Report of the Ministry of Health / Colony of Singapore.

STATE OF SINGAPORE

REPORT OF THE
MINISTRY OF HEALTH

for the year ended 31st December, 1960

BEING THE ANNUAL REPORT ON THE MEDICAL DEPARTMENT
BY THE ACTING DIRECTOR OF MEDICAL SERVICES
FOR THE YEAR
1960

(Cmd. 28 of 1965).

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INTRODUCTION

To: THE MINISTER FOR HEALTH,
SINGAPORE.

Sir,

I have the honour to present the Annual Report for the year ended 31st December, 1960.

The year 1960 is the first full year of the new State of Singapore where the Government assumed the full responsibility of internal self-government. It was a year of re-organisation of the Ministry of Health and for the first time all the medical and health services have been completely unified on an island-wide basis under the administration of this Ministry, with the physical integration of the City Health Department, the Cleansing Department, the Markets and Hawkers Department, the Health Department of the Rural Board and the Department of Chemistry.

The health of the State continues to improve, with no cases of smallpox, cholera, plague or yellow fever. There was a mild outbreak of typhoid with 61 cases in Pulau Bukom Besar which was quickly brought under control. No cases of malaria of indigenous origin were reported during the year.

The vital statistics maintained an all round progressive decline. The estimated mid-year population is 1,634,100; the birth rate per thousand population is 37.8 (compared with 39.5 in 1959); the crude death rate per thousand population is 6.2 (compared with 6.4 in 1959); the infantile mortality rate per thousand live births is 34.9 (compared with 36.00 in 1959); and the maternal mortality rate is 0.4 (compared with 0.7 in 1959).

The number of births this year showed a further reduction — 61,775 births in 1960 compared to 62,464 in 1959 and 62,495 in 1958.

To maintain the extensive service with continued increase in public demands for a better service has been extremely difficult, while limitations in institutional facilities and acute staff shortage of all categories have caused serious problems for the Ministry during the year. There was a large number of staff resignations of all ranks. Five senior personnel left the service during the year including the Permanent Secretary (Health) and Director of Medical Services, the Assistant Director of Medical Services (Health) and the Acting Senior Pathologist, which have created a very difficult situation in the senior administrative section of the Ministry.

The 1960 Estimates contained provisions for 48 specialist medical posts, 30 posts for Senior Registrars, 248 posts for Medical Officers and 50 posts for Housemen. As at 31st December, 1960, only 27 specialist medical posts and 6 posts of Senior Registrars were substantially filled, whilst there were 200 medical officers and 55 housemen.

To ease the present shortage of staff, plans for overseas recruitment of a limited number of specialist officers from Israel, senior registrars from Japan and timescale medical officers from Commonwealth countries were finalised. It is hoped that these officers will arrive early in the next year.

At the beginning of 1960, sixteen medical officers and two dental officers were undergoing post-graduate training overseas. A further ten medical officers and one dental officer proceeded overseas during the course of the year on study awards. Ten medical officers and two dental officers returned after having successfully completing their courses of study. Post-graduate study courses were awarded to 21 medical officers and dental officers during the year. The University of Malaya graduated 89 doctors and 20 dental surgeons and 4 pharmacists during the year.

REGISTERS OF DOCTORS, DENTISTS, ETC. 1960

	Doctors	Dentists	Female Nurses	Male Nurses	Asst. Nurses	Mid-wives	Phar.
Government Medical Dept.	249	41	639	243	298	599	19
University of Singapore ...	33	12	—	—	—	—	4
Private Practice or Institutions	358	272	455	12	56	365	72
Housemen	52	—	—	—	—	—	—
Total ...	692	325	1,094	255	354	964	95

The ratio of doctors to population is 1 to 2,553.

Finance

During the year $36.2 million was expended on medical and health services in Singapore which represents $22.15 *per capita*. 1960 completes the 10-year Medical Plan and steps are being taken to plan for expansion of the hospital and health services for the next five years.

Detailed information regarding the work of individual divisions, departments, sections, etc. are in different sections of this report and for the first time the report of the Department of Chemistry has been incorporated.

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

NG SEE YOOK,
L.M.S. (Singapore), D.P.H. (London),
Acting Director of Medical Services, Singapore.

29th July, 1963.

Chapter One

LEGISLATION

THE Hospitals Board (Report) Ordinance (No. 12 of 1960) and the Mental Disorders and Treatment Ordinance (No. 69 of 1960) were passed and the Tan Tock Seng's Hospital (Transfer) Bill was placed before the Assembly during the period under review.

Mental Disorders and Treatment Ordinance, 1960 (No. 69 of 1960).—This amending Ordinance enables a medical practitioner, including a medical officer, to send persons believed to be mentally ill direct to a mental hospital for observation and treatment. This is considered necessary as it has been found, in practice, that an increasing number of mentally ill persons are taken by their relatives, or others, direct to a doctor in a Government hospital for examination and treatment.

Hospitals Board (Report) Ordinance, 1960 (No. 12 of 1960).—The general policy of Government with regard to hospitals is to centralise all planning, inspection and control of Government hospitals in the hands of the Minister and his official staff. This Government legislation repeals the Hospitals Board so that all hospitals are administered directly by the Ministry of Health with the formation of a Hospitals Division to effectively run the hospital services.

Tan Tock Seng's Hospital (Transfer) Bill.—The Tan Tock Seng Hospital is administered by a Committee of Management.

In pursuance of Government's policy to integrate the City Council and other statutory organisations into Government in order to achieve a unified administration of all city and rural health services under the Ministry of Health, it was decided that the Tan Tock Seng Hospital's Committee of Management be repealed and the hospital be transferred to Government.

Accordingly this Bill for the transferance of the hospital to Government was presented to the Legislative Assembly for First Reading on the 20th October, 1960.

SUBSIDIARY LEGISLATION

The Poisons (Organo-Phospherous) Rules, 1960.—These Rules prohibit the import and use of organo-phospherous compounds, many of which are used as insecticides without the approval of the Director of Medical Services.

The Poisons (Amendment) Rules, 1960.—The above Rules exempt from control certain veterinary preparations.

Chapter Two

STAFF WELFARE

THE Labour and Welfare Section of the Government Health Department continued to provide a welfare service for the daily-rated labour force throughout the year 1960. The distribution of the labour force to the three District Councils, the City Cleansing Department, the City Anti-Malarial Department with the retention of a small nucleus for the work of the Central Health Office was done satisfactorily taking into account the personal problems involved in such transfers. A healthy relationship between the official side and the labour force has been maintained. The financial position of the Government Health Department Labourers' Co-operative Credit Society Ltd. is given in Table 1.

TABLE 1

FINANCIAL SUMMARY OF GOVERNMENT HEALTH DEPARTMENT LABOURERS' CO-OPERATIVE CREDIT SOCIETY LTD.

	Year ended 31st December, 1959	Year ended 31st December, 1960
	$ c.	$ c.
Post Office Savings Bank	7,541 97	5,041 97
Chartered Bank	1,069 64	1,042 35
Cash in transit	1,776 10	1,657 40
Investments	50,256 25	48,530 75
Loans outstanding	8,485 50	8,155 50
Total Credit balance	69,129 46	64,427 97
Membership	209	200
Total staff eligible	1,232	1,369

The Annual Sports of the Singapore Medical Services was held in October 1960. General Hospital won the Challenge Shield.

Concerts, social activities and children's parties were held in various institutions during the year.

Chapter Three

VITAL STATISTICS

THE population estimates of Singapore by racial groups and sex are given in Table 2 and Table 3.

Table 2

POPULATION OF SINGAPORE, 1911–1960

Year	Total	Malays	Chinese	Indians and Pakistanis	Eurasians	Europeans	Others
1911 (Census) ..	303,321	41,806	219,577	27,755	4,671	5,711	3,801
1921 (Census) ..	418,358	53,595	315,151	32,314	5,436	6,145	5,717
1931 (Census) ..	557,745	65,014	418,640	50,811	6,903	8,082	8,295
1947 (Census) ..	938,144	113,803	729,473	68,967	9,110	9,279	7,512
1957 (Census) ..	1,445,929	197,059	1,090,596	124,084	11,382	10,826	11,982
1958 (Mid-Year)	1,514,000	207,300	1,141,800	129,500	11,700	11,400	12,300
1959 (Mid-Year)	1,579,600	217,400	1,190,000	134,600	12,000	12,200	13,400
1960 (Mid-Year)	1,634,100	227,300	1,230,700	137,800	12,200	12,700	13,400

The racial group 'Malays' includes 'Indonesians'.

TABLE 3

MID-YEAR POPULATION ESTIMATES OF SINGAPORE BY RACIAL GROUP AND SEX, 1960

Racial Group	Males	Females	Total
Malays	118,700	108,600	227,300
Chinese	624,500	606,200	1,230,700
Indians and Pakistanis	92,400	45,400	137,800
Eurasians ...	6,100	6,100	12,200
Europeans ...	6,800	5,900	12,700
Others	7,100	6,300	13,400
Total ...	855,600	778,500	1,634,100

The racial group 'Malays' includes 'Indonesians'.

The ratio of females to males in 1931 was 584 to 1,000. At the 1947 Census it was 819 to 1,000. The ratio of females to males in the 1957 Census was 940 to 1,000. The ratios for 1958, 1959 and 1960 are 902: 1,000, 907: 1,000 and 909: 1,000 respectively.

There was a slight decrease in the number of births. There were 61,775 births in 1960 compared to 62,464 in 1959 and 62,495 in 1958.

The crude birth rate was 37.8 as compared to 39.5 in 1959 and 41.3 in 1958.

TABLE 4

LIVE-BIRTHS WHICH OCCURRED IN 1960

BY RACIAL GROUP AND AGE OF MOTHER AND BY SEX OF CHILD

Mother's Age in Years	TOTAL			MALAYS		CHINESE		INDIANS AND PAKISTANIS		EURASIANS		EUROPEANS		OTHERS	
	M. and F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
12 ..	1	..	1	..	1	..	..	..	..	..	..	..	..	..	..
13 ..	4	3	1	2	1	..	..	1	..	..	..	..	..	..	..
14 ..	23	14	9	7	3	2	..	5	5	..	1	..	..	..	..
15 ..	88	43	45	24	20	5	8	14	17	..	..	..	..	..	..
16 ..	291	152	139	76	64	44	46	32	29	..	..	..	..	..	..
17 ..	643	329	314	120	116	144	146	61	50	..	..	..	..	4	2
18 ..	1,216	600	616	221	222	286	296	86	90	3	3	..	..	4	5
19 ..	1,895	999	896	303	274	559	507	121	100	4	6	2	1	10	8
20 ..	3,082	1,598	1,484	430	400	953	898	196	166	7	9	4	..	8	11
21 ..	3,526	1,848	1,678	386	376	1,262	1,111	178	174	12	5	2	2	8	10
22 ..	3,306	1,738	1,568	364	344	1,166	1,035	176	164	9	12	10	7	13	6
23 ..	2,933	1,519	1,414	352	292	1,013	964	130	133	5	12	7	6	12	7
24 ..	4,279	2,264	2,015	385	362	1,672	1,447	160	169	16	18	14	7	17	12
25 ..	4,247	2,142	2,105	413	388	1,551	1,559	137	126	18	13	9	11	14	8
26 ..	3,848	2,018	1,830	361	311	1,501	1,359	119	127	13	13	14	8	10	12
27 ..	3,494	1,806	1,688	253	263	1,387	1,282	140	117	6	6	9	9	11	11
28 ..	3,541	1,818	1,723	269	272	1,409	1.311	107	116	8	10	11	8	14	6
29 ..	2,995	1,543	1,452	200	191	1,213	1,144	98	88	9	11	8	6	15	12
30 ..	3,550	1,850	1,700	344	307	1,347	1,213	130	145	9	13	10	13	10	9
31 ..	2,587	1,340	1,247	168	167	1,074	991	72	66	6	5	8	9	12	9
32 ..	2,761	1,458	1,303	233	206	1,128	989	73	80	5	8	7	9	12	11
33 ..	1,931	1,004	927	99	110	835	762	43	42	10	2	5	8	12	3
34 ..	1 824	965	859	103	100	795	686	51	58	4	4	2	7	10	4
35 ..	1,707	846	861	154	153	638	637	43	49	4	11	6	5	1	6
36 ..	1,557	794	763	100	64	645	650	39	32	3	9	5	4	2	4
37 ..	1,346	691	655	95	77	558	534	24	34	2	2	8	4	4	4
38 ..	1,178	599	579	75	67	489	477	21	31	4	1	6	3	4	..
39 ..	1,000	508	492	46	41	443	419	13	23	2	6	3	1	1	2
40 ..	931	476	455	52	47	401	388	12	15	6	2	3	1	2	2
41 ..	561	301	260	20	22	272	234	6	1	..	1	3	2	..	..
42 ..	527	256	271	11	26	236	235	6	5	3	2	..	2	..	1
43 ..	299	154	145	5	6	143	137	4	1	2	1	..	..	..	..
44 ..	217	116	101	6	4	109	94	1	2	..	..	..	1	..	..
45 ..	157	71	86	3	6	63	76	3	3	..	..	..	..	2	1
Over 45 ..	216	120	96	13	10	103	82	4	4	..	..	..	..	..	..
Unknown	14	7	7	1	..	3	4	1	1	..	..	..	..	2	2
Total ..	61,775	31,990	29,785	5,694	5,313	23,449	21,721	2,307	2,263	170	186	156	134	214	168

(i) Figures *exclude* live-births of wives of non-locally domiciled Services personnel.

(ii) The racial group 'Malays' includes 'Indonesians'.

TABLE 5

LIVE-BIRTHS WHICH OCCURRED IN 1960

BY REGISTRATION AREA, RACIAL GROUP OF FATHER AND SEX OF CHILD

Racial Group	TOTAL			CITY AREA			RURAL AREA		
	M. and F.	M.	F.	M. and F.	M.	F.	M. and F.	M.	F.
Malays	11,007	5,694	5,313	6,927	3,625	3,302	4,080	2,069	2,011
Chinese	45,170	23,449	21,721	38,385	19,949	18,436	6,785	3,500	3,285
Indians and Pakistanis	4,570	2,307	2,263	4,107	2,070	2,037	463	237	226
Eurasians	356	170	186	339	163	176	17	7	10
Europeans	290	156	134	286	153	133	4	3	1
Others	382	214	168	347	195	152	35	19	16
Total ..	61,775	31,990	29,785	50,391	26,155	24,236	11,384	5,835	5,549

(i) The racial group 'Malays' includes 'Indonesians'.
(ii) Figures exclude live-births of wives of non-locally domiciled Services Personnel.

TABLE 6

LIVE-BIRTHS WHICH OCCURRED IN 1960

BY PLACE OF USUAL RESIDENCE OF PARENTS, RACIAL GROUP OF FATHER AND SEX OF CHILD

Place of usual Residence	TOTAL			MALAYS		CHINESE		INDIANS AND PAKISTANIS		EURA-SIANS		EURO-PEANS		OTHERS	
	M. and F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
City ..	35,669	18,319	17,350	2,523	2,392	13,916	13,161	1,522	1,468	66	84	138	124	154	121
Katong ..	9,766	5,101	4,665	1,643	1,579	2,971	2,647	357	326	57	58	3	5	70	50
Serangoon	9,683	5,130	4,553	459	394	4,108	3,613	485	479	37	38	8	7	33	22
Bukit Panjang	3,127	1,622	1,505	273	213	1,166	1,110	159	176	8	3	8	1	8	2
Jurong ..	2,758	1,430	1,328	299	270	1,079	1,011	45	40	3	2	2	1	2	4
Southern Islands ..	695	345	350	249	269	81	71	9	7	3	2	3	—	—	1
Singapore Unspecified	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Federation of Malaya	68	39	29	6	6	17	12	8	3	1	—	6	7	1	1
Overseas ..	9	4	5	1	1	—	1	—	—	—	—	2	3	1	—
Total ..	61,775	31,990	29,785	5,453	5,124	23,338	21,626	2,585	2,499	175	187	170	148	269	201

(i) Figures *exclude* live-births of wives of non-locally domiciled Services personnel.

(ii) The racial group 'Malays' includes Indonesians'.

TABLE 7

LIVE-BIRTHS WHICH OCCURRED IN 1960

BY PLACE OF USUAL RESIDENCE OF PARENTS, REGISTRATION AREA AND SEX OF CHILD

Place of usual Residence	REGISTRATION AREA								
	TOTAL			CITY AREA			RURAL AREA		
	M. and F.	M.	F.	M. and F.	M.	F.	M. and F.	M.	F.
City	35,669	18,319	17,350	35,341	18,150	17,191	328	169	159
Katong	9,766	5,101	4,665	5,953	3,170	2,783	3,813	1,931	1,882
Serangoon ..	9,683	5,130	4,553	5,593	2,965	2,628	4,090	2,165	1,925
Bukit Panjang ..	3,127	1,622	1,505	1,759	927	832	1,368	695	673
Jurong	2,758	1,430	1,328	1,579	850	729	1,179	580	599
Southern Islands ..	695	345	350	103	54	49	592	291	301
Singapore Unspecified	—	—	—	—	—	—	—	—	—
Federation of Malaya	68	39	29	54	35	19	14	4	10
Overseas	9	4	5	9	4	5	—	—	—
Total ..	61,775	31,990	29,785	50,391	26,155	24,236	11,384	5,835	5,549

Figures *exclude* live-births of wives of non-locally domiciled Services personnel.

TABLE 8

DEATHS REGISTERED IN 1960

BY REGISTRATION AREA, SEX AND RACIAL GROUP

Racial Group	TOTAL			CITY AREA			RURAL AREA		
	M. and F.	M.	F.	M. and F.	M.	F.	M. and F.	M.	F.
Malays	1,758*	962	795	1,103*	599	503	655	363	292
Chinese	7,469	4,341	3,128	6,377	3,723	2,654	1,092	618	474
Indians and Pakistanis	769	556	213	674	485	189	95	71	24
Eurasians	74	39	35	62	31	31	12	8	4
Europeans	58	38	20	50	31	19	8	7	1
Others	82*	49	31	73*	46	25	9	3	6
Total ..	10,210*	5,985	4,222	8,339*	4,915	3,421	1,871	1,070	801

*Includes unknown sex.

(i) The racial group 'Malays' includes 'Indonesians'.
(ii) Figures *exclude* deaths of non-locally domiciled Services personnel and their families.

TABLE 9

DEATH REGISTERED IN 1960

BY PLACE OF USUAL RESIDENCE RACIAL GROUP AND SEX

Place of usual Residence	TOTAL			MALAYS		CHINESE		INDIANS AND PAKISTANIS		EURA-SIANS		EURO-PEANS		OTHERS	
	M. and F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
City ..	6,287*	3,662	2,623	428	371	2,832	2,065	336	137	12	16	20	14	34	20
Katong ..	1,590	907	683	316	263	467	375	93	25	18	9	5	2	8	9
Serangoon ..	1,388†	804	583	67	50	643	488	77	35	8	6	5	2	4	2
Bukit Panjang	414	265	149	53	30	176	102	35	14	—	2	1	1	—	—
Jurong ..	302	193	109	38	34	146	74	8	1	—	—	—	—	1	—
Southern Islands ..	110	64	46	48	42	13	3	1	1	—	—	2	—	—	—
Singapore Unspecified	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Federation of Malaya ..	94	68	26	6	5	56	20	5	—	1	1	—	—	—	—
Overseas ..	25	22	3	6	—	8	1	1	—	—	1	5	1	2	—
Total ..	10,210‡	5,985	4,222	962	795	4,341	3,128	556	213	39	35	38	20	49	31

* Includes two of unknown sex. (Others)
† Includes one of unknown sex. (Malaysian)
‡ Includes three of unknown sex.
(i) Figures *exclude* non-locally domiciled Services personnel and their families.
(ii) The racial group 'Malays' includes 'Indonesians'.

TABLE 10

DEATHS REGISTERED IN 1960

BY PLACE OF USUAL RESIDENCE, REGISTRATION AREA AND SEX

Place of usual Residence	REGISTRATION AREA								
	TOTAL			CITY AREA			RURAL AREA		
	M. and F.	M.	F.	M. and F.	M.	F.	M. and F.	M.	F.
City	6,287*	3,662	2,623	6,177*	3,601	2,574	110	61	49
Katong	1,590	907	683	896	516	380	694	391	303
Serangoon ..	1,388*	804	583	769*	456	312	619	348	271
Bukit Panjang ..	414	265	149	198	129	69	216	136	80
Jurong	302	193	109	174	120	54	128	73	55
Southern Islands ..	110	64	46	18	14	4	92	50	42
Singapore Unspecified	—	—	—	—	—	—	—	—	—
Federation of Malaya	94	68	26	89	64	25	5	4	1
Overseas	25	22	5	18	15	3	7	7	—
Total ..	10,210*	5,985	4,222	8,339*	4,915	3,421	1,871	1,070	801

*Includes unknown sex.
Figures *exclude* non-locally domiciled Services personnel and their families.

TABLE 11

DEATHS REGISTERED IN 1960

BY RACIAL GROUP, SEX AND AGE GROUP

Age Group	TOTAL			MALAYS		CHINESE		INDIANS AND PAKISTANIS		EURASIANS		EUROPEANS		OTHERS	
	M. and F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
Under 1 day ..	316†	187	127	35	27	140	90	10	8	..	..	1	2	1	..
1 day and under 2 days ..	190	114	76	24	13	79	59	9	1	..	..	2	1	..	2
2 days and under 3 days ..	124	74*	50	9	9	58	37	7	4	..	..	..	..	..	..
3 days and under 4 days ..	107	65	42	16	10	42	30	7	2	..	..	..	..	..	..
4 days and under 5 days ..	56	29	27	12	6	17	17	..	3	..	1	..	..	..	..
5 days and under 6 days ..	42	26	16	4	2	18	14	3	..	..	..	..	..	1	..
6 days and under 7 days ..	26	14	12	5	2	9	8	..	2	..	..	..	..	..	..
7 days and under 14 days ..	125	82	43	18	9	57	28	5	6	1	..	..	..	1	..
14 days and under 21 days ..	65	39	26	17	13	19	10	2	3	..	..	..	..	1	..
21 days and under 28 days ..	42	17	25	5	7	11	15	1	2	..	1	..	..	..	..
Neo-Natal Deaths ..	1,093†	647	444	145	98	450	308	44	31	1	2	3	3	4	2
28 days and under 2 months	170	104	66	49	25	43	33	11	8	..	..	..	..	1	..
2 months and under 3 months	160	81	79	34	31	43	40	4	8	..	..	..	..	..	.
3 months and under 4 months	103	51	52	23	16	17	29	9	7	..	..	1	..	1	..
4 months and under 5 months	102	56	46	23	25	27	15	6	4	..	..	..	..	..	2
5 months and under 6 months	78	48	30	22	15	24	12	1	3	..	..	..	..	1	..
6 months and under 7 months	99	52	47	25	11	23	30	4	4	..	1	..	1	..	..
7 months and under 8 months	86	47	39	20	20	24	17	2	2	..	..	..	..	1	..
8 months and under 9 months	100	50	50	15	22	28	25	5	3	1	..	..	..	1	..
9 months and under 10 months	57	26	31	15	11	8	17	3	3	..	..	..	..	..	..
10 months and under 11 months	63	30	33	13	10	16	20	1	3	..	..	..	..	..	..
11 months and under 1 year ..	47	21	26	11	8	8	16	2	2	..	..	..	..	..	..
Infant Mortality* ..	2,158†	1,213	943	395	292	711	562	92	78	2	3	4	4	9	4

* Includes neo-natal deaths.

† Includes two of unknown sex (One Malaysian and one Others).

(i) Figures *exclude* non-locally domiciled Services personnel and their families.

(ii) The racial group 'Malays' includes 'Indonesians'.

