment. They have also lectured in villages and persuaded persons to attend the dispensary specially for hookworm treatment. Hospital in-patients also have as a routine procedure received anthelmintic treatment. Further, at a number of places, *e.g.*, Chavakachcheri, Kilinochchi, and Vavuniya in the Northern Province and Wariyapola in the North-Western Province, the Medical Officers and Apothecaries, without help from the campaign staff, have given treatments in schools and villages in their areas.

The large increase (223,498) in the number of persons treated under this heading is attributable chiefly to the special efforts of the officers in charge of hospitals and dispensaries and to the help given them in certain instances by the campaign dispensers.

A printed memorandum was issued by the Department early in 1931 to all officers responsible for hookworm treatment, which in addition to giving directions for treatment, emphasized the necessity for adequate dosage. It has improved considerably the quality of the treatments given during the year. Previously many Medical Officers and Apothecaries fearing accidents after the administration of the standard dose of oil of chenopodium and carbon tetrachloride had been giving small and ineffective amounts of these drugs.

Campaign Staff.—After the disbandment of the Itinerating Units, the staff of the Ankylostomiasis Campaign consisted of the Superintendent (Dr. A. T. Kuriyan), 2 clerks and a peon for the office, 8 microscopists and 2 attendants for the laboratory, and 32 dispensers for the field work. The dispensers on their release from itinerating duty were attached to hospitals and dispensaries, to School Medical Officers, Parangi Campaign Officers, Health Units, and in the last quarter of the year to Assistant Inspecting Medical Officers of estates. Their duties were (a) to give talks and lectures in schools and villages, on estates, and to patients waiting at dispensaries and so induce persons to accept treatment, (b) to administer the treatment prescribed by the Medical Officer or Apothecary, and (c) to collect specimens and dispatch them to the laboratory.

The preceding table shows that 11,753 more school children and 36,304 more villagers were treated by the campaign staff in 1931 than in 1930. The percentage of children who underwent treatment in the schools dealt with rose from 35.9 in 1930 to 51.7 in 1931. This improvement was due to some extent to the fact that parents placed greater confidence in the permanent Medical Officer or Apothecary who was always available in case of emergency, than in the officer of an Itinerating Unit who remained in the district for a few days only.

The greatly increased number of villages treated by the Campaign staff has been a satisfactory result of the reorganization. A definite attempt is being made to bring treatment within still easier reach of the villager, since nowadays the severest ankylostome infestations come from villages and not from estates. With dispensers attached to dispensaries and Health Units for periods varying from three months to a year, it has been possible to undertake systematic village work under the supervision of the District Medical Officer or Medical Officer of Health. Previously only those villagers were treated who assembled at the schools on the days of school treatment by the Itinerating Units.

The chief work of the Itinerating Units during 1930 had been the mass treatment of labourers and their dependants on estates—a population of some 700,000 persons and the discontinuance of the units has led to a great diminution in the number of estate treatments. This result was foreseen but it was considered safe to reduce the intensity of the work for a period of some years in view of the fact that all estates had recently been thoroughly treated on more than one occasion and that a large amount of treatment would still continue to be given

by estate medical staffs. Estate work has, however, not been given up by the Department and Estate Superintendents were informed that on application they might obtain free of charge the services of the Medical Officer of the district and of an "anky" dispenser to give treatment, while in the latter part of the year it was arranged that Assistant Inspecting Medical Officers of estates when giving notice of a visit of inspection should offer to treat the estate school children and labourers. Campaign dispensers were supplied to the Assistant Inspecting Medical Officer for this purpose.

Health Units.—The treatments given by each Health Unit are shown in the following table:—

Health Unit.	School Children.	Others.	Estate Labourers.	Total.
Kegalla	1,802 ..	684 ..	759 ..	3,245
Matara	2,073 ..	1,284 ..	— ..	3,357
Kalutara	1,729 ..	577 ..	29 ..	2,335
Kadugannawa ..	1,239 ..	463 ..	402 ..	2,104
Trincmalee	1,495 ..	682 ..	— ..	2,177
Panadure	1,377 ..	702 ..	— ..	2,079
Kurunegala	609 ..	1,035 ..	— ..	1,644
Dehiwala	592 ..	130 ..	26 ..	748
Total for 1931 ..	10,916	5,557	1,216	17,689
Total for 1930 ..	8,006		1,118	9,124

In the third quarter of the year a dispenser was permanently attached to each unit in order to carry out mass treatment in villages, and it is anticipated that the ankylostomiasis work of these units will increase considerably in the future.

Mandapam Camp.—All immigrant labourers and their dependants proceeding to Ceylon from Southern India spend five days of quarantine in the camp and during this period receive hookworm treatment unless there is some contra-indication. The fall in numbers is due to the decrease in immigration.

Estate Staff.—Superintendents of estates rendered quarterly returns of the number of treatments given by their estate dispensers. Though the number fell by 21,634, as compared with 1930, it is considered satisfactory in view of the serious nature of the trade depression and of the decrease in the estate population, that estate staffs were able to give as many as 167,857 treatments.

Casualties after Treatment.—Last year's report contained a detailed statement of the drugs and of their dosage. During 1931 one death was reported after treatment. A school girl, 10 years of age, was given 5 minims of oil of chenopodium and became ill 36 hours afterwards. She was removed to hospital where she remained in a drowsy condition until she died 76 hours after treatment. Post-mortem examination showed fatty degeneration of the liver and death was probably due to delayed chenopodium poisoning in a patient whose liver was already diseased.

Educational Work.—The waiting room for patients in hospitals and dispensaries was used by the dispensers to give short talks on hookworm to those gathered there. In the afternoons the dispensers went out into the villages on propaganda work. At schools chart lectures were delivered by them to school children. For Health Exhibitions in different parts of the country posters, charts, specimens of intestinal parasites, and drugs used in anthelmintic treatment were supplied by the campaign. Microscopists were sent out to such places to demonstrate to the public the eggs and larvae of hookworm and to explain to them about the hookworm exhibits. Wherever possible, pamphlets on hookworm were distributed freely. Lantern lectures were delivered occasionally to public bodies by the campaign staff.

Laboratory Results.—During the year under review important changes in the laboratory technique were introduced. From the beginning of the year all specimens received were classified according to the character of the stools and the results of egg-counts were converted on the basis of formed stools and expressed in multiples of 100, as follows:—

1. Multiply the egg-count by 200.
2. Multiply the result by the following:—

For diarrhoeic stools	..	..	..	4
For mushy stools	..	..	..	2
For soft formed stools	..	..	..	1½
For formed stools	..	..	..	1

3. Give egg-count in round numbers:—

230	..	200	1,232	..	1,200
265	..	300	1,253	..	1,300

According to Dr. W. C. Sweet who made an island-wide survey of hookworm infestation in 1925, 2,200 was the average egg-count per gram per person for all provinces, on the basis of formed stools, the original figure of 1925 according to the old calculation being 1,102; the incidence of infestation in both calculations is the same, viz., 90.5 per cent.

It has been the practice to examine all the specimens in the order of their receipt at the laboratory, and in most cases the interval between collection in the field and examination at the laboratory was not less than 10 to 14 days. The delay caused changes in the character of the faeces and disintegration of the ova of the parasites, and the result thus obtained was not a true picture of the state of infestation and incidence. Arrangements were made in August for dispatch of the specimens from the field on the very day of their collection and for examination within three days of their arrival at the laboratory, ensuring thereby an interval of not more than five days between collection and examination.

Dispensers and Health Units were directed to dispatch specimens to the laboratory on scheduled dates and the numbers so sent were also restricted so that there might not be any accumulation of work in the laboratory.

The results of examination by Stoll's method, on the basis of formed stools, for 1924-25, for the period January to August, 1931, when examination was done not less than 10 to 14 days after collection, and September to December, 1931, when not more than five days elapsed after collection for examination, are tabled below separately:—

Intensity of Hookworm Infestation for all Provinces in Ceylon, 1924-25.

Province.	Number of Persons examined.		Average Egg- count per Gram per Person (basis formed Faeces).	
Northern	2,476	..	2,700
North-Central	1,301	..	3,100
North-Western	3,408	..	3,100
Eastern	3,396	..	2,300
Uva	3,575	..	1,600
Southern	3,207	..	1,900
Central	7,363	..	1,900
Sabaragamuwa	3,879	..	2,400
Western	3,902	..	1,900
Total	32,507	..	2,200

Microscopical Examinations made during January-August, 1931,
on the Basis of Formed Stools. (Examined 10 to 14
Days after Collection.)

Province.	Before Treatment.		After Treatment.	
	Number of Persons examined.	Average Egg-count per Gram per Person.	Number of Persons examined.	Average Egg-count per Gram per Person.
Northern	603	1,300	106	500
North-Central	41	1,000	—	—
North-Western	1,195	1,800	174	600
Eastern	1,256	1,500	29	400
Uva	471	900	33	200
Southern	1,413	1,000	149	400
Central	4,519	1,500	712	400
Sabaragamuwa	2,631	1,000	916	500
Western	4,770	1,200	480	700
All Provinces	16,899	1,300	2,599	500

Microscopical Examinations made during September-December, 1931,
on the Basis of Formed Stools. (Examined within
Five Days after Collection.)

Province.	Before Treatment.		After Treatment.	
	Number of Persons examined.	Average Egg-count per Gram per Person.	Number of Persons examined.	Average Egg-count per Gram per Person.
Northern	422	2,000	—	—
North-Western	1,101	1,700	262	700
Eastern	734	2,200	44	900
Uva	136	1,100	—	—
Southern	1,209	1,700	272	700
Central	2,634	2,000	201	700
Sabaragamuwa	327	1,400	27	800
Western	2,908	2,500	304	1,000
All Provinces	9,471	2,100	1,110	800

Other incidental findings during the course of microscopical examinations are given below:—

The Percentage of Infection for the Different Intestinal Parasites.

	Before Treatment.		After Treatment.	
	Number.	Percentage infected.	Number.	Percentage infected.
Total examinations: 35,803.				
Persons examined	30,602	—	5,201	—
Infected with—				
<i>Necator americanus</i>	24,053	78.6	2,983	57.4
<i>Ascaris lumbricoides</i>	27,047	88.4	3,646	70.1
<i>Trichuris trichuria</i>	25,168	82.2	3,760	72.3
<i>Enterobius vermicularis</i>	780	2.5	80	1.5
<i>Taenia</i> (sp.)	23	0.08	4	0.08

Multiple Parasitic Infection.

	Before Treatment.		After Treatment.	
	Analysis of 30,602 Examinations.		Analysis of 5,201 Examinations.	
	Number.	Percentage.	Number.	Percentage.
Harbouring no parasite	652	2.1	338	6.5
With one kind of parasite	2,950	9.6	1,029	19.8
With two kinds of parasite	8,690	28.4	1,969	37.9
With three kinds of parasite	17,839	58.3	1,824	35.0
With four kinds of parasite	471	1.5	41	.8
Total infected with some kind of parasite	29,950	97.9	4,863	93.5

Research.—(a) A preliminary investigation of the value of hexylresorcinol in the treatment of anyklostomiasis and ascariasis in Ceylon was carried out with samples of this new drug kindly supplied by the International Health Division of the Rockefeller Foundation. The investigation is not yet complete but the following tables indicate the degree of efficiency of the drug:—

Hookworms.

No. of Cases.	Sum Total of 52 Egg-counts per C.C. before Treatment.	Sum Total of 52 Egg-counts per C.C. after Treatment.	Percentage of Reduction in Egg-count.	No. of Cases which gave Negative Counts after Treatment.	Remarks.
52 ..	116,900 ..	29,000 ..	75 ..	11 ..	In 21 per cent. completed disinfestation.

Roundworms.

No. of Cases.	Sum Total of 45 Egg-counts per C.C. before Treatment.	Sum Total of 45 Egg-counts per C.C. after Treatment.	Percentage of Reduction in Egg-count.	No. of Cases which gave Negative Counts after Treatment.	Remarks.
45 ..	960,200 ..	179,600 ..	81 ..	22 ..	In 49 per cent. complete disinfestation.

The egg-count figures in the above tables are on the basis of formed stools.

(b) A special clinical study, checked by laboratory findings, of advanced and complicated cases of ankylostomiasis was instituted at the General Hospital and Lying-in Home, with a view to preparing a memorandum for the guidance of Medical Officers of outstation hospitals who often have to treat advanced cases of the disease complicated by pregnancy, heart failure, oedema, chronic dysentery, or malaria. The study is still incomplete but the following table gives the results of worm counts after treatment:—

Number of Treatments.	<i>Necator americanus.</i>			<i>Ascaris lumbricoides.</i>	<i>Enterobius vermicularis</i>	<i>Trichuris trichuria.</i>
	Males.	Females.	Total.			
1,275 ..	22,043 ..	25,388 ..	47,431 ..	266 ..	5,900 ..	256

2.—GENERAL MEASURES OF SANITATION.

Conservancy.—(1) *Public Latrines:* During the financial year 1930-31 76 public latrines were built by the Sanitary Boards and Village Committees throughout the Island as tabulated below:—

Province.	Number of Latrines.
Western ..	4
Central ..	21
Southern ..	20
Northern ..	11
Eastern ..	3
Sabaragamuwa ..	8
North-Western ..	6
Eastern ..	3
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Government allowed a grant of Rs. 75,000 to the Government Agents towards the cost of these latrines for the financial year 1930-31.

(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—

(1) to construct latrines ..	13,892
(2) to repair latrines ..	3,400
(3) to convert pits into dry-earth latrines ..	171

		Pit Latrines.	Dry-earth Latrines.
(b) Number of latrines—			
(1) Completed	.. ..	10,324	455
(2) Repaired	.. ..	3,332	240
(3) Pit latrines converted into dry-earth latrines	.. ..	..	84
(c) Number of persons who failed to comply with the requirements of the notices	.. ..	..	6,522
(d) Number of prosecutions entered	.. ..	..	1,961
(e) Number of convictions obtained	.. ..	..	1,423

The figures tabulated below show the work done on latrines in the various provinces during the year 1931:—

Province.	Latrines completed.		Latrines repaired.		Pit Latrines converted into Dry-earth Latrines.
	Pits.	Dry-earth.	Pits.	Dry-earth.	
Western ..	4,309	74	1,678	105	24
Central ..	1,906	122	645	37	19
Southern ..	1,384	15	513	2	5
Northern ..	83	128	14	30	17
North-Western	998	70	170	49	10
Uva ..	551	1	55	—	—
Sabaragamuwa	1,079	43	251	17	9
Eastern ..	14	2	6	—	—
	10,324	455	3,332	240	84

In Sanitary Board towns almost all the latrines are of the dry-earth type.

In rural areas the latrines are of the pit system but in some of the rural bazaars pit latrines have been converted into dry-earth latrines and conservancy is being done by Village Committees or on a co-operative basis. There is also communal conservancy in some rural areas. By this is meant the clubbing together of a number of householders in certain rural areas for the purpose of engaging a conservancy labourer to look after their latrines. Each householder pays about Re. 1.50 and 15 householders are enough to engage a labourer. This labourer works under the supervision of the Sanitary Inspector who sees that he conserves the buckets and disposes of the night soil satisfactorily.

Disposal of Night Soil.—In Sanitary Board towns and in some of the rural areas where dry-earth conservancy is in vogue night soil is disposed of by trenching on sites specially selected. The trenching grounds are regularly inspected and maintained in good order. In Talaimannar and Diyatalawa the night soil is incinerated.

Scavenging and Disposal of Refuse.—In Sanitary Board towns the refuse from residential and trade premises which is generally left in dust bins or in heaps by the roadside is collected and removed in scavenging carts to be ultimately disposed of by one of the following methods:—

(a) dumping, (b) burial in trenches, (c) incineration. Incineration is gradually taking the place of other and less satisfactory methods of disposal of refuse. Communal scavenging is in vogue in some of the rural bazaar areas and attempts are being made to introduce it to other rural areas.

The work of the Sanitary Engineering Division in connection with sewage disposal and drainage is given in detail in the section dealing with Sanitary Engineering.

Water Supplies.—No town in Ceylon except Colombo has an adequate and pure supply of water. The insistent demand for such supplies is emphasized by the large number of applications for the preparation of water schemes received from local authorities by the Sanitary Engineering Division.

The work of the division in connection with water supplies of towns and hospitals is described in the section dealing with Sanitary Engineering.

Public Wells.—144 public wells were built during the year as shown below :—

Province.	No. built.
Western	4
Central	59
Southern	22
Northern	7
Eastern	7
North-Western	16
North-Central	3
Uva	15
Sabaragamuwa	11
	<hr/> 144 <hr/>

Private Wells.—

(a) Number of inspections made	103,944
(b) Number of wells found unprotected	63,088
(c) Number of notices served for improvement	155
(d) Number of wells improved	1,109
(e) Number of persons prosecuted	12
(f) Number of persons convicted	11

Examination of Water Supplies.—

Number of samples sent for—	
(1) Bacteriological examination	43
(2) Chemical	26
Number of samples found unfit for drinking purposes—	
(1) Bacteriologically	15
(2) Chemically	3

Wherever unsuitable supplies of water were detected the sources of such supplies have been improved.

In the low-country streams, rivers, and wells, the majority of which are shallow and unprotected, are the principal sources of drinking water.

In the absence of the necessary legislation the safeguarding of water supplies in rural areas still continues to be a difficult problem. Tactful persuasion and education have been responsible for whatever has been done in this direction but these measures are slow and cannot continue indefinitely.

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

Names of Trades.	Number of Applications.		
	Received.	Recom- mended.	Not recom- mended.
(1) <i>Food and Drink Handling Trades</i> —			
(1) Bakeries	578	517	61
(2) Tea and coffee boutiques	1,361	1,283	78
(3) Eating-houses	429	395	34
(4) Dairies	230	209	21
(5) Butchers' stalls	192	187	5
(6) Fish stalls	102	94	8
(7) Pork stalls	14	13	1
(8) Aerated water manufactories	11	9	2
(2) <i>Licensed Trade Premises</i> —			
(1) Public galas	54	47	7
(2) Manure stores	22	19	3
(3) Soap manufactories	5	4	1
(4) Hide stores	5	5	—
(5) Lime kilns	35	31	4
(6) Brick kilns	7	6	1
(7) Laundries	69	65	4
(8) Cabook quarries	1	—	1
(9) Plumbago sheds	—	—	—
(10) Metal quarries	5	4	1
(11) Public bathing places	—	—	—
(12) Pits for soaking coconut husks	10	10	—
(13) Fibre mills	3	3	—
(14) Desiccating mills	1	1	—
(15) Tanneries	3	2	1
(16) Fat melting premises	—	—	—
(17) Salt fish stalls	18	18	—

Maintenance of the sanitary condition of licensed trade premises:—

(a) Number of premises inspected	..	5,565
(b) Number of notices served for breach of rules	..	1,292
(c) Number of notices voluntarily complied with	..	1,114
(d) Number of persons prosecuted	..	325
(e) Number convicted	..	264
(f) Number warned and discharged	..	56

Sanitary Inspections.—The following is a statement of inspections done:—*(a) Private Premises.*

Number of inspections made during the year	..	878,961
Number of premises found insanitary	..	177,432
Number of mosquito breeding places detected	..	23,878
Number of notices served to abate nuisance	..	6,667
Number of nuisances abated without prosecution	..	8,194
Number of persons prosecuted	..	647
Number of persons convicted	..	419
Number warned and discharged	..	118

(b) Railway Premises.

	Inspected.	Defective.	Defects remedied.
(1) Of Stations—			
Premises	1,440	198	145
Drains	854	158	99
Latrines	1,009	99	74
Mosquito breeding places	13	13	12
Water supplies..	259	43	24
Scavenging	223	11	5
Conservancy	403	4	1
(2) Of Bungalows—			
Premises	3,379	216	174
Drains	3,140	193	138
Latrines	3,301	151	120
Mosquito breeding places	41	38	36
Water supplies..	1,120	79	31
Scavenging	1,362	57	47
Conservancy	1,396	4	—
(3) Of lines—			
Premises	2,019	314	252
Drains	1,785	290	176
Latrines	1,157	231	152
Mosquito breeding places	10	10	5
Water supplies..	326	127	17
Scavenging	716	94	66
Conservancy	509	77	53

The inspection of private premises constitutes one of the routine duties of the Sanitary Inspector. On his visit he gets the house and the premises cleaned up, inquires after the health of the inmates, advises them with regard to the necessity for fresh air and sunlight and the need for open windows, looks into the condition of latrines and the source of water supply, deals with fly and mosquito breeding places and generally gets all remediable defects corrected.

In addition to these he gives talks on sanitation and personal hygiene to groups of villagers while on inspection.

The following statement gives particulars of offences against sanitary regulations which have not already been mentioned:—

Offences.	Prosecuted.	Convicted.
Erection of unauthorized buildings	128	111
Failing to demolish temporary sheds	16	11
Occupying buildings after compulsory closure	42	33
Occupying buildings without certificate of conformity	29	23
Failing to improve insanitary houses	19	8
Deviating from approved plan	25	21
Failing to provide drains	3	3
Faecal pollution	90	89
Carrying on unlicensed trades	365	307
Exposing for sale food unfit for human consumption	150	127

Offences.	Prosecuted.	Convicted.
Depositing rubbish in drains ..	25 ..	24
Throwing rubbish on public road ..	19 ..	16
Sinking wells without the permission of Chairman, Sanitary Board ..	12 ..	12
Failing to clear rank vegetation ..	53 ..	32
Failing to notify cases of infectious diseases ..	33 ..	29
Failing to provide dust bins ..	28 ..	28
Alterations to buildings without permit ..	19 ..	17
Failing to fill in insanitary pits ..	— ..	—
Exposing for sale food on roadside ..	45 ..	44

3.—SCHOOL HYGIENE.

The staff of the school medical service in 1931 consisted of five full-time School Medical Officers and six school nurses. In view of the large number of schools that are never reached by these officers, a suggestion made in 1925 has now been adopted, viz., to utilize the services of Medical Officers of Health and District Medical Officers for part-time work in the inspection of schools.

626 schools and 74,374 pupils were inspected in 1931 as compared with 673 schools and 81,240 children in 1930. 31,729 pupils were reported with physical defects needing treatment, details of which are given in the following table:—

	Western Province, Colombo.	Southern Province, Calle.	Central Province and Uva.	Northern Province, Jaffna.	Total.
Number of schools inspected ..	88 ..	135 ..	155 ..	248 ..	626
Number of pupils examined ..	14,958 ..	17,970 ..	20,921 ..	20,525 ..	74,374
<i>Defects Noted.</i>					
(a) Dental caries ..	1,696 ..	878 ..	3,983 ..	2,860 ..	9,417
(b) Visual defects ..	967 ..	154 ..	272 ..	208 ..	1,601
(c) Enlarged tonsils ..	431 ..	632 ..	633 ..	891 ..	2,587
(d) Adenoids ..	719 ..	2,596 ..	5,344 ..	2,514 ..	11,173
(e) Ankylostomiasis ..	30 ..	16 ..	368 ..	1,691 ..	2,105
(f) Malaria ..	102 ..	262 ..	596 ..	327 ..	1,287
(g) Skin diseases ..	59 ..	47 ..	18 ..	164 ..	288
(h) Aural defects ..	— ..	3 ..	— ..	— ..	3
(i) Parangi ..	756 ..	664 ..	862 ..	1,004 ..	3,286
(j) Unvaccinated ..	715 ..	214 ..	790 ..	1,275 ..	2,994
(k) Other defects ..					
					34,741

Ankylostomiasis and dental caries account for nearly two-thirds of the defects found on examination. A description of the measures taken to deal with ankylostomiasis among school children by mass treatment is given on page 26.

Dental Treatment.—Only in Colombo has it been possible to arrange dental clinics for school children and the lack of facilities elsewhere is felt by all the School Medical Officers.

Enlarged Tonsils and Adenoids (2,587 cases) are defects which are generally receiving more attention in the Island since the School Medical Service was started. The highest incidence is reported from the Northern Province, where 4.5 per cent. of the pupils were found to be affected. Only a small proportion of the cases seek operative treatment.

Malaria.—The difference in the incidence in the four inspectorates is very striking. Out of 2,105 cases reported from all the schools, the Western and Southern Provinces had 30 and 16 respectively, while the Central Province and Northern Province had 368 and 1,691. The explanation of this is that chronic malaria with enlarged spleens is becoming uncommon in the healthier and more prosperous Western Province and Southern Province, while it yet remains an ever-present problem in backward areas of the Central and Uva Provinces (Dumbara and Matale districts, Wellassa and Bintenne districts) and in the forest regions of the Wanni, in the Northern Province, North-Central Province, and Eastern Province which are included in the northern inspectorate. The figures given do not in any way indicate the seasonal incidence of malaria among school children, of which no statistics are available. The steps taken to combat malaria among school children consist in the free distribution of quinine in the form of tablets, powders, or mixtures to all Government schools which apply for them. The

Director of Education has issued circulars to the schools giving instructions regarding the prophylactic use of quinine for malaria. During the seasonal outbreaks of malarial fever special issues of quinine to Government schools are made by the Department of Medical and Sanitary Services and special officers are appointed to distribute the quinine. The School Medical Officer, Northern Province, reports that perceptible beneficial results have been noted. In Government vernacular schools records of quinine administration are kept and the prophylactic doses are given to the children in the schools by the teachers. In some of the secondary schools quinine parades are held by the head teachers and a systematic dosage carried out.

