Annual report / Municipality of Singapore, Health Department.

CITY COUNCIL OF SINGAPORE

ANNUAL REPORT OF THE HEALTH DEPARTMENT 1951

PRINTED AT THE GOVERNMENT PRINTING OFFICE, SINGAPORE,
BY R. D. GILLESPIE, ACTING GOVERNMENT PRINTER

1953

ANNUAL REPORT OF THE
CITY HEALTH DEPARTMENT
1951

BY

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WHEN READING this report it must be borne in mind that the rates quoted are uncorrected for inward or outward transfers unless otherwise stated; that patients from outside the town entering hospitals and other institutions providing medical facilities in the town adversely affect our Death and Infectious Diseases rates; that the age and sex distribution of our population is still abnormal; and that the number of deaths shown as due to the various diseases must necessarily be inaccurate, as something like thirty per cent. of the persons who die in Singapore have had no medical advice or treatment before death, and the causes of their deaths have had to be surmised without the aid of post-mortems.

The estimated mid-year population on which the statistics in this report are based is the Registrar of Statistics' figure which is 747,947.

Deaths, Notifications of Infectious Diseases, etc., in service personnel and their families are not included in the figures published in this report.

NOTIFIABLE DISEASES

THE NUMBER OF CASES NOTIFIED IN PERSONS OTHER THAN SERVICE PERSONNEL AND THEIR FAMILIES WHO WERE STATED TO BE ORDINARILY RESIDENT WITHIN THE CITY AREA IN 1951 AND IN THE PREVIOUS FIVE YEARS ARE SHOWN IN THE TABLE WHICH FOLLOWS:—

Year	Small-pox	Plague	Cholera	Typhoid Fever	Para-Typhoid Fever	Diphtheria	Cerebro-Spinal Fever	Typhus Fever (1)	Scarlet Fever	Leprosy	Poliomyelitis (2)	Anthrax	Puerperal Fever	Erysipelas	Chicken-pox	Total	Tuberculosis	Total
1942/45	(Japanese Occupation Period)																	
1946	87	..	..	87	6	121	7	10	1	50	126	..	26	5	183	709	3,249	3,958
1947	42	..	..	70	1	131	16	8	..	81	1	..	20	3	317	690	3,412	4,102
1948	5	..	..	70	2	193	11	16	..	121	120	..	38	13	329	918	4,078	4,996
1949	..	..	..	61	1	241	11	24	..	158	54	..	53	20	402	1,025	4,247	5,272
1950	..	..	..	129	..	224	6	13	..	180	72	..	82	10	466	1,182	3,684	4,866
Average for 5 years ..	26.8	..	..	83.4	2.0	182.0	10.2	14.2	0.2	118.0	74.6	..	43.8	10.2	339.4	..	3,734.0	4,638.8
1951	..	..	..	85	1	392	5	15	..	142	60	..	69	8	594	1,371	3,219	4,590

Under the heading of Typhus are included Tsutsugamushi or Scrub Typhus of Malaya (Mite Borne) and (Flea Borne.) Urban Type Tropical Typhus.
Louse Borne Typhus has not been seen in Singapore.

INCIDENCE OF THE NOTIFIABLE INFECTIOUS DISEASES BY RACE 1951

(TABLE EXCLUDES CASES IN SERVICE PERSONNEL AND THEIR FAMILIES)

	Typhoid Fever	Diph-theria	Chicken-pox	Puer-peral Fever	Polio myelitis	Cerebro-Spinal Fever	Tubercu-losis	Para-Typhoid Fever	Small-pox	Typhus Fever	Erysi-pelas	Leprosy	Total
Europeans	1 (3)	3 (1)	6 (4)	— —	6 (1)	— —	4 (1)	— —	— —	1 (—)	— —	— —	21 (10)
Eurasians	1 (—)	8 (—)	25 (4)	— —	2 (—)	1 (—)	26 (1)	— —	— —	— —	1 (—)	1 (—)	65 (5)
Chinese	71 (26)	351 (79)	263 (31)	31 (—)	44 (18)	3 (2)	2,779 (420)	— (1)	— —	3 (3)	6 (—)	122 (74)	3,673 (654)
Malays	5 (2)	13 (1)	49 (10)	35 (—)	2 (2)	— —	179 (36)	— —	— —	2 (1)	— —	5 (7)	290 (59)
Indians	7 (8)	16 (4)	248 (87)	3 —	6 (1)	1 —	220 (49)	1 —	— —	9 (3)	— —	14 (2)	525 (154)
Others	— —	1 (—)	3 (—)	— —	— —	— —	11 (2)	— —	— —	— —	1 (—)	— —	16 (2)
Total ..	85 (39)	392 (85)	594 (136)	69 (—)	60 (22)	5 (2)	3,219 (509)	1 (1)	— —	15* (7)†	8 (—)	142 (83)	4,590 (884)

Remarks:—(1) The figures not in brackets are of cases notified in persons ordinarily resident in the City Area only.

(2) The figures in brackets are imported cases and cases from Rural Board treated in Hospitals or Institutions in City Area but not ordinarily resident in the City Area.

* 4 Flea Borne and 11 Mite Borne † 7 Mite Borne.

INCIDENCE OF THE NOTIFIABLE INFECTIOUS DISEASES BY MONTHS 1951

(CASES IN SERVICE PERSONNEL AND THEIR FAMILIES EXCLUDED)

Month	Typhoid Fever	Diph-theria	Chicken-pox	Puer-peral Fever	Polio-myelitis	Cerebro-Spinal Fever	Tubercu-losis	Para-Typhoid Fever	Small-pox	Leprosy	Typhus Fever	Erysi-pelas	Total
January	5	47	74	7	7	—	257	—	—	12	1	1	411
	(4)	(9)	(22)	(—)	(7)	—	(36)	—	—	(10)	(—)	(—)	(88)
February	5	30	94	6	4	2	253	—	—	15	1	—	410
	(3)	(3)	(31)	(—)	(3)	(—)	(48)	—	—	(5)	(—)	—	(93)
March	3	22	87	5	5	—	250	—	—	10	4	2	388
	(4)	(5)	(25)	(—)	(3)	—	(40)	—	—	(7)	(—)	(—)	(84)
April	6	20	73	3	2	1	245	—	—	12	1	2	365
	(4)	(3)	(13)	(—)	(2)	(—)	(36)	—	—	(9)	(—)	(—)	(67)
May	4	29	29	2	4	1	332	—	—	17	1	1	420
	(3)	(3)	(5)	(—)	(1)	(1)	(35)	—	—	(4)	(—)	(—)	(52)
June	—	34	30	11	7	—	324	—	—	12	—	—	418
	—	(7)	(6)	(—)	(—)	—	(51)	—	—	(7)	(2)	(—)	(73)
July	1	40	25	5	2	—	240	—	—	12	1	—	326
	(—)	(8)	(1)	(—)	(—)	—	(36)	—	—	(11)	(—)	—	(56)
August	6	41	28	9	2	—	276	1	—	15	1	1	380
	(—)	(8)	(3)	(—)	(1)	(—)	(46)	(—)	—	(11)	(1)	(—)	(70)
September	2	46	27	6	4	—	269	—	—	7	2	1	364
	(1)	(16)	(6)	(—)	(1)	—	(39)	(1)	—	(4)	(—)	(—)	(68)
October	14	29	57	6	6	—	266	—	—	14	1	—	393
	(5)	(8)	(8)	(—)	(2)	—	(48)	—	—	(9)	(1)	—	(81)
November..	13	25	42	5	4	1	244	—	—	10	—	—	344
	(2)	(7)	(11)	(—)	(2)	(1)	(43)	—	—	(2)	(3)	—	(71)
December	26	29	28	4	13	—	263	—	—	6	2	—	371
	(13)	(8)	(5)	(—)	(—)	—	(51)	—	—	(4)	(—)	—	(81)
Total ..	85	392	594	69	60	5	3,219	1	—	142	15*	8	4,590
	(39)	(85)	(136)	(—)	(22)	(2)	(509)	(1)	—	(83)	(7)†	(—)	(884)

Remarks:—(1) The figures not in brackets are of cases notified in persons ordinarily resident in the City Area only.
(2) The figures in brackets are imported cases and cases from Rural Board treated in Hospitals or Institutions in the City Area but not ordinarily resident in City Area. * 4 Flea Borne and 11 Mite Borne. † 7 Mite Borne.

TUBERCULOSIS

3,219 cases of Tuberculosis in City residents and 509 in non-residents that is 3,728 in all were notified during the year. 81 of these were not ordinarily resident in the Colony.

Notified by	S.A.T.A.	T.T.S. Clinic	General Hospital	Total S.A.T.A. & Hospitals	Private Practi-tioners	Total
Number of cases notified	1,400	619	549	2,568	1,160	3,728

NOTIFICATIONS OF ALL TYPES OF TUBERCULOSIS 1951 (CITY RESIDENTS ONLY) (*Service Personnel and families not included*).

	AGE GROUPS							Total
	0–5 years	5–10 years	10–15 years	15–20 years	20–45 years	Over 45 years	Age not stated	
Males	123	10	8	95	1,406	683	3	2,328
Females ..	109	13	9	45	475	240	..	891
Total ..	232	23	17	140	1,881	923	3	3,219

The Tuberculosis notification rate in City residents was 4.3 per 1,000 of the population as against 5.04 in 1950, 6.01 in 1949, 5.8 in 1948 and 5.06 in the census year 1947.

The number of deaths certified as due to all forms of this disease was 1,284 as against 1,449 in 1950 and the death rate was 1.717 per 1,000 of the population as against 1.984 in 1950 and 2.162 in 1949.

The B.C.G. immunisation campaign, which was started towards the close of the year, is referred to later on in the report in the section which deals with supervision of Midwives and Infant Welfare.

SMALL-POX, PLAGUE, CHOLERA

There was no case of these diseases during the year.

TYPHOID

85 (+ 39 in non-residents) cases of Typhoid were notified as against 129 (+ 15 in non-residents) in 1950. 19 deaths were certified as due to this disease.

The notification rate for this disease per 1,000 of the population was 0.11 as against rates of 0.10 and 0.93 respectively in the census years 1947 and 1936.

Towards the close of the year about 100 persons from all over Singapore attended a Chinese dinner given in a private house in Upper Serangoon District. 30 of those who partook of the dinner became ill with typhoid about a fortnight later. The dinner was supplied by a caterer who prepared the dinner at the house using water from a surface well sited only 20 feet away from a latrine. All of the persons known to have taken part in the preparation and serving of the dinner were bacteriologically examined. None of them was found to be infectious. The source of the infection could not be traced but water from the well which had been used was proved by chemical and bacteriological examinations to be grossly polluted. Though no typhoid organisms were isolated from the well water samples examined this does not preclude the possibility of their having been present in the well water on the night the dinner was held.

DIPHTHERIA

392 cases of Diphtheria in City residents and 85 in non-residents were notified during the year as against 224 cases (+ 49 in non-residents) in 1950, 241 in 1949, 193 in 1948 and 131 in 1947. The notification rate from this disease per 1,000 of the total population was 0.52 as against 0.19 in the census year 1947.

MORTALITY RATES FROM DIPHTHERIA 1950 AND 1951

	1951	1950
Cases notified	477	287
Deaths certified	102	53
Mortality rate	21.3%	18.4%

The marked increase in the number of cases of Diphtheria notified year by year over the past few years is somewhat perturbing. For many many years, including the past few years, we have advised all parents, through the press and radio, to bring their infants and young children to the Infant Welfare Clinics for immunisation against Diphtheria. The response to our appeals has been most disappointing. In 1951 only 6,206 infants and toddlers were taken to our Clinics for a full course of immunisation against this disease. This number is extremely small considering that the number of births registered during 1950 and 1951 alone were 33,424 and 34,776 respectively.

It is a well established fact that immunisation of infants and children against Diphtheria markedly reduces the incidence of and the mortality from the disease. If, after further propaganda concerning the value of immunisation against this disease, the response remains unsatisfactory loathe as I am to suggest it, the question of making immunisation against this disease compulsory for infants and children as has been done in Hawaii and France, etc; may have to be considered.

POLIOMYELITIS

The number of cases notified during the year as Poliomyelitis and later confirmed was 60 in City residents and 22 in non-residents, as against 72 in the former and 16 in the latter in 1950.

PERCENTAGE OF PARALYTIC AND NON-PARALYTIC POLIO CASES TREATED AT MIDDLETON HOSPITAL IN 1950 AND 1951

	1951	1950
Total number of cases treated at Middleton Hospital ..	78	81
Paralytic cases	73	74
Non-paralytic cases	5	7
Percentage paralytic cases	93.5%	91.4%

Four of the cases treated at Middleton Hospital during the year were treated in respirators for periods varying from one day to three weeks. Only one of the cases so treated recovered.

The race and age distribution of the confirmed Poliomyelitis cases (in residents and non-residents) notified during the year are shown in the table which follows:—

MUNICIPAL AND IMPORTED CONFIRMED POLIOMYELITIS CASES NOTIFIED IN 1951

BY RACE SEX AND AGE GROUPS

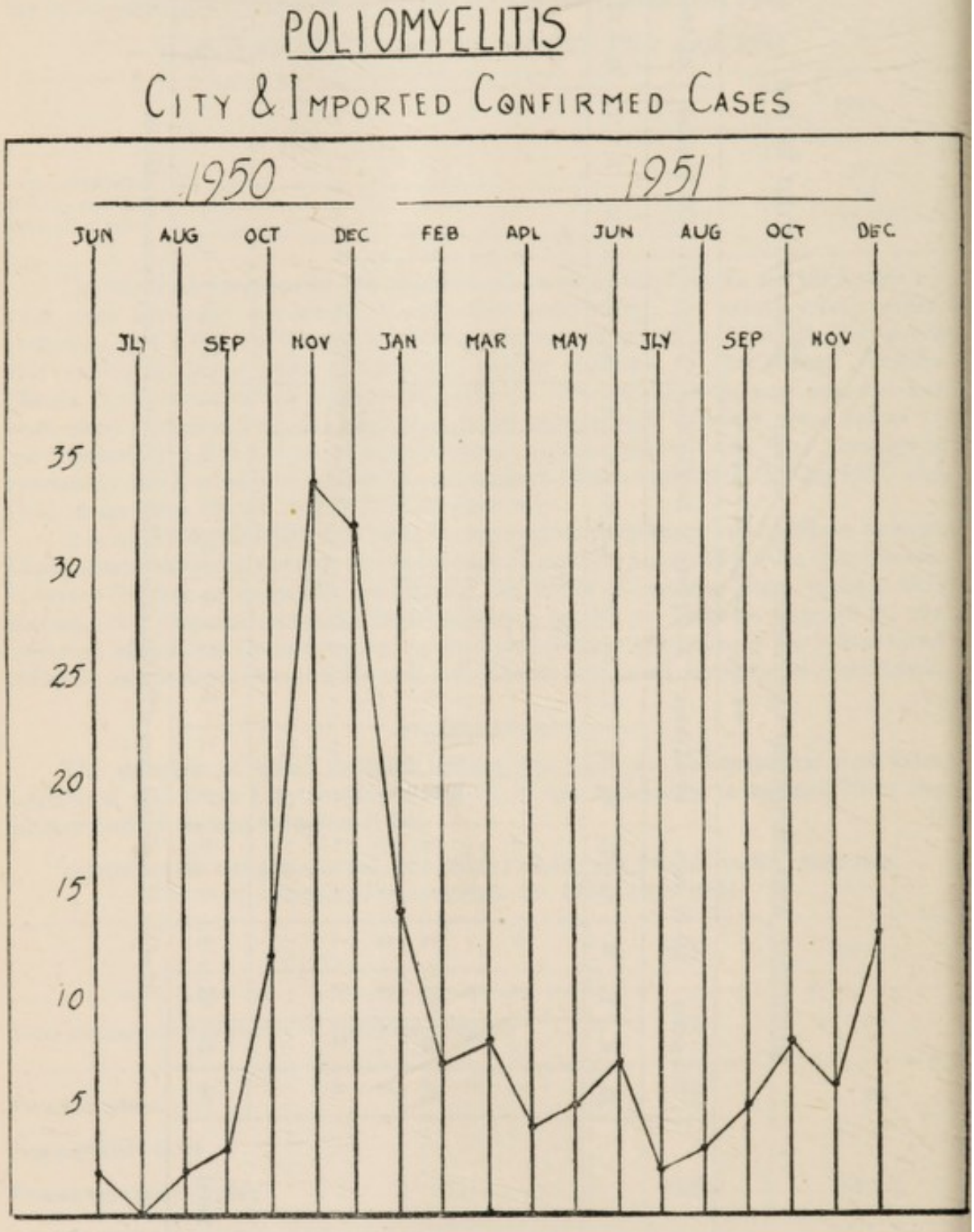
	0–5 years			5–10 years			10–15 years			15–20 years			20–25 years			25–35 years			35–45 years			45–55 years			Total		
	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.
Europeans ..	3	..	3	1	..	1	..	..	..	1	1	2	..	..	..	1	..	1	..	..	..	..	..	..	6	1	7
Eurasians ..	1	1	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	2
Chinese ..	29	22	51	2	1	3	2	3	5	..	..	..	1	..	1	..	2	2	..	..	..	..	..	..	34	28	62
Malays	1	..	1	2	1	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	1	4
Indians ..	2	2	4	1	..	1	..	..	..	..	..	..	..	..	..	1	1	2	..	..	..	..	..	..	4	3	7
Others	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Total ..	36	25	61	6	2	8	2	3	5	1	1	2	1	..	1	2	3	5	..	..	..	..	..	..	48	34	82

22 of the 82 confirmed cases of Poliomyelitis notified within the City Area were non-residents.

The dates of onset, by months, of the confirmed Poliomyelitis cases (in City residents and non-residents) in 1951 are shown in the graph which follows:—

GRAPH

ONSET OF ALL (CITY RESIDENTS AND NON-RESIDENTS) POLIOMYELITIS CASES BY MONTHS



LEPROSY

225 cases (142 of whom were in City residents) of Leprosy were notified in 1951 as against 266 (180 cases in City residents) in 1950.

During the year 3 deaths were certified as due to this disease as against 7 in 1950, 4 in 1949 and 3 in 1948.

OTHER INFECTIOUS AND PARASITIC DISEASES

Deaths certified during the year as due to some of the non-notifiable infectious and parasitic diseases are given in the table which follows:—
The 1950 figures are given for comparison.

	1950	1951
Dysentery—Bacillary	6	9
Unspecified	29	17
Amoebic	13	19
Influenza	48	28
Whooping Cough	5	1
Measles	4	29
Lepto-Spirosis (Weil's Disease)	3	4
Tetanus	3	46

The cases of non-notifiable infectious diseases treated at Middleton Hospital during the year were as follows:—

	1951	1950
Measles and Rubella	209	51
Whooping Cough	5	27
Amorbic Dysentery	105	90
Bacillary Dysentery	18	9
Clinical Dysentery	40	17
Diarrhoea and Enteritis	33	23

GENERAL

Medical Inspection of Passengers

The Malayan Federation and Singapore Port Health Authorities issued 266 permits to passengers to enter Singapore. These embraced 381 passengers of whom 18 failed to report and could not be traced.

Houses Quarantined and Disinfected

No houses were quarantined; 883 houses were disinfected during the course of the year.

Infectious Persons and Contacts

During the year 582 patients suffering from Infectious Diseases were removed to Middleton Hospital and 82 patients suffering from Leprosy were removed to Trafalgar Hospital.

MIDDLETON HOSPITAL

The full report of the Middleton Superintendent is appended.

Throughout the year the hospital was run on the same lines as in the other years since the occupation i.e., Government provided some of the staff and finance required.

Towards the close of the year two meetings were held by the Special Committee appointed by Government 'to enquire into, consider, and report on the general question of the prevention and treatment of dangerous and infectious diseases (as defined in the Quarantine and Prevention of Diseases Ordinance) and other infectious diseases, including suspected cases, contacts and carriers in persons residing in the Colony of Singapore or arriving therein, and the respective spheres of action and responsibility of the Government of the Colony and of the City Council in this connection.' One of the points which this Committee must consider is the question of the financing and control of Middleton Hospital in years to come. The Special Committee had reached no final decisions nor made their report by the end of the year.

During the year the question of increasing and strengthening the permanent nursing staff at the Middleton Hospital was gone into by the City Council. They decided that the staff should be increased and strengthened as was recommended by the Health Department. Budget provision to implement this decision has been made in the 1952 Budget.

Thanks to the generosity of the parents of a recovered case of Poliomyelitis who had been treated at the hospital a 'paddling pool' for the treatment of post-infectious cases of this disease was constructed at the hospital and donated to the City Council. The pool was officially opened by the Acting City President of the Council on 12th April, 1951.

VACCINATION

The races and age groups of the persons vaccinated during the year are shown in the table which follows:—

Nationalities	Under 6 months	6–12 months	1–5 years	Over 5 years	Total
Chinese	14,056	8,039	992	427	23,514
Malays	2,337	983	66	17	3,403
Indian	1,256	472	40	24	1,792
Eurasians	163	57	8	7	235
Europeans	37	11	..	2	50
Others	73	43	3	2	121
Total ..	17,922	9,605	1,109	479	29,115

The number of vaccinations carried out by City Vaccinators, Medical men, and Private Vaccinators, and the number returned as successful, modified, etc., are shown in the table which follows:—

1951

	Successful	Modified	Failed	Not seen	Total
City Vaccinators	16,659	75	143	553	17,430
Medical men	11,465	..	83	..	11,548
Private and Government Vaccinators	137	..	..	..	137
Total ..	28,261	75	226	553	29,115

VITAL STATISTICS

The Registrar of Statistics' figure for our estimated mid-year population, on which the statistics in this report are based, is shown by races in the table which follows:—

ESTIMATED MID-YEAR POPULATION BY RACES 1951

Malaysians	80,208
Chinese	588,023
Indians and Pakistanis	53,810
Europeans	8,889
Eurasians	8,825
Other Races	8,192
Total	747,947

BIRTHS

The number of births registered during the year was 34,776 as against 33,424 in 1950. The crude birth rate for all races combined was 46.50.

The following is the number of births for each month of the year, the 1950 figures being also shown.

Month	1950	1951	Month	1950	1951
January	2,831	2,912	July	2,719	2,917
February	2,527	2,559	August	2,762	2,975
March	2,742	2,573	September	2,752	2,767
April	2,687	2,883	October	2,926	3,199
May	2,975	2,980	November	3,011	3,188
June	2,767	2,970	December	2,725	2,853
Total	16,529	16,877	Total	16,895	17,899

The births registered by races were:—

	1950			1951		
	Males	Females	Total	Males	Females	Total
Europeans	118	94	212	116	114	230
Eurasians	163	139	302	185	156	341
Chinese	13,857	12,843	26,700	14,208	13,478	27,686
Malays	1,734	1,674	3,408	1,819	1,723	3,542
Indians	1,322	1,313	2,635	1,406	1,413	2,819
Others	97	70	167	91	67	158
Total	17,291	16,133	33,424	17,825	16,951	34,776

The ratio of male to 1,000 female births registered was for the Chinese 1,054, for the Malays 1,056 and for the Indians 995. The birth rate for each race in 1951 and the corresponding rates for 1950 are shown in the table which follows:—

	1950	1951
Europeans	25.89	25.87
Eurasians	35.50	38.64
Chinese	46.32	47.08
Malays	43.54	44.16
Indians	51.14	52.39
Others	22.02	19.29
All Races Combined	45.76	46.50

DEATHS

The total number of deaths during the year was 9,521 as against 9,585 in 1950. 2,740 of these deaths were in infants under 1 year of age as against 3,049 in 1950. The crude death rate for the year was 12.73 per 1,000 of the population compared with 13.13 in 1950.

The excess of births over deaths was 25,255 as against 23,839 in 1950.

The following return shows the number of deaths and the death rate for each month of the year:—

Month	No. of Deaths	Death Rate	Month	No. of Deaths	Death Rate
January	742	11.69	July	780	12.29
February	709	12.37	August	938	14.78
March	718	11.31	September ..	904	14.71
April	765	12.45	October	828	13.04
May	844	13.30	November ..	731	11.90
June	829	13.49	December ..	733	11.55

THE FOLLOWING RETURN SHOWS THE TOTAL NUMBER OF DEATHS AT DIFFERENT AGE PERIODS IN THE DIFFERENT RACES

Nationality	Sex	Under 28 days	28 days to 3 mths.	3 to 12 mths.	1 to 2 years	2 to 3 years	3 to 4 years	4 to 5 years	5 to 10 years	10 to 15 years	15 to 20 years	20 to 25 years	25 to 35 years	35 to 45 years	45 to 55 years	55 years Over	Un-known	Total	
Europeans ..	M	2	..	1	..	1	..	..	1	..	..	3	2	4	12	15	..	41	57
	F	2	..	..	..	..	1	..	..	..	..	..	5	..	1	7	..	16	
Eurasians ..	M	6	1	..	..	1	..	..	1	..	..	..	4	1	5	12	..	31	64
	F	2	1	4	2	..	1	..	..	..	..	1	2	1	2	17	..	33	
Chinese ..	M	449	207	406	264	142	80	57	88	49	65	84	236	433	668	1,073	8	4,309	7,466
	F	378	248	353	246	146	72	56	78	40	41	63	151	226	295	764	..	3,157	
Malays ..	M	95	62	107	49	25	11	9	13	5	9	17	38	41	64	96	..	641	1,197
	F	61	40	97	53	23	19	7	8	3	18	22	40	35	34	96	..	556	
Indians ..	M	53	22	35	16	12	2	2	4	4	2	9	53	77	83	76	..	450	669
	F	38	18	27	16	7	7	5	6	2	8	17	16	12	15	25	..	219	
Others ..	M	11	2	5	..	1	..	..	1	1	2	..	4	2	1	12	7	49	68
	F	4	..	3	..	1	..	1	..	..	..	..	1	2	..	6	1	19	
Total Males ..		616	294	554	329	182	93	68	103	59	78	113	337	558	833	1,284	15	5,521	9,521
Total Females ..		485	307	484	317	177	100	69	92	45	67	103	215	276	347	915	1	4,000	
Grand Total ..		1,101	601	1,038	646	359	193	137	200	104	145	216	552	834	1,180	2,199	16		

GENERAL DEATH RATE

The crude death rate for the year was 12.73 per 1,000 living compared with a rate of 13.13 in 1950, 12.70 in 1949, 13.46 in 1948 and 14.30 in the census year 1947.