TABLE 11—*continued*

DEATHS REGISTERED IN 1960

BY RACIAL GROUP, SEX AND AGE GROUP

Age Group	TOTAL			MALAYS		CHINESE		INDIANS AND PAKISTANIS		EURASIANS		EUROPEANS		OTHERS	
	M. and F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
Under 1 year ..	2,158*	1,213	943	395	292	711	562	92	78	2	3	4	4	9	4
1 year and under 2 years	339	193	146	63	42	101	84	26	17	2	1	..	..	1	2
2 years and under 3 years	202	104	98	28	30	71	61	5	5	..	..	..	..	..	2
3 years and under 4 years	144	72	72	17	17	46	53	9	2	..	..	..	..	..	..
4 years and under 5 years	98	56	42	13	7	40	32	2	3	..	..	..	..	1	..
5— 9 years ..	245	129	116	22	20	89	85	15	10	2	..	1	..	..	1
10—14 years ..	146	86	60	15	12	66	45	2	2	1	1	..	..	2	..
15—19 years ..	117	73	44	8	11	61	30	4	2	..	..	..	..	..	1
20—24 years ..	140	80	60	16	15	56	40	6	4	..	..	2	..	..	1
25—29 years ..	143	84	59	7	13	67	39	9	4	..	..	1	2	..	1
30—34 years ..	203	115	88	18	17	72	59	21	12	..	..	..	..	4	..
35—39 years ..	260	161	99	27	17	99	78	29	4	2	..	3	..	1	..
40—44 years ..	394	240	154	19	27	155	116	57	8	4	2	2	1	3	..
45—49 years ..	510	352	158	30	27	263	120	50	8	2	3	5	..	2	..
50—54 years ..	763	516	247	42	43	392	187	74	8	2	4	2	2	4	3
55—59 years ..	832	593	239	47	33	477	191	56	10	5	2	5	..	3	3
60—64 years ..	912	598	314	75	47	465	241	49	15	5	3	1	3	3	5
65—69 years ..	841	526	315	50	26	441	270	21	9	5	7	5	1	4	2
70—74 years ..	729	396	333	32	38	340	286	12	4	4	1	3	2	5	2
75—79 years ..	490	227	263	13	15	203	241	4	4	1	1	4	2	2	..
80—84 years ..	335	114	221	15	21	87	190	10	3	1	3	..	2	1	2
85 years and over	200	50	150	10	24	35	118	1	1	1	4	..	1	3	2
Unknown ..	9†	7	1	..	1	4	..	2	..	..	..	..	..	1	..
Total ..	10,210‡	5,985	4,222	962	795	4,341	3,128	556	213	39	35	38	20	49	31

* Includes two of unknown sex (One Malay and one Others).

† Includes one of unknown sex (Others).

‡ Includes three of unknown sex.

(i) Figures *exclude* non-locally domiciled Services personnel and their families.

(ii) The racial group 'Malays' includes 'Indonesians'.

TABLE 12

DEATHS REGISTERED IN 1960

BY REGISTRATION AREA, SEX AND AGE GROUP

Age Group	TOTAL			CITY AREA			RURAL AREA		
	M. and F.	M.	F.	M. and F.	M.	F.	M. and F.	M.	F.
Under 1 day ..	316†	187	127	292†	173	117	24	14	10
1 day and under 2 days	190	114	76	178	104	74	12	10	2
2 days and under 3 days	124	74	50	120	72	48	4	2	2
3 days and under 4 days	107	65	42	98	60	38	9	5	4
4 days and under 5 days	56	29	27	51	26	25	5	3	2
5 days and under 6 days	42	26	16	40	25	15	2	1	1
6 days and under 7 days	26	14	12	24	13	11	2	1	1
7 days and under 14 days	125	82	43	115	75	40	10	7	3
14 days and under 21 days	65	39	26	42	26	16	23	13	10
21 days and under 28 days	42	17	25	37	16	21	5	1	4
Neo-Natal Deaths ..	1,093†	647	444	997†	590	405	96	57	39
28 days and under 2 months	170	104	66	117	66	51	53	38	15
2 months and under 3 months	160	81	79	121	59	62	39	22	17
3 months and under 4 months	103	51	52	85	41	44	18	10	8
4 months and under 5 months	102	56	46	76	43	33	26	13	13
5 months and under 6 months	78	48	30	53	31	22	25	17	8
6 months and under 7 months	99	52	47	70	33	37	29	19	10
7 months and under 8 months	86	47	39	68	37	31	18	10	8
8 months and under 9 months	100	50	50	71	35	36	29	15	14
9 months and under 10 months	57	26	31	38	16	22	19	10	9
10 months and under 11 months	63	30	33	49	22	27	14	8	6
11 months and under 1 year ..	47	21	26	32	12	20	15	9	6
Infant Mortality* ..	2,158†	1,213	943	1,777†	985	790	381	228	153

* Includes neo-natal deaths. † Includes unknown sex.

Figures *exclude* non-locally domiciled Services personnel and their families.

TABLE 12—*continued*

DEATHS REGISTERED IN 1960

BY REGISTRATION AREA, SEX AND AGE GROUP

Age Group	TOTAL			CITY AREA			RURAL AREA		
	M. and F.	M.	F.	M. and F.	M.	F.	M. and F.	M.	F.
Under 1 year ..	2,158*	1,213	943	1,777*	985	790	381	228	153
1 year and under 2 years	339	193	146	245	135	110	94	58	36
2 years and under 3 years	202	104	98	165	86	79	37	18	19
3 years and under 4 years	144	72	72	125	63	62	19	9	10
4 years and under 5 years	98	56	42	75	38	37	23	18	5
5— 9 years ..	245	129	116	212	116	96	33	13	20
10—14 years ..	146	86	60	123	71	52	23	15	8
15—19 years ..	117	73	44	100	63	37	17	10	7
20—24 years ..	140	80	60	127	70	57	13	10	3
25—29 years ..	143	84	59	130	78	52	13	6	7
30—34 years ..	203	115	88	180	102	78	23	13	10
35—39 years ..	260	161	99	227	145	82	33	16	17
40—44 years ..	394	240	154	346	219	127	48	21	27
45—49 years ..	510	352	158	453	322	131	57	30	27
50—54 years ..	763	516	247	658	455	203	105	61	44
55—59 years ..	832	593	239	690	492	198	142	101	41
60—64 years ..	912	598	314	745	490	255	167	108	59
65—69 years ..	841	526	315	679	422	257	162	104	58
70—74 years ..	729	396	333	542	287	255	187	109	78
75—79 years ..	490	227	263	368	163	205	122	64	58
80—84 years ..	335	114	221	227	74	153	108	40	68
85 years and over ..	200	50	150	138	33	105	62	17	45
Unknown	9*	7	1	7*	6	..	2	1	1
Total ..	10,210*	5,985	4,222	8,339*	4,915	3,421	1,871	1,070	801

* Includes unknown sex.

Figures *exclude* non-locally domiciled Services personnel and their families.

TABLE 13

LIVE-BIRTHS AND CRUDE BIRTH RATES

Racial Group	1931		1947		1957		1958		1959		1960	
	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate
Malays	2,862	43.7	5,473	48.1	9,317	47.3	10,005	48.3	10,463	48.1	10,577	46.5
Chinese ..	15,993	37.9	33,629	46.1	46,263	42.4	46,189	40.5	45,799	38.5	44,964	36.5
Indians and Pakistanis	1,020	19.6	3,087	44.8	5,020	40.5	5,116	39.5	5,073	37.7	5,084	36.9
Eurasians ..	199	28.5	359	39.4	360	31.6	362	30.9	341	28.3	362	29.7
Europeans ..	169	20.6	312	8.9	355	32 8	338	29.8	286	23.4	318	25.0
Others	227	29.1	185	24.6	442	36.8	485	39.5	502	37.6	470	35.1
Total ..	20,470	36.4	43,045	45.9	61,757	42.7	62,495	41.3	62,464	39.5	61,775	37.8
Males	10,753		22,152		31,795		32,180		32,061		31,990	
Females ..	9,717		20,893		29,957		30,313		30,403		29,785	
Total ..	20,470		43,045		61,757*		62,495*		62,464		61,775	
Male births per 100 births ..		52.5		51.5		51.5		51.5		51.3		51.8

*Includes unknown sex.

(i) The racial group 'Malays' includes Indonesians'.
(ii) Figures for 1957—1960 exclude live-births of wives of non-locally domiciled Services personnel.

TABLE 14

DEATHS AND CRUDE DEATH RATES

Racial Group	1931		1947		1957		1958		1959		1960	
	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate
Malays	1,905	29.1	2,029	17.8	1,967	10.0	1,931	9.3	1,790	8.2	1,758	7.7
Chinese ..	10,599	25.1	9,368	12.8	7,696	7.1	7.613	6.7	7,431	6.2	7,469	6.1
Indians and Pakistanis	820	15.8	878	12.7	791	6.4	792	6.1	757	5.6	769	5.6
Eurasians ..	103	14.8	84	9.2	75	6.6	87	7.4	71	5.9	74	6.1
Europeans ..	51	6.2	74	2.1	38	3.5	65	5.7	42	3.4	58	4.6
Others	145	18.6	78	10.4	80	6.7	88	7.2	84	6.3	82	6.1
Total ..	13,623	24.2	12,511	13.3	10,647	7.4	10,576	7.0	10,175	6.4	10,210	6.2

(i) The racial group 'Malays' includes 'Indonesians'.
(ii) Figures for 1957—1960 exclude deaths of non-locally domiciled Services Personnel and their families.

The death rate of 6.2 per thousand in 1960 is the lowest on record and compares favourably with any country as crude death rate.

TABLE 15

INFANT DEATHS AND INFANT MORTALITY RATES, 1960

Racial Group	Number	Rate
Malays	688	65.0
Chinese	1,273	28.3
Indians and Pakistanis	170	33.4
Eurasians	5	13.8
Europeans	8	25.2
Others	14	29.8
Total ...	2,158	34.9

(i) The racial group 'Malays' includes 'Indonesians'.
(ii) Figures exclude deaths of children under one year of non-locally domiciled Services Personnel.

TABLE 16

STILL-BIRTHS AND STILL-BIRTH RATES

Year	Still-birth	Still-birth Rate	Year	Still-birth	Still-birth Rate
1931	568	27.0	1946	645	16.4
1932	528	24.8	1947	671	15.3
1933	527	23.9	1948	753	16.7
1934	586	25.1	1949	803	17.1
1935	650	24.5	1950	807	17.1
1936	693	24.1	1951	802	16.4
1937	755	24.7	1952	901	17.3
1938	783	24.0	1953	925	16.7
1939	814	23.0	1954	932	16.1
1940	719	20.8	1955	904	15.4
1941	816	32.2	1956	909	14.7
1942	467	16.6	1957	968	15.4
1943	599	18.8	1958	965	15.2
1944	610	18.9	1959	862	13.6
1945	459	18.4	1960	886	14.1

Figures for 1957–1960 exclude still-births of wives of non-locally domiciled Services Personnel

TABLE 17

MATERNAL DEATHS AND MATERNAL MORTALITY RATES

Year	Maternal Deaths	Maternal Mortality Rate	Year	Maternal Deaths	Maternal Mortality Rate
1931	158	7.5	1946	128	3.3
1932	160	7.5	1947	125	2.9
1933	128	5.8	1948	108	2.4
1934	111	4.8	1949	102	2.2
1935	100	3.8	1950	86	1.8
1936	103	3.6	1951	80	1.6
1937	134	4.4	1952	87	1.7
1938	154	4.7	1953	68	1.2
1939	140	4.0	1954	88	1.5
1940	148	4.3	1955	52	0.9
1941	146	4.1	1956	45	0.7
1942	160	5.7	1957	55	0.9
1943	139	4.4	1958	50	0.8
1944	131	4.1	1959	45	0.7
1945	179	7.2	1960	28	0.4

Figures for 1957–1960 exclude deaths of wives of non-locally domiciled Services Personnel.

TABLE 18

MIGRATION STATISTICS BY SEA AND AIR DURING 1960

Arrivals

Racial Group	ADULTS		*CHILDREN		Total
	Males	Females	Males	Females	
Malays	7,822	3,043	780	569	12,214
Chinese	22,937	12,473	1,884	1,297	38,591
Indians and Pakistanis ..	11,395	3,496	1,448	915	17,254
Eurasians	157	99	41	31	328
Europeans	41,204	19,942	3,698	2,472	67,316
Others	5,928	956	232	136	7,252
Total ..	89,443	40,009	8,083	5,420	142,955

* Under 12 years of age.

Departures

Racial Group	ADULTS		*CHILDREN		Total
	Males	Females	Males	Females	
Malays	8,394	3,175	644	483	12,696
Chinese	23,504	12,059	1,265	890	37,718
Indians and Pakistanis ..	24,020	4,484	1,989	1,746	32,239
Eurasians	167	108	44	24	343
Europeans	41,332	21,002	3,836	2,836	69,006
Others	6,412	1,010	250	197	7,869
Total ..	103,829	41,838	8,028	6,176	159,871

* Under 12 years of age.
The Racial group 'Malays' includes 'Indonesians'.

PART II

THE HEALTH DIVISION

Chapter Four

PUBLIC HEALTH DIVISION

INTRODUCTION

THE State of Singapore comprises the main Island of Singapore with several small surrounding islands. The main island is 27 miles long and 14 miles wide with a land area of 216 square miles. The area of the smaller islands is about 10 square miles.

There are two local authorities: the City Council and the Rural Board. The City Council administers a very thickly populated area of 31 square miles and is responsible for all environmental and some personal health services. The rest of the area is under the jurisdiction of the Rural Board and the Government Health Division through District Health Officers for all environmental health services in this area. The School Health and Curative Medical Services are on an island-wide basis.

During the year changes in local government policy was carried out. This involved the integration of the local authority functions within the Central Government Ministries. One of the direct results of this would be the need to effect a smooth integration of the City Health Department and the Rural Health Departments within the Public Health Division of the Ministry. Plans for this were put into operation during the year but the process of integration would be a long-term one spread over the next two years.

HEALTH SERVICES

The progressive trend of past years was maintained in 1960. The intensive programme of rural sanitation started in 1954 was continued. During the year 48 new villages were brought into the scheme of rural sanitation. Sanitation of village wells and latrines, efficient methods of refuse disposal and drainage and general sanitation of the houses have been introduced and maintained.

Training of Health Personnel

The second local Course for the training of Public Health Nurses commenced in April 1959. Fourteen students who attended the Course took their qualifying examination for the Health Visitors Certificate in April 1960 and 13 were successful in their examination.

Health Education

During the course of the year the Health Education Section helped to organise a Family Planning Campaign and a Family Planning Exhibition was held in November. A series of 12 forthnightly radio broadcasts outlining the work of the various departments in the Ministry was given during the year. In addition to these projects this Section carried out programmes of Health Education work in the Maternal and Child Health Centres and gave lectures to school teachers. The Government has given considerable emphasis to Health Education as a powerful public health measure and the Public Health Division studied ways and means of operating a health education programme to reach the masses.

School Medical Service

The school population and the total enrolment for all schools at the end of 1960 was 353,408 as compared with 320,977 at the end of 1959. Out of a total of 666 Government and Government Aided Schools 611 were visited and approximately 31 per cent of the school population were examined. The attendances of school children at the school clinics showed an 11 per cent increase as compared with the previous year. There has been a slow but steady improvement in the environmental hygiene of school premises particularly in the rural areas.

Maternal and Child Health Service

At the end of 1960 there were 20 main clinics, 20 visiting centres and 8 midwife centres in operation in the rural areas. Though no new clinics were opened during the year every effort was made to consolidate the existing temporary midwifery service with resident midwives stationed in thickly populated areas.

A special Domicillary After Care Service was set up as a pilot project in Bukit Panjang in April. This service was extended to the Bukit Timah and Kim Chuan Road areas.

The general standard of services offered during the year remained high despite staff shortage. Kampong midwife centres are rapidly increasing in popularity. The drive to immunise the child population continued. The mobile immunisation van visited kampongs to cover children who had not attended clinics. Plans for compulsory immunisation against diphtheria were formulated in the light of Government's policy to introduce legislation for this purpose. B.C.G. vaccination is available at all Maternal and Child Health Centres.

Quarantine Service

With its unique central geographical position, large number of passengers, ships and air crews pass through Singapore from neighbouring infected countries. Its Quarantine Service, consisting of the marine port health service, airport health service and Quarantine Station, constitutes an essential bastion against the introduction of disease from outside.

No case of dangerous infectious disease was reported in 1960.

	1958	1959	1960
Ships arriving from infected or suspected ports	2,030	2,206	1,232
Sea passengers inspected ...	136,226	168,914	119,461
Aircraft arriving from infected or suspected ports	2,438	2,188	1,325
Air passengers and crews inspected	94,718	94,878	74,916
Passengers quarantined ...	14,421	12,479	10,252

Environmental Health

The main feature of the work during the year was the maintenance of existing health services at a high level with further extension of these services to meet the progressive population increase.

With nearly 40 per cent of the population living in the Rural areas and a large number of housing estates and population centres growing up, urban standards are being enforced in such developed areas.

No case of malaria of indigenous origin has been reported in any part of Singapore. The programme of Aedes mosquito control around the International Airport as a principal measure of yellow fever control extends over an area of more than 6 square miles. The A. aegypti index has been O and the A. albopictus index ranged from 0.9 to 1.6 per cent in surveys done during the year.

Typhoid Outbreak at Pulau Bukom

During the year an explosive outbreak of typhoid fever occurred on Pulau Bukom Besar and the adjacent smaller islands. In all, 61 cases of typhoid fever were admitted to the Middleton Hospital of which 53 cases were confirmed as typhoid fever. There were no deaths. At the same time about 100 hawkers and handlers from Pulau Bukom were admitted and screened for the typhoid carrier state. The source of the infection was traced to a carrier living at Pulau Seking who brought fish from the island to the market at Pulau Bukom Besar for sale. There were 6 cases on Pulau Seking near the carrier's house. Inoculation against typhoid was carried out among the Southern Islands group and over 10,000 people were immunised.

Dr. K. Kanagaratnam, M.B.B.S. (Malaya), D.P.H. (Malaya) was Acting Assistant Director of Medical Services (Health) during the year.

INFECTIOUS DISEASES IN RURAL SINGAPORE

No case of cholera, plague or smallpox occurred in the year under review. The number of cases of notified infectious diseases from the Rural Areas is given in Table 19.

TABLE 19

INFECTIOUS DISEASES IN RURAL SINGAPORE

	1956	1957	1958	1959	1960
Chicken-pox	447	350	175	382	555
Diphtheria	114	159	158	98	82
Leprosy	31	30	21	26	25
Puerperal Fever ...	24	4	5	15	9
Enteric Fever	25	33	31	57	81
Acute Anterior Poliomyelitis	20	17	148	34	70

Diphtheria

There were 82 cases in 1960 as compared with 98 in 1959. The programme of immunisation in the Maternal and Child Health Clinics, in schools and in kampongs continued with satisfactory response.

Enteric Fever

In August and September, an explosive outbreak of typhoid fever occurred at Pulau Bukom Besar and the adjacent smaller islands. In all, 61 cases of enteric fever were admitted to the Middleton Hospital of which 53 cases were confirmed as typhoid fever. There were no deaths.

About 100 hawkers and food handlers from Pulau Bukom were admitted to Middleton Hospital and screened for the typhoid carrier state. The results were negative. Eventually it was found that a fish handler who stays at

Pulau Seking was a typhoid carrier. This particular person transported fish to Pulau Bukom Besar Market where they were sold. There were six cases confined around the carrier's house in Pulau Seking. He has since been confirmed by Middleton Hospital as a carrier and has been excluded from handling food.

Leprosy

There has been a progressive decline of this disease over the past few years.

Poliomyelitis

There were 70 cases notified in 1960 as compared with 34 in 1959. This disease continues to be an endemic disease in Singapore.

Chapter Five

HYGIENE AND SANITATION IN RURAL AREAS

THE Rural Health Department has been responsible for hygiene and sanitation in the rural areas of Singapore including the islands around the State.

The administrative set-up of three District Councils was continued in 1960, although the process of integration of the Local Health Authorities viz the City Health Department and the Rural Health Department, into the Ministry of Health was embarked on.

The staff of the three District Councils as on 31st December, 1960 is given in Table 20.

TABLE 20

	Central Government	Bukit Panjang	Serangoon	Katong	Total
Rural Health Officer	1	1	1	1	4
Public Health Engineer ...	1	—	—	—	1
Senior Sanitary Inspector ...	1	1	1	1	4
Sanitary Inspectors, Timescale ...	2	2	4	3	11
Probationer Sanitary Inspectors ...	—	2	2	2	6
Senior Technical Subordinates ...	1	1	1	1	4
Technical Subordinates ...	9	5	7	6	27
Market Inspector/Overseer ...	—	1	4	1	6
Piggery Overseer	—	1	1	1	3

In 1960 the staff of the Cleansing Section in the District Councils is given in Table 21.

TABLE 21

	Bukit Panjang	Serangoon	Katong	Total
Senior Cleansing Inspectors ...	1	1	1	3
Cleansing Inspectors	3	3	3	9
Technical Subordinates ...	2	1	3	6
Overseers	5	15	15	35

The Sanitary staff of the Rural Health Department in the various districts has been concerned with anti-malarial control (oiling and drainage), water supplies, inspection of houses and housing sites, food inspection, occupational health, village sanitation and control of infectious disease. The staff of the Cleansing Section is responsible for scavenging and conservancy services in the rural areas.

MALARIA CONTROL

There are three organisations with highly technical staff grouped in special anti-malarial units which have been engaged for over a quarter century in this task viz:—the City Council, the Armed Forces and the Public Health Division. The main method adopted by all three has been the larval control of the vectors — anopheline maculatus and anopheline sundaicus. This entails the laying of subsoil pipes, construction of permanent surface drains, digging of ditches, the use of anti-malarial oil and spraying of insecticides. There was no indigenous malaria case in Rural areas including the surrounding islands in the year 1960.

MALARIA SURVEYS

419 rural malaria surveys were carried out and the summary total of the various mosquito specimen collected on these surveys are tabulated below:

A. maculatus	99 collections
A. sundaicus	22 collections
A. karwari	1 collection
A. baezai	5 collections
A. leucosphyrus	—
A. aitkeni	—
A. hyrcanus	1,496 collections
A. kochi	858 collections
A. vagus	46 collections
A. separatus	1 collection
A. barbirositis	—
A. letifer	—

SPECIAL SURVEYS

353 special surveys were carried out during the year to investigate notifications of malaria cases, for bringing new areas under anti-malaria control because of development and in attending to mosquito, fly and other insect pest complaints. The following collections of mosquitoes were made during these surveys:

A. maculatus	3 collections
A. sundaicus	—
A. karwari	—
A. letifer	1 collection
A. baezai	10 collections
A. hyrcanus	82 collections
A. kochi	47 collections
A. vagus	—
A. separatus	1 collection
Aedes Stegomyia	655 collections
Culex	120 collections

Yellow Fever Control — Singapore Airport

Aedes Stegomyia mosquito control within the Airport Proper and 880 metres from the airport perimeter fence had been carried out vigorously as in previous year and as a result not a single collection of Aedes (S) aegypti, the domiciliary yellow fever vector, was made during the year within the control areas. The Aedes index for the year 1960 is given in Table 22.

AEDES (STEGOMYIA) SURVEYS 1960

The usual measures practised during previous years were satisfactorily maintained during 1960. This included clearing of artificial containers, check surveys, destruction of natural breeding places and clearing of secondary vegetation.

Residual Spraying

Spraying of houses in the controlled area around the International Airport and in the Southern Island was done once in four months.

WATER SUPPLIES

The provision of a safe water supply is one of the most important public health measures. The water supply in the Rural areas is mainly from two sources — city piped water supply and wells. Piped water supply is available along the main trunk roads of the rural areas. However, in the more remote parts the people depend on well water supply. This is an unsatisfactory state of affairs, from the public health point of view, as nearly every well is found to be grossly polluted due to the existence of insanitary dwellings or privies or pig and fowl sheds. Also, during dry weather the water level in the wells goes down and the people often complain of shortage of water. In such instances, water has to be transported in water wagons to relieve the water shortage. However, the Rural Board has made provisions in its annual budget for the erection of more standpipes for the use of the public residing in the outlying villages and kampongs. The Health Department advises on the suitability of the sites and also provides drainage facilities when these standpipes have been erected. During the year 1960, 125 standpipes were installed and 18 concrete platforms with drainage were constructed. Three new wells were constructed by the Rural Health Department to provide the remote rural people with water.