The Department of Medical and Sanitary Services spends a considerable amount of money in quinine distribution and the question of organization for obtaining the best results most economically is under investigation at present.

Malnutrition.—1,729 cases were reported from these Inspectorates, the largest number being from the Northern Province, viz., 1,186. The School Medical Officer, Western Province, reports 490 cases from his province and he makes a strong plea for the provision of a free midday meal for the children in vernacular schools in the Municipal area of Colombo. He reports that about 20 per cent. of the children in these schools are at present found to be suffering from malnutrition and are not in a fit condition to attend school. The need for a similar provision in the vernacular schools in the Vanni districts of the Northern Province and the North-Central Province and in similar schools in the backward districts of Uva and the Central Province is equally pressing.

Visual Defects.—1,601 cases were reported, the largest number being 967 from the Western Province which has the best provision for the treatment of cases. 499 cases of other eye diseases were also reported. The children's clinic at the Eye Hospital treated 894 eye cases and 350 ear, nose, and throat cases and had a total of 2,662 attendances. The School Medical Officer, Central Province, reports that 272 cases were referred to the Eye Surgeon, Kandy, for errors of refraction and that the recommendations were carried out in a majority of cases in English schools but few children from the vernacular schools have had their defects corrected. 10 pairs of spectacles were supplied by Government for necessitous pupils. The School Medical Officer, Southern Province, also reports that few defects are corrected. As there are Eye Surgeons now attached to the Hospitals in Kandy, Galle, Badulla, Batticaloa, and Jaffna better facilities for the treatment of eye defects are available to the schools within the range of their activities.

Skin Diseases.—Scabies and ringworm are the common skin affections prevalent. There has been a great fall in the number of cases reported in 1931; only 1,287 cases were seen as compared with 2,685 cases in 1930.

Aural Defects.—These are few in number, otitis media being the commonest. It is possible that with better methods of examination a larger number of aural defects will be noted.

Unvaccinated Children.—There was a considerable increase in the number of unvaccinated children found in the schools; 3,286 in 1931 as compared with 1,982 in 1930. A large number of them were vaccinated during the course of the year but it is unsatisfactory that unvaccinated children should be admitted to schools at all and more strictness by the school authorities would eliminate such cases. A fresh regulation might be inserted in the Education Code to ensure that school authorities comply with the requirements of the Vaccination Ordinance as a prerequisite to obtaining the Government grant.

Special Clinics in Colombo.—In addition to the Eye Clinic at the Victoria Memorial Eye Hospital there are special clinics held at the Anti-Tuberculosis Institute, the Dental Institute, and the Municipal Dispensaries which are conducted by the Municipal Medical Officers and school nurses.

Dental Institute Clinic.—2,428 children with 3,490 attendances are recorded for the year. Out of these, 1,806 were for extractions, 1,181 for cleaning, 123 for alveolar abscess, and 380 for filling which represents a large and progressive increase over previous years.

Children's Clinic—Victoria Memorial Eye Hospital.—1,244 cases were treated. Of these 894 were for eye defects and 1,207 visits were made. There were 350 cases of ear, nose, and throat diseases with 212 subsequent visits and 55 operations for removal of tonsils and adenoids were performed.

A specialist Surgeon has been appointed for diseases of the ear, nose, and throat and the work is extending.

Anti-Tuberculosis Institute Clinic.—570 children attended with 712 subsequent visits.

Mutwal Municipal Dispensary.—243 children attended and 207 subsequent visits were paid.

Defects in Buildings and Equipment.—There is a progressive improvement noted since all new schools now have to be reported upon by the Medical Officer of Health or School Medical Officer before they can be registered. Many of the old schools especially in the Northern Province are still housed in unsuitable buildings with mud floors. Insufficient ventilation is rare but overcrowding was noted in 15 of the schools. The absence of water supply in 40 (36 in Northern Province) and of latrines in 17 (15 in Northern Province) has also been recorded.

Follow-up Work.—Good results are being achieved by the school nurses following up cases in their homes and in bringing children to treatment centres. The greatest good is done by the education of poor children in cleanliness of person and clothing and in inculcating good sanitary habits.

Improvements and Extensions.—The co-operation of the Medical Officers of Health and Medical Officers in the districts is an advance which is capable of giving very much better results for the future at little cost. The greatest scope of preventive medicine lies in the gradual education of the young in sanitary principles and practice.

By bringing the Medical Officers in charge of Government Dispensaries and Hospitals into intimate touch with the schools within easy reach of their institutions their interest in public health problems is being stimulated and the school children obtain the advantages of closer examination and attention to their physical defects.

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 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.

The following report deals with the sanitary conditions of immigrant labourers on estates and the medical facilities available to them:—

MEDICAL WANTS ON ESTATES IN 1931.

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

Hospitals and Dispensaries.—(a) The planting districts of Ceylon had in 1931 66 Government hospitals and 108 Government dispensaries scheduled to estates. The figures for 1930 are the same as for 1931. 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 in 1931, 87 estate hospitals and 720 estate dispensaries built and maintained by

proprietors of estates. The figures for 1930 were 88 estate hospitals and 715 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 maintained 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, 1930, to September, 1931, Rs. 234,650 was paid by Government as rebate, as against Rs. 240,000 the previous financial year. The total cost of the drugs issued free during the financial year 1930-31 was Rs. 254,998.90, as against Rs. 285,703.87 the previous financial year.

(b) The Inspecting Medical Officer, Colombo, again reports that most of the dispensaries he inspected were not of a good type, being one-roomed buildings with a verandah or shelter for waiting cases, or a screened-off part of the factory or store. Attention has been drawn in previous reports to this unsatisfactory feature, and it is hoped that in future all dispensaries erected on estates will conform with the Government type plan, copies of which can be obtained by superintendents of estates on application to the Inspecting Medical Officer of the Province or to this office.

(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. It is true that in recent years there has not been an adequate supply of qualified apothecaries to meet the demands of the Department of Medical and Sanitary Services, hence it has been extremely difficult for estates to get properly trained dispensers. Matters improved in this respect in 1930, however, and there are now more qualified apothecaries applying for posts in the Department of Medical and Sanitary Services than there are suitable vacancies. Unfortunately in 1931 owing to the depression, estates were not able to offer high enough salaries to attract these qualified apothecaries, but no doubt this is a matter to which estates will pay attention when times improve. If such qualified apothecaries were appointed to estates not only would they be able to diagnose and treat disease better than the majority of the present dispensers but they would also be able to recognize serious cases demanding the attention of the District Medical Officer; hence it is probable that the large number of labourers (including infants) who die without attention from the District Medical Officer would be considerably reduced. With a view to encouraging estates to employ better qualified men for medical work, the Medical Wants Committee in 1930 decided upon a scale of marks to be given for medical qualifications on estates. Due weight was attached in the scale to the different qualifications usually met with in estate medical officers, apothecaries, and dispensers.

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 1931 was 815.

Sanitary Conditions on Estates and Line Maintenance.—The Inspecting Medical Officers again report that the sanitary conditions of the estates visited were satisfactory. The Inspecting Medical Officer, Kandy, reports that screens dividing up living rooms continued to be an undesirable feature on most estates. Another objectionable feature, he states, was the construction of lofts over the living rooms, resulting in a most foul atmosphere in the rooms at night when the door and window were closed. He recommends that the area of such lofts should never exceed half the area of the floor of the room below. The Inspecting Medical Officer, Kandy, considers that new lines are often handed over by contractors without a proper floor in the line rooms with the result that the inhabitants are

unable to keep the floor clean and dry. If the regulation that floors should be of brick rendered in cement, or pointed, or of well stamped gravel three inches deep, were followed, the labourers would easily keep the floor clean and tidy. The Inspecting Medical Officer, Uva, reports that many estates still fail to see that a clear space of 20 feet is left round each line, vegetable gardens and sheds for live stock often encroaching on this space. The Inspecting Medical Officer, Colombo, reports that the provision of dust bins and incinerators for the quick removal and disposal of line refuse has helped to maintain clear and sanitary compounds.

In the Colombo Inspectorate there was less pollution, by children, of the soil around the lines, due to the use of wide-mouthed utensils by young children, but the Inspecting Medical Officer, Kandy, complains that estate superintendents in his inspectorate have not sufficiently appreciated the need for such utensils and adds that the high incidence of ankylostomiasis among estate children would be lowered if such utensils were provided and used. The daily use of these utensils would train children to use latrines and help them to realize the relation between personal hygiene and public health.

Of the 259 estates inspected in the Central Province Inspectorate the general sanitary condition of 29 was reported to be bad; in the Uva Province Inspectorate the sanitary condition of 4 out of 164 estates inspected was bad; in the Colombo Inspectorate the sanitary condition of 11 out of the 392 inspected was bad.

Construction of Lines.—Owing to the continued depression in rubber and tea, the progress of line construction had to be more or less abandoned during the year, especially in the rubber districts. The Inspecting Medical Officer, Colombo, reports that 28 estates in his inspectorate were closed down during the year, and the work on other estates was done on a "care and maintenance" basis. The Inspecting Medical Officer, Uva, reports that several of the rubber estates in his inspectorate have ceased to employ an organized labour force and lines have been abandoned. As a result the deterioration of unoccupied lines is going on apace and soon such lines will be unfit for habitation.

Of the rooms inspected in the Colombo Inspectorate, 20,245 out of 22,853 were up to Government requirements; in the Central Province Inspectorate 27,180 out of 30,867 were up to Government requirements; in the Uva Province Inspectorate 11,085 out of 30,803 were up to Government requirements.

Accommodation.—Overcrowding still exists in a few estates in Uva and Kandy Inspectorates. In the Colombo Inspectorate 3 of the estates visited had slightly overcrowded lines, while in the remaining 389 estates visited there was no overcrowding. In the Central Province Inspectorate there was overcrowding on 11 of the estates visited. In Uva 5 estates were found to be slightly overcrowded and 8 estates overcrowded. The following are the figures for the past four years:—

Inspectorate.	Not overcrowded.				Slightly overcrowded.				Overcrowded.			
	1928.	1929.	1930.	1931.	1928.	1929.	1930.	1931.	1928.	1929.	1930.	1931.
Colombo	239..	262..	326..	389..	— ..	11..	12	3..	19..	4..	— ..	—
Central	.. 117..	.. 256..	.. 170..	.. 245..	.. 37..	.. — ..	.. 5..	.. 3..	.. 22..	.. 7..	.. 13..	.. 11
Uva	.. 159..	.. 168..	.. 183..	.. 151..	.. 63..	.. 21..	.. 10..	.. 5..	.. — ..	.. 1..	.. 11..	.. 8
	515	686	679	785	100	32	27	11	41	12	24	19

Water Supplies.—The importance of a good piped water supply from a clean protected source is being realized by estates, and the number of protected supplies is increasing yearly. In 1930, 432 of the estates visited had an entirely protected supply; in 1931, 441 of the estates visited had protected supplies. The number of unprotected supplies formed about 17 per cent. of the total number of supplies inspected, and were usually on estates owned by private individuals. As pointed out in last year's report, the source of a piped water supply is of the greatest importance; streams in the low-country are suspect and in the midst of rubber and tea have to be carefully protected from pollution through manuring.

Most cases of diarrhoea, dysentery, and bowel complaints amongst labourers can be put down to defective water supplies and money spent on the provision of a supply of good potable water is money soundly invested.

Latrines.—Steady progress is reported in this respect on the estates visited. A certain number of estates, it is true, were not provided with latrines, but in some instances these were small estates recently registered. The following table shows the progress made in latrine construction in the past four years on the estates inspected:—

Inspectorate.	Provided a Sufficient Number of Latrines.				Provided an Insufficient Number of Latrines.				Provided no Latrines.			
	1928.	1929.	1930.	1931.	1928.	1929.	1930.	1931.	1928.	1929.	1930.	1931.
Colombo	171	238	270	305	60	36	26	54	27	3	8	5
Central	60	160	59	48	86	97	122	107	30	6	12	8
Uva	123	83	143	124	99	92	43	21	—	15	18	19
	354	481	472	477	245	225	191	182	57	24	38	32

The bucket type of latrine is being installed more widely and results in a more regular use of the latrines and in less soil pollution. The labourers appreciate this type of latrine, as it has less smell, does not get water logged, and is more easily kept clean and sanitary. Its wider use would be a welcome development. Labourers are gradually becoming accustomed to using latrines where the condition of the latrines is satisfactory, and it is important that estate superintendents should see that clean sanitary latrines at convenient places are provided.

Vital Statistics.—The most important feature in the vital statistics in the past two years is the drop in the infantile mortality rate from 213 in 1929 to 194 in 1930 and to 184 in 1931. The infantile mortality rate for the whole Island dropped from 187 in 1929 to 175 in 1930 and to 158 in 1931.

In 1931, 2,337 male infants and 1,966 female infants died on estates, a total of 4,303, as against a total of 4,804 in 1930. The infant death rates of the different estate districts for 1927, 1928, 1929, 1930, and 1931 are given below:—

	1927.	1928.	1929.	1930.	1931.
Kandy ..	250	219	229	200	212
Matale ..	231	230	235	234	175
Nuwara Eliya	259	220	240	223	219
Badulla ..	216	228	231	185	163
Ratnapura	208	185	184	164	138
Kegalla ..	177	172	147	136	127
Colombo	221	205	134	138	124
Kalutara	150	140	144	159	126
Galle ..	228	172	169	215	164
Matara ..	250	152	231	213	234
Kurunegala	256	363	215	247	106

Causes of Death.—The chief causes of death during the past four years are as follows:—

Causes.	Infant Deaths under One Year.				Percentage of Deaths to Total Infant Deaths on Estates.				Corresponding Percentage for the Island.			
	1928.	1929.	1930.	1931.	1928.	1929.	1930.	1931.	1928.	1929.	1930.	1931.
Convulsions	945	1,008	778	700	18.1	18.9	16.2	16.3	28.3	29.2	25.7	26.1
Tetanus	3	6	2	1	.06	.1	.04	.001	.2	.1	.1	.0
Diarrhoea	69	60	58	53	1.3	1.1	1.2	1.2	1.3	1.6	1.4	1.0
Bronchitis	121	123	107	87	2.3	2.3	2.3	2.0	.7	.8	.7	.6
Pneumonia	196	239	185	195	3.8	4.5	3.8	4.5	2.3	2.3	2.1	2.4
Enteritis	14	8	15	8	.3	.1	.36	.02	.7	.9	.9	.0
Debility	2,795	2,817	2,661	2,398	53.6	52.8	55.4	55.8	19.7	20.9	21.0	21.9
Prematurity	748	783	707	628	14.34	14.7	14.7	14.6	5.8	6.3	6.5	6.7
Other Causes	324	294	291	233	6.2	5.5	6.0	5.4	41.0	37.9	41.6	40.0

Debility and convulsions are once more the chief causes of death.

Maternal and Child Welfare.—As stated in last year's report the chief 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 being 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.

The need for well-trained and tactful midwives on estates is once more emphasized. In the 1929 report an account was given of the treatment of the mother and child by the line dhais. It is not surprising that many infants weakened by lack of nourishment die of debility and that far too many mothers enfeebled by the treatment received fall easy victims to septic infection. The presence of a well-trained midwife would prevent such drastic treatment from being meted out to mother and child. It is satisfactory to be able to report that several estates have provided themselves with a midwife by having one of their own labour force trained at the Lying-in Home, Colombo.

The Inspecting Medical Officer, Central Province, advocates the addition of dried sprats and plenty of coconut to the curry and rice provided by estates to non-working children. The dried sprats add flavour to the curry, the coconut gives the children the fat they need in their diet. The Inspecting Medical Officer, Colombo Inspectorate, again emphasizes the advantages of a maternity room in the lines over a maternity ward in the hospital. Such maternity rooms are established and maintained at small cost, and ensure that the mother is confined in a clean room, thus diminishing the risk of infection. These rooms are made as follows:—Two adjoining rooms of a set of lines are taken for this purpose. The floor of one is cemented, and the walls limewashed after each occupation. The two rooms are connected by a door. The "cemented" room is the lying-in room and is furnished with a plank bed, a rough table, basin and jug, a couple of buckets, a few mats, two cumblies, and half a dozen sheets. The other room is occupied by the family of the patient.

As the mother has her family near her she has no fear or anxiety and this peaceful frame of mind helps during her confinement. Moreover, she is easily provided with food, clothes, &c., by her own people. In a case of difficult labour the medical officer has a clean room in which he can work comfortably and keep his instruments clean.

As regards maternal welfare the maternal mortality rate, which was 23.0 in 1930, as compared with 20.1 in 1929 and 19.5 in 1928 has dropped to 20.4 in 1931. This rate is still much too high and is probably largely due to the stubborn conservatism of the Indian labourers which prevents their utilizing freely the medical benefits now provided on estates for lying-in women. The maternity wards on estates are not used freely and it is only by the gradual education of the female labourers and their personal experience of the advantages to be derived by treatment in maternity wards on estates that any considerable improvement can be expected.

Principal Causes of Deaths among Estate Labourers.—Figures showing the principal causes of deaths among Indian immigrant labourers are given in Section II., Vital Statistics. The chief causes of death were debility, pneumonia, ankylostomiasis, infantile convulsions, and diarrhoea. As pointed out in previous reports the high death rate due to pneumonia might be reduced if more precautions were taken to guard against the effects of extreme climatic changes both by the provision of facilities on estates for drying wet blankets and by the supply of two blankets to every labourer working on estates over 2,000 feet.

Epidemic Diseases.—No cases of cholera or smallpox occurred on the estates visited in 1931. Malaria as usual prevailed in the Matale, Dumbura Valley, and Galagedara districts of the Central Province; in Ella, Kumbalwella, and Badulla area in the Province of Uva; and at Karawanella, Undugoda, Kegalla, and Rambukkana in the Province of Sabaragamuwa.

General.—The following mortality statistics for estates are of interest:—

	1927.	1928.	1929.	1930.	1931.
General mortality rate ..	28.2 ..	27.6 ..	25 ..	22.1 ..	20.8
Infantile mortality rate ..	228 ..	211 ..	213 ..	194 ..	184
Maternal mortality rate ..	20 ..	19.5 ..	20.1 ..	23 ..	20.4
Deaths from pneumonia ..	2,732 ..	2,816 ..	2,589 ..	2,077 ..	1,949
Deaths from dysentery ..	1,926 ..	1,723 ..	1,384 ..	1,028 ..	706
Deaths from diarrhoea ..	1,703 ..	1,597 ..	1,349 ..	1,080 ..	846

These figures show that the improvements carried out in housing, food supply, water supply, and general sanitation have been of real benefit to the Indian labourers as evidenced by a rapidly decreasing death rate during the last five years.

In spite of the difficult times estates are experiencing, every effort should be made by them to maintain the progress made in respect of estate sanitation and the health of estate labourers.

5.—HOUSING AND TOWN PLANNING.

All applications to construct buildings or to repair existing buildings are referred to the Medical Officers of Health. These applications are carefully scrutinized and wherever improvements are desirable such improvements are suggested to the applicant and the applications are altered accordingly. Recommendations are made in accordance with the Housing Ordinance.

The following is a statement of work done under the Ordinance referred to:—

(1) *New and Reconstructed Buildings.*

Number of applications received in respect of—		New.	Reconstruction and Repairs.
(a) Dwelling houses	.. ..	673	389
(b) Other buildings	.. ..	495	91

(2) *Insanitary Buildings.*

	Reconstruction and Repairs.
(a) Number of insanitary buildings reported upon during the year	.. 213
(b) Number of closing orders obtained	.. 84
(c) Number of buildings improved	.. 81
(d) Number of demolition orders obtained and extended	.. 57
(e) Number of buildings voluntarily demolished	.. 54

6.—FOOD IN RELATION TO HEALTH AND DISEASE.

All trades connected with food handling have to be licensed in areas controlled by Sanitary Boards, Local Boards, and Urban District Councils. These licences are renewed yearly. The renewal of licence is usually done after the recommendations of the Medical Officer of Health have been received by the chairman.

Milk Supply.—In the absence of a Pure Food Act the present unsatisfactory control of sale of milk will continue.

There is no control of sale of milk in rural areas owing to lack of suitable legislation.

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

(a) Number of samples taken and sent for analysis	.. ..	268
(b) Number of samples found adulterated	.. ..	162
(c) Percentage of water varied from	.. .. 6 per cent to 68 per cent.	
(d) Average adulteration	.. ..	31.5
(e) Number of persons prosecuted	.. ..	146
(f) Number convicted	.. ..	119
(g) Number warned and discharged	.. ..	8
(h) Amount of fines realized	.. ..	Rs. 2,052.50

Meat Inspection.—All cattle slaughtered were inspected before slaughter which took place in slaughter-houses provided by the local authorities. All meat stalls have to be licensed.

For sale of meat, fish, vegetables, and fruits markets are generally provided in areas under local bodies. In rural areas these articles are sold in fairs which are generally held once a week at different centres. They have been supervised and maintained satisfactorily by the Inspectors in charge of the areas concerned.

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.

7.—HEALTH UNITS.

During 1931 the work within the Colombo Mudaliyar's division outside Colombo city was brought into line with Health Unit work, thus increasing the areas carrying out this work from seven to eight.

Area.—The area taken up for Health Unit work is 1,702 square miles, of which 876 square miles are being worked, *i.e.*, one-fourteenth of the Island has been taken up for work and one-twenty-eighth is being worked.

Population.—The population comprised within Health Units has increased from 333,126 or 6.5 per cent. of the Island population in 1930 to 446,887 or 8.4 per cent. in 1931. Of this population 85,994 or 19.2 per cent. are urban and 360,893 or 80.8 per cent. are rural.

Work and Personnel.—The type of work carried out has continued to be as originally planned and the personnel employed is as follows:—

Medical Officers of Health	..	..	..	8
Medical Officer	..	..	..	1
Sanitary Inspectors	..	..	..	51
Public Health Nurses	..	..	..	12
Midwives	..	..	..	48
Clerks	..	..	..	9
Peons	..	..	..	8
Orderlies and Labourers	..	..	..	11

In addition to the above 2 Entomological Assistants and 2 Field Attendants are temporarily detailed for anopheline survey work in two units, *viz.*, Weudawili hatpattu and Paranakuru korale. A hookworm dispenser was also attached to each of the units for varying periods during the latter part of the year.

Births and Birth Rates.—From the vital statistics that follow the figures for Dehiwala area are excluded as they are available only for a part of the year.

The births in seven of the units amount to 12,702, giving a birth rate of 36.7, as compared with 37.4 the rate for the Island.

The birth rate in the different units varies from 29.1 at Panadure totamune to 44.7 at Matara Gravets Unit.

Deaths and Death Rates.—The deaths in seven of the units total 7,668, giving a crude death rate of 22.1, which is the same as that for the Island.

The death rate in the different units varies from 16.6 at Yatinuwara to 30.4 at Weudawili hatpattu.

Infant Mortality.—There has been a total of 1,807 infant deaths in seven of the units, giving an infant mortality rate of 142, as compared with 158 the rate for the Island.

The infant mortality rate in the different units varies from 106 at Panadure totamune to 268 at Trincomalee District.

Maternal Mortality.—There has been a total of 229 deaths among mothers at childbirth in seven of the units, giving a maternal mortality rate of 18. The rate for the different units varies from 6 at Matara gravets to 34.7 at Weudawili hatpattu.

Stillbirths.—Figures for stillbirths are available for the urban areas of the different Health Units. There has been a total of 86 stillbirths, giving a stillbirth rate of 54.

Expenditure.—The cost to Government of this work for the year is Rs. 212,381 or 2.2 per cent. of the Department's expenditure which was Rs. 9,700,000. What the local authorities coming within the various units have spent is not included as that expenditure would have been incurred even if there had been no Health Units.

Health Education.—Health Education has been carried out by means of—

- 152 lantern lectures.
- 145 lectures without lantern.
- 16 cinema lectures.
- 684 school talks.
- 1,324 village talks.

215 clinic talks.

4 health and baby weeks, reaching an estimated population of 152,000 or 34 per cent. of the Health Unit population.

325 conferences with the Health Unit staff have been held and training in health habits introduced in 14 schools in the different units.

Health Survey.—Health surveys were carried out in 4 of the units, a total of 20,101 houses being surveyed.