The chief causes of death in 1950 and 1951 and the rate per 1,000 living are set out in the table which follows:—

	1950		1951	
	Cases	rate per mille	Cases	rate per mille
Tuberculosis	1,449	1.984	1,284	1.717
Bronchitis and Pneumonia ..	1,565	2.143	1,639	2.191
Diarrhoea and Enteritis ..	1,048	1.435	1,071	1.432
Diseases of early infancy ..	764	1.046	716	0.957
Infantile Convulsions (up to 5 years)	556	.761	467	0.624
Violence	473	.648	482	0.644
Heart Disease	444	.608	497	0.664
Old Age	365	.500	368	0.492
Cancer	344	.471	371	0.496
Nephritis	218	.298	272	0.364
Malaria	101	.138	54	0.072
Dysenteries	48	.066	45	0.060
Diphtheria	37	.051	102	0.136
Typhoid	24	.033	19	0.025

From the above table it will be seen that the death rate from Diphtheria was considerably higher than in 1950. The question of immunisation against this disease is dealt with later on in the report in the section which deals with Infantile Mortality.

The number of deaths and death rates from Beri-Beri in the census years 1936, 1947 and in 1951 are shown in the table which follows:—

Year	Infants under 1 year		All ages	
	Deaths	Rate per 1,000 live births	Deaths	Rate per 1,000 living
1936	139	6.657	767	1.565
1947	65	8.128	383	0.568
1951	26	0.288	255	0.34

INFANTILE DEATH RATE

INFANTILE MORTALITY BY RACES 1936—1951 (OCCUPATION PERIOD 1942—1945 OMITTED)

Year	Europeans	Eurasians	Chinese	Malays	Indians	Others	All Races
1936 ..	26.7	137.4	197.8	219.9	121.0	96.1	191.6
1937 ..	12.2	109.9	172.4	229.9	139.5	72.2	171.9
1938 ..	16.3	58.5	178.9	235.6	128.9	98.9	177.4
1939 ..	39.4	79.6	150.3	188.4	91.6	96.9	147.7
1940 ..	31.9	77.9	162.6	209.9	111.8	104.2	160.7
1941 ..	21.6	48.6	152.5	211.6	102.8	143.6	152.4
1946 ..	28.2	65.5	91.6	140.4	94.9	126.6	96.39
1947 ..	52.0	84.3	93.4	144.1	81.8	109.9	97.6
1948 ..	28.0	45.3	83.9	163.1	80.0	67.0	90.10
1949 ..	19.3	38.7	74.3	122.7	82.1	109.5	79.18
1950 ..	18.9	53.0	87.4	145.8	71.3	65.9	91.22
1951 ..	21.7	41.1	73.7	130.4	68.5	158.2	78.79

The infantile mortality rate for the year, 78.79, is the lowest ever recorded for the City.

The main causes of death in infants and the rate per 1,000 live births for each disease in 1951 and 1950 are set out in the table which follows:—

	1951		1950	
	Cases	Rate per mille	Cases	Rate per mille
Convulsions	338	9.719	466	13.942
Bronchitis and Pneumonia ..	620	17.828	711	21.272
Diseases of early infancy ..	715	20.560	764	22.858
Diarrhoea and Enteritis ..	699	20.100	683	20.434
Tetanus	19	0.546	26	.778
Beri-Beri	26	0.748	10	.299
Congenital Syphilis ..	10	0.288	23	.688
Total ..	2,427	69.790	2,683	80.272

The deaths certified as due to Whooping Cough and Measles and their complications in 1951 and 1950 are shown in the table which follows:—

	Deaths from	
	Whooping Cough and complications	Measles and complications
1950	1	29
1951	5	4

NEO-NATAL RATES BY RACE AND SEX (1949—1951)

	1951			1950			1949		
	Males	Females	Both Sexes	Males	Females	Both Sexes	Males	Females	Both Sexes
Europeans ..	17.24	17.54	17.39	..	10.64	4.72	10.10	18.52	14.49
Eurasians ..	32.43	12.82	23.46	12.27	7.19	9.93	22.99	6.17	14.88
Chinese ..	31.60	28.05	29.87	30.17	36.99	33.45	27.46	32.34	29.85
Malays ..	52.23	35.40	44.04	44.98	40.62	42.84	38.01	29.04	33.70
Indians ..	37.70	26.89	32.28	35.55	25.89	30.74	35.34	42.76	39.01
Others ..	120.88	59.70	94.94	20.62	42.86	29.94	28.85	72.16	49.75
All Races Combined	34.56	28.61	31.66	31.64	36.08	33.78	28.96	32.70	30.78

The chief causes of the neonatal deaths in infants in 1951 and 1950 ar shown in the table which follows:—

	1951		1950	
	No. of cases	% Total Neo-natal Deaths	No. of cases	% Total Neo-natal Deaths
1. Premature Birth	381	34.60	504	44.64
2. Congenital Debility	62	5.63	50	4.43
3. Infantile Convulsions	76	6.90	92	8.15
4. Atelectasis	69	6.27	56	4.96
5. Diarrhoea and Enteritis	133	12.08	135	11.96
6. Tetanus	18	1.63	21	1.86
7. Bronchitis and Pneumonia	133	12.08	93	8.24
8. Congenital Malformations	48	4.36	34	3.01
9. Icterus Neonatorum	58	5.27	27	2.39
10. Injury at Birth	73	6.63	46	4.07
11. Beri-Beri	4	0.36	3	.27
12. Undefined or unstated causes ..	9	0.82	11	.97
13. Congenital Syphilis	4	0.36	7	.62
14. Diseases of Umbilicus	1	0.09	4	.33
15. Septicaemia and Pyaemia	..	..	11	.97
16. Other Diseases included under 161(c) ..	6	0.54	6	.53
17. Other Diseases	26	2.36	29	2.57
Total ..	1,101	..	1,129	..

The table which follows shows the number of births by race and sex that occurred at the Government Maternity Hospital in 1951 and also the percentage of the total registered births of each race born at this Hospital:—

	1951			Percentage of total births registered by race born at the Government Hospital	
	Males	Females	Both Sexes	1951	1950
Chinese	5,734	5,326	11,060	39.95	38.95
Indians	764	698	1,462	51.88	48.27
Malays	76	66	142	8.24	3.67
Europeans	101	102	203	88.26	72.64
Eurasians	95	72	167	48.97	40.40
Others	11	9	20	12.66	10.78
All Races ..	6,781	6,273	13,054	37.8 %	36.17%

In the table which follows the Infantile Mortality by race, age, and sex in 1951 are shown:—

1951 INFANTILE MORTALITY BY RACE, SEX AND AGE GROUP

	Europeans		Eurasians		Chinese		Malays		Indians		Others		Total All Races	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F
0–1 day	1	1	1	..	126	65	36	19	21	9	6	3	191	97
1–7 days	1	..	4	2	148	94	27	15	16	15	5	..	201	126
1–4 weeks ..	..	1	1	..	175	219	32	27	16	14	..	1	224	262
0–4 weeks ..	2	2	6	2	449	378	95	61	53	38	11	4	616	485
4 weeks—3 months ..	..	..	1	1	207	248	62	40	22	18	2	..	294	307
3–6 months ..	1	..	..	1	162	145	52	39	21	16	3	1	239	202
6–9 months ..	..	..	..	1	127	117	34	35	10	7	..	1	171	161
9–12 months ..	..	..	..	2	117	91	21	23	4	4	2	1	144	121
0–12 months ..	3	2	7	7	1,062	979	264	198	110	83	18	7	1,464	1,276

The percentage of the total births registered by races in the census years 1911, 1921, 1931 and 1947 and in 1948—1951 is shown in the table which follows:—

Year	Total Births	Chinese	Malays	Indians	Other Races	% OF TOTAL BIRTHS			Other Races
						Chinese	Malays	Indians	
1911 ..	5,560	3,750	1,051	406	353	67.4	18.8	7.3	7.52
1921 ..	10,237	7,789	1,270	640	538	76.0	12.4	6.2	5.26
1931 ..	16,488	13,229	1,758	917	584	80.23	10.66	5.56	3.54
1936 ..	20,878	17,093	1,842	1,314	629	81.87	8.82	6.29	3.01
1947 ..	30,548	24,247	3,233	2,323	745	79.3	10.5	7.6	2.44
1948 ..	32,074	25,996	3,004	2,299	775	81.1	9.4	7.2	2.4
1949 ..	33,101	26,602	3,294	2,461	744	80.4	10.0	7.4	2.2
1950 ..	33,424	26,700	3,408	2,635	681	79.88	10.20	7.88	2.04
1951 ..	34,776	27,686	3,542	2,819	729	79.61	10.19	8.11	2.10

The still births registered in 1951 and 1950 are shown in the table which follows:—

——	1951			1950		
	Males	Females	Total	Males	Females	Total
Europeans ..	1	2	3	2	4	6
Eurasians	1	..	1	5	2	7
Chinese	235	217	452	236	225	461
Malays	60	39	99	47	42	89
Indians	42	37	79	47	37	84
Others	3	1	4	1	3	4
Total ..	342	296	638	338	313	651
Total Rate per 1,000 births all races ..	..	..	18.0	..	..	19.10

CERTIFICATION OF DEATHS, 1951

The following return shows the number of deaths in the various races, the causes of which were certified by Medical Practitioners, Registrars (who certify the cause of death from the history obtained from relatives) and the Coroner:—

——	Europeans	Eurasians	Chinese	Malays	Indians	Others	Total
Medical Practitioners ..	32	52	4,820	363	388	40	5,695
Registrars	..	5	1,911	782	160	8	2,866
Coroner	25	7	735	52	121	20	960
Total ..	57	64	7,466	1,197	669	68	9,521

In the table which follows are shown the percentage number of deaths the causes of which were certified by Medical Practitioners, Inspecting Registrars and the Coroner, in the pre-war years 1939—1941 and in the post-war years 1946— 1951:—

——	1939	1940	1941	1946	1947	1948	1949	1950	1951
Medical Practitioners	69.0	68.7	68.9	57.16	58.48	60.22	59.81	58.89	59.82
Registrars ..	25.0	25.2	25.0	33.82	33.14	31.92	31.85	31.55	30.10
Coroner ..	6.0	6.1	6.1	9.02	8.39	7.86	8.34	9.56	10.08

ANALYTICAL AND BACTERIOLOGICAL LABORATORIES

Both reports are appended.

ANTI-MOSQUITO WORK

Dr. Cameron's report on the working of the Anti-Mosquito Department is appended.

The death rate from malaria during the year, 0.072 per 1,000 living, is the lowest ever recorded for the City of Singapore.

Under a previously approved programme certain permanent anti-malaria works were to have been carried out during the year in certain ravines off Braddell Road. These had to be abandoned for the time being because of the interference with the activities of vegetable gardeners and pig rearers in this area which such works would necessarily involve. The need for conserving all of the existing sources of supply of fresh vegetable, etc., for the City is of paramount importance at the moment.

Good progress was made during the year with the construction of new works and the consolidation of existing ones, though, as pointed out in previous reports this work is being slowed down more and more because of our having to divert more and more men daily to work on the clearing and removal of blockages from anti-malarial drains many of which have now become sullage drains.

The new permanent anti-malaria works carried out during the year included the construction of 4,796 yards of concrete anti-malarial drains, 298 yards of sub-soil pipelines and 515 yards of earth drains.

SUPERVISION OF MIDWIVES AND INFANT WELFARE

The report of the Acting Senior Assistant Health Officer (Infant Welfare) is appended.

The work carried out in this department was seriously handicapped throughout the year because of a shortage of full time Medical Officers and the temporary absence of Sisters and Health Visitors on compulsory leave, cumulative leave, etc.

16, 065 new infants were seen at the Clinics in the course of the year and 95,532 consultations in all were given to them.

The total number of home visits made by the Health Visitors was 83,620.

2,599 ante-natal mothers were seen and 8,030 consultations were given to them at the Clinics during the year.

The City Midwives conducted 1,349 confinements and attended 3,248 mothers who had given birth to infants without skilled attention at the time. These Midwives paid 15,648 visits in all to confinement cases.

The number of mothers visited by the Staff Nurses shortly after delivery was 20,992, 2,283 repeat visits were paid to these mothers.

The Maternal Mortality rate per 1,000 live and still births was 1.92. During the year no maternal death was certified as having been due to Puerperal Sepsis.

Though the Infant Welfare Clinics are only intended to advise pre and post-natal mothers and infants under 1 year of age, as in the other years since the war, many sick mothers and children over 1 year of age have had to be seen at the Clinics during the course of the year. During the year 3,800 new toddlers were seen at the Clinics and 7,455 consultations were given to them.

ANTI-DIPHTHERIA IMMUNISATION

During the year 3,691 infants under 1 year of age and 2,515 toddlers over 1 year of age received the full immunisation course (2 injections of A.P.T.) against Dipthheria. In all 6,206 infants and children were immunised against this disease during the year as against 9,401 in 1950.

Considering that the number of births reported in the City was 33,424 in 1950 and 34,776 in 1951, it is most disheartening to find that only 3,691 infants were brought to the Clinics during the year for free immunisation against Diphtheria.

In the United Kingdom and other countries where mothers do take heed of the advice given to have their infants immunised the incidence of and the death rate from Diphtheria have been enormously reduced.

ANTI-TUBERCULOSIS IMMUNISATION (B.C.G.)

In July as a result of an agreement reached between the World Health Organisation and the Singapore and Federation Governments, U.N.I.C.E.F. sent out a team of one doctor and two nurses to train suitable personnel in the use of B.C.G. Vaccine. The City Council had some of their Infant Welfare Staff trained in this work, and later agreed, subject to certain conditions, to carry out B.C.G. work at the Infant Welfare Clinics.

B.C.G. immunisation work was started in the Clinics in August. From then until the end of the year, 5,164 infants and children were tested, 2,461 of whom were vaccinated with B.C.G.

FOOD AND MARKETS

The report of the Market Inspector is appended.

9,339,759 katis of fresh fish were landed and auctioned at the markets during the year as against 10,523,191 katis in 1950 and 10,622,377 in 1949.

In the markets approximately 131 tons of unsound fresh foodstuffs, 5,435 head of poultry and 19,768 eggs were seized or surrendered and destroyed at the City Incinerator.

Early in the year the old dilapidated corrugated iron roof of the main market at Clyde Terrace Market was replaced by a new asbestos one.

FOOD SHOPS, ETC.

The licences issued during the year were as follows:—

Eating Houses	1,032
Restaurants	134
Coffee Shops	150
Soda Fountains	18
Meat and Fish Shops	103
Bakeries	27
Cake Shops	37
Biscuit Factories	5
Aerated Water Factories	11
Milk Vendors	98
Iced Water and Cold Drinks	46
Food Shops	22
Margarine Factories	2
Syrup Making	3
Sweet Making	10
Fruit Drink Factory	1
Dairy Shop	3
Ice-Cream Factories	3
Food Caterer	1
Possession of wild boar flesh	3

The licence fees amounted to $76,260.00.

These licensed premises were all regularly inspected by the District Sanitary Inspectors.

PLACES OF PUBLIC RESORT

Theatres, Hotels, Public Houses, Schools, Printing Presses, etc., were regularly inspected and the necessary reports submitted at the request of the several Licensing Authorities.

SLAUGHTER HOUSES

During the year 285,402 animals were slaughtered in the City Abattoirs as against 321,065 in 1950.

The number of the various types of animals slaughtered during the year, in the preceding years and in 1941 are shown in the table which follows:—

——	1951	1950	1949	1941
Pigs	238,451	263,073	281,038	309,719
Sheep	37,397	50,049	58,666	39,366
Goats	3,159	2,821	2,860	8,275
Oxen	4,246	4,303	3,602	17,088
Buffaloes	2,140	810	318	164
Horses	8	11	11	11
Deer	1	..	..	..

As will be seen from the above table less pigs and sheep and more buffaloes and goats were slaughtered at the Abattoirs in 1951 than in 1950.

The decrease in the number of sheep slaughtered during the year as against 1950, 1949 and in the pre-war years is due to the fact that fewer sheep were available for export from Australia because of the 'boom' in wool.

As will be seen from the table which follows though fewer pigs were slaughtered in 1951 than in 1950 or 1949 the actual weight of the pork produced in 1951 was probably higher than in the other years mentioned.

——	1950		1951	
	Number of pigs slaughtered	Approximate weight in katis	Number of pigs slaughtered	Approximate weight in katis
Local pigs (average weight)— 1950 = 45 katis 1951 = 55 ,,	239,536	10,779,120	183,662	10,101,410
Federation pigs (average weight) 1951 = 60 katis ..	..	..	28,675	1,730,500
Bali pigs (average weight in) 1950 and 1951 = 90 katis	23,537	2,118,330	26,111	2,349,990
Saigon pigs (average weight) 1951 = 80 katis ..	..	..	3	240
Approx. weight (in katis) of pork slaughtered	..	12,664,665	..	14,182,140

The number of pigs slaughtered at the Abattoir each month by butchers from the Rural Area is shown in the table which follows:—

1951	Number Slaughtered	Average number slaughtered per day
January	151	4.87
February	219	7.82
March	62	2.00
April	16	0.53
May	8	0.26
June	16	0.53
July	5	0.16
August	9	0.29
September	12	0.4
October	2	0.06
November	6	0.2
December	4	0.13
Total number slaughtered	510	..
Average number slaughtered per day ..	..	1.4

In last year's report I mentioned that new legislation is being sought which if approved should enable effective detrimental action being taken to discourage the 'illegal' slaughter of pork or the sale of pork which had been 'illegally' slaughtered. As this legislation has not been approved todate and as the 'no action' policy against hawkers instituted in 1950 was continued throughout the year only very little effective action could be taken to discourage the slaughter or sale of 'illegally' slaughtered pork throughout the year.

During the year 170 carcases were totally condemned at the Abattoirs, 50 being swine, 26 oxen, 65 sheep, 15 buffaloes and 9 being goats.

OFFENSIVE TRADES

303 licences, 290 of these for laundries were issued during the year, the fees collected being $12,266.00. All these licensed premises were subject to the usual routine inspections.

BURIAL GROUNDS

The number of deaths registered within the City Area and the number of burials and cremations carried out during the year in the Council and other cemeteries within the City Area and in the City Council cemeteries at Choa Chu Kang were as follows:—

——	Deaths registered within City Area	Burials and cremations made in City Council Cemeteries and licensed burial grounds within the City Area
Europeans	57	81
Eurasians	64	77
Chinese	7,466	4,455
Malays	1,196	1,232
Indians	669	653
Others	68	47
Total ..	9,520	6,545

5,460 of the 6,545 burials and cremations recorded in previous table took place at the City Council Cemeteries.

There were 6,456 exhumations carried out during the year under the supervision of the Burial Grounds Inspector. Most of these exhumations (6,401) were carried out at the old disused Teochew Cemetery at Orchard Road (T.S.D. 21 Lot No. 156). 6,396 of the remains from this Cemetery were exhumed and re-buried at the Teochew Cemetery, 12½ mile Thompson Road.

STAFF

Appointments

Dr. M. Jamieson, D.Sc., M.A., F.R.I.C., A.R.C.S., was appointed Supernumerary Analyst, with effect from 14th February, 1951.

Mr. Chia Hong Hoe, B.Sc., was appointed Assistant Analyst, with effect from 1st August, 1951.

Dr. Ling Ding Seng, L.M.S., was appointed Assistant Health Officer, with effect from 13th December, 1951.

Leave

Dr. H. R. Morrison, Senior Assistant Health Officer, proceeded to the United Kingdom on leave on 23rd March, 1951 and returned to the Colony and resumed duty on 17th October, 1951.

Mr. T. A. Spillane, City Analyst, sailed to the United Kingdom on leave on 2nd March, 1951 and returned to the Colony and resumed duty on 11th October, 1951.

Dr. Ng See Yook who went on leave to the United Kingdom on 9th September, 1950 returned to the Colony and resumed duty on 13th August, 1951. Whilst on leave in the United Kingdom Dr. Ng took the D.P.H. Course and obtained the Diploma in Public Health.

Resignation

Dr. W. E. Hutchinson, Deputy Health Officer, who retired from the City Council Service, ceased work on 27th December, 1951 and proceeded to the United Kingdom to take the leave for which he was eligible.

Dr. Cheah Seng Kee, Assistant Health Officer, resigned from the Service, with effect from 1st July, 1951.

Dr. Phay Seng Whatt, Assistant Bacteriologist, resigned from the Service, with effect from 30th September, 1951.

Retirement

Mr. H. J. Benjafield, O.B.E., Supernumerary Officer, Anti-Mosquito Department, (formerly Chief Sanitary Inspector) retired from the Service, with effect from 27th May, 1951.

Royal Sanitary Institute Course

There was no Royal Sanitary Institute Course held during the year.

Study Leave

Dr. V. M. S. Thevathasan proceeded to the United Kingdom on 9th August, 1951, on special study leave, to take the D.P.H. Course.

Mr. P. E. Taye who was granted a Colonial Development and Welfare Fund Scholarship, to take the R.S.I. Course for the Diploma in Meat and Other Foods in the United Kingdom was granted special study leave and proceeded to the United Kingdom on 9th August, 1951.

Special Leave

Mrs. D. Brohier, Health Visitor, Infant Welfare Department was granted 2 years no pay leave, with effect from 27th December, 1951, to enable her to proceed to the United Kingdom to join her husband, a Government employee, who had been sent to the United Kingdom for a few years to attend a technical course of training in his particular work in the Telecommunications Department.

Death

Mr. H. J. Benjafield, O.B.E., who retired from the Service on 27th May, 1951 passed away on 25th August, 1951.

Mr. T. G. S. Bracken, Superintendent Bidadari Christian Cemetery, passed away on 29th April, 1951.

Mr. P. Maruthamuthu, Superintendent, Hindu Cemetery, passed away on 5th September, 1951.

Health of Staff

Particulars of the attendances at the City Dispensaries in 1951 and in the preceding year are given in the table which follows:—

	1951			1950 Total
	Main Disp.	Lorong Lalat	Total	
Number of cases attended to	15,547	17,632	33,179	33,613
Number sent to Hospitals and Clinics ..	704	310	1,014	751
Number of dressings done	15,731	21,787	37,518	30,703
Number examined for physical fitness ..	2,715	780	3,495	1,501
Number of visits paid to homes by M.O. i/c Staff	38	1	39	35
Number of patients treated by Private Practitioners	3,291	194	3,485	2,486
Number of days leave granted (excluding leave granted by Private Doctors and Special T.B. leave)	45,968½	49,064	95,032½	99,201½
Total number of attendances at dispensaries ..	35,572	44,871	80,443	70,439
(*a*) Approximate average number of Open Vote employees excluding females and juveniles	..	..	8,972	8,544
(*b*) Junior and Subordinate Staff	..	..	2,127	2,037
			11,099	10,581
Average number of days sick leave granted per person to employees eligible for treatment at City Dispensaries (sick leave granted by Private Doctors and Special Tuberculosis leave not included)..	..	..	8.56	9.37

The chief causes of sickness in employees attending the dispensaries during the year were:—

Influenza	.. 10,077 cases
Diseases of Respiratory System ..	.. 3,539 ,,
Diseases of Digestive System	.. 1,837 ,,
Diseases of Skin and Cellular Tissue ..	.. 3,676 ,,
Accidents and Injuries	.. 4,844 ,,
Pyrexia of unknown origin	.. 1,812 ,,

During the year there were 4 primary attacks of Malaria and 2 cases of relapse in City Council employees. 976 blood films taken from employees were examined for malarial parasites—6 were positive.

GENERAL

During the year the Report of the Hawkers Inquiry Commission was considered by the City Councillors who eventually agreed to accept, subject to certain conditions, the recommendations made in it (except para. 57 relating to the establishment of a Hawkers Advisory Committee). The recommendations made in the Report are of very little interest or value from a health point of view.

Work on Kampong Sanitation was continued throughout the year. 4,778 feet of concrete channel sullage drains were constructed by the special squad employed on this work. As more and more Kampong Sanitation Work is carried out more and more men from the 'Kampong Sanitation Squad' have to be diverted to carry out maintenance work in the areas which have been dealt with to prevent them reverting to their previous insanitary state. The necessity for having to divert a considerable amount of labour to work on the maintenance of areas already dealt with markedly reduced the amount of new work that could be carried out during the year.

There were 1,288 notices including 344 Intimations served during the year. Of these and 280 outstanding notices carried forward from the previous year, 1,364 were complied with, 52 were cancelled and 124 carried forward to the following year.

The Sanitary Inspectors paid 60,540 visits of inspection during the year. 1,018 of these visits were made in the out-lying areas of the City in connection with pig rearing in both the prohibited and non-prohibited areas.