Anti-malarial works with subsoil drainage system also provide a ready source of domestic water. This serves two purposes at the same time. Firstly, it serves as an anti-malarial measure and at the same time, it provides seepage water tapped by this means for the use of the remote kampong folk.

FOOD HYGIENE

In a tropical country where most of the factories for food manufacture are of a sub-standard variety and the number of hawkers and food peddlers are high, constant vigilance is essential to avoid outbreaks of gastro-intestinal diseases. The Public Health Inspectorate has to provide constant supervision on the sale of food, the inspection of premises in which it is prepared and stored and the equipment and appliances used in the manufacture. A total of 15,801 inspections were made to food premises during the year.

The following premises were visited and recommendations forwarded to the Rural Board for the approval of the issue of licences:

Aerated water factory ...	3	Ice-cream storing ...	16
Bakery	61	Market (private) ...	11
Bean cake shop ...	1	Meat shop	40
Bean curd skimming ...	2	Milk bar	4
Cake shop	3	Pasteuring and packing milk plant	1
Coffee shop	29	Peanut butter canning ...	1
Cold drinks	7	Sauce factory	18
Coffee powder grinding ...	9	Slaughter house ...	2
Confectionery	3	Sweet making	2
Dairies	50	Soya bean curd factory ...	1
Eating house	583	Vegetable canning ...	5
Fish shop	17	Vegetable shop ...	22
Flour mill	11	Vermicelli factory ...	21
Fruit shop	52		

With periodic inspections and surprise checks, it is hoped to effect gradual improvement to the existing standards of the food premises and to maintain a reasonable standard of wholesomeness in the quality of the food prepared for human consumption.

OFFENSIVE AND DANGEROUS TRADES

Licensing and control of offensive trades are governed under section 211 of the Municipal Ordinance and the Rural Board Offensive Trades By-laws. These provide for the sanitary requirements, adequate lighting, ventilation and drainage of the premises, provision of adequate and wholesome water supply and the satisfactory safeguards for the prevention of any health hazards present in the trade. Many of these trades are really cottage industries which are conducted in crude and primitive ways and this tends to increase the hazards and dangers to health because of ignorance and the empirical means adopted. On the other hand, there has been a great improvement in the welfare of workers of the larger establishments as regards their housing accommodation, hours of work, wages, provision of benefits, leave and other matters pertaining to the workers' health. The Factory Ordinance came into effect in 1958 and it is hoped with its enforcement, the standard of industrial health in Singapore will be raised.

A total of 6,214 inspections were carried out in 1960. The number of premises licensed is as follows:

Attap store and timber yard	118	Petrol store	86
Brick factory	10	Picture frame making ...	1
Carbide store	11	Pineapple factory ...	2
Can making	2	Plywood factory ...	1
Candle making ...	2	Polythene manufacturing ...	1
Cellulose solution storing ...	10	Pottery works	7
Charcoal store	41	Rattan store	2
Chewing gum base factory	1	Rubber goods manufacturing	2
Fertiliser manufacturing ...	1	Rubber factory ...	6
Fire cracker shop ...	25	Rubber smoke house ...	24
Firewood store ...	96	Sago factory	4
Fruit preserving yard ...	3	Saw mill	9
Garage	68	Sheep and goat pen ...	4
Jelutong Factory ...	1	Shoe factory	1
Kerosene factory ...	6	Smithy and Foundry ...	10
Laundry	203	Soap Factory	11
Lime factory	8	Sugar refinery	3
Live stock farm ...	1	Tannery	5
Miniature Zoo	4	Tyre retrading ...	3
Oil factory	12	Turpentine store ...	2
Paper goods manufacturing	1	Woodwork factory ...	3
Perfume manufacturing ...	1		

PIGGERIES

The sanitary conditions of the piggeries in the rural areas leave much to be desired and it is not uncommon to receive complaints of nuisances from piggeries. The rearing of pigs, however, has an important economic bearing on the food production of the island and while a satisfactory solution should be found in sanitating these piggeries, this economic factor should be borne in mind. The total number of piggeries licensed during the year was 2,169.

CATTLE SHEDS AND DAIRIES

Unlike the Chinese farmer, the Indian workman keeps a few head of cattle to augment his income. Many of the cattle sheds were found to be insanitary and the Rural Health Department has been trying very hard to improve matters. There are two large dairy farms in the rural areas viz: Malayan Dairy Farm and Singapore Dairy Farm. These two farms supply milk which is pasteurised before sale to the public.

PISCICULTURE

The number of fish and prawn ponds in the Rural Areas remain about the same. From the public health point of view these prawn and fish ponds may give rise to breeding of A. sundaicus and control of breeding of dangerous mosquitoes in the brackish water pond has always been a difficult problem. There are about 300 ponds in the Rural Districts of which 250 are fish ponds, the rest being prawn ponds.

KAMPONG SANITATION

In 1960 drainage and other construction works were carried out in 48 kampongs. 5,161 yards of channel drains, 2,327 yards of subsoil drains, 3,918 yards of earth drains, 18 standpipe aprons and 29 latrines were constructed.

Provision of kampong sanitation is a great boom to the villagers and sets a new tone to the general health consciousness. The Cleansing Section lent ready co-operation in the maintenance of sanitated kampongs and the Public Health Inspectors helped in maintaining kampong sanitation by pursuing a programme of health education.

TABLE 22

SINGAPORE AIRPORT—PAYA LEBAR

AEDES STEGOMYIA CHECK SURVEYS CARRIED OUT DURING 1960

Month	Number of surveys	Number of houses checked	Number of *Aedes* (S) *aegypt* collections	Number of *Aedes* (S) *albopictus* collections	Number of *Aedes* (A) *obturbans* collections	Number of *Culex* collections	*Aedes Stegomyia* Index %
March	19	1,439	Nil	13	6	10	.9
June	17	1,383	Nil	18	4	10	1.30
September	17	1,373	Nil	16	3	11	1.16
*December	18	1,470	Nil	23	8	11	1.56
Total	71	5,665	Nil	70	21	42	4.01

*Intermittent rainy weather during period of survey in December 1960. Hence increase in *Aedes* collections.

TABLE 23

RURAL MALARIA SURVEYS CARRIED OUT DURING THE YEAR 1960

Month	No. of Surveys	*A. maculatus*	*A. sundaicus*	*A. letifer*	*A. karwari*	*A. baezai*	*A. hyrcanus*	*A. kochi*	*A. vagus*	*A. separatus*
January	33	13	..	..	..	1	93	87	6	..
February	32	4	..	..	..	1	120	61	2	..
March	42	13	1	..	..	2	134	87	1	..
April	27	10	..	..	1	..	70	63	4	..
May	30	4	3	..	..	..	111	59	3	..
June	37	11	4	..	..	..	116	72	5	..
July	33	8	..	..	..	..	106	92	4	..
August	45	15	..	..	..	..	197	61	8	..
September	36	8	..	..	..	..	162	65	6	..
October	34	7	2	..	..	..	120	71	3	..
November	33	3	3	..	..	1	120	61	3	1
December	37	3	9	..	..	..	147	79	1	..
Total ..	419	99	22	..	1	5	1,496	858	46	1

TABLE 24

SPECIAL MOSQUITO SURVEYS CARRIED OUT DURING THE YEAR 1960

Month	No. of Surveys	*A. maculatus*	*A. sundaicus*	*A. letifer*	*A. baezai*	*A. hyrcanus*	*A. kochi*	*A. vagus*	*Culex*	*Aedes Stegomyia*
January	24	..	..	..	..	..	..	..	..	30
February	36	..	..	..	..	13	7	..	44	62
March	29	1	..	..	..	6	5	..	5	40
April	30	..	..	..	3	6	6	..	16	38
May	31	..	..	..	3	8	7	1	13	51
June	31	..	..	..	1	3	3	..	13	63
July	28	..	..	..	..	3	4	..	2	65
August	30	..	..	..	..	12	6	..	4	65
September	30	..	..	..	..	6	2	..	7	75
October	31	..	..	1	3	5	3	..	12	66
November	25	2	..	..	..	9	2	..	1	47
December	28	..	..	..	..	11	2	..	..	53
Total ..	353	3	..	1	10	82	47	1	120	655

Chapter Six

MATERNAL AND CHILD HEALTH SERVICE IN THE RURAL AREAS

STAFF

THE staff of the Service consisted of one Lady Medical Officer i/c Maternal and Child Health Service, 11 Medical Officers, one Public Health Matron, 16 Health Sisters, 59 Health nurses and 82 Health midwives.

Maternal and Child Health Clinics

There are three types of Maternal and Child Health Clinics at present i.e.

	1958	1959	1960
Main clinics (resident midwives 2–6) ...	20	20	20
Midwife centres (resident midwife) ...	8	8	8
Visiting centres (non-residental) ...	25	21	20

There were no new clinics built during the year.

TABLE 25

MATERNAL AND CHILD HEALTH CENTRES AS ON 31ST DECEMBER, 1960

Buona Vista	Bulim	Tanjong Murai
Holland Road	St. John's Island	Kampong Blukang
Bukit Timah	Sungei Tengah	Kampong Bajau
Jurong 12½ m.s.	Kuala Loyang	Damar Luar
Jurong 18 m.s.	Somapah	Pulau Sudong
Bukit Panjang	Jurong 10 m.s.	Pulau Semakau
Ama Keng	Lim Chu Kang 18 m.s.	Pulau Seking
Mandai	Pulau Ubin	Pulau Seraya
Thomson Road	Yan Kit	Pulau Bukom Kechil
Yio Chu Kang		Lazarus Island
Lim Ah Pin		Pulau Ayer Merbau
Kim Chuan Road		Pulau Samulun
Kampong Batak		Pulau Ayer Merlimau
Bedok 9 m.s.		Chia Keng Village
Ulu Bedok		Ayer Gemuroh
Changi		Pulau Ubin
Sembawang		Ponggol
Keh Hai Road		Kampong Loyang
Pulau Brani		Pulau Sebarok
Pulau Tekong		Woodlands 15½ m.s.

TABLE 26

DOMICILIARY MIDWIFERY STATISTICS — RURAL AREA

	1957	1958	1959	1960
Total number of live and still births in the rural area	16,462	25,768	26,811	—
Confinements in Kandang Kerbau Hospital	5,556	5,831	8,311	8,746
Confinements attended by Government midwives	7,961	8,043	7,201	6,640
Confinements attended by private midwives Class B	5,483	6,452	5,878	5,197

Maternity Services

Ante-natal Care.—There was an increase in the ante-natal attendances in the clinics, both in the midwife sessions and the Lady Medical Officer sessions.

The weekly midwife ante-natal sessions in the main clinics and the daily midwife ante-natal sessions in the Kampong midwife centres proved to be of great value in maintaining the "umbrella" of ante-natal care in the rural areas.

Sunday midwife sessions were started in Lim Ah Pin Clinic to suit the convenience of the mothers. This has been extended to six other clinics and has proved to be popular.

There appears to be a progressive decrease in the number of cases of home confinements. There were 6,640 home confinements in 1960 as compared with 7,201 in 1959. Of these 6,640 home confinements, 3,825 were "B.B.A." (Born before arrival of Midwife). This is partly due to the distances which have to be travelled to call a midwife and partly due to a traditional practice of calling an unqualified midwife for delivery and a qualified midwife after delivery.

There were 18 maternal deaths in 1960 of which 12 were due to haemorrhage.

Domiciliary After-Care Service.—In order to cope with the increasing number of cases referred from Kandang Kerbau Maternity Hospital, a special D.A.C. Service was set up as a pilot project in Bukit Panjang in April with three midwives. An average of over 70 cases were attended by them every month.

Post-natal Care.—The attendances of the mothers at the post-natal clinic remained disappointing, although there were 4,491 post-natal attendances in 1960 as compared with 2,697 in 1959. This is only a small proportion of the cases delivered by Government midwives. A suture service for cases delivered by Government midwives was initiated.

Child Health Clinics

There were 155,450 attendances of children under one year as compared with 128,205 in 1959. There were 129,061 attendances of pre-school children as compared with 87,272 in 1959.

Immunisation

B.C.G. Vaccination.—There has been a slowly increasing response to the B.C.G. vaccination for newly-born infants. Out of 6,640 babies delivered by Government midwives, 5,401 infants were given B.C.G. vaccination.

Diphtheria, Whooping Cough and Tetanus. The immunisation against diphtheria, whooping cough and tetanus in all the rural clinics remained satisfactory and more children were coming for their booster doses.

Maternal and Child Health — Islands of Singapore

The standard of Maternal and Child care was the same as that in the clinics of the main Island of Singapore. A team consisting of a Lady medical officer, Health nurse and Health midwife, together with a Hospital Assistant, visited the islands weekly in the Floating Dispensary *Seraya* throughout the year. Bi-weekly out-patient sessions on the islands appeared to be much appreciated by the islanders.

Teaching

The Lady Medical Officer, Maternal and Child Health Service and Dr. Connie Lim assisted in the Public Health Nursing Course while Dr. Anne Tay gave lectures to pupil midwives and assistant nurses.

Family Planning Campaign

A family planning campaign was conducted towards the end of the year culminating in an Exhibition. Family Planning advice was offered at the Post-Natal Clinics.

TABLE 27

SUMMARY OF WORK DONE IN MATERNAL AND CHILD HEALTH CLINICS

	1958	1959	1960
Home visits by (*a*) Health Nurses	33,106	45,450	47,752
(*b*) Health Midwife	54,141	60,636	86,330
Nursing visits by Midwives	40,203	45,883	62,953
Confinements attended	7,750	7,201	6,640
Mothers in labour to hospitals	486	611	530
Clinic attendances			
Infants (0–1 year)	131,302	128,205	155,450
Children (over 1 year)	75,556	87,272	129,061
Ante-natal	77,391	75,558	105,907
Post-natal	3,186	2,697	4,491
Family Planning (new cases)	1,187	1,396	2,112
Family Planning (repeat cases)	4,411	5,987	6,837
Primary vaccinations	16,135	15,183	20,918
Diphtheria Immunisation			
P.T.A.P. 1st dose	2,604	1,704	3,044
2nd dose	2,795	1,245	2,654
Booster	6,062	4,893	5,072
Kampong Diphtheria Immunisation Campaign			
P.T.A.P. 1st dose	2,445	1,690	1,517
2nd dose	1,800	1,248	1,182
Booster	1,411	1,141	1,097
Triple Antigen Immunisation			
Diphtheria, Whooping Cough and Tetanus — 1st dose ...	25,717	21,307	18,924
Diphtheria, Whooping Cough and Tetanus — 2nd dose ...	12,968	16,784	16,972
Diphtheria, Whooping Cough and Tetanus — 3rd dose ...	12,265	13,349	15,763
Diphtheria, Whooping Cough and Tetanus — Booster ...	1,751	7,173	11,065
B.C.G. Vaccination (Island wide from May 1958) ...	2,994	4,078	5,401
Non-notifiable Infectious Diseases			
Whooping Cough	198	224	169
Measles	256	125	342
Mumps	10	28	39
Free Milk Distribution			
1. Milk to ante-natal mothers (in lb.) ..	17,667	20,487	16,293
Number of mothers	17,667	20,800	16,336
2. Milk to children (in lb.)	21,544.5	29,212	27,079
Number of children	23,266	31,513	27,159
3. Total amount of powdered milk (in lb.) ...	39,211.5	49,699	43,372

TABLE 28

VITAL STATISTICS — RURAL AREA

	1956	1957	1958	1959	1960
Maternal deaths	15	11	22	21	12
Live births	16,576	16,286	25,348	26,343	26,029
Still births	173	176	420	369	368
Total births	16,749	16,462	25,768	26,712	26,397
Perinatal deaths (first 7 days of life)	n.a.	n.a.	298	688*	716*
Neonatal deaths (first 4 weeks of life)	203	180	413	447	452
Infant deaths (deaths under 1 year of age)	647	570	1,077	968	966
Maternal mortality (deaths per 1,000 live and still births)	.89	.66	.85	.79	.45
Perinatal mortality (still births and deaths in 1st week of life) ...	n.a.	n.a.	27.8‡	25.76†	27.12†
Neonatal mortality (number of deaths per 1,000 births)	12.3	11.0	16.2	16.97	17.37
Infant mortality (number of deaths per 1,000 live births) ...	39.0	34.9	42.4	36.75	37.11
Still birth rate (number of still births per 1,000 total births) ...	10.3	10.6	16.2	13.81	13.94
Total number of babies under 1 year attending clinics	15,609	16,295	17,026	16,541	17,895

*Perinatal deaths = deaths under 7 days of age and still births.

†Perinatal mortality rate = number of deaths under 7 days of age and still births per 1,000 live and still births.

‡Per 1,000 total births.

Chapter Seven

QUARANTINE SERVICE

THE Quarantine Service comprises three closely related sections — the Marine Port Health Service, the Airport Health Service and the Quarantine Station.

Staff position at the end of the year is given in Table 29.

TABLE 29

STAFF OF THE QUARANTINE SERVICE AS ON 31ST DECEMBER, 1960

—	Health Officers	Lay Superintendent	Sanitary Inspectors	Technical Subordinates	Hospital Assistants	Midwife
Marine Port Health Service	4	—	2	1	—	—
Airport Health Service	1	—	—	—	4	—
Quarantine Station	—	1	—	1	1	1
Total	5	1	2	2	5	1

The Port Health Service has two launches available for the inspection and clearance of ships.

Inspection and Clearance of Small Craft

The health clearance of small craft from neighbouring islands is done by two Public Health Inspectors stationed at Immigration East Wharf. The service operates daily.

Radiomedical Service

The Government operates a round-the-clock radiomedical service. This is often availed of by merchant ships and requests for radiomedical advice has been received from Masters of ships as far away as the Persian Gulf and the Philippine Sea. During 1960 over 87 radiomedical requests were received and promptly attended to by the Port Health Officer on duty.

Quarantine Station

With stricter immigration control being enforced there continues to be a marked drop in the number of passengers quarantined at the Quarantine Station at St. John's Island.

TABLE 30

PASSENGERS QUARANTINED AT ST. JOHN'S ISLAND

	1956	1957	1958	1959	1960
Chinese	22,260	14,965	7,648	5,735	6,201
Indians	11,424	9,015	6,429	5,912	4,016
Malaysians	109	140	323	806	15
Others	49	55	21	26	20
Total ...	33,842	24,175	14,421	12,479	10,252

Airport Health Service

Paya Lebar Airport is the International Airport for Singapore. The Airport is a designated Sanitary Airport under the terms of Article 19 of the International Sanitary Regulations. Nineteen airlines make use of the Paya Lebar Airport and there were 6,422 aircraft arrivals and 6,429 departures on international flights. Round-the-clock services for the clearance of aircraft and passengers from infected airports has been provided by four Senior Hospital Assistants.

The general sanitation of the Airport has remained satisfactory throughout the year.

The Airport Health Officer rendered medical attention to minor ailments or emergencies. During the year 516 minor cases were seen; of these 34 were referred to General Hospital for treatment.

TABLE 31

SUMMARY OF WORK DONE BY THE AIRPORT HEALTH SERVICE

	1954	1955	1956	1957	1958	1959	1960
Aircraft from infected airports	1,341	1,313	1,647	1,707	2,438	2,188	1,325
Passengers and crew cleared	39,725	45,976	71,600	82,166	94,718	94,878	74,916
Passengers isolated ...	—	—	—	—	—	—	—
Passengers under surveillance	41	21	67	2,565	2,882	254	174
Aircraft disinfected ...	—	—	—	—	—	—	—

Introduction of Jet Services

The year 1960 was the second year of the introduction of jet flights at Singapore Airport. During the year ten airlines were operating jet and turbo jet aircrafts. This has created a busier time for health clearance at the Singapore Airport in view of the larger number of passengers which these modern aircraft carried.

TABLE 32

SUMMARY OF WORK DONE BY THE PORT HEALTH SERVICE

	1956	1957	1958	1959	1960
Inspections and clearance of ships					
Ships inspected and cleared ...	1,849	1,519	2,030	2,206	1,232
Passengers inspected on ships at the Quarantine Anchorage ...	95,779	101,182	136,226	168,914	119,461
Corpses inspected	14	10	11	5	15
Pilgrim Ships	4	4	4	4	5
Pilgrims	2,518	2,214	1,891	1,967	2,042
Disinfection of infected vessels ...	—	—	—	—	—
Small Crafts from neighbouring islands inspected and cleared ...	4,788	4,821	6,750	9,258	13,510
Passengers from small craft inspected	23,611	35,129	55,735	73,371	90,031
Inspection of Bum Boats ...	103	102	98	50	40
Inspection of Water Boats ...	8	8	9	5	2
Rodent Control					
Ships inspected for evidence of rodent life	401	418	472	403	410
Ships issued with Deratization Certificate	119	109	119	116	92
Ships issued with Deratization Exemption Certificate ...	282	309	353	287	318
Rats destroyed during fumigation	782	462	1,170	646	894
Rats examined bacteriologically*	193	129	680	268	168
Vaccination and inoculation					
Small-pox vaccination ...	10,042	9,819	8,668	11,069	16,174
Cholera inoculation	10,051	10,321	10,838	10,216	15,673
T.A.B. inoculation	58	75	34	30	947
Sanitary documents					
Bills of Health	500	575	616	498	384
Permits issued to import, export or tranship coffins containing human remains	88	71	54	75	100
Certificates to accompany goods ...	93	94	175	113	135
Certificates issued for articles disinfected by steam	1	—	—	—	—

*Rats are examined bacteriologically by the City Health Department.

Chapter Eight

SCHOOL HEALTH

THE School Health Service is centrally administered in Singapore. During the year 44 new schools were opened in Singapore. At the end of 1960 there were 762 schools in the State; this excludes the miscellaneous schools (e.g. religious, commercial, sewing, etc.). There were 56,438 new entrants. The total school population rose from 320,977 in 1959 to 353,408 by the end of 1960, an increase of 32,431.

A classification of Government, Government Aided and Private Schools together with the enrolments for 1959 and 1960 is shown in Table 33. The geographical distribution of schools, and the enrolment of Government and Aided Schools as compared with Private Schools are given in Tables 34 and 35.

TABLE 33

SUMMARY OF SCHOOLS AND SCHOOL POPULATION

Type of Schools	Number of Schools		Enrolment	
	1959	1960	1959	1960
Government Schools:				
(*a*) English	217	251	117,765	137,837
(*b*) Malay	70	77	15,804	19,644
(*c*) Chinese	13	18	6,564	9,518
(*d*) Tamil	2	2	143	148
Aided Schools:				
(*a*) English	68	69	36,105	36,983
(*b*) Malay	—	—	—	—
(*c*) Chinese	235	234	127,387	134,951
(*d*) Tamil	15	15	1,313	1,190
Private Schools:				
(*a*) English	59	58	9,616	8,072
(*b*) Chinese	39	38	6,280	5,065
Total ...	718	762	320,977	353,408

TABLE 34

GEOGRAPHICAL DISTRIBUTIONS OF SCHOOLS

	City	Rural	Islands	Total
Government and Government aided Schools	364	279	23	666
Private Schools	77	17	2	96

TABLE 35

DISTRIBUTION OF SCHOOL POPULATION

Government and Government Aided Schools	340,371
Private Schools	13,137
Total ...	353,408

Staff

At the end of 1960 the staff of the School Health Section consisted of one Health Officer in charge of Schools, four Health Officers, eight Lady Health Officers, ten assistant nurses and assistant Health Nurses, one Senior Dispensing Assistant, three Dispensing Assistants, one Laboratory Technician and one Public Health Inspector.

TABLE 36

SUMMARY OF SCHOOLS, SCHOOL POPULATION, CHILDREN EXAMINED AND HEALTH OFFICERS 1956–1960

	1956	1957	1958	1959	1960
Registered Schools ...	624	668	702	718	762
Students	235,079	260,444	295,481	320,977	353,408
Students examined ...	69,644	80,991	74,058	124,250	109,214
Health Officers ...	13	11	13	11	12

ROUTINE MEDICAL EXAMINATIONS

Medical examinations of children were carried out by the School Health Officers in Government and Government Aided Schools only. Whilst no examinations are conducted at non-aided (private) schools, children from such schools may, and do, attend the school clinics which are open to all school children.

