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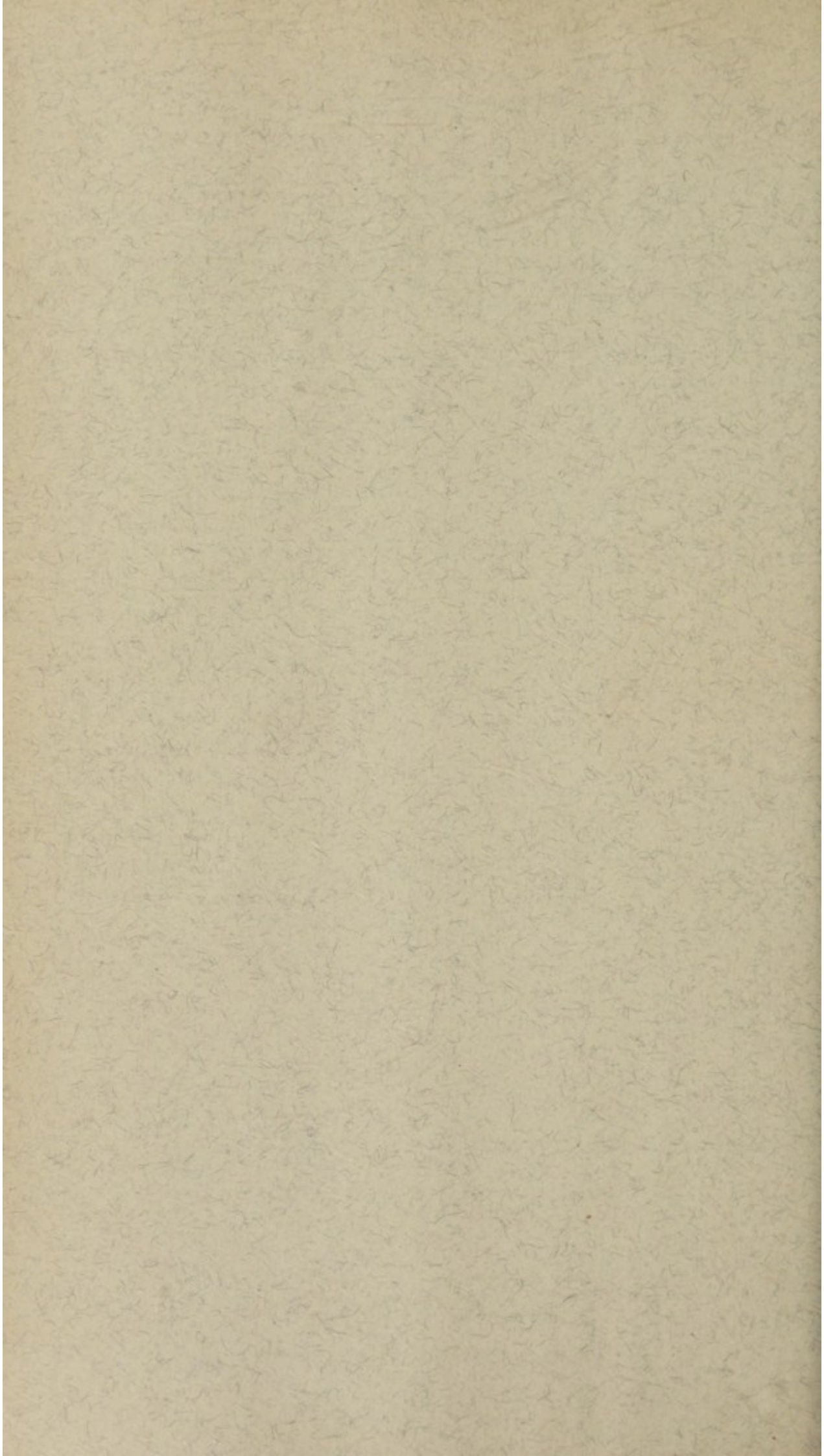
CITY COUNCIL OF SINGAPORE



ANNUAL REPORT OF THE
HEALTH DEPARTMENT
1956



PRINTED AT THE GOVERNMENT PRINTING OFFICE, SINGAPORE,
BY A. G. BANFIELD, GOVERNMENT PRINTER



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HEALTH DEPARTMENT
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BY

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City Health Officer

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CITY HEALTH DEPARTMENT

I HAVE the honour to submit my report on the working of the Health Department during the year 1956.

When reading this report and appendices it must be borne in mind that the statistics 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 slightly over 20 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 by Inspecting Officers without the aid of clinical observations or autopsies.

MID-YEAR POPULATION

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

ESTIMATED MID-YEAR POPULATION BY RACES, 1956

Malaysians	...	...	94,093
Chinese	...	...	699,197
Indians and Pakistanis	...	...	70,781
Europeans	...	...	11,852
Eurasians	...	...	10,156
Other Races	...	...	10,702
Total	...	...	<u>896,781</u>

Details concerning notifiable infectious disease, vital statistics, etc. and the work carried out by the various sub-departments are set out in appendices as follows:—

A—Notifiable Infectious Diseases.

B—General measures to combat spread of Infectious Diseases—Vaccination, etc.

C—Birth and Still-Birth Statistics.

D—General Death Rate, infant Mortality Rate, Neo-natal Rates, etc., Principal Causes of Death, Death by whom certified.

E—Markets, Food, Licences Issued, Abattoirs, Burial Grounds; and in the appended reports and returns of:—

Anti-Mosquito Department.

Analyst.

Bacteriologist.

Infant Welfare Department.

Superintendent, Middleton Hospital.

Market Inspector.

Superintendent, Abattoirs.

Chief Public Health Inspector.

Medical Officer i/c. Staff.

SUMMARY OF PRINCIPAL STATISTICS, 1956

BIRTHS AND DEATHS, ETC.—ALL RACES COMBINED

Total births registered	44,044
Total deaths registered	7,932
Excess of births over deaths	36,112
Birth Rate	49.11
Death Rate	8.84
Malaria Death Rate ... ..	.007
Infantile Mortality Rate	44.02
Neo-natal Rate	21.77
Still-Birth Rate per 1,000 live and still births	16.67
Maternal Mortality Rate per 1,000 live-births ...	.68

DEATHS BY WHOM CERTIFIED

	1955	1956
	<i>Per cent</i>	<i>Per cent</i>
Medical Practitioners	64.56	65.17
Inspecting Officers	22.22	21.09
Coroner	13.22	13.74

NOTIFIABLE INFECTIOUS DISEASES IN 1956

	<i>Cases Notified</i>	<i>Deaths</i>
Tuberculosis (all forms)	3,374 (including 539 non-residents)	668
Typhoid	100 (including 26 non-residents)	7
Paratyphoid	2 (including — non-residents)	—
Diphtheria	556 (including 131 non-residents)	59
Leprosy	169 (including 54 non-residents)	—
Poliomyelitis	42 (including 16 non-residents)	1
Small-pox, Cholera, Plague	Nil	Nil.

DEATHS CERTIFIED AS DUE TO SOME OF THE NON-NOTIFIABLE
INFECTIOUS AND PARASITIC DISEASES IN 1956

	1955	1956
Dysentery—Bacillary	3	3
Unspecified	11	4
Amœbic	11	12
Malaria	14	6
Influenza	20	24
Whooping Cough and Complications ...	1	8
Measles and Complications	22	18
Leptospirosis icterohæmorrhagica (Weil's Disease)	1	—
Tetanus	19	31

NON-NOTIFIABLE INFECTIOUS DISEASES TREATED AT THE
MIDDLETON HOSPITAL IN 1955 AND 1956

	1955	1956
Measles and Rubella	200	387
Whooping Cough	5	85
Amœbic Dysentery	136	126
Bacillary Dysentery	17	26
Clinical Dysentery	35	63

VACCINATION

	1955	1956
Age Group (0-1)	31,744	32,253
Age Group (1-5)	1,357	1,558
Age Group (5 and over)	110	120
Total Vaccinated and Revaccinated	<u>33,211</u>	<u>33,931</u>

MATERNITY AND INFANT WELFARE DEPARTMENT HOME VISITS
BY SISTERS AND HEALTH VISITORS

	1955	1956
Mothers visited by District Sisters within 10 days of confinement	19,924	18,763
Subsequent visits by District Sisters to Mothers	2,645	3,457
First visits by Health Visitors to new babies ...	31,182	29,516
Subsequent visits by Health Visitors to new babies	61,885	62,242
Visits to expectant mothers	6,706	9,346
Visits made in connection with Anti-Diphtheria Immunisation	2,766	5,561
Total visits to homes by Sisters and Health Visitors	125,108	128,885

ATTENDANCES AT CLINICS

	1955	1956
<i>Infants (0-1)</i>		
1st attendances	19,729	23,168
Subsequent attendances	122,019	157,705
Total attendances ...	<u>141,748</u>	<u>180,873</u>
<i>Preschool Children</i>		
1st attendances	3,159	17,193
Subsequent attendances	2,098	13,105
Total attendances ...	<u>5,257</u>	<u>30,298</u>
<i>Expectant Mothers</i>		
1st attendances	4,067	4,952
Subsequent attendances	9,897	13,329
Total attendances ...	<u>13,964</u>	<u>18,281</u>

DIPHTHERIA IMMUNISATION—COMPLETE COURSES

	1955	1956
Infants (0-1)	8,367	8,186
Preschool children (1-5)	4,621	10,790

In addition 1,540 children were immunised against whooping cough as well as diphtheria, making a total of 20,516.

COUNCIL FREE MIDWIFERY SERVICE

	1955	1956
Confinements attended by Council Midwives ...	1,210	1,371
Visits paid to cases discharged from Government Maternity Hospital three days or so after confinement	2,843	6,009
Visits subsequently paid to known cases of confinement not attended by Doctors or Midwives	160	164

CONDUCTION OF CONFINEMENTS

	1955	1956
Government Maternity Hospital	22,238	25,112
Private Maternity Homes and by Private Doctors	3,159	3,438
Private Midwives	15,879	14,876
Council Midwives	1,210	1,371
No Skilled attention at confinement	971	852
Total	43,457	45,649

HEALTH OF STAFF

AVERAGE STRENGTH OF JUNIOR AND SUBORDINATE STAFF AND DAILY RATED EMPLOYEES STATIONED IN SINGAPORE IN 1956

*(a) Approximate number of Junior and Subordinate Staff stationed in Singapore including temporary staff paid out of "Extra Clerical and Technical Assistance Votes" including females	3,098
†(b) Approximate number of Daily Rated Employees stationed in Singapore including females and juveniles	9,359

	Staff (a)	Daily Rated Employees (b)	Total (a) and (b)
New cases attended at dispensaries (including accidents)	8,239	38,127	46,366
Total attendances including first visits at dispensaries	22,017	101,165	123,182
Examination for physical fitness	906	1,487	2,393
Visits paid to homes by M.O. i/c. Staff	79	644	723
Cases treated by Private Doctors	1,904	8,526	10,430
Days Sick Leave granted (excluding leave under Workmen's Compensation Ordinance) including leave on account of Tuberculosis by:—			
(a) M.Os. i/c. Staff	12,254	53,753	66,007
(b) Private Practitioners	5,329	22,350	27,679
(c) Hospitals	4,649	26,077	30,726
Total	22,232	102,180	124,412
Leave granted under Workmen's Compensation Ordinance	24	8,505	8,529
Days leave granted on account of Tuberculosis	1,445	1,963	3,408
Average number of days sick leave, excluding leave under Workmen's Compensation Ordinance including tuberculosis leave granted per person employed in Junior, Subordinate and Daily Rated Employees and Temporary Staff in 1956	7.2	10.9	9.9

* Figure obtained by Assistant Secretary (Establishments) from Departments.

† Figure obtained from Establishment Officer (Labour).

All the open vote staff are now on the medical record card system. This is proving very satisfactory and it is intended to extend this system to the established junior and subordinate staff. When this is done it will be possible to obtain more information regarding the health of the staff.

TYPHOID

There were 74 cases of typhoid fever in City residents reported during the year against 100 cases in the previous year. The number of cases admitted to Middleton Hospital was 76 including 15 from the Rural Area. Among these cases there was one death. The source of infection was not traced in any of these cases which were scattered throughout the town.

DIPHTHERIA

The incidence of diphtheria continues to increase. There were 425 cases with 59 deaths, notified during the year. The figures for the previous four years are as follows:—

<i>Year</i>			<i>Cases Notified</i>	<i>Deaths</i>
1952	...	...	352	86
1953	...	...	245	56
1954	...	...	267	39
1955	...	...	347	44

This is the more unfortunate because diphtheria can be prevented by immunisation. Throughout the year, as in previous years, our Health Visitors advised mothers of infants to have them immunised against diphtheria but the results have been very disappointing. Towards the end of the year, in conjunction with Government, a publicity campaign was instituted and there was a reasonably good response particularly among children over one year of age. It appears that parents do not appreciate the danger of diphtheria and are not willing to spare the time necessary to take their children for immunisation or are afraid of the slight reaction which sometimes occurs. Propaganda will be intensified. (At least 70 per cent of the infants will require to be immunised before the campaign can be said to be satisfactory.) As usual, many of the cases admitted to hospital were in an advanced state of the disease and required early tracheotomy. During the year, 111 tracheotomies were carried out in the hospital.

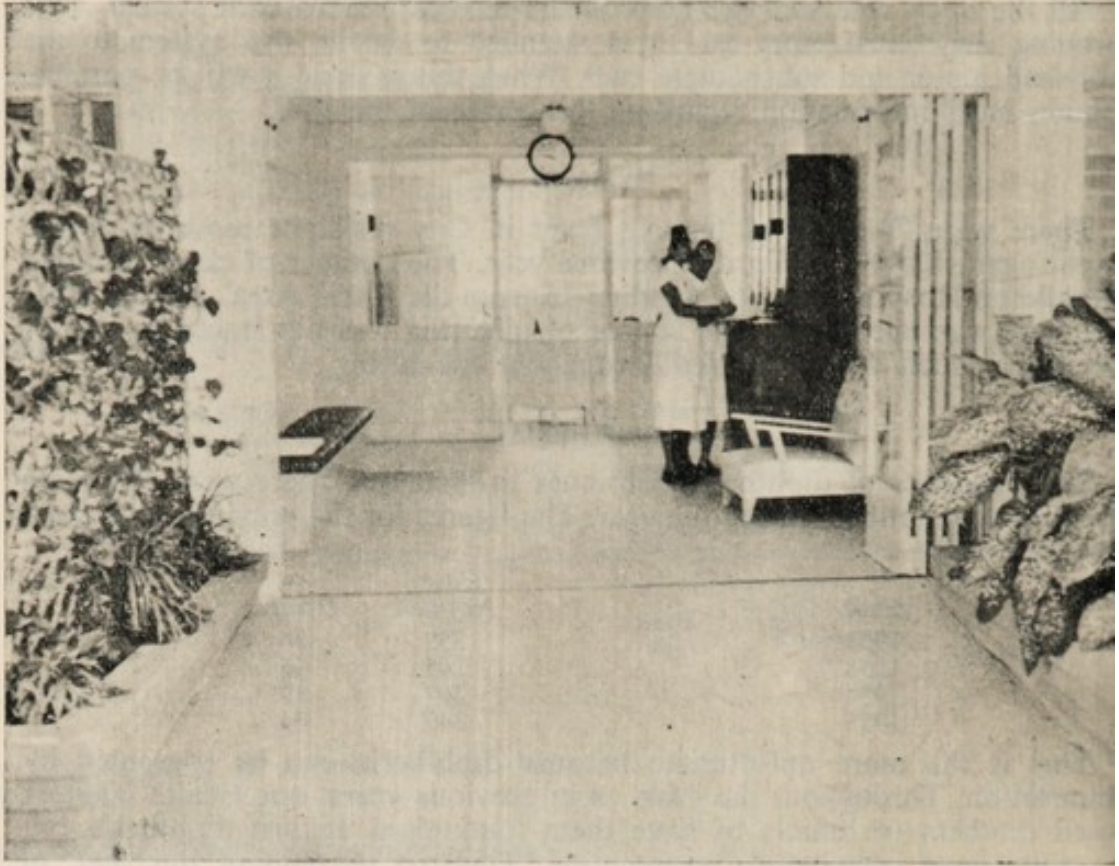
During the year a total of 20,516 children under 5 years of age were immunised against diphtheria. This number will not appreciably effect the incidence of the disease.

POLIOMYELITIS

Towards the end of the year there was an increase in the incidence of poliomyelitis. A total of 26 cases were notified in the City Area during the year as against 9 last year. This was not unexpected, and it is not anticipated that the outbreak will reach serious proportions. Out of 42 cases reported from Middleton Hospital and the Military Hospital during the year, 32 cases were under 5 (five) years of age. Of the 10 over five years of age, 6 were Europeans which is a disproportionately high figure and suggests that the immunity is lower among Europeans than among the local population.

MIDDLETON HOSPITAL

A new 30-bed cubicle block costing \$159,091 was opened during the year. Mr. Middleton-Smith, Acting President of the City Council performed the ceremony. Work on another 30-bed ward, on the site of a temporary building erected during the Japanese occupation, was also begun during the year.



Entrance to Cubicle Block—Middleton Hospital.



Six-Bedded Ward in Cubicle Block—Middleton Hospital.

The additional beds are badly needed as the number of admissions to the hospital has risen considerably during recent years, as the following figures show:—

1953	1954	1955	1956
2,049	2,914	3,312	3,831

A canteen and changing room for the staff costing \$77,933 was also open during the year.

DEATH AND INFANTILE MORTALITY RATES

The crude death rate per thousand of population and the infantile mortality rate per thousand live births for the year were again the lowest ever recorded being 8.84 and 44.02 respectively. As I stated in my opening paragraph the population of Singapore has an abnormal population structure and there is a high proportion of young people. The death rate is not corrected for transfers nor is it based on a standard population.

The main causes of death were bronchitis and pneumonia (1.15 per 1,000), tuberculosis (.74 per 1,000), diarrhoea and enteritis (.57 per 1,000), and diseases of early infancy (.81 per 1,000). All these are less than the corresponding proportions for 1955 with the exception for bronchitis and pneumonia which shows a slight increase. The death rate for tuberculosis shows a very big drop from 1.02 per thousand last year. For the purposes of comparison the following table may be of interest:—

<i>Tuberculosis Death Rate per 1,000 Living</i>							
1931	1936	1947	1951	1953	1954	1955	1956
3.089	2.868	2.350	1.717	1.08	1.00	1.02	.74

There were 2,835 cases notified during the year compared with an average of 2935.8 for the past five years, so that the lower death rate does not apparently reflect any lowered incidence of the disease.

MALARIA

The recorded death rate from malaria continues to decrease and was .007 per thousand compared with .017 per thousand in 1955. There were 48 cases of malaria reported from hospitals and dispensaries during the year of which 33 gave addresses within the City. These cases were investigated with the exception of 2, who could not be traced at the address given. All were found to be imported cases or relapses of previous infection. From this it appears that the City was free from malaria during the year.

Although the larvæ of malaria vectors, *A. sundaicus* and *A. maculatus* were found on 15 occasions, only in a few cases were the breeding places within the City Area, the others being in connection with City Council works outside the City. No malaria vector mosquitoes were caught in the human bait traps which were set throughout the year. Nevertheless, this freedom can only be maintained by continual vigilance. The cost of anti-malarial control was \$1,072,561.78 which is approximately \$1.19 per head of population.

The areas under permanent control were extended by the construction of a further 723 yards of concrete anti-malarial drain and 533 yards of sub-soil pipe lines.

The public now expect comparative freedom from "nuisance" mosquitoes and the cost of oiling, which is largely directed towards the control of these mosquitoes, was \$182,626.20. In all, 114,565 gallons of anti-malarial mixture were used as well as other insecticides such as dioldrex, gammexane, etc. Much of this oiling is made necessary by the existence of unmade up drains on private roads and land occupied by squatters, as well as by breeding places

created by building operations. It would be possible to reduce the expenditure on oiling very considerably if the City Cleansing Department were able to undertake the cleaning of roadside drains of private roads. Power to do this, it is hoped, will be obtained under the new Local Government Ordinance which is at present under consideration. At present powers for dealing with such drains are quite inadequate.

Aedes Control

During the year the question of the possibility of yellow fever being imported by air into Singapore came under consideration. A survey was carried out under the direction of Mr. McDonald of the Division of Entomology, Institute of Medical Research, Malaya. The report showed that the *Aedes aegypti* indices, in the five areas examined, range from 9 to 30 per cent which would give an average for all premises of 16.5 per cent, but it is estimated that the true index is probably about 25 per cent. In addition *Aedes albopictus*, another potential vector of yellow fever, is commonly found in Singapore. We must therefore not lose sight of the potential danger of yellow fever in Singapore.

Aedes aegypti is a domestic breeding mosquito, i.e. it breeds in collections of water, in and round houses, in empty tin cans, coconut shells, etc. though the public can do a great deal to reduce the breeding of this mosquito. Under the present legislation in Singapore the complete control of *Aedes aegypti* is not possible. New legislation to make it an offence to have *Aedes aegypti* breeding on premises would be required before the breeding of this mosquito could be controlled. At present the Government controls *aedes* breeding round the airport and requires persons coming from areas infected with yellow fever to have been inoculated against the disease. Further investigation into the whole question is under consideration by Government.

ANALYST DEPARTMENT

The Analyst report contains an interesting account of the work done on the treatment of water, particularly at the Tebrau Works, where activated silica flocculation and prefiltration liming increased the output of the plant designed to treat 10 million gallons per day, and capable in practice of treating 10 million gallons per day, to 26 million gallons per day.

The extension to the Laboratory on the roof was completed during the year. This has greatly alleviated the former overcrowded conditions under which the staff were working but it should be borne in mind that the Laboratory will possibly need further extension in the near future. It is, however, not possible to plan this at the moment because of the uncertainty as to the future functions of the City Council when the new Local Government Bill comes into force. The extension costs \$56,300.

FLUORIDATION

Fluoridation of part of the water supply was begun in the Bukit Timah Filters. This was a pilot scheme and treated only a small part of the water supply. It is intended to fluoride the water to 0.7 parts per million. It is to be expected that the whole water supply will be treated before the end of the next year.

The main effect will be on children whose teeth are still developing, i.e. children under the age of seven years when the permanent teeth are still in the process of being formed. From the experience in other parts of the world it would appear that we can expect a 50 per cent reduction in dental caries in these children.

The Government Dental Department have carried out surveys both in Singapore and Federation and will be in a position to assess the value of fluoridation of the water supply in Singapore in about seven years although some effect will be seen earlier.