There were 846 prosecutions with 748 convictions during the year. The fines amounted to $32,514.00. 14 prosecutions were withdrawn and 88 summonses could not be served.

445 samples of various foodstuffs and drugs were taken for examination during the year.

The following reports and returns are appended:—

Anti-Mosquito Report.
Report of the Analyst.
Report of the Bacteriologist.
Report of the Infant Welfare Department.
Report of the Superintendent Middleton Hospital.
Report of the Market Inspector.
Report of the Superintendent Abattoirs.
Chief Sanitary Inspector's returns.

I conclude by recording my grateful thanks to all members of the department, both Senior and Subordinate, for their continued loyal support.

I have the honour to be,
Sir,
Your obedient servant,
N. A. CANTON, J.P., M.B., B.Ch., B.A.O., D.P.H.
City Health Officer.

ANTI-MOSQUITO DEPARTMENT
1951

ANTI-MOSQUITO DEPARTMENT

INCIDENCE OF MALARIA

THE PREVIOUS practice of basing the incidence of malaria within the City on the returns from hospitals and dispensaries has been continued, and on this basis the number of reported cases is approximately the same as for last year. 300 cases were notified in 1949, 162 in 1950 and 164 in 1951. 63 of these 164 cases gave addresses outside the City, and, from the investigation reports, 25 of the remaining 101 cases also almost certainly received their infection outside the City. The remaining 76 cases may have been infected within the City but it was not possible to investigate the movements of every patient, as some were unknown at the address reported.

TRAPPING OF ADULT MOSQUITOES

Three mosquito traps were set up in various places for the collection of adult mosquitoes, and this has proved to be a valuable check on our species sanitation of malaria vectors. For details see APPENDIX "*A*".

LARVAE SEARCHING

A continual search for mosquito larvae was carried out. 7,570 collections of larvae were brought to the department for identification by the oiling checkers, and, in addition, many breeding places were eliminated without any larvae being brought for identification.

At APPENDIX "*B*" is an analysis of a consecutive series of 1,000 larvae collections from 1st July, 1951. This shows the commonest types of breeding places within the City. The Oiling Checkers had neither special instructions nor knowledge that this series of collections would be analysed, and it is, therefore, interesting to note that mosquito breeding is regularly found in routine examination of earth and concrete wells in constant use. At APPENDIX "*C*" is shown the total number of collections in which vector species were found, and the type of breeding place in which they are generally encountered.

PERMANENT ANTI-MALARIAL WORKS

As well as consolidating existing anti-malarial earth drains, several new constructions were carried out. Details of these are given at APPENDIX "*D*". The previously approved programme of permanent works had to be abandoned temporarily because it interfered with the supply of fresh vegetables to the City, and, due to the present emergency, alternative sources of supply, for example from Johore, are not available. Alternative schemes of work were, therefore, prepared.

Extensions and minor repairs to the previously existing permanent anti-malarial works were carried out as and when required, and details of these are given at APPENDIX "*E*". in which is listed works carried out during 1951 in 90 of the permanently drained areas.

PRAWN PONDS IN KALLANG BASIN

This dangerous area, having previously been sterilized from the point of view of vector breeding after a sharp outbreak of malaria in this locality before the war, was not maintained during the Japanese Occupation. Conditions here are still somewhat unsatisfactory, but action is in hand to improve them. 49 inspections were made during the year, and on 7 occasions the tidal gates were found closed. Algal growth on the ponds, which favours the breeding of *Anopheles sundaicus*, was recorded in February, May, August, September and October. Prompt larvicidal action was taken and no dangerous mosquito breeding was found.

INSANITARY KAMPONGS

Making up of kampong drains has been continued during 1951, and while there is no doubt that the sanitation in the areas concerned has improved it is open to question whether this work, which was started as an experiment, should be continued by the Anti-Mosquito Department. It cannot be expanded to any appreciable extent unless provision is made for the regular cleansing of these kampong sanitation drains which quickly become refuse chutes.

During 1951, 4,778 feet of concrete channel drains were constructed and paid for from the kampong sanitation vote. The details of these drains, and the disposition of the labourers maintaining the areas indicated are given in APPENDIX "*F*".

Although this small gang has worked hard, there is very little to see for their efforts and considering the work expended, it appears to have made little impression. Without constant maintenance these kampongs quickly revert to their previous insanitary state. It would appear that the experiment has proved that it is uneconomic, if not very nearly impossible, to render an over-crowded unplanned kampong sanitary, and that what is required is to clear these areas, when the opportunity presents itself, and avoid the occurrence of similar kampongs in existing open areas by prompt action when huts appear.

MAINTENANCE

Regular maintenance was carried out by ten gangs and two machine units. The target has been to maintain every area once in 40 days, but this has not always been achieved. Delay in most areas was due to increased work in clearing the drains, which in many cases, are now sullage drains. The question of who should clear such drains is under consideration. It would appear to be more a matter to be dealt with by the City Cleansing Department.

Turf in ravine floors. With the earth works in connection with the increased building activity which is going on at present, several ravine beds have been denuded of turf, presumably by subcontractors with contracts to spot-turf the new earth works. This has increased both the supervision and the maintenance of our ravines, as it appears that the programme of visits to the more isolated ravines was known, because on several occasions turf has been removed immediately after the ravine had received its routine maintenance and the gang had left the area.

Subsoil drainage: New seepages and extensions and repairs to existing pipe lines required the expenditure of the following subsoil pipes:—40 × 8″; 3,530 × 6″; 930 × 4″. In addition to this 2,403 subsoil pipes were taken up, cleared and relaid.

LARVICIDAL WORKS

Anti-malarial Mixture

71,485 gallons of this, containing 1 per cent D.D.T., were expended, as compared with 78,761 gallons expended during 1950. The slight decrease is due in part to filling in low lying land which was previously oiled, particularly in SIGLAP, GEYLANG and KATONG areas, and in part to the permanent works which have been carried out in areas previously oiled.

Ditrene Dip.

1,581 gallons of 3 per cent Ditrene Dip. have been used, mainly to control mosquito breeding in excavations for building construction where an oily larvicide would interfere with the proper setting of the concrete. The cost was recovered from the contractors concerned.

Malariol H S has proved effective in destroying mosquitoes larvae in vegetable ponds without damaging the vegetables. 84 gallons of this larvicide were expended on ponds in Sungei Whampoe and the Kallang Basin.

"Gammexane" has continued to prove effective in the control of nuisance mosquitoes breeding in septic tanks, and 515 lb. of this substance were used for this purpose.

"Benzine" with 10 per cent D.D.T. was required to control mosquito breeding along the margins of the reservoirs, and 16 gallons were expended for this purpose.

The total costs of these larvicides comes to $114,846.84 (including labour) and of this sum $5,517.91 was recovered from owners and contrcators.

PATROL GANGS

The five Patrol Gangs in charge of the areas around the General Hospital, Tan Tock Seng Hospital, Kallang Basin, Tanjong Rhu, Siglap and Joo Chiat are mainly concerned with the control of breeding places of *Anopheles sundaicus*, the brackish water breeder. These gangs cleaned and regraded 598,596 yards of earth drain, and cleaned 173,978 yards of concrete drain. They also collected and disposed of an average of 727 large baskets of tins and other water bearing receptacles every month.

NOTICES

247 notices under the Destruction of Mosquitoes Ordinance were served during the year, as compared with 167 during the previous year, the marked increase being due to the increased building activity with the consequent increase in breeding areas provided for the mosquito by the excavations.

TRAINING

The following Probationary Sanitary Inspectors were given a three month course in anti-malaria measures and the binomics and taxonomics of Malayan mosquitoes during the year:—

S. E. De Souza, George Yeo Chiang Beng, William Ying Yoke Fun, Heng Nam Whatt, Daud bin Roslan.

All candidates were examined at the end of their training, and passed the examination.

PLANS

217 plans for subdivisions were referred to the Department during the year by the Planning Officers of the S.I.T. These were examined and commented upon as required. Frequently, especially in the north, objections were raised by us on account of drainage, and the officers of the S.I.T. have been most co-operative in enforcing our requests and suggestions.

STAFF

Dr. Thevathasan was in charge of the Department for the first two months of 1951, and handed over to Dr. Cheah Seng Kee at the end of February. Dr. Cheah resigned at the end of June 1951, and I took over. These changes of staff, although necessary, are unfortunate, and must have thrown an unusually heavy burden on the Divisional Sanitary Inspector and two Divisional Anti-Mosquito Officers who have, throughout the year, given unsparingly of their best, to good effect. Mr. Perry's post was up graded from Senior Sanitary Inspector to Divisional Sanitary Inspector as from 1st January, 1951. The new classification is more in keeping with the responsibilities which the appointment carries.

J. CAMERON, MB., Ch.B., D.P.H., D.T.M. & H.
Acting Senior Assistant Health Officer.

APPENDIX "*A*"

Mosquito traps were set up in the following areas, with the results indicated below:—

Locality	No. of Nights	A. Maculatus	A. Sundaicus	Other Anopheles	Others	Total
Goodman Road	298	Nil	Nil	142	7,828	7,970
Kolam Ayer Lane	296	Nil	6	198	12,349	12,553
Telok Ayer Basin	90	Nil	Nil	1	3,957	3,958
Kampong Potong Pasir	176	Nil	Nil	2,519	6,481	9,000
Kim Keat Road	7	Nil	Nil	53	115	168
North of St. Michaels' Road ..	24	Nil	2	115	880	997
Total ..	..	..	8	3,028	31,610	34,646

3,007 anopheline female mosquitoes were trapped; of which 1,072 were dissected and none was found infected. In addition 31,610 adult mosquitoes were identified.

APPENDIX "*B*"

1,000 consecutive collections from Common breeding places:—

Stagnant pools	145
Grassy pools	33
Lorry Tracks	35
Building excavations	67
Seepages	13
Seepage drains	6
Earth drains	79
Roadside Earth drains	19
Concrete drains	125
Roadside Concrete drains	72
Sullage Concrete drains	78
Concrete holes	15
Concrete Tanks	10
Septic Tanks	17
Fish Tanks	2
Concrete Ponds	4
Fish Ponds	5
Vegetable Ponds	5
Ponds	94
Swimming Pools	3
Reservoir Edges	2
Canal Edges	1
Sump Pit	1
Earth Wells	32
Concrete Wells	6
Plank Wells	3
Trenches	3
Tins	45
Disused Drums	37
Tub	1
Jars	15
Flower Pots	3
Pipes	1
Scrap Dump	16
W. C. Pan	1
Boats	6
Total ..	1,000

APPENDIX "C"

7,570 collections of mosquito larvae were brought to the Anti-Mosquito Laboratory for identification. Forty-four of these contained larvae of *Anopheles sundaicus*, and twenty-seven contained larvae of *Anopheles maculatus*. The other 7,499 collections did not contain larvae of malaria vectors.

The types of breeding places in which the larvae of malaria vectors were found is as follows:—

A.—Maculatus		*A.—Sundaicus*	
Seepages	8	Stagnant pools	10
Concrete drain	6	Tidal Ponds	10
Roadside concrete drain	3	Ponds	7
Sullage concrete drain	1	Fish ponds	4
Stagnant pools	3	Vegetable ponds	2
Earth drain	2	Grassy pools	3
Concrete well	1	Swimming pools	3
Brick well	1	Earth drain	1
Earth well	1	Concrete tank	1
New building excavation	1	Concrete drain	1
		Iron tank	1
		Earth well	1
	27		44

From the above lists the necessity for regular cleansing and maintenance of concrete drains as an anti-malaria measure is readily seen. The finding of *A. sundaicus* in a swimming pool on the top of Fort Canning was somewhat of a surprise until it was discovered that salt water is pumped up to this pool and used for flushing street drains. Where vector breeding was found in or near lands occupied by the military a close liaison was maintained with their Anti-Malaria Officer.

APPENDIX "D"

NEW CONSTRUCTION WORKS CARRIED OUT IN 1951

A.M. Area No. 170—(Braddell Road Rav. No. 5)

Works in connection with the excavation and construction with inverts and slabs of a central line of drain was commenced. Four ponds were drained and nine trees were felled.

The following materials were used:—

920	21″ inverts		
50	15″ inverts		
2,300	18″ slabs	Labour Cost	$11,116.54
500	6″ subsoil pipes	Material Cost	$ 6,755.65

Work in progress.

(Braddell Road Rav. No. 6)

The excavation of a central line of drain in preparation for the carrying out of permanent anti-malarial works to be carried out at a later date, was completed.

Thirteen ponds were drained and fifteen trees felled.

Labour Cost $ 2,838.87

(Braddell Road Rav. No. 4)

The consolidation of the existing earth ditch with inverts and slabs was completed.

The following materials were used:—

440	21″ inverts		
11	18″ inverts		
182	15″ inverts		
460	12″ inverts		
32	9″ inverts	Labour Cost	$10,041.78
1,060	18″ slabs	Material Cost	$ 3,741.61

(*Braddell Road Rav. No. 3*)

The existing concrete channel was extended and permanent seepages were trapped by means of subsoil pipes. General levelling was also carried out.

The following materials were used:—

65 15″ inverts
40 18″ slabs
35 4″ subsoil pipes

Labour Cost $ 2,171.34
Material Cost $ 246.25

Work completed.

A.M. Area No. 151—(Hokien Cemetery No. 1)

The existing earth drain was realigned and replaced by concrete inverts and slabs. Five ponds and three wells were backfilled. Permanent seepages were trapped by means of subsoil pipes.

The following materials were used:—

5 18″ inverts
140 12″ inverts
88 9″ inverts
386 6″ subsoil pipes
195 4″ subsoil pipes
60 18″ slabs
12 15″ slabs

Labour Cost $ 6,292.67
Material Cost $ 1,101.83

Work completed.

A.M. Area No. 152—(Hokien Cemetery No. 2)

The replacement of the existing earth ditch with concrete inverts and slabs, and trapping of all permanent seepages by means of subsoil pipes were commenced and completed.

The following materials were used:—

453 18″ inverts
23 12″ inverts
82 9″ inverts
1,200 18″ slabs
100 15″ slabs
40 8″ subsoil pipes
724 6″ subsoil pipes
40 4″ subsoil pipes

Labour Cost $ 8,617.17
Material Cost $ 4,177.34

A.M. Area No. 148—(Serangoon Road Ravine)

The existing earth ditch was realigned to follow lot boundaries, and replaced with concrete inverts and slabs. Permanent seepages were trapped by means of subsoil pipes. Two huts in the new line of drain were demolished and re-sited by the owners at this department's request.

In addition to a subsidiary drain to receive storm and sullage waters, a washing place and a well were constructed. All permanent seepages were trapped. At this department's request the sullage drains of neighbouring huts were connected to A.M. Drains by the owners. Two 18″ Hume Pipe Culverts were constructed across a reserve road. Fourteen fruit trees had to be felled and four ponds and one earth well were backfilled.

General levelling was also carried out.

The following materials were used:—

2,000 21″ inverts
215 18″ inverts
10 15″ inverts
954 12″ inverts
3,578 18″ slabs
847 6″ subsoil pipes
2 18″ × 5′ Hume pipes

Labour Cost $26,995.38
Material Cost $14,803.79

Work in progress.

A.M. Area No. 147—(Woodsdale Ravine)

Two lines of earth drains were excavated to serve as outlets for storm and sullage water. General clearing of undergrowth and levelling of inequalities were also carried out.

Labour Cost $ 596.07

Work completed.

A.M. Area No. 47—(Newton Pond)

Realignment of the existing earth drain along the boundary of lot 54-5, Surrey Road and replacing it with concrete inverts and slabs were carried out.

The following materials were used:—

65 12″ inverts
90 18″ slabs

Labour Cost $ 393.84
Material Cost $ 235.66

Work completed.

A.M. Area No. 149—(East Lynne I)

Five hundred feet of earth ditch was excavated along the lot boundary and replaced by concrete inverts and slabs. In addition to draining one pond, five fruit trees had to be felled.

The following materials were used:—

352 18″ inverts
82 15″ inverts
241 12″ inverts
550 18″ slabs
258 6″ subsoil pipes
2 18″ 5′ Hume pipes

Labour Cost $ 3,738.12
Material Cost $ 2,158.32

Work completed.

A.M. Area No. 149—(East Lynne II)

The construction of a new line of concrete drain was commenced. At the head of this ravine in lots 171 and 150, two disused fish ponds were drained. All permanent seepages were trapped by subsoil pipes.

The following materials were used:—

446 18″ inverts
240 12″ inverts
952 18″ slabs
276 6″ subsoil pipes

Labour Cost $ 4,395.28
Material Cost $ 3,326.37

Work in progress.

A.M. Area No.178—(East Lynne III)

This is a small subsidiary ravine in the Serangoon Ravine. A central line of subsoil pipes was laid and a surface storm water channel was constructed.

The following materials were used:—

195 12″ inverts
18 18″ slabs
309 6″ subsoil pipes

Labour Cost $ 1,283.38
Material Cost $ 511.68

Work completed.

A.M. Area No. 131—(Joo Chiat Place)

Owing to the development of the low-lying area between Lorong 'H', Telok Kurau and Joo Chiat Place, it was found necessary to provide an earth drain along Joo Chiat Place as an outlet. Length of drain cut 365 yards.

Labour Cost $ 169.17

Work completed.

A.M. Area No. 124—(Cemetery Ravine)

During the Japanese occupation the whole ravine floor was interfered with by squatters planting vegetables. This caused the deterioration of the anti-malarial works that were carried out before the war.

General clearing of undergrowth, levelling off inequalities in the floor of the ravine and trapping of all outcropping seepages by means of subsoil pipes were carried out.

Thirteen large ponds were backfilled.

The following materials were used:—

90 4″ sub-soil pipes.

Labour Cost $ 348.32
Material Cost $ 90.00

A.M. Area No. 115—(Alexandra Road Ravine)

During the Japanese occupation the main drain in Ravine No. 2 was diverted and made up with bricks for a distance of 600′ 0″ towards the outlet at Alexandra Road roadside drain.

As this construction was badly damaged it was replaced by concrete inverts and slabs.

The following materials were used:—

300 21″ inverts
1,350 18″ slabs
Work completed.

Labour Cost $ 3,662.97
Material Cost $ 2,733.90

A.M. Area No. 105—(Bukit Permai)

The construction of subsidiary drains to receive storm and sullage water from the area between the Malayan Railway track and Silat Road was continued.

The following materials were used:—

100 15″ inverts
95 12″ inverts
370 18″ slabs
Work completed.

Labour Cost $ 2,806.90
Material Cost $ 718.39

A.M. Area No. 125—(Faber Ridge)

Owing to the activities of the squatters during the occupation practically all the existing subsoil pipe lines in this ravine were rendered ineffective. As a result seepages were exposed. These pipe lines were repaired.

The following materials were used:—

570 4″ subsoil pipes

Work completed.

Labour Cost $ 3,412.34
Material Cost $ 181.80

A.M. Area No. 74—(McKenzie Road Ravine).—Mount Emily Swimming Pool

A few permanent seepages outcropping below the swimming pool were trapped by subsoil pipes. This entailed the use of 229 6″ subsoil pipes.

Work completed.

Labour Cost $ 66.70
Material Cost $ 89.39

TOTAL MATERIALS DETAILED IN APPENDIX "*C*".

The following is the summary of the materials used for the new works:—

3,660 21″ inverts
1,482 18″ inverts
489 15″ inverts
2,413 12″ inverts
202 9″ inverts
40 8″ subsoil pipes
3,529 6″ subsoil pipes
9,304 4″ subsoil pipes
11,508 18″ slabs
100 15″ slabs
4 18″ Hume Pipes

APPENDIX "E"

DETAILS OF CONSTRUCTION CARRIED OUT IN AREAS ALREADY PERMANENTLY DRAINED BY EXISTING ANTI-MALARIAL WORKS

(1)—A.M. Area No. 1—Anderson Road

Minor repairs to this drain required 20 eighteen inch slabs and 250 old slabs were relaid.

Labour Cost	$	176.58
Material Cost	$	108.71

(2)—A.M. Area No. 2—Barker Road

New outcropping seepages were trapped by laying 70 × 4″ subsoil pipes.

Labour Cost	$	42.57
Material Cost	$	21.30

(3)—A.M. Area No. 5—Cluny Ravine

Minor repairs to the drain and extension of the subsoil pipe lines required 83 × 21″ inverts, 13 × 18″ inverts, 12 × 12″ inverts, 300 × 6″ subsoil pipes, 284 × 18″ slabs and the following old materials were relaid, 27 × 21″ and 33 × 15″ inverts and 473 × 18″ slabs.

Labour Cost	$	1,604.91
Material Cost	$	1,060.11

(4)—A.M. Area No. 7—Glencaird

10 × 12″ inverts and 207 × 6″ subsoil pipes were laid.

Labour Cost	$	140.78
Material Cost	$	115.47

(5)—A.M. Area No. 8—Kings Road Tyersall

205 × 18″ inverts, 12 × 15″ inverts, 10 × 12″ inverts and 85 × 18″ slabs were used plus 120 × 18″ inverts and 431 × 18″ slabs old materials were relaid.

Labour Cost	$	536.84
Material Cost	$	709.61

(6)—A.M. Area No. 9—Nassim and Dalvey

25 × 21″ inverts and 20 × 18″ slabs were used plus 50 × 18″ old slabs were relaid.

Labour Cost	$	57.91
Material Cost	$	112.93

(7)—A.M. Area No. 13—Stevens Road

150 × 15″ inverts and 20 × 18″ slabs were used plus 20 × 18″ old slabs were relaid.

Labour Cost	$	126.16
Material Cost	$	235.87

(8)—A.M. Area No. 14—Watten Estate

4 × 21″ inverts, 44 × 18″ inverts, 15 × 15″ inverts, 10× 8″ subsoil pipes, 4× 6″ subsoil pipes and 67 × 18″ slabs were used plus the following old materials, 30 × 21″ inverts, 106 × 18″ inverts, 26 × 6″ subsoil pipes and 455 × 18″ slabs were relaid.

Labour Cost	$	442.50
Material Cost	$	268.63

(9)—A.M.Area No. 15—Woodleigh

47 × 18″ inverts, 50 × 18″ slabs were used plus the following old materials, 25 × 18″ inverts and 166 × 18″ slabs were relaid.

Labour Cost	$	191.37
Material Cost	$	166.03

(10)—A.M. Area No. 17—Chander Factory Ravine

79 × 12″ inverts, 110 × 4″ sub-soil pipes and 10 × 18″ slabs were used.

Labour Cost	$	255.74
Material Cost	$	158.88

(11)—A.M. Area No. 18—Hammers Ravine

86 × 6″ subsoil pipes were laid to trap new seepages in this area.

Labour Cost	$	78.24
Material Cost	$	48.94

(12)—*A.M. Area No. 19—S. H. B. Ravine*

15 × 21″ inverts and 20 × 18″ slabs were used plus 30 old 18″ slabs were relaid.

Labour Cost	$	99.26
Material Cost	$	78.93

(13)—*A.M. Area No. 20—Jervois Road No. 1*

10 × 18″ inverts, 45 × 12″ inverts, 10 × 9″ inverts, 25 × 15″ slabs and 30 × 18″ slabs were used. The following old materials 60 × 15″ slabs and 160 × 18″ slabs were relaid.

Labour Cost	$	199.08
Material Cost	$	192.91

(14)—*A.M. Area No. 21 —Jervois Road No. 2*

5 × 12″ inverts and 10 × 18″ slabs were used plus 72 × 18″ old slabs were relaid.

Labour Cost	$	35.91
Material Cost	$	33.55

(15)—*A.M. Area No. 22—Jervois Road No. 3*

15 × 18″ slabs and 5 × 21″ inverts were used plus 80 old 18″ slabs were relaid.

Labour Cost	$	61.36
Material Cost	$	53.65

(16)—*A.M. Area No. 23—Keith Swamp*

6 × 21″ inverts were replaced.

Labour Cost	$	25.35
Material Cost	$	26.03

(17)—*A.M. Area No. 24—Leonie Hill*

10 × 18″ inverts, 20 × 12″ inverts, 10 × 18″ slabs plus 30 × 18″ old slabs were relaid.

Labour Cost	$	67.67
Material Cost	$	64.55

(18)—*A.M. Area No. 25—Morse Ravine*

16 × 18″ inverts and 15 × 12″ slabs were laid.

Labour Cost	$	14.57
Material Cost	$	50.86

(19)—*A.M. Area No. 27—One Tree Hill*

10 × 21″ inverts, 50 × 4″ subsoil pipes, 10 × 18″ slabs plus 35 × 18″ old slabs were relaid.

Labour Cost	$	67.08
Material Cost	$	62.15

(20)—*A.M. Area No. 28—Orchard Road No. 1*

15 × 21″ inverts, 30 × 18″ inverts, 80 × 15″ inverts 26 × 18″ slabs plus 112 × 18″ old slabs were relaid.

Labour Cost	$	221.36
Material Cost	$	300.10

(21)—*A.M. Area No. 32—Radin Mas*

80 × 21″ inverts, 18 × 18″ inverts, 305 × 12″ inverts, 70 × 9″ inverts, 25 × 4″ subsoil pipes, 805 × 18″ slabs plus the following old materials, 20 × 18″ inverts, 110 × 12″ inverts and 630 × 18″ slabs were laid.