Because of the enormous size of the school population it has been found necessary to establish a system of selective examinations. The School Health Officers during their visits to schools for the routine medical examinations confine their attention to particular groups. The groups include (*a*) new entrants, (*b*) Primary and Secondary school leavers, (*c*) defectives found at previous examinations. During the visit to the school, the staff are encouraged to refer for examination children who were not due for routine periodic examination but whose physical or mental progress was considered to be below par. These children are listed as "Others". These four groups are referred to in the report as "New Entrants", "School Leavers", "Re-examinations" and "Others".

As it is quite impossible to obtain an accurate history of past illness, previous inoculations, etc., from children aged 7–8 years in the Primary I classes, the parents of these children are invited to be present during the routine medical examinations. Their presence also affords an excellent opportunity for the Health Officers to advise them on hygiene and diet.

Out of a total of 666 Government and Government Aided Schools, 611 were visited by either a Health Officer or a Lady Health Officer, and in the case of a mixed school by both a Health Officer and a Lady Health Officer. The total number of children examined was 109,214 so that about one third of the school population was examined by the school Health Officers. Table 37 shows the number of boys and girls examined at the various types of schools.

TABLE 37

CLASSIFICATION OF CHILDREN EXAMINED

Schools	Girls	Boys	Total
Government English ...	24,307	24,642	48,949
Aided English ...	6,907	4,954	11,861
Government Chinese ...	1,134	1,265	2,399
Aided Chinese ...	20,543	15,639	36,182
Malay	5,110	3,958	9,068
Tamil	589	166	755
Total ...	58,590	50,624	109,214

It was considered particularly important to examine the new entrants, in order to diagnose and treat physical defects as early as possible, and where time was limited, the Health Officers concentrated on this group. According to the Ministry of Education statistics, nearly 57,000 children entered school for the first time in 1960. Of these 47,975 were examined during the year by the School Health Officers. Table 38 shows the total number of school children in the various groups that were examined by the Health Officers.

TABLE 38

CLASSIFICATION OF EXAMINATION DONE

	Girls	Boys	Total
New Entrants ...	23,838	24,137	47,975
School Leavers ...	13,874	17,484	31,358
Re-examinations ...	17,060	4,846	21,906
Others	3,818	4,157	7,975
Total ...	58,590	50,624	109,214

Table 39 shows the classification of the various types of schools visited by the Health Officers for the purpose of conducting medical examination of school children.

TABLE 39

CLASSIFICATION OF SCHOOLS INSPECTED BY SCHOOL HEALTH OFFICERS

	City	Rural	Island	Total
Government English ...	150	75	3	228
Aided English	34	19	—	53
Government Chinese ...	16	2	—	18
Aided Chinese	90	124	5	219
Government Malay	30	31	15	76
Government Tamil	2	—	—	2
Aided Tamil	9	6	—	15
Total ...	331	257	23	611

GENERAL HEALTH

It was the generally expressed view of the school Health Officers that improvement in the physical condition of the children continues slowly. On the whole, the general standard of health of the new entrants is fair, and that of the school leavers, good. Only 0.74 per cent of boys and 7.62 per cent of girls were considered by school doctors to be of poor general condition. Apart from dental caries and defective vision, a much higher percentage of defectives was found among the new entrants.

The main defects amongst the school children are skin and respiratory infections followed by sub-nutritional deficiency states — the contributory factors being helminthic infestations, poor dental and personal hygiene, and ignorance of parents of their children's dietetic requirements. Anaemia with worm infestation is more common in the rural schools.

Dental Caries

This is by far the most common defect found among school children. The majority cannot afford dental treatment, especially those from the rural areas. The provision of more mobile dental clinics would seem to be the answer. The present facilities for dental treatment are inadequate. There are only two Government Dental Clinics for the treatment of school children. One of these functions at the Institute of Health and the other at Tan Tock Seng Hospital. In addition, there are three school mobile dental clinics and four school dental huts.

The school mobile dental clinics do not cover many of the schools, particularly those in the rural areas and those sited in areas with poor approach roads. Most of the children from the rural schools are reluctant to have dental treatment even if it is free, because of the distances they have to travel. It is essential therefore to have more school mobile dental clinics visiting more of the schools, particularly those in the outlying rural areas.

Skin Infections

Skin conditions such as sores, ulcers, ringworm, eczema and scabies are found to be slightly more common among school children in the rural schools due to the lower standard of environmental hygiene. Malnutrition also accounts for dry scaly skin, phrynoderma, angular stomatitis, etc. Nits and lice are more often found on Malay and Indian children.

Many of these skin complaints affect usually all the members of a family simultaneously and consequently the eradication or elimination of such conditions from the school population is more difficult since the school children alone will receive treatment. It is therefore obvious that not only the children involved but the whole family should be treated and given all the advice and guidance.

Fourteen cases of neuroderma were diagnosed in the schools and of these six were confirmed as Hansen's disease and admitted into the Trafalgar Home.

Ear, Nose and Throat

Ten cases of deafness were reported. Infections of the middle ear, which were usually chronic, were referred to the E.N.T. Specialist for treatment. A number of children were found to have enlarged tonsils and parents were instructed with regard to conservative treatment. Tonsillectomy was not recommended except in cases with a history of repeated sore throats or where the general condition of the child was below normal.

Organic Valvular Heart Disease

Mitral stenosis, auricular and ventricular septal defects, and patent ductus arteriosus are the common heart defects found. In the case of the acquired cardiac disabilities they are probably of rheumatic origin although a previous history of rheumatic fever is very difficult to obtain.

Respiratory Infections

Children from the urban areas, where overcrowded living conditions and poor ventilation are common, were more susceptible to infection of the upper respiratory tract.

Bronchial asthma is quite a common condition found among the school children. Children with poor physical development associated with a history of chronic cough are mantouxtested and sent for radiological examination of the chest. Suspected cases of Primary Complex are referred to the school Tuberculosis Officer for diagnosis and treatment.

Genito-Urinary

Phimosis, hydrocele and inguinal hernia were the most common defects found amongst the boys. With the consent of the parents these children were referred to the consultants and surgeons of the General Hospital for further treatment.

Blood Conditions

Cases of anaemia, particularly gross anaemia, were found more in the rural areas where worm infestation is prevalent. A certain number of these cases were due to nutritional causes in both urban and rural areas.

Worm Infestation

The incidence is higher amongst the children in the rural areas as compared with the urban school children. This is due to inadequate sanitation, the illegal use of nightsoil as garden manure and the failure of the rural children to use protective footwear.

TABLE 40

INCIDENCE OF DEFECTS DETECTED IN ROUTINE SCHOOL MEDICAL EXAMINATION

(Figures for incidence of defects expressed as percentages)

	1956	1957	1958	1959	1960
Dental Caries					
Boys	51.67	46.16	45.91	44.56	55.64
Girls	51.78	55.52	49.7	45.11	39.85
Skin Infection					
Boys	7.51	10.74	13.63	7.46	6.01
Girls	22.08	18.11	12.79	11.13	8.56
Eyes: Infection					
Boys	1.73	1.36	1.81	1.12	.87
Girls	1.03	1.42	1.18	1.08	.77
Defective vision					
Boys	3.46	3.31	4.1	3.76	4.87
Girls	2.54	4.13	6.42	5.66	6.34
E.N.T.: Enlarged tonsils					
Boys	4.21	2.99	2.11	.91	1.17
Girls	0.75	1.	.46	.41	.29
Ear infections					
Boys	0.67	.51	.64	.69	.47
Girls	0.29	.25	.25	.17	.16
Cardiac Disease					
Boys	0.34	.89	1.16	.47	.53
Girls	0.82	1.14	1.18	.74	.64
Respiratory Infection					
Boys	2.92	3.93	4.02	2.33	1.08
Girls	6.62	4.48	3.62	2.71	3.12
Genito-Urinary					
Boys	2.33	3.41	2.71	1.72	2.86
Girls	0.08	.25	.33	.31	.34

TABLE 40—*continued*

	1956	1957	1958	1959	1960
Anaemia (under 60% Hb.)					
Boys	1.61	.65	.71	.60	.55
Girls	4.31	3.64	.69	.47	.90
Worm Infestation					
Boys	8.84	8.34	2.8	2.95	2.52
Girls	22.64	19.33	17.47	10.27	8.83
Other abnormalities including postural defects, Cleft Palate, Chest deformities					
Boys	0.68	1.17	1.19	1.31	.82
Girls	8.55	18.09	8.88	6.27	3.18
Children Examined					
Boys	37,553	41,221	30,805	66,004	50,624
Girls	32,091	39,770	43,253	58,246	58,590

Personal Hygiene

There has been some improvement in general cleanliness among school children. School Health Officers have been able to get the co-operation of teachers in most cases to improve the hygiene habits of the children. More attention, however, should still be paid to the care of teeth and finger nails, and the wearing of shoes in the rural schools. Pediculosis is prevalent among the Malay schools and to some extent in the Tamil schools. The school teachers can play an important part in its eradication.

SCHOOLS CLINICS

There is one main clinic at the Institute of Health, Outram Road, and it functions daily both in the mornings and afternoons. The Health Officers each have a regular morning and afternoon session in order to follow up their own cases. There are also three subsidiary clinics in the suburdan and rural areas. The Paya Lebar Clinic functions on Monday and Friday afternoons, the Kallang Clinic on Friday afternoons and the Bukit Timah Clinic on Saturday mornings. The Health Officers responsible for the schools served by the particular clinic are in attendance at each clinic session.

Table 41 shows the attendances at the school clinics for the years 1958 to 1960, while Table 42 shows the breakdown of school clinic attendances.

TABLE 41

ATTENDANCES AT SCHOOL CLINICS

	1958	1959	1960
Total number of new cases ...	44,469	44,730	55,056
Total number of re-visits ...	50,637	59,004	81,057
Total ...	95,106	103,734	136,113

Laboratory Investigations

Routine laboratory examinations are conducted in the main clinic at the Institute of Health where there is a small laboratory staffed by a qualified laboratory technician. 8,641 investigations were carried out by him, as against 5,345 for 1959.

TABLE 42

BREAKDOWN OF SCHOOL CLINIC ATTENDANCES, 1960

	New cases	Repeat cases	Total
Institute of Health Clinic ...	43,521	71,691	115,212
Paya Lebar Clinic ...	6,793	5,080	11,873
Kallang Clinic	3,445	3,159	6,604
Bukit Timah Clinic ...	1,297	1,127	2,424
Total ...	55,056	81,057	136,113

School Travelling Dispensaries

Two travelling dispensaries in the charge of one Health Sister assisted by 3 nurses visited the rural schools during the year for the treatment of minor ailments and to follow up cases referred by the School Health Officers. They were also responsible for the vaccination of new entrants both in the City and Rural schools.

TABLE 43

TOTAL NUMBER OF VISITS TO SCHOOLS AND THE TREATMENT GIVEN

	1958	1959	1960
Total No. visits to school ...	435	879	1,315
Total No. treatment given ...	17,612	56,258	73,017

TABLE 44

CASES REFERRED TO SPECIALISTS, HOSPITALS AND OTHER INSTITUTIONS

(*a*) Cases referred to Specialists

Cardiac Specialist	224
E. N. T. Specialist	518
Psychologist	32
Paediatrician	162
Ophthalmic Surgeon	170
Surgeons	1.066
Physicians	114
Orthopaedic Surgeon	200
Skin Specialist	139
Gynaecologist	18
Total ...	2,643

(*b*) Cases referred to Hospitals and other Institutions

General Hospital for admission	210
Casualty Dept. General Hospital	516
Middleton Hospital	123
Woodbridge Hospital	2
Trafalgar Home	6
Hansen's Clinic	14
Dental Clinic at Tan Tock Seng Hospital ...	51
Dental Clinic at Institute of Health ...	743
X-ray Dept. at General Hospital	121
X-ray Dept. at Institute of Health ...	1,406
Total ...	3,192

Cases referred from School Clinics

2,643 cases were referred to specialists and 3,192 cases were referred to various institutions.

TABLE 45

INFECTIOUS DISEASES IN SCHOOLS

	1956	1957	1958	1959	1960
Chicken pox ...	726	376	202	202	244
Diphtheria ...	61	118	124	272	425
Dysentery ...	18	—	6	16	26
Leprosy ...	7	4	4	11	6
Malaria ...	1	—	1	4	1
Measles ...	349	265	140	19	20
Mumps ...	306	218	207	325	984
Poliomyelitis ...	—	1	14	—	2
Typhoid Fever ...	2	4	6	13	6
Whooping Cough ...	11	28	34	20	83

Home and School Visiting

Homes and Schools were visited by the Health Nurses of the Travelling Dispensaries and the Institute of Health School Clinic:

(i) to investigate and follow up cases of tuberculosis;

(ii) to investigate cases of infectious diseases reported by the City Health Officer, the Rural Health Officer and School Principals;

(iii) to take throat swabs of all indirect class contacts of cases of Diphtheria reported by the City and Rural Health Officers (3,451 throat swabs were taken in 1960 as against 3,421 in 1959);

(iv) to vaccinate new entrants.

ENVIRONMENTAL HYGIENE IN SCHOOLS

Further improvement was registered in the field of environmental sanitation of schools during the year 1960.

A fully qualified Public Health Inspector is engaged on a whole time basis for duties connected with the School Health Service. Visits are made regularly to various schools for the purpose of routine inspections or in connection with special investigations. Routine inspections are confined to yearly inspection of the existing schools for the purpose of ascertaining whether the provisions of the Education Ordinance and the Regulations made thereunder are being complied with. The special visits are made because of complaints received, nuisances reported, applications by new schools for registration, new school projects and any additions or alterations to existing schools. During the year 677 inspections were made by the Public Health Inspector.

A total of 111 building plans were submitted for advice and recommendations. Of these 93 were approved and 18 returned for necessary amendments.

The Health Officer i/c Schools was asked by the Ministry of Education to inspect 23 buildings prior to their registration as schools. Of these 16 were recommended for registration, 7 were rejected.

An appreciable decrease in overcrowding was observed. 651 accommodation certificates were issued to schools during the year.

Improvement in canteen arrangements has been observed, particularly in the larger schools. Additional washing facilities have been installed, the tables have been lined with aluminium tops and fly-proof covers have been provided for the protection of food in many schools.

Generally speaking there is a slow but steady improvement in the sanitation of the schools as more schools are installing modern sanitation and where City Councils sewage system is not available are installing septic tanks. The smaller schools in the remote rural areas still present a problem and in those areas which are outside the gazetted nightsoil removal area the nightsoil is not removed as frequently as one would desire.

Feeding Schemes

There are two types of feeding schemes for schools. Slightly undernourished children were given skimmed milk made available through the Social Welfare Department on the recommendations of the School Health Officers. This scheme unfortunately had to be discontinued because of the failure on the part of some of the School Principals to comply with the directions issued by the Social Welfare Department.

The other scheme initiated a few years ago was to help those children belonging to the less provided families. This scheme particularly caters to those children having some type of tuberculosis lesions. During the year 4,979 such forthnightly rations were issued to 1,012 children. Each ration consists of:

- 1 lb. full cream powdered milk
- ½ lb. vitaminised skimmed milk
- ¼ lb. ovaltine for flavouring
- ½ lb. fresh butter
- 6 fresh hen eggs
- 6 oranges
- 1 lb. groundnuts

HEALTH EDUCATION

The Health Education Section performs an important function in the dissemination of Health Education knowledge. It serves the Health Branch of the Ministry of Health principally and renders assistance to other sections of the Ministry from time to time in various matters on Health Education related to methods, techniques and media.

The staff of this Section are the Health Education Officer, two Health Education Assistants and one Technician. Mrs. M. Knight, Dip.Sc., B.Sc. (Hon.) was in charge of the Section.

World Health Day, 1960

World Health Day has become a regular part of the time table of this Section. World Health Day was held on 7th April and it was decided to take the opportunity to discuss Health Education as the theme for this year. Senior members of the medical profession gave talks on this subject to representative gathering of government and voluntary workers. This was followed by a film show in which the use of films in Health Education was demonstrated. There was also a small display on "Methods and Media" in Health Education.

Anti-Tuberculosis Campaign

Tuberculosis is the major disease remaining in Singapore and in 1960 a campaign for mass X-ray of the population was made to cover the whole of Singapore eventually. This mass X-ray campaign was carried out by the Tuberculosis Control Unit and the Health Education Section helped the campaign with the production of leaflets and posters and also press and radio publicity.

Radio Talks

A series of 12 forthnightly radio broadcast over Radio Singapore outlining the work of the various departments in the Ministry of Health was given during the year. The broadcast was made over the four language networks and the Health Education Section arranged interviews with all ranks of personnel and helped in the preparation of the scripts.

Refresher Courses

A seminar was held at the Teachers Training College to discuss the adequacy of Health Education in schools. Representatives from the Ministry of Health, Ministry of Education and from the Department of Education, University of Malaya took part in the seminar.

A course for lay-workers and talks to the senior school children were arranged in connection with the Family Planning Campaign.

Exhibitions

A large Family Planning Exhibition was held in Victoria Theatre in connection with the Family Planning Campaign organised by the Ministry in November. This exhibition covered the Social, Economic and Health aspects of Family Planning. More than 80,000 people attended the exhibition which was held for more than one week. Following the termination of the main exhibition in Victoria Memorial Hall the exhibition was moved to various community centres in the rural areas.

PREPARATION OF HEALTH EDUCATION MATERIALS

In conjunction with the Family Planning Committee the Health Education Section helped in the preparation of the following:

(1) 4 posters,
(2) 1 strip cartoon,
(3) 2 pamphlets,
(4) 1 leaflet,
(5) 1 sound film strip.

A simple anatomy flannelgraph, a birth atlas and wax models of foods were prepared for distribution to the various Maternal and Child Health Clinics.

Training

The Health Education Officer and Staff gave formal lectures, demonstrations and held group discussions with post-graduate students of the D.P.H. Course, Public Health Inspectors-in-Training and Public Health Nurses-in-Training.

Chapter Nine

DENTAL HEALTH

THE DENTAL SECTION made steady progress throughout the year in expanding its facilities and services. Considerable planning and preparatory work had also been done for future development of the Service. The establishment of the Section was increased to 43 Dental Officers, and by the end of 1960 36 of these posts were filled. Other operating staff included 14 Dental Nurses who gave treatment to school-children. Mr. Wong Mook Qui, L.D.S., D.P.D., was confirmed in his appointment as Chief Dental Officer.

The activities of the Section fell into two main categories — Clinical and Preventive.

CLINICAL DENTISTRY

Schools Division

The provision of dental care to school-children continued to be the main problem and about half the total resources of the Dental Section was devoted to the School Dental Service. This service was closely associated with the School Health Service of the Medical Department and played an important part in promoting the health and well-being of Singapore school-children.

During 1960 the Schools Division comprised the following clinics:

Two large Central School Dental Clinics — one at the Institute of Health; one at the Tan Tock Seng Hospital.

Four small School Dental Clinics — one Dental Hut each at Rangoon Road School, Anthony Road School, Pearl's Hill School, MacNair Road School.

Three Community Centre Dental Clinics — one clinic each at Geylang Community Centre, Siglap Community Centre, Buona Vista Community Centre.

Three Mobile Dental Clinics.

One Dental Clinic at Pulau Bukom.

The School Dental Clinic at Tan Tock Seng Hospital functioned efficiently with a staff of five dental officers and one dental nurse. Dental treatment was given to all school-children referred by their school principals on an emergency basis. Complete and systematic treatment was given to a limited number of school-children from certain primary schools in the neighbourhood. As the site of the clinic at Tan Tock Seng was considered unsatisfactory it was proposed that new accommodation be found for this clinic. Subsequently plans for a new and larger clinic at Pegu Road were approved, and construction was expected to begin in 1961.

The School Dental Clinic at the Institute of Health, first opened in May 1959, began to function more fully in 1960. In addition to general dental treatment, this clinic also provided specialised orthodontic treatment. Two qualified orthodontists were in attendance full-time in the Orthodontic Department of this clinic. It was intended that with the allocation of more dental staff and equipment, this clinic would come to form part of a new Dental Training Centre at the Institute of Health by the end of 1961.

The dental huts staffed by dental nurses continued to operate effectively at four primary schools. One dental officer supervised the work of five dental nurses, and he personally attended to all dental operations beyond their scope.

Three dental clinics, located at the Geylang Community Centre, Siglap Community Centre and Buona Vista Community Centre provided treatment to under-privileged children attending various Children's Social Centres in the State. School-children were also treated in these clinics.

Three mobile dental clinics belonging to the Section visited regularly a number of schools in the rural areas and their schedule of routine treatment for school-children was well maintained. During the past year frequent requests by various schools for the services of mobile dental teams were received, and consequently these mobile clinics visited an additional number of rural schools to provide emergency dental treatment. Mobile dental clinics also visited several institutions including the Blind School, Children's Red Cross Home, Boys' Town, Cheshire Home and the Salvation Army Nursery at Bukit Timah.

The dental clinic at Pulau Bukom continued to function as a part-time clinic for school-children on that island.

Hospitals Division

The dental clinic at the General Hospital provided general and specialist dental treatment to out-patients and ward cases of the Hospital. This was the main Government dental clinic for out-patients and treatment to the poorer sections of the pupulation was given here. The teaching staff and students of the Dental School worked in conjunction with the Government dental officers at this clinic and there was close co-operation in providing a comprehensive range of treatment. During 1960 there was an increase in patients' attendance at the clinic, and a report of the work done is given in Chapter Twelve.

The chronic sick in Tan Tock Seng Hospital, Trafalgar Home and Woodbridge Hospital were given dental attention by one Dental Officer at dental clinics located in these institutions.

Inmates of the St. Andrews Orthopaedic Hospital continued to receive dental care from a mobile dental team which visited the Hospital regularly.

Maternal and Child Health Division

Pregnant and nursing mothers and their toddlers received dental attention at seven dental clinics located in the following centres:

Bukit Timah Maternal and Child Health Clinic,
Ama Keng Maternal and Child Health Clinic,
Mandai Maternal and Child Health Clinic,
Yio Chu Kang Maternal and Child Health Clinic,
Jalan Eunos Maternal and Child Health Clinic,
Prinsep Street Maternal and Child Health Clinic,
Buona Vista Community Centre.

This dental service was closely associated with other medical services provided at Government Maternal and Child Health clinics, and was intended for promoting the dental health of patients attending these Maternal and Child Health Centres.

Miscellaneous Dental Services

The Dental Section continued to operate the Police Dental Clinic at the Central Police Station. The dental officer treated the rank and file of the Force, to render these officers dentally fit. This dentist also visited the Changi and Outram Prisons regularly to attend to inmates and detainees.

A dental officer visited the Opium Treatment Centre, St. John's Island, once every week to treat the inmates.

During 1960, mobile dental teams were sent to various charitable institutions where free dental treatment was needed. As a general rule only emergency dental treatment was given to the inmates. The Lee Kuo Chuan Nursery, Cheshire Home, Gimson School, Boys' Town, Blind School and Red Cross Home were visited.

The dental service provided for ratings of the Royal Malayan Navy was discontinued after August 1960. This service was first started in 1954, and a dental officer attended the dental clinic at the R.M.N. Barracks regularly. However this Navy was handed over to the Federation Government toward the end of 1958 and it was subsequently agreed that this dental service should become the responsibility of that Government.

PREVENTIVE DENTISTRY

The end of 1960 marked the third completed year of fluoridation of the entire municipal water in Singapore.

Satisfactory progress was achieved in the fluoridation scheme which constituted an important step in the control of dental decay among the young population. The annual dental survey in connection with this scheme was carried out early in the year, and its main objective was the assessment of the efficacy of fluoridation in reducing the incidence of dental caries among school-children in Singapore. Results of these annual survey had been promising so far, but no significent figures could be expected at the present stage.

Training of Staff

During 1960 a Departmental Training Course award was granted to Mr. Wong Hee Deong, Dental Officer, to enable him to make a close study of the Dental Nurses' Training Centres in New Zealand and to observe the utilisation of dental nurses in the public dental services there. Mr. Wong spent 3½ months in New Zealand and returned in December 1960. It was intended that he should act as principal of the new Dental Nurses' Training School in Singapore.

Another dental officer, Mr. Wong Tho Yune returned from London in November 1960, after successfully completing higher dental studies under a Departmental Fellowship. He was granted the Diploma in Orthodontic of the Royal College of Surgeons, England. Mr. Wong had been subsequently posted at the Institute of Health Dental Clinic as an orthodontist.