DENTAL CARIES

The Council has agreed to allow Government to establish a dental surgery at the Prinsep Street Clinic to provide dental treatment for mothers attending the clinic. It is expected that this service will be extended to the other Maternity and Infant Welfare Clinics run by the City Council. The service will begin as soon as the premises are altered and the equipment put in. Government will supply the equipment and the services of Dental Surgeon, the City Council merely being responsible for the premises.

FOOD AND DRUGS EXAMINATION

During the year we again found Japanese Star Anise being sold in shops in Singapore. As this variety of tar Anise is toxic, unlike the Chinese variety which is used as a flavouring agent, the stocks of Japanese Star Anise were seized under the Sale of Food and Drugs Ordinance and destroyed under a disposal order from the Minister of Health. Towards the end of the year imported apples and grapes were found to be contaminated with arsenic. The public were advised by press and radio that they should peel or wash thoroughly all imported fruits before eating. The importers and trade representatives of the countries concerned have been advised that they should take steps to ensure that imported fruits do not have arsenical deposits on them.

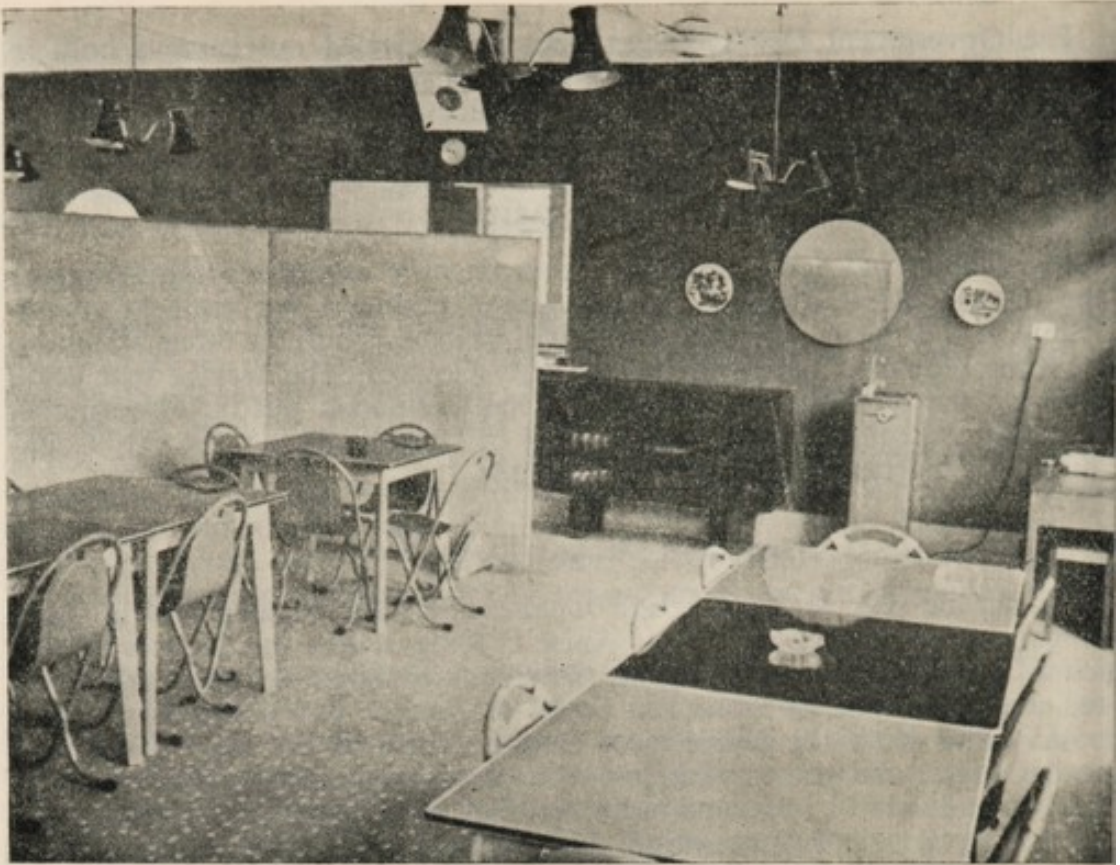
Owing to the Chief Food and Drugs Inspector being on study leave in Australia and to other Senior Inspectors of the department being on leave, a number of officers acted in these posts during the year. This was found to be unsatisfactory in that there was a lack of continuity.

During the year amendments to the Sale of Food and Drugs Ordinance were made with the purpose of giving better protection to the public against the sale of food containing injurious ingredients and against misdescription of food and drugs; and to provide fuller powers to secure that food is not contaminated in the course of preparation, distribution or sale. New regulations under the Ordinance are at present under consideration, which are required to give effect to the amendments of the Ordinance. It is to be hoped that they will not be long delayed.

INFANT WELFARE DEPARTMENT

The annual number of births in Singapore continued to increase. The work of the Infant Welfare Department is therefore correspondingly increasing. The Infant Welfare Clinics have been increased to seven to deal with this. Two new Clinics, one at the junction of McPherson Road and Aljunied Road, and the other at Odin Square off Alexandra Road, were opened during the year. The Clinics cost \$75,337 and \$76,165 respectively. The Colonial Development and Welfare Fund made a grant of \$45,554 towards the cost of Odin Square Clinic, and \$55,264 towards the cost of the Infant Welfare Clinic opened last year at Kim Keat Road which cost \$95,000. The opening ceremonies of the two new Clinics were performed by Mrs. Robert Eu, Vice-Chairman of the Health Committee, and Mr. J. T. Rea, President of the City Council.

Work is proceeding on the new Institute of Health which will contain a Maternity and Infant Welfare Clinic and is expected to be opened next year. This Clinic will replace the existing Clinic in two shop houses belonging to



Interior View of Staff Canteen—Middleton Hospital.



Waiting Room in Maternity and Infant Welfare Clinic

the Singapore Improvement Trust at Guan Moh Terrace which are quite inadequate for the numbers attending. During the year the City Council agreed on a tentative plan for additional new Clinics in the areas which the Improvement Trust is developing or redeveloping. The plan visualizes 12 Clinics to be constructed over the next 10 to 15 years bringing the total number of Clinics to 19.

During the year our Sisters and Health Visitors paid 128,885 visits to the homes of mothers and infants compared with 125,108 in 1955. The number of new infants seen at the clinics was 23,168 as compared with 19,729 in the previous year. The total number of attendances was also considerably higher than the previous year, being 180,873 compared with the previous year's attendances of 141,748. The number of confinements without skilled attention also fell slightly from 971 in 1955 to 852 in 1956. The number of confinements attended to by City Council midwives increased from 1,210 to 1,371. The opening of two new clinics necessitated recruitment of more staff, and the new nurses are being given training by the doctors and sisters in the department.

It is expected that in the near future the Government will be able to run courses for training Health Visitors in the new Institute of Health which is under construction. In the meantime two Health Visitors, Mrs. Fong Yit Fie and Mrs. Fong Ngit Eng went during the year to Australia under the Colombo Plan to take the same course in Maternity and Child Health as the two who returned from Australia last year.

The Lady Assistant Health Officers working in the clinics are also being trained. Dr. Maggie Lim, the Senior Assistant Health Officer obtained the Diploma in Public Health at the University of Malaya and Dr. N. S. Mahalingam went to the University of Malaya to do the same course during the year. I consider that it is of very great importance that the staff should be thoroughly trained.

Finally I would like to say that the staff cannot do their best work under the present conditions in the clinics, due to overcrowding and rush of work, and in the mothers' homes, due to the large number of visits they have to pay to the family. The public is becoming better educated and more appreciative of their service and the Council must be prepared to expand the staff to give this service both in the clinics and in the homes.

MASTER PLAN

The Master Plan for Singapore was published and put on display at the beginning of the year by the Government so that land owners and others might have the opportunity of objecting to proposals. I consider that the implementation of the Master Plan is of the greatest importance to the future health of Singapore. I hope that Government will be able to implement it fully.

The new housing areas already built by the Improvement Trust at Queensway speak for themselves. These areas with their open spaces, schools, well planned shopping areas and markets are a very marked contrast to the old areas of the City.

The Master Plan delineated a number of residential areas as attap areas where plank and attap dwellings or other dwellings of a temporary nature may be permitted. Many of these are in the City Area and the Council have agreed to permit temporary buildings without the submission of plans in these areas.

It is intended that in the areas concerned, surveys will be carried out and roads and drains delineated. It is to be hoped that this will be done early since already unauthorised building in these areas is taking place and



Immunisation against Diphtheria



Extension of Analytical Laboratory.

not checked, will lead to creation of large slum areas without proper roads and drains. Many of the new buildings are of a barrack type of single storey shop house which are not in themselves very objectionable but which, if allowed crowded together, undrained, and without proper access for scavenging and night soil removal, will create a grave menace to health in the future.

The first propaganda undertaken by the Council has been in connection with diphtheria immunisation. This has proved very successful and many infants were immunised during the month of December. Further propaganda and health education will be carried out next year.

The City Council has approved a sum of \$4,000 for purchase of projectors, etc. for health education and \$5,000 for running expenses, purchase or hire of films, posters, etc. We will not be able to start this until the lecture theatre which we expect to get on the ground floor is completed. When this is available we will commence education of selected food handlers such as employees of ice cream factories, eating houses, etc.

MARKETS

Kandang Kerbau Market was extended by roofing over the court yards in front and rear of the market. This extension allowed the creation of 63 new stalls. The cost was \$67,560.

STAFF TRAINING

Mr. James Bennett, Chief Food and Drugs Inspector and Mr. John Ferguson, Public Health Inspector went to Australia on a study course under the Colombo Plan in January and returned in December having obtained the Certificate for Inspectors of Meat and Other Foods of the Royal Society for Promotion of Health.

Mrs. Louise Wong, Sister in Middleton Hospital, returned from a study leave in England under the Sino-British Scholarship Fund having obtained with the Fever Nursing Certificate and the Royal College of Nursing Certificate in Hospital Administration (Nursing).

Sister Tan Gek Kim of Middleton Hospital returned from Australia under the Colombo Plan having passed the Infectious Diseases Nursing course and the College of Nursing, Australia, course for the Ward Sister's Diploma. The training of members of the Maternity and Infant Welfare Department staff has already been mentioned.

Two Public Health Inspectors, Mr. J. A. Then and Mr. M. G. Byrne were selected for training under the Colombo Plan in Australia and started correspondence courses during the year. They will go to Australia for further training next year with a view to obtaining the Certificate for Inspectors of Meat and Other Foods.

STAFF

Dr. Chan Tuck Kin and Dr. Lim Toan Kiaw were appointed to the Maternity and Infant Welfare Department on 1st February, 1956. Dr. K. Gunakaran was appointed as Assistant Bacteriologist on 4th November, 1956. Dr. Chan Joo Cheng, Assistant Health Officer (Staff) went on leave prior to retirement on 14th March, 1956. Dr. V. V. V. Menon, Assistant Health Officer (Staff) resigned from the service on 1st October, 1956 and Dr. V. K. Thomas, Assistant Health Officer (Staff) resigned on 29th November, 1956.

T. I. Williams was appointed Assistant Health Officer (Staff) on 1st October, 1956.

H. R. MORRISON, M.B., CH.B., D.P.H.,
City Health Officer.

Table 1
NOTIFIABLE INFECTIOUS DISEASES

The number of cases notified in persons who were stated to be ordinarily resident within the City Area in 1956 and in the previous five years are shown in the table which follows:—

	1951	1952	1953	1954	1955	Average for 5 years	1956
Small-pox ..	..	..	..	..	..	..	..
Plague ..	..	..	..	..	..	..	..
Cholera ..	..	..	..	..	..	..	..
Typhoid Fever ..	85	136	89	120	100	106.0	74
Para-typhoid Fever ..	1	2	2	..	..	1.0	2
Diphtheria ..	392	352	245	267	347	320.6	425
Cerebro-Spinal Fever ..	5	5	5	2	1	3.6	1
Typhus Fever* ..	15	16	9	15	4†	11.8	5†
Scarlet Fever ..	..	..	1	..	..	..	..
Leprosy ..	142	95	124	120	120	120.2	115
Poliomyelitis ..	60	45	30	53	9	39.4	26
Anthrax ..	..	..	..	..	..	..	..
Puerperal Fever ..	69	78	43	52	60	60.4	64
Erysipelas ..	8	16	15	13	10	12.4	3
Chicken-pox ..	594	413	713	1,057	1,687	892.8	1,402
Tuberculosis ..	3,219	2,990	2,911	2,580	2,979	2,935.8	2,835
Total ..	4,590	4,148	4,187	4,279	5,317	4,494.2	4,952

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

† 2 Flea Borne and 2 Mite Borne.

Table 2

NOTIFIABLE INFECTIOUS DISEASES BY RACES FOR THE YEAR 1956

—	Euro- peans	Eura- sians	Chinese	Malays	Indians	Others	Total
typhoid Fever ..	— (1)	— (1)	61 (18)	4 (1)	9 (5)	— (—)	74 (26)
diphtheria ..	— (—)	3 (1)	382 (123)	23 (6)	17 (1)	— (—)	425 (131)
chicken-pox ..	2 (—)	52 (4)	444 (95)	93 (29)	802 (207)	9 (—)	1,402 (335)
interperal Fever ..	— (—)	— (—)	21 (1)	36 (1)	7 (—)	— (—)	64 (2)
poliomyelitis ..	5 (2)	— (—)	12 (7)	2 (3)	7 (4)	— (—)	26 (16)
cerebro-spinal Fever ..	— (—)	— (—)	1 (—)	— (—)	— (—)	— (—)	1 (—)
tuberculosis ..	1 (—)	12 (5)	2,432 (423)	201 (77)	185 (34)	4 (—)	2,835 (539)
para-typhoid Fever ..	— (—)	— (—)	2 (—)	— (—)	— (—)	— (—)	2 (—)
typhus ..	— (—)	— (—)	97 (48)	3 (3)	14 (3)	1 (—)	115 (54)
typhus Fever ..	— (—)	— (—)	1 (—)	— (—)	4 (—)	— (—)	5* (—)
typhoid ..	— (—)	— (—)	2 (—)	1 (1)	— (—)	— (—)	3 (1)
small-pox ..	— (—)	— (—)	— (—)	— (—)	— (—)	— (—)	— (—)
cholera ..	— (—)	— (—)	— (—)	— (—)	— (—)	— (—)	— (—)
Total ..	8 (3)	67 (11)	3,455 (715)	363 (121)	1,045 (254)	14 (—)	4,952 (1,104)

The figures not in brackets are of cases notified in persons ordinarily resident in the City Area.

The figures in brackets are Imported Cases and cases from Rural Board treated in Hospital or Institutions in the City Area but not ordinarily resident in the City Area.

* 5 Flea Borne and Nil Mite Borne.

Table 3
 NOTIFIABLE INFECTIOUS DISEASES BY MONTHS FOR THE YEAR 1956
 (Figures in brackets are cases in non-residents)

Month	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Typhoid Fever	2 (—)	4 (—)	6 (3)	4 (2)	6 (3)	9 (3)	16 (—)	5 (—)	2 (1)	2 (5)	12 (2)	6 (7)	74 (26)
Diphtheria ..	48 (11)	37 (4)	24 (7)	31 (4)	37 (14)	47 (12)	31 (18)	40 (11)	32 (9)	32 (15)	27 (11)	39 (15)	425 (131)
Chicken-pox	155 (32)	202 (45)	177 (44)	185 (37)	119 (18)	109 (31)	87 (21)	83 (24)	65 (26)	81 (22)	63 (18)	76 (17)	1,402 (335)
Puerperal Fever	8 (1)	4 (—)	8 (—)	3 (—)	3 (1)	9 (—)	5 (—)	3 (—)	4 (—)	9 (—)	2 (—)	6 (—)	64 (2)
Poliomyelitis	— (—)	1 (1)	2 (3)	1 (2)	3 (3)	1 (3)	2 (—)	— (—)	— (—)	5 (—)	4 (2)	7 (2)	26 (16)
Cerebro-Spinal Fever	— (—)	— (—)	— (—)	— (—)	— (—)	— (—)	— (—)	— (—)	— (—)	— (—)	— (—)	— (—)	1 (—)
Tuberculosis	247 (57)	240 (45)	257 (57)	257 (43)	251 (40)	277 (41)	270 (48)	245 (46)	206 (29)	208 (51)	203 (44)	174 (38)	2,835 (539)
Para-typhoid Fever	— (—)	— (—)	— (—)	— (—)	— (—)	2 (—)	— (—)	— (—)	— (—)	— (—)	— (—)	— (—)	2 (—)
Leprosy ..	7 (4)	10 (5)	20 (4)	13 (13)	10 (1)	9 (4)	9 (7)	9 (3)	6 (3)	10 (5)	5 (3)	7 (2)	115 (54)
Typhus Fever	— (—)	— (—)	— (—)	3 (—)	2 (—)	— (—)	— (—)	— (—)	— (—)	— (—)	— (—)	— (—)	5 (—)
Erysipelas ..	— (—)	1 (—)	— (—)	— (—)	— (—)	— (—)	— (—)	— (—)	1 (—)	— (—)	1 (—)	— (—)	3 (1)
Small-pox ..	— (—)	— (—)	— (—)	— (—)	— (—)	— (—)	— (—)	— (—)	— (—)	— (—)	— (—)	— (—)	— (—)
Cholera ..	— (—)	— (—)	— (—)	— (—)	— (—)	— (—)	— (—)	— (—)	— (—)	— (—)	— (—)	— (—)	— (—)
Total ..	467 (105)	499 (100)	494 (118)	497 (101)	431 (80)	464 (94)	420 (94)	385 (84)	316 (68)	347 (98)	317 (80)	315 (82)	4,952 (1,104)

Table 4

POLIOMYELITIS

CONFIRMED CASES NOTIFIED IN 1956 BY RACE, SEX AND AGE GROUPS

Table includes imported cases as well as in City Resident (Cases in service personnel and families included)

	Europeans			Eurasians			Chinese			Malays			Indians			Others			Total		
	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.
	0-5 years	..	1	1	8	8	16	1	4	5	5	5	10	14	18	32
5-10 "	1	2	3	..	..	..	..	1	1	..	..	..	..	1	1	..	..	..	1	4	5
10-15 "	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..	..	..	1	..	1
15-20 "	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	1	1
20-25 "	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
25-35 "	1	2	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	2	3
35-45 "	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
45-55 "	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Total	2	5	7	..	..	..	9	10	19	1	4	5	5	6	11	..	..	..	17	25	42

16 of the 42 confirmed cases of Poliomyelitis notified within the City Area were non-residents.

Table 5
POLIOMYELITIS CASES NOTIFIED AND CONFIRMED IN 1956
Under 5 years of age (Resident and non-resident)
Cases in Service Personnel and Families included

	0-1 year		1-2 years		2-3 years		3-4 years		4-5 years		Total under 5 years	Total over 5 years
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.		
Europeans ..	..	1	..	..	..	..	..	..	..	..	1	6
Eurasians ..	..	..	..	..	..	..	..	..	..	..	..	..
Chinese ..	2	2	2	1	2	2	2	3	..	..	16	3
Malays ..	..	..	1	2	..	2	..	..	..	..	5	..
Indians ..	1	1	3	3	1	..	..	..	..	1	10	1
Others ..	..	..	..	..	..	..	..	..	..	..	..	..
Total ..	3	4	6	6	3	4	2	3	..	1	32	10

Table 6

PERCENTAGE OF PARALYTIC AND NON-PARALYTIC POLIOMYELITIS
CASES TREATED AT MIDDLETON HOSPITAL 1955 AND 1956

	1955	1956
Total cases treated at Middleton Hospital ..	19	37
Paralytic cases	19	36
Non-Paralytic cases .. ..	..	1
Paralytic cases	100%	97%

Table 7

NOTIFICATIONS OF TUBERCULOSIS (ALL TYPES) BY SEX AND AGE
GROUPS 1956—(IN CITY RESIDENTS ONLY)

Sex	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	52	10	8	87	1,107	891	6	2,161
Females	50	12	12	40	358	202	..	674
Total	102	22	20	127	1,465	1,093	6	2,835

Table 8

INSTITUTIONS, ETC., WHENCE TUBERCULOSIS NOTIFICATIONS
WERE RECEIVED

2,835 cases of Tuberculosis (all types) in City residents and 539 in non-residents that is 3,374 in all, were notified during the year. 15 of these were not ordinarily resident in the Colony.

Notified by	R.S.T.C.	T.T.S. Clinic	General Hospital	Total R.S.T.C. and Hospitals	Private Practi- tioners	Total
Number of cases notified	1,532	921	292	2,745	629	3,374

Table 1

GENERAL MEASURES TAKEN TO PREVENT IMPORTATION AND SPREAD OF INFECTIOUS DISEASES

PASSENGERS UNDER SURVEILLANCE DURING THE YEAR 1956

Number of Passenger Undertakings received ..	59
Number of Persons under surveillance ..	76
Number of Persons seen ..	73
Number of Persons not seen and could not be traced ..	3

Table 2

HOUSES QUARANTINED, DISINFECTED, AND INFECTIOUS CASES REMOVED TO INFECTIOUS HOSPITAL, TRAFALGAR HOSPITAL

Houses quarantined ..	..	..	..
Houses Disinfected ..	..	..	890
Infectious cases removed to Infectious Hospital ..	..	..	864
Leper cases removed to Trafalgar Hospital ..	..	..	95

Table 3

VACCINATIONS BY CITY VACCINATORS, MEDICALMEN, PRIVATE AND GOVERNMENT VACCINATORS

1956

	Successful	Modified	Failed	Not seen	Total
City Vaccinators	19,404	43	87	1,565	21,099
Medicalmen	12,388	..	40	..	12,428
Private and Government Vaccinators	404	..	..	..	404
Total ..	32,196	43	127	1,565	33,931

Table 4

VACCINATION BY RACES, 1956

Race	Under 6 months	6-12 months	1-5 years	Over 5 years	Total
Chinese	16,377	8,470	1,324	103	26,274
Malays	3,172	1,515	154	7	4,848
Indians	1,672	622	64	8	2,366
Eurasians	183	70	10	2	265
Europeans	64	14	4	..	82
Others	71	23	2	..	96
Total ..	21,539	10,714	1,558	120	33,931

Table 1

BIRTHS AND STILL BIRTHS

The following is the number of births for each month of the year, the 1955 figures being also shown:—

Month	1955	1956	Month	1955	1956
January	3,231	3,410	July	3,289	3,669
February	3,118	3,289	August	3,761	3,684
March	3,422	3,259	September	3,535	3,530
April	3,454	3,644	October	3,690	3,714
May	3,572	3,758	November	3,801	4,156
June	3,673	4,111	December	3,544	3,820
Total	20,470	21,471	Total	21,620	22,573

Table 2

The Births registered by races were:—

	1955			1956		
	Males	Females	Total	Males	Females	Total
Europeans	154	175	329	161	160	321
Eurasians	175	152	327	189	135	324
Chinese	16,856	15,972	32,830*	17,867	16,631	34,500†
Malays	2,340	2,224	4,564	2,411	2,267	4,679‡
Indians	1,884	1,766	3,650	1,904	1,897	3,801
Others	196	194	390	218	201	419
Total	21,605	20,483	42,090	22,750	21,291	44,044

* Include 2 Chinese of Unknown Sex. † Include 2 Chinese of Unknown Sex.