Communicable Diseases.—1,746 cases of communicable diseases were notified and 1,727 were investigated. Vedaralas have not notified in the Yatinuwara Unit and reporting by them at Weudawili Hatpattu, Paranakuru Korale, and Trincomalee Units is very poor.

1,912 first and 999 second doses of anti-typhoid vaccine were administered as against 1,833 and 864 respectively in 1930.

8,059 primary and 2,621 secondary vaccinations against smallpox were done in six of the units by Health Unit Inspectors as compared with 6,125 primary and 3 secondary vaccinations in 1930. The larger number of secondary vaccinations during 1931 was done at Trincomalee due to the occurrence of smallpox there. The percentage of successful vaccinations is 92.2 as against 93.9 in 1930. The number of unobserved cases has increased from 2.3 per cent. in 1930 to 6.7 in 1931, due to a large number of secondary vaccinations done at Trincomalee not being available for inspection.

Hookworm treatment was carried out in all the units. A total of 17,689 persons were treated, as compared with 9,005 in 1930 and 3,541 in 1929.

13,359 laboratory examinations were carried out as compared with 9,233 in 1930 and 5,008 in 1929. Of this number 2,592 were carried out at Health Unit offices and 10,767 in Colombo, the majority of the latter being faecal specimens in connection with hookworm treatment. The number of specimens examined at Health Unit offices has increased from 808 in 1930 to 2,605 in 1931.

In the matter of tuberculosis control 160 notifications were received as compared with 82 in 1930 and 368 home visits were made and 904 contacts were kept under observation, 248 contacts received 459 periodical examinations and 22 patients were placed in institutions.

Malaria is a problem in three of the units. In two throughout their whole areas, while in the third in a part of it. In the former two units, control work has been in operation in the two chief towns for some years. In the third and in the rural section of one of the other two anopheline investigative work is being carried out. Quinine is being distributed as a prophylactic measure in the schools of the Trincomalee and Weudawili Hatpattu Units during the malarial seasons. During the year a procedure was tried out in the rural section of the Weudawili Hatpattu Unit to make quinine mixture available to the villagers during the fever season.

Anti-Rat Measures.—A total of 7,873 commercial premises was inspected for rat holes. 2,044 had a total of 5,246 holes, of which 2,254 or 42 per cent. were filled.

Anti-Fly Measures.—A total of 1,854 fly breeding places was found and 1,493 were dealt with.

Maternity, Infant and Pre-school Hygiene.—The number of Health centres has increased from 22 in 1930 to 35 in 1931. The number of Child Welfare clinics held is 1,276 as compared with 843 in 1930. At these centres 489 expectant mothers paid 1,259 visits as against 136 expectant mothers and 561 visits in 1930; 1,313 infants paid 9,917 visits as against 892 infants and 6,142 visits in 1930; 1,360 pre-school children paid 8,476 visits as against 874 pre-school children and 6,198 visits.

Forty-eight trained midwives attached to the Health Units as against 39 in 1930 and 24 in 1929 made 53,129 ante-natal visits to 8,538 expectant mothers (as against 26,761 ante-natal visits to 4,659 expectant mothers in 1930) at the rate of 5.8 visits per mother and attended at the delivery of 4,985 mothers as compared with 2,712 in 1930, paying them 34,582 post partum visits at the rate of 6.9 visits per confined case as against 5.3 in 1930.

Eleven public health nurses visited 10,450 homes paying a total of 15,810 visits.

School Hygiene.—There are 313 schools with a school population of 54,473; of this number 5,669 were medically examined as against 8,337 in 1930; 4,027 or 70 per cent. were found to be defective with a total of 8,376 defects or 2.1 defects per defective child. 1,647 or 19 per cent. of the defects found were corrected.

Consultations at Office.—There were 1,594 consultations at the office as against 649 in 1930. Of these 682 were children and 912 adults.

Periodic Health Examination.—Forty-six out of the 123 individuals who are attached to Health Units received a complete physical examination and advice during the year.

Latrine Construction.—135 public latrines in all the units received 8,235 inspections. 172 defects were found and 8 latrines were newly built during the year.

Latrine construction was carried out in all the units. 71,924 dwellings are provided with 29,886 latrines at the rate of one latrine to 2.4 houses. During the year 1,853 new latrines were constructed as against 1,713 in 1930 and 1,239 were rendered to sanitary type as against 994 in 1930.

313 schools are provided with 255 latrines, *i.e.*, one latrine to 1.2 schools. During the year 19 schools that were without latrines were provided with them.

Water Supply.—133 public wells received 2,616 inspections during the year. Six new public wells were constructed, 24 partially improved, and 8 radically improved.

22,847 private wells received 33,846 inspections. 141 new wells were constructed, 287 were partially and 227 radically improved.

340 springs and spouts received 667 inspections.

Licensed Trades.—In all the units there are 197 bakeries, 1,401 tea and coffee boutiques, 194 eating-houses, 11 aerated water manufactories, 66 meat stalls, 83 fish stalls, 174 vegetables stalls, 83 dairies, 234 laundries, 170 galas and cattle sheds, 3 soap manufactories, and 94 brick and lime kilns. All these have been inspected and received a total of 80,220 inspections. 35,666 defects were found and 16,399 of them were remedied, *i.e.*, 46 per cent. as against 42.6 in 1930.

Food Sanitation.—8,099 head of cattle were inspected and 7,852 passed for slaughter as against 7,397 and 7,128 respectively in 1930.

4,381 goats were inspected and 4,367 passed as against 6,114 and 6,108 respectively in 1930.

172 samples of milk were examined as against 25 in 1930.

Meat, fish (fresh, dried, and salted), and vegetables were seized as unfit for human consumption on 31 occasions as against 7 in 1930.

Housing.—154,524 inspections of private premises were made as against 95,376 in 1930. 91,641 defects were found and 43,361 were rectified as against 39,815 and 22,011 respectively in 1930.

Ninety-five public premises received 2,940 inspections, 995 defects were found and 570 were corrected.

313 schools received 3,371 inspections. 2,090 defects were found and 899 were corrected. Twenty-eight new latrines were installed in 19 schools. 253 schools out of the 313 or 80.8 per cent. (as against 73.8 per cent. in 1930) of them are provided with adequate latrine accommodation.

1,072 applications for new buildings were received and 1,051 were reported on; 610 for additions and alterations and 572 were reported on; 359 for certificate of conformity and 352 were reported on.

Estate Health Work.—There are 85 estates possessing resident labour in 4 of the units. Of these 38 are co-operative and 36 of them received 130 visits, at which 201 defects were found and 40 of them corrected. Seventy-five expectant mothers and 34 infants were kept under care and 47 mothers were confined by Health Unit midwives. The vaccinations done and the hookworm treatment given on these estates are enumerated earlier in the figures stated for these activities.

Remarks.—The work in Health Units was consolidated during the year and the reduction in infant and maternal mortality obtained in some of the units where work has been done with fairly adequate personnel has been encouraging. This type of work is now being accepted by the people as the line along which Health work in the Island should progress.

8.—SANITARY ENGINEERING.

The development of water supplies and drainage schemes continued to receive the close attention of the division during the past year.

Investigations were undertaken at all Anti-malaria Campaign Centres with a view to extending anti-malaria drainage measures and so reducing the annual maintenance costs.

The construction of the Totuwila-ela channel at Anuradhapura was completed during the year for a sum of Rs. 11,032. The new channel, which is some 8,400 feet in length, deals with the swamps and lowlying lands between Nuwarawewa and the Malwatu-oya. It has greatly improved malaria conditions in this area and its usefulness was particularly noticeable during last season's heavy rains.

Anti-malaria drainage was begun at Maho towards the end of the year and it is anticipated that a marked improvement will be made here before next year.

At Badulla the Badulla-oya and its tributaries were carefully examined in order that river control measures might be adopted to deal with the anopheline breeding which is particularly prevalent during certain seasons. It is proposed to commence experimental work at various points during the year.

The problem of anti-malaria drainage at Mantivu, Eastern Province, was reported upon and plans prepared to enable preliminary mosquito investigations to be made.

The maintenance of all field equipment, issue of larvicides, &c., for the various anti-malaria centres was carried on as usual by this division.

Town drainage schemes for Panadure, Moratuwa, Nuwara Eliya, and Kalutara were put in hand and a scheme for Negombo was completed.

Revised plans and details for the sewage disposal scheme at Ratmalana new workshops were drawn up and construction of the scheme was begun.

A scheme of sewage disposal for Nuwara Eliya by the activated sludge process is nearing completion, and schemes of sewerage and sewage disposal for Ragama Anti-Tuberculosis Hospital and Ragama Jail are well advanced.

The sewerage system at Mandapam Camp was investigated and certain recommendations made for its improvement. The working of the Municipal septic tanks at Kandy were also reported upon. Town water supply schemes with estimates were completed for Hanguranketa and Ragalla.

Proposals for the augmentation of the water supply for Nawalapitiya were agreed to and the field work was started. Reports upon water analyses and supplies were made for the following towns:—Chilaw, Divulapitiya, Hatton, Kalutara, Kurunegala, Kuliyaipitiya, Madampe, Panadure, Ulapane, and Wariyapola. Surveys were carried out in connection with the augmentation of the water supplies for Nuwara Eliya and gaugings at various points were commenced.

The water supplies to hospitals were examined and reported upon including those at Anamaduwa, Balangoda, Buttala, Batticaloa, Dolosbage, Kandy, Kegalla, Karawanella, Kilinochchi, Kandana, Manampitiya, Mannar, Moneragalla, Madulima, Madulkele, Passara, Pussellawa, Ratmale, and Undugoda and also those at Mandapam Camp and Polgahawela Depôt.

The sanitary drainage of hospitals was taken up and schemes for Negombo, Mantota, and Chavakachcheri hospitals completed. These schemes provide for the separation of foul water from the surface drainage and for its subsequent treatment. A number of similar schemes are in course of preparation for hospitals in the Northern Province.

With the aid of a grant from the International Health Division of the Rockefeller Foundation it was possible to experiment with the newly-recommended bored-hole latrine. During the year 389 such latrines were installed in the Health Unit areas of Kadugannawa and Kalutara.

The villages in Kadugannawa area are situated approximately 1,700 feet above sea level and are located in a series of hills surrounded by paddy fields. The soil is predominantly light clay, easy to remove and fairly free from rocks. The ground water level is low except near paddy fields. The average depth of the water table in the 83 holes in which water was encountered was $13\frac{1}{2}$ feet.

The villages in the Kalutara area are only a few feet above sea level. The soil is laterite and the boring was more difficult. The ground water level is high and in the wet season in the lowest places it comes within 2 or 3 feet of the surface.

At Kadugannawa the cost of boring one hole was Rs. 3.34; of the squatting plate, Rs. 3.12; the total cost, Rs. 7.53. The average depth of the 297 holes was $19\frac{1}{4}$ feet.

Superstructures of mud and wattle were found to be most suitable. By using these materials the villager and his family were able to erect serviceable structures without actual expenditure of money. Some villagers built more expensive structures of brick, planks, and cabook.

The Medical Officers of Health report that the villagers prefer this type of latrine. Being deep, there is little smell and hence they are not objectionable when placed within 15 to 30 feet of the house. Its accessibility encourages use and soil pollution is much reduced. The superstructures are small, 3 feet by $3\frac{1}{2}$ feet, and are kept very clean.

Further observation is necessary before deciding in what localities they will prove successful. Upon the whole the results are encouraging.

The work of the division continues to increase and the necessity for an additional draughtsman was felt. Over 250 plans and enlargements were made and all mosquito survey maps for the various anti-malaria surveys brought up to date. Photographic prints were reduced to a minimum.

With the continuation of the general depression it is thought that fewer proposals for sanitary works will be made. It would appear advisable, however, that as many schemes should be taken up as the staff available can deal with, particularly those connected with the water supplies and drainage problems at hospitals, so that when a change occurs in the financial situation they may be immediately proceeded with.

As previously pointed out little can be done in the direction of anti-malaria drainage, except in the drainage of Crown lands, without the necessary Ordinance dealing with the drainage and control of private lands in malaria centres.

B.—MEASURES TAKEN TO SPREAD THE KNOWLEDGE OF HYGIENE AND SANITATION.

General.—Mr. J. H. de Saram, Superintendent of the Health Education Division, returned to the Island in January after a study of health education and correlated subjects for a period of nine months in Europe, the United States, and the Far East under a Fellowship granted by the Rockefeller Foundation.

Besides gaining practical experience in official and unofficial organizations in London, New York, Boston, and Tokio, he was privileged to take short courses of Public Health in the London School of Tropical Hygiene and at Harvard School of Public Health and a course of Journalism at Columbia University.

On his return to Ceylon he was attached to the Head Office, working immediately under and directly associated with the Directorate. In spite of the crippling influences of the financial depression which permitted no expenditure on staffs or projects not already provided in the estimates, the Superintendent was able to assist other sections of the Department and to back their activities with vigour.

Press.—The Superintendent acted in the capacity of an Intelligence Officer of the Department so far as the press was concerned.

The weekly health articles in the vernacular press were resumed this year and 34 articles in Sinhalese and Tamil papers were published during the year in addition to numerous casual bulletins reporting health lectures and activities.

The formal health articles in the English press were discontinued as their usefulness was problematic and their place was taken by a series of health bulletins of an informal character.

Health News.—Health news, which was started as a leaflet for the benefit of the staff of Health Units, was converted early in the year into a departmental publication.

Two numbers were reproduced on a Gestetner machine and 2 subsequent numbers at the Government Press in the form of a regular magazine. The journal is now issued once in two months and is devoted to the subject of health education generally and a description of the activities of the Department. Several copies were sent in exchange overseas.

The second volume of "Health Talks", being a reprint of press articles published during 1928, was issued in book form in English early this year; Sinhalese and Tamil editions are in the press.

A daily health bulletin entitled "Health and Light" was edited by the Superintendent, Health Education, during the Health and Electricity Exhibition at Dehiwala.

Radio Talks.—An important departure in connection with the radio talks was that they were given by the speakers at the microphone direct to the listeners, instead of being read out by the staff of the broadcasting station.

The associations of these talks with the names of well-known medical men and others added special interest to them and made them more popular than before. Talks in Tamil were provided for the first time this year. Variety was provided by the inclusion of health songs, health plays, and health recitations in the radio programmes.

Thirty-five talks were given in all in English, Tamil, and Sinhalese. Some of these were reproduced in full in the English and vernacular press.

Preparation of Health Education Material.—96 public health posters in English, Sinhalese, and Tamil, issued by the Colombo Municipal Council, were purchased in bulk and mounted on stiff boards for distribution to the Medical Officers of Health. Nineteen original posters in oil colour were turned out illustrating various points in health education.

Over 200 commercial advertisements and overseas posters were adapted for local use. The schools and Boy Scouts turned out a number of exhibits which proved most useful. It has been decided to reproduce a poster on soil pollution and on the cleanliness of teeth for circulation.

Two sets of coloured lantern slides on health education, two on infant feeding, and one set containing health slogans were made during the year. The sets on "General Sanitation" and "Plague" were duplicated.

The addition of numerous miscellaneous exhibits and duplication of others made it possible to supply material for two health exhibitions which were held simultaneously.

Lectures.—Public lectures and lectures to special groups like teachers, social service organizations, village committees were delivered by the Superintendent of Health Education at Colombo, Kandy, Negombo, Kadugannawa, Cotta, Dehiwala, Urapola, Batticaloa, Jaffna, Kegalla, and Ratnapura. The Medical Officers of Health gave 178 lectures, illustrated with lantern slides, cinema films as a part of their routine duties. An effort made to train Sanitary Inspectors to give health talks proved promising.

In Schools.—The training of teachers received due attention during the year. Classes were started and completed at Kegalla, Kurunegala, Padukka, Ratnapura, Nattandiya, Gampaha, Jaffna, and Ambalangoda.

Those started at Chilaw, Matale, and Kadugannawa are in progress. Definite arrangements were made to conduct classes at Jaffna, Piliyandala, Badulla, Kalmunai, Matale, Matara, and Horana.

A short course of lectures to the students of the Gampaha Training School and special health talks to the students of St. Vincent Teachers' School, Batticaloa, and the Peradeniya Training Colony. A short course of lectures extending over 6 weeks was given at Negombo to a select group of Principals, Head Teachers, and Supervising Teachers of the secondary schools of the town.

With the co-operation of the Provincial Surgeon, Northern Province, an effort was made as an experiment to correlate health education with medical inspection of schools. Under this scheme every doctor in the peninsula in charge of a

hospital or dispensary acted as a School Medical Officer for the institutions in the neighbourhood and provided a weekly school clinic. The work was co-ordinated by the Provincial Surgeon and the School Medical Officer.

Health Weeks.—In the Imperial Baby Week Challenge Shield Competition, 1930-31, the 3rd place was allotted to the Health and Baby Week Committee, Matara. The Health and Baby Week Committee at Hambantota was highly commended.

During the period under review Health Weeks were held at Cotta, Dehiwala, Chilaw, Urapola, Kadugannawa, and Kalutara.

Stimulus was added to the Kotte Health Week by the presence of His Excellency the Governor and the organization of a mammoth historical pageant as a side-show.

At Dehiwala the week's health activities were supplemented by an Electricity Exhibition which attracted large crowds from the metropolis and surrounding areas.

At Chilaw the health demonstration was a part of the Anti-Malarial Campaign which culminated in a crowded programme of activities preceded by a cleanliness campaign.

At Jrapola the local Village Committee organized the show and demonstrated that an unofficial committee could attend to all details of organization using the officers of the Department in an advisory capacity.

The Yatinuwara Health Unit concluded a year of real pioneer work with a successful Health Week supported by all sections of the community.

The Kalutara show was a highly specialized one demonstrating various aspects of child welfare for a period of 3 days.

In spite of the depression, the standard of health weeks this year maintained the high level reached in previous years.

The Children's Charter.—The Health Education Division sponsored an effective publicity scheme by the establishment of an Inter-Collegiate Council which debated the Children's Charter at a public meeting held in the Royal College Hall on July 1.

The charter was based on the findings of President Hoover's White House Congress on Child Health and Child Conservation which was attended by the Superintendent of Health Education during his study leave in the United States of America.

Overseas Relations.—By regular correspondence and the exchange of literature, the Superintendent kept the Department in touch with various health organizations both in the East and the West.

He has been appointed local Chairman of May Day Celebrations (U. S. A.) and Member of the Continuity Committee of the World Federation of Educational Associations (Health section).

Mr. S. Rajagopalam, Health Education Officer of the Travancore State, and Dr. A. Hamid, Assistant Hygiene Publicity Officer of the United Provinces, India, were attached to the Health Education Division for a period of 1 month and 6 weeks respectively, during which time it was possible to make helpful exchange of ideas. Dr. J. H. Hydrick, Director of the Health Education Division of Java and a Fellow of the Rockefeller Foundation, spent a week in Ceylon.

C.—TRAINING OF SANITARY PERSONNEL.

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

D.—RECOMMENDATIONS FOR FUTURE WORK.

As stated in my report for 1930 future progress in public health depends on the development of health work on Health Unit lines and on the evolution of an efficient midwifery service. Funds and trained personnel are needed for this development and both are lacking at present. Under present conditions it is only possible to maintain existing services with the resources available.

In view of the necessity for exercising the strictest economy ranges of rural Sanitary Inspectors have been combined when vacancies occurred and this policy will be followed as far as possible till the financial position improves.

In order to meet the changed conditions obtaining owing to depression it is proposed to revise the hours of work of Sanitary Inspectors and bring them in line with those in force in Health Unit areas and Anti-Malarial Campaign Centres.

Steps will be taken to encourage mass latrine construction in villages by introducing bored-hole latrines in suitable areas. Where these latrines have been successfully installed soil pollution has been effectively checked; the provision of these latrines on an extensive scale would therefore be a considerable step forward in solving the problem of soil pollution which is responsible for much of the prevalence of epidemic bowel disease and of bowel parasites.

IV.—PORT HEALTH WORK AND ADMINISTRATION.

Ceylon is guarded against the introduction of dangerous infectious disease from abroad by the health service at each of its ports and by the two Quarantine Camps at Mandapam and Tataparai in Southern India. The chief sources of danger to the Island are (a) the grain traffic with Rangoon and other Burmese ports in respect of plague—some 6,000,000 bags of rice are imported annually, of which more than 4,500,000 come from Rangoon—and (b) the passenger and immigrant labour traffic between India and Ceylon by the Dhanuskodi-Talaimannar and the Tuticorin-Colombo routes in respect of cholera and smallpox. Usually more than 200,000 persons a year enter Ceylon by these two routes which are protected by the Quarantine Camps of Mandapam and Tataparai respectively, but the number in 1931 fell to 169,582.

With the introduction of the new Constitution for Ceylon in July, 1931, the Board of Immigration and Quarantine which succeeded the Plague Committee in 1922, became the Board of Quarantine. The post of Chairman of the Board had always been filled by the Principal Collector of Customs, but as the functions of the Quarantine Department are essentially those of a health service, the Executive Committee of Health recommended that the Principal Collector of Customs, who was proceeding on leave, should be succeeded as Chairman by the Director of Medical and Sanitary Services. The writer therefore assumed the duties of Chairman on October 20, 1931. The technical work of the Quarantine Department is performed by medical officers, apothecaries, and vaccinators of the Department of Medical and Sanitary Services. The Port of Colombo has a whole-time staff of four medical officers, while at the fifteen minor ports the local medical officers give part of their time to the work. The surveillance of travellers after arrival at their destinations in Ceylon is also carried out by medical officers of the Department.

Colombo.—2,958 British and foreign vessels and 230 Indian sailing craft called at the port, as against 2,506 and 280 respectively in 1930. Two vessels arrived infected with smallpox and one with a case of clinical cholera. The patients were landed and sent to the Infectious Diseases Hospital and the ships kept in quarantine until vaccination, disinfection, and other control measures had been completed. Bacteriological examination of the cholera case failed to demonstrate cholera vibrios and the patient recovered.

One vessel arrived after leaving at Kankasanturai the corpse of a person suspected to have died of plague at sea.

Of the minor infectious diseases, three cases of chickenpox were disembarked and isolated in the Infectious Diseases Hospital.

During 1931 a greater number (47) of cases of human plague was recorded in Colombo than in any other seaport in the world. Since plague is endemic in Colombo careful measures are taken in accordance with Article 13 of the International Sanitary Convention, 1926, to prevent infection reaching shipping in the harbour. All ships are moored away from the shore and work in "restricted quarantine," the harbour lighters are subjected to weekly deratization with sulphur dioxide and the port coolies for loading and unloading cargo are disinfected and medically inspected. Clayton gas apparatus is available for the deratization of small vessels with empty holds, but the port does not possess the means of dealing with larger ships or of carrying out fully the provisions of Article 28 of the International Convention.

The harbour water boats were cleaned and cement-washed every quarter and inspected by one of the Port Health Officers before use.

A venereal diseases clinic for seamen has been maintained at the port since 1921, and an account of its work appears in Section VI. of this report.

Minor Ports.—509 steamers and 2,154 sailing vessels called at the fifteen minor ports. 356 of the steamer visits were at Talaimannar in connection with the ferry service to India. All passengers arriving at Talaimannar had passed through Mandapam Quarantine Camp or had been inspected by Medical Officers of the Camp. No passengers are permitted to land at the other small ports in the northern part of the Island and ships visiting these ports work in strict quarantine. This is a necessary precaution since the shipping is mostly engaged in coastwise traffic with small ports in districts of Southern India where small-pox and cholera are more or less endemic, while a few boats bring rice from Burmese ports.

Mandapam Quarantine Camp.—The continued depression in trade contributed to the further decrease in the number of persons who passed through the Camp *en route* for Ceylon. The following are the figures for the last five years:—

Year.	Estate Labourers.	Passengers.	Total.
1927	159,399 ..	60,507 ..	219,906
1928	133,712 ..	66,918 ..	200,630
1929	105,095 ..	70,923 ..	176,018
1930	91,422 ..	62,162 ..	153,584
1931	68,337 ..	50,474 ..	118,811

All estate labourers remain five days in the Camp, where they are disinfected, vaccinated, treated for ankylostomiasis, and subjected to a careful medical inspection. First and second class passengers and their personal servants are medically inspected at the railway station and usually allowed to proceed but are subjected to surveillance for 12 days after arrival in Ceylon. The majority of third class passengers pass through the Camp.

Ten passengers and 17 estate labourers were rejected on account of leprosy and 13 estate labourers were rejected for other diseases, viz., 2 cholera convalescents, 1 general debility, 3 whooping cough, 5 advanced pregnancy, and 2 epilepsy.

The general hospital of the Camp has accommodation for 20 patients and there were 902 admissions of which 20 proved fatal.

The infectious diseases hospital has 12 beds for smallpox and 16 for cholera. Six cases of cholera were admitted during the year and three recovered. Other infectious diseases were also treated, viz., chickenpox 20 cases, measles 19, mumps 6, and syphilis 1.