Two other dental officers were in the United Kingdom on study leave.

During 1960 six Chairside dental assistants completed their 2-year departmental training and passed their final examinations.

Four probationer dental technicians began their 3-year training course in the central dental laboratory in Maxwell Road. a dental officer, Mr. Ng Luck Cheng acted as lecturer.

Two newly-recruited dental nurses were sent to the Penang Dental Nurses' Training School for training. The Singapore Government had in the meantime approved the establishment of a new Dental Nurses' Training School in Singapore, and this is expected to be set up in 1961.

Returns of work for all governmental dental clinics is given in Table 46.

Dental Board

The Inspecting Officer, Dental Board, made a total of 275 inspections on Division II dentists in Singapore.

A total of 149 warning notices were issued to a number of these dentists.

Division I Dentists.—During the year 1960 there were 15 new registrations and 8 removals in the List of Division I Dentists, resulting in an increase of 7 persons in the List.

The total number of 91 Division I Dentists was distributed as follow:

	Beginning of 1958	*End of 1960*
Private Practice	40	38
Government Service	30	39
U. of Malaya	14	12
Armed Services	—	2
Total ...	84	91

A closer study of the list showed that—

(1) of the two dentists who left private practice, one left the State and the other joined Government Service;

(2) during the year 13 dentists joined Government Service while 4 left the service (of which 3 left the State and one joined the University of Malaya);

(3) three dentists on the staff of the University left the State while one dentist joined the staff (on leaving Government Service);

(4) during the year, 3 members of the Armed Services were registered but at the end of the year only two of them renewed the Annual Practising Certificates.

Divsion II Dentists.—During the year 1960 there were 3 deaths and one restoration. At the end of the year 2 dentists were removed from the list because they failed to renew the Annual Practising Certificate. The number of dentists which was 235 at the beginning of 1960 was therefore reduced to 231 at the end of 1960.

Inspection.—A total of 275 inspections were carried out during the year 1960.

Warning Notices.—149 warning notices were issued:

Suspected covering	3
Failure to display Annual Practising Certificate	84
Failure to display Name plate	22
Failure to display Annual Practising Certificate, Certificate of Registration and Name plate	7
Failure to display Annual Practising Certificate and Name plate	22
Failure to display Annual Pratising Certificate and Certificate of Registration	11
Total ...	149

Change of Address.—There were 29 changes of address. Some of the changes were due to poor practices. Where the change has been to premises owned by dental mechanics, covering was suspected.

Illegal Practices.—One unlicenced dentist was reported by the Department to the Police and court prosecution had been initiated. There were four other cases of suspected illegal practice and these were being kept under close observation.

TABLE 46

DENTAL SERVICES, SINGAPORE

RETURN OF WORK

Period covered January 1960—*December* 1960

	PATIENTS SEEN					TREATMENT GIVEN									PATIENTS
	NEW CASES			Re-examined	Total attendances	FILLINGS			EXTRACTIONS		Scalings (per visit)	Dressings (per visit)	Dentures inserted	Other treatment	Treatment completed
	Examined	Requiring treatment	Refusing treatment			Silver Amalgam	Silicate	Other	Deciduous teeth	Permanent teeth					
SCHOOLS DIVISION:															
School Dental Clinic, T.T.S.H. ..	5,825	5,825	180	579	23,987	7,662	2,605	3	9,244	5,154	927	5,633	36	1,748	654
S.D.C., Institute of Health ..	29,261	29,261	152	139	37,376	6,781	682	45	20,671	12,004	425	2,971	157	2,628	384
Dental Nurses Clinics ..	1,842	1,842	61	3,602	15,860	11,031	268	466	15,761	111	3,592	2,918	..	201	2,068
Mobile Dental Clinics ..	1,590	1,590	330	3,698	13,800	6,892	190	716	8,358	1,714	260	3,361	10	135	685
Geylang Community Centre ..	411	411	260	2,711	3,382	1,861	334	11	1,213	396	89	415	29	346	323
Siglap Community Centre ..	343	343	9	58	4,575	1,410	181	858	4,249	931	171	42	16	2	227
Buona Vista Community Centre	240	240	21	865	2,906	304	59	..	1,450	1,359	37	190	82	345	61
HOSPITALS DIVISION															
Dental Clinic, General Hospital	42,948	42,948	..	69,263	112,211	4,430	990	1,745	37,042	46,217	..	18,855	1,809	2,192	..
Dental Officer, Chronic Sick ..	5,985	5,985	28	245	5,985	349	62	205	201	5,470	625	147	179	67	979
MATERNITY AND CHILD WELFARE DIVISION															
Bukit Timah and Ama Keng ..	1,834	1,834	..	..	8,170	849	150	..	2,509	5,731	139	782	445	1,016	246
Mandai and Yio Chu Kang ..	1,198	1,198	14	42	5,618	765	180	484	2,241	3,521	175	80	97	347	173
Jalan Eunos	1,272	1,272	9	5,794	7,057	798	87	10	1,283	4,832	280	215	598	1,360	367
Prinsep Street	700	700	2	3,653	4,349	573	270	..	153	3,299	112	313	289	486	285
MISCELLANEOUS															
Police Dental Clinic ..	810	810	115	2,962	6,424	1,017	103	3	..	3,175	780	833	102	816	390
Royal Malayan Navy ..	25	25	..	179	653	175	36	2	3	42	226	54	14	99	172
St. John's Island	258	258	..	476	810	4	..	5	18	1,002	..	3	..	76	48
Pulau Bukom	165	165	5	340	505	178	25	..	318	118	30	113	..	14	27
Orthodontic Clinic, Institute of Health	906	906	..	2,824	3,730	84	9	114	516	344	8	108	451	1,705	62
Total ..	95,613	95,613	1,186	97,430	257 398	45,163	6,231	4,667	105,230	95,420	7,876	37,033	4,314	13,583	7,151

PART III

THE HOSPITALS DIVISION

Chapter Ten

HOSPITALS DIVISION

INTRODUCTION

1960 must still be considered a transitional period for the Hospitals Division. When internal self-government was achieved in 1959, the process of Malayanisation in the medical services was nearly complete. That the change-over has been generally smooth is a credit to the foresight of the previous planners and the abilities of the local officers. But the deficiencies in the services due to the thinning out of personnel will become apparent and will require continued effort to overcome.

The completion of the hospital at Thomson Road and the Mental Defective Unit at Woodbridge Hospital in 1959 and an outpatient dispensary at Jalan Kayu in 1960 were the last of the projects in the 10-year Medical Plan. Their completion marked the end of a period of intensive development to make up the leeway in hospital development following the Pacific War. It also marked the need for further planning for hospital development. Such planning was begun late in 1959 and was completed in 1960 the following year for incorporation in the Government's 4-year development plans.

On the 19th February, 1960, the Hospitals Board was abolished by the Hospitals Board (Repeal) Ordinance, 1960. This brought the financial control of the hospitals within the Ministry and foreshadowed the formation of a Hospitals Division.

Towards the end of the year the City Council administered Middleton Hospital for infectious diseases, and its eight public dispensaries and staff clinics were transferred to the Hospitals section of the Ministry as part of the process of integration of City Council departments with Government departments.

DEVELOPMENT

Two outpatient dispensaries were opened in the year. A part of the Lim Ah Pin Road Community Centre was converted into an outpatient dispensary. The other was at Jalan Kayu which was a standard plan type similar in design to the dispensaries at Pegu Road and at Bukit Panjang.

HOSPITALS

The following is a list of hospitals:

Government Hospitals

	Beds Available
General Hospital	1,251
Thomson Road Hospital (District General Hospital) (144 staffed)	396
Kandang Kerbau Hospital (Maternity)	390
Woodbridge Hospital (Mental)	1,869
Mental Defective Unit at Woodbridge Hospital	45
Tan Tock Seng Hospital (Tuberculosis)	1,200
Middle Road Hospital (Venereal Diseases)	58
Middleton Hospital (Infectious Diseases)	250
Trafalgar Home (Leprosy)	1,023
St. Andrew's Orthopædic Hospital	120

	Beds Available
Institutional and Departmental Hospitals	
Police Training School	20
Prisons Hospital	160
Opium Treatment Centre (St. John's Island)	20
Private Hospitals	
Gleneagles (General Hospital)	89
Youngberg Memorial Hospital (General Hospital)	67
St. Andrew's Mission Hospital (for children)	60
Kwong Wai Siew Hospital (Cantonese Hospital)	434
Private and Charitable Homes	
Cheshire Home	42
Little Sisters of the Poor Home for the Aged	32
Hylam Sick Bay (Community Home for Hainanese only) ...	38
Khek Sick Bay (Community Home for Khek only)	40
Red Cross Crippled Children's Home	40
Singapore Children's Society's Convalescence Home	24
St. John's Home for the Aged	50

TABLE 47

Number of beds available, principle types, on 31st December, 1960.

(The figures exclude beds in Institutional and Departmental Hospitals and Charitable Homes).

Total Hospital Beds	7,232
per 1,000 population	4.4
Government Hospital Beds	6,582
per 1,000 population	4
Private Hospital Beds	650
per 1,000 population	.4
General Beds (Government)	1,627
per 1,000 population	1
Maternity Beds	390
per 1,000 population	.24
Psychiatric Beds	1,869
per 1,000 population	1.1
Tuberculosis Beds	1,200
per 1,000 population	.73

IN-PATIENTS IN HOSPITALS, 1960

The following table shows the daily average number of patients, the number of patients admitted during the year, the number of deaths and the death rate per hundred treated.

Hospitals	Average Number of Patients	Admissions during the year	Discharges	Deaths	Mortality per cent
General Hospital	1,038.41	40,817	38,075	2,806	6.86
Thomson Road Hospital	76.00	767	597	70	9.00
Kandang Kerbau Hospital (Maternity) ..	348.00	47,975	47,901	60	.12
Woodbridge Hospital (including Mental Defective Unit)	2,017.06	2,376	2,095	60	1.43
Tan Tock Seng Hospital (Tuberculosis) ..	1,049.50	3,357	2,943	324	7.39
Middle Road Hospital (Venereal Diseases) ..	28.80	1,130	1,141	..	..
Middleton Hospital (Infectious Diseases) ..	192.00	4,924	4,857	76	1.48
Trafalgar Home (Leprosy)	787.00	294	435	17	3.8
St. Andrew's Orthopaedic Hospital ..	105.41	151	242	..	..

THE OUTPATIENT SERVICES

The services provided in the outpatient dispensaries is essentially a general practitioner service. Outpatient attendances at the 13 full-time, 4 part-time dispensaries the 8 former City Council public dispensaries and at the 4 travelling dispensaries are given in the following table.

TABLE 48

Attendances at Outpatient Dispensaries

Dispensaries	*1960*	*Proportion per 1,000 of population*
Outdoor Dispensaries	1,023,434	625
Hospital Outpatients Section ...	987,280	600
City Council Dispensaries ...	313,029	193
Travelling Dispensaries	193,890	118
Total ...	2,517,633	1,536

The dispensary services should not be confused with the outpatient clinics run by the specialist units in the various hospitals:—

TABLE 49

Outpatient Attendances at Specialised Clinics

Clinics	*1960*	*Proportion per 1,000 of population*
General Hospital	326,880	200
Thomson Road Hospital	1,813	1.1
Kandang Kerbau Hospital (Maternity)	193,922	119
Woodbridge Hospital (Psychiatry) ...	4,593	2.8
Tan Tock Seng Hospital	345,623	210
Middle Road Hospital (Social Hygiene)	201,102	123
Trafalgar Home (Skin Clinic at Irrawaddy Road)	14,609	8.9
Total ...	1,088,542	664.8
Casualty Department, General Hospital	106,239	65

STAFF

MEDICAL OFFICER STAFF IN GOVERNMENT HOSPITALS AND OUTPATIENT SERVICES

	GRADE 'E'		GRADE 'G'		SENIOR REGISTRAR		MEDICAL OFFICER	
	Approved Establishment 1960	Effective Personnel 1960	Approved Establishment 1960	Effective Personnel 1960	Approved Establishment 1960	Effective Personnel 1960	Approved Establishment 1960	Effective Personnel 1960
Medical Superintendents ..	1	..	4	2	..	..	..	..
Surgeons:—								
General	1	1	3	3	5	1	..	..
Orthopaedic	1	1	1	1	2	1	..	..
Ear Nose and Throat ..	..	..	1	1	1	..	..	..
Ophthalmic	..	..	2	1	1	1	..	..
Obstetrician and Gynacologist	..	..	2	2	3	2	..	..
Physician:—	..	..	3	3	4	1	..	..
Paediatrician	1	1	2	2	2	..	..	..
Chest Physician	1	..	4	3	4	..	..	..
Psychiatrist	1	1 (Acting)	1	1	2	..	..	..
Leprology	..	..	1	..	1	..	..	..
Venerology	..	..	1	1	..	..	..	..
Pathologist	1	..	1	1	2	..	..	..
Radiologist	1	1	2	..	1	..	..	..
Radiotherapist	..	..	1	1	1	1	..	..
Anaesthetist	..	..	2	1	1	1	..	..
General Duty Medical Officer	..	..	..	..	..	..	207	135
	8	5	31	23	30	8	207	135

TABLE 50

Nursing Staff in Government Hospitals and Outpatient Services on 31st December, 1960

	Approved Establishment	*Effective Personnel*
Matron, Grade I	4	4
Matron, Grade II	10	4
Sisters	180	107
Staff Nurses and Student Nurses ...	1,047	922
Assistant Nurses	461	428
Staff Midwives	161	97
Pupil Midwives	190	130

TABLE 51

"Ancillary" Staff* in Government Hospitals and Outpatient Services on 31st December, 1960

	Approved Establishment	*Effective Personnel*
Radiographers	26	20
Physiotherapists	19	13
Pupil Occupational Therapists	10	6
Almoners	27	26
Dietitians	4	4

* Includes officers on permanent establishment, probationers, contract officers, temporary officers.

SURGICAL UNIT A

The year was marked by the visit of Prof. B. Eiseman of Denver, Colorado, from 6th March till 14th June as Visiting Professor of Surgery. Experimental surgery on animals was started, and, with the experience thus gained, cardiac surgery, both closed and open, has been put on a firm foundation. From only doing an odd case once every few months, the number of cardiac operations has increased to sixty this year.

All this has been done in addition to the usual run of cases, which also showed an increase. This work has been carried out despite the shortages in staff. The shortage of anaesthetists has acted as a brake on the work done especially for the "cold" case and for school children on the waiting list.

The increase in the work has been chiefly on "major" operations chiefly of chest operations. But the waiting list continues to increase and is almost a farce to add to the list.

B UNIT

Mr. Yahya Cohen who had been acting Senior Surgeon from the beginning of September 1959 was appointed to the substantive post of Senior Surgeon, Singapore on the 1st March, 1960.

The major change on the Unit was the establishment of a ward as a post-operative Unit. This, as stated in the last report was work which had started in the previous year, but which could not be finalised until March of this year. The reason for this was a shortage of nursing staff and these were not obtainable until then.

Due to a shortage of staff in the Department of Pathology, the Tuesday afternoon clinico-pathological session had to be discontinued. However, in view of the considerable importance of reviewing all pathological material removed on this Unit, meetings have been held in the Unit every week. The

specimens removed form a basis for discussion on the surgical problems dealt with during the week. This meeting has been of considerable advantage, and usually followed the weekly round. Further discussion then takes place by all members of the Unit following the pathological session on the deaths during the week. It is felt that this is an extremely important part of the work of any surgical unit. The review of deaths during the week and discussions surrounding the causes, not only enables the individual members to discuss their mutual problems, but helps considerably in the training of the younger members of staff in responsibility. It is hoped that arrangements would be made during the following year for the resumption of the clinico-pathological sessions with the department of Pathology of the University of Malaya.

Some research work has been instituted during the year — the major task of the Unit was to carefully check 500 cases of acute appendicitis which had undergone operation in the Unit. It is intended to analyse these 500 cases to study local nosology in this particular condition.

The spirit of this investigation was not only to satisfy academic interest but to test the ability of the Unit to carry out a concerted piece of research in which every member would have taken a greater or smaller part. By the end of the year about 350 cases had been collected and it is hoped to complete this task in the following year.

ORTHOPÆDIC SURGERY

This is the first year that the two orthopædic units have been working as separate units. There are still many facilities which are shared. When the second half of the first phase of the rebuilding of the Units is completed early in the new year, this will be corrected, but not entirely until the total plan is completed.

There are no figures the work done previously for comparison as the units have only come into separate existence. It is unlikely that there will be any large increase in operations until each unit has its own theatres. Admissions however are increasing and bed utilisation is about 100 per cent which is an indication that extra beds are being put up, but not of rapid turnover. The average stay in the units being about 20 days.

An appointment system for outpatients has been introduced which reduces the time patient wait for treatment, It is still difficult to persuade patients to get used to the idea.

There has been a reorganisation of the Appliance and Limb Fitting Centre. The number of appliances has increased and costs have been reduced. A large stock of used limbs were given free by Hanger's Ltd. of the United Kingdom. With reconditioning and adjustments these meet the needs admirably.

The number of patients attending at the gymnasium and rehabilitation centre for amputatees has risen. Lecture demonstrations in the work carried out in the department is given to medical students and to trainee nurses.

EAR, NOSE AND THROAT DEPARTMENT

There was a total of 5 doctors working in the department.

Through the co-operation of the out-patients department only referrals were sent to the Unit so that the total attendances at the Unit's clinics were reduced:

Outpatients	*1959*	*1960*
New Cases	10,521	7,929
Repeats	18,079	17,673

The number of operations increased though:

	Major	*Minor*	*Emergencies*
1956	1,855	1,815	—
1957	1,488	2,796	—
1958	1,158	2,563	73
1959	1,018	2,298	70
1960	1,343	2,677	63

THE OPHTHALMIC UNIT

Two major changes were instituted in July 1960 in the Unit's outpatient clinic. Firstly, patients were seen in the afternoons between 1 p.m. to 4 p.m. instead of in the mornings. Secondly, only patients on a referral basis were seen. The latter was introduced not only to conform with the rest of the specialist clinics in the hospital, but also to relieve the pressure of work on the officers in the Unit. In particular, with the resignation of Mr. K. Singh in August 1960, the burden of consultative and major operative work fell completely on the shoulders of Mr. R. C. K. Loh.

These changes have had their desired effect as seen when comparing the attendance figures for the first half of year and that for the second half of the year.

	New Patients	*Old Patients*
January to June 1960	10,117	39,658
July 1960 to December 1960	5,666	21,807
Total ...	15,783	61,465

The numbers, both of old and new outpatients have been reduced by almost 50 per cent. However, the amount of work did not decline in any way, as almost all these cases that were referred were relatively difficult cases, requiring more time in examination, investigation and treatment.

Summary of Work

	1956	*1957*	*1958*	*1959*	*1960*
Number of new cases ...	17,215	17,563	19,311	21,979	15,783
Number of repeat cases ...	44,428	54,714	70,904	84,558	61,465
Major operations ...	908	1,013	824	1,283	1,315
Minor operations ...	2,659	2,850	3,676	7,467	7,572

As can be seen, there has been an increase in the number of operations performed.

The first corneal graft operation was performed in Singapore on a rather difficult case. The result was satisfactory and follow-up is necessary to note its final result. A survey of the ocular complications in the cases of leprosy in the Trafalgar Home inmates was made in the early part of this year. Further investigations in glaucoma was made, and a greater amount of time was spent on these cases. It must be remembered the glaucoma is a major cause of blindness in Singapore.

ANÆSTHETIC UNIT

The anæsthetic staff serves not only in the General Hospital but also at the Kandang Kerbau Hospital and at the Dental Clinic.

"Open Heart" surgery—under hypothermia was successfully undertaken for the first time ever in Singapore, when a patent inter — auricular septum was repaired. Since then further cases of Auricular Septal defect and two cases of pulmonary stenosis have been corrected with two deaths. But for the shortage of anæsthetists, many more cases would have been done.

Teaching:—A course of lectures for dental and medical students and practical demonstrations in basic anæsthetic techniques were given throughout the year. The course of lectures (two one-hour lectures) to each final year batch of nurses as they came up were given.

DEPARTMENT OF RADIOLOGY

STAFF

	Radio logists	*Radio therapists*	*Radiographers*	*X-Ray Assistants*	*Junior Photo-graphic Assistants*
General Hospital ..	4	4	17 (Diagnostic) (including 3 on probation) 2 (Therapeutic)	2	12
Tan Tock Seng Hospital ...	—	—	2 (one is part-time)	—	6
Kandang Kerbau Hospital ...	—	—	1 (part-time)	—	—
Institute of Health ...	—	—	1	—	2
Woodbridge Hospital ...	—	—	—	—	1
On Scholarship in the United Kingdom ...	1	—	6 (Diagnostic) 1 (Therapeutic)	—	—

The total number of radiographic examinations for all X-ray departments was 188,992. This figure is slightly smaller by 2,175 when compared with the 1959 figures. However, the above figure does not include an additional 15,985 chest cases in the recent mass miniature X-ray survey conducted by the Assistant Director of Medical Services (Tuberculosis) for the Farrer Park district, which began on 3rd October, 1960 and ended in the last part of December 1960. Included in this survey were 823 temporary teachers. The overall number of cases X-rayed in 1960 therefore came to 204,977. There had also been a significant increase in some types of specialised examinations, particularly in angiographic work of all categories.

There was an increase in the number of cases treated in the Radiotherapy Section, namely, 679 cases for 1960 as against 460 cases in 1959, representing an increase of about 48 per cent. This was because there were more radiotherapists, and besides there was no major breakdown of equipment. Unfortunately, there was still an insufficiency of radiographers (therapeutic) which limited somewhat the number of cases.

The number of examinations carried out is shown in the following table (compared with figures for 1959):

TABLE 52

No. of diagnostic radiographs taken

	1959	*1960*
General Hospital	76,515	78,610
Tan Tock Seng Hospital	91,000	78,257
Kandang Kerbau Hospital	4,647	4,845
Woodbridge Hospital	3,290	3,325
Institute of Health (for chests only) ...	15,715	23,955
Total ...	191,167	188,992

Work on renovation of the main X-ray Department in the General Hospital was started in September 1960, under the supervision of the Senior Architect (Health Projects). The renovation has to be performed in stages, it is planned to have the entire project completed by 1962.

A new 500 MA X-ray Diagnostic Unit was installed in the Woodbridge Hospital.

PHYSIOTHERAPY DEPARTMENT

There were only 13 full-time physiotherapists working in the Department when the authorised strength was 20.

The number of cases treated in the department were:

	1959	*1960*
New Cases	8,244	8,190
Repeats	139,078	134,207

Lectures and lecture demonstrations were given to medical students, staff nurses and district nurses throughout the year, and also physical training for first year nurses. A Physiotherapy Department was started in Thomson Road Hospital beginning of the year.

OCCUPATIONAL THERAPY DEPARTMENT

The separate departments of occupational therapy in the various hospitals were unified by placing the senior officer, Miss J. K. L. Lim, in charge of the service.

The work on patients is to assist, and to provide diversional therapy, to assist in the treatment of patients by providing remedial activity, and to assist in the rehabilitation of the disabled and chronic sick.

Recreational activity is arranged for wheel-chair patients and especially the paraplegics. Loss of power of hands is improved by giving patients special work requiring use of the hands and new crafts such as weaving, making of rattan and raffia articles are taught.

The total visits to patients in the wards in the General Hospital was 18,872. In the year 2,626 patients attended at the department.

$8,475 was expended by the department on recurrent items, and $5,176 was taken in as revenue from sale of articles made in the department.

DIETETIC DEPARTMENT

From July 1960 the dietitians duties were extended to other Government hospitals to check food supplies delivered by contractors as well as covering certain duties in connection with diets at Thomson Road Hospital following a request from the Medical Superintendent.

One dietitian on the General Hospital establishment continued to be employed full time at Woodbridge Hospital.

The average number and cost per day of diets is shown below:

	Paying A	*Paying B*	*Free*	*Children*
Average daily number ...	34	73	688	178
Average daily cost ...	$3.22	$2.98	$1.15	.96½ cts.