‡ Include 1 Malay of Unknown Sex.

Table 3

The birth rate for each race in 1956 and the corresponding rate for 1955 are shown in the table which follows:—

	1955	1956
Europeans	28.77	27.08
Eurasians	33.04	31.90
Chinese	48.91	49.34
Malays	50.03	49.73
Indians	53.89	53.70
Others	39.09	39.15
All Races Combined	48.86	44.02

Table 4

The table which follows, shows the number of live-births by race and sex that occurred at the Government Maternity Hospital in 1956 and also the percentage of the total registered live-births of each race born at this hospital:—

	1956			Percentage of total births registered by race born at the Govt. Hospital	
	Males	Females	Both Sexes	1956	1955
Chinese	10,703	9,790	20,493	59.40	55.89
Indians	1,303	1,276	2,579	67.85	67.75
Malays	309	282	591	12.63	12.01
Europeans	99	98	197	61.37	60.49
Eurasians	111	88	199	61.42	59.94
Others	130	116	246	58.71	13.33
Total All Races ..	12,655	11,650	24,305	55.18	51.84

Table 5

The percentage of the total births registered by races in the census years, 1911, 1921, 1931, 1947 and in 1951-1956 is shown in the table which follows:—

Year	Total Births	Chinese	Malays	Indians	Other Races	Percentage of Total Births			
						Chinese	Malays	Indians	Other Races
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
1947 ..	30,548	24,247	3,233	2,323	745	79.3	10.5	7.6	2.44
1951 ..	34,776	26,686	3,542	2,819	729	79.61	10.19	8.11	2.10
1952 ..	36,529	28,853	3,842	3,097	737	78.99	10.52	8.48	2.02
1953 ..	39,322	31,076	4,062	3,387	798	79.03	10.33	8.61	2.03
1954 ..	40,935	32,018	4,466	3,468	983	78.22	10.91	8.47	2.40
1955 ..	42,090	32,830	4,564	3,650	1,046	78.00	10.84	8.67	2.49
1956 ..	44,044	34,500	4,679	3,801	1,064	78.33	10.62	8.63	2.42

Table 6

The Still-Births registered in 1956 and 1955 are shown in the table which follows:—

	1956			1955		
	Males	Females	Total	Males	Females	Total
Europeans	3	2	5	..	6	6
Eurasians	5	1	6	2	6	8
Chinese	242	215	457	239	227	468*
Malays	74	70	144	71	54	125
Indians	48	52	100	61	54	115
Others	7	9	16	7	3	10†
Total	379	349	734*	380	349	733‡

* Includes 2 Chinese Sex Unknown.

† Includes 2 Race and Sex Unknown.

‡ Includes 2 Chinese Sex Unknown.

3 Malays Sex Unknown.

1 Race and Sex Unknown.

Table 1
DEATHS

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	621	13.14	July	662	8.70
February	629	9.15	August	708	9.30
March	618	8.12	September	668	9.07
April	662	8.99	October	672	8.83
May	881	8.95	November	625	8.49
June	710	9.64	December	676	8.88

Table 2

The chief causes of death in 1955 and 1956 and the rate per 1,000 living are set out in the table which follows:—

	1955		1956	
	Cases	Rate per Mille	Cases	Rate per Mille
Bronchitis and Pneumonia	961	1.12	1,029	1.15
Tuberculosis	879	1.02	668	.74
Diarrhoea and Enteritis	553	.64	513	.57
Diseases of early Infancy	970	1.13	725	.81
Infantile Convulsions (up to 5 years) ..	194	.23	152	.17
Violence	501	.58	476	.53
Heart Disease	637	.74	631	.70
Old Age	462	.54	498	.56
Cancer	560	.65	579	.65
Nephritis	230	.27	220	.25
Beri-Beri	85	.10	85	.09
Diphtheria	44	.05	59	.07
Malaria	14	.02	6	.007
Dysenteries	25	.03	19	.02
Typhoid	11	.01	7	.008

Table 3
MORTALITY ACCORDING TO RACES AND AGES, 1956

Age Group	EUROPEANS			EURASIANS			CHINESE			MALAYSIANS			INDIANS AND PAKISTANIS			OTHERS			TOTAL		
	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T
	Under 1 day	1	..	1	3	1	4	131	77	208	28	24	52	16	12	28	2	1	3	181	115	296
1 day and under 2 days	66	29	95	13	9	22	8	4	12	..	..	..	87	42	129
2 days and under 3 days	1	..	1	1	37	32	69	7	6	13	2	2	4	..	..	..	46	41	87
3 days and under 4 days	31	22	53	7	3	10	4	2	6	..	..	..	42	27	69
4 days and under 5 days	19	14	33	8	3	11	3	1	4	..	..	1	30	19	49
5 days and under 6 days	24	14	38	5	3	8	..	..	..	..	..	..	29	17	46
6 days and under 7 days	1	..	1	20	9	29	2	1	3	1	2	3	..	..	..	24	12	36
7 days and under 14 days	..	1	1	..	1	1	60	24	84	12	7	19	6	1	7	..	..	..	78	34	112
14 days and under 21 days	36	21	57	11	7	18	4	2	6	..	..	..	51	30	81
21 days and under 28 days	29	10	39	8	3	11	3	1	4	..	..	..	40	14	54
Neo-Natal Deaths	1	1	2	4	3	7	453	252	705	101	66	167	47	27	74	2	2	4	608	351	959

Table 3—continued
MORTALITY ACCORDING TO RACES AND AGES, 1956—continued

Age Group	EUROPEANS			EURASIANS			CHINESE			MALAYSIANS			INDIANS AND PAKISTANIS			OTHERS			TOTAL		
	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T
	28 days and under 2 months	1	..	1	73	57	130	42	13	55	8	6	14	..	1	*2	124	77
2 months and under 3 months	1	..	1	43	42	85	27	12	39	6	3	9	77	57	134	
3 months and under 4 months	..	..	..	..	..	33	35	68	19	11	30	5	..	5	..	..	..	..	57	46	103
4 months and under 5 months	..	..	..	..	1	1	31	27	58	18	12	30	1	3	4	..	..	..	50	43	93
5 months and under 6 months	..	..	..	..	..	28	21	49	11	15	26	2	..	2	..	..	..	..	41	36	77
6 months and under 7 months	..	..	..	..	..	31	24	55	14	16	30	2	2	4	1	..	..	1	48	42	90
7 months and under 8 months	..	..	..	..	..	18	17	35	10	11	21	4	1	5	..	..	..	..	32	29	61
8 months and under 9 months	..	..	..	..	..	24	24	48	9	16	25	1	3	4	..	..	..	..	34	43	77
9 months and under 10 months	..	..	..	..	..	23	15	38	..	6	6	4	2	6	1	..	..	1	28	23	51
10 months and under 11 months	..	..	..	..	..	19	23	42	4	5	9	1	1	2	..	..	1	1	24	30	54
11 months and under 12 months	..	..	..	..	..	10	14	24	6	5	11	1	2	3	..	..	..	..	17	21	38
Infant Mortality	2	1	3	5	4	9	786	551	1,337	261	188	449	82	50	132	4	4	*9	1,140	798	*1,939

Table 3—continued
MORTALITY ACCORDING TO RACES AND AGES, 1956—continued

Age Group	EUROPEANS			EURASIANS			CHINESE			MALAYSIANS			INDIANS AND PAKISTANIS			OTHERS			TOTAL		
	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T
1 year and under 2 years	1	..	1	116	116	232	43	30	73	7	8	15	..	1	1	167	155	322
2 years and under 3 years	1	..	1	74	73	147	14	22	36	3	2	5	92	97	189
3 years and under 4 years	..	..	..	..	..	..	50	59	109	11	13	24	3	6	9	..	1	64	79	143
4 years and under 5 years	..	..	..	..	..	..	28	29	57	4	2	6	1	3	4	..	..	33	34	67
5 years and under 10 years	1	1	1	1	1	1	82	78	160	15	10	25	12	8	20	..	1	111	96	207	
10 years and under 15 years	1	1	1	..	..	..	44	24	68	9	5	14	3	4	7	..	..	58	33	91
15 years and under 20 years	..	..	..	..	..	..	64	38	102	12	7	19	5	2	7	..	..	83	47	130
20 years and under 25 years	1	1	2	2	2	2	68	51	119	7	10	17	8	6	14	..	..	86	68	154
25 years and under 30 years	2	1	2	2	2	2	63	35	98	12	10	22	13	7	19	..	..	109	53	145
30 years and under 35 years	1	1	1	1	1	1	68	49	117	14	15	29	23	7	30	..	..	184	73	182
35 years and under 40 years	2	2	3	2	2	2	121	66	187	17	10	27	40	4	44	..	..	238	121	359
40 years and under 45 years	1	2	3	2	2	2	184	87	271	21	23	44	31	6	37	..	..	315	146	461
45 years and under 50 years	3	3	6	2	2	4	233	125	358	31	12	43	44	4	48	..	..	419	182	601
50 years and under 55 years	8	1	9	2	2	3	310	159	469	39	15	54	60	5	65	..	..	429	199	628
55 years and under 60 years	3	1	4	2	2	4	339	161	500	33	20	53	47	12	59	..	..	395	210	605
60 years and under 65 years	..	..	..	2	2	4	339	183	522	26	20	46	27	5	32	..	..	306	206	512
65 years and under 70 years	4	1	5	3	5	8	262	184	446	15	8	23	18	7	25	..	..	181	191	372
70 years and under 75 years	1	1	1	3	3	3	155	172	327	15	14	29	7	4	10	..	..	122	173	295
75 years and under 80 years	2	1	2	2	2	4	101	149	250	11	18	29	6	4	4	..	..	50	106	156
80 years and under 85 years	1	2	3	1	1	1	40	93	133	6	9	15	2	2	4	..	..	31	69	100
85 years and over	..	..	..	..	..	..	19	56	75	6	9	15	4	1	5	..	..	6	..	..
Age Unknown	..	..	..	..	..	..	4	..	4	..	..	..	..	..	..	..	..	2	..	..
Total all ages	35	12	45	29	29	58	3,550	2,538	6,088	622	470	1,092	446	157	603	31	14	46	4,711	3,220	*7,932

* Includes 1 of Unknown sex.

Table 4
INFANTILE MORTALITY BY RACES, 1947-1956

Year	Europeans	Eurasians	Chinese	Malays	Indians	Others	All Races
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
1952	35.7	45.6	71.0	120.8	64.9	102.6	75.34
1953	21.7	64.6	66.7	116.7	63.8	127.3	71.54
1954	29.5	37.2	52.5	110.4	64.3	68.1	59.66
1955	12.2	36.7	45.0	106.9	47.7	43.6	51.60
1956	9.3	27.8	38.8	96.0	34.7	21.5	44.02

Table 5

The main causes of death in infants and the rate per 1,000 live births for each disease in 1956 and 1955 are set in the table which follows:—

	1956		1955	
	Cases	Rate per Mille	Cases	Rate per Mille
Convulsions	118	2.68	179	4.25
Bronchitis and Pneumonia	404	9.17	502	11.93
Diseases of early Infancy	882	20.03	973	23.12
Diarrhoea and Enteritis	343	7.79	362	8.60
Tetanus	10	.23	16	.38
Beri-Beri	14	.32	30	.71
Congenital Syphilis	13	.30	7	.17
Total	1,784	40.50	2,069	49.16

Table 6
1956 INFANTILE MORTALITY ACCORDING TO RACE, SEX AND AGE GROUPS

Race	Sex	AGE GROUP											
		0-1 Day	1-7 Days	1-4 Weeks	0-4 Weeks	4 Weeks-3 Months	3-6 Months	6-9 Months	9-12 Months	0-12 Months			
Europeans	{ M. F.	1 1	1	1	2
	{ F. M.	1	1
Eurasians	{ M. F.	3	1	.. 1	4	1	5
	{ F. M.	1	1	..	3 1	4
Chinese	{ M. F.	131	197	125	453	116	92	73	52	786			
	{ F. M.	77	120	55	252	99	83	65	52	551			
Malays	{ M. F.	28	42	31	101	69	48	33	10	261			
	{ F. M.	24	25	17	66	25	38	43	16	188			
Indians	{ M. F.	16	18	13	47	14	8	7	6	82			
	{ F. M.	12	11	4	27	9	3	6	5	50			
Others	{ M. F.	2	.. 1	..	2	.. 1	..	1	1	4			
	{ F. M.	1	..	..	2	..	..	..	1	4
Total Races	{ M. F.	181	258	169	608	201	148	114	69	1,140			
	{ F. M.	115	158	78	351	134	125	114	74	,798			
Combined Total		296	416	247	959	336*	273	228	143	1,939*			

*Including one of unknown sex and nationality

Table 7
NEO-NATAL RATES BY RACE AND SEX (1954-1956)

	1956			1955			1954		
	Males	Females	Both Sexes	Males	Females	Both Sexes	Males	Females	Both Sexes
	Europeans	6.21	6.25	6.23	6.49	..	3.04	26.85	12.82	19.67
Eurasians	21.16	22.22	21.60	28.57	52.63	39.76	14.39	19.11	16.89
Chinese	25.35	15.15	20.43	26.58	22.23	24.46	31.24	26.28	28.86
Malays	41.89	29.11	35.69	43.59	36.42	40.10	41.43	29.78	35.83
Indians	24.68	14.23	19.47	22.82	19.82	21.37	44.39	33.90	39.22
Others	9.17	9.48	9.53	25.51	41.24	33.33	27.03	35.53	31.41
Total	26.73	16.49	21.77	27.96	23.53	25.80	33.26	27.25	30.39

Table 8

The chief causes of the neo-natal deaths in infants in 1956 and 1955 are shown in the table which follows:—

	1956		1955	
	No. of Cases	% Total Neo-natal deaths	No. of Cases	% Total Neo-natal deaths
1. Ill-defined diseases peculiar to early infancy and Immaturity	346	36.08	514	47.33
2. Infantile Convulsions	15	1.56	45	4.14
3. Atelectasis	119	12.41	97	8.93
4. Diarrhoea and Enteritis	64	6.67	177	16.30
5. Tetanus	10	1.04	15	1.38
6. Bronchitis and Pneumonia	91	9.49	4	.37
7. Congenital Malformations	64	6.67	54	4.97
8. Icterus Neonatorum	82	8.55	96	8.84
9. Injury at Birth	120	12.51	37	3.41
10. Beri-Beri .. ..	..	..	2	.18
11. Undefined or unstated causes	23	2.40	13	1.20
12. Congenital Syphilis	4	.42	3	.28
13. Diseases of Umbilicus .. ..	..	..	..	..
14. Septicaemia and Pyaemia	1	.10	..	..
15. Other diseases	20	2.09	29	2.67
Total	959		1,086	

Table 9

CERTIFICATION OF DEATHS, 1956

By whom certified	Euro-peans	Eura-sians	Chinese	Malays	Indians	Others	Total
Medical Practitioners .. ..	..	7	998	560	103	5	1,673
City Council Inspecting Officers	28	45	4,263	461	340	32	5,169
Coroner	17	6	827	71	160	9	1,090
Total	45	58	6,088	1,092	603	46	7,932

Table 10

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 years 1947—1956:—

—		1947	1948	1949	1950	1951	1952	1953	1954	1955	1956
Medical Practitioners	..	58.48	60.22	59.81	58.89	59.82	63.30	66.63	65.25	64.56	65.17
Inspecting Registrars	..	33.14	31.92	31.85	31.55	30.10	25.90	22.99	22.45	22.22	21.09
Coroner	..	8.39	7.86	8.34	9.56	10.08	10.80	10.38	12.30	13.22	13.74

Table 1

FOOD AND MARKETS

	1955 <i>Weight in katties</i>	1956 <i>Weight in katties</i>
A. Quantity of fresh fish landed and auctioned at the markets	9,026,721	8,631,255
B. Quantities of unsound foodstuffs at markets which were seized, surrendered and destroyed during the year:—		
Fish, Meat, Vegetables, Fruits and Miscellaneous	267,514	267,287
Eggs	17,275	23,583
Head of Poultry	5,228	4,331
C. Samples taken for chemical analysis during the year =	686	

Decayed and unsound foodstuffs at Godown in the Harbour Board and elsewhere and shops in the City which were seized or surrendered and destroyed during the year included 34,265 tins, 228 bottles, 489 packages, 4 tons 0 cwts. 1 qrs. 8 lb. of assorted provisions. 1,650 bottles and 0 phials of drugs were also surrendered and destroyed.

Table 2

D. Licences Issued and Fees Collected.

Year	LICENCES ISSUED			Total Fees
	Total	Food By-laws	Offensive Trades	
1955	2,197	1,769	..	\$ c. 80,972 00
			428	17,694 58
				98,666 58
1956	2,206	1,767	..	80,896 00
			439	17,907 27
				98,803 27

Table 3

THE NUMBER OF ANIMALS SLAUGHTERED AT THE ABATTOIRS IN 1955 AND 1956

	1955	1956
Pigs	355,209	431,373
Sheep	63,868	64,636
Goats	1,776	2,918
Oxen	4,233	3,057
Buffaloes	2,482	3,437
Horses	4	9
Total ..	<u>427,572</u>	<u>505,430</u>

NUMBER OF PIGS FROM VARIOUS SOURCES SLAUGHTERED AT ABATTOIR AND APPROXIMATE WEIGHT OF PORK PRODUCED IN 1955 AND 1956

	1955		1956	
	Number of pigs slaughtered	Approximate weight katties	Number of pigs slaughtered	Approximate weight katties
Local pigs—Average carcass weight, 50 katties	310,088	15,504,400	412,243	20,612,150
Federation pigs—Average carcass weight, 60 katties	42,709	2,562,540	18,429	1,105,740
Bali pigs—Average carcass weight, 90 katties	2,412	217,080	701	63,090
Total ..	<u>355,209</u>	<u>18,284,020</u>	<u>431,373</u>	<u>21,780,980</u>

CARCASSES TOTALLY CONDEMNED AT THE ABATTOIRS 1956

Swine	Sheep	Oxen	Buffaloes	Goats	Total Condemned
55	92	37	7	1	192

REVENUE

The total revenue excluding rent received for use of chilling rooms from the Abattoirs in 1956 was \$992,332.25. This is nearly \$156,809.55 more than the previous year's revenue which was \$835,522.70.

ANTI-MOSQUITO DEPARTMENT

I HAVE the honour to submit the report on the work of the Anti-Mosquito Department for the year 1956.

2. *Incidence of Malaria.*—Forty-eight cases of malaria were reported from hospitals and dispensaries during the year. Thirty-three gave addresses within the City and were fully investigated. With the exception of two who gave wrong addresses, all were found to be imported cases or relapses.

3. *Trapping of Adult Mosquitoes.*—The three mosquito traps set up in various parts of the City for the collection and subsequent identification of adult mosquitoes continued to provide a valuable check on our anti-malarial control measures. For details see Appendix A.

4. *Larvæ Searching.*—8,877 collections of mosquito larvæ were brought by the field staff to the departmental laboratory for identification. As in the past, a close watch for the breeding of the malaria vector, *A. sundaicus*, was kept on all boats brought into the Singapore and Kallang Rivers for repairs. No such breeding was found in any of the boats.

Appendix B is an analysis of 1,000 consecutive larval collections during the year showing the common breeding places within the City.

Appendix C shows the total number of collections in which vector species were found together with their breeding places.

5. *Permanent Anti-Malarial Works.*—The areas under permanent control were extended by the construction of 723 yards of concrete anti-malarial drains and the laying of 533 yards of subsoil pipe lines. In addition to this, 2,264 yards of wornout anti-malarial drains were reconstructed with new materials.

Details of permanent anti-malarial works are listed at Appendix D.

Minor repairs to existing permanent anti-malarial works were carried out as and when required and details of these are given in Appendix E.

6. *Frawn Ponds in Kallang Basin.*—Weekly inspections continued to be carried out as in past years, to ensure that sluice gates were opened and algæ growths on ponds removed. No breeding of *A. sundaicus* was found in this area during the year.

7. *Kampong Sanitation.*—As in the past year, the existing kampong sanitation drains were regularly maintained by the Kampong Sanitation Labour Force. In addition to providing drainage for a number of standpipes installed during the year, the bases of 75 existing standpipes were reconstructed and new drainages provided. For details of Kampong Sanitation Works, please see Appendix F.

8. *Maintenance.*—Maintenance work carried out by ten gangs and four Machine Units, was continued on the basis of having anti-malarial drains maintained approximately once in 35 days. Five patrol gangs continued to work around the General Hospital, Tan Tock Seng Hospital, Kallang Basin, Tanjong Rhu, Siglap, Katong and Geylang areas mainly to control the breeding of *A. sundaicus*. 172,939 yards of concrete drains and 22,687 yards of earth drains were regularly maintained. 4,279 baskets of tins and other water bearing receptacles were collected and disposed of. Of the above total length of concrete drains 31,888 yards were daily cleansed satisfactorily by contract labour at a cost of \$11,000 per month.

9. *Larvicidal Works.*—(i) *Anti-Malarial Mixture.*—During the year 114,565 gallons of this mixture with 1 per cent D.D.T. were used compared with 110,480 gallons last year. This increased usage was due to the increasing breeding places created in areas where temporary dwellings are permitted. Furthermore, oiling had to be done on all the badly constructed and neglected drains at Tanjong Rhu Reclamation where the Land Office had allotted plots for the resettlement of timber and charcoal dealers from the Beach Road area.

(ii) *Shell Malariol Emulsion.*—This larvicide was used for the control of breeding in places where an oily larvicide was undesirable. 202½ gallons of the larvicide were expended.

(iii) *Malariol H.S.*—As in the previous year 321½ gallons of this were used to control mosquito breeding in fish and vegetable ponds in the Sungei Whampoe and the Kallang Basin areas.