8,699 persons who paid 16,917 visits were treated at the outdoor dispensary of the Camp.

Treatment for ankylostomiasis was given to 64,066 labourers out of 69,084 examined.

33,903 passengers and 68,352 estate labourers were vaccinated against small-pox.

The sanitary condition of the Camp remained excellent throughout the year. The Camp has its own water supply which is carefully protected and subjected to frequent laboratory examinations, its own electric lighting plant, and a water carriage system of drainage and sewage disposal. The food supply and kitchens were carefully supervised and remained satisfactory.

The examination for cholera carriers which was started in September, 1930, was continued throughout 1931 in the Camp laboratory. 37,865 specimens were examined and from 10 of them cholera vibrios were isolated. A large number of atypical vibrios were also recovered.

Tataparai Quarantine Camp.—50,771 passengers proceeding from India *via* Tuticorin to Colombo passed through the Camp, as against 52,507 in 1930 and

62,123 in 1929. 98 per cent. of the passengers were petty traders and bungalow, garden, and rickshaw pullers, and the majority (38,387) came from the Tinnevely district where cholera was more or less endemic.

There were 40 rejections—26 for leprosy, 9 convalescing from smallpox, and 5 for chickenpox.

48,862 passengers were vaccinated, 35,490 at the Camp and 13,372 at Tuticorin.

The Camp has an area of 33.82 acres. There was considerable overcrowding at times, and the buildings, sanitary arrangements, and water supply are not satisfactory but towards the end of the year considerable extensions and improvements were started. The food was of good quality and the Camp was maintained in a clean condition.

Surveillance.—99.84 per cent. of the 49,797 persons from Southern India entering Ceylon under surveillance reported at their destinations and completed the 12 days' period of surveillance. Among these persons two cases of smallpox, three of cholera, one of enteric, and one of chickenpox were detected during their period of surveillance.

V.—MATERNITY AND CHILD WELFARE.

Infant Mortality.—The following statement gives in tabular form the figures relating to infant deaths and infant mortality rates for 1931, for 1930, and the average for 10 years 1921 to 1930:—

			Average, 1921-1930.		1930.		1931.
Infant deaths—							
Whole Island	..	..	34,870	..	35,877	..	31,440
Urban areas	..	..	4,578	..	4,264	..	4,195
Rural areas	..	..	30,292	..	31,613	..	27,245
Infant mortality rates—							
Whole Island	..	..	182	..	175	..	158
Urban areas	..	..	218	..	183	..	188
Rural areas	..	..	171*	..	174	..	154
Ceylonese	..	..	166†	..	172	..	155
Indian Immigrant	..	..	208†	..	194	..	184
European	..	..	19†	..	18	..	25

* Average for 4 years.

† Average for 7 years.

Of the 31,440 infant deaths, convulsions have been responsible for 8,215 or 26 per cent. and debility for 6,877 or 21.8 per cent. As in previous years these conditions have been the two chief causes of deaths among infants. The number of infant deaths recorded for 1931 shows a saving of 4,437 lives, as compared with the deaths in 1930, when there were more than 1,000 deaths fewer than in 1929. The infant mortality rate of 158 is the lowest ever recorded for Ceylon, the lowest rate prior to this having been 160 in 1927.

Maternal Mortality.—The following table sets out the number of maternal deaths and the maternal death rates for 1931, for 1930, and the average for 10 years 1921 to 1930:—

			Average, 1921-30.		1930.		1931.
Maternal deaths—							
Whole Island	..	..	3,760	..	4,381	..	4,142
Urban areas	..	..	594	..	815	..	702
Rural areas	..	..	3,166	..	3,566	..	3,440
Maternal mortality rates—							
Whole Island	..	..	19.5	..	21.4	..	20.8
Urban areas	..	..	27.4	..	34.9	..	31.4
Rural areas	..	..	18.5	..	19.6	..	19.5

The maternal mortality rate for Ceylon continues to be abnormally high. The number of maternal deaths recorded for 1931 shows a saving of 239 lives of mothers at childbirth as compared with the deaths for 1930 resulting in the rate being 0.6 per 1,000 lower than the rate for 1930.

As in previous years puerperal sepsis and puerperal convulsions contribute 84 per cent. of the total deaths at childbirth. Of the 4,142 deaths, 1,474 or 35.6 per cent. have been caused by puerperal sepsis and 2,019 or 48.3 per cent. by puerperal convulsions. These two important causes of death point to the necessity for trained assistance at childbirth under proper supervision and skilled ante-natal care respectively. Where these have been provided as in Health Units there has been an appreciable reduction in the maternal mortality rate.

Stillbirths.—Stillbirths are registered only in the urban areas. During 1931 there were 1,643 stillbirths, as compared with 1,776 in 1930 and 1,786 in 1929 and 1,528 the average for 10 years 1921 to 1930.

The stillbirth rate for 1931 is 73.5 per 1,000 live births, as compared with 76 in 1930, 80 in 1929, and 71 the average for 10 years 1921 to 1930. How high this rate is will be realized when it is compared with the 1930 rate for England and Wales which is 41.

Ante-natal and Baby Clinics.—At the ante-natal clinics held at the De Soysa Lying-in Home 2,567 mothers paid 3,216 visits, as against 2,252 and 2,654 respectively in 1930.

In addition to these 2,089 combined ante-natal and baby clinics were held in various parts of the Island at 59 centres to which visits have been paid as follows by—

Expectant mothers	2,673
Infants	17,623
Pre-school children	17,466 as

against the following for 1930:—

Clinics	1,547
-----------------	-------

visits by—

Expectant mothers	873
Infants	13,525 and
Pre-school children	7,098

Midwifery.—103 trained midwives under supervision were provided by Government (69 at hospitals and 34 at Health Units) as against 98 in 1930, 58 by local authorities and 109 by estates as against 67 and 93 respectively in 1930, making a total of 270 as against 258 in 1930. There are about the same number of trained midwives doing private work.

The registration of midwives under Ordinance No. 26 of 1927 is compulsory only in the city of Colombo where the number registered amounts to 204 as against 155 in 1930.

During the year the control of the training and examination of pupil midwives was transferred on the recommendation of the Ceylon Medical Council from the Department of Medical and Sanitary Services to the Ceylon Medical College Council. The training continues to be carried out at the De Soysa Lying-in Home, Colombo, as well as at the McLeod Mission hospital at Inuvil. During 1931, 86 women received training at the De Soysa Lying-in Home, 66 being pupil midwives and 20 trained nurses as compared with 49 and 13 respectively in 1930.

Maternity Beds in Hospitals excluding the Lying-in Home.—Of the 107 Government hospitals in 1930 with a total of 11,407 beds, 69 had maternity wards with a total of 443 beds. During 1931 the number of maternity beds in 5 hospitals was reduced from 42 to 22 and in 5 hospitals increased from 31 to 45. Three new maternity wards were built at Moneragala (4), Embilipitiya (2), and Dandagamuwa (4) with a total of 10 beds. At the end of the year there were 72 hospitals with maternity wards with a total of 447 beds. The other hospitals although not provided with maternity wards take maternity cases into their general wards.

Public Health Nursing.—At the end of 1930 there were 2 trained Public Health Nurses and 4 in training. During 1931, 6 other nurses were selected for training and at the end of the year there were 12 Public Health Nurses in all: 7 passed and 5 in training. In the 1931-32 budget provision has been made for another 4. The training continues to be carried out at the Kalutara Totamune Health Unit. The insufficiency of Public Health Nurses made it difficult to place child welfare work on a better basis and to cover a wider area.

Voluntary Associations and Child Welfare Work.—The assistance of voluntary associations has been received in connection with the carrying out of child welfare work. There are in the Island 24 voluntary associations under the names of social service leagues, health leagues, child welfare leagues, &c., actively associated in the work. The total income of 19 of these associations during the year has been Rs. 16,802, of which Rs. 11,144 or 66 per cent. has been expended on child welfare work.

Work of Lady Doctors.—There are five lady doctors stationed at the following towns, viz., Beruwala, Weligama, Batticaloa, Trincomalee, and Puttalam, for work among women and children chiefly of the Muslim population. They attend to sick mothers and children at the outdoor dispensary, visit in the homes free of charge in the case of the poor those who cannot attend the dispensary, hold ante-natal and baby clinics, and do a certain amount of educational work. The lady doctors at Beruwala and Trincomalee do their maternity and child welfare work in association with the Health Units at these places. The other three work under difficulties without an adequate staff for effective work. These five doctors have paid 4,449 home visits chiefly for conditions associated with pregnancy, labour, and the puerperium. They have attended both in the home and at the dispensary 188 mothers at childbirth, 411 puerperal cases, 1,055 sick expectant mothers, 2,000 sick infants, and 6,614 sick pre-school children. They have held 457 clinics at 10 centres at which 453 expectant mothers paid 1,472 visits, 738 infants paid 2,792 visits, and 2,611 pre-school children paid 7,749 visits.

VI.—HOSPITALS, DISPENSARIES, AND VENEREAL DISEASES CLINICS.

HOSPITALS AND DISPENSARIES.

General Remarks.—All parts of the Island are generously provided by the State with hospitals and dispensaries. In and around Colombo are the General Hospital (939 beds), Lying-in Home (83 beds), Eye Hospital (56 beds), Women's Hospital (45 beds), Children's Hospital (82 beds), Female Venereal Diseases Hospital (29 beds), Police Hospital (32 beds), Tuberculosis Hospital (349 beds), Tuberculosis Sanatorium (72 beds), and Infectious Diseases Hospital (168 beds). Elsewhere there are 92 Government hospitals with 6,579 beds and 2 Leper Asylums with accommodation for 684 patients. In addition there are the Prison Hospitals and Lunatic Asylum mentioned in Section VII. with accommodation for 2,292 patients. The number of hospital beds provided by Government is approximately 2 per 1,000 of population. No new hospitals were opened during the year.

The number of central and branch dispensaries and visiting stations maintained by Government increased from 595 in 1930 to 603 in 1931. 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 Clinic, Colombo; Dental Institute, Colombo; and special clinics associated with the Kandy, Galle, Jaffna, Batticaloa, and Badulla hospitals for the treatment of eye diseases.

During the year under review there was a decrease in the number of estate hospitals maintained by the proprietors of estates from 88 to 87 and an increase in the number of estate dispensaries from 715 to 720.

191,864 in-patients with 12,641 deaths, giving a mortality rate of 6.58 per cent., were treated in the various Government hospitals. The figures for the previous year were 208,464, 13,907, and 6.70, respectively. In the Government dispensaries and out-patient departments attached to Government hospitals 3,714,348 patients who paid 5,748,376 visits were treated, as against 3,810,010 and 5,815,125 visits the previous year.

The diseases treated at hospital out-patient departments and dispensaries were as follows:—

I.—Communicable Diseases.

Enteric fever	..	..	536
Fevers of obscure causation	..	..	4,724
Malarial fever	..	..	1,355,581
Cerebral malaria	..	..	4,675
Malarial cachexia	..	..	99,332

Malarial cirrhosis	..	..	219
Measles	..	..	36
Whooping cough	..	..	1,551
Diphtheria	..	..	95
Influenza	..	..	169,125
Mumps	..	..	179
Dysentery (all forms)	..	..	27,301
Amoebic hepatitis and liver abscess	..	..	76
Leprosy	..	..	15
Erysipelas	..	..	64
Chickenpox	..	..	69
Dengue	..	..	33
Yaws ..	..	..	24,708
Hydrophobia	..	..	20
Tetanus	..	..	35
Pulmonary tuberculosis..	..	..	1,786
Other tuberculous diseases	..	..	572
Syphilis (all varieties)	..	..	5,233
Soft chancres	..	..	318
Gonorrhoeal complications (arthritis, rheumatism, &c.)	..	..	3,464
Gonorrhoea (acute and chronic)	..	..	12,065
Filarial diseases	..	..	449
Acute rheumatic fever	..	..	761
Puerperal fever	..	..	3,386
Other infectious diseases	..	..	635

II.—General Diseases.

Malignant tumours—carcinoma, sarcoma	..	..	82
Non-malignant tumours	..	..	631
Chronic rheumatism	..	..	217,452
Arthritis (acute and chronic)	..	..	8,775
Diabetes mellitus	..	..	512
Anaemias (of unknown causation)	..	..	16,900
Goitre ..	..	..	395
Leukaemias	..	..	586
Acute poisonings	..	..	127
Other general diseases	..	..	8,808

III.—Local Diseases.

Diseases of the nervous system	..	..	28,902
Diseases of the eye	..	..	65,096
Diseases of the ear	..	..	35,075
Diseases of the heart and blood vessels	..	..	6,722
Diseases of the lungs and pleura	..	..	165,277
Diseases of the gastro-intestinal tract	..	..	358,050
Diseases of the liver and gall bladder	..	..	5,252
Diseases of the urinary system	..	..	17,343
Diseases of the generative systems	..	..	28,054
Diseases of the spleen	..	..	5,987
Diseases of the lymphatic system	..	..	6,099
Diseases of the skin and cellular tissues	..	..	130,478
Diseases of the bones and joints	..	..	6,855
Ankylostomiasis	..	..	246,620
Other helminthic diseases	..	..	283,115
Ulcers ..	..	..	213,545
General injuries	..	..	19,532
Local injuries	..	..	96,050
Other local diseases	..	..	23,981

The following donations were made during the year 1931:—

Mr. C. E. A. Dias of Colpetty, who in 1930 presented a maternity clinic of 6 beds to Horana dispensary, which was named "Lady Stanley Maternity Hospital", presented in 1931 a fully equipped maternity ward of 6 beds and a children's clinic to Panadure Hospital. This was called "Beatrice Dias Memorial Ward" and was opened by His Excellency the Governor on June 10, 1931. The Kandy Muslim Association provided funds for a separate mortuary for Muslims at the Kandy Hospital. The building was completed in February, 1931, and is in use now.

REPORT ON COLOMBO HOSPITALS.

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

General Hospital, Colombo.—The number of patients treated in the hospital during 1931 was 19,122 (1,261 paying and 17,861 non-paying patients) as compared with 19,175 (1,490 paying and 17,685 non-paying) in the previous year.

Of the total cases treated there were 2,172 deaths as against 2,304 in 1930. The daily average sick in hospital was 924.97.

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

	Maximum.	Minimum.
Paying section ..	82 on 21.5.31 ..	24 on 17.11.31
Non-paying section ..	980 on 25.6.31 ..	719 on 14.4.31

The number of operations performed was 2,863, of which 2,584 were performed in the hospital and 279 (minor operations) at the Out-patients' Department as against a total of 2,641 (2,400 in hospital and 241 on out-patients) in the previous year.

The total number of patients treated at the Out-patients' Department amounted to 28,620 as compared with 29,103 in 1930. The number of visits paid by patients was 172,880 with a daily average of 550.

In 1931 the only new building constructed was a fuel store for coal, coke, and firewood.

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

Urine ..	..	..	10,778
Faeces ..	..	..	6,729
Gastric contents ..	..	..	323
Sputa ..	..	..	2,736
Bloods ..	..	..	8,592
Cerebro spinal fluids ..	..	..	274
Ascitic pleural and other fluids ..	..	..	160
Smears ..	..	..	1,008
Tissue Sections, General Hospital ..	..	..	418
Tissue Sections, Outstation Hospitals ..	..	..	175
Tissue Sections, Post-mortem room ..	..	..	112
Total ..	..	..	31,305

The total number of specimens examined during the year 1931 was 31,305, as against 35,253 in 1930 and 32,893 in 1929. The decrease is due principally to instructions that the ordinary qualitative examination of urines should be carried out in the wards of the hospital.

X-Ray Department.—3,515 patients in the non-paying section and 541 patients in the paying section, making a total of 4,056 patients, underwent X-ray examination, as against a total of 3,226 in 1930. In the electro-therapeutic section 4,655 sittings were given to non-paying patients (including patients from the 2nd class paying wards from whom no charges are recovered) and 1,063 sittings to paying patients, making a total of 5,718, as compared with 5,559 the previous year.

Seventy-eight cases had radium treatment for different diseases, chiefly cancer, as compared with 155 cases in 1930.

Dental Institute, Colombo.—This institute is in the fifth year of its existence and has proved to be of immense benefit to the large number of poor patients who attend for treatment. The professional staff consists of one qualified Dental Surgeon, two Apothecary Assistants, a Matron, and a Nurse.

12,133 new patients were treated during the year under review, as against 14,815 in 1930. The total number of visits made by the new and old patients were 26,580.

The number of patients was made up as follows:—

Patients sent from hospital wards ..	..	674
Children attending the school clinic ..	..	1,593
Other patients ..	..	9,866
		12,133

The following treatments were given:—

Extractions	..	..	11,233
Cleaning and filling	..	..	6,430
Temporary relief	..	..	3,613
Dressing	..	..	4,574

56 cases were operated on at this Institute.

De Soysa Lying-in Home.—The urgency for increased accommodation to enable the work to be carried out on improved lines is once more emphasized.

The number of cases under treatment in 1931 was 5,716, as against 5,410 in the previous year and 5,123 in 1929. The daily average number of beds occupied was 114.35 and the mortality rate was 2.23, as compared with 112.45 and 2.03 respectively the previous year.

There were 137 maternal deaths and of these 50 were due to accidents of child-birth, 18 to puerperal causes, and 69 to general causes, such as ankylostomiasis, diarrhoea, heart failure, toxæmia, &c.

The number of live births was 3,561. Of these infants, 3,345 left the hospital alive while 216 died after delivery, as against 3,363 and 237 respectively in 1930. 533 obstetric operations were performed during the year, necessitating the use of forceps in 223 cases, craniotomy in 37 cases, decapitation in 4 cases, internal (41) and external (5) podalic version in 46 cases, curettage and evacuation of uterus in 111 cases, manual extraction of placenta in 37 cases, and minor operations in 75 cases. Labour was classified as normal in 2,335 cases. In 54 cases of placenta prævia 10 infants were born alive, 40 were born dead, and 4 were undelivered; 48 mothers recovered and 6 died. In 124 cases of puerperal eclampsia 115 mothers recovered and 9 died; 48 infants were born alive, 39 were born dead, 5 miscarriages, 10 delivered outside, and 22 were not delivered.

This institution continued to be the chief training school for midwives in the 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 Clinic.—There are 7 beds and 1 cot in the paying section and 43 beds and 5 cots in the non-paying section of this hospital.

29,387 new out-patients were treated during the year, as against 27,364 out-patients in 1929. Of the cases treated 21,995 were eye, 5,405 ear, 688 nose, and 1,299 throat cases. The total number of visits made by the new and old patients were 73,289.

There were 80 in-patients remaining in hospital at the beginning of the year and 1,463 patients were admitted during the year as compared with 78 and 1,560 respectively in the previous year. Of these 1,429 were discharged with seven deaths.

The total number of ophthalmic operations performed on in-patients during the year was 566 and on out-patients 2,981, the corresponding figures for the previous year being 567 and 2,518 respectively. Approximately 394 individual cases of cataract were operated on during the year. 2,324 refraction cases were attended to in 1931 as against 1,628 in 1930.

The School Clinics continued to be well attended. 894 eye cases and 350 ear, throat, and nose cases (total visits 2,663) received treatment.

The Lady Havelock Hospital for Women and Lady Ridgeway Hospital for Children.—The total number of patients admitted during the year was 3,034 and with 114 patients remaining from 1929, 3,151 patients (women 1,382, children 1,766, were treated in 1931, as against 3,139, 127, and 3,266 patients respectively in 1930.

The daily average sick was 126.9 as against 126.8 in 1930 and 127.9 in 1929. The number of paying patients treated was 153, as against 143 in 1930.

The total number of deaths was 501; of these 79 were women and 422 were children, showing a mortality rate of 5.9 per cent. for women and 24.8 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 number of surgical operations performed was 798. Of these 534 were major and 264 minor operations. The operation mortality rate was 2.3 per cent., as against 5.4 in 1930.

In the training school for nurses there were 27 pupils of whom 15 were first year pupils. The professional staff of this hospital consists of the qualified Lady Doctor-in-Charge and two qualified Assistant Medical Officers.

Female Venereal Diseases Hospital.—The total number of patients admitted during the year was 338 and with 13 patients remaining from 1930. 351 patients were treated in 1931, as against 605 in 1930. The daily average of patients was 23.53 as against 26.64 in 1930. The total number of deaths was 7 showing a mortality rate of 1.09 per cent. The principal diseases treated were syphilis, 155 cases with 4 deaths, and gonorrhoea, 140 cases with 1 death.

Usually female cases of syphilis and gonorrhoea in the acute stage are treated in this hospital and when hospital treatment is not necessary they attend the clinic as out-patients (*vide* report under Venereal Diseases Clinic, page 60), for continuation of treatment.

During the year 27,531 patients who paid 51,221 visits were treated at the out-patients department of this hospital. Malaria, influenza, ankylostomiasis, venereal, digestive, and skin diseases were the most prevalent ailments treated.

The Infectious Diseases Hospital (Angoda), Colombo.—During the year under review, 2 cases of imported smallpox, 2 cases of cholera, and 15 cases of plague were admitted. Chickenpox is endemic in Ceylon and cases occurred throughout the year but there was no epidemic of the disease.

There remained 62 patients in hospital at the end of 1930 and 1,252 patients were admitted during the year making the total treated 1,314, as against 1,492 during the previous year. Of these 135 cases proved fatal, giving a mortality rate of 10.27 per cent., as against 5.95 per cent. during the previous year.

The following are some of the infectious diseases treated and the number of deaths in 1931:—

			Number treated.	Deaths.
Smallpox	..	..	2	—
Enteric fever	..	..	219	71
Measles	..	..	12	—
Whooping cough	..	..	14	1
Diphtheria	..	..	15	5
Mumps	..	..	38	—
Plague	..	..	15	13
Chickenpox	..	..	512	1

One hundred and four plague contacts and 44 cholera contacts were kept under observation. No one of the contacts developed the disease.

REPORT ON OUTSTATION HOSPITALS.

Of the provincial hospitals those of Kandy and Galle are the largest and most important.

Kandy Hospital.—There are 333 beds and the medical staff consists of Superintendent, Physician, Surgeon, Ophthalmic Surgeon, and 4 House Officers. The hospital is a nurses' training school and 83 pupils were under training during the year. Both the wards and nurses' quarters were much overcrowded.

There were 9,275 admissions in 1931 as compared with 9,314 in 1930. Of these 7,997 were cured and discharged, 623 died; the corresponding figures for 1930 were 8,620 and 694 respectively. The daily average sick in hospital was 348.77 as against 392.45 in 1930; the percentage of deaths to the total treated was 6.5 as against 7.12 in 1930.

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

	Admission.	Deaths.
Enteric fever	145	38
Malaria	888	13
Dysentery	98	16
Influenza	605	5
Pulmonary tuberculosis	153	33
Leprosy	20	—
Ankylostomiasis	596	62
Pneumonia	108	37
Eye diseases	960	7

There were 496 operations performed, 398 major and 98 minor with 21 and no deaths respectively.

The Eye Institute is becoming a 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 are always overcrowded. The number of eye operations performed was 698.

Galle Hospital.—This hospital is situated in Mahamodara, a suburb of Galle, and is near the sea. It has at present accommodation for 271 patients.

The staff consists of a Medical Superintendent, Visiting Physician, Visiting Surgeon, Eye Surgeon, and 3 House Officers. This hospital is also a training centre for nurses with a European Matron and 2 Nursing Sisters.

The total number of in-patients treated during the year was 6,937 with a daily average of 203.5. Out of these 408 died giving a percentage of 5.88 deaths.

The following were the chief diseases treated:—Dysentery 136 cases with 9 deaths; pulmonary tuberculosis 98 cases with 13 deaths; typhoid fever 170 cases with 53 deaths; malaria fever 912 cases with 23 deaths; ankylostomiasis 245 cases with 23 deaths. There were 468 surgical operations performed during 1931.

In the casualty room 271 cases were attended to and 836 injections were given for parangi and syphilis. In the laboratory 5,728 specimens were examined; of these 344 were blood and 216 sputa. In the Eye Institute 5,962 cases (19,483 visits) were treated, and 691 minor and 91 major operations were carried out.

INSTITUTIONS FOR TUBERCULOSIS.

There are four special institutions for tuberculosis in Ceylon, viz., the King Edward VII. Anti-Tuberculosis Institute, Colombo, the Ragama Hospital, the King Edward VII. Sanatorium at Kandana, and the King Edward VII. Sanatorium at Kankasanturai for early cases.

The Institute in Colombo and the two sanatoria were built and equipped from the King Edward VII. Memorial Anti-Tuberculosis Fund, but are maintained by Government.

The Institute is situated in a central part of Colombo and in addition to the usual clinic rooms has X'ray apparatus, a laboratory and artificial sunlight apparatus, and serves as a centre for expert diagnosis and treatment. There are no beds at the Institute but patients requiring indoor treatment are sent to Kandana or Ragama as accommodation permits. The nurses make a number of visits to patients' homes and are expected to arrange for contacts to attend at the Institute for medical examination. The X'ray installation and artificial sunlight apparatus were unfortunately out of order during the year. 3,295 out-patients who paid 8,585 visits were treated at the Institute.