ALMONER'S DEPARTMENT GENERAL HOSPITAL

The duties of the senior almoner have increased considerably as she is now responsible for the Almoner Service in all the hospitals.

The senior almoner also has to attend at the Complaints Bureau in the Office of Director of Medical Services twice a week. The work involved has decreased and is hoped that there will be some other arrangement for those who seek advice at the Bureau.

The almoners sit on committees of voluntary organisations. For example, the Orthopædic Almoner is a member of the Red Cross Committee responsible for the care of patients in the Red Cross Crippled Home; the almoner in the Eye Clinic is on the Blind Welfare Committee; the E.N.T. Almoner on the Deaf and Dumb Society Committee and the Pædiatric Almoner on the Children's Society Committee that runs the Convalescent Home and on the Spastic Committee which runs the Spastic Centre. These committees meet outside working-hours and it means that the almoners in fact have to give up some of their free time so that they can work with voluntary organisations.

Number of patients registered with the Almoners in the various Units in General Hospital

	1959	*1960*
Medical Unit I	1,004	462
Eye Clinic	575	489
Medical Unit II	1,070	739
Radiotherapy and E.N.T. Units (Senior Almoner) ...	330	237
Surgical Units 'A' and 'B'	1,062	745
Orthopædic Unit 'C'	1,575	1,347
Orthopædic Unit 'O'	1,125	851
Pædiatric Units — East and West	1,105	1,083
Outpatient Department and E.N.T. Unit (non-alignant)	1,206	600

The decrease in numbers seen by the almoners is directly related to the cut in sickness allowances previously granted by the Social Welfare Department. To ensure regular attendances it was often necessary to give the patients monthly certificates, even though they had been recommended an allowance for a period of six months. This meant that a number of patients only came to see the almoner for a certificate. All the almoners are pleased that this clerical duty has been taken off their hands, although the consequences of the cut in allowances is something to be deplored.

As a result of negotiations with the Director of Social Welfare, a disability allowance has been granted to a large number of patients since October but they still receive less than they used to have ($16 a month for a single person). As the disability allowance does not include the chronic sick and the dying, or those with serious medical conditions, it is this group that is most seriously affected.

Also the grant in public assistance is only to Singapore citizens, the non-citizens who are seriously ill or chronic sick present a problem which have to be dealt with by all the almoners.

MEDICAL RECORDS DEPARTMENT

It has been possible to make a start in organisation of hospitals Medical Records department since the return of the officer, Mr. I. Nadarajah, who was trained in the United Kingdom in medical records work.

The aim of the service will be to compile morbidity statistics and statistics of hospital activities. This would be a large undertaking which will take many years to complete. Assistance from W.H.O has been given. The initial work was begun in 1956 by the W.H.O. expert, Mr. Acker. The framework on the organisation of records was laid by him. A great deal more has to be done to implement the system of keeping records, analysing them and compiling the statistics from them. This will also involve revision of hospital records forms, revision of the system of storage and recording and will require the setting up of newly organised medical records offices in each hospital and eventually the setting up of a separate medical records Scheme of Service under which medical records officers are trained for this work.

At the General Hospital a medical records sub-committee was formed in March 1960 to look into the re-organisation of the medical records systems in the General Hospital. Already a significant improvement in the records service is noticeable.

Chapter Eleven

THOMSON ROAD HOSPITAL

THE FIRST ward in this hospital was opened in November 1959.

Three additional wards for medical cases were opened during the year — each with a bed-strength of 36 patients.

Staff

A small number of staff of all categories was brought into the hospital.

There are four doctors. The physician also acted as the Medical Superintendent.

The nursing staff comprised 1 Acting Matron, 3 Sisters, 10 staff nurses, 3 trained male nurses and 22 assistant nurses.

An almoner, a pharmacist, laboratory technician and a dietitian were on the staff by the end of the year.

School of Nursing (Preliminary Training School)

This was opened in July 1960 for training of pupil assistant nurses and is under the charge of three sister tutors, one of whom is from W.H.O.

Patients

There were a total number of 767 admissions into the hospital during the year. These patients were drawn from the Pegu Road, Thomson Road and Bukit Panjang Out-Patient Dispensaries. Some were transferred from the General and Kandang Kerbau Hospitals. The number of patients admitted per month gradually increased towards the latter half of the year and in December there were 84 admissions.

An out-patients' service provides for the staff and their families and for the follow-up of discharged in-patients. In the former there were 570 attendances and in the latter 845, for the year.

In addition during the recent Mass X-Ray Survey (Farrer Park Area) 46 patients suspected to be suffering from a non-tuberculosis chest conditions were referred for investigations and management.

Chapter Twelve

DENTAL CLINIC

Since Government and University activities in the Dental Clinic are difficult to separate this report should be read in conjunction with the annual report of the University of Malaya.

Staff

At present there are eight Government dental officers and housemen. There have been a number of changes during the year with the transfer of dental officers and the addition of new housemen but the total has remained reasonably constant.

The University establishment numbers 14 with at present three vacancies During the year, Mr. F. M. S. Lee, B.D.S., F.D.S.R.C.S. (England) joined the staff, Mr. Edmund Tay returned from study leave with the F.D.S.R.C.S. (England), and R. V. Lam, M.D.S., proceeded on study leave to the United States of America.

GENERAL

The position is set out in Tables 53, 54 and 55. Table 53 gives detailed figures of the work done in 1960 and Table 54 gives the comparative figures for the years 1951 to 1960.

The most notable feature is the surprising increase in the number of out-patient attendances at the Dental Clinic, from 101,754 in 1959 to 112,211 in 1960, an increase of over 10 per cent and a record figure. The number of new cases also substantially increased from 33,958 in 1959 to 42,948 in 1960, a 29 per cent rise. These figures are most commendable and the clinic is working at full capacity. However, it must be observed that the increases are largely due to patients seeking relief from pain, and as a result, there has been a sharp rise in the number of teeth extracted during the year. Indeed Government staff spent most of their time on extractions. Whilst it is necessary for them to undertake this public service, yet it seems a pity that day after day these fully trained dental officers should be obliged to undertake this monotonous type of work. Conservative and preventive treatment, including periodontia and orthodontia, is mainly undertaken by students in order to fulfil their requirements, and therefore the output remains largely the same as in 1959.

There seems to be an ever increasing public demand for certain types of dental treatment, and some appointments are necessarily made 4 to 6 months in advance. This is particularly distressing when it concerns young children suffering from decayed teeth who require a general anaesthetic. Many will suffer from considerable pain, from infection and possible complications before they can be treated. Here urgent action seems clearly indicated.

The greater demand for the saving of teeth is noted with satisfaction, and it is hoped that additional dental centres will be established to take care of this phase of dentistry for adults as well as children.

Mention must again be made of the space available to the Oral Surgery section, particularly in the Theatre, which is quite inadequate for the number of operations that are performed. Indeed the theatre can hardly be called an operating theatre in the proper sense, since often two or more operations are carried out at the one and same time. Plans for enlargement have been submitted, in an effort to relieve this congestion. Mention must also be made of the rejection of our request for a Dental Ward and the relative difficulty at times in obtaining ward accommodation for patients. No recovery facilities for patients exists at present in the dental clinic and it is obvious that if general anaesthetics are administered these should exist.

It must be recorded that excellent support and co-operation has been received from the various hospital wards without which our in-patient treatment would have been impossible.

REVENUE

Revenue shows an increase of $2,609.15 from $22,368.10 to $25.077.25 over the figure for 1959. This figure however does not compare with the figures reached in the past years prior to the introduction of the present system of free treatment for all children up to school leaving age. This factor had largely increased the number of children seeking treatment, and also has decreased the revenue.

Comment must be again made on the record number of attendances in 1960 which is largely a tribute to a hard working government staff reduced to a bare minimum and hindered often by the lack of sufficient nursing assistance. It must be recorded that there has been excellent co-operation between the Government and University staff.

All in all it can be said that the Dental Clinic has had a most satisfactory year.

TABLE 53

Detailed Figures of the Work done in 1960

1960	PATIENTS							EXTRACTIONS								FILLINGS													X-RAYS	
	FIRST VISITS							ADULTS				CHILDREN				ADULTS														
	Government Servants	Others	Total	Average Daily Out-Patient Attendances	Percentage of Government Servants	Repeat Cases	Number of Out-Patient Attendances	Local and Regional Anaesthetic		Other General Anaesthetic		Local and Regional Anaesthetic		Other General Anaesthetic		Amalgams	Synthetic Porcelain	Acrylics	Inlays	Crowns	Bridges	Gold Foil	Root Fillings	Total of Fillings	Oral Surgery Operation	Periodontia	Orthodontia	Dressings	Number of Dentures supplied	Number of Patients	Number of Films
								Patients	Teeth	Patients	Teeth	Patients	Teeth	Patients	Teeth															
	*			†												‡							‖	¶		§	‖			
January	85	2,706	2,791	329.33	3.24	5,113	7,904	2,339	2,927	..	..	1,277	1,925	234	675	285	24	7	69	1	1	5	25	417	77	39	7	1,690	84	575	1,612
February	98	3,293	3,391	404.38	2.89	6,314	9,705	2,833	3,773	2	1	1,245	2,008	318	960	453	75	5	108	30	10	3	45	724	91	53	21	2,661	137	680	1,626
March	121	3,585	3,706	330.69	4.12	4,892	8,598	2,676	3,584	2	4	1,215	1,978	353	1,103	340	58	7	78	12	4	3	33	535	64	27	9	1,849	119	519	1,157
April	121	3,325	3,446	310.3	3.51	3,691	7,137	2,351	3,145	2	..	915	1,472	327	953	47	15	5	3	4	..	..	9	83	89	8	34	1,564	93	346	877
May	122	3,101	3,223	329.37	3.79	4,682	7,905	2,820	3,688	..	..	1,138	1,174	328	1,096	121	23	8	14	5	4	3	16	193	76	51	26	1,784	65	436	1,349
June	95	3,219	3,314	389.58	2.87	6,036	9,350	2,903	3,823	..	..	1,120	1,786	274	887	457	109	18	27	7	2	2	75	697	30	129	17	1,855	109	591	1,825
July	94	3,634	3,728	394.62	2.52	6,532	10,260	3,070	4,106	..	..	1,168	1,871	305	976	637	159	19	75	10	3	5	63	971	92	102	30	1,503	210	473	1,413
August	127	4,162	4,289	404.65	2.96	6,232	10,521	3,238	4,020	3	1	1,606	2,632	313	1,103	298	62	11	44	29	4	10	64	513	78	84	7	2,075	184	527	1,643
September	112	3,689	3,801	433.68	2.95	7,041	10,842	3,257	4,187	1	1	1,465	2,321	350	1,266	426	162	8	53	8	1	15	104	777	85	111	23	1,480	229	685	1,968
October	112	3,360	3,472	395.	2.74	6,008	9,480	3,216	4,346	1	1	1,308	2,076	382	497	559	103	23	90	20	3	8	52	858	91	107	15	1,125	194	467	1,265
November	110	3,602	3,712	371.	2.96	5,934	9,646	3,326	4,356	..	..	1,547	2,464	355	1,259	324	77	20	41	33	5	3	39	542	76	100	5	968	185	461	1,337
December	79	3,996	4,075	417.8	1.94	6,788	10,863	3,166	4,254	1	..	2,063	3,219	349	1,341	483	129	16	69	51	2	15	94	953	79	151	39	973	202	534	1,630
Total ..	1,276	41,672	42,948	375.87	3.04	69,263	112,211	35,395	46,209	12	8	16,067	24,926	3,888	12,116	4,430	990	147	666	201	40	72	619	7,165	978	992	222	18,855	1,809	6,814	17,698

* Government Servants include their wives and children.

† In calculating the Daily Average Out-Patient Attendances, allowance has been made for Sundays and Public Holidays.

‡ These figures include fillings done in deciduous teeth as well.

§ These represent the number of attendances only and not cases completed.

¶ In this column only permanent fillings are included. All fillings of a temporary nature are included in the "Dressings" column. Fillings include all crowns and bridges.

‖ The figures in this column include such items as repairs and small partial dentures and also Orthodontic appliances.

TABLE 54

Comparative Figures for the years 1951 to 1960

Year	Total New Cases	Total Out-patients Attend-ances	Daily Average	Extrac-tions	Oral Surgery Opera-tions	Fillings	Dressings	Dentures	X-Rays	Revenue
										$ c.
1951	7,149	29.168	106.06	22,973	..	3,490	12,556	1,457	3,571	29,125 65
1952	10,054	37,988	138.11	27,983	..	5,913	10,393	1,223	4,498	31,126 67
1953	14,444	50,449	183.42	51,972	..	6,006	31,604	1,726	6,298	44,535 59
1954	21,525	63,469	231.20	71,715	..	6,859	44,641	2,092	6,596	53,842 84
1955	27,895	82,107	278.74	83,392	847	6,039	52,201	1,873	6,761	34,738 85
1956	32,547	99,004	334.47	82,175	896	6,741	63,338	2,348	9,137	36,341 94
1957	36,508	107,700	362.05	67,785	646	9,048	64,018	2,304	10,683	32,068 65
1958	25,770	87,293	291.03	53,701	755	5,277	23,315	2,025	15,498	21,954 50
1959	33,958	101,754	340.1	61,826	887	7,660	20,314	1,638	16,610	22,368 10
1960	42,948	112,211	375.87	83,259	978	7,165	18,855	1,809	17,696	25,077 25

TABLE 55

HOSPITAL:—GENERAL (DENTAL)

OUT-PATIENTS

Year 1960

Nationalities	New Case				Repetitions			
	Male	Female	Child	Total	Male	Female	Child	Total
Europeans	19	11	7	37	66	56	20	142
Eurasians	81	60	57	198	261	227	153	641
Chinese	9,626	11,669	15,133	36,428	18,475	23,877	15,112	57,464
Indians	1,966	722	673	3,361	4,291	1,380	880	6,551
Malays	1,363	823	648	2,834	2,235	1,266	747	4,248
Javanese	26	14	1	41	14	7	..	21
Japanese	4	1	..	5	3	1	..	4
Others	18	15	11	44	97	72	23	192
Total ..	13,103	13,315	16,530	42,948	25,442	26,886	16,935	69,263

Chapter Thirteen

THE GENERAL HOSPITAL

THE Hospital wards are grouped in three blocks. Over the years additions and extensions have been built so that the small Sepoy Hill on which the hospital was built is now covered over with buildings of varying architectural styles and has lost its air of spaciousness.

The additions however have added to the bed-strength of the hospital and improved its facilities. The number of beds have been increased to 1,251 compared to a pre-war number of 750.

Within the hospital compound is the Faculty of Medicine and its hostels. The hospital is the main teaching hospital for medical students in their clinical years. Dental students are trained in the School of Dentistry and dental clinic which is within the hospital.

Also within the hospital compound is the School of Nursing. In this school and in this hospital all future nurses for the medical services are trained. In-service departmental training of laboratory technicians and dispensing assistants are also conducted largely within the hospital.

The Blood Transfusion Service, the Pathological Laboratory services, for radiotherapy and the outpatient services are administered largely from centres situated in this hospital. The Heads of the Almoners, the Dietitic, Occupational Therapy and Physiotherapy Departments are also at the General Hospital.

The hospital is therefore the main hospital — the "mother-hospital" in Singapore — it combines as a general service hospital, a teaching hospital and, because of its association with teaching, and the aggregation of some of the best specialists, is in some respects a specialist hospital.

Summary of Unit Activity

Of the total of 1,251 beds, the average daily number of beds occupied was 1,038.41. The number of in-patients treated were as follows:

Male	26,892
Female	14,896
Total	41,788
Deaths	2,806
Percentage of deaths to total treated	6.71

STATISTICS SHOWING UNIT ACTIVITY FOR THE YEAR 1960

	Medical Unit I	Medical Unit II	Paediatric Unit	Surgical Unit 'A'	Surgical Unit 'B'	Orthopaedic Surgical Unit 'C'	Orthopaedic Surgical Unit 'O'	Ear, Nose and Throat Unit	Ophthal-mic
Discharges and Deaths ..	5,277	5,576	11,055	6,554	6,296	2,458	1,067	1,222	1,532
Total Attendances Out-patient Clinic	28,679	24,725	38,467	32,814	48,893	29,406	21,046	25,602	77,248
Number of Beds allocated ..	150	189	300	136	143	100	60	60	85
Bed Occupancy (Based on beds allocated)	97%	83%	58%	102%	105%	92%	102%	67%	82%
Turnover per bed	35 (points)	30 (points)	37 (points)	48 (points)	44 (points)	25 (points)	18 (points)	20 (points)	18 (points)
Crude average length of stay ..	10 (days)	10 (days)	6 (days)	8 (days)	9 (days)	14 (days)	22 (days)	12 (days)	17 (days)
Deaths	625	642	810	253	238	29	14	42	10
Percentage of Deaths to In-patients total treated	11.84	11.51	7.33	3.88	3.78	1.18	1.31	3.44	.65

TABLE 56

OUTPATIENT ATTENDANCES AT MAIN CLINICS OF HOSPITAL UNITS

	New Cases	Repeats	Total
Surgical O.P.D. 'A' Unit	13,292	19,522	32,814
Surgical O.P.D. 'B' Unit	20,097	28,796	48,893
Orthopaedic O.P.D. 'C' Unit	7,091	22,315	29,406
Orthopaedic O.P.D. 'O' Unit	5,577	15,469	21,046
Ear, Nose and Throat Department, O.P.D. ...	7,929	17,673	25,602
Eye Clinic	15,783	61,465	77,248
Medical O.P.D. Unit I	979	27,700	28,679
Medical O.P.D. Unit II	1,906	22,819	24,725
Paediatric, O.P.D.	4,247	34,220	38,467

TABLE 57

UNITS IN GENERAL HOSPITAL

Unit	Head of Unit
Medical Unit I	Professor G. A. Ransome, M.R.C.S., F.R.C.P.
Medical Unit II	Professor E. S. Monteiro, M.D., F.R.C.P., F.R.F.P. & S., D.C.H.
Paediatric Unit	Dr. (Miss) C. E. Field, M.D., M.R.C.S., M.R.C.P. up to 15th October, 1959.
	Dr. Quah Quee Guan, L.M.S. (Singapore), D.C.H., M.R.C.P.E.
Surgical Unit 'A'	Professor G. S. Yeoh, F.R.C.S., M.A., M.B., B.Chir.
Surgical Unit 'B'	Mr. Yahya Cohen, F.R.C.S., F.R.A.C.S.
Surgical Unit 'C' Orthopaedic	Professor A. G. Karlen, M.D.
Surgical Unit 'O' Orthopaedic	Mr. D. W. C. Gawne, F.R.C.S.
Ear, Nose and Throat ...	Dr. Seow Li Jin, M.B., F.R.C.S.
Ophthalmic Unit	Dr. Robert Loh, M.B.

Each Unit runs its own outpatient clinic for the follow-up of cases discharged from the wards belonging to the unit, and of cases referred for special investigation or treatment.

The summary of unit activity has been given previously; the following reports from the Units are extracts and condensations of their other work in the year.

MEDICAL UNITS

Medical Unit I

The report from the unit touches chiefly on its research during the year.

Research

An analysis of the records on necropsies and deaths during the period 1950–1954 showed a significant higher incidence of coronary artery disease for Indians compared to the Chinese. The study is being extended to a survey of blood cholesterol levels in the different ethnic groups in Singapore.

The rare condition known as Takayashu's Disease or Obliterative Brachiocephalic Arteritis has now been reported from this Unit. Studies have led to the conclusion that this condition is a primary arteritis of the aorta, the clinical presentation varying with the portion of the aorta affected and it is possible that some cases of renal artery stenosis with severe hypertension are due to arteritis of the abdominal aorta involving the renal artery orifices.

Collaborative studies with the Department of Tropical Disease and Public Health, Tulane University School of Medicine on the subject of Eosinophilic Lung still continues. Tissue material has been exchanged for study. Blood levels of diethylcarbamazine following two different routes of administration, oral and intramuscular, were carried out and showed no significant difference. Electrophoresis of serum proteins in cases of Eosinophilic Lung showed a rise in gamma globulin which returned to normal after treatment of diethylcarbamazine.

A series of cases of cryptogenetic splenomegaly is being studied with particular reference to aetiology and haematologic changes following splenectomy.

Medical Unit II — Research

Drug trials formed a large part of the year's research: guanethidine and hydroflumethiazide for the treatment of hypertension; cryprophetadine hydrochloride for the treatment of the dermatoses; 'triparanol' for the inhibition of cholesterol biosynthesis in cardiovascular disease and 'endoxan' for chemotherapy of malignant disease.

A study of tetanus in Singapore — the incidence and mortality — in the last three years has been completed.

A preliminary report of mono-aminase inhibition in pain and depression was made and the study is continuing.

PÆDIATRIC UNIT

The year saw the loss of two specialist officers from the Unit, Dr. C. E. Field, Head of the Unit who retired on 15th October, 1960 and Dr. G. Smith who resigned at the end of 1959.

The Post-Basic Training in Paediatrics for eight staff nurses started in 1959 continued and these girls will complete their training by August of 1961.

The increase in the laboratory investigations (29,670 in 1960 compared to 26,767 in 1959) is an index of the special requirements of Paediatric Unit. The increase of work was chiefly in the Biochemical Section. Since the attachment of the University technician trained in micro-biochemical estimations, it was possible to investigate the special problems such as neonatal jaundice, hæmolytic anæmias and dehydration.

More new cases were seen in the outpatient clinics of the Unit, (3,541 in 1960 compared to 3,013 in 1959), largely because of increase of referrals. The repeat cases showed no significant fall because of the early discharges. The highest outpatient attendance are for gastro-enteritis, nephritis, tuberculosis and heart and respiratory diseases.

The total admissions again showed a rise compared to last year, largely due to the high rate of re-admissions.

Both the great killers of our children, gastra-enteritis and bronchopneumonia took lesser toll than in the year before (1959) in spite of the greater number of children suffering from these diseases who were admitted.

The admissions for tuberculosis continued to show a gratifying fall especially in the incidence of military tuberculosis.

Neonatal jaundice of all types, also showed an increase compared to last year. This may be because doctors are sending more cases into the Unit.

There was a disquieting increase of poisoning cases, the greatest increase being from food poisoning.

SURGICAL UNITS

The following table summaries the operations done in the surgical units of the hospital.

TABLE 58

GENERAL HOSPITAL

OPERATIONS FOR THE YEAR, 1960

Month	SURGICAL 'A' UNIT			SURGICAL 'B' UNIT			SURGICAL 'C' UNIT			SURGICAL 'O' UNIT			OPHTHALMIC UNIT			EAR, NOSE AND THROAT		
	Major	Minor	Total	Major	Minor	Total	Major	Minor	Total	Major	Minor	Total	Major	Minor	Total	Major	Minor	Total
January ..	218	441	659	251	374	625	64	582	646	42	580	622	111	553	664	86	148	234
February ..	245	510	755	233	428	661	53	257	310	50	299	349	115	615	730	101	191	292
March ..	290	576	866	232	458	690	78	669	747	39	785	824	146	788	934	94	299	393
April ..	257	485	742	215	459	674	73	577	650	43	610	653	98	628	726	125	195	320
May ..	294	627	921	194	458	652	73	612	685	48	667	715	118	643	761	103	186	289
June ..	289	526	815	239	499	738	77	480	557	59	739	798	103	731	834	113	216	329
July ..	291	639	930	317	471	788	76	648	724	45	773	818	106	549	655	114	248	362
August ..	352	764	1,116	216	823	1,039	91	829	920	38	587	625	87	651	738	114	312	426
September ..	283	632	915	216	534	750	67	791	858	44	809	853	97	626	723	124	256	380
October ..	270	690	960	264	563	827	57	768	825	34	781	815	112	630	742	138	236	374
November ..	237	665	902	237	520	757	76	946	1,022	36	706	742	111	575	686	153	236	389
December ..	202	627	829	191	478	669	55	915	970	64	847	911	111	583	694	78	154	232
Total ..	3,228	7,182	10,410	2,805	6,065	8,870	840	8,074	8,914	542	8,183	8,725	1,315	7,572	8,887	1,343	2,677	4,020

Chapter Fourteen

KANDANG KERBAU HOSPITAL

THE HOSPITAL has a bed capacity of 390. This increase of 74 was made possible by the opening of four newly renovated wards. 276 of the beds are for maternity cases and 114 are for gynæcological cases.