(iv) *Gammexane.*—245 lbs. of this were used in the temporary control of nuisance mosquito breeding in septic tanks, which continued to be responsible for a number of mosquito complaints received.

(v) *Kerosene with D.D.T.*—6 gallons with 5 per cent D.D.T. were used mainly for barrier spraying and occasionally as an anti-fly measure.

(vi) *Benzine with 10 per cent D.D.T.*—1,710 gallons were used to control mosquito breeding along the margins of the reservoirs.

(vii) *Dieldrex 15.*—93 gallons of this were used through the Swing Fog machine to control adult mosquitoes.

The total cost of larvicides (including labour) was \$182,626.20; of this sum \$8,105.84 was recovered from owners of properties and building contractors.

10. *Swing-Fog Machine.*—The four swing-fog machines which were put into use towards the latter part of last year were used extensively to deal with adult mosquitoes, flies and other insects. The insecticide used was Dieldrex 15. Experiments with a cheaper insecticide—Pybuthrin in small doses in kerosene oil containing D.D.T., and Gammexane (Phbuthrin 2 drahms 8 minims, D.D.T. 2 ozs. and Gammexane 4 ozs. in 4 gallons of kerosene)—were carried out but was found unsatisfactory.

11. *Filling in of Low-lying Areas.*—The filling in of the extensive swamp at the Bendemeer area by controlled tipping by the City Cleansing Department was continued.

12. *Notices.*—Sixty-one notices under the Destruction of Mosquitoes Ordinance were served during the year. As in the past year, the majority of these were served on building contractors.

13. *Anti-fly Measures.*—In addition to the normal routine oiling, our oilers helped to carry out anti-fly measures on several occasions.

14. *Training.*—Probationary Public Health Inspectors R. Rajakrishnan, Lim Ah Guan, Chua Cheng Hai and Wong Keng Mun completed a training course on A.M. measures and in the bionomics and taxonomics of Malayan mosquitoes in the Department.

15. *Layout Plans.*—539 layout plans were referred to this Department by the Planning Officer, Singapore Improvement Trust, for comments regarding drainage. The sites were inspected and comments given.

It was noticed towards the end of the year that a large number of attap dwellings were erected in approved attap areas without first consulting this Department. This not only interfered with the existing Anti-Malarial drainage system but also created new drainage problems. This matter was taken up

h the City Architect and Building Surveyor and as a result 30 applications to build such dwellings were referred to this Department. In all these cases the sites concerned were inspected and comments given.

16. *Staff.*—(i) Dr. A. Manoharan took over duties from Dr. Ling Ding ng as A.H.O. (A.M.D.) on 10th February, 1956. He left for U.K. on 9th September, 1956 to take up D.P.H. Course.

(ii) Dr. Ng See Yook assumed office of A.H.O. (A.M.D.) on 1st September, 1956.

(iii) Fong Chee Leong, clerk was transferred from Secretariat Department on 3rd January, 1956.

(iv) Seah Seng Tee was transferred from City Engineer's Department to take up the post of Junior Overseer on 1st February, 1956.

(v) P. Singaraveloo was transferred from the City Cleansing Department to take up the post of Junior Overseer on 1st February, 1956.

17. *Labour.*

Authorized Labour Force	...	...	607
Average monthly strength on payroll	...	...	574
Percentage of shortage	...	...	5%
Number of working days for 1956	...	...	313
Number of mandays taken as sick leave	...	...	5,843
Number of mandays taken annual leave	...	...	3,207
Number of mandays taken public holidays	...	...	6,774
Number of mandays lost curfew during October Riots	...	...	628

441 different labourers took sick leave on at least one occasion during the year. This means that 76.8 per cent of the total labour force went on sick leave at least once during the year. The average number of mandays lost per labourer on account of sickness is 10.2 days.

18. *Miscellaneous.*—(i) Under the direction of Mr. W. W. MacDonald of the Division of Entomology, Institute for Medical Research, Malaya, a mosquito survey was made in Singapore City area on the 20th and 21st February to determine the prevalence of *Aedes (Stegomyia) aegypti* (Linn). Of the five areas examined, the *Aedes aegypti* indices were found to range from 10 to 37 per cent according to the results published by Mr. MacDonald.

(ii) The Superintendent, Anti-Mosquito Department participated on 6th April, 1956 in a feature programme which was broadcast over Radio Malaya on the eve of World Health Day on the subject "Kill all disease-bearing insects".

(iii) During the October riots normal working of the Department's labour force was disrupted for a few hours during the days that the curfew was imposed.

(iv) Heavy rain during the month of November caused extensive damage to permanent anti-malarial works. The cost of repairing this damage will be about as much as \$10,600.

(v) The Government Land Office commenced resettling charcoal and firewood dealers from Beach Road at Tanjong Rhu Reclamation, an area well-known for the breeding of *A. sundaicus*. As a result of this resettlement, control measures were made extremely difficult owing to the indiscriminate storage of materials and neglected roadside drains. Our difficulties were brought to the notice of the authorities concerned and they have kindly promised to cooperate by levelling of all the depressions, cleansing of the drains and getting the occupants to comply with our requirements.

19. A close liaison was maintained with the Rural Health authorities, Malayan Railway Authorities and Army Departments concerned with the control of mosquito breeding.

SUMMARY OF WORKS AND COSTS FOR 1956

Particulars	Labour	MATERIALS			Totals
		Mason	Machine	Larvicide	
	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.
Major Works including $\frac{1}{3}$ cost of Store Labour ..	125,750 27	34,616 23	..	..	160,366 50
Patrol Works including Tidal Gate Labourers ..	122,238 13	..	..	..	122,238 13
MAINTENANCE					
1. Grass cutting, cleansing drains, including hire and benzine ..	352,820 10	..	4,256 94	..	357,077 04
2. Larvicidal works, trappers, oiling checkers and $\frac{1}{3}$ cost of Store Labour ..	103,660 16	..	..	78,966 04	182,626 20
3. Repairs including $\frac{1}{3}$ cost of Store Labour ..	57,418 96	31,258 95	..	..	88,677 91
4. Cleansing of drains by Contract Labour ..	132,000 00	..	..	..	..
	893,887 62	65,875 18	4,256 94	78,966 04	1,042,985 78
Cost of Haulage ..	..	..	..	..	29,576 00
Grand Total ..					1,072,561 78

NG SEE YOOK, L.M.S. (S'pore), D.P.H. (Lond.),
*Assistant Health Officer,
 for Deputy Health Officer.*

APPENDIX A

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

Locality	No. of Nights	<i>A. mac.</i>	<i>A. sund.</i>	<i>A. letifer</i>	Other <i>Ano-phel.</i>	Others	Total
Orong 3 Geylang Road ..	121	Nil	Nil	Nil	Nil	2,093	2,093
Endemeer area ..	215	Nil	Nil	Nil	33	6,659	6,692
St. Georges Road ..	22	Nil	Nil	Nil	21	667	688
Lim Keat Road ..	152	Nil	Nil	Nil	233	3,119	3,352
Campong Alexandra ..	6	Nil	Nil	Nil	Nil	51	51
Aljunied Road ..	48	Nil	Nil	Nil	Nil	945	945
Downer Road ..	48	Nil	Nil	Nil	Nil	1,127	1,127
Canjong Rhu Road ..	96	Nil	Nil	Nil	1	1,605	1,606
Guillemard Road ..	63	Nil	Nil	Nil	Nil	1,821	1,821
Thomson Road, Police Dept.	88	Nil	Nil	1	Nil	1,012	1,013
	Nil	Nil	1	288		19,099	19,388

287 Anopheline female [mosquitoes were trapped; of which 182 were dissected and one was found infected. In addition 19,099 adult mosquitoes were identified.

Sgd. P. V. SAMUEL,
Laboratory Assistant (A.M.D.)

21st January, 1957.

1,000 consecutive collections from common breeding places:—

Roadside concrete drain	...	190
Sullage concrete drains	...	56
Concrete drains	...	125
Roadside earth drains	...	5
Earth drains	...	76
Canal edges	...	5
Sewage excavations	...	3
Stagnant pools	...	183
Grassy pools	...	34
Seepage pools	...	3
Hoof Marks	...	1
Swimming Pool	...	1
New building excavations	...	45
Lorry Tracks	...	8
Vegetable Ponds	...	47
Fish Ponds	...	21
Tidal Ponds	...	2
Prawn Ponds	...	5
Edges of Reservoir	...	2
Seepages	...	16
Earth Wells	...	10
Brick Wells	...	2
Concrete well	...	1
Concrete holes	...	4
Septic Tanks	...	5
Concrete tanks	...	15
Iron Tubs	...	2
Water stop cock pits	...	8
Sump pits	...	4
Silt pits	...	5
Boats	...	14
Disused drums	...	55
Disused tins	...	13
Disused jars	...	13
Disused bucket	...	1
Disused tyres	...	17
W.C. Pans	...	2
Disused jug	...	1
		<hr/>
Total	...	1,000
		<hr/>

Sgd. P. V. SAMUEL,
Laboratory Assistant (A.M.D.)

21st January, 1957.

APPENDIX C

8,877 collections of mosquito larvæ were brought to the laboratory for identification. Only one of them contained larvæ of *Anopheline sundaicus* collected from a new roadside concrete drain in Tanjong Rhu area; and 14 contained larvæ of *Anopheline maculatus*. The other 8,862 collections did not contain larvæ of malaria vectors.

The types of breeding places in which the larvæ of *Anopheline maculatus* were found were as follows:—

Valve chamber, outlet chambers, outflow streams of Murnane Reservoir, Dunearn Road	6
Seepages:	
Mandai Quarry	2
Thomson Road	1
S.H.B. area	1
	— ... 4
Swimming Pool (Gunong Pulai Water Works)	1
Reservoir in Estate Ravine 1 at Gunong Pulai adjoining the Water Works	3
	—
	Total ... 14
	—

PERMANENT ANTI-MALARIAL WORKS CARRIED OUT DURING 1956

Anti-Malarial Area	MATERIALS USED												Labour Cost	Material Cost	Remarks	
	Inverts				Slabs				Subsoil Pipes							
	21"	18"	15"	12"	9"	18"	15"	12"	8"	6"	4"					
88. Jewish Cemetery	..	..	..	30	..	..	..	120	..	..	..	..	..	\$ c.	\$ c.	The construction of the subsidiary drain was continued. Work completed.
136. Boon Teck Road	..	..	375	85	..	2,567 700 (old)	..	..	..	450	..	..	..	8,736 18	4,622 33	The laying of an additional line of slabs on either side of the drain and the construction of the subsidiary drains were continued. Work completed.
172. Sommerville Ravine	523	..	..	72 (old)	..	4,443	..	75	..	..	70	..	..	33,049 67	7,924 30	The existing earth drain (from M.C. pipe line reserve to Sungai Kallang) was consolidated with concrete inverts and slabs. Work completed.
15. Woodleigh Filters	..	..	50	50	..	..	..	..	140 (old)	500	..	..	..	882 02	463 25	The subsidiary drain was re-constructed and 2 subsoil pipe lines were relayed. Work in progress.
9. Nassim and Dalvey	415 375 (old)	..	..	10	..	2,220 680 (old)	..	..	..	10	..	..	..	12,967 25	4,705 02	The main Anti-Malarial concrete drain was re-constructed. Work completed.
10. Fern Hill	55	431 (old)	5	45 160 (old)	..	220 1,094 (old)	..	..	..	55	5	..	..	6,429 72	1,285 22	The main Anti-Malarial concrete drain was re-constructed. Work completed.
22. Jervois Road Ravine No. 3..	..	..	65	130	10	230	..	100	..	..	..	..	..	3,468 97	602 01	The existing Anti-Malarial concrete drain was re-constructed. Work completed.

PERMANENT ANTI-MALARIAL WORKS CARRIED OUT DURING 1955—continued

Anti-Malarial Area	MATERIALS USED												Labour Cost	Material Cost	Remarks				
	Inverts						Slabs			Subsoil Pipes									
	21"	18"	15"	12"	9"		18"	15"	12"	8"	6"	4"							
24. Leonie Hill	10	245	5	..	105	..	600	..	130	\$	c.	4,155 92	\$	c.	1,076 53	The existing Anti-Malarial concrete drain was re-constructed. Work completed.
29. Orchard Road No. 2 ..	200	67	..	..	..	600	..	..	..	..	..	..	2,843	10	1,530	94	The existing Anti-Malarial concrete drain was re-constructed. Work in progress.
32. Radin Mas ..	140	130	..	20	25	410	40	..	..	90	..	..	4,684	16	1,356	92	The existing Anti-Malarial concrete drain was re-constructed and all out cropping seepages were trapped by means of sub-soil pipes. Work completed.
118. Pierce Reservoir (Island Club)..	325	..	..	..	..	650	..	..	..	..	..	..	1,503	24	1,982	54	The existing Anti-Malarial concrete drain was re-constructed. Work suspended.
172. Sommerville Ravine ..	399 58 (old)	5	..	51 80 (old)	30 9 (old)	3,527 220 (old)	..	225 12 (old)	..	319	213	..	29,729	20	7,327	31	The existing Anti-Malarial concrete drain (from M.C. Pipe line to Braddell Road) was re-constructed. Work completed.		

DETAILS OF REPAIRS CARRIED OUT TO THE EXISTING ANTI-MALARIAL WORKS—continued

Anti-Malarial Area	MATERIALS USED																								Labour Cost	Material Cost
	INVERTS												SLABS						SUB-SOIL PIPES							
	21"		18"		15"		12"		9"		18"		15"		12"		8"		6"		4"					
	N	R	N	R	N	R	N	R	N	R	N	R	N	R	N	R	N	R	N	R	N	R				
100. Adam Park	40	..	80	..	5	..	50	65	20	..	350	880	..	..	20	10	200	5	..	..	..	1,431	58
101. Joo Seng Road	..	..	..	..	..	6	..	..	..	..	20	100	..	..	..	..	..	..	..	..	..	508	25
104. Thiam Siew Avenue	..	..	..	..	90	..	..	..	6	..	45	480	..	..	..	..	..	..	..	..	..	303	04
107. Wayang Satu	..	..	50	..	..	10	20	..	..	..	150	660	..	..	..	100	..	5	..	..	..	1,016	99
109. Mt. Pleasant	95	50	65	..	..	37	..	20	20	..	295	370	..	20	20	100	250	40	..	..	..	1,521	18
110. MacRitchie	350	230	240	20	..	..	..	..	..	..	950	880	..	..	..	2	6	360	120	..	..	2,381	40
114. Dunearn Road	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	17	30
115. Alexandra Road Ravine	212	125	35	..	10	..	30	..	..	..	450	335	..	..	..	..	..	120	..	..	..	1,675	16
116. Sungai Whampoa	..	..	1	..	..	..	..	..	..	..	32	26	..	..	..	..	..	..	..	..	..	127	21
117. Telok Blangah Road Ravine	210	40	..	52	..	130	25	..	..	..	..	..	..	..	..	55	120	190	95	367	430	2,690	37
120. Kim Seng Road	..	..	..	..	..	3	..	..	..	..	40	365	..	..	..	..	..	..	..	..	..	707	38
121. Brick Factory Ravine	100	112	..	..	..	25	..	25	25	..	285	335	..	..	..	..	..	15	..	..	..	679	40
123. Kampong Limau Ravine	..	..	5	..	15	20	..	..	..	..	50	2	..	..	..	..	..	5	..	..	..	212	38
124. Cemetery Ravine	5	..	5	..	..	5	25	..	..	..	40	80	..	..	..	..	..	..	..	..	..	270	58
125. Faber Ridge	75	10	5	..	..	15	12	..	..	..	80	115	..	..	..	..	..	..	..	..	..	335	40
126. Temple Ravine	..	..	90	..	..	20	..	..	..	..	30	50	..	..	..	..	..	..	..	..	..	346	32
127. Henderson West	..	..	..	..	..	..	..	..	..	..	80	80	..	..	..	..	..	..	..	..	..	154	80
129. Sungai Namly	..	..	25	..	..	..	..	..	..	..	20	64	..	..	..	..	..	..	..	..	..	111	80
130. Mt. Washington	200	40	205	90	57	5	20	..	..	..	2,075	880	145	..	..	..	..	..	..	..	..	10,317	34
131. Katong	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	243	64
132. Bugis Rubber Estate	10	..	65	..	..	40	..	..	25	128	130	270	..	..	..	..	..	20	..	250	..	1,110	58
133. Aljunied Road	..	..	..	..	..	355	65	3	..	..	15	82	..	..	..	..	..	..	..	..	..	632	47
135. Kim Keat Road Ravine	..	..	..	..	35	10	90	..	..	..	15	45	..	..	..	..	..	..	..	..	..	106	67
136. Boon Teck Road Ravine	..	..	..	..	..	5	..	..	..	..	125	500	..	..	..	..	..	..	..	..	..	947	44
137. Jalan Rajah Ravine	..	..	..	75	..	..	..	..	..	..	130	..	..	..	..	..	..	..	..	..	..	244	62
138. Ah Hood Road	..	..	..	2	..	35	157	..	..	..	135	190	60	..	..	..	..	..	..	..	..	192	36
139. Lorong 33, Geylang	..	..	..	..	..	20	42	10	..	..	..	110	..	..	..	..	..	..	..	..	..	154	65
141. Hindoo Cemetery Ravine No. 5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	100	22
144. Hindoo Cemetery Ravine No. 2	10	15	15	..	..	..	..	..	..	..	20	100	..	..	..	..	..	..	..	..	..	120	44
146. Mohd. Cemetery Ravine	..	..	..	..	..	..	..	..	..	..	5	..	..	..	..	..	..	..	..	..	..	45	80
148. Serangoon Road Ravine	2	30	13	135	75	20	..	..	..	..	35	230	..	..	..	..	..	..	..	..	..	256	33
151. Hokien Cemetery Ravine No. 1	..	..	..	..	..	..	..	..	..	..	255	90	..	..	..	..	..	..	..	..	..	949	99
153. St. Michael's Road	35	15	..	..	13	40	24	40	10	..	45	136	..	..	..	..	..	..	..	..	..	765	14
154. Thomson Road Ravine No. 4	..	..	5	..	15	25	10	..	..	..	60	285	..	..	..	..	..	..	..	..	..	1,195	38
158. Jalan Datch Ravine	..	..	10	..	..	..	..	..	..	..	30	50	..	..	..	..	..	..	..	..	..	81	54
164. Woodleigh	..	..	..	..	..	..	..	..	..	..	..	58	..	..	..	..	..	..	..	..	..	71	12
168. Thomson Road No. 7	..	..	..	..	..	10	50	5	60	..	..	..	..	..	..	..	..	..	..	..	..	119	08
170. Braddell Road Ravine Nos. 5 and 6	4	..	25	15	135	225	5	120	..	..	155	750	..	..	..	..	..	..	..	..	..	910	23
172. Sommerville Ravine	10	..	15	15	135	80	..	..	..	..	340	..	..	..	..	..	..	..	..	..	..	1,105	45

IMPORTED CASES OF MALARIA, 1956.

<i>Source of Infection</i>		<i>Number</i>
From incoming ships .. .. .	.. .. .	4
Neighbouring Islands .. .. .	.. .. .	5
Cases referred to Rural Health Department ..	.. .. .	2
Johore .. .. .	.. .. .	14
Kuala Lumpur .. .. .	.. .. .	2
Malacca .. .. .	.. .. .	1
Bangkok .. .. .	.. .. .	1
Indonesia .. .. .	.. .. .	8
India .. .. .	.. .. .	2
China .. .. .	.. .. .	2
Unknown .. .. .	.. .. .	5
		<hr/>
		46
Address not traceable .. .. .	.. .. .	2
		<hr/>
	Total ..	48
		<hr/>

CHEMICAL LABORATORY

I HAVE the honour to report on the work carried out in the Chemical Laboratory during 1956.

The total number of samples received and analysed during the year amounted to 28,007. This is an all time record number of samples and exceeds the high average of last year by over 3,000. The large volume of work handled by the Department is particularly noteworthy because, for the greater part of the year the laboratory was under expansion, involving major reconstruction, and conditions for work were anything but ideal. Fume cupboards—essential for a laboratory of this type—were not in commission and the staff had to work almost continuously in an atmosphere that was certainly not salubrious.

The samples examined were submitted by all Departments of the City Council and included the usual large number from commercial firms. An increased number of samples connected with the study of metallic corrosion under tropical condition were examined for the Pan-Malayan Scientific Advisory Council.

The samples examined may be classified according to their source of origin as follows:—

Water Department	...	...	17,107
Sewerage Department	...	...	4,598
Gas Department	...	...	134
Electricity Department	...	...	1
Engineers Department	...	...	30
Health Department	...	...	751
Architect's Department	...	...	2,188
City Stores and Workshops	...	...	16
City Fire Brigade	...	...	5
City Cleansing and Hawkers Department			1
Pan-Malayan Scientific Advisory Council			176
Commercial Firms	...	...	3,000
			28,007

The nature of these samples and a general indication of the diverse consultative and advisory duties carried out for the various Departments of the Council is given below.

The details of samples received from the City Council Departments were as follows:—

WATER DEPARTMENT

The following samples were received and reported on:—

Water samples taken at various stages during treatment (13,455), water from camp supply (1,459), water from clear water tanks (47), water from Tebrau River for arsenic test (82), house tap supply (complaints) (10), well water from Bedok (2), mortar (1), acidulated distilled water (1), sand (9), water for oxygenation (2), sediment in water (1), sediment (3), reagents, indicators and solutions (392), sulphate of alumina (10), reservoir water (40), river water from Tebrau (2), lime (4), deposit in engine water jacket (1), hydrated lime (2), cement (1), water for fluorine tests (1,231), lubricating oil (1), water from sedimentation tank—Tebrau (1), concrete (1), water for ammonium test (3), urine for fluorine test (48), scales (1), granite dust (1), activated alum (1), black deposit (1), water meter (1), sterilising tablets (1), sodium silico fluoride (1), galvanised piping (B.S.S. Tests) (12), boiler water (279).

In April, with newly available supplies of sodium silicate and sufficient pumping capacity, sodium bicarbonate activated silicate treatment was resumed at Tebrau Works at an initial rate of 18 m.g. per day. This was rapidly raised to 25 m.g. per day with no impairment in the quality of the water. However, during this period conditions were not ideal. There was continual dredging in the Tebrau River just at the point of intake and, due to the exceptionally large amounts of suspended matter arising from the disturbed river mud being carried over to the filters, filter runs were somewhat reduced. In June dredging of the river was finally discontinued and, concomitantly, the quality of the water was enhanced and filter runs extended. It was found possible to reduce dosages of chemicals to 20 parts per million of sulphate of alumina and 5 parts per million SiO_2 and maintain the high quality of the treated water. The output was then steadily maintained at 26 m.g. per day and even during rotation cleaning of flocculators and clarifiers there was no necessity to reduce this output.