In order to popularize the Institute patients suffering from lung conditions other than tuberculosis were treated and nearly half the attendances were by such patients. Now however that the Institute is well established, an attempt is being made to restrict the work principally to tuberculosis.

The hospital for tuberculosis at Ragama is 12 miles away from Colombo and is easily accessible by rail and road. It contains 349 beds and is intended for the treatment of advanced or moderately advanced cases of pulmonary tuberculosis.

The following are the statistics for the year:—

The number of patients remaining at the end of 1930 was 305 and the number admitted during 1931 was 923. There were 303 deaths (of which 55 died within two weeks of admission) showing a percentage of 24.67 to the total number treated. 637 patients were discharged, of whom 60 left hospital relieved within

two weeks, 33 were transferred to Kandana Sanatorium, and 56 left cured. The number remaining in hospital on December 31, 1931, was 218, which includes 25 patients remaining for over one year. The daily average number of patients in the hospital was 320.12.

Usually the cases admitted are in the 3rd stage of the disease (according to Terban Gerhardt's classification) and only rarely are 2nd stage patients seen. The average case shows bilateral involvement below the 4th rib, frequently with localized excavations.

Treatment is based on—

- (1) Rest cure.
- (2) Graduated exercises.
- (3) Symptomatic treatment.
- (4) (a) Artificial pneumothorax.
(b) Artificial light
(c) Gold preparations.
- (5) Education.

The staff is gradually being trained to maintain discipline among the patients with regard to *rest and graduated exercises*. The patients are given regular talks about the benefit of these methods of treatment. Besides walks, patients have regular breathing exercises and odd jobs in the wards and gardening.

Ten patients received artificial pneumothorax treatment. One died, four are still in hospital, two improved, and in three the disease was arrested. Twenty-seven patients received gold treatment in the form of Sanoerysin and Solganal. Those requiring artificial light treatment are sent to the General Hospital, Colombo.

Symptomatic treatment forms a large part of the work. Only about 20 per cent. of the patients are fit for outdoor exercises, the remaining 80 per cent. being on absolute rest or the 1st and 2nd stages of graduated labour.

Patients are given regular talks on—

- (1) How to avoid spreading tuberculosis.
- (2) How to avoid getting it.
- (3) How to preserve children from it.
- (4) The earliest suspicious signs.
- (5) When you go home from hospital.

The water supply was hopelessly inadequate; the patients are unable to have regular baths; the shower baths cannot be used; and the dhoby is very greatly handicapped. The quality of water was much below standard. Funds for an improved water supply have however now been voted.

One of the old wards was demolished and a new ward of 40 beds was completed and occupied in May, 1931. A modern incinerator for burning sputum replaced the old one.

A commission was appointed in January, 1931, "to inquire into and report on the sanitary conditions of the Ragama Anti-Tuberculosis Hospital and to make recommendations thereon".

The Commission were of opinion, after their inspection and three other meetings, that (a) the present drainage system was defective, (b) the water supply system inadequate, (c) the hospital kitchen unsatisfactory, (d) the burial ground unsuitably sited, and (e) the hospital premises in need of extension.

The Commission made detailed recommendations for the improvement of the conditions now prevailing at the hospital.

General Hospital, Tuberculosis Wards.—The number of patients treated during the year was 989 and there were 325 deaths. These wards may be considered at present as an annexe of the Ragama Tuberculosis Hospital. They are generally crowded with advanced cases of pulmonary tuberculosis, the majority of whom remain in the hospital till they die. The position is an unsatisfactory one as the cases are not under the care of a staff specially trained in tuberculosis work and the wards were not built or equipped as tuberculosis wards. They are a makeshift till proper accommodation is available for the large number of chronic cases who are unable to get accommodation at the Ragama hospital. The treatment of these cases is mainly symptomatic.

The King Edward VII. Sanatorium at Kandana is 14 miles from Colombo and has accommodation for 72 patients.

The number of patients remaining at the end of 1930 was 60 and the number admitted during 1931 was 144 (132 new admissions and 12 re-admissions). There was no death. In 109 (75.69 per cent.) of the 144 patients discharged the disease was arrested, 19 (13.19 per cent.) were much improved, 9 (6.25 per cent.) were improved, 2 were not improved, and 5 were in the same condition. The number remaining in the sanatorium on December 31, 1931, was 60 and the daily average number of patients was 61.93.

The usual principles of sanatorium regime are applied to patients, viz.—

- (1) Rest—mental and physical,
- (2) Graduated exercises,
- (3) Routine, discipline, and education,
- (4) Correct feeding,

supplemented by such therapeutic measures as are required.

The King Edward VII. Sanatorium at Kankasanturai on the coast of the Northern Province is a new building erected at the expense of the King Edward VII. Memorial Fund. It was opened on January 15, 1932. Accommodation is provided for 44 patients. The cost of building has been Rs 102,575.

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) Jevons Dispensary, Puttur.
- (6) The Wesleyan Medical Mission Hospital, Batticaloa.
- (7) The Wesleyan Medical Mission Branch Dispensary at Kattankudi.
- (8) The Denepitiya Medical Mission Hospital, Southern Province.

Nos. (1) and (8) are for males and females; Nos. (2) to (6) are for females and children only.

VENEREAL DISEASES CLINICS.

There are three Venereal Diseases Clinics in the town of Colombo, viz., 1 at the General Hospital (out-patient), 1 at the Port Surgeon's Office (out-patient), and the third at the Female Branch Hospital with accommodation for both in-patients and out-patients.

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

Cases.	1929.	1930.	1931.
Syphilis	840 ..	731 ..	526
Soft sores	47 ..	91 ..	300
Gonorrhoea	825 ..	653 ..	725
Yaws	64 ..	29 ..	26

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

40 persons attended the clinic last year. 40 cases of syphilis were treated and intravenous injections of Neo-Salvarsan were given. Treatment is free.

After injections are given a card is handed 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.

Most of the cases are diagnosed by clinical examination only, since there is usually insufficient time to arrange for serological or bacteriological examination at the Bacteriological Institute.

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

Cases.	1929.	1930.	1931.
Syphilis	242 ..	366 ..	236
Gonorrhoea	464 ..	469 ..	262
Yaws	— ..	12 ..	1
Other venereal diseases ..	— ..	49 ..	—
	<hr/> 706	<hr/> 896	<hr/> 499

The clinic is held on 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.

Venereal Diseases Clinic at the Kandy Dispensary.—This is a new clinic which was opened on October 2, and is held on two evenings a week—Mondays and Saturdays. The cases treated till December 31, 1931, were as follows:—

Syphilis ..	27	Yaws ..	2
Gonorrhoea ..	36	Skin diseases ..	11

Besides the particulars given in respect of the four clinics, 6,058 in-patients (with 85 deaths) in the various hospitals and 21,080 out-patients at dispensaries and out-patients' department of hospitals in the Island were treated for venereal diseases during the year, as against 7,035, 163, 21,798, respectively, in 1930.

HOSPITAL RETURNS &c.

Charts and returns of hospitals will be found at the end of this report.

VII.—PRISONS AND ASYLUMS.

PRISONS.

During the year 1931, eleven 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 Hulftsdorp (Colombo) and Kandy (old prison).

On December 31, 1930, there were in all the prisons a total of 3,324 convicted prisoners (3,263 males and 61 females). During the year under review 11,592 males and 377 females were admitted and 11,795 males and 356 females were discharged. 115 male and 1 female prisoner died. On December 31, 1931, 3,425 male and 62 female convicted prisoners remained in all the prisons.

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

	Beds.
The Prison Hospital, Welikada	180
Female Jail Hospital, Welikada	12
The Mahara Prison Hospital	53
The Negombo Prison Hospital	16
The Bogambara (Kandy) Prison Hospital	35
The Jaffna Prison Hospital	12
The Galle Prison Hospital	12
The Anuradhapura Prison Hospital	12
The Badulla Prison Hospital	4
The Batticaloa Prison Hospital	5
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On the whole the health of the prisoners in all prisons was satisfactory. In Jaffna prison bowel complaints and sore-eyes were prevalent owing to the long drought. 3 cases of chickenpox and 28 cases of mumps occurred. At Welikada there were 635 cases of dysentery (amoebic 38, bacillary 284, unidentified types 313). The routine laboratory examination of all dysentery patients has made

it possible to treat bacillary cases with serum and amoebic cases with emetine. The results of treatment have, therefore, been more satisfactory than in the past. 109 cases of mumps, 2 cases of chickenpox, and 3 cases of measles occurred. At Mahara prison there were two epidemics of dysentery at the end of January and April respectively, the chief cause being scarcity of water due to drought and 104 cases of malaria and 51 cases of influenza occurred. At Kandy dysentery was the chief disease and was due to the long drought. At Galle there was very little sickness and at Anuradhapura malaria fever and dysentery were the chief diseases.

Anti-typhoid inoculations were given at Welikada and Mahara prisons.

All new admissions to the Mahara jail, 741 cases in all, 865 prisoners in Galle jail, and all the prisoners in Batticaloa jail who needed it, were given treatment for ankylostomiasis during the year.

The sanitary condition of the prisoners was good on the whole. The Medical Officer, Mahara Prison, reports that the new building programme, which will result in an improvement in the sanitary condition of that prison is well under way. During the year six new wards were completed, two are nearing completion and work on three more has not yet begun. The Senior Medical Officer, Prisons, reports that the conditions that prevail at Hulftsdorp remand jail are still very unsatisfactory, chiefly because of overcrowding and unsatisfactory buildings, but the congestion was relieved to some extent by a certain number of remand prisoners being housed at Welikada.

The Medical Officer of Galle Prison also complains of continuous overcrowding in the prison.

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 Key* below).
Prison Hospital, Welikada	1,220·14..	75·92..	2,349..	24,665..	54..	2·29..	1, 2, 3, 4, 5, 8, 10, 12, 15, and 16
Mahara	785·05..	23·80..	663..	1,177..	10..	1·51..	1, 2, 3, and 5
Bogambara	481·92..	13·86..	676..	19,750..	2..	·29..	1, 2, 3, 5, 8, 9, 10, and 16
Jaffna	434·12..	20·67..	840..	3,845..	5..	·59..	1, 3, 4, and 6
Negombo	173·50..	7·32..	199..	4,353..	17..	8·54..	1, 2, and 3
Galle	99·34..	6·29..	208..	536..	3..	1·44..	2, 5, and 7
Anuradhapura	142·87..	4·0..	236..	—	—	—	1 and 3
Badulla	38·96..	0·44..	26..	269..	—	—	1, 3, and 5
Batticaloa	49·39..	1·16..	50..	—	—	—	1 and 3
	3,425·29	153·46	5,247	54,595	91	2·44	

* Key referred to.

1. Malaria.	5. Influenza.	9. Chickenpox.	13. Abscess.
2. Diarrhoea.	6. Pneumonia.	10. Skin diseases.	14. Pulmonary tuberculosis.
3. Dysentery.	7. Enteritis.	11. Enteric.	15. Rheumatism.
4. Eye diseases.	8. Conjunctivitis.	12. Mumps.	16. Other diseases.

ASYLUMS.

(a) THE LUNATIC ASYLUM, ANGODA.

The Government Lunatic Asylum is situated at Angoda, about 6 miles from Colombo, and was built to accommodate 1,830 inmates.

During 1931 the average daily number of patients was 2,357, the largest number on any one day being 2,590 and the lowest number 2,292.

The main buildings consist of six three-storey blocks containing altogether eighteen large wards each designed to hold 96 persons. There is also a block of 102 cells in which noisy patients can be locked up. There are no paying wards for better class patients and no facilities for modern treatment.

Uncertified persons sent by the courts for medical observation to determine their mental state are placed in the same wards as certified patients and although it is the custom to speak of the "House of Observation" the term refers not to a building but to the legal status of such uncertified persons while they are in the Asylum.

Attention was drawn in last year's report to the serious overcrowding. From 1926 to 1931 the number of inmates of the Asylum had been increasing by nearly 200 a year so that a state of overcrowding had developed which was getting progressively worse. As a result the death rate from diseases such as dysentery and tuberculosis had become alarmingly high and it was essential to mitigate to some extent the unsatisfactory conditions under which the patients—in particular, the male patients—were living.

In the last quarter of 1931, therefore, some 361 mild cases of both sexes were discharged and sent to their homes and another 300 quiet male patients were transferred to two large temporary wards that had been built at a cost of nearly Rs. 30,000. Thus, the year which opened with 2,548 inmates in the Asylum closed with 2,325 and additional accommodation for 300 patients had been built.

The statistics for 1930 and 1931 are as follows:—

Asylum—

	1930.			1931.		
	Males.	Females.	Total.	Males.	Females.	Total.
Remaining at beginning of the year ..	1,461	767	2,228	1,588	837	2,425
Admitted ..	692	310	1,002	595	270	865
Total treated ..	2,153	1,077	3,230	2,183	1,107	3,290
Discharged ..	371	119	490	597	177	774
Died ..	194	121	315	207	163	370
Remaining at end of the year ..	1,588	837	2,425	1,379	767	2,146

House of Observation—

	1930.			1931.		
	Males.	Females.	Total.	Males.	Females.	Total.
Remaining at beginning of the year ..	115	67	182	78	45	123
Admitted ..	1,125	499	1,624	1,141	538	1,679
Total treated ..	1,240	566	1,806	1,219	583	1,802
Transferred to Asylum ..	562	247	809	517	222	739
Discharged ..	577	248	825	572	258	830
Died ..	23	26	49	28	26	54
Remaining at end of the year ..	78	45	123	102	77	179

Court.—A court for the disposal of lunacy cases was established at the Asylum on January 16, 1930, and sits every Thursday. It has been a great benefit and convenience to the patients and to the staff and has resulted in a saving of Government money.

Infectious Diseases.—The following table shows the number of cases of infectious diseases occurring during 1930 and 1931:—

	Inmates.				Attendants.			
	1930.		1931.		1930.		1931.	
	M.	F.	M.	F.	M.	F.	M.	F.
Dysentery ..	209	155	234	176	10	4	4	9
Chickenpox ..	24	34	140	11	1	8	13	3
Pulmonary tuberculosis ..	88	47	67	41	—	—	—	—
Influenza ..	30	35	21	105	6	9	4	21
Erysipelas ..	2	1	—	—	—	—	—	—
Enteric fever ..	3	4	7	1	—	—	1	—
Smallpox ..	13	—	—	—	11	—	—	—
Leprosy ..	1	—	—	—	—	—	—	—
Mumps ..	—	20	—	83	—	2	—	7
Parangi ..	—	—	4	—	—	—	—	—

Dysentery and Pulmonary Tuberculosis.—Of the 426 deaths which occurred in the Asylum, 93 were due to dysentery and 58 to pulmonary tuberculosis. The prevalence of these two diseases must be attributed in no small measure to the state of overcrowding.

Accidents.—The number of cases of injury to patients by themselves was 90, by other patients 126, and by attendants nil.

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

Occupation and Amusements.—The male patients were employed mostly in agricultural work and in maintaining the Asylum grounds in good order. The female patients made uniform for the staff and other articles for Asylum use.

Games and sports were carried on as usual. There are three tennis and two volley ball courts and a cricket ground which were largely used by the patients and attendants.

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

Laboratory.—A laboratory which has been a long felt want was started in February, 1930. With the present equipment it is only possible to do the simple laboratory examinations of blood, sputum, faeces, and urine.

(b) LEPER ASYLUMS.

There are two Leper Asylums in the Island, one at Hendala, 7 miles from Colombo, and the other on the Island of Mantivu, 3 miles from Batticaloa in the Eastern Province.

Hendala Leper Asylum.—The following historical note has been compiled by Mr. R. H. Bassett, C.C.S. :—

“ In 1688 leprosy in Ceylon was extremely prevalent, leading to the establishment of a Leper Asylum in Colombo and the passing of various prohibitory laws, including one prohibiting the hawking of “ Apes ” (Hoppers) and “ puttass ” (Pittu) both of which delicacies were introduced from Java. In 1705 Governor C. J. Simon proposed to segregate all lepers on the island of Walcheren in the Negombo lagoon, but the people of Negombo objected so strongly that the proposal had to be given up and the Asylum was built at Hendala on its present site. The building was begun during the reign of Governor Simon (1703-1707), and finished in 1708 by his successor Governor Hendrek Boeker (1707-1716). Over the door of the Medical Superintendent's office is a most elaborate stone monogram, bearing the date 1708 and shaped like a moon-stone; it is said to represent the initials of Governor Boeker, but to the uninitiated observer it is completely indecipherable.

“ There is a romantic story that the daughter of a Dutch Governor, who contracted leprosy wishing to show her sympathy for her fellow-sufferers, built the original Asylum for them at Hendala, but this pretty tale was ruthlessly exploded by a former Government Archivist, who proved that the cost of construction and equipment was borne entirely by the government.”

This Asylum must be one of the oldest existing institutions for the treatment of leprosy if this account is correct. The majority of the present buildings are of more recent date than the office bearing the initials of Governor Boeker.

The staff consists of a Medical Superintendent, 2 Assistant Medical Officers, 2 Apothecaries, a Steward-Clerk, a Mother Superior and 12 Religious Sisters, 2 overseers, 46 male attendants, 9 female attendants, an office peon, a gate-keeper, a dhoby, 4 cooks, and 43 labourers.

The statistics of the hospital are given below :—

	Mixed Races.		Indians.		Total.
	Males.	Females.	Males.	Females.	
Remaining on December 31, 1930	416	109	61	11	597
Admitted during 1931	113	22	34	9	178
Discharged during 1931	84	12	31	6	133
Died during 1931	26	10	5	2	43
Remaining on December 31, 1931	419	109	59	12	599

Of the 178 admissions, 130 were new cases and 48 were re-admissions. Amongst the new admissions, 98 were Ceylonese and 32 were Indian immigrants and represented the following types:—

N ¹ —20,	N ² C ¹ —4,
N ² —36,	N ² C ² —4,
N ¹ C ¹ —38,	N ² C ³ —1.
N ¹ C ² —26,	

The new admissions were from the following provinces:—

	Ceylonese.		Indians.		Total.		Grand Total.
	M.	F.	M.	F.	M.	F.	
Western	37	12	7	1	44	13	57
Southern	16	2	2	—	18	2	20
Central	7	1	8	3	15	4	19
Sabaragamuwa	17	1	9	2	26	3	29
Northern	2	—	—	—	2	—	2
North-Western	2	—	—	1	2	1	3
North-Central	—	—	—	—	—	—	—
Eastern	—	—	—	—	—	—	—
Uva	—	—	—	—	—	—	—
	81	16	26	7	107	23	130

From the above admissions it will be seen that about 75 per cent. were Ceylonese and 25 per cent. Indian immigrants.

Of the 133 patients discharged, 89 were discharged as non-infective after 3 consecutive bacteriological examinations, 17 were repatriated to India, 4 were transferred to Mantivu Asylum, 22 absconded, and 1 was discharged as not a leper.

Deaths.—The number of deaths during the year was 43—31 males and 12 females. The percentage of deaths to total treated was 7.0.

The School.—The school was established in 1920. The number on the roll is 81 with an average attendance of 45. 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 Inspector of Schools who reported favourably on its work.

On January 27 a scout troop was inaugurated by the Chief Scout Commissioner for Ceylon for the boy-patients at the Asylum. More than 20 boys entered the troop, scout uniforms were provided and every encouragement was given them by the staff. The troop has been very successful; the regular outdoor exercises, the games and occupations have given the boys new interests and greatly improved their health. In November the troop paid a visit to the Mantivu Asylum where they camped for three weeks and were entertained by a similar but smaller troop which the Medical Officer, Mantivu, had formed from among his patients.

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. There are fitters, carpenters, masons, tailors, and shoemakers. Some patients make ornamental flower pots out of cement and sand; most of these pots are sold and the patients derive some pecuniary benefit. Patients trained as barbers work among the patients and receive a small sum from the Government for work done for the Asylum. There are some who do vegetable gardening and others occupy their time in flower gardening. However, the patients who work are only a minority when compared with the large number who lead a more or less lazy life.

Special Treatment of Leprosy.—Until April, 1931, the drug E. C. C. O. was largely used. The drug was injected intra-muscularly usually into the gluteal or deltoid muscles. The injections were given twice a week. The initial dose was $\frac{1}{2}$ c.c., increasing by $\frac{1}{2}$ c.c. each time to a maximum dose of 5 c.c. Occasionally coughing, dizziness, and tightness of the chest followed the injections but these symptoms disappeared in a few days under symptomatic treatment. From April pure chaulmoogra oil was used with 4 per cent. double distilled creosote added to it. The injections were given intra-muscularly and subcutaneously and also

intra-dermally in a few cases, the dose being similar to E. C. C. O. The general symptoms were practically nil, but the local reaction was more severe, pain and irritation at the site of injection continuing for 4 or 5 days in most cases. On 12 occasions abscesses followed the injections and had to be lanced. The pain and irritation following injection were allayed by frequent hot fomentations and massage.

Of the 599 inmates in this institution only 299 males and 92 females volunteered for treatment during the year. The table below shows the progress of treatment:—

No. of Injections.	No. of Patients.	Marked Improvement.	Slight Improvement.	No Improvement.
Males—				
Over 50	10	6	3	1
25–50	61	11	30	20
1–24	228	10	88	130
Females—				
Over 50	5	4	1	—
25–50	30	8	15	7
1–24	57	3	15	39
Total	391	42	152	297

The patients have not been regular in coming for injections, but they seem to be taking an interest in the treatment which is a hopeful sign. There has been an increase of patients receiving injections as compared with last year's figures.

Appreciable improvements were also noted in early cases and in young individuals. Our results would be more encouraging but for the fact that most cases are admitted to this institution after they have progressed for many years.

Eighty-nine were discharged on parole after being examined bacteriologically three times with negative results. Of the 89 discharged in 1931, several have returned with a fresh outbreak of ulcers.

Visitors.—The Asylum was visited by the following well known leprosy experts during the year, viz., Dr. Victor G. Heiser, President of the International Leprosy Association, Dr. R. G. Cochrane of the British Empire Leprosy Relief Association, and Dr. H. Windsor Wade of the Leonard Wood Memorial for the Eradication of Leprosy.

Mantivu Leper Asylum.—The institution which has been in existence only ten years is situated on an island of about 160 acres in a large lagoon near Batticaloa. Male patients are housed in twenty-four two-roomed cottages each with its own kitchen, and in a number of hospital wards. The female patients all live under hospital conditions in wards. There is accommodation for 176 patients. Although it was originally intended that the institution should be conducted as a leper colony, a large staff of attendants, garden labourers, &c., is maintained but Dr. Hunt, who was appointed Medical Officer in March, is attempting to encourage the patients to engage in useful work and to become to some extent self-supporting.

At the end of 1930 there were 163 lepers (128 males and 35 females) remaining in the Asylum. There were 63 admissions (57 males and 6 females) during 1931, and 28 cases (28 males) were discharged. There were 21 deaths (19 males and 2 females) and the percentage of deaths to total treated was 9.29.

Treatment.—All the patients except 15 received treatment with E. C. C. O. injections and chaulmoogra oil by the mouth and about 11 per cent. of those who underwent this form of treatment showed definite improvement.

Boy Scout Movement.—The Medical Officer on hearing of the troop which had been started at Hendala, started his own troop at Mantivu and enrolled 14 boys. Without any outside help he has produced a very useful troop and has modified the scout training to suit local conditions. The boys are actively engaged in agriculture and by the end of the year had planted more than 1,000 plantain trees, 2,000 betel creepers, and 20 different kinds of vegetables and were well on the way to being partially self-supporting.

VIII.—METEOROLOGY.

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

Rainfall.—The chief features of the year 1931 were widespread deficits in February and March, causing severe drought in many places; marked thunder-storm activity in April, which, in particular, gave unusually heavy rains along the southern ridges of the hills on April 14; continued deficits in the north and east of the Island during the south-west monsoon; heavy August rains in the south-west of the Island; and heavy December rains over the greater part of Ceylon. These last were largely due to two depressions which passed over the Island during the month; the second gave not only heavy rain, but also abnormally strong wind, in the north of Ceylon.

The rainfall totals for the year were nearly everywhere in excess of average, but not usually by large amounts. The highest figures, to the nearest inch, were Watawala, 257, Kenilworth estate, 243, and Theydon Bois estate, 240 inches. The highest averages (10 years and over) were Carney estate, 232, and Blackwater estate, 231 inches. The lowest totals for the year were Puttalam Eastern Saltern, 37, Kalpitiya, 39, and Nachchikalli, 40 inches, while the lowest averages (10 years and over) were Marichchukaddi, 35, Pomparippu and Mannar, 39 inches.