Labour Cost	$	1,874.79
Materials Cost	$	2,077.38

(22)—*A.M. Area No. 35—Tiong Bahru*

15 × 18″ inverts, 112 × 12″ inverts, 100 × 8″ subsoil pipes, 220 × 6″ subsoil pipes, 45 × 4″ subsoil pipes, 20 × 15″ slabs, 400 × 18″ slabs plus the following old materials, 15 × 21″ inverts, 26 × 18″ inverts, 15 × 15″ inverts, 40 × 15″ slabs and 113 × 18″ slabs were laid.

Labour Cost	$	825.54
Material Cost	$	1,134.37

(23)—*A.M. Area No. 36—Wishart*

20 × 21″ inverts, 20 × 18″ inverts, 20 × 18″ slabs plus 230 old 18″ slabs were laid.

Labour Cost	$	127.44
Material Cost	$	138.30

(24)—*A.M. Area No. 39—Balestier Plain*

50 × 18″ slabs plus 93 old 18″ slabs were laid.

Labour Cost	$	85.01
Material Cost	$	81.08

(25)—*A.M. Area No. 41—Gallop Road*

40 × 18″ inverts, 5 × 9″ inverts, 10 × 18″ slabs plus 70 old 18″ slabs were laid.

Labour Cost	$	115.82
Material Cost	$	122.38

(26)—*A.M. Area No. 42—Grange Road*

40 × 21″ inverts, 12 × 12″ inverts, 5 × 6″ subsoil pipes, 45 × 18″ slabs plus 195 × 18″ old slabs were laid.

Labour Cost	$	242.74
Material Cost	$	224.40

(27)—*A.M. Area No. 43—Gallop Road*

10 × 18″ slabs, 150 × 6″ subsoil pipes, 10 × 18″ slabs plus 20 old 18″ slabs were laid.

Labour Cost	$	470.06
Material Cost	$	107.19

(28)—*A.M. Area No. 47—Newton Pond*

10 × 21″ inverts, 9 × 12″ inverts, 3 × 4″ subsoil pipes, 864 × 15″ slabs, 30 × 18″ slabs plus the following old materials 15 × 21″ inverts, 97 × 12″ inverts, and 105 × 18″ slabs were laid.

Labour Cost	$	999.92
Material Cost	$	813.59

(29)—*A.M. Area No. 48—Rochalie*

330 × 21″ inverts, 15 × 6″ subsoil pipes, 450 × 18″ slabs plus the follwoing old materials 50 × 21″ inverts and 400 × 18″ slabs were laid.

Labour Cost	$	1,172.57
Material Cost	$	1,607.21

(30)—*A.M. Area No. 49—Swettenham Road*

25 × 21″ inverts, 105 × 15″ inverts, 3 × 9″ inverts, 200 × 18″ slabs plus 80 × 18″ old slabs were laid.

Labour Cost	$	587.11
Material Cost	$	553.77

(31)—*A.M. Area No. 50—Tanglin Barracks I*

80 × 21″ inverts, 45 × 18″ inverts, 90 × 18″ slabs plus 20 × 21″ old inverts and 230 old 18″ slabs were laid.

Labour Cost	$	245.36
Material Cost	$	412.30

(32)—*A.M. Area No. 51—Tanglin Barracks II*

190 × 18″ inverts, 110 × 18″ slabs plus 50 × 21″ old inverts and 600 × 18″ old slabs were laid.

Labour Cost	$	744.65
Material Cost	$	434.07

(33)—*A.M. Area No. 56—Henderson Road*

10 × 12″ inverts, 15 × 18″ slabs plus 75 × 18″ old slabs were laid.

Labour Cost	$	79.42
Material Cost	$	43.65

(34)—*A.M. Area No. 57—Bukit Brown Golf Club*

A blow out in the subsoil pipe line in Ravine *C* called for the replacement of 144 × 8″ and 165 × 6″ new subsoil pipes, 950 × 8″ and 320×6″ old subsoil pipes were relaid.

Labour Cost $ 2,360.45
Material Cost $ 183.44

(35)—*A.M. Area No. 58—Kampong Java Area*

30 × 21″ inverts, 74 × 18″ inverts, 5 × 15″ inverts, 85 × 12″ inverts, 354 × 18″ slabs plus the following old materials, 74 × 21″ inverts, 80 × 12″ inverts and 933 × 18″ slabs were laid.

Labour Cost $ 1,016.11
Material Cost $ 880.26

(36)—*A.M. Area No. 63—Swiss Cottage No. 1*

11 × 15″ Inverts, 67 × 12″ Inverts, 35 × 15″ slabs, 2 × 18″ slabs plus 175 × 15″ old slabs were laid.

Labour Cost $ 202.20
Material Cost $ 180.91

(37)—*A.M. Area No. 67—Spottiswoode Park*

5 × 18″ Inverts were laid.

Labour Cost $ 19.47
Material Cost $ 11.80

(38)—*A.M. Area No. 73—Mandalay Road*

1 × 21″ inverts, 55 × 15″ inverts, 30 × 12″ inverts, 55 × 18″ slabs plus 180 × 18″ old slabs were laid.

Labour Cost $ 188.45
Material Cost $ 209.20

(39)—*A.M. Area No. 79—Serangoon Village*

50 × 21″ inverts, 11 × 15″ inverts, 5 × 12″ inverts, 5 × 4″ subsoil pipes, 90 × 18″ slabs, and the following old materials; 26 × 15″ inverts, 15 × 12″ inverts, and 426 × 18″ slabs were laid.

Labour Cost $ 371.65
Material Cost $ 317.64

(40)—*A.M. Area No. 81—Mount Rosie*

2 × 21″ inverts, 25 × 18″ inverts, 20 × 18″ slabs, plus 27 × 18″ old inverts and 155 old 18″ slabs were laid.

Labour Cost $ 165.74
Material Cost $ 97.90

(41)—*A.M. Area No. 87—Thomson, Balastier Road, Ravine*

15 × 15″ inverts, 30 × 18″ slabs plus 118 old 18″ slabs were laid.

Labour Cost $ 114.67
Material Cost $ 50.18

(42)—*A.M. Area No. 88—Jewish Cemetery*

10 × 21″ inverts, 25 × 18″ inverts, 48 × 15″ inverts, 50 × 12″ inverts, 110 × 18″ slabs, plus 325 × 18″ old slabs were laid.

Labour Cost $ 398.52
Material Cost $ 285.15

(43)—*A.M. Area No. 89—Kampong Bahru*

80 × 12″ inverts, 70 × 18″ slabs plus 80 × 18″ old slabs were laid.

Labour Cost $ 370.31
Material Cost $ 215.86

(44)—*A.M. Area No. 91—Holland Bukit Timah*

85 × 21″ inverts, 30 × 18″ inverts, 90 × 18″ slabs, plus 50 × 21″ old inverts, and 470 × 18″ old slabs were laid.

Labour Cost $ 438.11
Material Cost $ 494.55

(45)—*A.M. Area No. 96—Western Reclamation*

15 × 21″ inverts, 50 × 18″ slabs plus 60 old 18″ slabs were laid.

Labour Cost	$	269.60
Material Cost	$	123.94

(46)—*A.M. Area No. 100—Adam Park*

41 × 21″ inverts, 299 × 18″ inverts, 52 × 15″ inverts, 44 × 12″ inverts, 2 × 8″ subsoil pipes, 15 × 6″ subsoil pipes, 2 × 4″ subsoil pipes, 358 × 18″ slabs plus the following old materials, 15 × 21″ inverts, 361 × 18″ inverts, 55 × 15″ slabs, and 2,145 × 18″ slabs were laid.

Labour Cost	$	1,742.30
Material Cost	$	1,541.60

(47)—*A.M. Area No. 104—Katong*

200 × 12″ inverts, 35 × 9″ inverts, 381 × 15″ slabs 2 × 18″ slabs plus the following old materials 35 × 12″ inverts, 515 × 15″ slabs were laid.

Labour Cost	$	413.08
Material Cost	$	742.08

(48)—*A.M. Area No. 106—Jalan Besar*

20 × 12″ inverts, and 270 × 12″ old inverts were laid.

Labour Cost	$	65.04
Material Cost	$	29.65

(49)—*A.M. Area No. 107—Wayang Satu*

29 × 21″ inverts, 188 × 18″ inverts, 7 × 12″ inverts, 39 × 9″ inverts, 4 × 8″ subsoil pipes, 3 × 4″ subsoil pipes, 184 × 18″ slabs, plus the following old materials, 20 × 21″ inverts, 148 × 18″ inverts, 12 × 12″ inverts, 1,383 × 18″ slabs were laid.

Labour Cost	$	971.22
Material Cost	$	881.52

(50)—*A.M. Area No. 109—Mount Pleasant*

Extensive repairs to this area called for the use of—648 × 21″ inverts, 52 × 18″ inverts, 15 × 12″ inverts, 15 × 6″ subsoil pipes, 448 × 18″ slabs plus the following old materials, 183 × 21″ inverts, 9 × 18″ inverts, 62 × 12″ inverts, 1,946 × 18″ slabs were laid.

Labour Cost	$	2,877.48
Material Cost	$	2,903.94

(51)—*A.M. Area No. 110—McRitchie Reservoir Ravine*

223 × 21″ inverts, 50 × 18″ inverts, 80 × 4″ subsoil pipes, 235 × 18″ slabs plus the following old materials, 61 × 21″ inverts, 13 × 18″ inverts, 15 × 8″ subsoil pipes, 50 × 4″ subsoil pipes, 714 × 18″ slabs were laid.

Labour Cost	$	1,104.25
Material Cost	$	1,151.15

(52)—*A.M. Area No. 114—Dunearn Road*

45 × 12″ inverts, 50 × 9″ inverts, 5 × 18″ slabs plus the following old materials, 35 × 12″ inverts, 15 × 9″ inverts, were laid.

Labour Cost	$	162.10
Material Cost	$	117.80

(53)—*A.M. Area No. 115—Alexandra Road, Ravine*

40 × 21″ inverts, 30 × 18″ inverts, 10 × 12″ inverts, 100 × 18″ slabs plus 390 × 18″ old slabs were laid.

Labour Cost	$	383.29
Material Cost	$	352.61

(54)—*A.M. Area No. 116—Sungei Whampoe*

10 × 21″ inverts, 5 × 18″ slabs plus 120 × 12″ old inverts, and 33 × 18″ old slabs were laid.

Labour Cost	$	99.80
Material Cost	$	41.60

(55)—*A.M. Area No. 117—Telok Blangah Road, Ravine*

50 × 21″ inverts, 6 × 12″ inverts, 41 × 18″ slabs plus 130 × 18″ old slabs were relaid.

Labour Cost	$	133.11
Material Cost	$	213.70

(56)—*A.M. Area No. 118—Kallang Reservoir*

10 × 21″ inverts, 2 × 6″ subsoil pipes, 5 × 18″ slabs plus 10 × 21″ old inverts and 19 × 18″ old slabs were laid.

Labour Cost	$	53.82
Material Cost	$	62.33

(57)—*A.M. Area No. 119—Scott Road, No. 3*

70 × 12″ inverts, 52 × 9″ inverts, and 5 × 4″ subsoil pipes were laid.

Laobur Cost	$	84.91
Material Cost	$	139.15

(58)—*A.M. Area No. 121—Alexandra Brick Factory Ravine*

60 × 21″ inverts, 10 × 12″ inverts, 30 × 4″ subsoil pipes, 5 × 18″ slabs plus 448 × 18″ old slabs were laid.

Labour Cost	$	289.24
Material Cost	$	377.63

(59)—*A.M. Area No. 122—Alexandra Road, 4th Mile Ravine*

20 × 18″ slabs plus 110 × 18″ old slabs were laid.

Labour Cost	$	89.34
Material Cost	$	64.52

(60)—*A.M. Area No. 124—Alexandra Road, Cemetery Ravine*

25 × 21″ inverts, 3 × 18″ inverts, 40 × 15″ inverts, 100 × 12″ inverts, 25 × 18″ slabs plus 120 × 18″ old slabs were laid.

Labour Cost	$	210.02
Material Cost	$	329.60

(61)—*A.M. Area No. 125—Alexandra Road, Faber Ridge Ravine*

20 × 21″ inverts, 30 × 18″ inverts, 15 × 15″ inverts, 175 × 12″ inverts, 15 × 9″ inverts, 100 × 4″ subsoil pipes, 35 × 18″ slabs plus 195 × 18″ old slabs were laid.

Labour Cost	$	392.50
Material Cost	$	424.16

(62)—*A.M. Area No. 126—Alexandra Road, Temple Ravine*

50 × 12″ inverts, and 15 × 9″ inverts, were laid.

Labour Cost	$	64.78
Material Cost	$	76.30

(63)—*A.M. Area No.* 130—*Mount Washington Ravine*

43 × 21″ inverts, 15 × 18″ inverts, 48 × 15″ inverts, 35 × 12″ inverts, 80 × 6″ subsoil pipes, 275 × 18″ slabs plus the following old materials, 20 × 21″ inverts, 15 × 18″ inverts, 10 × 15″ inverts, and 985 × 18″ slabs were laid.

Labour Cost	$	1,952.13
Material Cost	$	892.67

(64)—*A.M. Area No. 132—Bugis Estate Ravine*

4 × 21″ inverts, 8 × 18″ inverts, 4 × 18″ slabs, 35 × 18″ old slabs were laid.

Labour Cost	$	58.90
Material Cost	$	35.65

(65)—*A.M. Area No. 133—Kallang Basin*

5 × 18″ inverts, 180 × 12″ inverts, 195 × 18″ slabs plus 485 × 12″ old inverts, and 436 × 18″ slabs were laid.

Labour Cost	$	595.46
Material Cost	$	667.24

(66)—*A.M. Area No. 134—Bendemeer*

5 × 12″ inverts, 10 × 18″ slabs and 10 × 18″ old slabs were laid.
The Tidal gate steel flap was renewed during the year.

Labour Cost	$	33.40
Material Cost	$	57.76

(67)—*A.M. Area No. 135—Kim Keat Road, Ravine*

3 × 15″ inverts, 35 × 12″ inverts, 10 × 9″ inverts, 174 × 18″ slabs plus the following old materials, 37 × 21″ inverts, 20 × 18″ inverts, 35 × 12″ inverts, 10 × 9″ inverts, and 235 × 18″ slabs were laid.

Labour Cost	$	331.33
Material Cost	$	310.88

(68)—*A.M. Area No. 136—Boon Teck Road*

107 × 18″ inverts, 2 × 15″ inverts, 41 × 12″ inverts, 56 × 18″ slabs plus 10 × 15″ old inverts, and 445 × 18″ slabs were laid.

Labour Cost	$	314.26
Material Cost	$	169.40

(69)—*A.M. Area No. 137—Tai Jin Ravine*

12 × 21″ inverts, 90 × 12″ inverts, 10 × 9″ inverts 90 × 6″ subsoil pipes, 25 × 18″ slabs plus 23 × 18″ old inverts, 116 × 12″ old inverts, 30 × 9″ old inverts, 747 × 6″ old subsoil pipes, and 145 × 18″ old slabs were laid.

Labour Cost	$	1,564.97
Material Cost	$	330.40

(70)—*A.M. Area No. 138—Ah Hood Road, Ravine*

12 × 21″ inverts, 3 × 15″ inverts, 45 × 12″ inverts, 53 × 18″ slabs plus 15 × 21″ old inverts, 35 × 12″ old inverts, 170 × 18″ old slabs were laid.

Labour Cost	$	318.19
Material Cost	$	213.60

(71)—*A.M. Area No. 140—Kampong Playfair*

20 × 18″ slabs, 165 × 18″ old slabs were laid.

Labour Cost	$	115.04
Material Cost	$	61.79

(72)—*A.M. Area No. 141—Thomson Road, Ravine 5*

5 × 15″ inverts, 4 × 18″ slabs plus 5 × 15″ old inverts, and 12 × 18″ old slabs were relaid.

Labour Cost	$	17.52
Material Cost	$	17.33

(73)—*A.M. Area No. 142—Thomson Road, Ravine 2*

100 × 6″ subsoil pipes, 5 × 18″ inverts, 10 × 18″ slabs plus 145 × 6″ old subsoil pipes, and 104 × 18″ old slabs were laid.

Labour Cost	$	503.92
Material Cost	$	109.41

(74)—*A.M. Area No. 145—Hindoo Cemetery, No. 2*

5 × 18″ inverts, 45 × 6″ subsoil pipes, 10 × 18″ slabs plus 105 × 6″ old subsoil pipes, and 70 × 18″ old slabs were laid.

Labour Cost	$	299.24
Material Cost	$	85.18

(75)—*A.M. Area No. 146—Mohameddan Cemetery, Ravine*

3 × 18″ inverts, 4 × 15″ inverts, 28 × 18″ slabs, and 20 × 18″ old slabs were laid.

Labour Cost	$	120.84
Material Cost	$	79.54

(76)—*A.M. Area No. 147—Woodsdale Ravine*

15 × 18″ slabs were laid.

Labour Cost	$	16.20
Material Cost	$	25.65

(77)—*A.M. Area No. 151—Hokien Cemetery, Ravine No. 1*

1 × 21″ inverts, 5 × 18″ slabs and 50 × 18″ old slabs were laid.

Labour Cost	$	26.40
Material Cost	$	14.92

(78)—*A.M. Area No. 153—St. Michaels' Road*

15 × 21″ inverts, 10 × 15″ inverts, 10 × 12″ inverts, 175 × 18″ slabs plus 10 × 21″ old inverts, 40 × 15″ old inverts, and 820 × 18″ old slabs 55 × 12″ old inverts, 40 × 9″ old inverts, were laid.

Labour Cost	$	747.04
Material Cost	$	441.66

(79)—*A.M. Area No. 154—Thomson Road, No. 4*

2 × 21″ inverts, 3 × 12″ inverts, 14 × 18″ slabs and 16 × 18″ old slabs were laid.

Labour Cost	$	83.56
Material Cost	$	49.25

(80)—*A.M. Area No. 156—Thomson Road, No. 3*

20 × 15″ inverts, 6 × 12″ inverts, 5 × 9″ inverts, 15 × 18″ slabs, and 25 × 18″ old slabs were laid.

Labour Cost	$	81.12
Material Cost	$	66.66

(81)—*A.M. Area No. 158—Jalan Datoh*

10 × 18″ inverts, 8 × 18″ slabs, and 30 × 18″ old slabs, were laid.

Labour Cost	$	47.52
Material Cost	$	40.90

(82)—*A.M. Area No. 160—Kampong Martin*

5 × 18″ inverts, 2 × 15″ inverts, 10 × 9″ inverts, 25 × 18″ slabs 80 × 18″ old slabs were laid.

Labour Cost	$	108.47
Material Cost	$	75.30

(83)—*A.M. Area No. 163—Thomson Road, No. 6*

50 × 4″ subsoil pipes, and 8 × 18″ old slabs were laid.

Labour Cost	$	53.57
Material Cost	$	32.51

(84)—*A.M. Area No. 164—Woodsville*

80 × 12″ inverts, and 131 × 12″ old inverts were laid

Labour Cost	$	97.60
Material Cost	$	94.50

(85)—*A.M. Area No. 166—Craig Road, Railway*

5 × 12″ inverts, were laid.

Labour Cost	$	16.17
Material Cost	$	17.65

(86)—*A.M. Area No. 167—Carey Road, Ravine.*

40 × 4″ subsoil pipes, and 10 × 18″ slabs were laid

Labour Cost	$	102.80
Material Cost	$	36.45

(87)—*A.M.—Area No. 169—Havelock Road*

The existing subsoil pipe line was extended by laying 40 × 4″ subsoil pipes.

Labour Cost	$	48.90
Material Cost	$	13.05

(88)—*A.M. Area No. 170—Braddell Road, Ravine*

5 × 21″ inverts, 10 × 18″ inverts, 239 × 12″ inverts, 14 × 9″ inverts, 47 × 18″ slabs plus 28 × 12″ old inverts, and 220 × 18″ old slabs were laid.

Labour Cost	$	644.34
Material Cost	$	272.42

(89)—*A.M.—Area No. 171—Bukit Ho Swee*

30 × 12″ inverts were laid.

Labour Cost	$	117.40
Material Cost	$	55.35

(90)—*A.M. Area No. 172—Sommerville Road, Ravine*

8 × 21″ inverts, 18 × 15″ inverts, 65 × 12″ inverts, 35 × 9″ inverts, 2 × 8″ subsoil pipes, 405 × 6″ subsoil pipes, 50 × 18″ slabs plus 45 × 6″ old subsoil pipes, 216 × 18″ old slabs were laid.

Labour Cost	$	1,109.70
Material Cost	$	479.71

The following is the summary of materials used for extensions and minor repairs to existing anti-malarial works:—

2,307	× 21″ inverts
1,804	× 18″ inverts
729	× 15″ inverts
2,537	× 12″ inverts
378	× 9″ inverts
9,169	× 18″ slabs
461	× 15″ slabs
262	× 8″ subsoil pipes
1,904	× 6″ subsoil pipes
658	× 4″ subsoil pipes

The following old materials were relaid:—

652	× 21″ inverts
1,193	× 18″ inverts
644	× 15″ inverts
1,721	× 12″ inverts
95	× 9″ inverts
17,658	× 18″ slabs
330	× 15″ slabs
965	× 8″ subsoil pipes
1,388	× 6″ subsoil pipes
50	× 4″ subsoil pipes

APPENDIX "F"

KAMPONG SANITATION

Disposition of Maintenance Gang—

1. Kampong Geylang Serai	..	2 men	..
2. Kampong Silat ..	..	12 men	..
3. Kampong Silat, S.I.T. and Bukit Purmei ..	..	1 man	..
4. Kampong Mount Washington	..	2 men	..
5. Kampong Alexandra ..	..	3 men	..

1 mandore supervising

Materials and Labour Costs

(*a*) Kampong Geylang Serai .. Mukim XXVI
Length of drain 1312 feet .. ..

		$ c
170 × 21″ inverts		
500 × 18″ inverts		
20 × 15″ inverts	Labour Cost	17,213 32
30 × 9″ inverts	Material Cost	8,242 17
2,170 × 18″ slabs		
10 × 36″ culverts	Total Cost ..	25,455 49
11 × 30″ culverts		
4 × 24″ culverts		

(*b*) Kampong Silat .. .. Mukim I
Length of drain 450 feet.

		$ c.
14 × 15″ inverts	Labour Cost	10,460 54
85 × 12″ inverts	Material Cost	1,498 79
140 × 9″ inverts		
	Total ..	11,959 33

(*c*) Kampong Silat (S.I.T.) .. Mukim I

		$ c.
(General Cleaning) ..	Labour Cost	877 72

(*d*) Kampong Mount Washington
Length of drain 1,888 feet.

		$ c.
14 × 15″ inverts	Labour Cost	4,594 53
790 × 12″ inverts	Material Cost	4,014 44
140 × 9″ inverts		
	Total ..	8,608 97

(*e*) Kampong Bukit Purmei .. Mukim I
Length of drain 700 feet.

		$ c.
240 × 12″ inverts	Labour Cost	1,011 72
110 × 9″ inverts	Material Cost	1,063 49
	Total ..	2,075 21

(*f*) Kampong Alexandra .. .. Mukim I
Length of drain 300 feet.

		$ c.
50 × 15″ inverts	Labour Cost	2,753 16
80 × 12″ inverts	Material Cost	249 14
20 × 9″ inverts		
	Total ..	3,002 30

Costs of Total and Materials and Labour

Total length of drain constructed	4650 feet
Total number of 21″ inverts used	170
Total number of 18″ inverts used	500
Total number of 15″ inverts used	98
Total number of 12″ inverts used	1195
Total number of 9″ inverts used	440
Total number of 18″ slabs used	2170

36″ Hume pipes 10
30″ Hume pipes 11
24″ Hume pipes 4

	$	c.
Total Material cost	15,068	03
Total Labour cost	36,910	99
Grand Total ..	51,979	02

CHEMICAL LABORATORY
1951

CHEMICAL LABORATORY

THE TOTAL number of samples received and analysed during the year amounted to 27,926.

The samples were made up as follows:—

Water Department	20,352
Sewerage Department	2,804
Health Department	387
Electricity Department	724
Gas Department	178
Fire Brigade Department	7
Engineer's Department	4
Veterinary Department	8
Bacteriological Department	1
Architect's Department	1
Town Cleansing Department	1
Commercial Firms	3,459
Total ..	27,926

In 1950 the number of samples received showed an increase of some 20 per cent over the previous year. This year's (1951) total is nearly 5,000 more than in 1950 i.e. a 47 per cent increase over that two years ago.

The details of samples received from Municipal Departments were as follows:—

WATER DEPARTMENT

Water Supply (12,503), Water for Alum Test (3,514), Tebrau River Water (742), Tebrau River Water for Arsenic Test (1,696), Treated Tebrau River Water (60), Raw Water, including Stream Water for Flocculation, etc. (13), Raw Water and Stream Water for chemical test (16), Domestic Tap Water (3), Well Water (1), Boiler water (316), Mount Emily Pool Water (1,074), Lime (88), Hydrated lime (2), Chloride of lime (1), Sulphate of alumina (8), Sulphate of ammonia (4), Fertilisers (9), Lime-stone powder (1), Granite (2), Soil (6), Deposits (1), Vulcanite ring and joint (2), Boiler Scale (1), Water Meters (2), Chlorine diffuses (1), Dyestuff on sacking (1), and unknown powder (1).

There is a marked increase in the number of samples from this Department and considerably more variety in the type of samples submitted is observed.