With this achievement, the endeavours of the laboratory in the investigations of water treatment methods may be said to have been accomplished. While further refinements are still practicable, the utilisation of chemical methods, probably uniquely combined in activated silicate flocculation and pre-filtration liming, to achieve an output of 26 m.g. per day from a treatment works, designed for 10 m.g. per day and capable in practice of achieving 15 m.g. per day with conventional treatment, is worthy of record.

The quality of water obtainable from Tebrau Works with this type of treatment may be assessed from the following typical results:—

pH	...	...	...	8.2
Colour (Hazen units)	...	...	...	5
Turbidity units	...	...	...	0.5
Residual alum (p.p.m.)	...	...	...	0.05
Iron (p.p.m.)	...	...	...	0.05
Total Colony count per mile	...	...	...	20
at 37° in 24 hours.				
Presumptive Coliform count per 100 mile	...	...	...	0
in 24 hours.				

The conversion of Woodleigh Works from slow sand filtration to rapid gravity filters was completed. The laboratory carried out investigations into the type of treatment relevant to the Pierce Reservoir water and made recommendations as to chemical dosages. The new proven successful pre-filtration liming was automatically introduced at Woodleigh and again savings in wash water were considerable.

During May fluoridation with sodium silico-fluoride to the extent of 0.7 p.p.m. fluorine, was commenced at Bukit Timah Works. Daily control tests of the supply water were carried out at various points in the system and the urines of personnel engaged in chemical treatment were also examined. The control tests showed that the fluorine content of the water was somewhat lower than that aimed for, due to arching of chemical in the feed machine. This was subsequently rectified by modifications of the Water Engineer but, although the correct fluorine dosage is now obtained at Bukit Timah, dilution with unfluoridated water from other works reduces the fluorine content in the general supply to negligible amounts. Fluoridation at Woodleigh will be introduced in 1957 and a more rational level of fluorine should then be obtainable in the Singapore supply.

The regular urine examination of chemical treatment personnel showed no increased level of fluorine content.

The investigation into the water from wells in the Bedok Valley was concluded. The water from all these wells was found to be grossly polluted and varied in quality to such an extent as to make treatment exceedingly difficult. If the addition of water from this valley to the Singapore supply is essential the most complete purification will be necessary. It has been recommended by this laboratory that this should include pre-aeration, sedimentation, flocculation with chemicals, sedimentation, filtration, and chlorination.

The ranges and averages of daily analysis of the various raw and treated waters are shown in Tables *A* and *B* attached. Table *C* gives monthly complete analysis of water from the clear water tanks. In general, the satisfactory quality of the City supply was maintained throughout the year.

SEWERAGE DEPARTMENT

The number and types of samples analysed during the year included the following:—

Routine sewages, sludges, top-waters and effluents (3,192), septic tanks (621), Sewage-Oxidation and Humus tanks (668), river water (74), water (2), copper sulphate solution (12), soil (2), sand (3), aluminium sheets (1), earth (9), detergents (5), Rexon coating concrete pipe (1), ground water (1), fibre drain pipe (1), sewer water (6).

The two main purification works, namely, Alexandra Road Works and Kim Chuan Road Works remain unchanged. The average results of final effluents from these works which flow into Alexandra Road stream and Serangoon River respectively are given below, expressed in parts per 100,000.

—	INTO ALEXANDRA ROAD STREAM		INTO SERANGOON RIVER	
	<i>Range</i>	<i>Average</i>	<i>Range</i>	<i>Average</i>
Free and Saline Ammonia	0.08/4.8	1.09	0.48/4.8	2.24
Albuminoid Ammonia ..	0.02/0.48	0.19	0.1/2.4	0.49
Oxygen absorbed in 4 hrs.	0.54/3.5	1.10	0.73/5.45	3.35
Biochemical Oxygen Demand	0.24/5.75	1.75	2.10/12.0	7.25
Total Solids	28/220.2	75.5	21.8/158.4	67.0
Suspended Solids	0.6/8.0	2.15	0.2/16	3.60
Nitrates (as N)	absent/0.3	0.10	absent/0.1	absent
Chlorides (as Cl)	7/81	27	10/56	19
pH	73/7.8	7.4	6.8/7.5	7.3

The effluent discharging into Alexandra Road Stream continues to be of the same good quality as that obtained in 1955. Owing to the increased overloading at the Kim Chuan Road Works, the effluent discharging into Serangoon River shows further deterioration compared to the results of 1955.

The effluents from private septic tank installations were examined more regularly than heretofore and the number of samples sent in for analysis have increased considerably. Out of a total of 242 installations, samples from 204 were received for examination. Eighty-four of these were reported as unsatisfactory and appropriate recommendations for rectifying matters were made. In general, the more regular sampling and maintenance has resulted in a raising of the average standard of the effluents.

Analyses of river waters were carried out on samples taken from various points of the Singapore River, Serangoon River, Kallang River, Bukit Timah Road Canal, Rochore Road Canal and a prawn pond from Lorong Baltawai to determine the degrees of pollution and the concentration of tidal water.

A preliminary examination has been done on samples of sewage from Alexandra Road Works and Kim Chuan Road Works to determine the presence of undecomposed detergents which, with the help of aeration, have caused copious foaming on the surface of the sewage particularly in the contact channels and bioflocculation units of the latter works. The total detergent content was surprisingly high, amounting to over 100 parts per million.

In June the use of an experimental lagoon at Alexandra Works was re-started to assess the efficacy of using algæ. The results from this lagooning treatment were distinctly promising. An experimental tank using indrawn air and upward flow was introduced in May at Alexandra Works. Initially the results were good but towards the end of the year they varied tremendously due mainly to sludge accumulation. The design of this experimental plant is now being modified and further control tests will continue.

Several samples of earth were submitted for pH tests and the determination of their sulphate and chloride contents. Two samples of pipes were examined for compliance with British Standard Specifications. Other miscellaneous items examined included soils, sand, ground water and the preparation of solutions.

In consultation with the Chief Engineer, Sewerage Department it is now agreed that from 1st January, 1957, all results of analysis for sewage and allied samples will be expressed in parts per million.

HEALTH DEPARTMENT

A total of 751 samples were received and reported on in connection with Public Health administration. The major portion of the samples comprised food which amounted to 97.6 per cent of the total while the remainder consisted of drugs, anti-malarial oils, and others. The number of formal samples received under the sale of Food and Drugs Ordinance was 535 of which 99 were found to be adulterated, below standard or otherwise unsatisfactory and certificates were issued for these samples. These unsatisfactory samples constitute 18.5 per cent of the total number of formal samples as compared to 32.2 per cent for 1955.

Details of adulteration and other irregularities found are given in Table D.

Samples of food and beverages which are manufactured locally in premises licensed by the City Health Officer as well as those imported were examined for general compliance with standards, metallic contamination, saccharin and prohibited preservatives. They include the following:—

Local

Soda water, peppermint sweets, sweets, aerated waters, non-carbonated drinks, ice cream, "kaya", soya bean milk, waters for soft drink manufacture, syrups, lemonade draught, beanactar, tomato and chilly sauces, sauce mixture, orange drink base, popsicles, pepper mixtures, curry powders, tea dust, special sauce extract, chinese cake, food preservative and canned pineapples.

Imported

Cauliflower, canned meat, canned peas, colouring matter, cordials, ketchup, canned lichee, beer, apples, pears and grapes.

The following samples were examined for adulteration, purity and conformity with statutory standards:—

Milk (fresh and canned), coffee powder, coffee mixture, pepper and pepper mixture, evaporated milk, skimmed milk, whole egg powder, butter, margarine, pure vegetable ghee, brandy, whisky, rum, compound of vegetable oil and butter, sarsaparilla, milk powder, tomato and chilly sauce and sweetened condensed milk.

Food examined for fitness for human consumption consisted of the following:—

Assorted canned food, flour sweeping, sweetened condensed milk, evaporated milk.

The following drugs were received and tested for statutory standards and conformity with the British Pharmacopœia:—

Black draught vitamin C, Cod liver oil capsules, "Baby Fever Powder", "Pick-me-ups" multivitamin tablets, multivitamin solution Patent, "Asprin Tablets", "Peppil CBC" tablets.

Other miscellaneous samples received were:—

Well water, anti-malarial oil, black roof deposit, earth, D.D.T. metal pipe, star anise.

Following the reported illnesses of some people, imported apples were found to contain harmful amounts of arsenical insecticides. These apples were from Japan and the exporters have confirmed that the fruits had been sprayed with sodium arsenite. Since this occurrence sample of all imported fruit normally eaten whole are taken regularly for analyses.

Out of a total of 37 samples of soda water examined, 11 samples contained high lead content. On the whole, locally produced beverages are usually quite satisfactory in relation to compliance with general standards.

Detection of large scale adulteration of coffee and coffee mixtures has been a feature of the year's work. Out of a total of 111 samples, examined, 55 samples (49.6 per cent) were found to be deficient in the stated coffee content. Another item of food frequently adulterated is milk from local vendors. Twenty-three samples from a total 214 submitted have been found to be unsatisfactory.

Forty-seven cans of imported cauliflower were examined and all were found to contain sulphur dioxide, a non-scheduled preservative under the local Food and Drugs Regulations. Apart from this preservative, 18 cans were of poor quality and the consignment was certified to be unfit for human consumption.

A number of locally prepared Barley juices and syrups were tested and 12 samples were issued with certificates stating the presence of saccharin. Court proceedings were subsequently instituted against the vendors.

Only a very few samples of drugs were submitted this year for examination. Out of these, one sample, a Baby Fever Powder had undesirably high lead and arsenic contents. This sample had attached, a label, a free and unduly favourable interpretation of the City Analyst's certificate given some years before.

Although steps have been taken last year to ban future imports of the toxic Japanese Star Anise, *Illicium Religiosum*, this variety has made its re-appearance in the Singapore market. After examination and report by the Laboratory, a large stock was seized and confiscated by the Health Department. Well waters examined during the year were from Kampong Lew Lian, Paya Lebar Road, Shaw Road and Jalan Alsagoff and several samples of anti-malarial oils were tested for the Anti-Malarial Department for viscosity, density and spreading power.

Whisky, brandy and other liquors taken before the Christmas Festival were found to be surprisingly free from adulteration. Of the samples examined only one brandy was found to contain added water.

GAS DEPARTMENT

The following samples were received for analysis:—

Boiler water (40), gas coal (60), coal gas from laboratory (3), deposit from gas main (1), liquor from holder syphon (1), town gas (8), water (3), holder water (1), oil from naphthalene washer (14), river water (1), creosote (2).

The laboratory continued the routine examination of boiler waters and recommended method of feed water treatment which gave uniformly satisfactory results. Coal was analysed for gas making qualities and, in general, a more uniform quality coal appeared to be received by the Gas Department.

A deposit causing blockage of a gas main, was examined and found to be almost entirely naphthalene. At Singapore prevailing temperatures it seems difficult to remove all the naphthalene by washing and subsequent deposition in the mains, particularly during wet weather occurs.

Creosote was examined for its wood preserving properties and recommendations made as to its potentialities for such treatment.

ARCHITECTS DEPARTMENT

The following samples were received for analysis:—

Pool water (Mount Emily) (896), pool water (Yan Kit) (1,192), aquarium water (98), cement slab (1), fertilizer (1).

Pool waters taken from the two swimming pools run by the City Council were tested daily. The high quality of the pool water in regard to clarity and dissipation of pollution was maintained throughout the year.

Regular samples were received from the now flourishing Van Kleef Aquarium for control of pH and check on pollution or substances toxic to fish.

CITY ENGINEER'S DEPARTMENT

The following samples were received for analysis:—

Glazed piping (6), aluminium sheet (Anodised) (1), drain pipe (1), lubricating oil (18), greases (4).

The examination of lubricating oils and greases was in connection with tenders for the Transport Centre. This system enables the deliveries from the successful tenderer to be checked during the year against the original tender sample and helps to exclude delivery of inferior material. The glazing pipes were examined for purity and water absorption, while the aluminium sheet was examined for kitchen sink suitability in Singapore Improvement Trust housing schemes.

CITY STORES AND WORKSHOPS

The following samples were received for analysis:—

Aluminium casting (6), cement (3), fuel oil (1), coke (2), water (3), wash water (1).

The cements were examined for conformity with British Standard Specifications. The examination of the aluminium castings arose from an explosion from a molten aluminium crucible during heating. As a result of analysis, it was shown that pieces of copper alloy, e.g. brass from a previous melt fell from the scoop into the molten aluminium, and formed an eutectic alloy, with melting point appreciably lower than that of aluminium. The expansion of this alloy was so vigorous that an explosive reaction occurred. Advice was given as to future precautions.

CITY FIRE BRIGADE

The following samples were received for analysis:—

Petroleum (4), "Zippo" lighter fluid (1).

All these samples were examined for classification under the Petroleum Ordinance.

ELECTRICAL DEPARTMENT

One sample thought to be a corrosive chemical and found in a newly arrived transformer was found to be innocuous.

CITY CLEANSING DEPARTMENT

One sample of bone ash from the City incinerators was examined for fertiliser properties but was found to be relatively valueless.

COMMERCIAL FIRMS

A total of 3,000 samples were received and reported on. The income (\$49,911) derived from these samples was the highest to date. These samples may be classified as follows:—

Essential Oil	...	...	...	74
Vegetable Oil	...	...	...	860
Ores	...	...	...	139
Metal and Alloys	...	...	...	48
Food	...	...	...	403
Chemicals	...	...	...	84
Local Products	...	...	...	625
Damaged Goods	...	...	...	102
Miscellaneous	...	...	...	665
				3,000

The range and variety of samples received from this source are shown hereunder but the following cases dealt with in the laboratory are worthy of special mention.

A Singapore bound steamer hit a submerged object and had to be beached to avoid total loss. The question arose whether the Captain had deviated from his course and struck a reef or whether he hit a submerged wreck while still on course. A piece of material which had pierced and lodged in the hull of the ship was examined in the laboratory. Analysis showed that this was oxidised iron encrusted with barnacles and other marine growth, probably originating from a long submerged wreck. The findings exculpated the ship's Captain from any navigational error.

A fire on a ship about a day's steaming from Singapore was thought by the shipping agents to have arisen from chemicals stored in one of the holds. An on the spot investigation by an officer of the Department and subsequent analysis of chemicals and burnt material did not substantiate this view. Ignition of straw packing by a carelessly thrown match or cigarette was the most probable cause of the fire.

A fire in a Singapore godown was followed by a substantial insurance claim for damage to dyestuffs stored there. This laboratory was able to establish, by use of a photoelectric colorimeter, that the damage caused by the fire was not appreciable and that, in many cases, fading of colour was due to prolonged storage only.

An interesting aspect of the work done for commercial firms was the greatly increased use of the laboratory's facilities by druggists importing medicines from China in order to check for metallic contamination with special reference to lead, which, in the past, had been found to be present in excessive amounts.

The full range of samples is given in the following list:—

Essential Oils

Patchouli, Cananga, citronella, vertivert, hydrogenated whale oil, gingelly, woodoil, nutmeg.

Vegetable Oils

Coconut, palm, cooking, sludge, peanut, groundnut, coconut acid.

Ores

Manganese, zinc, monazite, iron, copper, bauxite, galena, ilmenite, titanium, silicon, lead.

Food

Ice cream mix, reconstituted milk, creamy milk, fresh milk, coffee powder, bacon, creamery butter, sweetmeats, sweetened condensed milk, evaporated milk, canned food, sago flour, beef juice, chinese lard, cheese, gram, wheat flour, soft drink, tomato catsup, oatmeal, sugar, beer, cooking fat, monosodium glutamate, dried milk powder, butter, soya bean milk, soya beans, whisky, margarine, tablets, brandy.

Chemicals

Caustic Potash, trisodium phosphate, acetic acid, sodium hydroxide, CO_2 , flue gas, calcium carbonate, arcton, cylinder gas, mea., trinitium phosphate.

Local Products

Jelutong, centrifuge latex, copra, copra cake, cube gambier, gum benjamin, patchouli leaves, soap, tuba root.

Damaged Goods

Gunny sacking, coffee seeds, sugar, hair brushes, cardboard cartons, packing paper, raw rubber, rice, rubber sheets, canned cauliflower, bacon, rust, transparent paper, shirts, textile, process peas, cotton blanket, aluminium sheet paper, cooked ham, wall distemper, mill boards, rusted tins, brass sheet, rusty car parts, gunny bag, old newspaper, fishing nets, lead battery plates, manila funnel gantline, tiles, newsprint paper, chocolate, steel strappings, biscuits, dry preserved olives, wheat flour, poplin, salted fish, pork luncheon meat, galvanised wire, canisters vim, jute batching oil, tamarind, tapioca waste, maize, galvanised cable sheathing, chisels, galvanised plain sheet.

Miscellaneous

Pool water, distilled water, chinese medicine, gold ring, flooring, fuel oil, wood preservatives, water, treated water, sulphate of alumina, sand, concrete, clay, brylcream debris, deposits, soaplye, glycerine, dyestuff, burnt material, brine water, asbestos fibre, coal, lubricating oil, foundry coke, cement, lacquer, fertilizer, well water, fluid, pineapple fibre bunker coal, anthracite, "kleanol", "cloudisole", washer water, bunch ash, textile, galvanised piping, stationery cells, ornament, detergent, cod liver oil, glycerine, brick, chrome plating of car, sediments, animal fodder, powder, galvanised round wire, glycerol, travelling rugs, guano, "Tide" soap powder, wall plaster, pipes.

COMMITTEES

The City Analyst on official nomination served on the following committees:—

1. Corrosion and Tropicalisation Committee of the Pan-Malayan Scientific Advisory Council.
2. Advisory Committee in Fluoridation.
3. Food and Drugs Committee.

In April, the City Analyst represented the Singapore Government at the World Health Organisation South-East Asia and Western Pacific Study Group on Water Standards held in Manila.

STAFF

Mr. Lim Chin Kuan, Deputy City Analyst, left for vacation leave in U.K. in July. During his six months absence Mr. Tan Tong Teck, Assistant Analyst, acted in the post of Deputy. Mr. Loke Fook Seng filled the new post of Assistant Analyst from September. Mr. Chia Hong Hoe, Assistant Analyst, pursued his course of studies in London during the year.

ACCOMMODATION

The new laboratory extension was completed and occupied in September. Although greatly alleviating the formerly overcrowded conditions, it does not provide all the accommodation necessary for the present work of the laboratory and possible further future expansion will have to be kept in mind.

After this record working year it gives me particular pleasure to record my appreciation and thanks to all members of the staff for their whole hearted co-operation, particularly during the trying period of laboratory reconstruction.

T. A. SPILLANE, M.SC., F.R.I.C., F.I.C.I.,
City Analyst.

TABLE A

RESERVOIR WATERS

AVERAGES OF DAILY ANALYSIS FOR YEAR 1956
(PARTS PER MILLION)

Parts per million	PONTIAN		PULAI		MACRITCHIE		PIERCE		TEBRAU	
	Average	Range	Average	Range	Average	Range	Average	Range	Average	Range
Nitrite Nitrogen (as Nitrogen) ..	a	a/a	a	a/a	a	a/a	a	a/a	a	a/a
Carbon Dioxide ..	1.9	1.3/2.5	3.2	2.3/4.3	1.4	1.2/2.1	1.4	1.2/1.5	3.3	2.2/4.3
Total Alkalinity (as CaCO ₃) ..	5.2	4.3/5.9	5.3	4.7/5.9	2.3	1.7/2.7	2.0	1.4/2.6	2.9	2.0/3.9
pH Value ..	6.6	6.5/6.7	6.4	6.3/6.5	6.2	6.0/6.4	6.1	6.0/6.3	6.1	5.6/6.3
Iron ..	0.45	0.31/0.70	0.25	0.13/0.67	0.35	0.28/0.44	0.37	0.32/0.41	0.39	0.31/0.58
Colour (Hazen Units) ..	13	10/17	14	5/49	16	14/21	15	12/17	33	24/62

TABLE B

PURIFIED WATERS

AVERAGES OF DAILY ANALYSIS FOR YEAR 1956

Parts per million	PULAI		BUKIT TIMAH		WOODLEIGH		TEBRAU	
	CLEAR WATER TANK		CLEAR WATER TANK		CLEAR WATER TANK		CLEAR WATER TANK	
	Average	Range	Average	Range	Average	Range	Average	Range
Nitrite Nitrogen (as Nitrogen) ..	a	a/a	t	t/t	a	a/t	a	a/a
Carbon Dioxide ..	0.01	a/0.09	0.7	0.5/1.0	0.3	a/0.6	0.31	0.05/0.6
Total Alkalinity (as CaCO ₃) ..	11.1	10.0/14.5	10.2	8.3/14.2	13.9	8.0/18.8	11.3	10.0/13.0
pH Value ..	8.6	8.4/8.8	7.4	7.3/7.6	8.0	7.4/8.5	8.1	7.5/8.5
Free Chlorine ..	0.49	0.38/0.57	.23	0.18/0.28	0.44	0.29/0.76	0.53	0.46/0.64
Soluble Aluminium (as Al) ..	..	..	1.33	0.62/1.81	..	..	0.39	0.18/0.68
Iron ..	0.38	0.30/0.58	0.29	0.14/0.35	0.24	0.11/0.32	0.05	0.05/0.05
Colour (Hazen Units) ..	10	6/14	6	5/8	5	5/6	< 5	< 5/ < 5

CLEAR WATER TANKS

AVERAGES OF MONTHLY COMPLETE ANALYSIS 1956 OF SINGAPORE

Parts per Million	GUNONG PULAI		BUKIT TIMAH		WOODLEIGH		TEBRAU	
	CLEAR WATER TANK		PUMPING MAIN		PUMPING MAIN		CLEAR WATER TANK	
	Average	Range	Average	Range	Average	Range	Average	Range
Ammoniacal nitrogen (as NH ₃)	0.19	0.08/0.50	0.13	0.06/0.24	0.19	0.06/0.44	0.13	0.08/0.24
Albuminoid nitrogen (as NH ₃)	0.04	0.02/0.08	0.04	0.01/0.06	0.04	0.02/0.06	0.04	0.02/0.12
Nitrite Nitrogen (as Nitrogen)	a	a/a	t	a/t	a	a/t	a	a/a
Nitrate Nitrogen (as Nitrogen)	0.001	a/0.01	t	a/0.03	a	a/a	0.01	a/0.06
Carbon Dioxide	a	a/a	0.70	a/1.10	a	a/a	0.44	a/1.2
Total Alkalinity (as CaCO ₃)	11.7	10.0/16.0	10.2	8.0/18.0	14.6	8.0/20.0	10.7	8.0/13.0
Free Chlorine	0.50	0.35/0.60	0.27	0.15/0.55	0.48	0.20/0.80	0.41	0.25/0.55
Iron	0.37	0.20/0.60	0.29	0.20/0.40	0.24	0.10/0.50	0.05	0.05/0.05
Soluble Aluminium (as Al)	..	..	1.27	0.45/2.30	0.70	0.60/0.80	0.43	0.05/0.75
Chlorides (as Cl)	6.7	5.5/7.5	6.7	6.0/8.0	6.7	6.0/8.0	6.5	5.5/8.0
pH	8.7	8.5/8.9	7.5	7.3/8.3	8.1	7.3/8.9	7.9	7.3/8.9
Oxygen absorbed from KMnO ₄ soln. in 4 hrs.	0.81	0.50/1.20	0.62	0.22/0.94	0.63	0.32/1.10	0.63	0.35/1.40
Temporary Hardness (as CaCO ₃)	11.5	8.5/16.0	10.2	8.0/18.0	14.6	8.0/20.0	10.9	8.0/13.0
Permanent Hardness (as CaCO ₃)	2.0	Nil/11.0	14.6	0.5/21.0	6.2	1.5/18.0	9.3	0.5/15.0
Total Hardness (as CaCO ₃)	13.6	8.5/27.0	25.3	10.0/32.0	20.8	17.5/26.0	20.2	12.5/23.5
Organic Solids	22	11/37	21.4	10.0/34.0	25.4	14.0/58.0	16.5	11.0/30.0
Inorganic Ash	25	15/40	31.8	13.0/46.0	27.4	16.0/44.0	28.6	21.0/32.0
Total Solids	46	33/61	53.0	23.0/80.0	52.8	31/97	45.1	33.0/59.0
Colour (Hazen Units)	10	5/15	7	5/15	5	5/7	< 5	< 5/ < 5
B.O.D. in 5 days	0.39	0.15/0.80	0.48	0.25/0.95	0.55	0.15/1.60	0.37	0.15/0.55

FOOD AND DRUGS SAMPLES ADULTERATED OR OTHERWISE IRREGULAR

Number	Sample	Nature of Irregularity
20	Milk ..	Deficient in solids-not-fat.
2	Milk ..	Deficient in solids-not-fat and fat.
1	Milk ..	Deficient in fat.
1	Coffee ..	Deficient in coffee.
7	Coffee Powder ..	Deficient in coffee.
47	Coffee Mixture ..	Deficient in coffee.
2	Sweets ..	Absence of Vitamin B ₁ and Vitamin B ₂ .
3	Canned Cauliflower ..	Contained Sulphur Dioxide.
5	Almond Syrup ..	Contained saccharin.
1	Plum Syrup ..	Contained saccharin.
2	Barley Water ..	Contained saccharin.
1	Barley Juice ..	Contained saccharin.
3	Barley Syrup ..	Contained saccharin.
1	K. K. Baby Fever Powder ..	Contained excessive lead, arsenic and copper.
1	Food Preservative ..	Contained Boric Acid.
1	Ice Cream ..	Deficient in fat.
1	Brandy ..	Deficient in strength.