Temperature.—The low-country stations with the highest and lowest mean shade temperatures for 1931 were Mannar with 83°F. and Galle with 80°F. The figures for Colombo and Kandy were 81°F. and 77°F. respectively, while Nuwara Eliya, at an elevation of 6,000 feet, had a mean temperature of 60°F. The highest shade temperature recorded during the year was 99.0°F. at Ratnapura on March 4, while the highest on record is 103.7°F. at Trincomalee on May 12, 1890. The lowest this year at low-country stations was 61.9°F. at Anuradahapura on January 25 and 28, while 31.5°F. was recorded on January 31 at Nuwara Eliya, at which station 27.1°F. was recorded in 1914. The highest shade temperature in Colombo in 1931 was 92.1°F. on February 3, and the lowest 67.9°F. on January 26. The mean daily range for 1931 (the difference between the mean of the maximum and the mean of the minimum) was highest at Badulla and Nuwara Eliya, 17°F., and lowest at Jaffna, 8°F. At Colombo and Kandy it was 11°F. and 15°F. respectively. The absolute range for the year (the difference between the highest and the lowest readings actually recorded at any one station) was greatest at Nuwara Eliya, 45.7°F., and lowest at Galle, 21.2°F.

Returns.—Meteorological returns for the towns of Colombo and Nuwara Eliya are given below:—

Colombo.											
Month.	Sunshine.	Temperature.					Rainfall.			Winds.	
	Mean Solar Radiation.	Mean Minimum on Grass.	Mean Shade Minimum.	Mean Shade Maximum.	Mean Temperature.	Amount in Inches.	Average Percentage Humidity. Means of		General Directions.	Average Daily Mileage.	
							9.30 A.M. and 3.30 P.M.	Maximum and Minimum.			
	°	°	°	°	°				A.M.	P.M.	
January	129.0	69.7	87.0	72.6	79.8	4.25	71	75	NE	NNW	133
February	145.3	70.4	88.1	73.9	81.0	3.48	72	78	NE	WNW	121
March	139.6	72.1	89.4	75.0	82.2	1.86	69	78	Var.	W	104
April	132.3	74.4	88.6	75.8	82.2	9.40	74	81	SSW	WSW	101
May	127.1	75.7	87.3	77.2	82.2	11.81	79	84	SW	SW	146
June	137.1	75.7	85.6	77.6	81.6	10.60	82	84	SW	SW	188
July	133.4	74.4	84.9	76.5	80.7	12.12	80	82	WSW	SW	141
August	139.0	74.3	84.3	76.2	80.2	9.11	81	84	WSW	SW	159
September	148.7	74.3	84.4	76.8	80.6	5.54	79	82	WSW	WSW	147
October	151.6	73.7	85.6	76.3	81.0	7.03	76	82	SW	WSW	128
November	153.8	71.8	85.4	73.5	79.4	15.74	78	84	Var.	W	93
December	151.2	71.4	85.0	73.1	79.0	15.44	75	82	NNE	NNW	113
Mean	140.7	73.2	86.3	75.4	81.8	106.38	76	81			13

Nuwara Eliya.												
Months.	Sunshine.		Temperature.			Rainfall.			Winds.			
	Mean Solar Radiation.	Mean Minimum on Grass.	Mean Shade Maximum.	Mean Shade Minimum.	Mean Temperature.	Amount in Inches.	Average Percentage Humidity. Mean of		General Directions.		Average Daily Mileage.	
							9.30 A.M. and 3.30 P.M.	Maximum and Minimum.				
	°	°	°	°	°				A.M.	P.M.		
January	—	46.0	68.1	48.4	58.2	9.58	74	82	—	—	—	—
February	—	41.2	70.8	45.8	58.3	1.44	64	77	—	—	—	—
March	—	42.0	72.3	45.5	58.9	3.10	60	75	—	—	—	—
April	—	48.7	71.4	50.5	61.0	11.35	78	85	—	—	—	—
May	—	51.0	72.0	53.3	62.6	4.16	76	82	—	—	—	—
June	—	55.7	65.0	56.7	60.8	16.26	90	90	—	—	—	—
July	—	53.3	66.8	54.7	60.8	2.40	83	84	—	—	—	—
August	—	55.6	63.4	55.6	59.5	19.89	93	94	—	—	—	—
September	—	53.3	66.3	54.2	60.2	9.03	83	86	—	—	—	—
October	—	49.4	68.6	51.8	60.2	7.68	78	85	—	—	—	—
November	—	49.3	69.0	51.0	60.0	15.24	78	86	—	—	—	—
December	—	—	67.9	52.6	60.2	16.06	80	85	—	—	—	—
Mean	—	49.6	68.5	51.7	60.1	116.19	78	84	—	—	—	—

IX.—SCIENTIFIC.

(1) BACTERIOLOGICAL INSTITUTE.

The examinations carried out at the Bacteriological Institute for the year were—

Nature of Specimens.	Official.	Private.	Total.	Positive.	Negative.
Blood for examination for typhoid	2,991..	24..	3,015..	837..	2,178
Blood for examination for paratyphoid A	1,672..	13..	1,685..	4..	1,684
Blood for examination for paratyphoid B	1,675..	9..	1,684..	—	1,684
Blood for examination for Wassermann test	4,351..	222..	4,573..	—	—
Blood for examination for malarial parasites	86..	14..	100..	26..	74
Human material for <i>B. pestis</i>	35..	—	35..	10..	25
Rats for examination for <i>B. pestis</i>	995..	176..	1,171..	—	1,171
Sputa for tubercle bacilli	521..	34..	555..	103..	452
Sputa for pneumococci	6..	—	6..	5..	1
Urine for bacteriological examination	205..	—	205..	—	—
Urine for chemical examination	32..	11..	43..	—	—
Secretions for gonococci	81..	10..	91..	13..	78
Secretions for diphtheria bacilli	66..	30..	96..	22..	74
Faeces for <i>B. dysenteriae</i>	1,945..	1..	1,946..	403..	1,548
Faeces for <i>E. histolytica</i>	1,984..	30..	2,014..	—	—
Faeces for ova of intestinal parasites	17..	10..	27..	14..	13
Secretions for <i>B. leprae</i>	582..	1..	583..	177..	406
Evacuations for cholera vibrio	27..	—	27..	13..	14
Scrapings for spirochaetes	8..	4..	12..	1..	11
Faeces and urine for <i>B. typhosus</i>	22..	—	22..	2..	20
Miscellaneous specimens	394..	12..	406..	—	—
Water for bacteriological examination	57..	22..	79..	—	—
Total	17,752	623	18,375		

The doses of vaccines prepared and issued were—

Nature of Vaccine.	Official.	Private.	Total.
Autogenous vaccines	70	18	88
T. A. B. vaccines (doses)	9,221	521	9,742
Gonococcal vaccine (doses)	5,132	—	5,132
Staphylococcal vaccines (doses)	94	10	104
<i>B. coli</i> vaccines (doses)	120	—	120
Cholera vaccines (doses)	500	200	700
Plague vaccines (doses)	—	264	264
Total	15,137	1,013	16,150

The following table shows the specimens of faeces received from four institutions for the examination for *E. histolytica* and *B. dysenteriae*. It will be noticed that in only about half of the specimens which contained blood and mucus were either *E. histolytica* or *B. dysenteriae* found. This is to be expected in a country such as Ceylon where the causes of blood and mucus in the stools are numerous. Doubtless in some cases the causes were either *E. histolytica* or *B. dysenteriae*, though they were not found. It will be noticed that *B. dysenteriae* (Flexner) is found nearly four times as frequently as *E. histolytica*.

Name of Institution.	No. of Specimens.	<i>E. histolytica</i> .	<i>B. dysenteriae</i> .	Mucus.	Blood and Mucus.	Giardia, Flagellates, &c.	Blastocystis.
General Hospital ..	434 ..	37 ..	75 ..	321 ..	231 ..	41 ..	61
Maratha Jail-Ragama ..	278 ..	26 ..	65 ..	159 ..	113 ..	56 ..	59
Colon Hospital, Colombo ..	472 ..	3 ..	67 ..	249 ..	117 ..	12 ..	43
Psychiatric Asylum, Angoda ..	568 ..	40 ..	176 ..	468 ..	379 ..	56 ..	76
Totals ..	1,752	106	383	1,197	840	165	239

(2) PASTEUR INSTITUTE.

The number of persons who received preventive inoculation and treatment of the wound was 764; this is a decrease of 273 on the number for 1930, and is the lowest since 1925.

The number of brains from dogs and other animals examined during the year was 220; this is a decrease of 80 on the number for 1930.

Table I. gives the provinces from which the persons came who received treatment:—

TABLE I.

Western Province ..	..	..	..	419
Southern Province ..	..	..	..	127
Central Province ..	..	..	..	73
North-Western Province ..	..	..	..	46
Northern Province ..	..	..	..	35
Province of Sabaragamuwa ..	..	..	..	34
Province of Uva ..	..	..	..	28
Eastern Province ..	..	..	..	2
Total ..	..	..	..	764

Table II. gives the provinces from which the dogs' heads were received with the results of examination:—

TABLE II.

Province.	Positive.	Negative.	Unfit.	Total.
Western ..	54 ..	45 ..	12 ..	111
Central ..	18 ..	26 ..	6 ..	50
Southern ..	5 ..	8 ..	4 ..	17
Sabaragamuwa ..	4 ..	8 ..	5 ..	17
North-Western ..	5 ..	6 ..	2 ..	13
Uva ..	2 ..	7 ..	1 ..	10
Northern ..	— ..	— ..	2 ..	2
Total ..	88	100	32	220

The statistics of failures of the preventive inoculation against rabies for 1930 are now complete; they are as follows:—

Number of persons treated ..	..	..	..	1,037
Number of fatal cases ..	..	..	..	7
Percentage of failures ..	..	..	..	·68

(3) OUTSTATION LABORATORIES.

The following table gives the number of examinations reported from the laboratories attached to the Victoria Memorial Eye Hospital and the Lying-in Home in Colombo and to Outstation Hospitals:—

Name of Institution.	Urine.	Faeces Positive for Hook-worm.	Faeces Negative for Hook-worm.	Blood Positive for Malaria.	Blood Negative for Malaria.	Other Examinations.	Total.
Victoria Memorial Eye Hospital ..	785 ..	3 ..	2 ..	1 ..	6 ..	1,531 ..	2,328
Lying-in Home ..	2,586 ..	700 ..	332 ..	18 ..	73 ..	199 ..	3,908

Outstation.

Anuradhapura ..	2,603 ..	1,632 ..	329 ..	734 ..	533 ..	337 ..	6,168
Badulla ..	3,324 ..	2,387 ..	893 ..	80 ..	202 ..	206 ..	7,092
Batticaloa ..	1,644 ..	1,102 ..	149 ..	17 ..	8 ..	226 ..	3,146
Chilaw ..	1,438 ..	950 ..	349 ..	109 ..	173 ..	240 ..	3,259
Galle ..	3,327 ..	1,516 ..	226 ..	4 ..	16 ..	639 ..	5,728
Jaffna ..	3,609 ..	1,806 ..	558 ..	103 ..	200 ..	302 ..	6,578
Kandy ..	5,151 ..	1,486 ..	674 ..	652 ..	1,790 ..	2,929 ..	12,682
Kurunegala ..	4,107 ..	3,058 ..	944 ..	394 ..	754 ..	3,017 ..	12,274
Ratnapura ..	1,739 ..	1,477 ..	213 ..	45 ..	140 ..	475 ..	4,089
Mandapam Camp ..	152 ..	69 ..	132 ..	— ..	4 ..	38,102 ..	38,459

Mr. Michael, Laboratory Assistant of Mandapam Camp, has continued the work on “cholera carriers”.

The following is from his report:—

Total number of specimens of faeces examined for <i>V. cholerae</i> ..	37,865
Mixed cultures ..	3,414
Do. + for <i>V. cholerae</i> (Carriers) ..	9
Do. + for non-agglutinating vibrios ..	984
Do. O do. ..	2,421
Do. + for cholera red reaction ..	748
Do. O do. ..	227
Do. + for both vibrios (vibrios that gave cholera red reaction and that did not give) ..	9
Single cultures ..	4,143
Do. + for <i>V. cholerae</i> (one “carrier” and 6 cholera patients) ..	7
Do. + for non-agglutinating vibrios ..	199
Do. O do. ..	3,939
Do. + for cholera red reaction ..	118
Do. O do. ..	70
Do. + for both vibrios (vibrios that gave cholera red reaction and that did not give this reaction) ..	11

The persons examined for cholera carriers were estate labourers and passengers undergoing quarantine. Of the 37,865 examined 3,163 were passengers. Specimens from passengers were collected in small tin containers and cultured in tubes of 6 in. by $\frac{3}{4}$ in. with about 1 in. of medium. Each passenger's faeces were cultured and examined separately. Estate labourers arrived in large numbers and as it was not possible to examine such a large number without much expense and time, faeces from 10 labourers were cultured in a 100 c.c. conical flask with 35 c.c. of medium and enrichment culture (subculture) was made in 6 in. by 1 in. tube with about 1 in. of medium. If cholera vibrios were grown in the mixed culture then the faeces of the ten persons concerned were examined separately to detect carriers. This technique was carried out under the instructions of the Director of Medical and Sanitary Services and Director, Bacteriological Institute. By this method of making

a mixed culture with 10 separate specimens 250 to 300 labourers were examined daily in 25 to 30 mixed cultures and these mixed cultures have given fairly satisfactory results. Nearly 29 per cent. of these cultures showed presence of vibrios and of the cultures with single specimens from labourers nearly 16 per cent. showed vibrios.

Frequently cholera vibrios and cholera-like vibrios were isolated in one and the same culture. This necessitated plating of every culture of vibrios and examining several colonies for confirmation.

Of the non-agglutinating vibrios isolated two different kinds were observed. One was similar morphologically to cholera vibrios and the other was thicker. The former gave the cholera red reaction while the latter did not. A few cultures of both kinds of vibrios were added to goat's blood cells and after 6 hours in room temperature, it was found that the cholera-like vibrios did not haemolyse the blood cells while the other did completely. Both vibrios liquified serum and fermented glucose without gas formation.

It will be interesting to note that of the large number of non-agglutinating vibrios isolated only 44 were from passengers. This may perhaps be attributable to the better standard of living among that class of people.

He has examined up to the end of 1931, by these methods the stools of 40,552 persons and excluding cholera patients has found agglutinable *Vibrio cholerae* in eleven of them. These cultures have been examined at this laboratory. This indicates that about one person in 3,600 who comes from South India to Ceylon is a "cholera carrier". After this work has been continued for several years it will be interesting to correlate the results with rainfall and epidemic conditions, &c., in Southern India.

(4) GOVERNMENT VACCINE ESTABLISHMENT.

The number of calves received on hire from the contractor amounted to 475. During the 12 months 475 calves were used for vaccination, and of these 474 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 165,996, which is sufficient for the vaccination of approximately 497,988 persons. Of this number of tubes 1,076 were sold, realizing a sum of Rs. 937; 44,200 were issued to Mandapam Camp, 20,800 to Tataparai Camp, Tuticorin. A large quantity of lymph was also stored in bulk in reserve supply.

The weekly returns of Vaccinators received at this office show that a successful case percentage of 98.1 (primary vaccinations) was obtained with the lymph issued during the year.

(5) PUBLICATIONS.

The following papers were published during the year:—

Jacocks, W. P.: Bored-hole Latrines. Ceylon Government Press.

Sinnatamby, G. S.: Some observation on another case of Cutaneous Human Anthrax. Journal, Ceylon Branch, Brit. Med. Ass., XXVIII., (1), 20.

Jayasuriya, J. H. F.: Notes and Comments on a case of Nephrectomy for advanced Pyonephrosis. Ibid., XVIII., (1), 27.

Hill, W. C. O.: Notes on a specimen of Bilateral Thinning of Parietal Bones. Ibid., XVIII., (1), 15.

Two further specimens of Bilateral Parietal Thinning, Ibid., XVIII., (2), 1.

Wijerama, E. M.: Notes on Four Cases of Clinical Interest. Ibid., XVIII., (2), 7.

X.—MISCELLANEOUS.

(1) MEDICAL EDUCATION.

The Ceylon Medical College was established in 1870. In 1887 recognition was granted by the General Medical Council of the United Kingdom and the diploma became registrable in Great Britain and all parts of the Empire.

In 1924 the complete extended curriculum of one year pre-medical study (chemistry, physics, botany, and zoology) which is spent at the University College, and a five years' course in the Medical College was adopted. At the end of the course, the diploma in Medicine, Surgery and Midwifery is conferred under the designation of L.M.S. (Ceylon).

The College also provides a two years' course of instruction for apothecary students.

The following extracts from the report of the Registrar, Ceylon Medical College, for the year 1931 are given:—

In October, 1931, the training of midwives hitherto undertaken by the Department of Medical and Sanitary Services was vested in the College which will issue in future 1st and 2nd class certificates of efficiency to the successful pupils. The 1st class certificate is given in the case of English-speaking pupils and a high standard is required. The 2nd class is given to Sinhalese- and Tamil-speaking pupils and a somewhat lower standard is accepted.

The statistics for the year are as follows:—

Medical.

Number of students qualified for the L.M.S.	..	..	8
Number of students admitted to the College	..	..	37
Total number of students on the rolls	..	..	154

Results of Examinations—Medical.

	1931. March.		1931. July.		1931. September.		1931. December.		1931. Total.	
	Sat.	Passed.	Sat.	Passed.	Sat.	Passed.	Sat.	Passed.	Sat.	Passed.
Pre-medical ..	76..	23..	—..	— ..	43..	11..	—..	— ..	119..	34
1st Professional ..	31..	17..	28..	11..	—..	— ..	—..	— ..	59..	28
2nd Professional, Parts I. and II.	23..	19..	16..	14..	—..	— ..	—..	— ..	39..	33
Final ..	8..	2..	12..	— ..	—..	— ..	12..	6..	32..	8
									249	103

Apothecaries.

Number on the rolls	..	..	..	..	57
Number admitted	..	..	..	..	27

Results of Examinations.

		1931. March.		1931. July.		1931. December.		Total.	
		Sat.	Passed.	Sat.	Passed.	Sat.	Passed.	Sat.	Passed.
1st Apothecaries ..		15..	12..	25..	17..	— ..	— ..	40..	29
2nd Apothecaries ..		8..	3..	16..	11..	5..	5..	29..	19
								69	48

*Midwives.**Results of Examinations.*

						1931.	
						December.	
						Sat.	Passed.
1st Class	..	..	..	..	..	5	5
2nd Class	..	..	..	..	..	13	12
						<hr/>	<hr/>
						18	17
						<hr/>	<hr/>

Revenue for the financial year Rs. 60,344.

Expenditure Rs. 107,048.49.

The Medical College has excellent facilities for teaching Anatomy and Physiology to 1st and 2nd year students. The buildings of the Anatomy School were opened in 1913 and the new Physiology block opened in 1930 in addition to an extremely well designed and equipped lecture theatre with accommodation for 120 students, and the three spacious laboratories for histology, bio-chemistry, and experimental physiology, has demonstration and small class rooms and ample special accommodation for original work.

The facilities for teaching 3rd year students Pharmacology, Pathology, and Bacteriology are deplorable. The College has no pathology museum or laboratory and instruction in pathology has therefore to be given in the clinical laboratory of the General Hospital where the accommodation is quite inadequate. Bacteriology was taught at the Bacteriological Institute, a small and already overcrowded building, where there is neither the accommodation nor the equipment necessary for teaching and where classes must be limited to six students at a time. During the year rather better accommodation for the bacteriology class was improvised in an old laboratory building at the Medical College.

Clinical instruction is given in the General Hospital and the special hospitals in and around Colombo which provide ample clinical material and possess highly qualified and experienced staffs.

The annual budget of the Medical College has for several years averaged only Rs. 100,000 (more than half of which amount is repaid to Government in students' fees) and it is difficult, if not impossible, to conduct efficiently a medical school with more than 150 medical students on such limited funds. The College offers no post-graduate courses of instruction.

(2) KING EDWARD VII. (MEMORIAL) ANTI-TUBERCULOSIS FUND.

The Anti-Tuberculosis Institute in Colombo and the Kandana Sanatorium were built and equipped from the Fund and at the end of the year 1930 the construction of the King Edward VII. Sanatorium at Kankasanturai in the Northern Province was completed. Owing to lack of funds for maintenance the Department was unable to open this new Sanatorium during 1931 but, after careful consideration, Government agreed to a scheme for accepting only paying patients and the institution was equipped and opened in January, 1932. As regards the proposal to provide a special children's ward at Kandana, Government was not prepared; owing to the financial situation, to undertake to open the ward if constructed. It was therefore decided to earmark provisionally a sum of Rs. 20,000 for the building and to place the money in fixed deposit until such time as Government might be in a position to open and maintain the ward, when constructed.

It was also decided not to close the Fund until this ward was erected.

(3) CIVIL MEDICAL STORES.

The following extracts from the report of the Superintendent, Civil Medical Stores, are given:—

The working of this Establishment during the past year has been very satisfactory.

A new system of issuing and accounting was introduced in October, 1930, with very gratifying results. Each group of requisitions was complied with before the due dates and stock records were kept up to date all through the year, with the result that the stocks were checked in September and the verification report was completed by November, the earliest time in the recollection of any of the oldest members of the Staff. The ledgers were kept by three clerks instead of by five clerks as formerly. I hope to introduce an improved visible index system in place of the existing ledgers.

Requisitions.—6,199 were received for drugs, a decrease of 500. This is partly due to branch dispensary requisitions being combined with those of the central dispensaries.

Estate Section.—Drugs to the value of Rs. 254,998 were issued out of grants to estates and to the value of Rs. 5,294 on payment.

Preparation Section.—More work was taken over by the Preparation Section. The quantity of spirituous preparations made was 105,000 lb. compared with 40,000 lb. the previous year. The number of locally obtained quart bottles used was 56,000 compared with 17,000. This resulted in a saving of £1,876.

Instrument Section.—The revised form of standard instruments and surgical equipment for institutions was completed and inventory books are now being prepared for proficient accounting at the institutions.

Quinine.—13,409 lb. of quinine and 2,269,775 quinine tablets were issued costing Rs. 263,934.

The Dispatch Section continues to be congested but the smaller number of requisitions dealt with and the improved working have relieved the congestion a little.

Expenditure for drugs and instruments during the year was Rs. 837,248; of this amount Rs. 318,386 was expended in quinine alone. This item will cost more in future on account of the fall in the value of sterling. The amount expended for opium preparations was Rs. 5,490.33 and the amount received by sales was Rs. 3,563.41.

(4) SALE OF OPIUM TO REGISTERED CONSUMERS AND VEDARALAS.

No depôts were closed during 1931. There are now 51 depôts in existence. No consumers were registered during the year.

The total number of registered consumers served from the depôts in the Island during the year was 4,746, as against 5,244 in the previous year and 5,636 in 1929.

4,325 consumers obtained eating opium and 421 obtained smoking opium, as against 4,797 and 447 respectively in 1930 and 5,181 and 455 respectively in 1929.

3,642 vedaralas purchased eating opium, as compared with 3,555 in 1930 and 3,206 in 1929.

1,846 pounds of eating opium and 235 pounds of smoking opium, which realized Rs. 194,089.54 and Rs. 32,946.64 respectively, were sold to consumers and vedaralas during the year, as compared with 2,266 pounds of eating and 265 pounds of smoking opium sold in 1930, which realized Rs. 238,058.37 and Rs. 37,078.16 respectively.

The total amount realized by the sale of eating and smoking opium was Rs. 227,036.18, as against Rs. 275,136.53 in 1930. 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 and an increase in the amount of opium issued to them.

(5) BUILDING REQUIREMENTS.

The most serious financial problem with which the Department is faced is its building programme. The only large scheme started during the year was the new Home estimated to cost Rs. 179,000 to accommodate the Assistant Matron, 26 nurses, and 50 stipend pupil midwives at the De Soysa Lying-in Home, and owing to lack of funds work on this building was discontinued in October.

Of the various major building schemes, that for a new bacteriological laboratory continues to be the most urgent and is of vital importance for the proper functioning of the Department. The estimated cost is a little more than Rs. 200,000. The laboratory would form the first unit of an Institute of Medical Sciences designed to embrace pathology, entomology, public health chemistry, helminthology, and protozoology, in addition to bacteriology, and providing facilities for undergraduate and postgraduate training and instruction, for original investigations into local medical problems as well as for the routine laboratory work of the Department.

Of almost equal importance is the building of the Nurses' Home for which the site has already been acquired adjacent to the General Hospital, Colombo. Until this Home is available it is impossible to undertake the training of pupil nurses at the General Hospital and the present very unsatisfactory conditions at the three smaller hospitals where nurses are now trained must continue. The estimated cost of the proposed Nurses' Home is Rs. 500,000.