Analyses and experiments on the Tebrau River Water were continued. Of interest, also, has been the examination of water from Island Streams viz. Namby, Ulu pandang, Alexandra, and Pang Sua as possibly emergency sources of supply. Results on experimental treatment showed that these water can be satisfactorily treated to obtain additional supplies quite fit to be impounded in the Island Reservoirs.

In connection with trial running of the Woodleigh Boilers, without "blowing down" a length series of daily examinations were made in order to record the variations in pH, Specific Gravity, and dissolved solids.

CITY WATER SUPPLY

The sources of supply of raw water remain unchanged viz. McRitchie, Pierce, and Seletar Reservoirs in Singapore Island and Pontian and Gunong Pulai in Johore. The daily consumption has now reached 35½ million gallons.

There has been no radical change in water treatment. The pH of the supply water was raised by addition of more lime. Experiments in the laboratory during the year indicated that sodium aluminate and/or sulphate of alumina may well replace lime and sulphate of alumina, particularly in treatment of new sources of supply. Smaller doses appear to be satisfactory and, if successful, considerable financial saving should result.

The ranges and averages of daily analyses of the various raw and treated waters are shown in tables *A* and *B* attached. Table *C* gives monthly complete analyses of water from the clear water tanks. The satisfactory quality of the City Supply is maintained. From July 1951 the Hazen scale was adopted in place of the red, yellow, and blue system of colour. This has been found to give a satisfactory yet more easily apprehended description of the waters.

SEWERAGE DEPARTMENT

The following samples were analysed:—

Sewage and Sludge (2,586), Septic Tank (197), Stream Water (13), Glazed piping (7), Sand (1).

Assistance—from the chemical view point—was given in the drafting of new bye-laws concerning the reception of trade effluents into the Sewage System.

Except for additional sedimentation tanks at Alexandra Road, the purification system remains unchanged.

SEWAGE PURIFICATION

The purification system remains unchanged. Water-borne sewage is purified either at Alexandra Road or Kim Chuan Road. The crude night-soil from unsewered areas, is collected at People's Park, Albert Street or Paya Lebar Road and from these places is pumped to special tanks at Kim Chuan Road and from there to Serangoon for final treatment. The solid matter from the water-borne sewage at Alexandra Road also received treatment in the night-soil tanks at Kim Chuan Road. The final purified effluents enter the Alexandra Road Stream from Alexandra Road Works and the Serangoon River from the Kim Chuan Road Plant.

The average qualities and ranges for the year are shown in the following tables (results expressed as parts per 100,000):—

	INTO ALEXANDRA ROAD STREAM		INTO SERANGOON RIVER	
	Range	Average	Range	Average
Free and Saline Ammonia	0.48/1.28	0.74	0.80/3.80	2.28
Albuminoid Ammonia	0.04/0.36	0.19	0.16/1.00	0.48
Oxygen absorbed in 4 hours	0.54/1.35	0.97	0.42/3.50	2.22
Bio-chemical oxygen demand	0.50/2.95	1.45	1.00/8.25	3.75
Total Solids	42.2/281.0	93.1	33.0/97.6	61.6
Suspended Solids	0.7/3.7	1.7	0.8/8.1	2.9
Nitrates (as N2)	abs/1.2	0.4	abs/abs	abs
Chlorides (as Cl)	11/118	34.0	11/35	18.0
pH value	7.1/8.1	7.5	7.3/8.1	7.5

The reasonably good quality of the effluent from the Alexandra Road Works has been maintained during the year. The somewhat poorer Kim Chuan Road effluent is rather less satisfactory than last year.

Sewage Effluents from Small Installations.

The samples submitted represent the final effluents emptying into open drains. The annual averages and ranges of values, in parts per 100,000 of the 197 samples analysed were as follows:—

	Range	Average
Free Ammonia	0.06/6.40	1.60
Albuminoid ammonia	0.04/0.80	0.30
Oxygen absorbed in 4 hours	0.14/9.45	1.72
Suspended Solids	0.5/55.2	3.6
Chlorides	0.6/14.0	3.7
Nitrates	abs/3.5	0.5

The overall average standard of these effluents is somewhat poorer than last year. In order to facilitate the location of causes of poor performance in certain installations, double sampling and testing (for digestion tank and aeration bed) has been carried out.

HEALTH DEPARTMENT

The following samples were received:—

Soda Water (76), Aerated Water (8), Orange Cordial (3), Milk (136), Reconstituted Milk (11), Creamery Milk (1), Coffee and Coffee Mixtures (34), Pepper and Pepper Mixtures (17), Cooking fats and oils (17), Ghee (3), Olive Oil (1), Groundnut oil (4), Gingelly oil (1), Salad oil (2), Margarine (1), Wax (2), Sausages (6), Canned fish (9), Canned Sauce (1), Greenpeas flour (1), Icing Sugar (1), Tomato sauce (2), Chewing Sweets (1), Sauce beans (1), Dye (2), Well Water (31), Tap water (2), Whisky (2), Camphorated oil (8), Still water (2), Liniment of turpentine (1).

Subjects of interest have included edible oils found to contain large proportions of mineral oil; coffee mixtures found to contain matter other than coffee considerably in excess of the amount disclosed in the label (and often in excess of the 50 per cent maximum); and pepper mixtures heavily adulterated with farinaceous material. Check sampling had some beneficial results in regard to the edible oils and coffee mixtures. For the time being, the requirement to disclose the composition of pepper mixtures on the label has been enforced but amendment of the regulations may require to be considered in order to prohibit the adulteration of pepper and other condiments of such importance in Asian diet.

The use of the secret component for the dye used in the City Abattoirs chop was continued. 384 chops were examined by Sanitary Inspectors and positive results obtained in all cases.

The following is a summary of prosecutions resulting from breaches of the Food and Drugs Regulations during the year.

Sale of Food and Drugs Ordinance	Prosecution	Not served	Conviction	Fines
				$
Selling adulterated milk	35	14	21	1,970
,, ,, coffee	4	..	4	725
,, ,, pepper	1	..	1	..
,, ,, Camphorated oil	1	..	1	50
,, milk deficient in fat	3	1	2	75
,, edible oil containing unsaponifiable mineral oil..	1	..	1	1,000
,, coffee mixture bearing a false label ..	2	..	2	225
,, skimmed milk	1	..	1	..
Importing skimmed milk	2	1	1	..

ELECTRICITY DEPARTMENT

The following samples were received for analysis:—

Fuel oil (258), Boiler water (426), Transformer oil (34), Graphite (1), Diesoline (1), Lead Sheathing (2), Cylinder deposit (1), Boiler deposit (1), Boiler Scales (2).

There were some interesting cases of extreme corrosion of economiser tubes in St. James Power Station. Analysis indicated that corrosion was caused by wet flue vapours containing oxides of sulphur a product of combustion of fuel oil with appreciable sulphur content.

GAS DEPARTMENT

The following samples were received for analysis:—

Spent Oxide (43), Spent Oil (32), Boiler water (35), Coal (39), Gas (15), Sulphate of Alumina (1), Chinese medicine (1), Fertiliser (1), Dieselene oil (1), Gammexane spray (1), Flue dust (1).

Co-operation with the laboratory continued in the matter of the conditions of operation of the napththalene extraction plant in the Gas Works.

FIRE BRIGADE

The following samples were received:—

Varnish (1), Shell Spirit (1), Thinner (2), Film (1), Powder (1), Mica (1).

These were generally samples of liquid suspected of contravening the Petroleum Ordinance.

ENGINEER'S DEPARTMENT

(*Including Stores and Workshops*)

The following samples were received:—

Brass Boring (1), Fire-bricks (1), Solder (2).

ARCHITECT'S DEPARTMENT

Only one sample was received:—

Wall panell (1).

TOWN CLEANSING DEPARTMENT

Only one sample was received:—

Sodium Bisulphite (1).

BACTERIOLOGICAL DEPARTMENT

Only one sample was received:—

Dog's urine (1)

VETERINARY DEPARTMENT

The following samples were received:—

Cat's stomach (1), Saliva swabs (1), urine (4), dog's organ (1), Horse's blood (1).

COMMERCIAL FIRMS, ETC.

A total of 3,459 samples were reported on. These may be classified as follows:—

Essential Oils	65
Vegetable Oils	1,460
Mineral Oils	6
Ores	88
Alloys	40
Food	417
Drugs	8
Chemicals	80
Local Produce (other than above)	750
Damaged goods	212
Miscellaneous	333
Total	3,459

The types of samples received under these main classifications were as follows:—

Essential Oils

Citronella, nutmeg, patchouli and peppermint.

Vegetable Oils

Candle-nut, coconut, groundnut, palm and palm oil sludge.

Mineral Oils

Lubricating, diesel and petroleum jelly.

Ores

Bauxite, galena, graphite, ilumenite, slag, wolfram, zircon, and oıes of antimony, iron, lead, manganese, niobuim, tin, silver and tantalum.

Alloys

Alloys of aluminium, lead, nickel, zinc, white metal, gun-metal, brass, tinplate.

Food

Aerated water, biscuits, beans, butter, desicated coconut, sago flour, wheat flour, tapioca flour, gelatine, ginger-wine, herrings, ice-cream, pork lard, margarine, condensed milk, evaporated milk, reconstituted milk, milk powder, marmite, pepper powder, salt, icing-sugar, curry spices, orange squash, tinned foods, tinned cherries, tinned pine-apples, dried squid, pork sausages and sweets.

Drugs

Ascorbic acid tablets, caffeine citrate, cinchona bark, quinine, Chinese medicine, Malay medicine, salicylic acid, sulphadiazine tablets, ointment.

Chemicals

Acetic acid, formic acid, nitric acid, sulphuric acid,caustic soda, Co2 gas, glycerine, mercury, monoethanolamine, phenolphthalein, rock phosphate, rubber coagulant, saccharin, soda ash, sodium bicarbonate, sodium silicate, sodium arsenite, talcum powder and tirethanolamine.

Local Produce

Black pepper corn, candlenut, copra, copra cake, cube-gambier coconut cake, cutch, gum benjamin, gutta siak, jelutong, mimosa, tuba root, soap, patchouli leaf.

Damaged Goods

Aluminium sheet, aluminium disc, lump alum, attache case, beer-bottle, boot-polish, cigarettes, cloves, cotton textiles, cotton yarn, clock dials, coffee seeds, corrugated sheet, cycle-pump, condensed milk, dates,

Dhall, dye-stuff, fine-clay, fishing nets, flour, wheat flour, galvanised wire, ginger seeds, gum, geera seeds, haircords, herrings, jaggery, labels, mosquito destroyer, metal straps, native paper, nipits pastilles, newsprint, padlock rattan sticks, rayon, rice, rice-bran, rubber, rug, sardines screw-driver, sewing machine, shirt, stem-ginger, tin plate, turn-screws, tea-dust, tinned mushrooms, shuttle corks, waterproof paper, wire nails.

Packings of various descriptions, including cardboards, cotton bag, gunny sacking, manila chip-board, water-proof paper, hessian bag and straw.

Miscellaneous

Antilouse powder, baby powder, bat guano, beans, beeswax, blood, boiler-feed water, brandy, brine sludge, cement, cloudifier, coal, coke, cow's blood, Co2 compressor washings, deposit on aircraft, eye-mo, face-cream, fibres, graphite, grass, horse saliva and sweat, horse powders, kapok, lacquered file slides, metal band, oil sludges, pool water, rayon-satin, river water, sand, sawdust, steel, sugar, sauce colouring matter, septic tank effluent, water, wax, woodkeg powder, wool rug.

STAFF

The writer was on long leave in United Kingdom from 1st March to 11th October during which period Dr. M. Jamieson was in charge of the laboratory. Mr. Chia Hong Hoe filled the vacant post of Assistant Analyst from 1st August. Mr. Tan Choon Eng and Mr. Ong Beng Guan filled the newly created posts of laboratory officer and senior laboratory assistant respectively. During the year training was given to Mr. P. J. Joseph of the Water Department and to Mr. S. R. Joseph of the Sewage Department. Mr. Swee Lian Choo's services were retained in a supernumerary capacity.

It is a pleasure to record the willing and helpful co-operation of my colleagues and staff during the year.

I have the honour to be,
Sir,
Your obedient servant,
T. A. SPILLANE, M.Sc., A.R.I.C., F.I.C.I.
City Analyst.

TABLE *A*

RESERVOIR WATER

AVERAGES OF DAILY ANALYSIS FOR THE YEAR 1951

Parts per Million	PONTIAN		PULAI		MACRITCHIE		PEIRCE	
	Average	Range	Average	Range	Average	Range	Average	Range
Nitrites	absent	a/trace	absent	a/trace	absent	a/trace	absent	a/trace
Carbon Dioxide	2.0	6.5/6.0	4.5	1.5/8.0	2.0	a/5.5	1.5	1.0/3.0
Alkalinity (as CaCO3)	6.0	2.0/10.0	5.0	3.0/8.0	3.0	1.0/4.0	2.0	1.0/6.0
pH Value	6.5	5.9/7.5	6.1	5.9/6.5	6.1	5.5/9.6	5.9	5.3/6.5
Iron	0.50	0.10/1.2	0.55	0.20/3.0	0.40	0.20/0.80	0.55	0.20/0.90
*Colour:—								
Jan. — May Yellow	4.1	2.0/6.3	5.2	2.3/9.8	4.6	3.0/6.7	5.0	3.5/7.0
Red	0.8	0.3/1.3	1.4	0.3/4.7	0.95	0.4/2.5	1.0	0.6/3.9
Blue	0.7	0.3/1.4	0.5	0.2/1.2	0.9	0.5/1.5	0.8	0.3/1.8
June — Dec. Hazen's Scale	22	15/40	18	10/28	31	17/58	34	17/58

**Note*:—Hazen unit measurement was substituted for Lovibond colours from June.

TABLE *B*

PURIFIED WATERS

AVERAGES OF DAILY ANALYSIS FOR YEAR 1951

Parts per Million	PULAI		BUKIT TIMAH		WOODLEIGH	
	CLEAR WATER TANK		CLEAR WATER TANK		CLEAR WATER TANK	
	Average	Range	Average	Range	Average	Range
Nitrites	absent	abs/trace	absent	abs/trace	absent	abs/trace
Carbon Dioxide	absent	abs/2.0	0.5	abs/2.0	absent	abs/1.0
Alkalinity (as CaCO3) ..	10.5	6.0/22.0	9.5	4.0/16.0	16.5	12.0/26.0
pH Value	8.2	6.7/9.6	7.7	6.8/9.3	8.5	7.1/9.6
Free Chlorine	0.40	0.07/0.70	0.08	a/0.45	0.25	0.04/0.70
Soluble Alum	0.15	abs/1.0 * (Jan-July)	1.10	0.20/3.5	..	..
Iron	0.40	0.10/0.70	0.25	0.10/0.60	0.25	0.05/1.0
*Colour:—						
Jan.—May Yellow ..	3.4	1.5/5.8	2.3	0.6/5.0	0.9	0.6/2.1
Red ..	0.6	0.1/1.5	0.3	0.0/1.6	0.0	0.0/0.2
Blue ..	0.5	0.3/.8	0.5	0.3/1.0	0.7	0.3/1.0
Jan.—Dec. Hazen's Scale ..	19	15/38	14	6/28	14	5/35

*Notes:—(1) Hazen Unit measurement substituted for Lovibond colours from June.
(2) Pulai. Soluble alum tests discontinued from August.

TABLE C

CLEAR WATER TANKS

AVERAGES OF MONTHLY COMPLETE ANALYSIS

	PULAI		BUKIT TIMAH		WOODLEIGH	
	CLEAR WATER TANK		PUMPING MAIN		CLEAR WATER TANK	
	Average	Range	Average	Range	Average	Range
Free ammonia	0.10	0.02/0.28	0.08	.02/.18	0.07	a/0.20
Albuminoid ammonia ..	0.07	0.02/0.24	0.06	a/0.12	0.04	0.02/0.08
Nitrites	absent	a/trace	absent	a/trace	absent	a/trace
Nitrates	0.04	a/.18	0.03	a/0.08	0.08	a/0.18
Carbon Dioxide	0.25	a/2.0	0.5	a/1.0	absent	a/0.5
Alkalinity	10.0	7/13.0	9.0	7.0/16.0	15.7	13.0/18.0
Free Chlorine	0.30	0.03/0.50	0.06	a/0.08	0.24	0.05/0.40
Iron	0.45	0.3/0.60	0.30	0.10/0.40	0.25	0.05/0.70
Soluble Alum	0.18	a/0.50	1.15	0.30/3.0	..	..
Chlorides	4.0	3.5/5.5	4.5	4.0/6.0	4.0	3.0/6.0
pH	8.1	6.9/8.9	7.8	6.9/9.1	8.3	7.5/8.9
Oxygen in 4 hours ..	0.53	0.25/0.82	0.45	0.25/0.56	0.32	0.15/.50
Hardness						
Temporary	9.8	7/13	9.0	7/16	15.5	13/18
Permanent	2.0	1/5	8.5	3/38	5.5	2/10
Total	11.8	8/14	27.5	10/54	21.0	19/26
Solids						
Organic	23.8	12.4/42.8	19.8	13.5/30.4	17.7	9.2/26.8
Inorganic	23.9	12.8/46.4	40.8	15.2/66.0	22.5	3.6/34.8
Total	47.7	35.6/76.0	60.6	38.4/84.0	40.2	28/59.2
* *Colour*						
Yellow	3.3	2.3/4.0	2.8	0.7/4.2	0.90	0.8/1.0
Red	0.5	0.3/0.7	0.35	0.0/0.8	0.00	0.0/0.0
Blue	0.5	0.3/0.7	0.6	0.4/0.8	0.70	0.7/0.8
Hazen Unit	21	15/30	16	14/18	13	5/22
* *B.O.D. in 5 days* ..	1.07	0.67/1.73	1.2	0.66/2.13	0.85	0.40/1.13

* *Notes:*—

(1) Hazen unit measurement substituted for Lovibond colours from July.
(2) Residual alum test for Pulai discontinued as from August 1951.
(3) B.O.D. in 5 days test done as from July 1951.

ANNUAL REPORT—SUMMARY

A total of 27,926 samples was received for analysis during the year. This exceeded the 1950 total by some 20 per cent and the 1949 total by some 47 per cent. Amongst City Council Departments the Water Department contributed particularly to the increased number of analyses but, generally, an overall increase from all Departments was noted. Commercial samples were also higher than previous year.

In addition, consultant work—for both City Departments and Commercial Firms—was markedly increased. Some interesting problems during the year were:—

1. Investigation of treatability of Singapore Island Streams as an emergency source of supply.
2. Trial running of Woodleigh boilers to examine the effect in "sludging", etc. when "Blowing down" was delayed.
3. Flocculation experiments substituting, sodium aluminate and/or sulphate of alumina for lime and sulphate of alumina.
4. Arsenic examination on Tebrau River to check whether arsenical spraying in the catchment area was affecting the source of supply.
5. Examination of the possible effect on Sewage Purification plant of reception of Trade effluents.
6. Study of cause of deterioration in quality of effluent from certain small installations.
7. Examination of pepper mixtures for a variety of adulterants. As a result of this investigation, it is recommended that the Food and Drugs Regulations be amended to prevent admixture of foreign material with pepper and other condiments of suchimportance in Asian diet.
8. Experiments to remove Napthalene from fuel oil.
9. Investigation of cause of corrosion in economiser tubes at St. James Power Station.
10. A wide variety in damaged goods for cause of damage was received.

STAFF

From 1st March to 11th October, Dr. M. Jamieson was in charge of the laboratory while the writer was on leave. Mr. Chia Hong Hoe joined the laboratory as Assistant Analyst in August. The newly created posts of laboratory officer and Senior laboratory assistant were filled by Mr. Tan Choon Eng and Mr. Ong Beng Guan, respectively. Mr. Swee Lian Choo's services were retained in a supernumerary capacity.

Colleagues and staff gave their usual loyal and willing co-operation during the year.

BACTERIOLOGICAL LABORATORY

1951

BACTERIOLOGICAL LABORATORY

REPORT on the work of the Bacteriological Laboratory during the year 1951:—

Section A. Public Health specimens	33,404
Section B. Water—	
(i) Routine	14,919
(ii) Mount Emily Swimming Pool Water	1,072
(iii) Miscellaneous Swimming Pool Water	402
(iv) Algae and others	177
Section C. Sewerage—Wash Water	35
Grand Total ..	50,009

SECTION A.—PUBLIC HEALTH SPECIMENS

The total number of specimens received were 33,404 and involving 39,298 examinations. These specimens were from the following:—

City Health Office	7,780
City Infant Welfare Clinics	3,272
Middleton Hospital	5,623
St. Andrew's Mission Hospital	5
Singapore Anti-Tuberculosis Association	71
Kwong Wai Siew Hospital	15
Johore Water Works Dispensary	346
Medical Practitioners:—	
Europeans	5,387
Eurasians	740
Chinese	1,028
Malays	30
Indians	875
Rats from Plague Prevention Unit	
Total number of Rats examined	5,003
Ecto-parasites of Rats from Plague Prevention Unit	
Total number of Ecto-parasites from rats ..	3,229
Grand Total ..	33,404

(1) MALARIA

	Positive	*Negative*	*Total*
Species			
F. falciparum	16	..	16
P. vivax	51	..	51
P. malariae	..	..	..
Mixed infection	..	..	..
Total negatives	..	3,382	3,382
Grand Total ..	67	3,382	3,449
Source—From			
Medical Practitioners ..	45	949	994
City Health Office	13	2,354	2,367
Johore Water Works	9	79	88
Grand Total ..	67	3,382	3,449

The number of positive blood films was 1.9 per cent as compared to 1.8 per cent in 1950 and 2.7 per cent in 1949.

(2) TUBERCULOSIS

	Positive	*Negative*	Total
Source			
Sputum	128	1,958	2,086
Faeces	..	1	1
Urine	1	1	2
Throat Swab	..	1	1
Pus and pleural fluids ..	..	5	5
Cerebro-spinal fluids ..	1	4	5
Milk	..	50	50
Glands from Pig	1	4	5
Glands from Bullock ..	14	14	28
Spleen from Monkey ..	1	..	1
Liver from Monkey ..	1	..	1
Grand Total ..	147	2,038	2,185

(3) ENTERIC FEVER

	Positive	*Negative*	*Total*
Blood for Widal Reaction			
Agglutination with Salmonella Typhi	47	238	285
Agglutination with Sal. paratyphi A	..	195	195
Agglutination with Sal. paratyphi B	..	195	195
Agglutination with Sal. paratyphi C	..	195	195
Blood clot culture—Sal. typhi isolated	21	196	217
Faeces for culture—Sal. typhi isolated	2	627	629
Urine for culture—Sal. typhi isolated	2	665	667
Grand Total ..	72	2,311	2,383

(4) TROPICAL TYPHUS

Blood for Weil-Felix Reaction		
Number of sera POSITIVE for B. proteus	OXK ..	4
Number of sera POSITIVE for B. proteus	OX19 ..	0
Number of sera investigated ..	..	170

(5) DYSENTERY

	Positive	*Negative*	*Total*
Faeces examination for Amoebae			
E. histolytica	93	..	93
E. coli	12	..	12
Others	..	..	..
NEGATIVE	..	2,503	2,503
Total ..	105	2,503	2,608
Faeces or culture for Bacillary Dysentery			
Shigella Flexner	8	..	8
Shigella Sonnei	9	..	9
Others	..	..	..
NEGATIVE	..	828	828
Total ..	17	828	845
Grand Total ..	122	3,331	3,453

(6) CHOLERA

One specimen of stool was examined with negative result.

(7) PLAGUE

No human specimens were received.

5,003 rats were dissected and none showed any signs of plague infection. 3,229 ecto-parasites were examined.

The species and distribution of all the rats and ecto-parasites that were examined are given in the following table:—

Source	R. Norvigicus		R. Rattus		R. Concolor		R. Musculus		Crocidura	Totals			
	m	f	m	f	m	f	m	f		Fleas	mites	Rats	preg:
1. Town area	837	1,888	490	625	247	187	81	61	95	2,874	88	4,151	170
2. Singapore Harbour Board	8	11	27	32	..	..	..	..	..	27	2	78	9
3. Health Officer (PORT) ..	3	3	40	43	20	31	29	41	..	..	..	210	28
4. Health Officer (RURAL)	10	53	29	42	106	111	101	105	7	222	16	564	61
	858	1,955	586	382	373	329	211	207	102	3,123	106	5,003	268
Grand Totals ..	2,813		968		702		418						
Total Pregnant ..	138		31		51		48						268

A total of 280 dead rats were received from the following sources:—

1. Town area	60
2. Singapore Harbour Board	..
3. Health Officer (Fort)	210
4. Health Officer (Rural)	10
Total ..	280

Fleas

Of the 3,123 fleas caught and examined, 6 were identified as C. felix and the rest were X. cheopis.

The flea index in the Town Area was 0.69

(8) CEREBRO-SPINAL FEVER

Three specimens of cerebro-spinal fluid were examined and the meningococcus was not demonstrated in any of the specimens.