BACTERIOLOGICAL LABORATORY

I HAVE the honour to submit the following report on the work of the Bacteriological Laboratory during the year 1956. The report is made up of the following sections (the corresponding figures for 1955 have been included for the purpose of comparison):—

	1956	1955
A. Public Health Specimens	52,040	43,138
B. Water		
1. Routine	13,331	13,221
2. Mount Emily and Yan Kit Swimming Pools	2,494	2,501
3. Miscellaneous	315	307
4. Algæ and others	67	111
C. Sewerage—Wash Water	36	35
	—————	—————
Grand Total	68,283	59,313
	—————	—————

A. PUBLIC HEALTH SPECIMENS

The total specimens received were 52,040 and were from the following sources:—

	1956	1955
1. City Health Office	15,740	13,913
2. Infant Welfare Clinics	8,169	5,105
3. Middleton Hospital	13,247	8,904
4. St. Andrew's Mission Hospital	29	19
5. Kwong Wai Siu Free Hospital	3	17
6. Johore Water Works	613	69
7. Private Medical Practitioners	5,411	5,162
8. Rats from Plague Prevention Unit	5,610	5,840
9. Ecto-parasites of Rats—Plague Prevention Unit	3,218	4,109
	—————	—————
Grand Total	52,040	43,138
	—————	—————

Malaria.—2,433 blood films were examined for malarial parasites.

Number of positive for <i>P. falciparum</i>	1	
Number of positive for <i>P. vivax</i>	9	

Tuberculosis.—2,477 specimens were examined with the following results:—

Source	Positive	Negative	Total
Sputum	12	2,410	2,422
Others .. .. .	..	55	55
Total ..	12	2,465	2,477
<i>ENTERIC FEVER:—</i>			
Agglutination with Sal. typhi	69	584	653
Agglutination with Sal. paratyphi A	3	215	218
Agglutination with Sal. „ B	1	217	218
Agglutination with Sal. „ C .. .. .	..	218	218
Blood clot culture—Sal. typhi isolated	22	197	219
Fæces culture Sal. typhi isolated	9	1,311	1,320
Urine culture Sal. typhi isolated	7	1,283	1,290
Total ..	111	4,025	4,136
Agglutination with Vi I antigen .. .. .	..	..	656
Grand Total ..			4,792

Tropical Typhus.—Blood for Weil-Felix Reaction:—

Number of sera Positive for <i>B. proteus</i> OXK ..	0
Number of sera Positive for <i>B. proteus</i> OX19 ..	1
Total number of sera investigated	346

Dysenteries

1861 specimens of fæces were examined for amœbæ.

Number of positives for <i>E. histolytica</i> ..	37
Number of positives for <i>E. coli</i>	9

987 specimens of fæces were cultured for *B. dysenteriae*.

Number of positives for <i>Shigella flexner</i> ..	47
Number of positives for <i>Shigella sonnei</i> ..	36

Plague.—No human specimens were received.

5,610 rats were dissected and none showed any signs of plague infection.
3,218 ecto-parasites were examined.

The species and distribution of all rats and ecto-parasites that were examined, are given in the table attached.

A total of 470 dead rats were received from the following sources:—

City Area	133
Government Health Department ...	1
Port Health Department ...	336 (Fumigated H.C.N.)

During the year, 685 live rats were handed to D.A.D.A.H., H.Q., Singapore Base District. These were not included in the above total.

All the 3,052 fleas caught were *X. cheopis*.

The flea index in the City Area was 0.59.

Cerebro-Spinal Fever.—No specimens were received.

Cholera.—No specimens were received.

Leprosy.—Skin smears:—

Total number of positives ...	9
Total number of negatives ...	24
	—
Total number examined ...	33
	—

Diphtheria.—Throat swabs for culture for *C. diphtheriæ*.

Positive	1,206
Negative	8,246
	—
Total number examined ...	9,452
	—

MISCELLANEOUS EXAMINATIONS:

Pathological exudates for General examination ...	38
Urine for General examination	4,653
Pus and urine for Gonococci	650
Blood for Kahn Test	4,262
Blood for Culture	4
Blood for T.R.C., T.W.C., and Differential counts	1,276
Blood for Hæmoglobin percentage	88
Blood for B.S.R.	156
Blood for Micro Filaria	9
Blood for <i>B. abortus</i>	1
Blood for <i>B. melitensis</i>	1
Fæces for Intestinal parasites	11,779
Fæces for Occult Blood	8
Sludge for Fungi	1
Skin for Fungi	1
Sewerage effluent	6
Sundried humus	188
Disinfectants	6
Milk bottles and cartons for sterility tests ...	50
Milk	151
Ice-cream	107
Egg powder for Salmonella group ..	1
Cooked food for Salmonella group ...	4
	—
Total ...	23,440
	—

B. WATER

1. Routine

15,825 routine samples of water from the City Water Engineer were tested bacteriologically.

Throughout the year the condition of the tap water remained satisfactory

The following is a summary on the various samples examined:—

Source	Year's Average total colonies per m. l at. 37° C. in 24 hours	Year's Average presumptive coli-form count per 100 m. l.
MacRitchie Res: Valve Tower ..	401	37
Peirce Res: Valve Tower	173	12
Seletar Res: Channel	177	26
Pontian Res: Valve Tower	315	61
Bukit Timah Res: Clear Water Tank ..	17	Less than 1
Woodleigh Res: Clear Water Tank ..	29	Less than 1
Gunong Pulai Res: Clear Water Tank ..	23	Nil.
Tebrau Clear Water Tank (Outlet) ..	17	1
Pontian Res: Camp supply	17	Less than 1
Pearl's Hill Res: Tank 1	25	Less than 1
Pearl's Hill Res: Tank 2	26	Less than 1
Pearl's Hill Res: Air Valve	34	Less than 1
Fort Canning Res:	28	Less than 1
Taps—Bacteriological Laboratory ..	26	Nil.
Lorong Lalat Office	29	Nil.
Joo Chiat Office	27	Less than 1
Havelock Road Office	37	Nil.
Pasir Panjang Office	63	Less than 1
Dunearn Road Office	24	Less than 1
Average of 6 taps	34	Less than 1

2. Mt. Emily and Yan Kit Swimming Pools

Mt. Emily:

Shallow End	9	Nil
Centre Deep	10	Nil
Filter Outlet	11	Nil

Yan Kit:

Shallow Pool (Inlet)	10	Less than 1
Practice Pool (Deep End)	11	Nil
Main Pool (Inlet)	11	Nil
Main Pool (Outlet)	12	Nil

Results of these pools were satisfactory throughout the year.

3. Miscellaneous Water Samples

From:

Singapore Swimming Club	157 samples
Tanglin Club Pool	96 samples
Chinese Swimming Club	47 samples
Other sources	15 samples

Total ... 315 samples

4. Algae and Others

Sixty-seven samples were examined for algae counts and all the results showed a low count throughout the year.

C. SEWERAGE

Thirty-six samples of wash water from the City Cleansing Department were examined and were found to be satisfactory.

STAFF

Dr. C. M. Sambamurthi joined the staff as an Assistant Bacteriologist on 1st May, 1956 and resigned on 3rd November, 1956.

Dr. Ling Ding Seng was requested to carry on the additional duties of City Bacteriologist in the absence of the substantive holder of the post Dr. Ng See Yook who was transferred to the Anti-Mosquito Department with effect from 1st October, 1956.

Dr. K. Karunakaran was appointed as an Assistant Bacteriologist on the 4th November, 1956.

Mr. Loo Cheng Swee, laboratory assistant retired from the service on the 1st November, 1956 after 35 years of faithful service.

Messrs. John Soh Chnio Liang and Lim Lian Teck were appointed as laboratory assistants with effect from 25th April, 1956 and 1st December, 1956 respectively.

LING DING SENG, M.B., B.S., D.P.H.,

*Acting City Bacteriologist,
Singapore.*

MATERNAL AND INFANT WELFARE DEPARTMENT

	1956	1955
I. <i>Total number of Confinements in City Area</i> ...	45,649	43,457
Nature of Confinements:		
In Hospital	25,112	22,238
By Private Doctors	3,438	3,159
By Private Midwives	14,876	15,879
By City Council Midwives	1,371	1,210
With no skilled attention	852	971
Of these confinements:		
Mothers visited by District Sisters within 10 days after confinement	18,763	19,924
Subsequent visits to Sick Mothers	3,457	2,645
Sick Mothers treated in their homes by Lady Assistant Health Officers	4,542	3,394
Maternal deaths in puerperium	9	5
Mothers removed and untraced	394	84
<i>Total number of births in City Area</i> ...	45,998	43,785
Number of twins	345	320
Number of triplets	2	4
Still Births	690	732
Number of new born babies seen by District Sister	18,508	19,668
Babies born in Hospital	25,878	21,737
Babies untraced	384	85
II. <i>Free Midwifery Services from the Clinics</i>		
(a) Free confinements conducted by 16 City Council Midwives	1,371	1,210
(b) Number of cases referred from Kandang Kerbau Hospital for post natal domiciliary after-care by City Council Midwives	6,009	2,843
(c) Abnormal cases referred to Kandang Kerbau Hospital	27	22
(d) Number of self attended deliveries followed up by City Council Midwives	164	160
(e) Total visits paid by City Council Midwives to patient's homes	26,844	14,257
II. <i>Visits paid by Health Visitors to Homes</i> ...	91,758	93,067
1st visits following Birth Report	29,516	31,182
Subsequent visits	62,242	61,885
Percentage of Total Births visited by Health Visitors	64.17%	71.21%
<i>Total number of Visits of Sisters and Health Visitors to homes</i>	128,885	125,108

IV. Clinic Activities

	1956	1955
A. INFANTS		
New infants 1st attendances at Clinics	23,168	19,729
Subsequent attendances of infants at Clinics	157,705	122,019
Total attendances	180,873	141,748
Of these attendances of Sick Babies were	115,300	90,488
i.e. in percentage	63.75%	63.84%
B. TODDLERS		
1st visits	17,193	3,159
Subsequent visits	13,105	2,098
Total visits	30,298	5,257
Of these attendances of Sick Toddlers were	15,033	—
i.e. in percentage	49.62%	—
C. SICK MOTHERS		
Number of Sick Mothers treated:		
In Clinics	19,754	13,550
On District	4,542	3,394
Total	24,296	16,994
D. ANTE NATAL CONSULTATIONS IN CLINICS		
Ante Natal mothers 1st attendances	4,952	4,067
Subsequent attendances	13,329	9,897
Total	18,281	13,964
Ante Natal home Visiting by 4 Health Visitors	9,346	6,706
Kahn Blood Tests taken	2,439	139
Number positive	84	19
i.e. in percentage	3.44%	7.32%
E. FAMILY PLANNING		
Number of new cases advised	309	607
Revisits { Number coming to check appliances	171	632
{ Old cases	255	398
Unsuitable cases and failures	4	17
Cases referred to F.P.A. or Kandang Kerbau Hospital	958	798
Total	1,697	2,452
F. IMMUNISATION AGAINST DIPHTHERIA		
<i>(a) UNDER 1 year old</i>		
1st injections	8,978	9,059
2nd injections (Number who completed the course)	8,186	8,367
Total injections	17,164	17,426

(b) <i>Over 1 year old</i>	1956	1955
1st injections	13,818	4,969
2nd injections (Number who completed the course) ...	10,790	4,621
Total injections ...	24,608	9,590
Visits to homes to follow up cases ...	5,561	2,766
Febrile reactions	2,004	1,099
Percentage of completed injections for infants and toddlers	45.43%	
(c) <i>T.A.F. Injections (over 10 years)</i>		
1st injections	612	192
2nd injections	463	129
3rd injections	350	93
Total ...	1,425	414
(d) <i>Contact cases</i>		
1st injections	509	595
2nd injections	474	519
Total ...	983	1,114
(e) <i>Boosting dose</i>	1,677	168
G. IMMUNISATION AGAINST DIPHTHERIA AND WHOOPING COUGH		
1st injections	2,680	683
2nd injections	2,202	535
3rd injections (Number who completed the course) ...	1,540	417
Total ...	6,422	1,635
Febrile reactions	787	116
H. FREE MILK POWER DISTRIBUTION		
Total number of babies given free milk	2,593	1,805
Number of nursing mothers given free milk	996	457
Number of re-issues	46,160	36,124
Amount given to Salvation Army ...	1,200	672
Amount given to Covent Orphanage ...	1,200	1,200
Total number of lb. of Powdered Milk used	36,000	32,446
V. <i>Supervision of Midwives in Private Practice by Supervisor of Midwives</i>		
(a) Number of inspections of Private Midwives' Bags in 3 major clinics	1,772	1,879
(b) District Visits to check on Private Midwives work	2,182	1,773
(c) Investigation of Puerperal Fever cases reported	60	67
(d) Investigation of Tetanus Neonatorum cases reported	14	4
VI. <i>Medical Examination of City Council Female Staff</i>		
(a) For fitness to join service, confirmation in service and to join Municipal Provident Fund ...	188	199
(b) For treatment of ailments ...	150	177
	388	316

COMMENTS

The volume of work of the Maternal and Infant Welfare Department continued to increase in 1956. Our seventh clinic was opened at Odin Square in April, to bring clinic services to the fast increasing population of the Alexandra Road, Tiong Bahru/Henderson Road areas. Extensions to Joo Chiat Clinic were eventually completed, providing quarters for the 2nd resident midwife, and expansion of the waiting hall space. It is regretted that due to delay in construction, the Urban Health Centre could not be completed during the year.

CLINIC ACTIVITIES

The demand for clinic facilities continued, for both preventive and curative aspects of the work. There was a very large increase in attendances of infants and toddlers as well as the number of sick mothers treated. Altogether 63.75 per cent of the infant consultations and 49.62 per cent of toddler consultations were for treatment, as the public seem to consider the clinics are Outpatient Dispensaries for mothers and babies. Although the need for treatment is recognised, in that it is necessary to prevent minor ailments from developing into more serious ones or even deaths, the real scope and function of the Maternal and Infant Welfare work is not lost sight of. It is hoped that the confidence of the mothers will be gained when a cure is effected, thus paving the way to more ready acceptability of our teaching of general health measures and mothercraft. However some mothers tend to resent what they consider is criticism of their methods, and much patience is needed to try and make them realise that prevention is better than cure.

ANTI-DIPHTHERIA IMMUNISATION

Immunisation facilities have been provided by the Municipal Health Department for over 17 years now and the Maternal and Infant Welfare staff have, both in the homes visited and in the clinic, been trying to make the public aware of the existence of the endemicity of this disease and the weapon they have available to stamp it out. Unfortunately we do not seem to be able, by our personal persuasion propaganda methods, to get the parents to co-operate. In 1956 we were very far from achieving the target we aimed at, of getting 75 per cent of babies from 6 months-1 year immunised which is necessary before a satisfactory level of herd immunity can be hoped for. Only 18.7 per cent of children under 1 year completed both injections. The apathy of parents was somewhat stirred up during the last two months of the year when the newly formed Health Education Council assisted in providing accessory propaganda over press and radio to back up our personal approach method. However the response was not always entirely what we aimed for. Quite a good response among toddlers was achieved (10,790 in 1956 as compared with 4,621 in 1955) but there were many young adults (who are not in the vulnerable age group) who also demanded inoculations, and many others came seeking injections for cures of all manner of ills under the impression that inoculation was a panacea for everything. The result of such increased propaganda always seems to make the public think that an epidemic is raging and they for the first injection—unfortunately about 55 per cent of them failed to return for their second inoculation, despite repeated visits from Health Visitors specially sent to remind them. It appears necessary that country wide propaganda to back our personal persuasion should be sustained and continuous, in order to keep the public constantly aware of the problem and the existence of immunisation facilities, from Infant Welfare clinics as well as from private practitioners.

ANTE-NATAL ATTENDANCES

During the year, after arrangements with the Bacteriology Laboratory were completed, routine blood tests for V.D. were instituted for all Ante-Natal cases, where formerly only patients with suspicious case histories were tested. Opposition and refusal were general, and much patience was needed to explain the necessity of having this test done to ensure that all babies born have no likelihood of having congenital syphilis. Although only a very small number of positive cases were found out of the total number examined (84 positives out of 2,439 cases tested) this has ensured that 84 babies have had a chance of being saved by treatment before they were born. In spite of all these difficulties, our Ante Natal attendances conformed to the general pattern of increase in numbers.

FAMILY PLANNING

More and more of this work is being referred to the Family Planning Association clinics as they have expanded their activities and increased the number of their clinics to the extent that they are capable of handling more and more cases. Working in conjunction with them is a great help in relieving our staff, whose numbers never seem to be adequate in dealing with the ever increasing infant population.

HOME VISITING

There was an overall increase in home visits paid by Sisters and Health Visitors, although there was a slight decline in the number of visits paid to newly confined mothers and babies, which can be attributed to the fact that more and more babies were born in Kandang Kerbau Hospital or in private doctors' maternity homes. Subsequent routine visits by Health Visitors to infants up to one year however were increased, while visits to expectant mothers in their homes to advise on preparations for the confinement were also increased, from 6,706 to 9,346.

CONFINEMENTS

The increasing popularity of deliveries in Kandang Kerbau Hospital was mirrored in the decline in the number of babies delivered by private midwives, although the services our 16 City Council midwives for free deliveries in patients' homes were even more in demand. From the patients' point of view, delivery in Kandang Kerbau Hospital and early discharge appear advantageous if there is satisfactory follow-up in the domiciliary after-care services. Unfortunately the referral chits issued to the patients on discharge from hospital are not always brought to the clinics immediately—some are posted to us, resulting in delay or difficulty in finding the case if the address is incorrectly given. Some do not send for us at all, with the result that the babies and mothers do not get any post-natal after-care. Some patients who are well able to afford to pay for the services of private midwives get delivered in the free wards of Kandang Kerbau Hospital and insist on having the attention of our City Council midwives whose case-load of post-natal washings is already heavy for really deserving cases. The increase in the number of such cases followed up by City Council midwife after early discharge from Kandang Kerbau Hospital rose from 2,683 in 1955 to 6,009 in 1956—the total number of visits paid increased from 14,257 to 26,844.

There was a continued slowly decreasing number of babies without skilled attention. The Kim Keat Road-Potong Pasir area (District D) had the highest number of such self delivered cases, and it was with the intention of dealing

with this problem that 2 extra midwives were engaged when the Kim Keat Road Clinic was opened replacing Balestier Road Clinic. These 2 midwives were given the midwives quarters above the former Balestier Road Clinic, so that there are now four City Council midwives serving this area.

LIAISON WITH OTHER DEPARTMENTS

(1) *Kandang Kerbau Hospital*

(a) In the Domiciliary After Care Service by our midwives.

(b) We continued to refer our primiparae and any ante-natal cases with complications to the hospital.

(c) Premature babies from the Premature Unit were referred to us on discharge for supervision. It was very gratifying to see how with proper attention some of the puny babies rapidly developed.

(2) *Social Welfare Department*

(a) We continued liaison concerning transferred children. When our Health Visitors came across such cases they advised them to register the transfer with the Protector of Young Persons. During routine visits they were able to keep an eye on the kind of care the transferred child received.

(b) Similarly in the case of children under the Fostering Out Scheme where the foster parents were in the pay of the Social Welfare Department. These children regularly attended their nearest clinic for check on their progress and were given supplements of powdered milk, cod liver oil, tonic, etc., if needed.