The hospital is run as two units; a Government Unit under Dr. Chong Tuck Kwong, L.M.S., M.R.C.O.G. and a University Unit under Prof. B. H. Sheares, M.D., M.S., F.A.C.S., F.R.C.O.G.

Maternity Section

The number of deliveries in the hospital have shown a progressive rise due in part to the natural increase in population as well as the increase in the proportion of births now taking place in the hospital.

TABLE 59

	1956	1957	1959	1959	1960
In-patients	32,472	36,159	39,761	44,736	48,272
Deliveries	24,940	27,763	30,146	33,709	36,267
Percentage Deliveries/ Patients	75	76	76	75	75
Total live Births, Singapore ...	60,892	61,757	62,495	62,464	61,775
Percentage Births in K.K. /Total Singapore ...	41	45	48	54	59

Domiciliary Delivery Service

1960 was the 4th year of the Domiciliary Delivery Service. The main object of the service is the training of medical students, general trained nurses and midwifery pupils in the domiciliary midwifery.

The medical students, trained nurses and pupil midwives spend eight weeks in the extern practice. Each student is accompanied by experienced midwives and supervised by a Sister. A total of 108 medical students, 62 trained nurses and 50 midwives were trained in 1960.

Of 8,240 cases investigated only 2,292 cases were selected for home confinements. But finally only 1,776 cases were attended in labour, of which 44 cases had to be admitted to hospital.

Domiciliary After-Care Service

Out of a total of 36,267 deliveries in the hospital, 10,789 were looked after in the patients' homes by the staff midwives attached to this service.

Pædiatric Section

Infants are referred to the pædiatrician who attends at the hospital daily because of some abnormality or for prematures under 4 lb. birth weight.

A wide range of infant abnormalities are seen — birth injuries, congenital malformations, bleeding diseases, severe neonatal jaundice, infections, respiratory complications and others.

There are two premature nurseries for premature infants of birth weight less than 4 lb or full-term infants who are very ill and need special care.

Table 60 depicts the total admissions and mortality for the different birth weights, with figures for 1959 for comparison.

TABLE 60

Birth Weight	Admissions 1959	Admissions 1960	Deaths 1959	Deaths 1960	Percentage 1959	Mortality 1960
Less than 2 lb.	47	74	46	70	97.8	94.6
2 lb.–2 lb. 7 oz.	82	86	71	74	86.8	86.0
2 lb. 8 oz.–2 lb. 15 oz. ...	109	149	64	88	58.7	59.0
3 lb.–3 lb. 7 oz.	159	242	74	88	46.6	36.3
3 lb. 8 oz.–3 lb. 15 oz. ...	215	355	65	94	30.2	26.5
4 lb.–5½ lb.	61	136	25	61	40.9	44.1
More than 5½ lb.	39	98	25	36	64.1	36.7
Total ...	712	1,140	370	511	—	—

The commonest causes of death in prematures are pulmonary syndrome of the newborn (which includes pulmonary hyaline membrane disease, pulmonary hæmorrhage and atelectasis), and intracranial hæmorrhage.

The Pædiatric Medical Officer sees cases referred to him every morning from the Postnatal Clinic. The number seen for 1960 is 1,943 infants. A large number of cases of B.C.G. adenitis were seen in the second half of 1960.

The Pædiatrician and his Medical Officer follow up all the prematures born in Kandang Kerbau Maternity Hospital on Wednesday afternoons. The corresponding figures for 1959 and 1960 were:

	1959	1960
New Cases	527	834
Repeat Cases	518	1,676

Gynæcology Section

There were 7,207 admissions of gynæcological cases and 8,978 operations were performed, 3,813 of these being on out-patients. The operations were chiefly caesareans, hysterectomies, colporrhaphies, dilation and currettage, cautery of the cervix, myomectomies and sterilization.

Almoner's Department

A third almoner joined the department during the year.

The growing awareness of the assistance the almoners can provide is seen in the large numbers and larger variety of cases referred to the department. Financial aid to patients; provision of food to poor mothers and malnourished children, arrangements for fostering or adoption of babies, advice on marital problems, and assistance to the unmarried mothers, the patient with malignant disease are all part of the work of the department.

Outpatient Department

The ante-natal, post-natal and gynæcological clinics are for both normal and abnormal cases. As far as is possible the "normal" cases are kept separate from the special clinics for "abnormal" cases. There are clinics for infertility and for cancer.

TABLE 61

SUMMARY OF WORK DONE AT KANDANG KERBAU HOSPITAL, 1956–1960

	1956	1957	1958	1959	1960
Total Admissions:					
Maternity Cases ...	27,951	30,747	33,491	37,661	40,768
Gynæcologic Cases ...	4,252	5,085	5,989	6,775	7,207
Total ...	32,203	35,832	39,480	44,436	47,975
Daily average of patients ...	296	282	296	320	320
Maternity Statistics:					
Normal deliveries ...	15,058	15,840	16,742	17,809	18,580
Abnormal delieveries ...	9,882	11,925	13,404	15,800	17,687
Total ...	25,878*	27,765	30,146	33,609	36,267
Breach deliveries ...	916	1,001	997	997	1,144
Forceps deliveries ...	470	563	544	524	574
Cæsarian	488	571	530	523	825
Triplets (set)	3	2	4	5	4
Twins (pairs)	285	320	347	318	280
Still births	478	592	564	537	500
Born before arrival ...	307	307	364	434	539
Maternal deaths ...	39	37	35	34	25
Maternal deaths rate per 1,000	1.4	1.3	1.1	0.9	0.6
Cases cared by Domiciliary After-Care Service (Started in May 1954) ...	7,282	8,128	9,104	10,545	10,789
Domiciliary deliveries (Started in September 1955)	938	1,515	1,578	1,797	1,776
Gynæcologic Statistics:					
Gynæcologic operations (mainly hystectomies, colporrhapies, dilatation and curettage, cautery of cervix, myomectomies and sterilization)—					
In-patients operations ..	3,944	4,755	5,494	5,949	5,045
Out-patients operations	2,774	2,815	2,873	2,864	3,933
Total ...	6,718	7,570	8,367	8,813	8,978

* Includes domiciliary deliveries.

TABLE 61 — *continued*

	1956	1957	1958	1959	1960
Gynæcologic deaths ...	12	13	25	31	35
Gynæcologic deaths rate percentage	.28	.26	.42	.46	.48
Out-Patient Statistics:					
Ante-natal attendances ...	63,256	69,803	71,361	80,094	84,187
Gynæcologic attendances ...	37,074	36,430	34,200	44,106	55,272
Total ...	100,330	106,233	105,561	124,200	139,459
Post-natal Mothers ...	17,115	20,697	26,489	29,952	26,965
Post-natal Babies ...	10,484	11,993	18,202	21,870	21,955
Clinical Laboratory:					
Routine examinations ...	47,280	49,722	46,138	56,756	63,830
Radiologic Unit:					
(Started in 1963)					
Patients for Radiologic examinations ...	3,930	4,244	4,076	4,618	4,761
Anæsthetic:					
Anæsthetics administered —					
Major cases	1,414	934	1,125	1,650	1,880
Minor cases	5,138	5,731	6,786	5,995	4,025
Total ...	6,552	6,665	7,911	7,645	5,905
Number of general anæsthetics	6,261	6,386	7,594	7,183	5,710
Number of spinal anæsthetics	244	227	255	244	181
Number of local anæsthetics	47	52	62	168	194

Chapter Fifteen

TAN TOCK SENG'S HOSPITAL

TAN TOCK SENG HOSPITAL continued to function as the main government centre for treatment of tuberculosis. Three new wards were opened bringing the total bed strength to 1,200.

In conformity with the plan to start a new hospital in Woodbridge Hospital for chronic medical cases the block in that hospital utilised for chronic infectious ambulant tuberculosis cases was closed and the 37 patients transferred back to this hospital.

Staff

The staff of the hospital consisted of 4 Chest Physicians (one acting), 14 Medical Officers (Timescale), 2 Matrons Grade II, 23 Sisters, 4 Charge Nurses (Men), 6 Almoners, 1 Radiographer, 1 Physiotherapist, 1 Occupational Therapist, 1 Pharmacist, 1 Steward, 1 Hospital Assistant Special Grade, 2 Senior Dispensing Assistants, 3 Dispensing Assistants, 7 Laboratory Technicians, 10 Staff Nurses, 1 Hospital Assistant (Timescale), 14 Male Nurses, and 386 Assistant Nurses.

Three Sisters of the Franciscan Missionaire of the Divine Motherhood, together with 5 Staff Nurses and 58 Student Nurses, comprised the nursing staff of the Mandalay Section of the Hospital. The Rev. Mother Mary Angela, Matron Grade II, retired on 1st November.

Table 62 gives a return of tuberculosis cases admitted to Government hospitals in Singapore. Admission to hospital for in-patient treatment is made according to various priorities on medical and social grounds.

TABLE 62

TUBERCULOSIS CASES ADMITTED TO GOVERNMENT HOSPITALS

	1954	1955	1956	1957	1958	1959	1960
Tan Tock Seng's Hospital:							
Pulmonary	2,137	2,104	2,061	2,442	3,064	2,588	2,752
Bones and Joints ...	35	59	79	133	171	169	115
Other forms	11	12	22	27	41	62	43
General Hospital:							
Pulmonary	686	776	944	942	785	660	703
Bones and Joints ...	240	287	146	302	338	332	157
Other forms	297	339	415	122	242	252	230
St. Andrew's Orthopædic Hospital:							
Pulmonary	—	—	—	—	—	—	19
Bones and Joints ...	170	247	104	235	245	121	115
Other forms	—	—	105	—	—	—	—
Total ...	3,576	3,824	3,876	4,203	4,886	4,184	4,134

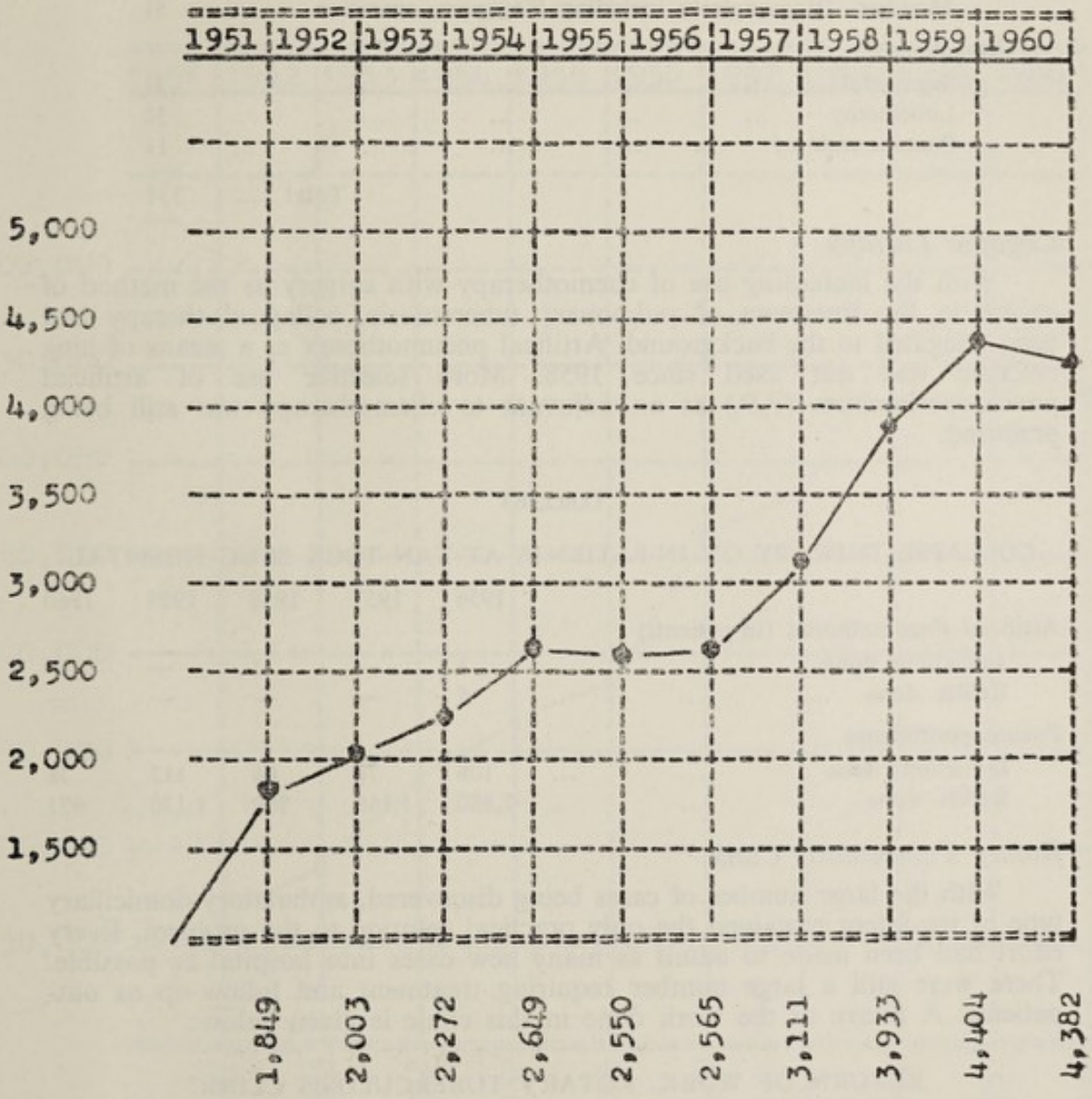
Treatment

In-patient treatment is still considered essential in the treatment of tuberculosis. Approximately 400 beds were allocated for far advanced cases with the view to rendering as many of such cases non-infectious, and to provide for those who have no home. The rest of the hospital beds were for early treatable cases and for those admitted for special medical reasons, e.g. emergencies, cases for surgery, etc. Admission was strictly by waiting list system. Priority for admission was given for emergency, acute and toxic cases and highly infectious cases with unsatisfactory home conditions.

TAN TOCK SENG HOSPITAL

GRAPH SHOWING IN-PATIENTS TREATED

1951–1960



Streptomycin, isonicotinic acid, hydrozide, and para-aminosalicylate in suitable combinations are the three major drugs used. As a routine, cases receiving no treatment before were given Streptomycin with INAH. daily for about five months to be followed by PAS. with INAH. daily for one year.

For cases whose tubercle bacilli were resistant to one or more of three major anti-tuberculous drugs, Cycloserine, Viomycin, Pyrazinamide and Trescatyl (M & B) were available but their use were limited to controlled therapeutic trials under the chest physicians.

Cases selected for major thoracic surgery were still done by the Surgical Units in General Hospital, but the pre-operative preparation and post-operative follow up were done at Tan Tock Seng Hospital. 477 minor operations were done at Tan Tock Seng Hospital of which 285 were bronchoscopic examinations.

Altogether 131 major thoracic operations were done by the surgeons in General Hospital for this hospital. A breakdown of the operations done were as follows:

Thoracoplasty:	
Modified Thoracoplasty including Singapore operation ...	51
Resections:	
Segmental	31
Lobectomy	38
Pneumonectomy	11
Total ...	131

Collapse Therapy

With the increasing use of chemotherapy with surgery as the method of choice in the treatment of pulmonary tuberculosis, collapsed therapy had been relegated to the background. Artifical pneumothorax as a means of lung collapse was not used since 1958. More selective use of artificial pneumoperitoneum (P.P.) as an adjuvant to chemotherapy was still being practised.

TABLE 63

COLLAPSE THERAPY ON IN-PATIENTS AT TAN TOCK SENG HOSPITAL

	1956	1957	1958	1959	1960
Artificial Pneumothorax (In-patients)					
Inductions done	1	—	1	—	—
Refills done	5	—	—	—	—
Pneumoperitoneum					
Inductions done	106	74	66	112	78
Refills done	2,880	1,160	769	1,170	971

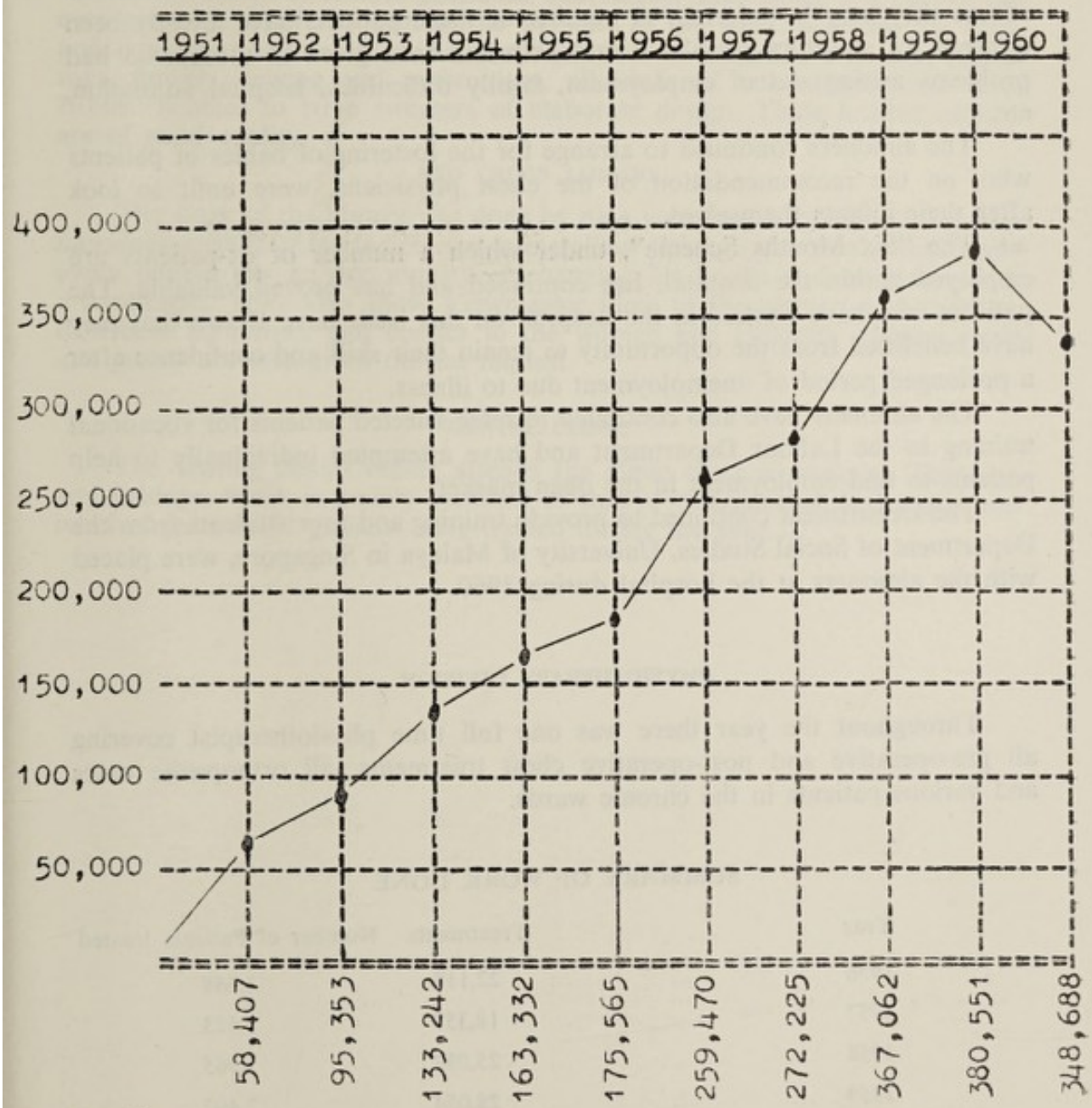
Rotary Tuberculosis Clinic

With the large number of cases being discovered, ambulatory-domicillary type of treatment remained the only practical solution to the problem. Every effort had been made to admit as many new cases into hospital as possible. There were still a large number requiring treatment and follow-up as out-patients. A return of the work done in this clinic is given below:

RETURN OF WORK, ROTARY TUBERCULOSIS CLINIC

	1957	1958	1959	1960
New cases of Tuberculosis	2,405	2,790	2,685	2,863
Repeat visits of cases of Tuberculosis ..	269,820	364,272	377,866	342,760
Cases seen by Specialists:				
(*a*) New cases	2,796	3,434	3,946	2,703
(*b*) Old cases	36,751	44,474	49,768	47,935
X-ray Examinations	75,973	82,682	90,697	78,094
Fluroscopic screenings	4,024	1,743	1,422	1,189
Laboratory Examinations	111,420	110,447	94,551	94,034
A.P. Inductions	6	—	—	—
A.P. Refills	16	—	—	—
P.P. Inductions	55	24	84	48
P.P. Refills	20,826	8,586	7,046	6,068

TAN TOCK SENG HOSPITAL
TOTAL OUT-PATIENTS TREATED
(New Patients and Revisits)
1951–1960



Training

Nineteen student nurses passed the Examination for the Tuberculosis Nursing Certificate. 66 assistant nurses passed the Final Examination during the year. 202 nurses remained in training at the end of the year.

ALMONER'S DIVISION

The almoners have been working in close co-operation with other departments within the hospital, almoners' departments in other hospitals, community service organisations and other social agencies.

The almoners work in the same Unit system as the medical staff and continuity of contact with one almoner is maintained throughout a patient's attendance at the hospital and in the out-patient department.

A number of patients were referred to the almoners following the inception of the Mass X-ray scheme in October. The almoners have endeavoured to see these patients on their first visit to the clinic in the same way as all new patients are seen on their first attendance from whichever source they may be referred. A number of these patients have already been referred for statutory social aid and help has been given to those who had problems arising out of employment, family difficulties, hospital admission, etc.

The almoners continued to arrange for the fostering of babies of patients who, on the recommendation of the chest physicians, were unfit to look after their infants themselves.

The "Six Months Scheme", under which a number of ex-patients are employed within the hospital, has continued and has proved valuable. The patients who have worked in the hospital on this basis have shown that they have benefitted from the opportunity to regain their skill and confidence after a prolonged period of unemployment due to illness.

The almoners have also continued to refer selected patients for vocational training to the Labour Department and have attempted individually to help patients to find employment in the open market.

The Department continued to provide training and four students from the Department of Social Studies, University of Malaya in Singapore, were placed with the almoners at the hospital during 1960.

PHYSIOTHERAPY DIVISION

Throughout the year there was one full time physiotherapist covering all pre-operative and post-operative chest treatments, all orthopædic cases and various patients in the chronic wards.

SUMMARY OF WORK DONE

Year	Treatments	Number of Patients treated
1956	22,118	1,688
1957	18,357	1,523
1958	25,032	1,965
1959	28,054	2,407
1960	20,019	2,400

OCCUPATIONAL THERAPY

The rehabilitation of ex-tuberculosis patients referred by the Labour Department and by the almoners of this Hospital continued. The following crafts were found to be the most suitable for the patients to be trained in basketry, tailoring and lampshade-making the former two being the most popular. The period of training for tailoring is usually between 6–9 months whilst the period for basketry is 6 months.

DIVERSIONAL THERAPY UNIT

Thirty-five wards were covered by 60 voluntary workers. The year has been highly successful, and there has been increased activity in all ways. The total number of articles produced was 12,000. This figure is a sign of the ever growing popularity among the patients of the work done by the Unit, and is a great source of satisfaction. The articles comprise felt toys, plastic toys, flowers, sewing and embroidery, all kinds of knitted garments from babies' bootees to large sweaters of elaborate design. These knitted articles are of good quality.

RED CROSS LIBRARY

The work of the library was done by nine volunteer lady helpers. On two mornings a week these ladies circulate trolleys through the men's wards, and every patient has an opportunity of changing his books and magazine once a forthnight. They also show Viewmaster films to the women and children, distribute magazines and comics to the women and children. Playing cards and games are also given out on request.

DENTAL CLINIC

The visiting dental officer attends the clinic twice a week on Tuesdays and Fridays. Work is mainly confined to that of clearance of oral sepsis and relief of pain. 2,161 patients were treated during the year.

Chapter Sixteen

MIDDLETON HOSPITAL

THIS INFECTIOUS DISEASES Hospital which was formally run by the City Council to which Government made an annual grant, was transferred to the Government Hospitals administration in 1960.