(9) LEPROSY

Skin smears	POSITIVE ..	17
	NEGATIVE ..	86
	Total number examined ..	103

(10) DIPHTHERIA

Throat swabs	POSITIVE ..	548
	NEGATIVE ..	4,527
	Total number examined ..	5,075

(11) MISCELLANEOUS EXAMINATIONS

	Positive	Negative	Total
Urine for General Examination	..	..	1,640
Pathological exudates for general examination	..	..	38
Pus for Gonococci	52	404	456
Urine for Gonococci	..	27	27
Prostatic smear for Gonococci	..	2	2
Seminal fluid for Spermatozoa	1	1	2
Blood for Kahn Reaction	413	1,885	2,298
Blood for Culture	..	..	12
Blood for Haemoglobin estimation	..	..	3
Blood for Differential count	..	..	113
Blood for Filaria	..	7	7
Blood for B. melitensis	..	4	4
Blood for B. abortus	..	4	4
Blood from Dog for Leptospirosis	..	1	1
Urine from Dog for Leptospirosis	..	2	2
Animal organs for Leptospirosis	..	4	4
Animal organs for examination	..	..	9
Blood film for Spirillum minus	..	1	1
Faeces for Occult blood	1	6	7
Faeces for Intestinal parasites:—			
Ankylostome ova	1,344	..	..
Ascaris ova	2,087	..	..
Trichuris ova	1,023	..	..
Oxyuris ova	38	..	..
Strongyloides	9	..	..
Lamblia cysts	25	..	..
Cercomonas	2	..	..
Negative	..	4,816	..
Total stool specimens	..	..	9,344
Sundried humus	..	..	79
Hair for Fungi	1	..	1
Faeces from horse for culture for Cl. tetani	..	1	1
Milk for Streptococci	..	1	1
Milk	..	..	147
Ice-cream	..	..	18
Pus for Autogenous Vaccine	..	..	1
Tinned pineapple	..	..	13
Chilli Sauce	..	..	1
Marmite	..	..	1
Disinfectant	..	..	6
Grand Total	..	..	14,244

	Positive	Negative	Total
Guinea—pig Inoculations for			
Leptospirosis —Blood	..	1	1
Urine	..	2	2
Animal organs	..	2	2
Tuberculosis —Urine	1	..	1
Total	1	5	6

Section B.—water

Fourteen thousand nine hundred and nineteen (14,919) routine samples of water from the City Water Engineer were tested bacteriologically. This figure is again the highest on record.

This increase in samples is due to the water schemes in Johore, and special samples from main supplies to new houses and housing estates which have been erected during the year.

Throughout the year, the condition of the tap water remained satisfactory.

Results of examination on the various samples are summarised in the following table:—

YEAR 1951

Source	Year's Average total colonies per m.l. at 37°C. in 24 hours	Year's Average presumptive coliform count per 100 m.l.
MacRitchie Reservoir Valve Tower	330	24
Peirce Reservoir Valve Tower	253	9
Seletar Reservoir Channel	270	21
Pontian Reservoir Valve Tower	374	23
Bukit Timah Reservoir Clear Water Tank ..	17	Nil
Woodleigh Reservoir Clear Water Tank ..	31	Nil
Gunong Pulai Reservoir Clear Water Tank ..	19	Nil
Pontian Reservoir Camp Supply	61	Less than 1
Pearl's Hill Service Reservoir — Tank No. 1 ..	29	Nil
Pearl's Hill Service Reservoir — Tank No. 2 ..	28	Nil
Pearl's Hill Service Reservoir — Air Valve ..	38	Nil
Fort Canning Reservoir	50	Nil
Halesworth	28	Nil
Tap—Bacteriological laboratory	60	Nil
Lorong Lalat	53	Less than 1
Joo Chiat Office	41	Less than 1
Havelock Road	66	Less than 1
Pasir Panjang	96	Less than 1
Average of five taps	63	Less than 1

Mount Emily Swimming Pool

A total of one thousand and seventy-two (1,072) samples were examined from Mount Emily Public Swimming Pool and the results obtained were satisfactory throughout the year.

The following table gives the average results for the year:—

Source	Year's average total colonies per m.l. at 37° C. in 24 hours	Year's average presumptive coliform count per 100 m.l.
Shallow End	24	Less than 1
Centre Deep	23	Less than 1
Filter Outlet	45	Less than 1

Four hundred and two (402) miscellaneous water samples were examined during the year.

1. Singapore Swimming Club	..	265
2. Tanglin Club ..	..	88
3. Chinese Swimming Club	..	30
4. Others	..	19
Total	..	402

Algae

One hundred and seventy-three (173) samples of water were examined for algae count.

One sample of water from a service tank was examined for the presence of worms and these were identified as belonging to the species called "Planaria Simplex".

Three specimens of snails recovered from water meters were identified as "Melania tuberculata".

Section C.—sewerage

Thirty-five (35) samples of wash water from the City Town Cleansing Department were examined during the Year and were found to be satisfactory.

Section D.—staff

Dr. Ng See Yook (City Bacteriologist) who was on vacation leave in United Kingdom returned to duty on the 12th August, 1951.

Dr. Phay Seng Whatt (Deputy Bacteriologist) resigned from the service on 1st October, 1951 to take up a University appointment and Dr. Ling Ding Seng was appointed to fill the vacancy on the 14th December, 1951.

REMARKS

I wish to express my gratitude to the staff for their co-operation and fine work in the laboratory during the year.

NG SEE YOOK,
L.M.S. (Singapore) D.P.H. (London)
City Bacteriologist.

INFANT WELFARE DEPARTMENT

1951

INFANT WELFARE DEPARTMENT

	1951	*1950*
Total live and still births submitted to the Infant Welfare Department	35,414	34,075
Total live births	34,776	33,424

A.—CLINIC ACTIVITIES

1. New births registered by 5 Clinics for visiting ..	29,854	28,940
Percentage of total births visited by Health Visitors	85.85%	87.08%
2. Visits paid by Health Visitors to Homes:—		
1st Visits	28,462	27,111
Revisits	55,158	55,360
Total ..	83,620	82,471
3. *Clinic Consultations*		
(*a*) New infants	16,065	16,069
Revisits of infants	79,467	86,688
Total ..	95,532	102,757
Of these, number of babies sick and received treatment	58,991	
Percentage of attendance	61.75%	
Number of mothers sick and received treatment	7,483	
(*b*) New toddlers	3,800	7,117
Revisits of toddlers	3,655	7,267
Total ..	7,455	14,384
4. *Post Natal Consultations*		
New Post Natal mothers	3,529	3,697
Revisits to Post Natal mothers ..	2,970	2,957
Total ..	6,499	6,654
5. *Ante Natal Consultations*		
New Ante Natal mothers	2,599	2,936
Revisits of Ante Natal mothers ..	5,431	6,398
Total ..	8,030	9,334
Visits paid to their homes	3,391	4,399
6. *Vaccination of infants*		
In Clinics	13,138	14,032
On district	4,083	3,851
Total ..	17,221	17,883

	1951		1950
7. *Immunisation against Diphtheria*			
Under 1 year old—1st injections ..	4,439	*Under and Over 1 year old and Contacts*	
2nd injections ..	3,691		
Total ..	8,130	1st	7,116
Over 1 year old—1st injections ..	2,478		
2nd injections ..	2,263		
Total ..	4,741	2nd	6,163
Contact cases —1st injections ..	394		
2nd injections ..	252		
Total ..	646		
Grand total of inoculations given ..	13,517		13,279
Reactions	878		1,215
Refusals	54		91
Visits to homes to follow up ..	1,842		1,269
8. *B. C. G. inoculations*			
No. tested in 5 months	5,164		..
No. of B. C. G. inoculations given ..	2,461		..
9. *Free Milk Distribution*			
No. of new babies issued with free milk powder	1,201		1,134
No. of nursing mothers issued with free Milk Powder	53		79
Total No. of Re-issues	18,612		21,840
Total No. of lb. of Powdered Milk used ..	18,510		19,304
Of which given to Salvation Army Home ..	400	lb.	..
Of which given to Convent Orphanage ..	400	lb.	..
10. *Family Planning*			
No. of cases fitted with appliances ..	1,356		1,638
No. of Revisits .. .. 1,246 ..	1,485		828
No. came for Rechecking .. 239 ..			
"Unsuitable" cases	126		92
No. referred to F.P.A. clinics or Kandang Kerbau Hospital	151		92
Total No. of cases ..	3,118		2,650
Of which No. advised on account of health	73		550
11. *Free Midwifery Service*			
No. of free confinements for poor cases by City Council Midwives	1,349		1,662
No. of Post Natal cases followed up by City Council Midwives	3,248		778
Of which those referred by Kandang Kerbau Hospital were	3,017		..
No. of abnormal cases sent to Kandang Kerbau Hospital	30		49
Visits paid by Midwives to Patient's Homes	15,648		14,024

B.—SUPERVISION OF MIDWIVES

Inspection of Private Midwives' Bags and Books in Clinics	2,440		2,609

DISTRICT SISTERS' WORK IN CHECKING UP ON BIRTHS AND MIDWIVES

1. Total births registered by I. W. D. for visits ..		34,776		33,424
Total No. of twins reported to I. W. D. ..		280		245
Total No. of triplets reported to I. W. D. ..		1		3
Stillbirths		638		651
Neonatal Deaths		1,101		1,129
Removed and Untraced		211		413
Seen by District Sisters	(60.25%)	20,953	(%)	20,132
Born in Hospital	(39.13%)	13,619		12,750
2. Total Confinements		35,127		33,827
In Hospital	(39.63%)	13,923	(38.16%)	12,910
By Private Doctors	(9.43%)	3,313	(7.62%)	2,579
By Private Midwives	(45.76%)	16,076	(47.82%)	16,177
Self attended	(5.18%)	1,815	(6.40%)	2,161
Of these Mothers seen by District Sisters ..		20,992		20,716
Mothers died		16		12
Mothers removed and untraced ..		204		352
3. Home visits and Revisits by District Sisters following report of birth		23,275		22,714
4. Puerperal Fever cases reported		69		82
5. Tetanus Neonatorum		19		19
6. Gonorrhoeal ohpthalmia cases		..		20
INFANTILE MORTALITY		78.79%		91.22%
BIRTH RATE		46.50%		45.76%
MATERNAL MORTALITY		58		73.

COMMENTARY

STAFF

Nurses

Our chronic complaint appears to be on insufficiency of nurses in order to "man" every branch of the work at its maximum efficiency. Adjustments had to be made every now and then to re-arrange duties to cope with all the different kinds of leave which seemed to recur, whether compulsory, cumulative or sick—however, regarding maternity leave, there were only 2 during the year, from among a female staff of 42. Sometimes no replacement was available so that some of the homevisiting suffered by having to be held over, with the hope that eventually the backlog of cases could be made good.

Sister Piong Eu Moi returned from United Kingdom in the middle of the year, having attained her C.M.B. Certificate. She has been of great help especially in the Ante Natal sessions, which in consequence was brought a little nearer the desired standard.

Supervisor of Midwives

We did not have one throughout the year, and the work was done as well as could be expected by the District Sisters in addition to their own duties of visiting in the puerperium. During these visits they could check on the resultant work of Private Midwives, but the supervision of the Midwife actually at work has not been possible, although this is an important necessity especially in the case of Midwives who have been qualified for a long time. Routine inspection of bags and books was also done by the District Sisters and any cases of Midwives requiring admonishing were referred to Lady Medical Officer.

Doctors

For the whole of 1951 the department had only 1 full-time L.M.O. during the absence on leave of Dr. Tan. The employment of Private Doctors for a 2 hour session daily was of assistance, but was not entirely satisfactory in that:—

1. Clinic nurses had to hustle thro their interviews with patients in order to get them sorted out in readiness for the doctors, with consequent skimping of advice which was quite unavoidable.

2. Many cases were left unseen at times when the part-time Doctors 2 hour session was up. Usually these Doctors would obligingly work overtime, but sometimes cases needing the Doctor's attention were left to the nurses' initiative either to send the patients to swell the crowds in the General Hospital Outpatient Department, or to Private Doctors whose charges might be beyond the patient's means.

3. Sick mothers in the puerperium discovered by the District Sisters could not be visited by a Doctor, and responsibility for treatment had perforce to be undertaken by Acting L. M. O.—who has in addition to be in charge of Family Planning and B. C. G., hold some clinic sessions, examine female staff of the City Council, give lectures to nurses, deal with refractory midwives, as well as see to the running of the department.

CLINIC ACTIVITIES

Visiting Babies

With the increase in the number of births together with the deficiency in staffing, it is only to be expected that the efficient running of the various branches of the department would be affected—especially the homevisiting of babies from birth to 1 year. Each Health Visitor is given 25—30 cases to visit per day in the town areas, and 20—25 cases in country areas (In United Kingdom a Health Visitor visits 50 cases per week). This number of cases is actually too much, only allowing 10 minutes or less to the Health Visitor to track down the correct baby, to weigh it, and to discuss with the mother items like feeding, fresh air, sleep habits, clothing, vaccinations, A.P.T. inoculations, B.C.G., family planning, etc., etc. Sometimes, much time and effort is wasted looking for a baby whose address is incorrectly notified —about 40 per cent of the cases delivered in Kandang Kerbau Hospital either do not give their addresses correctly or these are not copied down correctly on admission—e.g., one address was given as Clyde Terrace, 8½ milestone, while in other cases, numbers which do not exist were given. The Kandang Kerbau Hospital almoner has been asked to co-operate in this respect.

Yet another detractor from our having a mere imposing total of visits is the fact that many cases from rural areas now go to Kandang Kerbau for delivery. Their addresses may be given as being in the city becau.e they come in to live with relatives nearer the hospital when they are nearly due for confinement. Our Health Visitors on looking for these cases find they have returned to their kampongs, so that after the expenditure of much time and energy these are not counted as visits.

Consultations

Although the total of our clinic consultations for infants have dropped we still had considerable numbers to cope with daily, more than could be dealt with comfortably. It is not desirable that the atmosphere in which an infant consultation is held should be one of hectic scrambling to deal with large crowds of cross and ailing infants, nor should anxious mothers be kept waiting their turn too long. It is not right that we should sacrifice time and care in giving advice in order to attain spectular figures of attendances. The public has come to regard us as a treatment and Outpatient centre, and in 1950 the large numbers that we had was due to this demand for treatment. While realising the need for relieving the congestion in the General Hospital Outpatient Departments and the necessity for more

children's outpatient treatment centres, I feel we must not do so at the expense of our primary function of health education and inoculating against disease. Our toddler figures of 1951 have dropped from 14,384 in 1950 to 7,455, as we referred many cases to General Hospital, or to Private Doctors (the charges of the latter I am told are somewhat reduced nowadays). We did this not only because of our inability to cope owing to staff shortages, but also because rising prices of drugs caused our Vote for Medicines and Infant Food to be absolutely inadequate had we treated every case that came. Nearly every toddler was a treatment case, while out of 95,532 infant attendances, 58,991 or 61.75 per cent were for treatment of sick babies.

Ante Natal and Post Natal Clinics

Here again there has been a slight decrease in the number of attendances. This has been most noticeable in the Prinsep Street and Balestier Road Clinics, possibly due to their proximity to Kandang Kerbau Hospital—in Joo Chiat and Tiong Bahru, however, the number were just as many as before. Patients have been flocking to Kandang Kerbau Hospital for delivery and therefore have to attend Kandang Kerbau Ante Natal Clinics. The advantages of being confined in Kandang Kerbau are because it is free, and because it is more convenient than giving birth in their cubicles often with no home help available to clear up afterwards. The 2—3 days hospitalisation is welcomed because it gives just sufficient time for the mothers to get some rest and yet is not too long to cause them to fret about what is happening to the rest of the family at home. Then when they get home they are assured that our City Council Midwives will call on them to attend to mother and baby, so much so that there were several cases who could well afford to pay for such a service from Private Midwives and still expected this of us. One other factor which might have affected our Ante Natal attendances was the Family Planning advice which most of the mothers begged for, Antenatally, to relieve them of the prospect of having to come up year after year pregnant, worn out, anaemic, underfed as they were.

We attempted to teach Ante Natal and Post Natal exercises to the mothers thro the Midwives but unfortunately, as it is still a very new idea it will probably not catch on for quite a time yet. T' e visiting of Ante Natal mothers in their homes was cut down after August, as we then commenced B.C.G. inoculations and being short of staff had to use each Ante Natal nurses on certain days of the week for this work.

Clinic Midwives

1 more Mdiwife was added to our staff making a total of 8 Midwives, but the number of cases actually delivered was about 300 less than in 1950, Prinsep Street and Kreta Ayer Clinic having the least number, although Joo Chiat and Tiong Bahru and Balestier Midwives were as busy as ever. It was the post natal washings which kept our Midwives very busy there being 3,248 in 1951 as against 778 in 1950; out of this 3,248 cases, 3,017 were washings referred from Kandang Kerbau Hospital, the rest being self attended cases. This heavy increase in washings might have had some effect in lowering the number of deliveries by our Midwives, for on many occasions when a call for a Midwife was made during the day she was out on her washing rounds, and the case had to be referred to a nearby Private Midwife. Sometimes our Midwives have over 20 washings to do in a morning.

Puerperal Fever

We are still not receiving notifications of fever in the puerperium from Private practitioners despite D.M.S. Circular 1020/1951—throughout 1951 only 3 such notifications were received, the other 63 being cases discovered by our District Sisters and treated by me. The small total of 69 is misleading to an

outsider who might think that the standard of domiciliary Midwifery and conditions under which confinements are conducted must be pretty high. It is heartening to see the steady fall in number of self attended, they occur usually in remote areas where help may not be available but in this respect, the majority appear to be among the Malays in the kampongs who do not seem to make any arrangements beforehand to secure a Midwife until the moment of labour, but rely on any old crone available at the moment.

Family Planning

The opening of a Family Planning Clinic at Tiong Bahru, with a nurse functioning full time every day, just round the corner from our Infant Welfare Clinics resulted in the falling off of attendances at the weekly sessions in our own Clinic, so that it seemed a waste of time spending a whole 2 hour session over just 1–2 cases, especially when we were so short-staffed and had started additional activities by giving B.C.G. inoculations. These Family Planning sessions in Tiong Bahru Clinic were therefore suspended till our staff situation improves in the future. The few cases presenting themselves for advice were asked to go round the corner to the F.P.A. headquarters. The other clinics however were kept as busy as ever, so much so that in order not to sacrifice careful and patient teaching for large numbers, I limited the new cases to not more than 14 per session—this in addition to all the revisits, and referred the surplus to the F.P.A. Clinics, but often they would come back next week, or go the next day to another of our Infant Welfare Clinics which was holding a Family Planning session that day. We even get cases coming from as far as Penang and Kampar, and cases from Johore Bahru, Kulai and Segamat are common. We have had Health Visitors from upcountry coming to be taught our technique as well as nurses from F.P.A. and some final year medical students.

Although we have not been able to affect the Birth Rate as yet, we can already see results in that those mothers who used to be our regular patients every year in the Ante Natal clinics have now been given some respite. At their regular 6 months visit for check up at our Family Planning session it is heartening to see not only their gratitude, but their new attitude towards life and their improved health, freed from the fear of ever recurring pregnancies with its drain on their mental and physical health.

PREVENTIVE INOCULATIONS, B.C.G. AND ANTI-DIPHTHERIA

In July 1951, Sister Betty Tan, S/N Yong and I commenced training under the U.N.I.C.E.F., B.C.G. team, by giving mass inoculations to school children. In August, we were considered proficient enough to start inoculating babies and toddlers. At first this was only given in Prinsep Street Clinic but when we were able to train more nurses, we expanded, till now we are holding sessions twice a week in each of our 3 major clinics. The response has been very good, the mothers appearing to welcome it, but strange as it may seem, Chinese mothers do not seem to be keen on their boy babies receiving this injection, possibly wanting to experiment on their girl babies first, in case there are untoward results—this is evidenced by the large stack of pink cards (for girls) as against the small stock of white cards (for boys) which are in our files. On the whole however, the respond is better than for A.P.T. inoculations where the Health Visitors have practically to beg the parents to bring their children for this. The population of course is far more T.B. conscious than diphtheria conscious. Diphtheria is quite an unheard of disease to most people whereas T.B. has been known since history. The only time they have ever heard of Diphtheria is from the lips of our Health Visitors, and this source alone is not sufficient to drive in the dangers to their minds, as they confuse it with ordinary tonsillitis and septic throats.

Distribution of Free Powdered Milk

There was a hitch in our supplies from Government and we received on the following:—

March	..	4,000 lb.
May	..	4,000 lb.
July	..	2,000 lb.
November	..	2,000 lb.
Total	..	12,000 lb i.e. about half our usual quantity.

Luckily we had a small surplus stock carefully conserved from the previous year but we had to refuse quite a number of mothers asking for this free milk. Although the amount we give away to each baby is certainly not sufficient for its needs, it is of help to keep out what the parents can afford to buy, and when our supply was insufficient it was quite a blow to these people—they resorted to Sweetened Condensed Milk which may be cheaper, but which all pædiatricias now agree is not a suitable baby food.

Infantile Mortality Rate .. .. 78.79 per cent.

I have the honour to be,
Sir,
Your Obedient Servant,
MAGGIE LIM, M.R.C.S., L.R.C.P.,
Acting Senior Assistant Health Officer.

MIDDLETON HOSPITAL

1951

MIDDLETON HOSPITAL

TABLE I below shows the number of admissions, discharges and deaths during the year.

TABLE I

	Remaining 31–12–50	Admitted	Discharged	Died	Remaining 31–12–51
Small-pox	..	..	..	..	..
Cholera	..	..	..	..	..
Plague	..	..	..	..	..
Chicken-pox	16	610	617	1	8
Measles	..	219	197	18	4
Diphtheria	29	469	389	91	18
Meningococcal Meningitis	..	4	3	1	..
Enteric Fever	3	91	57	6	31
Tropical Typhus:—					
Scrub	..	7	7	..	..
Urban	..	..	..	..	..
Ac. Ant. Poliomyelitis	41	78	77	8	34
T.B. Meningitis	..	11	6	4	1
Amoebic Dysentery	3	105	99	3	6
Bacillary Dysentery	..	18	14	3	1
Clinical Dysentery	..	40	36	4	..
Diarrhoea and Enteritis	..	33	28	4	1
Erysipelas	..	4	3	..	1
Whooping Cough..	2	5	7	..	..
Mumps	..	79	79	..	..
Other Diseases	6	190	176	17	3
? Typhoid Carriers	..	121	112	..	9
Contacts	..	8	8	..	..
Observations	..	125	121	..	4
Total ..	100	2,217	2,036	160	121

Administration and Finance

This institution as in previous years, is still jointly administered and financed by the City Council and the Government, pending the decision of a Special Joint Committee on the responsibility for the control and treatment of Infectious Diseases in Singapore.

Dangerous Infectious Diseases

During the year, there was no case of Small-pox, Plague or Cholera.

Enteric Fevers

Of the enteric fevers, typhoid fever is mainly endemic in the Country.

91 cases of typhoid fever were admitted during the year and with three cases remaining from last year, 94 cases were treated during this year, with 6 deaths, a case fatality rate of 6.38 per cent.

Table II below shows the number of admissions and deaths by month, throughout the year.

TABLE II

TYPHOID ADMISSIONS AND DEATHS BY MONTHS 1951

——	J.	F.	M.	A.	M.	J.	J.	A.	S.	O.	N.	D.	Total
No. of Admissions ..	7	5	5	6	4	..	1	1	3	10	10	39	91
No. of Deaths ..	..	..	..	1	1	..	..	..	..	3	..	1	6

It will be noted that there were 39 admissions during December, 1951; of these 39 cases, 23 had attended a common wedding dinner in a house at Paya Lebar. With the help of the City authorities, 9 cooks and servers from the restaurant which supplied the dinner were detained in the hospital for investigation as suspected carriers. Blood examinations of these suspected carriers showed a positive Vi agglutination of 1/10 titre in one, and 1/320 titre in another, but their stool and urine examinations were persistently negative for Sal. Typhi. At the time of writing this report, these two suspects were still detained in the hospital for further investigations of their stool and urine.

Chloromycetin treatment is still giving gratifying results. Of the 91 cases, 75 were treated with Chloromycetin. The total dosage of Chloromycetin for an adult patient is 29 grams, spread out for a period of 14 days. With this treatment, the temperature falls to normal within 72 to 96 hours, from the initial dose. Three relapsed with this treatment, and 5 cases died. All these 5 cases died within 24 to 36 hours after the initial dose of Chloromycetin before the drug has any chance to take effect, denoting the severity of disease.

These deaths were complicated with the following conditions: Erysipelas and Broncho-pneumonia, (one case); Bed-sores (one case); Haemorrhage (one case); Perforation (one case); Cardiac-failure (one case).

Diphtheria

469 cases of Diphtheria were admitted during the year and with 29 cases remaining from last year, a total of 498 cases were treated during the year, the highest ever recorded figure for this hospital. Of these 469 cases, 99 cases were contacts of clinical cases with positive throat swabs for C. diphtheriae, but who manifested no clinical signs and symptoms of the disease.

TABLE III

Types of Cases	Admissions	Deaths
Laryngeal and Tracheal	163	72
Nasopharyngeal	69	18
Faucial	133	1
Nasal	5	..
Contact Carriers	99	..
Total ..	469	91

TABLE IV

ADMISSIONS BY NATIONALITIES

Race	Admissions	Deaths
Europeans	4	..
Eurasians	8	1
Indians	17	2
Chinese	424	81
Malays	16	7
Total ..	469	91

TABLE V

ADMISSIONS BY AGE GROUPS

Age	Admissions	Deaths
1 year and below	31	11
1 — 2 years	91	36 } 89
2 — 5 years	198	42
5 — 10 years	91	2
10 — 15 years	37	..
15 — 20 years	5	..
Above 20 years	16	..
Total ..	469	91

TABLE VI

ADMISSIONS AND DEATHS BY MONTHS

——	J.	F.	M.	A.	M.	J.	J.	A.	S.	O.	N.	D.	Total
Admissions	56	32	29	24	29	39	48	48	63	33	32	36	469
Deaths	14	7	9	7	2	7	6	1	15	7	9	7	91

Of the 469 admissions, 91 cases died, showing a case fatality rate of 19.4 per cent.