(c) In July 1956 with the kind co-operation of Miss Guok, Assistant Director Social Welfare, our Health Nurses were given an opportunity to see all aspects of the work of that Department. She kindly arranged talks and conducted tours of the many institutions under the control of the Social Welfare Department. It was of great value in our work in that we were made aware of the correct procedure when we had any cases to refer.

(3) *Dental Clinic*

Plans for a much needed dental annexe in our Clinics could not unfortunately, be implemented during the year.

(4) *Health Education Council*

(a) Representation on the Working Sub-Committee by one of our Health Officers was of use in getting much needed propaganda for Anti-Diphtheria Immunisation to back up all the personal persuasion that our Health Visitors and Doctors had been reiterating throughout the years. Towards the last 2 months of the year, press and radio propaganda stimulated the interest of the public, and for a time there was quite a good response particularly for toddlers over 1 year old. Further plans are in hand which the Health Education Council will sponsor to keep up the propaganda, which must be continuous in order to keep the public constantly aware of the ever present threat of the disease to young children.

(b) It is also hoped that the Council will be able to assist the Department in obtaining posters, flannellgraphs and models and produce leaflets on various aspects of Maternal and Infant Welfare work for education, not only of the patients but also the nurses.

(5) Talks were given to medical students of the University of Malaya, Department of Social Studies and to nurses in training on the history and various aspects of the work of the Department.

INCREASES IN STAFF

There have been some increases in the number of staff but the benefit was more apparent than real. In the case of the Doctors it was planned that 8 Doctors for 7 Clinics would allow one in charge of each clinic, with one combining administrative duties with some clinical, particularly for relief purposes during the leaves of the others. The leave regulations, however, consumed a total of 290 days vacation leave for the 8 Doctors, without taking into account any sick or maternity leave which might be likely to occur—nor considered the leave of anybody on post graduate studies. Consequently the department has been functioning most of the time with 6 Doctors for 7 Clinics, and at times with only 5.

EDUCATION OF STAFF

It is generally accepted that there is a need for refresher courses for the Staff to keep them *au fait* with present trends. We cannot stagnate complacently when changes in outlook and technique are taking place. The Health Visitors are given an In Service training after recruitment but there is need for systematic training before they join, and refresher course every few years. 3 of the Senior Health Sister have been abroad to acquire the Health Visitor's Certificate under the Colombo Plan; 2 Health Visitors were sent to Australia for a course in Maternal and Child Welfare care and returned since, and 2 more departed for Australia towards the end of last year.

The same need was felt for the Lady Assistant Health Officers. As from 1955, they have been going one at a time to the University of Malaya to undergo the Diploma of Public Health course.

VISITORS FROM ABROAD

We had quite a number of these during the year. Most of them were sponsored by World Health Organisation and came from neighbouring countries of South East Asia, desirous to know our methods. We also derived mutual benefit by hearing about their problems and how they tackled them. Experts on Maternal and Welfare work also visited us, in particular Dr. Alexander, W.H.O. Consultant on Maternal and Welfare who came from Manila Headquarters; Miss Merry, who was here to advise on the training of District Nurses; and Miss Marwick, who very kindly gave 2 talks on Mental Health to our nurses.

THE FUTURE

Our 7 Clinics are already quite inadequate to cope with the large increase in our infant population. The congestion in them and the consequent necessity of having to queue up to be attended to, have put off many a mother who would have liked to drop in and weigh her well baby and consult on some problem of management, or to come for inoculation. There is a need for more clinics within easy approach of the neighbourhood where the people live. Tentative plans have been put up for 12 clinics to be built in the future with reference to development according to the Master Plan, and it remains for their implementation to relieve the crowded and harassed conditions that at present exist, and to provide a really efficient Maternal and Infant Service for the people of this country.

Dr. MAGGIE LIM, M.R.C.S., L.R.C.P., D.P.H.
*Senior Assistant Health Officer,
 Maternity and Infant Welfare.*

MIDDLETON HOSPITAL

I HAVE the honour to submit the Annual Report of the Middleton Hospital for the year 1956. Table below shows the number of Admissions, Discharges, Deaths, etc. during the year.

Table I

Diseases	Remaining 1955	Admitted	Dis- charged	Died	Remaining
Small-pox .. ..	..	..	..	..	..
Cholera .. ..	..	..	..	..	..
Plague .. ..	..	..	..	..	..
Chicken-pox	18	1,488	1,484	..	22
Herpes—zoster .. ..	..	1	1	..	..
Measles	2	301	291	12	..
Rubella .. ..	..	86	85	..	1
Diphtheria	36	552	504	47	37
Diphtheria Carrier	1	188	187	..	2
Acute Anterior Poliomyelitis	19	37	32	..	24
Pulmonary Tuberculosis .. ..	..	1	1	..	..
Tuberculosis Meningitis .. ..	..	2	2	1	..
Meningitis Non-Meningococcal .. ..	..	2	2	..	..
Typhoid Fever	7	76	74	1	8
Tropical Typhus .. ..	..	1	1	..	..
Malaria B. T. .. ..	..	1	1	..	..
Japanese B. Encephalitis .. ..	..	1	..	..	1
Mumps	1	52	53	..	..
Whooping Cough	1	85	82	2	2
Erysipelas .. ..	..	2	2	..	..
Amoebic Dysentery	3	126	121	3	5
Bacillary Dysentery .. ..	..	26	26	..	..
Clinical Dysentery	2	63	62	1	2
Infective Hepatitis .. ..	..	1	1	..	..
Late effect of Polio	1	1	1	..	1
? Typhoid Carrier obs. .. ..	..	369	369	..	..
Observations	1	84	85	..	..
Other diseases	4	285	275	9	5
Total ..	96	3,831	3,741	76	110

During the year, there were 3,831 admissions. This is the highest number of admissions ever admitted to this hospital. During last year, there were 3,312 admissions.

DANGEROUS INFECTIOUS DISEASES

There were no cases of small-pox, cholera or plague.

DIPHTHERIA

Table II

DIPHTHERIA ADMISSIONS AND DEATH FOR THE LAST 10 YEARS

Year	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956
Admissions ..	136	184	220	222	370	427	332	345	460	552
Deaths ..	23	41	42	28	91	80	47	34	41	47

Table V

DIPHTHERIA ADMISSIONS AND DEATHS BY AGE AND SEX GROUP

Age group		ADMISSIONS		Total Admissions	DEATHS		Total Deaths
		M.	F.		M.	F.	
Under	1 year	25	15	40	3	3	6
	1 year	39	39	78	8	4	12
	2 years	52	42	94	5	5	10
	3 years	49	24	73	3	3	6
	4 years	32	31	63	2	2	4
	5 years	23	13	36	1	..	1
	6 — 10 years	61	72	133	3	5	8
	11 — 14 years	6	13	19	..	..	..
	15 — 19 years	5	3	8	..	..	..
	20 +	2	6	8	..	..	..
Total ..		294	258	552	25	22	47

Table VI

DIPHTHERIA ADMISSIONS AND DEATHS BY ETHNIC GROUP

—		ADMISSIONS		Total	DEATHS		Total
		M.	F.		M.	F.	
Europeans	..	..	..	..	..	..	..
Eurasians	..	1	2	3	..	..	..
Chinese	..	268	239	507	23	18	41
Indians	..	7	6	13	1	..	1
Malays	..	18	10	28	1	4	5
Others	..	..	1	1	..	..	..
Total ..		294	258	552	25	22	47

Table VII

DIPHTHERIA:—TYPE OF CASES AND DEATHS

				Admissions	Deaths
Laryngeal and Tracheal	..	..	..	171	36
Naso-pharyngeal	..	..	..	108	11
Faucial and Tonsillar	..	..	..	239	..
Nasal	..	..	..	33	..
Aural	..	..	..	1	..
Total ..				552	47

Table XII

AGE GROUP, SEX AND TYPE OF CASES OF POLIOMYELITIS

Age and Sex	Under 1 yr.		1 yr.		2 yrs.		3 yrs.		4 yrs.		5 yrs.		6-10		11-14		15-19		20+		Total	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F		
Paralytic ..	3	4	7	6	2	4	2	3	..	1	..	..	..	2	..	..	..	..	..	..	2	36
Non-Paralytic ..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1
Total ..	3	4	7	6	2	4	2	3	..	1	..	..	1	2	..	..	..	..	..	..	2	37
Deaths ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

Table XIII

AGE GROUP, NATIONALITY AND SEX OF POLIOMYELITIS

Age Group	EUROPEANS		EURASIANS		CHINESE		INDIANS		MALAYS		OTHERS		TOTAL	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Under 1 year	1	..	..	2	2	..	1	1	..	..	..	3	4
1 year	4	1	2	3	1	2	..	..	7	6
2 years	1	2	1	..	..	2	..	..	2	4
3 years	2	3	..	..	..	..	..	..	2	3
4 years	1	..	..	..	..	..	1
5 years
6-10 years ..	1	..	..	..	..	..	..	2	..	..	..	..	1	2
11-14 years
15-19 years
20+	2	..	..	..	..	..	..	..	..	..	..	..	2
Total ..	1	3	..	..	9	8	3	7	2	4	..	..	15	22

TYPHOID FEVER

76 cases of typhoid fever were admitted during the year. One case, a female Chinese adult, who was admitted to hospital on the 9th day of her illness died within 24 hours after admission. There was no concentration of the disease in any particular part of Singapore. Out of 76 cases admitted, 15 were from rural area. During 1955, there were 114 cases with 2 deaths. A total of 369 persons employed by the City Council Water Department and various ice cream manufacturing factories were investigated but none was found to be a carrier.

Table XIV

AGE, SEX AND ETHNIC GROUP OF TYPHOID FEVER

Deaths in brackets ()

	Age Group						Total			
	0-10		11-19		20+					
	M	F	M	F	M	F				
Eurasians	1			
Chinese	12	9	13	7	14	6(1)	61 (1)
Indians	2	2	1	1	5	..	11
Malays	2	1	3
Total ..	14	12	14	8	21	7(1)	76 (1)			

Table XV

ADMISSIONS AND DEATHS BY MONTH

Month	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Admissions ..	2	4	6	2	7	8	12	4	3	6	12	10	76
Deaths ..	..	..	..	..	..	..	1	..	..	..	..	..	1

Table XVI

REGIONAL DISTRIBUTION OF TYPHOID FEVER

Month	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Urban ..	2	3	4	2	5	8	12	4	2	2	12	5	61
Rural ..	..	1	2	..	2	..	..	..	1	4	..	5	15
													76

CHICKENPOX

1,488 cases of chickenpox were admitted during the year with no deaths. 83 per cent cases were from City Area. As in previous years, nearly 50 per cent admissions were Indian male adults.

Table XVII

REGIONAL DISTRIBUTION OF CHICKENPOX

Month	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Urban	147	175	153	148	110	95	76	71	61	72	57	79	1,244
Rural..	24	33	34	19	15	23	22	20	19	16	10	9	244
													1,488

Table XVIII

AGE, SEX AND ETHNIC GROUP OF CHICKENPOX

	0-10		11-20		20+		Total
	M	F	M	F	M	F	
	Europeans	1		..	3
Eurasians ..	..	..	..	..	11	4	42
Chinese ..	..	..	..	..	73	79	350
Indians ..	..	..	..	..	86	95	935
Malays ..	..	..	..	..	16	8	92
Others ..	..	..	..	..	16	11	66
Total ..	203	197	199	107	687	95	1,488

MALARIA

One case of benign tertian and 2 cases of clinical malaria were admitted during the year. A male Attendant of this hospital who had been to Johore on holiday, was admitted here with fever a fortnight after his visit and on investigation was found to be suffering from B.T. malaria. The other 2 were American seamen.

JAPANESE B. ENCEPHALITIS

This is the first case of this disease admitted into this hospital. A muslim boy of 9 years admitted with signs and symptoms of encephalitis and hemiplegia, was serologically diagnosed as Japanese B. Encephalitis by Professor Hale of the University of Malaya. The patient is still under treatment in hospital.

TROPICAL TYPHUS

There was only 1 case of Tropical Typhus admitted during the year (murine type).

MEASLES

301 cases were admitted with 12 deaths. 8 cases died within 24 hours after admission due to the complication of Broncho Penumonia. 22 cases were from the Oversea Chinese Creche and other Public Institutions.

WHOOPIING COUGH

There was a mild outbreak of the disease during the year with 85 admissions and 2 deaths. This is the highest number of cases ever admitted to this hospital for the past 20 years. Besides the above, 18 mild cases were also treated as out patients.

Table XIX

MONTHLY ADMISSIONS AND DEATHS OF WHOOPING COUGH

Month	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Admissions ..	3	..	3	4	5	10	23	11	7	9	4	6	85
Deaths ..	..	..	..	..	..	..	..	1	..	..	1	..	2

DYSENTERY

Table XX

Type of Dysentery	Admissions	Deaths
Amoebic Dysentery	126	3
Bacillary Dysentery	26	..
Clinical Dysentery	63	1
Total ..	215	4

Of the 126 cases of Amœbic Dysentery admitted, 3 cases died. One, a Chinese male adult, 56 years old, was a chronic case of Pulmonary Tuberculosis, died 6 days after admission, and the other 2, a Malay girl of 5½ years, and a Chinese boy of 2 years died 2 days after admission.

Of the 26 cases of Bacillary, 19 were type Flexner and 7 Sonne.

During the routine examination of the employees of the ice cream factories for Typhoid carrier state, 2 were found to be B. Dysentery carriers. They were admitted to hospital for treatment.

Table XXI

OTHER DISEASES

Diseases	Remaining 1955	Admitted	Discharged	Died	Remaining
Acute Tonsillitis	2	180	179	..	3
Acute Laryngitis	16	16	..	..
Bronchitis	8	8	..	..
Bronchiectasis	1	1	..	..
Broncho Pneumonia	1	5	3	3	..
Influenza	7	7	..	..
Pyrexia of unknown origin	2	1	..	1
Malaria Clinical	2	2	..	..
Encephalitis and Myelitis	2	1	1	..
Non-Pyogenic Arthritis	3	3	..	..
Rheumatoid Arthritis	2	2	..	..
Cardiac failure	1	..	1	..
Dermatitis	4	4	..	..
Boils	2	2	..	..
Burns	1	1	..	..
Pyelitis	1	1	..	..
Ankylostomiasis	3	3	..	..
Ascariasis	10	10	..	..
Gastro enteritis and Colitis	1	17	14	4	..
Stomatitis	6	6	..	..
Bacillary Dysentery Carrier	2	2	..	..
Carcinoma Rectum	3	3	..	..
Lambliasis	1	..	..	1
Congenital Syphilis	1	1	..	..
Intussusception	1	1	..	..
Adenitis	1	1	..	..
Otitis media	1	1	..	..
Haemorrhoids	2	2	..	..
Total	4	285	275	9	5

Table XXII
ADMISSION OF THE IMPORTANT DISEASES FOR THE LAST 10 YEARS

Diseases	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956
Small-pox	41	5	..	..	..	..	..	..	..	..
Plague	..	..	..	..	..	..	..	..	..	..
Cholera	..	..	..	..	..	..	..	..	..	..
Chicken-pox	323	313	373	422	610	450	836	1,313	1,769	1,488
Measles	54	41	194	50	204	142	117	182	200	301
Rubella	49	5	6	1	11	9	..	1	..	86
Diphtheria	137	184	218	222	370	427	332	345	460	552
Cerebro Spinal Meningitis	15	7	4	4	4	2	4	2	..	..
Typhoid Fever	59	53	62	88	91	117	91	125	114	76
Acute Anterior Poliomyelitis	..	134	68	81	78	50	41	70	19	37
Erysipelas	2	15	15	12	4	3	..	3	..	2
Whooping Cough	12	6	8	27	5	3	..	10	5	85
Scarlet Fever	191	30	..	14	79	..	..	..	..	..
Mumps	1	6	3	3	..	15	9	35	54	52
Tropical Typhus	89	8	8	3	7	92	4	7	..	1
Amebic Dysentery	5	65	106	90	105	22	134	122	136	126
Bacillary Dysentery	6	1	11	9	18	9	25	18	17	26
Clinical Dysentery	405	40	602	17	40	..	16	34	35	63
Other diseases, carriers and observations	..	893	..	731	591	455	440	647	503	936
Total	1,389	1,798	1,678	1,771	2,217	1,796	2,049	2,914	3,312	3,831

Table XXIII

ETHNIC GROUP, NUMBER OF DAYS AND DEATHS IN HOSPITAL

	REMAINING 1955		ADMITTED 1956		TOTAL		Died
	No. of Patients	No. of Days in Hospital	No. of Patients	No. of Days in Hospital	No. of Patients	No. of Days in Hospital	
Europeans .. ..	..	..	17	156	17	156	..
Eurasians	2	40	76	671	78	711	..
Chinese	76	3,826	2,063	24,107	2,140	27,933	67
Indians and Pakistanis ..	14	489	1,260	10,354	1,273	10,843	2
Malays	2	20	301	2,147	303	2,167	7
Javanese	2	28	35	232	37	260	..
Others .. ..	..	..	79	495	79	495	..
Total	96	4,403	3,831	38,162	3,927	42,565	76

Table XXIV

Sex	Remaining 1955	Admitted 1956	Total Treated	Discharged	Transferred	Absconded	Died	Total	Remaining at end of 1956	Percentage Death	Average Daily Number of Patients	Number of Beds
Male	55	2,435	2,490	2,435	15	..	40	2,428	62	..	..	..
Female	41	1,396	1,437	1,394	7	..	36	1,389	48	..	..	..
Total	96	3,831	3,927	3,829	22	..	76	3,817	110	1.93	116	250

HOSPITAL IMPROVEMENTS DURING THE YEAR

1. The 30-bed Cubicle Ward under construction 1955 was completed and officially opened by Mr. R. Middleton-Smith, Acting President, City Council, on 11th October, 1956. The ward is now in use.

2. The Staff Canteen and Changing Rooms were completed and now in use. This has improved considerably the social amenities for all the staff.

3. 4 wards were repainted during the year.

4. The overhead service water tank was completed.

5. Installation of wireless dissemination to all the wards for the benefit of the patients.

6. Internal automatic telephone system was also installed.

Under Construction

Reconstruction of an old ward for 30 beds is in progress, and is expected to be completed during the early part of 1957.

STAFF

Two Staff Nurses who had been on a two years' Scholarship (one in England and the other in Australia) returned during the year and were promoted as Sisters. They have been successful in the examinations, one obtaining the Fever Nursing Certificate of England and the hospital administration diploma (Nursing) of the Royal College of Nurses, England, and the other obtaining the Fever Nursing Certificate of Victoria and the Ward Administration Certificate of Australia. One Staff Nurse proceeded to Australia on a 6 months' Colombo Plan Scholarship. The staff position is now much improved.

ACKNOWLEDGMENTS

We are grateful to the following:—

1. Professor G. A. Ransome and Mr. Watt-Maney as consultants.
2. The blood transfusion service for their help by supplying blood to some bad cases of Typhoid and Dysentery.

In conclusion, I wish to thank the Staff for their co-operation and loyalty.

NG SEE YOOK, L.M.S., D.P.H.,
*Medical Superintendent,
 Middleton Hospital.*

CITY MARKETS

I HAVE the honour to submit the 34th Annual Report on City Markets of Singapore as follows:—

MAJOR RENOVATIONS

Kandang Kerbau Market

Two sides of the market were extended allowing the addition of sixty-three new stalls.

Clyde Terrace Market

The roof of the Poultry Section was repaired and repainted.

INSTALLATION OF UNITS FOR KILLING AND DEFEATHERING POULTRY

A unit, comprising a killing bin, two gas burners, a sump and washing tank, was installed at Kandang Kerbau Market. This unit has not proved entirely satisfactory and further consideration is being given before installing similar units at other markets.

UNSOOUND FOODSTUFF

4,331 Head of Poultry, 23,583 Eggs, 95 lb. of Mutton and 267,216 katties (approximately 159.05 tons) of Unsound Foodstuffs were destroyed.

PUBLIC WEIGHING SCALES

Avery Spring Balances, with a maximum weighing capacity of 28 lb. were maintained in good order for public use at all markets.

REVENUE

Revenue from the five per cent commission on auction of fish was \$2,691.98 cents more, and from licence fees and hire of poultry cages \$4,988.50 cents more, than that collected last year.

REVENUE FROM FISH AUCTIONS

<i>Market</i>	<i>Quantity Auctioned Katties</i>	<i>Auction Value</i>		<i>5% Commission</i>	
		<i>\$</i>	<i>c.</i>	<i>\$</i>	<i>c.</i>
Ellenborough ...	5,965,964½	3,367,055	00	168,352	75
Clyde Terrace ...	2,665,290½	1,167,575	80	58,378	79
	<u>8,631,255</u>	<u>4,534,630</u>	<u>80</u>	<u>226,731</u>	<u>54</u>

TOTAL REVENUE

<i>Market</i>	<i>Amount Collected</i>	
	<i>\$</i>	<i>c.</i>
1. Clyde Terrace ...	131,397	29
2. Kandang Kerbau ...	36,022	40
3. Orchard Road ...	30,019	52
4. Sims Avenue ...	12,591	80
5. Grange Road ...	4,541	60
6. Ellenborough ...	236,221	35
7. Telok Ayer ...	37,690	00
8. Maxwell Road ...	22,382	80
9. Peoples Park ...	17,172	80
	<u>528,039</u>	<u>56</u>

RETURNS

Monthly returns of the Average Market Prices were sent to the Department of Statistics, and daily returns showing the amount of fish auctioned at the Clyde Terrace and Ellenborough Markets, with places of origin and prices were sent to the Department of Fisheries monthly.

Attached herewith are returns showing the quantity of Unsound Foodstuffs destroyed during 1956 and a summary of Vacant Stalls as at 31st December 1956.

G. NEWMAN,

Acting Market Inspector.