The schemes for the Bacteriological Institute and the Nurses' Home are considered to take precedence over all others because they will help and improve the work of the Department throughout the country. The other items of the building programme will necessitate an expenditure of about Rs. 11,000,000 but mostly represent local problems and are mainly for the reconstruction of obsolete hospitals and for the extension of institutions which are much too small for the areas they serve.

Throughout the Island numerous minor structural improvements and additions are required to departmental buildings but owing to the reduction during the last few years of the vote for this purpose from Rs. 220,000 to Rs. 45,000 comparatively little progress has been possible.

(6) GENERAL REMARKS.

Measures of economy were initiated towards the end of the year 1930 which it was anticipated would result in an under-expenditure by Rs. 1,180,000 of the Department's estimates for the year ending September 30, 1931. Thanks to the ready co-operation of all responsible officers of the Department and to the additional duties undertaken and personal sacrifices made by many of them, the actual savings realized amounted to Rs. 1,654,396. The special merit of these large economies lies in the fact that they were made without reducing the services rendered by the Department to the public.

Of the funds expended by the Department, Administration took 4 per cent., Medical Services 73 per cent., Public Health 17 per cent., and Miscellaneous

Services 6 per cent. Public Health might be expected to claim a greater percentage than seventeen, but as regards most of its activities it is a comparatively new branch of the Department and is still developing. The main items of miscellaneous expenditure were more than balanced by the revenue they brought in.

1931 was a healthy year: the death rate of 22.1 was one of the lowest yet recorded, while the malaria incidence was lower than in any of the past ten years and was a welcome change from the very high rates of 1928, 1929, and 1930. These satisfactory results are attributable chiefly to the favourable climatic conditions which prevailed during the year.

The most notable change in the Department, necessitated by the financial stringency, has been the thorough reorganization of the Ankylostomiasis Campaign. While very considerable economy has resulted the treatments given have increased in number and improved in quality, and definite efforts have been made to arrange still greater facilities than in the past for carrying out treatment in the villages where the heaviest infestations now occur. Useful research and investigation, which eventually should have an important practical bearing on the campaign, was carried on throughout the year into the treatment of advanced and complicated hospital cases of hookworm disease and into the use of the new drug, hexyl-resorcinol. Supplies of this drug were kindly given by the International Health Division of the Rockefeller Foundation. Investigation is also to be undertaken into the causation of infantile convulsions. This condition which accounts for 12,000 to 16,000 infant deaths a year is suspected to be due largely to roundworm infestation. If this surmise is found to be correct, it should be possible to bring children under two years of age to whom at present mass anthelmintic treatment is not given, within the scope of the campaign. The prevention of soil pollution which is the most important supplementary measure to mass treatment in dealing with ankylostomiasis, received a valuable stimulus from the demonstration in village sanitation by means of the bored-hole latrine. This demonstration, financed by the International Health Division, and carried out in two Health Unit areas with the assistance of the Sanitary Engineering Division, has shown that in many villages every house can be provided with a cheap and sanitary type of latrine which the people will use.

The Parangi Campaign, initiated in 1920, has almost eliminated this disease from most parts of the Island and it was possible, therefore, at the end of 1930 to withdraw the Itinerating Medical Officers from districts where it had ceased to be endemic. Four of the thirteen officers, however, continued to carry out itinerating parangi duty, in the Central, North-Central, Sabaragamuwa, and Eastern Provinces, respectively, and treated nearly 7,000 patients with intravenous injections of Neo Salvarsan. Nearly 25,000 parangi patients attended dispensaries for treatment. Such patients usually go to dispensaries in rural districts which are under the care of apothecaries, and apothecaries are not permitted to give intra-venous injections and have no effective means of treatment at their disposal. With a view to supplying these dispensaries with a safe and satisfactory drug which the patient can take by mouth, tests were carried out with Stovarsol and Spirocid and good clinical results were obtained. A further series of tests with serological controls is now being made with a new Bayer product, As4,876, which has not yet been named or placed on the market, but supplies of which were kindly given free of charge by the agents to the manufacturers. In Ceylon, parangi is a disease of poverty and the backwoods. It continues to exist owing to the apathy and ignorance of its victims who do not trouble to seek treatment. An early typical case is now rarely met with, and most patients report with indefinite tertiary symptoms such as rheumatic pains and headaches and occasionally with thickening of the tibiae or chronic ulcers.

The supply of trained nurses falls far short of the demand and it has not been possible to maintain the nursing staffs at many hospitals at full strength. No progress could be made with the proposals for training nurses at the General Hospital, Colombo, on account of lack of funds for building the Nurses' Home which is an essential part of the scheme. The three existing training hospitals cannot produce enough trained nurses to meet the annual requirements of the

Department, but at each of these hospitals additional buildings have been taken into use to house pupil nurses who previously were living under seriously overcrowded conditions.

In September a start was made with the extension to the De Soysa Lying-in Home, but the work came to a standstill with the new financial year, since the funds voted in the budget were not released. This extension would have made possible the training of double the present number of midwives and would have reduced to some extent the overcrowded condition of the wards.

There has been an encouraging and persistent demand from the public for improved facilities for maternal care, not only in Colombo but throughout the Island and particularly in rural areas. That improved and extended facilities are needed in Ceylon, there can be no question. Each year some 4,000 women die as the result of childbirth and some 16,000 infants die within a week of birth. The maternal and neo-natal death rates are four or five times greater in Ceylon than in England. It is necessary, however, to say a word of warning with regard to the rather prevalent view that the solution of the problem lies in the supply of trained midwives to sanitary board and village committee areas. Merely to do this would be to initiate a policy which has failed and already been given up as useless in certain other countries. A recent investigation of the work of the sanitary board and village committee midwives in the Province of Sabaragamuwa showed that each midwife attended monthly an average of five births and that within her area she was called only to 20 per cent. of the confinements. These midwives had degenerated in their methods of cleanliness, had forgotten how to use a thermometer and as a means of reducing maternal mortality and morbidity were considered to be of no value. A contrast is afforded by the Health Unit maternity services. In that of Kalutara each midwife attended on an average 10 births a month and in addition gave ante-natal care and visited the mother regularly for ten days after the confinement; 48 per cent. of the confinements in the area were attended by her, and the rates of maternal and neo-natal deaths were considerably lower among the cases she attended than among other cases. These better results are due to close and careful supervision by both doctor and nurse. Without such supervision the supply of midwives to an area is useless.

It is of interest to note the great increase that has taken place in hospital maternity work of recent years. Ten years ago out of 94 Government hospitals there were 32 with special maternity wards containing 246 beds. Last year out of 107 hospitals there were 72 with maternity wards containing 447 beds, and the total number of maternity cases dealt with in all Government hospitals has increased from 6,509 ten years ago to 16,248 in 1931. The policy of constructing maternity wards at outstation hospitals has been a wise one and must form an important part of any comprehensive scheme for maternal care.

With more than 500,000 school children to deal with, the provision of a complete school medical service cannot at present be contemplated. The existing whole-time staff for school work is less than a tenth of what would be required, but steps are being taken to utilize also District Medical Officers and Medical Officers of Health for the medical inspection of schools and school children within their areas, in order that treatment may be arranged for certain prevalent diseases such as ankylostomiasis, malaria, and scabies, that inspections of the school sanitation may be carried out, health instruction to the scholars supervised, and infectious diseases controlled. Only in the large towns is it possible to provide specialist ophthalmic, ear, nose, and throat treatment for school children and only in Colombo is dental care available.

It has been the policy of the Department during the year gradually to concentrate the work of Medical Officers of Health in small but thickly-populated areas rather than in large sparsely peopled districts, and to give these officers a wider range of duties than in the past, including not only sanitation and the control of epidemic disease but school hygiene, maternity and child welfare, anti-malaria measures, &c. In other words, their work is being brought into line with that of the Health Units which have already proved their value. The extension of local government and the early formation of a number of new Urban District

Councils is likely to hasten forward this policy, since sanitation is one of the chief functions of an Urban District Council and almost all the existing Councils have already found that the services of a properly trained Medical Officer of Health are essential.

The Indian Immigrant population on estates consisted of some 685,000 persons. The great reduction in infant mortality and the steady and progressive fall in the general death rate from its former high level to 20.8—a figure actually lower than the lowest recorded death rate for the Island as a whole—are indications of the inherent soundness of the Medical Wants Ordinances and of the beneficial results which employers of labour can bring about by providing good housing, sanitation, water, food, and medical care for their labour forces. While the rapid progress of the previous seven or eight years cannot be expected to continue during the existing depression, it would be regrettable if the system and organization which have brought about these good results were to be abandoned or seriously weakened.

R. BRIERCLIFFE,
Director of Medical and Sanitary Services.

Colombo, May 31, 1932.

Chart showing the General Systemic and Preventable Diseases treated at the Government Hospitals
during the year 1931. Total Cases-191,864.

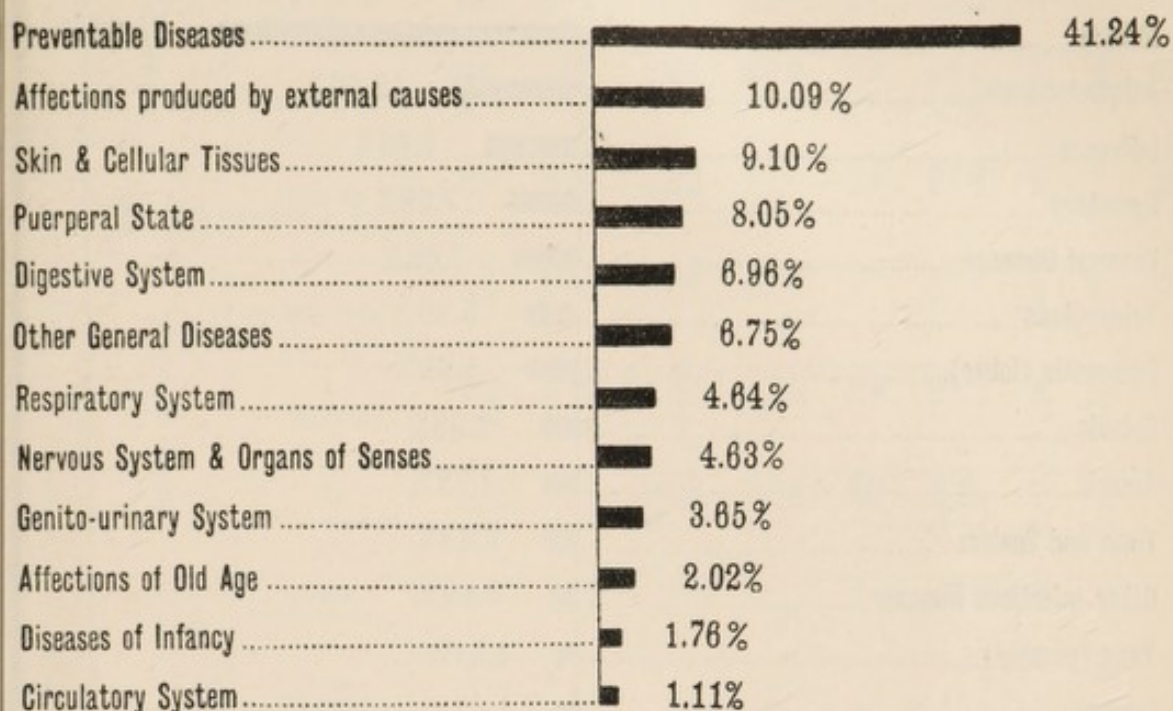
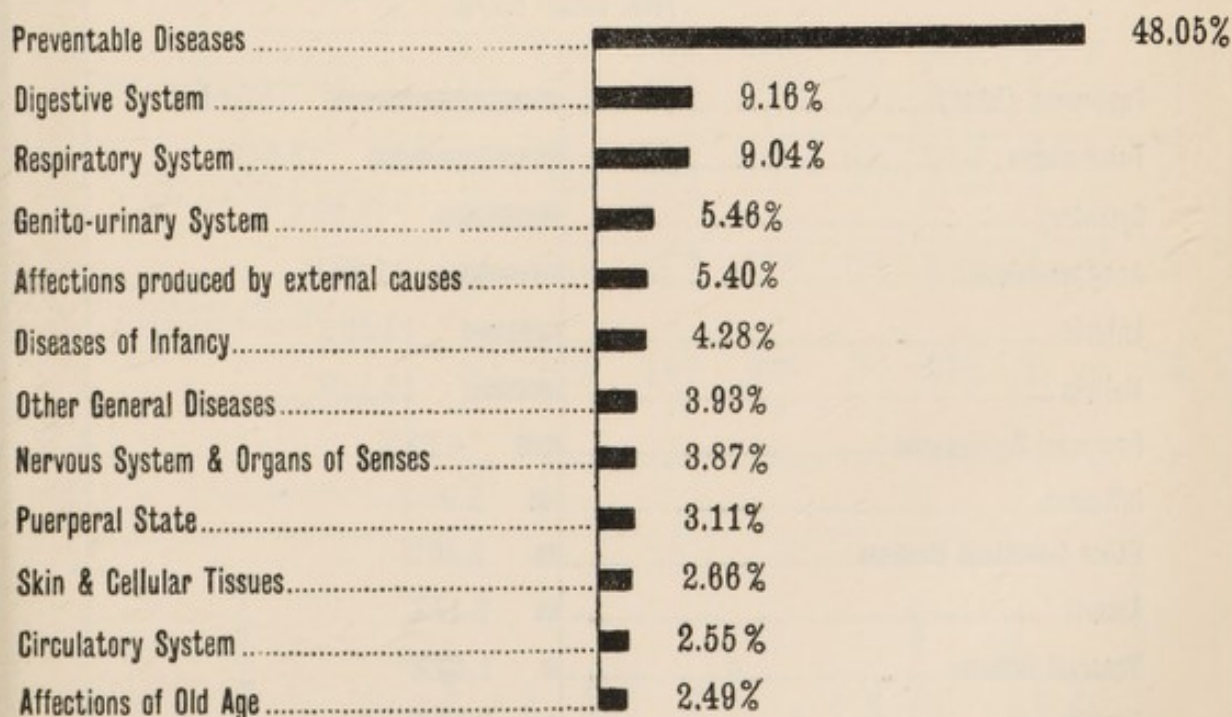
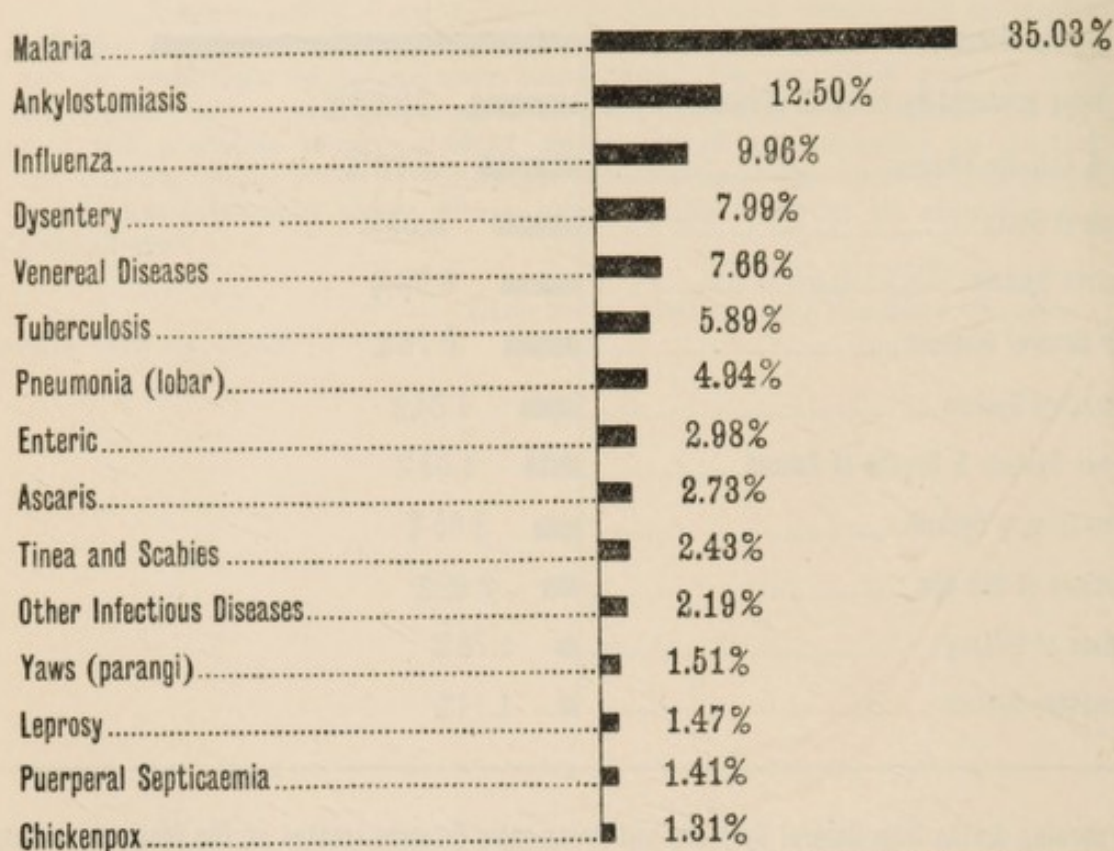


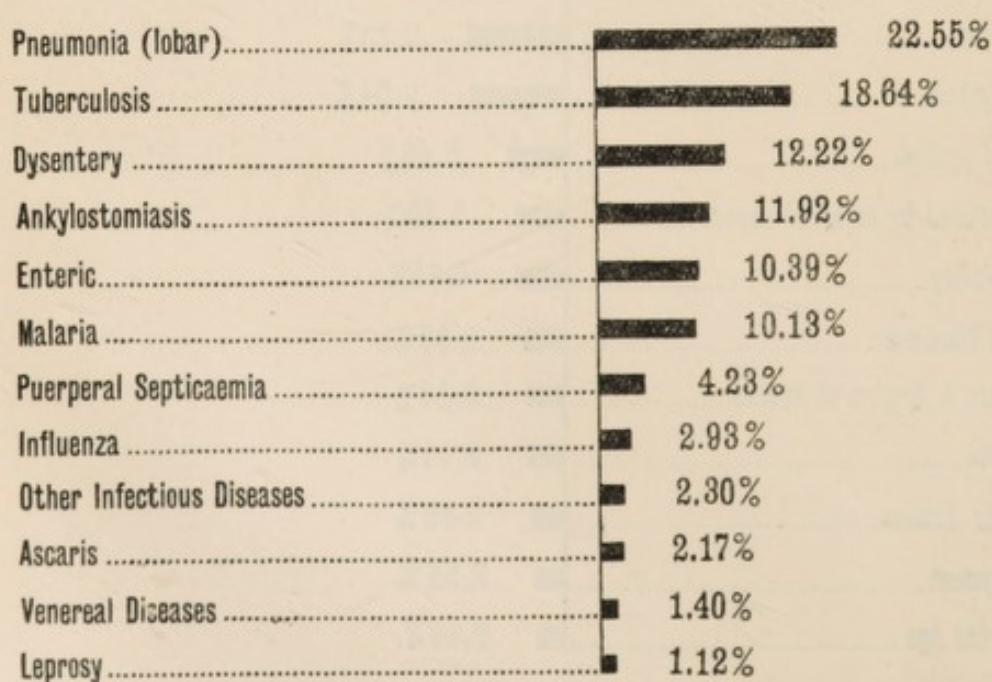
Chart showing deaths from General Systemic and Preventable Diseases treated at the Government Hospitals
during the year 1931. Total Deaths-12641.



C- Chart showing cases of Infectious Diseases treated at the Government Hospitals during the year 1931.
Total Cases - 79117.



D- Chart showing deaths from Infectious Diseases treated at the Government Hospitals during the year 1931.
Total Cases - 6074.



I.—Hospital Returns.

Province and District.	No. of hospitals.	No. of beds.	No. of patients remaining in hospital at the beginning of the year 1931.	No. of patients admitted during the year 1931.	Daily average No. of patients in hospital during the year 1931.	Attendants.					Patients discharged.			No. of patients who died in 1931.	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.		Cured.	Relieved.	Not improved.	Died in 1931.		Were discharged in 1931.	Were remaining in 1931.		
						Day nurses.	Night nurses.	Not nurses.	Partial day nurses.								Partial night nurses.	
<i>Western Province.</i>																		
Colombo	18	2,966	2,497	46,873	2,744.23	228	49	291	246	88	22,261	17,956	2,141	4,100	22.49	28.29	41.08	2,569
Kalutara	5	372	226	10,072	294.11	10	—	27	21	3	3,925	4,947	380	727	8.15	10.94	12.89	184
<i>Central Province.</i>																		
Kandy	13	1,017	659	20,240	737.38	70	13	75	31	20	11,113	6,618	977	1,533	11.58	13.77	13.08	365
Matale	2	229	147	4,354	130.08	4	—	23	—	4	1,689	2,283	63	314	9.00	9.56	9.27	93
Nuwara Eliya	8	398	235	8,170	296.30	13	1	36	—	3	3,305	4,209	174	474	9.13	13.36	13.42	317
<i>Southern Province.</i>																		
Galle	6	545	280	11,200	348.79	25	4	66	2	1	4,723	4,403	1,275	671	12.85	13.80	12.29	182
Matara	2	165	84	4,255	118.63	5	—	14	—	3	1,997	1,827	73	267	8.82	10.24	11.16	115
Hambantota	3	101	70	2,595	73.65	7	—	17	—	3	602	1,690	68	215	8.62	10.38	9.35	94
<i>Northern Province.</i>																		
Jaffna	6	343	200	8,087	248.70	13	2	38	—	1	3,824	3,570	301	309	6.86	12.55	13.12	121
Mannar	3	130	40	1,963	52.94	2	—	25	—	—	1,421	356	45	111	6.59	10.59	13.87	97
Mullaitivu	2	90	22	1,085	23.92	—	—	6	10	—	781	212	23	63	6.93	7.87	6.79	62
<i>Eastern Province.</i>																		
Batticaloa	5	350	227	2,502	253.03	17	2	18	—	1	1,496	724	41	155	7.00.18	51.02	158.18	3,686
Trincomalee	1	57	26	1,324	30.25	3	—	7	—	—	266	992	8	63	8.08	8.07	13.33	95
<i>North-Western Province.</i>																		
Kurunegala	5	426	267	10,377	330.27	12	2	46	1	—	2,458	6,897	222	768	11.22	13.45	14.25	204
Puttalam	2	82	39	1,756	54.73	6	1	5	2	1	1,240	375	7	116	8.39	10.07	9.96	96
Chilaw	2	115	70	2,752	90.63	2	—	3	14	2	1,333	1,125	64	223	10.16	11.60	14.38	113
<i>North-Central Province.</i>																		
Anuradhapura	4	220	99	4,634	108.74	4	1	36	2	2	2,517	1,760	95	261	5.13	5.60	5.14	59
<i>Province of Uva.</i>																		
Badulla	12	737	332	16,190	481.75	21	1	44	37	11	5,525	9,252	589	777	8.48	10.59	10.54	217
<i>Province of Sabaragamuwa.</i>																		
Ratnapura	7	514	351	11,149	357.71	13	1	53	—	4	6,619	3,507	204	761	10.04	11.28	13.04	190
Kegalla	6	579	289	16,117	433.25	15	—	28	17	26	7,528	7,562	181	733	9.97	10.52	12.23	345
Total	112	9,436	6,169	185,695	7,209.09	470	77	838	383	173	84,623	80,266	6,931	12,641	14.13	13.67	20.36	3,686

II.— Cases treated.

According to Diseases.