Out of the 91 deaths, 61 died within 24 hours of admissions. Tracheotomy was performed on 107 cases, i.e., 22.8 per cent of the admissions, almost 1 in every 5 cases admitted into the hospital for treatment, required a tracheotomy operation, an appalling figure. Of these 107 tracheotomies, 52 died, i.e., 48.5 per cent.

From the above figures, one concludes that:—

(i) Diphtheria is on the increase in Singapore.

(ii) The high incidence of tracheotomy operations and the large number of cases dying within 24 hours after admission denote how late the cases seek medical treatment; and only when the child is in a moribund and dying condition, that he is brought to the hospital. I put this to sheer ignorance of the parents or poverty, as most of them belong to the working classes, as shown by the number of unclaimed dead bodies which have to be buried by the hospital authorities.

(iii) There is a higher proportion of admissions and deaths among children below the age of 5 years, i.e., the pre-school age children. Of the 469 cases, 320 were children under 5 years of age with a mortality rate of 97.8 per cent. This group of children receive little or no medical attention as most of them are excluded from the care of the Infant Welfare Clinics being too old, and from the School Health Services being too young. They generally come under no health supervision except the care of the parents. All these cases had no diphtheria immunisation done on them.

Diphtheria is a preventable disease which can be easily eradicated from the country by mass immunisation of the child population. This has been definitely established and proved beyond doubt in countries such as the United Kingdom and in countries where the response to immunisation has been excellent. This present state of affairs in Singapore with regard to Diphtheria and the needless wastage of life should not be allowed to continue any further. It is recommended that more active health propaganda should be instituted, that a mass immunisation campaign against Diphtheria should be organised, and the Public should be educated to come forward and demand this prophylaxis. It is only with these intensified measures, that this disease can be controlled and eradicated from this country.

Measles

209 cases of measles were admitted with 18 deaths. Most of these cases were from public institutions where the danger of spread of this disease was present. All the deaths were due to Broncho-pneumonia.

Meningococcal Meningitis

There were 4 cases with 1 death.

Tropical Typhus

All the seven cases were Scrub Typhus. There was no death.

Dysentery

TABLE VII

Dysentery	Cases	Deaths
Amoebic	105	3
Bacillary	18	3
Clinical	40	4
Total ..	163	10

Acute Anterior Poliomyelitis

TABLE VIII

CASES AND DEATHS OF POLIOMYELITIS BY MONTHS

——	J.	F.	M.	A.	M.	J.	J.	A.	S.	O.	N.	D.	Total
Cases	13	5	9	4	4	6	3	2	6	7	7	12	78
Deaths	..	..	1	2	..	2	1	..	1	1	..	..	8

From this table, as anticipated, the disease is now endemic in the country.

TABLE IX.

AGE GROUPS, SEX DISTRIBUTION, TYPES OF CASES AND DEATHS OF POLIOMYELITIS

Age Groups		0–1 year		1–2 years		2–5 years		5–10 years		10–15 years		15–20 years		20–30 years		30–40 years		Total	
Sex		M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Paralytic	C	8	11	13	7	12	7	4	2	..	1	1	1	1	1	1	1	40	31
	..																		
	D	2	1	1	..	1	..	1	..	..	..	..	..	..	..	..	..	5	1
Non-Paralytic	C	..	..	..	..	1	..	1	..	1	..	..	..	..	..	..	..	3	..
	D	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Bulbar	C	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	2	..
	..																		
	D	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	2	..
Abortive	C	..	..	..	..	1	..	..	..	..	1	..	..	..	..	..	..	..	2
	..																		
	D	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Total	C	8	11	13	7	15	8	5	2	1	2	1	1	1	1	1	1	45	33
	..																		
	D	2	1	1	..	3	..	1	..	..	..	..	..	..	..	..	..	7	1

From this table, one gathers the following conclusions:—

1. 62 out of 78 were children under 5 years of age.
2. The disease is more prevalent among the males.
3. A high incidence of cases with paralysis.

Four cases were treated in Iron Lungs, 3 in the Bragg-Paul type and all died; and one in the Both type and recovered. As in previous years, for continuity of treatment all the cases were retained in the hospital for physiotherapy after the acute stage of the disease was over, and two full-time physiotherapists were employed for this purpose.

Through the generosity of a grateful parent a small bathing pool about 5 feet × 15 ft. × 2½ ft. was donated to the hospital for the treatment of Poliomyelitis cases and was ready for use in April 1951. This pool was officially opened by the Acting President Municiapal Commissioners on 12th April, 1951.

Other Diseases and Observations

TABLE X

OTHER DISEASES

	Remaining 31–12–50	Admitted	Discharged	Died	Remaining 31–12–51
Cerebral Haemorrhage	..	1	..	1	..
Soft Syphilitic Hemiplegia	..	1	1	..	..
Neuromyelitic Optica	..	1	1	..	..
Tetanus	..	1	1	..	..
Encephalitis	..	2	2	..	..
Tonsilitis	..	110	109	..	1
Stomatitis	1	..	1	..	..
Bornchitis	..	2	2	..	..
Broncho-Pneumonia	1	14	8	7	..
Lobar Pneumonia	..	6	6	..	..
Pluerisy with effusion	..	1	1	..	..
Asthma	..	2	2	..	..
Abscess Lung	..	1	1	..	..
Pyrexia	1	2	3	..	..
Influenza	..	1	1	..	..
Dengue	..	1	1	..	..
Ac. Rheumatic Fever	1	1	2	..	..
Infective Arthritis	..	1	1	..	..
Malaria S. T.	..	2	2	..	..
„ B. T.	..	1	..	..	1
Clinical Malaria	..	6	3	2	1
Acute Abdomen	..	2	2	..	..
Gastric ulcer with Haemorrhage ..	..	1	..	1	..
Ascariasis	1	7	8	..	..
Secondary Syphilis	..	3	3	..	..
Yaws	..	2	2	..	..
Pemphigus	..	3	3	..	..
Herpes Zoster	..	1	1	..	..
Cerebral Embolism (Post Partum) ..	..	1	1	..	..
Anaemia	..	2	1	1	..
Congenital Heart	..	1	..	1	..
Beri Beri	..	3	..	3	..
Peripheral Neuritis	..	1	1	..	..
Pylonephritis	..	4	3	1	..
Cellulitis	..	1	1	..	..
Ottitis	..	1	1	..	..
Tetany	1	..	1	..	..
Total ..	6	190	176	17	3

These cases were admitted to the hospital suspected to be suffering from an Infectious Disesae. After investigation, the above table shows the cases diagnosed and others classified under observations under Table I. They were either discharged or transferred to other hospitals. This group of cases required a great amount of investigations and occupied valuable bed space, as they had to remain in this hospital for several days before a bed is available in other hospitals for a transfer.

TABLE XI

NATIONALITY AND DAYS IN HOSPITAL

Race	REMAINING 31–12–50		ADMITTED 1951		TOTAL 1951	
	No. of Patients	Days in Hospital	No. of Patients	Days in Hospital	Total No. of Patients	No. of Hospital Days
Europeas	1	12	32	405	33	417
Eurasians	2	102	62	815	64	917
Indians	21	612	553	4,869	574	5,481
Chinese	72	7,199	1,382	20,996	1,454	28,195
Malays	3	43	182	1,824	185	1,867
Others	1	3	6	48	7	51
Total ..	100	7,971	2,217	28,957	2,317	36,928

Average number of patients a day 101
Average number of days per patient in hospital 17
Number of cases from outside City limits.. 241

STAFF

The permanent staff of the hospital is totally inadequate, and with the increase of admissions and the sudden in rush of typhoid, diphtheria, and polio cases at various periods in the year, extra duties were thrown on the existing nursing staff, necessitating the employment of more temporary nursing staff. This was made more difficult by the scarcity of trained nursing staff for employment, and these newly recruited temporary staff had to be specially trained in fever nursing for a period before they were of use in the wards. The ideal of an infectious diseases hospital should always have an adequate staff of trained personnel at all times to meet any emergency. It is gratifying to record that the City Councillors had at last approved a new increased establishment for the hospital.

The following were the staff changes for the year:—

Dr. H. R. Morrison, Acting Medical Superintendent, proceeded on vacation leave in March 1951 and in his place Dr. Phay Seng Whatt was appointed as Acting Medical Superintendent.

Dr. Ng See Yook, the Medical Superintendent, returned from vacation leave on 12th August.

Dr. Phay Seng Whatt resigned from the service in October to join the University of Malaya.

Dr. J. Flinter was seconded from the Government to the hospital as a Medical Officer from 16th October, 1951.

Dr. Ling Ding Seng joined the service on the 15th December, 1951.

I wish to place on record the spirit of service and co-operation rendered by all the staff in the hospital throughout the year and especially during an emergency. They are to be congratulated for the good work done in the welfare of the patients.

In conclusion, I wish to thank Prof. Ransome, Prof. Monteiro, Prof. Mekie and Dr. Wilkinson who acted as consultants to this hospital.

I have the honour to be,
Sir,
Your obedient servant,
NG SEE YOOK,
L.M.S. (Singapore) D.P.H. (London)
Medical Superintendent, Middleton Hospital.

MARKETS

1951

MARKETS

CITY MARKETS

THERE ARE 10 City Markets. The new Market-cum-Hawkers' Shelter at Seng Poh Road in Tiong Bahru was placed under the control of the City Cleansing Department and was opened to the public on 20th January, 1951.

PRIVATE MARKETS

There are six Private Markets licensed within the City Limits the administration of which is the responsibility of the licencees.

CLEANSING

Routine work has been satisfactorily carried out by the market labourers. The yearly cleansing on Chinese New Year's Day was carried out on 6th February. The City Fire Brigade Department loaned canvas hoses, complete with nozzles, couplings, connecting stand pipes and hydrant keys for the cleansing operations. Rats caught were destroyed.

REPAIRS

The markets were kept in a good state of repair during the year.

MAJOR REPAIRS

(i) Renovation of Orchard Road Market which commenced in December was completed in January, 1951.

(ii) The Clyde Terrace main market roof was completely changed from corrugated iron to new asbestos, between December 1950 and February 1951. The rewiring of the whole market which commenced in January was completed in April. Four new lights were fixed in the poultry shed.

Minor maintenance and repairs were carried out on Departmental indents by the City Architects, Engineers, Electric, Gas, Sewerage, Plumbers' Stores and Water Departments respectively.

UNSOUND FOODSTUFFS

5,435 heads of poultry, 19,768 eggs and 220,653¾ katties (approximately 131.4 tons) of unsound foodstuffs were collected from all the City Markets and sent to the City Incinerator for destruction.

PRICES AND QUANTITIES OF FOODSTUFFS

The approximate quantities of foodstuffs passing through the seven principal markets as well as their estimated values were recorded.

Mutton, Australian and Indonesian Goats' flesh remain the only items which still have a control price, the price was increased from $1.30 per lb. to $1.45 per lb. The prices of foodstuffs were comparatively much higher than pre-war and there has been a tendency to increase during the year in line with the rise in prices of other commodities.

TABLE *A*.

Article	*Per*	*1947*	*1948*	*1949*	*1950*	*1951*
Beef ..	Kati	1.50	1.85	1.69	1.61	1.72
Mutton ..	lb.	.75	.75	.75	.96	1.51
Pork ..	kati	2.34	2.16	1.86	1.37	2.91
Tea ..	lb.	1.50	2.11	2.43	..	..

Article	*Per*	*1947*	*1948*	*1949*	*1950*	*1951*	
Coffee ..	kati	.70	1.08	1.10	..	..	
Sugar ..	kati	.25	.30	.30	.28	.34¼	
Salt ..	kati	.08	.08	.08	.05	..	
Potatoes ..	kati	.29	.25	.19	.22	.29	
Yam ..	kati	.17	.22	.21	.24	.38	
Ducks ..	kati	1.44	1.55	2.74 (each)	1.33	1.62	
Eggs (hen) ..	ten	1.65	1.51	1.43	1.28	1.56	
Capons ..	kati	2.88	3.13	2.97	..	..	
Fowls ..	kati	1.94	1.94	1.65	1.62	2.14	
Rice ..	Gantang	1.50	1.80	1.80	1.56	1.65	or 27½ cts. per kati.

The prices of rice and sugar have been undergoing several changes viz.

Rice ..	26 cts. per kati	2nd January
Rice ..	32 cts. per kati	1st October
Sugar ..	32 cts. per kati	2nd January
Sugar ..	43 cts. per kati	13th August
Sugar ..	38 cts. per kati	31st December

and were finally rationed at 32 cts. or 38 cts. per kati respectively at the end of the year.

REVENUE FROM FISH AUCTIONS

Revenue for the 5 per cent Commission on Wet Fish auction sales showed a slight increase over the previous year. This was due to the increased prices of fish.

TABLE *B.*

Market	Period	Quantity Landed and Auctioned Katties	Total Auction Value	Total 5 per cent Commission Collected
			$ c.	$ c.
Ellenborough	Nov., and Dec., 1945	1,830,365½	1,619,276 12	80,965 24
Clyde Terrace	Nov., and Dec., 1945	1,002,373½	1,300,343 60	65,017 18
Ellenborough	1946	18,401,681	8,124,597 40	406,229 87
Clyde Terrace	1946	12,237,577	6,151,718 80	307,585 94
Ellenborough	1947	5,724,560	3,500,413 20	175,020 66
Clyde Terrace	1947	5,208,806	2,723,594 80	136,179 74
Ellenborough	1948	6,549,040	3,164,748 20	158,237 41
Clyde Terrace	1948	4,054,028	2,275,678 00	113,783 90
Ellenborough	1949	7,274,440½	3,112,001 80	155,600 09
Clyde Terrace	1949	3,347,937	1,686,801 20	84,340 06
Ellenborough	1950	7,096,523	3,104,206 20	155,210 31
Clyde Terrace	1950	3,426,668	1,677,436 20	83,871 81
Ellenborough	1951	6,430,129	3,583,428 00	179,171 40
Clyde Terrace	1951	2,909,630½	1,650,185 20	82,509 26

TOTAL REVENUE—TABLE *C.*

Market	1947	1948	1949	1950	1951
	$ c.	$ c.	$ c.	$ c.	$ c.
Clyde Terrace ..	206,648 74	183,547 90	150,668 06	150,627 81	150,007 26
Ellenborough ..	246,473 66	230,349 41	223,457 09	220,966 31	245,300 40
Telok Ayer	32,819 00	34,132 30	34,678 90	33,603 80	33,902 80
Orchard Road ..	30,422 00	31,416 60	30,037 20	29,015 40	28,899 60
Kandang Kerbau ..	34,883 00	35,459 80	33,300 60	32,712 60	32,757 60
Grange Road ..	3,780 00	4,214 10	4,604 20	4,955 20	4,627 20
Sims Avenue ..	9,528 00	10,570 00	12,172 00	11,952 00	11,361 00
Maxwell Road ..	18,828 00	19,068 00	21,442 00	22,472 00	22,158 00
People's Park ..	17,104 00	16,747 00	17,689 00	14,554 00	12,656 00
Total ..	600,486 40	565,505 11	528,049 05	520,859 12	541,669 86

RETURNS

Daily

(*a*) To the Director of Fisheries, giving the total weight of fish auctioned in Clyde Terrace and Ellenborough markets and the place of origin of the fish landed.

Weekly

(*b*) To the Director of Fisheries, Singapore, the average retail prices of certain types of popular fresh fish.

Monthly

(*c*) Average Market Price List to the Registrar of Statistics, Singapore, the Singapore Traction Co., Ltd., and the Controller of Labour, Singapore.

STAFF

Mr. Goh Lye Choon, Manager, Ellenborough Market retired on reaching the age limit in September.

Mr. Teo Kah Phau, Chief Cashier, of the Treasurers Department, was re-appointed as successor to the post of Manager, Ellenborough Market in September.

Two watchmen were granted leave to proceed to India, 'Gantis' were appointed in their places.

74 and 17 attendances were recorded at the City Council main and sub-dispensaries respectively by the staff and labourers during the year.

I attach the returns showing the approximate amount of foodstuffs passing through the markets with approximate values, the quantity of unsound foodstuffs destroyed and a summary of the vacant stalls as on 31st December, 1951.

I have the honour to be,
Sir,
Your obedient servant,
KOH CHENG KHIANG,
Acting Market Inspector, Cert. R.S.I.

RETURN OF SOME OF THE FOODSTUFFS PASSING THROUGH THE MARKETS FOR THE YEAR 1951

Market	FISH				MEAT			VEGETABLES			Fresh Fruits	POULTRY		Miscellaneous	Approximate Value
	Fresh	Shell	Boiled	Salted	Beef	Mutton	Pork	Fresh	Dry	Salted		Live-stock	Eggs		
	Katis	Katis	Katis	Katis	Katis	Lb.	Katis	Katis	Katis	Katis	Katis	Heads	Tens	Katis	$ c.
Clyde Terrace	913,300	266,400	..	449,200	778,700	178,450	240,650	3,932,000	294,900	142,700	292,300	133,690	205,850	128,900	8,468,562 50
Ellenborough	749,500	279,900	322,500	835,300	13,650	..	999,200	534,400	506,300	50,450	47,450	77,470	235,600	42,600	6,999,098 50
Telok Ayer ..	148,550	11,000	17,120	14,990	197,100	58,900	283,760	1,857,650	1,630,680	23,490	430,900	25,350	49,380	35,600	2,050,643 30
Kandang Kerbau ..	243,885	77,245	..	14,496	42,510	106,505	88,265	310,980	10,135	18,330	127,610	34,538	51,370	..	1,118,360 10
Orchard Road	314,350	25,481	18,028	6,113	297,985	154,520	310,591	338,325	5,285	17,931	441,758	45,301	65,458	19,958	2,472,959 40
People's Park	40,800	..	..	..	13,860	..	314,600	1,241,000	..	10,080	..	468,800	..	8,700	2,589,439 00
Maxwell ..	108,514	26,858	5,400	14,975	141,917	48,978	142,649	577,772	7,718	25,201	..	213,040	44,701	74,066	1,904,328 28
Grange Road	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Sims Avenue	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Total ..	2,518,899	686,884	363,048	1,335,074	1,495,722	547,353	2,379,715	8,792,127	2,455,018	288,182	1,340,018	998,189	652,359	309,824	25,603,391 08

SUMMARY OF UNSOUND FOODSTUFFS DESTROYED FOR THE YEAR 1951

Market	FISH				MEAT			VEGETABLES AND FRUITS				POULTRY		
	Fresh	Shell	Boiled	Salted	Beef	Mutton	Pork	Fresh Vegetables	Dry Vegetables	Salted Vegetables	Fresh Fruits	Livestock	Eggs	Miscellaneous
	Katis	Katis	Katis	Katis	Katis	Lb.	Katis	Katis	Katis	Katis	Katis	Heads	Tens	Katis
Clyde Terrace ..	8,943	250	..	40	..	..	..	22,805	..	..	2,830	825	236	..
Ellenborough ..	12,530	12,530	..	..	..	..	..	6,630	12,780	..	1,550	404	581	885
Telok Ayer ..	..	395	..	..	..	..	..	49,000	34,940	..	5,560	185	161	2,680
Kandang Kerbau ..	501	1,245	..	129	..	..	..	2,768	..	..	2,231	205	552	..
Orchard Road ..	337	7,304	..	20	234	..	..	4,229	..	..	9,420	152	..	1,579
People's Park ..	..	..	..	..	..	..	..	1,980	..	..	..	522	..	..
Maxwell ..	1,869	1,500	..	..	127	25	43	5,354	..	..	..	3,031	319	..
Grange Road ..	245	..	..	..	..	..	..	556	..	..	504	..	..	372
Sims Avenue ..	408	397	..	..	..	..	..	1,420	56	..	829	111	127.8	633
Total ..	24,833	23,621	..	189	361	25	43	94,742	47,776	..	22,924	5,435	1,976.8	6,149

SUMMARY OF VACANT SLABS AND STALLS AS AT 31ST DECEMBER, 1951

Description	Clyde Terrace	Ellen-borough	Telok Ayer	Kan-dang Kerbau	Orchard Road	People's Park	Max-well	Grange Road	Sims Avenue	Remarks
FISH (*a*) Fresh	22	1	6	..	6	12	30	4	4	
(*b*) Boiled	..	..	..	..	..	..	..	..	..	
MEAT (*a*) Beef	..	..	..	..	..	2	..	..	..	
(*b*) Mutton	..	..	1	..	..	..	1	..	..	
(*c*) Pork	..	..	..	..	..	16	..	..	3	
(*a*) Fresh Vegetables, Fresh Fruits and Fresh Eggs	1	..	..	..	..	1	37	1	5	
(*b*) Salted Vegetables ..	..	..	..	..	..	1	..	1	..	
(*c*) Dry Vegetables and Fresh Eggs ..	..	..	..	..	..	..	..	..	..	
(*d*) Dry and Salted Vegetables ..	..	..	..	..	..	..	..	..	..	
POULTRY: Livestock	..	7	2	..	..	..	2	1	..	
Eggs	..	..	..	..	..	..	..	..	..	
Salt Fish and Dried Vegetables ..	..	..	..	..	..	3	5	2	9	
MISCELLANEOUS:										
Beancakes	..	..	..	..	..	..	5	..	..	
Cleaned Ducks and Chickens and Dressed Poultry	..	..	..	..	..	1	3	..	..	
Ground Assorted Spices ..	..	..	..	..	..	..	..	..	..	
Fancy Fish	..	..	..	..	..	..	..	..	..	
HAWKERS, Eating—Large ..	..	..	..	..	..	..	..	..	..	
Cooked Food ..	..	..	..	..	..	..	..	..	..	
BLOCK ICE	..	..	..	..	..	..	..	..	..	
SODA FOUNTAIN	..	..	..	..	..	..	..	..	..	
FROZEN MEAT	..	..	..	..	..	..	..	..	..	

ABATTOIRS

1951

ABATTOIRS

During the year 285,402 animals were slaughtered in the City Abattoirs; 238,451 were swine, 4,246 oxen, 2,140 buffaloes, 8 horses, 37,397 sheep, 3,159 goats and 1 deer.

119 swine died in the pens.

166 swine died in the depot.

55 swine carcases were totally condemned.

I have the honour to be,
Sir,
Your obedient servant,
J. L. da SILVA,
Acting Superintendent of Abattoirs.

——	Swine	Oxen	Buffaloes	Horses	Sheep	Goats	Deer
Admitted for sl. 1951 ..	238,636	4,260	2,165	8	37,431	3,171	1
Slaughtered 1951 ..	238,451	4,246	2,140	8	37,397	3,159	1
Died in pens	119	5	13	..	56	8	..
Died in depot.. ..	166	..	..	..	..	..	..
Carcases condemned ..	55	26	15	..	65	9	..
Diseased organs, etc., cond. and dest. in tons ..	6.2	4.1	4.7	..	1.8	.1	..

Total Receipts for the year 1951

	$	c.
Fees for slaughter at Pig Section	477,272	00
Fees for slaughter at Cattle Section	19,299	00
Fees for slaughter at Sheep Section	40,603	00
Fees for storage at French Road Depot ..	14,680	25
Fees for sale of pigs' bristles..	180	00
Fees for sale of Blood	540	00
Fees for inspection of wild boar carcases ..	88	00
Receipts as pen rents (all slaughter houses) ..	20,699	20
Total Receipts for the year 1951 ..	573,361	45
Total Receipts for the year 1950 ..	628,653	05

Special slaughtering licenses issued during the year 1951 (1 swine at $10 each, 24 sheep and 18 goats at $5 each) = $220 00

ANIMALS SLAUGHTERED MONTHLY IN CITY ABATTOIRS DURING THE YEAR 1951

——	Swine	Oxen	Buffaloes	Horses	Sheep	Goats	Deer
January	18,912	383	70	..	3,896	168	..
February	19,355	361	72	1	2,816	175	..
March	19,881	329	298	..	4,042	148	..
April	18,041	326	171	2	3,210	160	..
May	16,422	322	130	2	3,075	268	..
June	17,139	361	255	1	1,925	359	..
July	20,027	599	230	2	1,485	221	..
August	21,671	259	310	..	1,870	285	1
September	20,608	351	269	..	3,952	257	..
October	21,257	336	35	..	4,225	328	..
November	21,742	300	106	..	2,813	602	..
December	23,396	319	194	..	4,088	188	..
Total sl. during 1951 ..	238,451	4,246	2,140	8	37,397	3,159	1
Total sl. during 1950 ..	263,073	4,303	810	11	50,047	2,816	..

CARCASES TOTALLY CONDEMNED DURING THE YEAR 1951

———	Swine	Oxen	Buffaloes	Sheep	Goats
Caseous Lymphadenitis ..	..	..	..	2	..
Cysticercus Cellulosae	29	..	..	..	..
Dropsy	..	1	1	..	7
Emaciation (e Dropsy)	..	4	7	..	..
Erysepilas	4	..	..	..	..
Gangrenous Pneumonia ..	..	..	..	2	1
Generalized Bruising	..	1	..	..	..
Generalized Melanosis	..	..	1	..	..
Jaundice	2	10	2	3	1
Moribund	1	..	..	5	..
Pyaemia	2	2	..	..	..
Pyrexia	15	4	2	45	..
Sarcosporidiosis	1	..	..	..	..
Septic Metritis	..	2	1	..	..
Septic Pericarditis	..	..	..	1	..
Septicaemia	..	..	1	..	..
Transit Fever	..	..	..	7	..
Tuberculosis	1	2	..	..	..
Total condemned during 1951 ..	55	26	15	65	9
Total condemned during 1950 ..	84	14	5	38	1

REPORT FOR THE YEAR ENDING 31ST DECEMBER, 1951

——	Swine	Oxen	Buffaloes	Horses	Sheep	Goats	Deer
Number slaughtered ..	238,451	4,246	2,140	8	37,397	3,159	1
Died in pens	119	5	13	..	56	8	..
Died in depot.. ..	166	..	..	..	..	..	..
Carcases condemned ..	55	26	15	..	65	9	..
Diseased organs, etc., cond. and dest. in tons ..	6.2	4.1	4.7	..	1.8	.1	..