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REVENUE FROM FISH AUCTIONS

Market	Revenue	Percentage	Total
Clyde Terrace	1,047,000	24.2%	4,320,000
Ellenborough	2,620,000	60.4%	4,320,000
Other Markets	653,000	15.4%	4,320,000
Total	4,320,000	100%	4,320,000

TOTAL REVENUE

Market	Revenue
1. Clyde Terrace	1,047,000
2. Ellenborough	2,620,000
3. Other Markets	653,000
Total	4,320,000

SUMMARY OF UNSOUND FOODSTUFFS DESTROYED

FOR THE YEAR 1956

Market	FISH				MEAT			VEGETABLES AND FRUITS				POULTRY		Miscellaneous
	Fresh	Shell	Boiled	Salted	Beef	Mutton	Pork	Fresh Vegetables	Dry Vegetables	Salted Vegetables	Fresh Fruits	Live-stock	Eggs	
Clyde Terrace ..	Kattis 9,438	Kattis 2,327	Kattis ..	Kattis ..	Kattis ..	Lb. ..	Kattis ..	Kattis 35,744	Kattis 8,432	Kattis ..	Kattis 3,762	Heads 832	Tens 1119.	Kattis 11,128
Ellenborough ..	17,460	8,291	..	..	..	..	..	17,321	15,877	..	4,261	666	558.	1,841
Telok Ayer ..	560	6,290	..	..	..	..	..	38,945	15,460	..	11,600	206	314.	4,185
Kandang Kerbau ..	929	1,530	..	535	..	..	5,000	..	..	..	4,486	718	258.9	..
Orchard Road ..	299½	178	..	..	300	2	3,932	..	..	..	3,737	134	49.1	1,752
People's Park ..	..	..	..	..	68½	..	19,788	..	..	..	..	627	..	..
Maxwell ..	451	552	..	..	177	93	1,666	..	..	..	191	962	..	..
Grange Road ..	160	..	..	..	..	..	1,033	..	..	..	815	60	19.9	710
Sims Avenue ..	1,148	469	..	..	..	..	2,968	93	..	..	239	126	39.4	794
Total ..	30,445½	19,637	..	535	545½	95	293	126,397	39,862	..	29,091	4,331	2,358.3	20,410

SUMMARY OF VACANT SLABS AND STALLS AS AT 31ST DECEMBER, 1956

Description	Clyde Terrace	Ellenborough	Telok Ayer	Kandang Kerbau	Orchard Road	People's Park	Maxwell Road	Grange Road	Sims Avenue	Remarks
Fish (a) Fresh ..	25	..	4	1	..	4	34	5	8	
(b) Boiled	
MEAT (a) Beef	2	..	..	..
(b) Mutton	1	..	..	..	..	..	..
(c) Pork	1	..	..	..
(a) Fresh Vegetables, Fresh Fruits and Fresh Eggs	1	1	1	..	38	3	2	
(b) Salted Vegetables	1	1	1	1	..	
(c) Dry Vegetables and Fresh Eggs	
(d) Dry and Salted Vegetables	
POULTRY: Livestock	8	..	..	..	..	2	..	..
Eggs	2	..	..	..	..	..	..	..
Salt Fish and Dried Vegetables	2	4	2	12	
MISCELLANEOUS:—										
Beancakes	6	..	..
Cleaned Ducks and Chickens and Dressed Poultry	1	2	..	..
Ground Assorted Spices	
Fancy Fish	
HAWKERS: Eating—Large Cooked Food	
BLOCK ICE	
SODA FOUNTAIN	
FROZEN MEAT	
FROZEN MUTTON	
Total ..	25	10	6	2	1	11	87	11	22	

CITY ABATTOIRS

I HAVE the honour to submit my report for the year ending 31st December, 1956.

During the year 505,430 animals were slaughtered in the City Abattoirs; 431,373 were swine, 3,057 oxen, 3,437 buffaloes, 9 horses, 64,636 sheep and 2,918 goats.

346 swine, 11 oxen, 2 buffaloes, 447 sheep and 5 goats died in pens.

49 swine died in the depot.

55 swine, 37 oxen, 7 buffaloes, 92 sheep and 1 goat carcasses were totally condemned.

J. L. da SILVA, CERT. R.S.I.,
Superintendent of Abattoirs.

—	Swine	Oxen	Buffaloes	Horses	Sheep	Goats
Admitted for slaughter, 1956 ..	432,004	3,053	3,456	9	64,946	2,922
Slaughtered 1956	431,373	3,057	3,437	9	64,636	2,918
Died in pens	346	11	2	..	447	5
Died in depot	49	..	..	..	..	..
Carcasses condemned ..	55	37	7	..	92	1
Diseased organs, etc. condemned and destroyed in tons ..	11.4	3.7	5.7	..	7.2	0.11

TOTAL RECEIPTS FOR THE YEAR 1956

	S	c.
Fees for slaughter at Cattle section	19,554	00
Fees for slaughter at Sheep section	67,868	00
Fees for slaughter at Pig section	864,008	00
Fees for storage at French Road Depot	9,977	05
Fees for inspection of wild boar carcasses	84	00
Receipts for sale of blood and pigs' bristles	540	00
Receipts as pen rents (all slaughter houses)	31,484	20
Total receipts for the year 1956	993,515	25
<i>Less</i> refund of slaughter fees	1,183	00
Total net receipts for the year 1956	992,332	25
Total net receipts for the year 1955	835,522	70
Special slaughtering licenses issued during the year 1956 (7 pigs @ \$10 each, 29 sheep and 9 goats @ \$5 each)	260	00

ANIMALS SLAUGHTERED MONTHLY IN CITY ABATTOIRS DURING THE
YEAR 1956

	Swine	Oxen	Buffaloes	Horses	Sheep	Goats
January ..	34,054	304	272	..	5,914	161
February ..	33,742	262	219	..	2,949	250
March ..	34,623	299	242	..	5,607	193
April ..	35,200	243	301	..	2,878	269
May ..	36,580	265	341	..	5,752	208
June ..	35,864	163	309	..	3,947	225
July ..	37,323	248	324	1	5,812	251
August ..	38,984	272	227	1	6,104	316
September ..	37,367	241	242	3	5,984	257
October ..	32,883	280	229	4	6,613	262
November ..	36,759	241	302	..	5,940	234
December ..	37,994	239	429	..	7,136	292
Total slaughtered during 1956 ..	431,373	3,057	3,437	9	64,636	2,918
Total slaughtered during 1955 ..	318,575	4,389	1,825	13	60,868	2,237

CARCASSES TOTALLY CONDEMNED DURING THE YEAR 1956

	Swine	Oxen	Buffaloes	Sheep	Goats
Cas. Lymphadenitis ..	..	..	..	1	..
Cysticercosis ..	..	1	..	..	..
Emaciation e Dropsy ..	..	5	..	5	1
Generalised Bruising ..	6	3	..	3	..
Generalised Pneumonia ..	..	..	..	1	..
Jaundice ..	10	3	..	20	..
Moribund ..	1	1	..	..	..
Pyrexia ..	27	1	..	58	..
Sarcosporidiosis ..	..	..	6	..	..
Septic Metritis ..	..	1	..	..	..
Septicaemia ..	6	1	1	4	..
Tuberculosis ..	1	22	..	..	..
Swine Fever ..	2	..	..	..	..
Pyæmia ..	1	..	..	..	..
Total condemned during 1956	55	37	7	92	1
Total condemned during 1955	25	40	16	57	..

REPORT FOR THE YEAR ENDING 31st DECEMBER, 1956

	Swine	Oxen	Buffaloes	Sheep	Horses	Goats
Number slaughtered ..	431,373	3,057	3,437	9	64,636	2,918
Died in pens	346	11	2	..	447	5
Died in depot	49	..	..	..	..	..
Carcases condemned ..	55	37	7	..	92	1
Diseased organs etc. condemned and destroyed in tons ..	11.4	3.7	5.7	..	7.2	0.11

CASES OF PARTIAL CONDEMNATION

	Swine	Oxen	Buffaloes	Sheep	Goats
Abscess	13,719	..	1	9	..
Angiomatosis .. ..	..	23	..	..	..
Bruising and/or Fracture ..	4,017	63	1	227	6
Cas. Lymphadenitis .. ..	..	..	..	11,237	..
Cirrhosis	121	3	..	46	2
Congestion	11,903	6	1	5,130	3
Cysts	71	2	9	142	..
Fascioliasis .. ..	..	1,251	1,015	..	89
Fatty Infiltration	50	62	11	1,515	1
Hydronephrosis	150	..	..	4	..
Inflammation	378	9	358	430	10
Maggots .. ..	..	..	..	100	..
Mastitis	1	19	..	..	..
Melanosis .. ..	..	..	..	71	..
Metritis .. ..	..	9	..	..	..
Necrosis	99	..	..	..	..
Nephritis .. ..	..	..	..	64	..
Onchocerciasis .. ..	..	163	..	..	..
Parasites	279	1	..	..	..
Pericarditis	23	2	..	5	..
Peritonitis	11	..	..	..	..
Plenrisy	559	1	4	173	..
Penumonia	444	8	2	6	1
Pregnancy	52	107	9	..	17
Sarcosporidiosis .. ..	..	..	1,566	495	..
Strongylosis .. ..	..	1	52	..	..
Tuberculosis	2	144	..	..	..

ITEMS OF INTEREST FOR THE YEAR 1956

The revenue of \$992,332.25 for the year surpasses all previous years. The increase is due to the smaller type of pigs slaughtered during the year.

Two pig carcasses condemned for Swine Fever were reported to the Government Veterinary Officer.

J. L. da SILVA, CERT. R.S.I.,
Superintendent of Abattoirs.

PUBLIC HEALTH INSPECTORS SECTION STAFF

Mr. L. A. Marcus, Chief Public Health Inspector, proceeded to the United Kingdom on leave for 8 months from 4th February to 30th October, 1956. He was promoted to the post of Superintendent, Markets and Hawkers Department on 1st January, 1957 from which date the writer was promoted to the post of Chief Public Health Inspector.

The Chief Food and Drugs Inspector, Mr. J. W. Bennett and one Public Health Inspector, Mr. J. Ferguson, who left Singapore in January 1956 on Colombo Plan Scholarship for one year, returned to the Department in December after having passed the final Royal Society of Health examination, held in Sydney for the Certificate of Inspector of Meat and Other Foods.

Two Probationary Public Health Inspectors attended as candidates for a period of approximately 9 months, the Royal Society of Health Course in Singapore which commenced on 1st February, 1956. One of these candidates failed in the final examination. He has, however, been granted permission by the Head Office of the R.S.H. (London) to take part in this year's examination with exemption from all subjects except Sanitary Engineering. The other candidate was successful.

One Divisional Public Health Inspector, Mr. A. N. Chatterji was on leave, prior to retirement, since 7th August, 1956.

The Acting Market Inspector, Mr. Koh Cheng Khiang was transferred back to the Main Office of the Health Department as from 1st June, 1956, when another qualified Public Health Inspector, Mr. G. G. Newman was detailed to act in his place.

During the absence on leave of the substantive holders of the above mentioned Designated Posts, their duties were carried out by senior members of the Public Health Inspectorate in accordance with the policy of the Establishments Committee to give the most senior officers an opportunity to act in rotation in the higher graded posts.

The staff as at 31st December, 1956 is as follows:—

C.P.H.I.	D.P.H.Is.	S.P.H.Is.	F. & D.Is.	Q.P.H.Is.	P.P.H.Is.	Total
1	1	4	3	25	8	42

SANITARY WORK

Kampong Inspection

Kampong Inspections were carried out in connection with:—

- (a) Kampong Sanitation.
- (b) Enforcement of the Swine By-laws.
- (c) Checking new huts within the City Area.
- (d) Checking new structures other than huts in dwelling houses within the City Area.
- (e) Selection of sites for the erection of standpipes.

104 days were spent during which 1,838 premises were inspected.

Complaints

A total of 1,469 complaints were received from the public involving 15,112 visits.

Complaints			No. of Complaints	Primary Visits	Revisits	Total visits and revisits
Mosquito	..	..	741	6,469	} 6,251	15,112
Other	..	..	728	2,392		

Mosquito breeding was found in 2,150 premises.

Infectious Diseases

The following cases of infectious diseases were investigated.

Polio-myelitis	Diphtheria	Chicken-pox	Typhus	C.S.M.	Leprosy	Typhoid
26	425	1,402	5	1	115	74

In connection with the above, the following work was carried out.

Diphtheria Throat Swabs	Removal to Middleton Hospital	Barrier Spraying re Poliomyelitis	Total Visits
3,044	606	26	2,344

Notices

The following is a summary of notices served.

Type of Notice	B/f	Served	Total	Complied with	Cancelled	C/f
Intimations	76	342	418	347	27	44
Limewash	1	145	146	128	7	11
Nuisance Notice ..	52	38	90	59	3	28
Abatement Order ..	3	16	19	15	..	4
Prohibition Order ..	..	..	..	..	..	..
Well Notice .. ..	..	1	1	1	..	..
Total	132	542	674	550	37	87

Food and Drugs

686 samples were taken by the Public Health Staff for chemical analysis, bacteriological examination and breaches of the Food and Drugs Regulations, of which 379 samples were taken by the Public Health Inspectors and the remaining 307 by the Food and Drugs Inspectors. 105 samples were also taken for bacteriological examination. For details, please see Appendix I, Table A.

Routine inspection of premises in connection with unsound food was carried out by the Food and Drugs Inspectors involving 6003 visits. For summary of foodstuffs surrendered and destroyed, please see Table *B* of Appendix *I*.

Inspection of Premises

Inspections carried out on other classes of premises not included in the above, total 28,311 visits as follows:—

Sauce Factories	159
Oilmills	86
Sawmills	59
Places of Entertainment	287
City Markets	336
Private Markets	264
Coffee Grinding Mills	42
Printing Press	212
Licensed Premises	19,069
Public Houses	421
Labour Ordinance	9
Daily Fines	97
Serving Notices	551
Inspecting Notices	1,104
Cautioning Cases	213
Unlicensed Premises	839
Goldsmiths	33
Dry Cleaners	34
Measuring Schools	6
Smoke Observations	16
Foundries	17
Other Premises	4,457
Total	<u>28,311</u>

In connection with the visits to:—

- (a) Places of Entertainment;
- (b) Printing Presses;
- (c) Public Houses;
- (d) Native Passenger Lodging House,

these inspections were made generally for the purpose of putting up recommendations with regard to the licensing, registration or renewal of licences under the control respectively of (1) Police Department (2) Chief Secretary (3) Customs Department (Board of Licensing Justices) (4) Criminal Investigation Department (Special Branch).

During the year, 193 plans were received from the City Architect and Building Surveyors Department, for comments generally with regard to the drainage, sanitary accommodation, working facilities and the siting of septic tanks including the discharge of the effluent. The number of inspections made in this connection are included under the heading of "Other Premises".

Reports to other Departments

A total of 561 reports were made to various departments in the City Council with regard to irregularities observed during the course of the Public Health Inspectors' rounds:—

City Cleansing Department	175
City Sewerage Department	134
City Building Department	100
Other Departments	152
Total	<u>561</u>

Offences and Prosecutions

298 summonses were applied for all types of infringements of the Ordinance and By-laws.

Court proceeding took up 151 man working days. There were 318 prosecutions with 264 convictions. 4 summonses were withdrawn and 43 not served and 7 acquitted. Total fines amounted to \$10,546.50.

Meat Inspection

Owing to the shortage of the staff at the City Abattoirs, one Public Health Inspector was seconded for duty at the pig abattoirs on a weekly roster, from the beginning of the year. Additional Inspectors were also sent to relieve the staff who went on leave or to assist in the inspection of the large number of animals slaughtered during several periods throughout the year.

Plague Prevention Section

Total number of rats caught in the City Area ...	4,954
Number of Fleas combed from the rats ...	2,522

Cemetery Section

Burial in Public Cemeteries ...	4,554 (216)
Burial in Private Cemeteries ...	694
Total ...	5,248 (216)*
Exhumations ...	5,743

For number of Burials by Race see Table C.

Figure in brackets denotes cremations.

Food and Drugs Section

Re Japanese Star Anise (Illicium Anisatum). As a result of investigations carried out in 1955 on information received from Mr. A. F. Caldwell, Senior Lecturer in Pharmacy, University of Malaya, *re* symptoms of poisoning observed in a number of persons admitted into the General Hospital after partaking curry flavoured with Japanese Star Anise and on instructions from the City Health Officer, all stocks of this toxic Japanese fruit found in possession of wholesalers and retailers were placed under seizure in accordance with Section 4 (i) (c) of the Sale of Food and Drugs Ordinance (Cap. 148).

Out of 12 seizures, three firms appealed to the Court to disallow the forfeiture of their stocks, but subsequently withdrew their appeal. The City Magistrate confirmed the seizures made by this department. The total stock, comprising 160 pickuls (under seizure), were eventually destroyed at the City Incinerator on receipt of a disposal order from the Minister of Health.

Re Arsenic on Apples. In October, 1956 investigations were carried out and necessary action taken as a result of the discovery of arsenic on apples imported from Japan. Importers of Japanese apples were warned to thoroughly wash their stocks of fruit before distribution to retailers. Fruiterers, fruit hawkers, market stallholders and other retailers were also requested to inform their customers to wash and peel such apples before consumption. In addition to these measures publicity was also given to this matter over Radio Malaya and in the Press.

The examination and sampling of imported fresh fruits is being continued.

During the year there were 9,991 man working days which were spent as follows:—

Sanitary Work	Abattoirs	Burial Grounds	Sick Leave	Infectious Diseases Duties	Vacation Leave
8,464	366	177	59	366	559

The total number of visits during the year covering all categories of work was 53,608 as compared with 62,144 in 1955. The fall in the number of visits was due to the absence on study and vacation leave of 4 Senior Inspectors holding Designated Posts, whose duties were carried out by other members of the Public Health Inspectorate. This caused a chain reaction resulting in Inspectors, who normally carried out district work, acting in a supervisory capacity.

J. W. BENNETT, A.R.S.H.,
*Chief Public Health Inspector,
 City Health Department,
 Singapore.*

APPENDIX I—continued

SAMPLES TAKEN FOR BACTERIOLOGICAL EXAMINATION

Ice Cream	...	...	47
Popsicles	...	...	52
Cold Turkey	...	...	1
Cake	...	...	1
Cooked Ham	...	...	1
Canned Sweet Corn	...	...	1
Tap Water	...	...	1
Soya Bean Milk	...	...	1
Total	...	...	105

Table B

SUMMARY OF FOODSTUFFS SURRENDERED AND DESTROYED

Crates	Cases	Boxes/ Packages	Tins	Bottles/ Jars	FOOD BY WEIGHT	
					Katties	Pounds
..	..	489	34,265	228	4 Tons 1 qr.	8 lbs.

1,152 bottles (100 each) of Multi-Vitamins tablets and 498 bottles ($\frac{1}{2}$ oz. each) of Pan-Vita Drops were also surrendered and destroyed.

Table C

BURIAL GROUNDS

1956				Burials and Cremations made in City Cemeteries and licensed burial grounds in City Area	Exhumations
Europeans	..	..	..	51	..
Eurasians	..	..	..	73	..
Chinese	..	..	..	3,341	5,743
Malays	..	..	..	1,276 (9)	..
Indians	..	..	..	(a) 459 (206)	..
Others	..	..	..	47 (1)	..
Total				5,248 (216)	5,743

(a) Includes two burial of ashes. (b) Figures in () denote cremations.

ANNUAL REPORT—DISPENSARIES 1956

The year 1956 saw the establishment and full working of the two new dispensaries one at Lorong Lalat and another at Alexandra Road and the stage is set for the construction of another dispensary at Kolam Ayer.

Table I

THE FOLLOWING COMPARATIVE TABLE SHOWS FIGURES FOR ATTENDANCES AT THE DISPENSARIES AND SICK DAYS LOST.

	City Hall Disp.			Lorong Lalat			Alexandra Road			Total		
	1956	1955	1954	1956	1955	1954	1956	1955	1954	1956	1955	1954
Total Attendances	30,502	27,840	27,817	59,458	51,661	44,528	33,222	34,889	21,455	123,182	114,390	93,790
Total Sick Days	19,477	21,446	22,083	37,140	34,684	36,880	9,390	10,886	9,564	66,007	67,016	68,527

Table II

PRIVATE PRACTITIONERS

	1956	1955	1954
Number of Cases	10,430	8,505	6,531
Number of Sick Days	27,679	24,860	22,050

It is encouraging to note that many members of the staff and open vote employees are visiting the dispensaries during the afternoon after their work for minor complaints. Health preserving drugs like vitamins are liberally dispensed and many employees are taking advantage of it.

The junior and subordinate staff shall soon be placed on the card system similar to that of the open vote employees when a record of their medical histories including physical examinations and the results of clinical investigations and diagnostic procedures can be maintained.

Table III.—Home Visits: Medical Officers in charge of Staff made a total of 723 visits to patients' homes as compared to 166 in 1955 and 92 in 1954.

During the period of strike by the Gas Department workers, one of the Medical Officers visited the Kallang Gas Works daily and treated the workers and their families who were stationed within the premises.

Table IV.—Medical examinations: Altogether 2,393 examinations were made to assess physical fitness prior to entry into service and/or the Municipal Provident Fund.

Staff Position and changes:

- (a) *Medical Officers.*—Dr. J. C. Chan who was the Medical Officer i/c City Hall Dispensary went on long leave prior to retirement. Dr. H. D. Jesudason joined the City Council service and is in charge of the Alexandra Road Dispensary.

Dr. K. Karunakaran was appointed as the Assistant Bacteriologist in the City Bacteriologist Department Drs. V. K. Thomas and V. V. V. Menon left the Council's service.

Dr. T. I. Williams who was holding a temporary post was placed on the permanent establishment. Dr. W. A. Nicolas joined the department late in the year to fill a temporary post of Medical Officer.

(b) *Hospital Assistants*—

1. 1 Chief Hospital Assistant;
2. 2 Senior Hospital Assistant;
3. 1 Dispenser (shared with M. & I.W. Department);
4. 7 Hospital Assistants.

(c) *Clerks*—5.

(d) *Attendants*—9.

Total No. of first visits recorded at the dispensaries=46,366 as compared to 34,191 during 1955.

Chief Causes of sickness in employees attending Dispensaries:

Short Fever	...	...	8,525
Diseases of Respiratory system	...	...	2,948
Accidents and Injuries	...	...	9,527
Diseases of the Skin	...	...	2,387
Diseases of the Digestive system	...	...	3,577
Diseases of the Eye	...	...	1,442
Diseases of the E.N.T. and Mouth	...	...	2,485
Cardio-Vascular diseases	...	...	18
Deficiency diseases	...	...	1,728
Diseases of the Urinary system	...	...	221
Venereal Diseases	...	...	126
Pulmonary Tuberculosis	...	...	46
Diabetes	...	...	112
Dental	...	...	732

No case of Malaria was detected.

It has to be placed in record of the ready and valuable help rendered to this department by the sister institutions of the Government, S.A.T.A. Middleton hospital and the City Bacteriologist's Department.

T. I. WILLIAMS, M.B.,B.S.,
Medical Officer i/c of Staff.