Diseases.	Remaining in Hospital at end of 1930.	Admissions in 1931.	Deaths in 1931.	Total Cases treated in 1931.	Remaining in Hospital at end of 1931.
I.—EPIDEMIC, ENDEMIC, AND INFECTIOUS DISEASES.					
Enteric Group—					
(a) Typhoid Fever ..	83	2,075	590	2,158	152
(b) Paratyphoid A. ..	—	17	1	17	1
(c) Paratyphoid B. ..	—	2	18	2	—
(d) Type not defined ..	14	163	22	177	3
Relapsing Fever ..	8	76	7	84	4
Undulant Fever ..	2	20	—	22	1
Malaria—					
(a) Tertian ..	398	22,546	246	22,944	545
(b) Quartan ..	27	1,359	27	1,386	34
(c) Aestivo-autumnal ..	59	262	22	321	5
(d) Cerebral Malaria ..	6	323	179	329	9
(e) Cachexia ..	47	2,687	141	2,734	57
(f) Blackwater ..	—	—	—	—	—
Smallpox ..	—	10	2	10	2
Measles ..	2	51	—	53	2
Whooping Cough ..	5	103	1	108	8
Diphtheria ..	2	25	11	27	1
Influenza ..	56	7,821	178	7,877	115
Mumps ..	20	331	4	351	7
Cholera ..	—	4	2	4	—
Dysentery—					
(a) Amoebic ..	120	3,179	373	3,299	135
(b) Bacillary ..	43	1,613	183	1,656	68
(c) Undefined or due to other causes	52	1,313	186	1,365	19
Plague—					
(a) Bubonic ..	1	11	7	12	—
(b) Pneumonic ..	—	1	—	1	—
(c) Septicæmic ..	—	17	7	17	—
(d) Undefined ..	—	3	—	3	—
Leprosy ..	768	395	68	1,163	784
Erysipelas ..	5	121	7	126	6
Acute Poliomyelitis ..	—	3	—	3	—
Encephalitis Lethargica ..	—	21	6	21	—
Epidemic Cerebro-spinal Fever ..	—	—	—	—	—
Other Epidemic Diseases—					
(a) Rubeola (German Measles) ..	—	—	—	—	—
(b) Varicella (Chickenpox) ..	25	1,015	1	1,040	21
(c) Dengue ..	—	24	—	24	1
(d) Yaws ..	34	1,166	4	1,200	47
Rabies ..	—	19	14	19	—
Tetanus ..	9	293	121	302	6
Tuberculosis, Pulmonary, and Laryngeal ..	548	3,697	1,071	4,245	545
Tuberculosis of the Meninges or Central Nervous System ..	—	13	13	13	—
Tuberculosis of the Intestines or Peritoneum ..	1	66	22	67	1
Tuberculosis of the Vertebral Column ..	—	41	4	41	1
Tuberculosis of Bones and Joints ..	1	32	1	33	—
Tuberculosis of other organs—					
(a) Skin or Subcutaneous Tissue (Lupus) ..	1	20	3	21	1
(b) Bones ..	—	9	1	9	—
(c) Lymphatic System ..	11	171	7	182	6
(d) Genito-urinary ..	—	2	—	2	—
(e) Other organs ..	—	242	3	26	—

II.—Cases treated—*contd.*According to Diseases—*contd.*

Diseases.	Remaining in Hospital at end of 1930.	Admissions in 1931.	Deaths in 1931.	Total Cases treated in 1931.	Remaining in Hospital at end of 1931.
I.—EPIDEMIC, ENDEMIC AND INFECTIOUS DISEASES—<i>contd.</i>					
Tuberculosis disseminated—					
(a) Acute ..	6 ..	— ..	— ..	6 ..	—
(b) Chronic ..	— ..	18 ..	7 ..	18 ..	2
Syphilis—					
(a) Primary ..	32 ..	1,078 ..	— ..	1,110 ..	36
(b) Secondary ..	23 ..	624 ..	5 ..	647 ..	46
(c) Tertiary ..	8 ..	216 ..	11 ..	224 ..	16
(d) Hereditary ..	8 ..	138 ..	45 ..	146 ..	7
(e) Period not indicated ..	3 ..	70 ..	— ..	73 ..	4
Soft Chancre ..	3 ..	141 ..	1 ..	144 ..	11
A.—Gonorrhoea and its complications ..	99 ..	2,908 ..	14 ..	3,007 ..	118
B.—Gonorrhoeal Ophthalmia ..	— ..	15 ..	2 ..	15 ..	—
C.—Gonorrhoeal Arthritis ..	17 ..	670 ..	7 ..	687 ..	25
D.—Granuloma Venereum ..	— ..	5 ..	— ..	5 ..	1
Septicaemia ..	2 ..	83 ..	36 ..	85 ..	8
Filarial Diseases ..	— ..	21 ..	1 ..	21 ..	1
Acute Rheumatic Fever ..	8 ..	197 ..	4 ..	205 ..	12
Other Infectious Diseases ..	22 ..	351 ..	13 ..	373 ..	8
II.—GENERAL DISEASES NOT MENTIONED ABOVE.					
Cancer or other malignant Tumours of the Buccal Cavity ..	6 ..	304 ..	18 ..	310 ..	3
Cancer or other malignant Tumours of the Stomach or Liver ..	— ..	33 ..	15 ..	33 ..	—
Cancer or other malignant Tumours of the Peritoneum, Intestines, Rectum ..	— ..	24 ..	11 ..	24 ..	—
Cancer or other malignant Tumours of the Female Genital Organs ..	2 ..	215 ..	15 ..	217 ..	18
Cancer or other malignant Tumours of the Breast ..	1 ..	57 ..	7 ..	58 ..	1
Cancer or other malignant Tumours of the Skin ..	— ..	45 ..	6 ..	45 ..	1
Cancer or other malignant Tumours of Organs not specified ..	13 ..	218 ..	23 ..	231 ..	8
Tumours non-malignant ..	20 ..	386 ..	14 ..	406 ..	4
Chronic Rheumatism ..	76 ..	3,342 ..	26 ..	3,418 ..	101
Scurvy (including Barlow's Disease) ..	— ..	4 ..	2 ..	4 ..	—
Pellagra ..	— ..	— ..	— ..	— ..	—
Rickets ..	3 ..	108 ..	24 ..	111 ..	6
Diabetes (not including Insipidus) ..	10 ..	297 ..	23 ..	307 ..	16
Beri-Beri ..	— ..	— ..	— ..	— ..	—
Anaemia—					
(a) Pernicious ..	2 ..	181 ..	24 ..	183 ..	7
(b) Other Anaemias and Chlorosis ..	17 ..	1,079 ..	40 ..	1,096 ..	3
Diseases of the Pituitary Body ..	— ..	3 ..	— ..	3 ..	—
Diseases of the Thyroid Gland—					
(a) Exophthalmic Goitre ..	— ..	14 ..	— ..	14 ..	—
(b) Other diseases of the Thyroid Gland, Myxoedema ..	— ..	24 ..	2 ..	24 ..	—
Diseases of the Para-Thyroid Glands ..	— ..	1 ..	— ..	1 ..	—
Diseases of the Thymus ..	— ..	1 ..	— ..	1 ..	—
Diseases of the Supra-Renal Glands ..	— ..	— ..	— ..	— ..	—
Diseases of the Spleen ..	1 ..	62 ..	5 ..	63 ..	—
Leukaemia—					
(a) Leukaemia ..	4 ..	132 ..	9 ..	136 ..	4
(b) Hodgkin's Disease ..	— ..	9 ..	1 ..	9 ..	—

II.—Cases treated—*contd.*According to Diseases—*contd.*

Diseases.	Remaining in Hospital at end of 1930.	Admissions in 1931.	Deaths in 1931.	Total Cases treated in 1931.	Remaining in Hospital at end of 1931.
II.—GENERAL DISEASES NOT MENTIONED ABOVE— <i>contd.</i>					
Alcoholism ..	1	31	1	32	1
Corrosive Acids ..	1	57	10	58	—
Metallic Poisons ..	—	13	—	13	1
Vegetable Alkaloids ..	—	41	10	41	—
Ptomaine Poisoning ..	2	1	1	3	—
Other Acute Poisonings ..	—	93	10	93	2
Other General Diseases—					
Auto-intoxication ..	20	693	54	713	19
Purpura Haemorrhagica ..	—	1	—	1	—
Haemophilia ..	—	1	1	1	—
Diabetes Insipidus ..	—	69	13	69	—
Undefined ..	26	868	42	894	23
III.—AFFECTIONS OF THE NERVOUS SYSTEM AND ORGANS OF THE SENSES.					
Encephalitis (not including Encep- halitis Lethargica) ..	—	16	5	16	1
Meningitis (not including Tuberculous Meningitis or Cerebro-spinal Menin- gitis) ..	1	84	49	85	1
Locomotor Ataxia ..	—	23	2	23	1
Other affections of the Spinal Cord ..	5	134	27	139	5
Apoplexy—					
(a) Haemorrhage ..	—	111	72	111	—
(b) Embolism ..	1	26	20	27	—
(c) Thrombosis ..	—	100	32	100	6
Paralysis—					
(a) Hemiplegia ..	16	330	95	346	20
(b) Other Paralysis ..	15	243	66	258	15
General Paralysis of the Insane ..	—	17	—	17	—
Other forms of Mental Alienation ..	3	141	12	144	1
Epilepsy ..	6	310	25	316	18
Eclampsia, Convulsions (non-puer- peral) 5 years or over ..	1	80	21	81	4
Infantile Convulsions ..	2	287	95	289	6
Chorea ..	—	12	—	12	—
A.—Hysteria ..	3	334	—	337	8
B.—Neuritis ..	9	373	7	382	12
C.—Neurasthenia ..	1	232	1	233	33
Cerebral Softening ..	—	8	3	8	—
Other affections of the Nervous System, such as Paralysis Agitans ..	11	386	26	397	28
Affections of the Organs of Vision—					
(a) Diseases of the Eye ..	40	1,015	—	1,055	75
(b) Conjunctivitis ..	29	1,535	2	1,564	17
(c) Trachoma ..	—	11	—	11	—
(d) Tumours of the Eye ..	10	34	1	44	1
(e) Other affections of the Eye ..	68	2,382	14	2,450	145
Affections of the Ear or Mastoid Sinus ..	10	435	7	445	14
IV.—AFFECTIONS OF THE CIRCULATORY SYSTEM.					
Pericarditis ..	6	45	13	51	2
Acute Endocarditis or Myocarditis ..	4	57	14	61	7
Angina Pectoris ..	—	61	4	61	2
Other Diseases of the Heart ..	—	—	—	—	—
(a) Valvular—Mitral ..	20	657	138	677	24
Aortic ..	1	29	24	30	—
Tricuspid ..	—	—	—	—	—
Pulmonary ..	1	25	7	26	—
(b) Myocarditis ..	9	231	73	240	8

II.—Cases treated—*contd.*According to Diseases—*contd.*

Diseases.	Remaining in Hospital at end of 1930.	Admissions in 1931.	Deaths in 1931.	Total Cases treated in 1931.	Remaining in Hospital at end of 1931.
IV.—AFFECTIONS OF THE CIRCULATORY SYSTEM— <i>con d.</i>					
Diseases of the Arteries—					
(a) Aneurism ..	3 ..	17 ..	1 ..	20 ..	2
(b) Arterio-Sclerosis ..	3 ..	45 ..	— ..	48 ..	11
(c) Other diseases ..	— ..	45 ..	6 ..	45 ..	—
Embolism or Thrombosis (non-cere- bral) ..	2 ..	54 ..	14 ..	56 ..	1
Diseases of the Veins—					
Haemorrhoids ..	28 ..	306 ..	4 ..	334 ..	20
Varicose Veins ..	3 ..	40 ..	— ..	43 ..	3
Phlebitis ..	3 ..	70 ..	2 ..	73 ..	7
Diseases of the Lymphatic System—					
Lymphangitis ..	1 ..	77 ..	— ..	78 ..	2
Lymphadenitis, Bubo (non-specific)	8 ..	246 ..	4 ..	254 ..	5
Other ..	— ..	— ..	— ..	— ..	—
Haemorrhage of undetermined cause	— ..	10 ..	3 ..	10 ..	—
Other affections of the Circulatory System ..	4 ..	111 ..	22 ..	115 ..	2
V.—AFFECTIONS OF THE RESPIRATORY SYSTEM.					
Diseases of the Nasal Passages—					
Adenoids ..	4 ..	39 ..	— ..	43 ..	—
Polypus ..	— ..	34 ..	1 ..	34 ..	4
Rhinitis ..	1 ..	42 ..	— ..	43 ..	1
Coryza ..	3 ..	95 ..	2 ..	98 ..	—
Affections of the Larynx-Laryngitis	4 ..	105 ..	4 ..	109 ..	—
Bronchitis—(a) Acute ..	48 ..	2,200 ..	85 ..	2,248 ..	75
(b) Chronic ..	25 ..	1,631 ..	108 ..	1,656 ..	52
Broncho-Pneumonia ..	46 ..	1,932 ..	632 ..	1,978 ..	53
Pneumonia—(a) Lobar ..	76 ..	3,831 ..	1,370 ..	3,907 ..	89
(b) Unclassified ..	8 ..	538 ..	193 ..	546 ..	13
Pleurisy, Empyema ..	28 ..	610 ..	78 ..	638 ..	24
Congestion of the Lungs ..	— ..	6 ..	2 ..	6 ..	—
Gangrene of the Lungs ..	— ..	10 ..	9 ..	10 ..	—
Asthma ..	20 ..	1,390 ..	38 ..	1,410 ..	47
Pulmonary Emphysema ..	2 ..	10 ..	1 ..	12 ..	—
Pneumothorax ..	— ..	4 ..	3 ..	4 ..	—
Other affections of the Lungs—Pul- monary Spirochaetosis ..	3 ..	136 ..	23 ..	139 ..	6
VI.—DISEASES OF THE DIGESTIVE SYSTEM.					
A.—Diseases of Teeth or Gums—					
Caries, Pyorrhoea, &c. ..	4 ..	384 ..	4 ..	388 ..	9
—Other affections of the Mouth—					
Stomatitis ..	4 ..	320 ..	7 ..	324 ..	5
Glossitis, &c. ..	— ..	75 ..	1 ..	75 ..	2
Affections of the Pharynx or Tonsils—					
Tonsillitis ..	7 ..	488 ..	14 ..	495 ..	7
Pharyngitis ..	— ..	135 ..	2 ..	135 ..	2
Affections of the Oesophagus					
A.—Ulcer of the Stomach ..	3 ..	100 ..	5 ..	103 ..	4
B.—Ulcer of the Duodenum ..	— ..	17 ..	5 ..	17 ..	—
Other affections of the Stomach—					
Gastritis ..	11 ..	565 ..	11 ..	576 ..	15
Dyspepsia, &c. ..	14 ..	1,047 ..	3 ..	1,061 ..	23

II.—Cases treated—*contd.*According to Diseases—*contd.*

Diseases.	Remaining in Hospital at end of 1930.	Admissions in 1931.	Deaths in 1931.	Total Cases treated in 1931.	Remaining in Hospital at end of 1931.
VI.—DISEASES OF THE DIGESTIVE SYSTEM— <i>contd.</i>					
Diarrhoea and Enteritis—					
Under two years	20	784	146	804	29
Diarrhoea and Enteritis—					
Two years and over	105	2,680	494	2,785	94
Colitis	24	1,231	140	1,255	43
Ulceration	8	250	8	258	18
Sprue	1	43	2	44	1
Ankylostomiasis	319	9,583	724	9,902	459
Diseases due to Intestinal Parasites—					
(a) Cestoda (Taenia)	10	8	—	18	—
(b) Trematoda (Flukes)	1	—	—	1	—
(c) Nematoda (other than Anky- lostoma)—					
Ascaris	28	2,128	132	2,156	55
Trichocephalus Dispar	—	2	1	2	—
Trichina	—	—	—	—	—
Dracunculus	—	—	—	—	—
Oxyuris	—	4	—	4	—
(d) Coccidia	—	—	—	—	—
(e) Other parasites	5	11	—	16	—
(f) Unclassified	—	75	21	75	—
Appendicitis	24	558	19	582	26
Hernia	33	571	31	604	27
A.—Affections of the Anus Fistula, &c.	5	389	18	394	9
B.—Other affections of the Intestines—					
Enteroptosis	3	57	25	60	1
Constipation	36	1,555	10	1,591	31
Acute Yellow Atrophy of the Liver	—	7	6	7	—
Hydatid of the Liver	—	1	—	1	—
Cirrhosis of the Liver—					
(a) Alcoholic	17	180	45	197	7
(b) Other forms	6	235	72	241	8
Biliary Calculus	—	13	1	13	—
Other affections of the Liver—					
Abscess	7	193	14	200	6
Hepatitis	9	297	12	306	7
Cholecystitis	—	48	3	48	—
Jaundice	5	132	13	137	4
Diseases of the Pancreas	2	14	6	16	2
Peritonitis (of unknown origin)	23	149	67	172	10
Other affections of the Digestive System	42	1,515	73	1,557	30
VII.—DISEASES OF THE GENITO- URINARY SYSTEM (non-venereal).					
Acute Nephritis	74	1,378	320	1,452	85
Chronic	31	917	200	948	35
A.—Chyluria	—	1	—	1	—
B.—Schistosomiasis	—	4	—	4	—
Other affections of the Kidneys,					
Pyelitis, &c.	5	418	54	423	16
Urinary Calculus	1	131	3	132	4
Diseases of the Bladder-Cystitis	4	466	29	470	17

II.—Cases treated—*contd.*
According to Diseases—*contd.*

Diseases.	Remaining in Hospital at end of 1930.	Admissions in 1931.	Deaths in 1931.	Total Cases treated in 1931.	Remaining in Hospital at end of 1931.
VII.—DISEASES OF THE GENITO- URINARY SYSTEM (non- venereal)— <i>contd.</i>					
Diseases of the Urethra—					
(a) Stricture ..	11	387	19	398	10
(b) Other ..	2	321	1	323	5
Diseases of the Prostate—					
Hypertrophy ..	2	88	9	90	2
Prostatitis ..	4	85	3	89	3
Diseases (non-venereal) of the Genital Organs of Man—					
Epididymitis ..	5	189	16	194	10
Orchitis ..	6	181	—	187	3
Hydrocele ..	15	139	2	154	6
Ulcer of Penis ..	4	97	1	101	12
Other ..	12	240	12	252	9
Cysts or other non-malignant Tumours of the Ovaries ..					
Salpingitis ..	—	2	—	2	—
Abscess of the Pelvis ..	2	137	6	139	9
Uterine Tumours (non-malignant) ..	—	112	2	112	7
Uterine Haemorrhage (non-puerperal)	1	86	1	87	—
A.—Metritis ..	3	170	2	173	4
B—Other affections of the Female Genital Organs—					
Displacement of Uterus ..	22	464	9	486	27
Amenorrhoea ..	1	102	—	103	1
Dysmenorrhoea ..	1	138	—	139	1
Leucorrhoea ..	1	159	—	160	1
Other undefined ..	3	111	3	114	3
Diseases of the Breast (non-puerperal)—					
Mastitis ..	1	21	1	22	—
Abscess of Breast ..	7	117	1	124	4
VIII.—PUERPERAL STATE.					
A.—Normal Labour ..	220	10,349	81	10,569	285
B.—Accidents of Pregnancy—					
(a) Abortion ..	7	678	7	685	14
(b) Ectopic Gestation ..	—	39	6	39	1
(c) Other accidents of Pregnancy ..	32	1,226	66	1,258	40
Puerperal Haemorrhage ..	—	42	13	42	—
Other accidents of Parturition ..	3	360	28	363	7
Puerperal Septicaemia ..	30	1,085	257	1,115	42
Phlegmasia Dolens ..	—	13	1	13	—
Puerperal Eclampsia ..	1	219	51	220	6
Sequelae of Labour ..	11	329	35	340	24
Puerperal affections of the Breast ..	—	33	—	33	2
Pregnancy (ante-natal) ..	29	1,843	99	1,872	67
IX.—AFFECTIONS OF THE SKIN AND CELLULAR TISSUES.					
Gangrene ..	33	377	93	410	11
Boil ..	—	97	—	97	6
Carbuncle ..	28	823	11	851	46
Abscess ..	55	1,769	50	1,824	79
Whitlow ..	50	1,609	18	1,659	50
Cellulitis ..	137	2,989	127	3,126	149
A.—Tinea ..	4	128	14	132	2
B.—Scabies ..	54	1,732	6	1,786	65
Ulcer ..	132	3,467	9	3,599	113

II.—Cases treated—*contd.*According to Diseases—*contd.*

Diseases.	Remaining in Hospital at end of 1930,	Admissions in 1931.	Deaths in 1931.	Total Cases treated in 1931.	Remaining in Hospital at end of 1931.
IX.—AFFECTIONS OF THE SKIN AND CELLULAR TISSUES— <i>contd.</i>					
Other Diseases of the Skin—					
Brythema ..	12	500	3	512	21
Urticaria ..	5	152	2	157	6
Eczema ..	43	1,459	3	1,502	51
Herpes ..	1	39	—	40	2
Psoriasis ..	8	120	—	128	5
Elephantiasis ..	2	52	—	54	1
Myiasis ..	—	137	3	137	4
Chigoes ..	15	40	5	55	1
Cutaneous Leishmaniasis ..	75	1,802	23	1,877	60
Other undefined ..	34	1,313	1	1,347	47
X.—DISEASES OF BONES AND ORGANS OF LOCOMOTION (OTHER THAN TUBERCULOUS).					
Diseases of Bones—Osteitis ..	4	200	7	204	5
Diseases of Joints—Arthritis ..	6	336	8	342	16
Synovitis ..	3	182	1	185	4
Other Diseases of Bones or Organs of Locomotion ..	11	203	6	214	19
XI.—MALFORMATIONS.					
Malformations—Hydrocephalus ..	—	5	1	5	—
Hypospadias ..	—	11	—	11	—
Spina Bifida, &c. ..	—	53	2	53	—
XII.—DISEASES OF INFANCY.					
Congenital Debility ..	35	2,081	260	2,116	38
Premature Birth ..	3	168	118	171	2
Other affections of Infancy ..	15	600	69	615	17
Infant neglect (infants of three months or over) ..	7	401	93	408	14
XIII.—AFFECTIONS OF OLD AGE.					
Senility—Senile Dementia ..	80	3,778	298	3,858	92
XIV.—AFFECTIONS PRODUCED BY EXTERNAL CAUSES.					
Suicide by Poisoning ..	—	3	3	3	—
Corrosive Poisoning (intentional) ..	—	15	4	15	—
Suicide by hanging or strangulation ..	—	1	1	1	—
Suicide by drowning ..	—	1	—	1	—
Suicide by cutting or stabbing instru- ments ..	—	1	1	1	—
Other Suicides ..	—	5	3	5	—
Food Poisoning—Botulism ..	—	34	1	34	—
Attacks of Poisonous Animals— ..	11	200	8	211	11
Snake Bite ..	—	38	4	38	1
Insect Bite ..	—	18	1	18	—
Other accidental Poisonings ..	1	95	10	96	—
Burns (by Fire) ..	33	711	110	744	33
Burns (other than by Fire) ..	8	168	12	176	8
Suffocation (accidental) ..	—	7	3	7	—
Poisoning by Gas (accidental) ..	—	—	—	—	—
Drowning (accidental) ..	—	5	—	5	—
Wounds (by Firearms) ..	11	239	22	250	11
Wounds (by cutting or stabbing instruments) ..	106	4,268	89	4,374	141
Wounds (by Fall) ..	77	3,561	103	3,638	114
Wounds (in Mines or Quarries) ..	20	32	4	52	1

II.—Cases treated—*contd.*
According to Diseases—*contd.*

Diseases.	Remaining in Hospital at end of 1930.	Admissions in 1931.	Deaths in 1931.	Total Cases treated in 1931.	Remaining in Hospital at end of 1931.
XIV.—AFFECTIONS PRODUCED BY EXTERNAL CAUSES— <i>contd.</i>					
Wounds (by Machinery) ..	20 ..	350 ..	21 ..	370 ..	26
Wounds (crushing, <i>e.g.</i> , Railway accidents, &c.) ..	26 ..	607 ..	23 ..	633 ..	18
Injuries inflicted by Animals, Bites, Kicks, &c. ..	16 ..	352 ..	7 ..	368 ..	15
A.—Over fatigue ..	— ..	1 ..	— ..	1 ..	—
B.—Hunger or Thirst ..	— ..	16 ..	1 ..	16 ..	1
Exposure to Heat—					
Heatstroke ..	— ..	2 ..	1 ..	2 ..	—
Sunstroke ..	— ..	4 ..	— ..	4 ..	—
Lightning Stroke ..	— ..	3 ..	— ..	3 ..	—
Electric Shock ..	— ..	11 ..	— ..	11 ..	—
Murder by Firearms ..	— ..	7 ..	7 ..	7 ..	—
Murder by cutting or stabbing instru- ments ..	— ..	7 ..	7 ..	7 ..	—
Murder by other means ..	— ..	1 ..	1 ..	1 ..	—
A.—Dislocation ..	4 ..	257 ..	1 ..	261 ..	2
B.—Sprain ..	5 ..	257 ..	1 ..	262 ..	4
C.—Fracture ..	100 ..	2,016 ..	165 ..	2,116 ..	110
Other external Injuries ..	129 ..	5,521 ..	71 ..	5,650 ..	151
Deaths by violence of unknown cause ..	— ..	2 ..	1 ..	2 ..	—

XV.—ILL-DEFINED DISEASES.

A.—Diseases not already specified or
ill-defined—

Ascites ..	15 ..	197 ..	20 ..	212 ..	3
Oedema ..	8 ..	9 ..	— ..	17 ..	—
Asthenia ..	30 ..	797 ..	82 ..	827 ..	19
Shock ..	— ..	58 ..	22 ..	58 ..	1
Hyperpyrexia ..	— ..	1,103 ..	35 ..	1,103 ..	77
Other ..	208 ..	1,530 ..	31 ..	1,738 ..	63
B.—Malingering ..	7 ..	64 ..	— ..	71 ..	—