CASES OF PARTIAL CONDEMNATION

——	Swine	Oxen	Buffaloes	Sheep	Goats
Abscess	9,277	5	9	6	1
Adhesions	..	..	..	1	1
Angiomatosis	..	1	..	..	..
Arthritis	..	8	..	..	..
Bruising and/or Fracture ..	3,289	96	14	56	2
Caseous Lymphadenitis ..	..	..	..	4,213	..
Cirrhosis	63	..	1	5	..
Congestion	955	27	32	961	3
Cysts	384	7	25	98	2
Cysticercosis..	4	12	1	..	..
Fascioliasis	..	1,502	737	27	78
Fatty Infiltration	21	64	11	476	2
Foot Rot	..	4	..	1	1
Hydronephrosis	57	..	..	1	..
Inflammation	342	51	83	29	2
Injuries	2	1	..	1	..
Maggots	..	..	..	10	..
Mammitis	..	5	..	..	..
Mastitis	1	4	..	..	..
Melanosis	..	..	..	66	3
Metritis	2	2	2	..	1
Necrosis	62	..	..	..	..
Nephritis	157	1	14	2	1
Onchocerciasis	..	320	..	..	..
Parasites	569	..	..	..	..
Pericarditis	12	1	5	1	..
Peritonitis	100	..	2	..	..
Pleurisy	222	1	13	74	..
Pneumonia	250	10	14	17	6
Pregnancy	60	41	17	..	1
Sarcosporidiosis	..	..	468	..	..
Strongylosis	9	..	3	135	..
Tuberculosis	1	17	..	..	..
Urticaria	1	..	..	..	..

SANITARY INSPECTORS DEPARTMENT
1951

SANITARY INSPECTORS DEPARTMENT

STAFF AND ADMINISTRATION

At the beginning of the year, the Inspectorate Staff comprised 2 Divisional Sanitary Inspectors in charge of the North and South Divisions respectively, 24 qualified and 5 probationary Sanitary Inspectors.

The year opened with a re-organisation of the Sanitary Department. A new scheme which was duly approved by the Council, was introduced for the sanitary administration of the City Area. To implement this scheme, the City Area was re-divided into 24 Sanitary Districts and 6 such districts were grouped to form one sub-division so that there were 4 sub-divisions. In addition, an independent section for dealing with Food and Drugs was created.

On 1st February, 4 qualified Sanitary Inspectors were promoted to fill the approved appointments as Senior Sanitary Inspectors in charge of each Sub-division respectively. Two other Inspectors were appointed to carry out the work of Food and Drugs Inspectors in charge of the North and South Divisions respectively.

Vacancies caused by the implementation of the scheme were duly filled and the Sanitary Section brought up to strength during July. The new probationers were attached to the A.M.D. for training until September when they joined the main office.

Since the appointment of the Disinfecting Officer in 1950, this officer has been detailed for duty at Middleton Hospital and did not return to the main office for disinfecting work until September 1951. During the intervening period the duties of the Disinfecting Officer were carried out by a Sanitary Inspector in rotation.

To provide relief for the Abattoir Staff as the result of sick and vacation leave, one qualified Sanitary Inspector was seconded to that department off and on for most of the time during the year. In addition, 2 qualified Inspectors were sent for part time duty as the result of a change of working conditions in that department and, commencing from July, full time duty (including Sundays and holidays) was carried out by 2 qualified Inspectors in weekly rotation owing to a change from day to night slaughter. A probationary Inspector in rotation was attached to the Abattoirs for training throughout the year.

Relief was also provided by the Inspectorate Staff to the Infant Welfare Department on request for over three months when one qualified Inspector acted in the capacity of Municipal Vaccinator.

One probationary Sanitary Inspector was seconded to act as Superintendent Christian Cemeteries Bidadari since July on the death of the holder of the post.

One qualified Inspector resigned in September and another qualified Inspector proceeded to United Kingdom on study leave during August.

The total Inspectorate Staff as on 31st December, 1951, was 2 Divisional Inspectors, 4 Senior Sanitary Inspectors, 18 qualified and 10 probationary Sanitary Inspectors. Although this appeared to be only one under approved strength, caused by the resignation of a qualified Inspector in September, it must be appreciated that in reality, the Inspectors have been carrying out their duties in the maintenance of sanitary standards in their districts under great stress on account of the numerous calls for assistance from other sub-departments throughout the year. I would, therefore, like to place on record that, in spite of these disruptions in their routine, the Inspectors have performed their duties exceptionally well.

SANITARY WORK

There were 7,341 man-working days during the year. Of these 535 days vacation and 120 days sick leave were granted. 365 days (including Sundays and holidays) were spent in office and/or Middleton Hospital on standby duty. The remaining 6,001 man-working days were utilised as follows:—

House-to-House Inspections

159 days were spent on house-to-house inspections of a routine nature with 1,642 houses inspected. Notices were served on the owners to carry out repairs to their premises where necessary and in addition to these, a total of 875 limewash notices were served on the various occupiers.

KAMPONG INSPECTIONS

Kampong inspections were carried out mainly in connection with kampong sanitation and the enforcement of the Municipal Swine By-laws. 291 man-working days were spent during which 5,732 were inspected.

The Municipal Swine By-laws (1948) have been amended during the year and the areas in which pigs were prohibited have been extended to cover certain suburban districts in the North Division of the City on account of the development of housing estates in those areas. Prohibition Notices were served on 1,018 pig rearers during March, April and May and summary action followed towards the latter part of the year.

COMPLAINTS

A total of 1,042 complaints were received from the general public during the year and were made up as follows:—

Mosquito complaints	444
Other complaints	598
Total ..	1,042

In this connection, a total of 4,915 visits were made by Sanitary Inspectors with 2,794 re-inspections of premises.

FOOD AND DRUGS

Sampling

423 samples for chemical analysis were taken during the year comprising the following:—

Coffee:—	
Coffee Powder	5
Ground coffee	8
Coffee Mixture	25
Coffee and Chicory ..	1
Cordials:—	
Orange Juice	2
Lime Juice	1
Dyes:—	
Orange	1
Green	1
Fish, canned	15
Flour, Green pea	1
Margarine	1
Carried forward ..	61

Brought forward ..	61
Peppers:—	
Pepper (plain)	3
Pepper powder	4
Pepper mixture	4
White pepper	3
Pineapples, canned ..	6
Sauces:—	
Sauce (plain)	1
Sauce, bean	1
Sauce, chillie	1
Sauce, tomato	2
Milks:—	
Creamy milk	2
Fresh milk	138
Recon. milk	1
Skimmed milk	4
Sweet Cond. milk ..	6
Carried forward ..	237

	Brought forward ..		237
Oils:—			
	Cooking oil	.. ..	1
	Cooking product	.. ..	13
	Edible Oil	.. ..	4
	Ghee ..	.. ..	4
	Gingerly oil	.. ..	2
	Groundnut oil	.. ..	4
	Olive oil	.. ..	1
	Salad oil	.. ..	1
	Sausages	.. ..	6
	Sugar, icing	.. ..	1
	Sweets, Chewing	.. ..	1
	Carried forward ..		275

	Brought forward ..		275
Waters:—			
	Aerated waters	.. ..	16
	Drinking water	.. ..	2
	Water from Soda Fountains	..	82
	Well water	.. ..	34
Whiskey:—			
	Whiskey	.. ..	2
Miscellaneous:—			
	White wax	.. ..	1
	Concen. Drill Water	..	2
	Lini. Turpentine	..	1
	Camphorated oil	..	8
	Total	..	423

In addition, 22 bacteriological samples were taken comprising 16 ice-cream, 5 canned pineapple and 1 ice-popsicle.

With the appointment of 2 Inspectors to deal with Food and Drugs a wider range of products could be sampled and regular inspections of premises with special regards to the soundness or otherwise of foodstuffs in general could be carried out. In this connection, Food and Drugs Inspectors paid a total of 3,838 visits to premises including markets and foodstalls, and made 2 investigations into complaints of food.

The number of samples taken during the year under report showed a small increase over that of the preceding year. It is anticipated that more can be achieved as more experience is gained by the Food and Drugs Inspectors and a systematic routine worked out.

Unsound Food

The following quantities of foodstuff were found to be unsound or otherwise contravening the Food and Drugs Regulations, and were destroyed:—

Assorted Provisions 5 cases, 62,710 tins, 630 bottles and 466 packets
Fresh Foods 40 tons, 11 cwts, and 3 lb, 104 katties and 18 bags.

The Singapore Harbour Board Authorities were also requested to destroy the following foods which were found in their godowns in a decayed or putrefying state:—

Onions	.. 226 bags or baskets	..	Dates 4 baskets
Potatoes	.. 44 bags or baskets	..	Flour 80 bags
Sardines	.. 181 tins ..	..	Assorted Provision 159 tins

Meat Inspection

As has been mentioned elsewhere in this report, the Sanitary Inspectors assisted in the inspection of Meat at the Municipal Abattoirs. A total of 250 man-working days and 756 hours were spent in this connection.

Illegal Slaughter

Investigations and necessary action with regards to the illegal slaughter of pigs and the sale of such meat were continued as in previous years with the exception that no arrests (by City Cleansing Dept. Staff) nor seizure of meat found were made. Summary action only was resorted to.

The discontinuance of raids in conjunction with the City Cleansing Department was partly due to the recommendations of the Hawkers Enquiry Commission, and partly due to restricted powers provided under the relevant sections of the Municipal Ordinance.

The legal aspect on the question regarding the illegal slaughter of animals, however, has been placed before the C.C.s a memorandum in 1950, which is still under consideration.

Ice-Cream Hawkers

Action against unlicensed ice-cream hawkers together with the City Cleansing Dept. Inspectors was continued throughout the year as and when transport and staff were available. A total of 183 man-working days were spent.

INFECTIOUS DISEASE

The following cases of infectious disease were investigated:—

Chicken-pox ..	.. 594	C. S. M. ..	.. 5
Typhoid ..	.. 85	Poliomyelitis	.. 61
Diphtheria ..	.. 392	Typhus ..	.. 15

156 lepers were investigated and dealt with.

Throat swabs were taken from diphtheria contacts where necessary.

455 cases of infectious disease were removed to Middleton Hospital by Sanitary Inspectors on standby duty.

144 passengers signing surveillance were cautioned to report to the Health Officer for inspection.

55 premises in which Poliomyelitis occurred and their vicinities were dealt with by barrier spraying of Detrene Dip and refuse disposed of after treatment.

In the investigation of infectious disease a total of 1,966 visits and revisits were made.

INSPECTION OF PREMISES

Inspection carried out on other classes of premises not included in the above, total 39,672 visits as follows:—

Use of Night-soil as manure	62
Sawmill	77
Sauce Factories	215
Oil mills	135
Smoke observations	3
Places of Entertainment	364
Municipal Markets	889
Private Markets	595
Coffee Grinding and Roasting	79
Dry cleaners	130
Goldsmiths	141
Foundries	3
Printing Presses	396
Measuring Schools	19
Licensed premises	23,225
Unlicensed premises	2,487
Public houses	651
Native Passenger Lodging Houses	89
Labour Ordinance	36
No. of inspections for daily fines	1,284
Serving Notices	1,302
Inspecting Notices	2,188
No. of visits cautioning cases	836
Other premises	4,466
Total ..	39,672

OFFENCES AND PROSECUTIONS

923 summonses were applied for all types of infringements of the Ordinance and By-laws during the year.

Court proceedings took up 375 man-working days. There were 846 prosecutions with 748 convictions. 86 summonses were not served and 14 summonses withdrawn. One warrant was executed. Total fines amounted to $32,514.76.

NOTICES

The following is a summary of notices served:

Types of Notices	B/f	Served	Total	Complied with	Cancelled	C/f
Intimations	87	344	431	318	68	45
Limewash Notices	169	875	1,044	992	3	49
Nuisance Notices	22	60	82	48	8	26
Abatement Orders	1	9	10	6	..	4
Prohibition Orders	..	..	..	..	..	..
Mandatory Orders	1	..	1	..	1	..
Total ..	280	1,288	1,568	1,364	80	124

REPORTS TO OTHER DEPARTMENTS

As has been the practice, close inter-departmental liaison was maintained with other departments of the City Council. Matters relevant to those departments were brought to their notice as follows:—

To:—

City Cleansing Department ..	187 reports
Building Department	381 reports
Sewerage Department	94 reports
Roads Department	22 reports
Fire Brigade	19 reports
Other Departments	6 reports

The Sanitary Inspectors also assisted the Electric Department in the distribution of Notices to all licensed premises and markets, in their 'Economy in Electricity' drive.

GENERAL

The total number of visits during the year covering all categories of sanitary work was 60,540.

During the year, Inspectors carried out rounds in their districts outside normal working hours. In this connection, a total of 635 was put in.

Inspectors carried out standby duty in connection with Infectious Diseases at night throughout the year.

RETURN OF LICENCES ISSUED UNDER THE FOOD SHOP BY-LAWS DURING THE YEAR 1951

NATURE OF LICENCE		Per Annum	Number Issued	CASH RECEIVED		DETAILS OF LICENCES ISSUED											
						For One Year	For One Month	For 2 Months	For 3 Months	For 4 Months	For 5 Months	For 6 Months	For 7 Months	For 8 Months	For 9 Months	For 10 Months	For 11 Months
		$		$	c.												
BAKERIES	Bakery	48	27	1,260	00	25	..	..	..	..	..	..	1	1	..	..	..
	Biscuit Factory ..	48	5	240	00	5	..	..	..	..	..	..	..	..	..	..	..
	Cake Shop ..	48	37	1,712	00	34	..	..	..	..	1	..	1	1	..	..	..
BUTCHERS SHOPS, ETC.	Fruit Drink Factory	48	1	48	00	1	..	..	..	..	..	..	..	..	..	..	..
	Meat Shop ..	48	80	3,700	00	76	1	..	1	1	1	..	..	..	..	..	..
	Syrup Making Shop..	48	3	144	00	3	..	..	..	..	..	..	..	..	..	..	..
	Mutton Shop ..	48	1	48	00	1	..	..	..	..	..	..	..	..	..	..	..
	Margarine Factory..	48	2	96	00	2	..	..	..	..	..	..	..	..	..	..	..
	Pork Shop ..	48	22	1,056	00	22	..	..	..	..	..	..	..	..	..	..	..
	Sweets Making Shop	—	10	480	00	10	..	..	..	..	..	..	..	..	..	..	..
EATING HOUSES, ETC.	Eating House ..	48	1,032	48,928	00	1,006	2	1	1	3	3	4	6	..	1	4	1
	Coffee Shop ..	48	150	7,136	00	148	..	1	..	..	..	1	..	..	..	..	..
	Iced Water and Cold Drinks ..	48	46	2,044	00	41	1	1	..	2	..	..	..	1	..	..	..
	Soda Fountain ..	48	18	860	00	17	..	..	..	..	..	..	..	..	..	..	1
	Food Caterer ..	48	1	48	00	1	..	..	..	..	..	..	..	..	..	..	..
	Ice Cream Factory ..	48	3	144	00	3	..	..	..	..	..	..	..	..	..	..	..
	Aerated Water Factory	48	11	500	00	10	..	..	..	..	1	..	..	..	..	..	..
	Milk Sellers ..	12	98	1,176	00	98	..	..	..	..	..	..	..	..	..	..	..
	Restaurant ..	48	134	5,316	00	99	..	1	22	1	..	10	..	..	1	..	..
	Dairy Shop ..	48	3	144	00	3	..	..	..	..	..	..	..	..	..	..	..
	Food Shop ..	48	22	1,036	00	21	..	..	..	..	..	..	1	..	..	..	..
	Possession of Wild Boar Flesh ..	48	3	144	00	3	..	..	..	..	..	..	..	..	..	..	..
	Total ..		1,709	76,260	00	1,629	4	4	24	7	6	15	9	3	2	4	2

RETURN OF LICENCES ISSUED UNDER THE OFFENSIVE TRADE BY-LAWS DURING THE YEAR 1951—*continued*

NATURE OF LICENCE	Per Annum	Number Issued	CASH RECEIVED	DETAILS OF LICENCES ISSUED											
				For One Year	For One Month	For 2 Months	For 3 Months	For 4 Months	For 5 Months	For 6 Months	For 7 Months	For 8 Months	For 9 Months	For 10 Months	For 11 Months
	$		$ c.												
Blachan Store	36	3	108 00	3	..	..	..	..	..	..	..	..	..	..	..
Brick Kiln	75	2	150 00	2	..	..	..	..	..	..	..	..	..	..	..
Charcoal Making ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Dye House	18	8	144 00	8	..	..	..	..	..	..	..	..	..	..	..
Drying and Sorting Fish ..	54	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Fruit Preserving	75	2	150 00	2	..	..	..	..	..	..	..	..	..	..	..
Importation of Meat ..	..	9	2,875 50	9	..	..	..	..	..	..	..	..	..	..	..
Knacker's Yard	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Lime Making	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Lye Making	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Laundry	12	290	3,480 00	290	..	..	..	..	..	..	..	..	..	..	..
Offal Boiling	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Pottery Works	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Private Market	600	6	3,600 00	6	..	..	..	..	..	..	..	..	..	..	..
Rags and Bones Store ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Sago Factory	75	4	300 00	4	..	..	..	..	..	..	..	..	..	..	..
Sauce Factory	18	24	405 00	21	..	..	..	..	..	..	3	..	..	..	..
Sheep or Goat Pen ..	18	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Sick Receiving House ..	1	4	4 00	4	..	..	..	..	..	..	..	..	..	..	..
Soap Boiling	18	7	109 50	6	1	..	..	..	..	..	..	..	..	..	..
Sugar Boiling	75	2	150 00	2	..	..	..	..	..	..	..	..	..	..	..
Tannery	75	3	225 00	3	..	..	..	..	..	..	..	..	..	..	..
Oil Mill	18	10	180 00	10	..	..	..	..	..	..	..	..	..	..	..
Grinding Marble and Other Minerals	18	1	18 00	1	..	..	..	..	..	..	..	..	..	..	..
Coffee Roasting and Grinding Factory	18	4	72 00	4	..	..	..	..	..	..	..	..	..	..	..
Refining Precious Metals by the Acid Process	18	11	198 00	11	..	..	..	..	..	..	..	..	..	..	..
Carried forward ..	..	390	12,169 50	333	1	..	..	..	..	..	3	..	..	..	..

RETURN OF LICENCES ISSUED UNDER THE OFFENSIVE TRADE BY-LAWS DURING THE YEAR 1951—*continued*

NATURE OF LICENCE	Per Annum	Number Issued	CASH RECEIVED		DETAILS OF LICENCES ISSUED											
					For One Year	For One Month	For 2 Months	For 3 Months	For 4 Months	For 5 Months	For 6 Months	For 7 Months	For 8 Months	For 9 Months	For 10 Months	For 11 Months
	$		$	c.												
Brought forward ..		390	12,169	50	333	1	..	..	..	..	..	3	..	..	..	..
CATTLESHEDS, PONYSTABLES, COWSHEDS:																
9 Animals and Under per head @	1.50	1	7	50	1	..	..	..	..	..	..	..	..	..	..	..
10—14 Animals	15	1	15	00	1	..	..	..	..	..	..	..	..	..	..	..
15—24 ,, ...	22.50	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
25—50 ,, ...	37.50	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Over 50 ,, ...	75	1	75	00	1	..	..	..	..	..	..	..	..	..	..	..
Total ..		393	12,266	50	339	1	..	..	..	..	..	3	..	..	..	..

RETURN OF PROSECUTIONS FOR THE YEAR 1951

Offences		TOTAL					Remarks
		Prosecutions	Withdrawn	Not Served	Convictions	Fines	
Municipal Ordinance						$ c.	
Obstructions	Section 120	..	..	..	..	..	
Offensive matter flowing into Public Drain ..	„ 131	..	..	..	..	..	
Establishing a private market	„ 198	..	..	..	..	..	
Unlicensed Offensive Trades	„ 211	96	8	21	67	8,517 00	
Using night-soil or urine as manure ..	„ 213	..	..	..	..	..	
Latrine, etc. notice not complied with ..	„ 219	..	..	..	..	..	
Night-soil kept for more than 48 hours ..	„ 223	..	..	..	..	..	
Filthy premises	„ 233	24	..	..	24	440 00	
Limewash notice not complied with ..	„ 234	3	..	..	3	25 00	
Non-Compliance of notice for the destruction of rats and mice	„ 235	..	..	..	..	..	
Non-compliance of notice of demolition order of insanitary dwelling	„ 236	..	..	..	..	..	
Allowing premises to be overcrowded ..	„ 237	..	..	..	..	..	
Non-compliance with Nuisance Notice ..	„ 246	13	..	..	13	120 00	
„ „ „ Order ..	„ 247	6	1	..	5	130 76	
„ „ Closing Order ..	„ 247	..	..	..	..	..	
Non-compliance of order for demolition of house unfit for human habitation	„ 248	..	..	..	..	..	
Non-compliance with Well Notice ..	„ 254	..	..	..	..	..	
Opening Well without permission	„ 254	..	..	..	..	..	
License not exhibited	„ 381	..	..	..	..	..	
Breaches of Offensive Trades By-laws ..	..	3	..	..	3	20 00	

RETURN OF PROSECUTIONS FOR THE YEAR 1951—*continued*

Offences	TOTAL					Remarks
	Prosecutions	Withdrawn	Not Served	Convictions	Fines	
					$ c	
By-laws Sections 58 and 211 M.O.						
Unlicensed Foodshops	416	11	20	385	14,052 00	
,, Milk Vendors	25	..	11	14	330 00	
Opening licensed premises during prohibited hours ..	11	..	1	10	105 00	
Conveying milk for sale without regulation bottles ..	..	..	..	..	..	
Failing to have name and address marked upon the vehicle/can	..	..	..	..	..	
Keeping Swine in a prohibited area	43	..	4	39	595 00	
Filthy Stables, Cowsheds, etc.	..	..	..	..	..	
Breaches of the Foodshop By-laws	43	..	..	43	650 00	
Market and Slaughter Houses						
Selling vegetables within 50 yards of market .. Section 193	..	..	..	..	..	
Unsound Food .. .. .. ,, 199	..	..	..	..	..	
Slaughtering Animals except in Abattoirs .. ,, 204	64	..	3	61	2,940 00	
Market By-laws .. .. .. ,, ..	34	..	..	34	520 00	
Sale of Food and Drugs Ordinance						
Selling Adulterated Milk .. .. Section 11-1	35	..	14	21	1,970 00	
,, ,, Coffee .. .. ,, 11-1	4	..	..	4	725 00	
,, ,, Pepper .. .. ,, 11-1	1	..	..	1	..	

RETURN OF PROSECUTIONS FOR THE YEAR 1951—*continued*

Offences	TOTAL					Remarks
	Prosecutions	Withdrawn	Not Served	Convictions	Fines	
					$ c.	
Sale of Food and Drugs Ordinance—*continued*						
Selling Adulterated Camphorated Oil	1	..	..	1	50 00	
,, Milk Deficient in Fat .. .. Section 11-1	3	..	1	2	75 00	
,, Edible Oil containing unsaponiable Mineral oil	1	..	..	1	1,000 00	
,, Coffee Mixture bearing a false label	2	..	..	2	225 00	
,, Skimmed milk without a licence	1	..	..	1	..	
Importing Skimmed milk without a licence	2	..	1	1	..	
Quarantine and Prevention of Disease Ordinance						
Failing to report case of Inf. Disease .. Section 3	..	..	..	..	..	
Moving patient without permission .. ,, 19	..	..	..	..	..	
Exposing patient while suffering .. .. ,, 19	..	..	..	..	..	
Conveying patient in public vehicle .. ,, 24	..	..	..	..	..	
Failing to have child vaccinated .. .. ,, 43-1	15	..	2	13	25 00	
Failing to bring child for inspection .. ,, 44	..	..	..	..	..	
Registration of Births and Deaths Ordinance						
Failing to Register Births .. .. Section 9	..	..	..	..	..	
Failing to Register Deaths .. .. ,, 13	..	..	..	..	..	

RETURN OF PROSECUTIONS FOR THE YEAR 1951—*continued*

Offences	TOTAL					Remarks
	Prosecutions	Withdrawn	Not Served	Convictions	Fines	
					$ c.	
Destruction of Mosquitoes Ordinance						
Failing to comply with notice .. .. Section 9-1	..	..	..	..	..	
Recovery of costs of work done .. .. „ 8-1	..	..	..	..	..	
Destroying Anti-malarial Works .. .. „ 15	..	..	..	..	..	

Summary

Total	Prosecutions	846
„	Withdrawn	20
„	Not Served	78
„	Convictions	748
„	Fines	$ 32,514.76 *cts.*

N.B.:—Costs are not included in the amount of fines.

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

S. V. HOGAN,
Acting Chief Sanitary Inspector.