Staff

The resident Medical Officer who was also acting as the Medical Superintendent was assisted by other City Council doctors who did calls on a roster. Valuable assistance was also given by the consultants from the General Hospital, Professors Ransome and Monteiro and the Orthopædic Surgeons, Professor Karlen and Mr. Friedman.

Admissions

Admissions to the hospital and of principal infectious diseases in the last ten years are given in the following table:

TABLE 64

ADMISSIONS OF THE MORE IMPORTANT DISEASES FOR THE LAST 10 YEARS

Diseases	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960
Amoebic Dysentery	105	22	134	122	136	126	197	156	112	249
Bacillary Dysentery	18	9	25	18	17	26	74	60	36	70
Chicken-Pox	610	450	836	1,313	1,769	1,488	1,039	472	987	1,453
Clinical Dysentery	40	..	16	34	35	63	150	92	68	161
Cerebro-Spinal Meningitis ..	4	2	4	2	..	..	..	4	..	..
Diphtheria	370	427	332	345	460	552	712	547	519	642
Erysipelas	4	3	..	3	..	2	3	1	..	3
Measles	204	142	117	182	200	301	153	357	146	178
Mumps	..	15	9	35	54	52	14	43	47	55
Pneumonia	..	..	..	..	..	..	..	1	4	3
Plague	..	..	..	..	..	..	..	..	..	..
Poliomyelitis	78	50	41	70	19	37	52	405	66	201
Rubella	11	9	..	1	..	86	36	7	9	16
Scarlet Fever	79	..	..	..	..	..	1	..	..	..
Smallpox	..	..	..	..	..	..	..	..	10	..
Tropical Typhus	7	92	4	7	..	1	..	1	..	..
Typhoid Fever	91	117	91	125	114	76	118	127	160	174
Whooping Cough	5	3	..	10	5	85	30	38	15	39
Cholera	..	..	..	..	..	..	..	..	..	..
Other Diseases Carriers and Observations	591	455	440	647	503	936	1,083	1,368	1,272	1,680
Total ..	2,217	1,796	2,049	2,914	3,312	3,831	3,662	3,679	3,451	4,924

TABLE 65

NUMBER OF ADMISSIONS, DAYS IN HOSPITAL AND DEATHS BY ETHNIC GROUPS

Ethnic Group	REMAINING 1959		ADMITTED 1960		TOTAL		DEATHS
	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	..	..	13	174	13	174	1
Eurasians	4	10	38	304	42	314	..
Chinese	131	9,374	2,940	40,285	3,071	49,659	58
Indians and Pakistanis	47	1,320	1,216	11,236	1,263	12,556	11
Malays	12	375	586	6,323	598	6,698	4
Javanese	1	9	66	514	67	523	1
Others	3	237	65	458	68	695	1
Total ..	198	11,325	4,924	59,294	5,122	70,619	76

TABLE 66

	Remaining 1959	Admitted 1960	Transferred to other hospital	Died	Remaining 1960	Deaths %	Average daily number of patients
Male ..	119	3,021	13	42	101	1.33	..
Female ..	79	1,903	11	34	88	1.71	..
Total ..	198	4,924	24	76	189	1.48	192

DANGEROUS INFECTIOUS DISEASES

There were no cases of smallpox, plague and cholera during the year.

TABLE 67

DIPHTHERIA ADMISSIONS AND DEATHS FOR THE LAST 10 YEARS

Year	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960
Admissions ..	370	427	332	345	460	552	712	548	519	642
Deaths	91	80	47	34	41	47	58	34	23	32
Mortality rate ..	24.59	18.73	14.15	9.86	8.91	8.51	8.14	6.20	4.43	4.98

TABLE 68

MONTHLY DIPHTHERIA ADMISSIONS AND DEATHS FOR 1960

Month	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Admissions ..	61	52	42	45	53	58	70	45	48	41	60	67	642
Deaths ..	2	4	3	3	4	2	4	1	..	3	2	4	32

During the year the number of diphtheria admissions was maintained at a high level. 642 cases were admitted, the second highest number of cases for a year on record. 32 cases died giving a mortality rate of 4.98 per cent 48 cases required tracheotomy for respiratory obstruction of which 17 died from complications.

Carriers.—601 contacts were admitted as diphtheria carriers.

TABLE 69

REGIONAL DISTRIBUTION OF DIPHTHERIA ADMISSIONS BY MONTH

Month	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Urban ..	55	45	36	39	44	51	59	42	43	35	50	57	556
Rural ..	6	7	6	6	9	7	11	3	5	6	10	10	86
Total ..	61	52	42	45	53	58	70	45	48	41	60	67	642

TABLE 70

DIPHTHERIA ADMISSIONS AND DEATHS BY AGE AND SEX GROUP

Age Group	Admissions M.	Admissions F.	Total Admissions	Deaths M.	Deaths F.	Total Deaths
Under 1 year ..	38	22	60	3	1	4
1 year	28	16	44	2	2	4
2 years	43	29	72	6	3	9
3 years	48	46	94	3	4	7
4 years	24	29	53	1	..	1
5 years	31	25	56	2	1	3
6—10 years ..	75	89	164	2	1	3
11—15 years ..	13	46	59	..	..	..
16—20 years ..	4	9	13	..	..	..
21+	7	20	27	..	1	1
Total ..	311	331	642	19	13	32

TABLE 71

DIPHTHERIA ADMISSIONS AND DEATHS BY ETHNIC GROUP

Nationality	Admissions M.	Admissions F.	Total	Deaths M.	Deaths F.	Total
Europeans	..	2	2	..	..	..
Eurasians	2	1	3	..	..	..
Chinese	272	304	576	18	13	31
Indians	13	11	24	..	..	..
Malays/Javanese ..	24	13	37	1	..	1
Others	..	..	..	..	..	..
Total ..	311	331	642	19	13	32

TABLE 72

DIPHTHERIA-TYPE OF CASES

Type	Admissions	Deaths
Laryngeal	63	20
Pharyngeal	148	11
Faucial	281	1
Aural	26	..
Nasal	118	..
Cutaneous	4	..
Buccal	1	..
Stomal	1	..
Total ..	642	32

TABLE 73

DIPHTHERIA ADMISSIONS, DEATHS AND TRACHEOTOMY OPERATIONS

Total Admissions	642
Total Deaths	32
Case Mortality rate	4.98%
Number Tracheotomies done	48
Number of Deaths after tracheotomies	17

TABLE 74

A.A. POLIOMYELITIS: ADMISSIONS AND DEATHS FOR LAST 10 YEARS

Year	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960
Admissions	78	50	41	71	19	29	52	404	66	201
Deaths	8	8	5	2	2	..	..	12	3	6

201 cases of poliomyelitis were admitted during the year with six deaths, a mortality rate of 3 per cent. This is the highest figure recorded for a non-epidemic period. The number of poliomyelitis admissions remained at a high level from May till the end of the year with a peak August (37 cases) and September (33 cases). Most of the cases occurred in children aged 3 years and below.

Poliovirus

Type 1 poliovirus remained dominant throughout the year and was responsible for the increased incidence of cases in the second half of the year.

One of the fatal cases was a young American woman who developed poliomyelitis one month after arrival in Malaya. She developed extensive paralysis and required the use of an iron lung but subsequently succumbed with diabetes mellitus as a complication.

Serological examinations showed that she had no antibodies to all the three types of poliovirus at the onset of the illness but she subsequently developed antibodies to type 1 poliovirus. She had been advised to have poliomyelitis immunization before leaving America but refused. Her case has been described in some detail as an illustration of the danger to an unimmunised person who travels from an area with little virus to an area where the virus is abundant.

TABLE 75

POLIOMYELITIS ADMISSIONS AND DEATHS BY MONTH

Month	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Admissions ..	7	11	4	9	13	21	19	37	33	18	16	13	201
Deaths ..	..	..	..	..	..	..	1	2	..	..	3	..	6

TABLE 76

REGIONAL DISTRIBUTION OF POLIOMYELITIS CASES BY MONTH

Month	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Urban ..	6	5	4	7	10	11	15	24	21	9	9	7	128
Rural ..	1	6	..	2	3	10	4	13	12	9	7	6	73
Total ..	7	11	4	9	13	21	19	37	33	18	16	13	201

TABLE 77

AGE, SEX AND ETHNIC GROUPS OF POLIOMYELITIS CASES

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 ..	..		..		21	15	6	1	1	1	..		28	17
1 year	..		..		17	13	4	3	2	1	..		23	17
2 years	..		..		30	15	7	4	1	2	..		38	21
3 years	..		..		15	10	1	2	1	..	..		17	12
4 years	..		..		7	2	..		1	..	..		8	2
5 years	..		..		2	2	..		..		..		2	2
6—10 years ..	..		..		4	5	..	1	1	..	..	1	5	7
11—15 years ..	..		..		..		..		..		..		..	
16—20 years ..	..		..		..		..		..		..		..	
20+	..	1	..		..	1	..		..		..		..	2
Total ..	..	1	..		96	63	18	11	7	4	..	1	121	80

TABLE 78

TYPHOID FEVER ADMISSIONS AND DEATHS BY ETHNIC GROUPS, AGE AND SEX

(Deaths in Brackets)

Age	0—10		11—19		20+		Total	
Sex	M.	F.	M.	F.	M.	F.	M.	F.
Europeans	..	..	..	..	..	..	..	..
Eurasians	..	..	..	..	..	..	..	..
Chinese	17	10	32	9 (1)	14	17	63	36 (1)
Indians	2	1	5	..	6	..	13	1
Malays	9	12	8 (1)	10	9	6	26 (1)	28
Javanese	..	1	..	..	3	1	3	2
Others	1	..	1	..	..	..	2	..
Total ..	29	24	46	19	32	24	107	67

TABLE 79

TYPHOID FEVER—ADMISSIONS AND DEATHS BY MONTH

Month	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Admissions ..	12	17	7	4	12	10	14	9	58	10	10	11	174
Deaths ..	..	1	..	..	..	..	..	..	..	..	..	1	2

174 cases of typhoid fever were admitted during the year, the highest figure recorded since the Second World War.

There were two deaths, a mortality rate of 1.15 per cent. One case died of acute toxæmia with cardiac failure and the other of hepatitis with acute liver failure as a complication.

The large number of admissions was due in part to an outbreak of typhoid fever which broke out without warning on the Pulau Bukom islands in September.

Pulau Bukom typhoid outbreak

During the year an explosive outbreak of typhoid fever occurred on Pulau Bukom Besar and the adjacent small islands. In all 61 cases of fever were admitted to the hospital of which 53 cases were confirmed as typhoid fever.

The outbreak started in September when 55 cases of fever were admitted to the hospital of which 49 cases were confirmed as typhoid fever. In October, another 4 cases of fever were admitted of which 2 cases were proved to be typhoid. These 2 cases were admitted in a critical condition but recovered after a stormy illness. In November another two cases of typhoid fever were admitted with typhoid fever. There were no deaths.

At the same time, 94 hawkers and food handlers from Pulau Bukom were admitted and screened for the carrier state. The results were negative and the source of the outbreak remained unascertained.

TABLE 80

PULAU BUKOM TYPHOID CASES BY ETHNIC, SEX AND AGE GROUP

Age	0—5		6—10		11—20		21—30		31+		Total	
Sex	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
Chinese ..	..	..	1	2	4	2	..	..	..	2	5	6
Malays ..	1	3	6	6	4	12	4	..	1	1	16	22
Javanese ..	..	..	..	..	..	..	..	..	1	..	1	..
Boyanese ..	..	..	1	..	..	..	..	..	..	..	1	..
Indonesian ..	..	..	..	..	..	1	..	..	..	..	..	1
Indians ..	..	..	..	..	1	..	..	..	..	..	1	..
Total ..	1	3	8	8	9	15	4	..	2	3	24	29

Typhoid Carriers.—During the year, a total of 446 persons from ice-cream manufacturers, dairy farms, public water works and Pulau Bukom were investigated for the typhoid carrier state.

Chickenpox

1,453 cases of Chickenpox were admitted during the year.

TABLE 81

CHICKENPOX ADMISSIONS BY AGE, SEX AND ETHNIC GROUPS

Age	0—10		11—19		20+		Total		Total Admissions
Sex	M.	F.	M.	F.	M.	F.	M.	F.	
Eurasians ..	2	3	3	5	9	6	14	14	28
Europeans ..	..	1	..	1	..	..	..	2	2
Chinese ..	72	60	63	24	77	44	212	128	340
Indians ..	75	59	80	49	370	131	525	239	764
Malays ..	52	28	38	20	88	44	178	92	270
Javanese ..	3	7	..	..	2	2	5	9	14
Others ..	2	11	5	6	6	5	13	22	35
Total ..	206	169	189	105	552	232	947	506	1,453

TABLE 82

CHICKENPOX CASES, REGIONAL DISTRIBUTION BY MONTH

Month	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Urban ..	122	124	187	170	136	78	100	96	28	101	80	100	1,322
Rural ..	16	15	13	12	14	7	10	9	1	8	9	17	131
Total ..	138	139	200	182	150	85	110	105	29	109	89	117	1,453

TABLE 83

Dysentery Type	Admissions		Deaths
1. Amoebic Dysentery	249		1
2. Amoebic and Bacillary Dysentery ..	3		1
3. Bacillary Dysentery (*a*) Flexner ..	40	70	
(*b*) Sonne ..	23		
(*c*) Shiga ..	7		
4. Clinical Dysentery	161		..
Total ..	483		2

Dysentery Carriers

Eight cases of bacillary dysentery carrier (Flexner) were admitted for the year. These cases were detected at the Naval Base Hospital in the course of routine examination of applicants for the job of domestic servants.

Chapter Seventeen

MIDDLE ROAD HOSPITAL

VENEREAL disease control presents a difficult social problem in this Island State of Singapore with its busy international port, its entrepôt trade, its rapidly growing industry and its military establishments coupled with a population of over 1.5 million and its many transients. The facilities provided include:

(1) Middle Road Hospital: a 58-bedded hospital with male and female out-patient clinics;

(2) Tanjong Pagar Clinic, Nelson Road: a seamen's clinic in the Dock Area;

(3) Male and Female Mobile Dispensaries for diagnosis and treatment in rural areas;

(4) an Epidemiological Control Unit for case finding, contacting defaulters, follow-up of treated patients and contacting family units for investigation;

(5) a serological laboratory for rapid diagnosis.

In addition social hygiene also runs a skin out-patient service.

ATTENDANCES

Total attendances though less than 1959 is still much higher than previous years. This drop was partly due to shortage of medical officers resulting in temporary cessation of some clinical sessions in the Tanjong Pagar Clinic. The daily average attendances totalled 677 based on 297 working days in the year:

Year	In-patients	Out-patients	Total Attendances
1956	1,353	24,551 (9,955 Females)	185,452
1957	1,335	28,215 (11,502 Females)	190,549
1958	1,125	34,861 (14,997 Females)	197,333
1959	1,349	37,658 (16,723 Females)	218,270
1960	1,130	35,331 (16,515 Females)	201,102

INCIDENCE OF VENEREAL DISEASES

There has been a steady decrease in the total incidence of V.D. infections:

Year	Syphilitic infections	Other V.D. infections	Total
1956	1,226	3,557	4,803
1957	1,276	4,176	5,452
1958	1,035	4,198	5,233
1959	795	4,043	4,838
1960	860	3,435	4,295

SYPHILIS

Syphilitic infections show a rise compared to 1959 being accounted for by an increase in primary syphilis cases:

TABLE 84

SYPHILITIC INFECTIONS

	1956	1957	1958	1959	1960
Primary Syphilis	128	182	125	100	198
Secondary Syphilis ...	41	33	49	26	24
Early Latent Syphilis ...	182	249	168	143	116
Late Latent Syphilis ...	650	577	528	394	431
Infantile Syphilis ...	10	17	8	3	5
Total ...	1,011	1,048	878	666	774

RATIO OF VARIOUS SYPHILITIC IESIONS

	1956	1957	1958	1959	1960
Neuro Syphilis ...	40.0	43.6	56.0	49.0	50.7
Cardio-vascular ...	14.2	11.0	14.4	15.0	11.6
Cutaneous	18.7	22.7	11.4	9.0	13.0
Bones and Joints ...	27.1	22.7	18.2	27.0	24.7

There were also nine cases of congental/syphilis above the age of two years. The following table shows a break-down of teritiary syphilis:

TERTIARY SYPHILIS

Nationality	Gummata and Skin	Bones and Joints	Cardio-vascular	G.P.I.	Tabes	Other Neuro Syphilis
Male:						
Chinese ..	4	13	7	6	4	12
Indian ..	2	1	..	1	1	1
Malaysian ..	1	1	..	1	..	2
Total ..	7	15	7	8	5	15=57
Female:						
Chinese ..	1	1	1	1	2	2
Indian ..	1	1	..	..	..	1
Malaysian ..	..	..	..	..	..	1
Total ..	2	2	1	1	2	4=12
Grand Total ..	9	17	8	9	7	19=69

GONORRHOEA NON SPECIFIC URETHRISTIS

Gonorrhoea and non specific urethritis which have been on the increase since 1956 showed a welcome drop but not of gonorrhoea opthalmia. The rise in this cases is a warning against laxity in control and the need for vaginal smear examinations among ante-natal cases:

INCIDENCE OF GONORRHOEA AND NON SPECIFIC URETHRISTIS

Year	Gonorrhœa	Gonococcal Ophthalmia	Gonorrhoea Complications	Gonorrhœa and N.S.U.	N.S.U.	Total
1956 ..	2,584	54	11	240	529	3,418
1957 ..	2,856	33	10	177	522	3,598
1958 ..	2,808	37	6	253	804	3,908
1959 ..	3,027	67	13	268	914	4,289
1960 ..	2,529	106	9	244	773	3,661

OTHER MINOR VENERAL INFECTIONS

A downward trend is shown in this category of cases:

Year	Lymphogranuloma	Soft Sore	Mixed Infections	Granuloma Inguinale
1956	40	647	141	—
1957	33	1,046	188	—
1958	13	1,228	106	—
1959	15	784	137	—
1960	7	692	100	—

SOCIAL HYGIENE MOBILE DISPENSARIES

A male and two female travelling dispensaries visit Maternity and Child Welfare centres in rural areas, out-patient dispensaries and club or community centres. Due to staff shortage the medical officer had occasionally to be withdrawn from the male travelling dispensary, while the service to Bukit Timah and Bukit Panjang was withdrawn, in October due to dispensary facilities in these areas. The following table shows the work done:

Clinic	Male	Female	Ante-natals	V.D. Cases	Investigation Cases	Total
Central Rural:						
Yio Chu Kang ..						
Upper Serangoon	153	3,135	3,106	14	3,274	3,288
Seletar ..						
Paya Lebar ..						
Rural West						
Bukit Timah ..						
Pasir Panjang ..						
Bukit Panjang ..	330	4,640	4,517	59	4,911	4,970
Holland Road ..						
Jurong ..						
Rural East						
Kampong Batak						
Changi ..	..	3,786	3,654	34	3,752	3,786
Ulu Bedok ..						
Siglap ..						
Total ..	483	11,561	11,277	107	11,937	12,044

ANTE NATAL CASES

Nationality	Number of Ante-natals	Primi-para	Primi-para positive	Multi-para	Multi-para-positive
Chinese ..	6,862	833	7	6,129	15
Malaysian ..	3,313	383	18	2,930	17
Indian ..	1,057	122	1	935	..
Eurasian ..	17	2	..	15	..
Others ..	28	4	..	24	..
Total ..	11,277	1,344	26	10,033	32

SEAMEN

Under the Brussel's International Agreement of 1924, seamen of all nationalities are afforded all the facilities for free diagnosis and treatment of V.D. The number of seamen treated during the last 5 years are as follows:

1956	1957	1958	1959	1960
1,072	995	1,054	1,157	1,200

EPIDEMIOLOGICAL CONTROL UNIT

This unit was responsible for 14,655 home visits to defaulters or contacts. Of these 7,776 cases reported, giving a success rate of 54 per cent. Of 2,079 cases contacted by post 787 attended a success rate of 38 per cent.

There were 5,435 family units on the register under treatment or surveillance, of these 424 family units were registered in 1960.

93 girls under the age of 18 were sent by the Social Welfare Department, 4 cases were infected with gonorrhoea, 2 had syphilis and one had both.

PROPHLAXIS

The total number of prostitutes on the register at the end of 1960 was 1,455 of whom 78 were new cases. Of these 55 were free from infection. The majority of these cases came voluntarily or as the result of educational propaganda while the rest were referred by the Military Police or the Anti-Vice Branch. 2,223 prophylactic injections were given.

DERMATOLOGICAL CLINIC

The skin out-patient clinic attended to 12,106 cases made up mainly of pyoderma, eczemas, neurodermatitis and dermatitis from other causes, while psoriasis, lupus erythematosus, lupus vulgaris and vesicule bullous dermatitis group of eruptions were also seen. 45 cases of leprosy were referred to the Irrawady Road Skin Clinic.

SUMMARY OF WORK IN THE SOCIAL HYGIENE

———	1956	1957	1958	1959	1960
Blood specimens for K.T. ..	29,315	33,400	33,983	38,316	37,831
C.S.F. for K.T.	596	242	198	243	330
Dark Ground Specimens ..	4,223	4,114	3,003	2,308	2,966
Smears for gonorrhœa ..	23,373	26,482	31,356	36,432	27,396
Smears for culture for gonococci	157	115	134	49	191
Aqua penicillin G used ..	4,034mu	3,540mu	2,426mu	2,113mu	5,386mu
Procain (PAM) penicillin ..	34,437mu	33,485mu	26,808mu	25,207mu	19,000mu
Penidure (Bicillin) ..	2,712mu	2,175mu	740mu	10,976mu	8,148mu
Total number of injections ..	189,209	183,523	187,662	185,865	185,841

INVESTIGATION CASES

———	1956	1957	1958	1959	1960
Apprehensive group including ante-natals and contact cases	11,265	12,552	16,545	17,909	13,961
Dermatological complaints ..	4,711	5,538	8,993	11,041	12,106
Arthritis and Arthralgia ..	572	620	942	1,242	2,136
Non-gonococcal urethritis, cervicitis, trichomonas infestation, dysuria, etc. ..	869	983	1,509	980	860
Other genital infestations, warts, balanitis, paraphimosis, traumatic ulcers, hydroceles, non-specific epididymitis, etc. ..	692	712	922	962	986
Yaws	30	9	15	34	15
Leprosy	16	19	27	12	45
Non-venereal iritis, conjunctivities	115	136	299	244	367
Miscellaneous	1,478	2,197	376	396	560
Total ..	19,748	22,766	29,628	32,820	31,036

CHAPTER EIGHTEEN

LEPROSY

TRAFALGAR HOME

This Institution takes its name from the rubber estate on which it was built. It has infirmary wards for those leprosy patients requiring hospital treatment and chalets forming a village system for the ambulant patient.

Patients with positive skin smears are admitted. Cases with negative skin smears may also be admitted for treatment of trophic ulcers or for orthopædic treatment. The discharge of the "infectious" case is after skin smears taken in four consecutive months are found to be negative. In special cases, the Leprosy Board may permit the discharge of patients conditionally.

An outpatient clinic, known as the Irrawdy Skin Clinic, is run by the hospital for the treatment of the discharged patient and those non-infectious cases (negative skin smears). It also runs the contact service and the registry of leprosy cases.

STAFF

Dr. P. Oorjitham took over the duties of Medical Superintendent on 3rd August, 1960 from Dr. Wong Kum Hoong when Dr. Wong was transferred to a medical unit prior to proceeding overseas for higher studies.

Mr. Lau Swee Wah officiated in the post of the Lay Superintendent when Mr. K. K. Thomas' contract of service expired on the 2nd February, 1960.

The post of chief clerk was filled by Mr. Tan Boon Huang when Mr. A. Rajah retired on the 31st March, 1960.

A significant indication of the change in attitude towards the disease and the gradual change over from a place for segregation to a therapeutic centre was the appointment of the following staff:

Miss Helene Goh ...	...	Occupational Therapist
Mrs. Jimmy Oh ...	...	Staff Nurse
Miss Rosie Lim ...	...	Investigator
Mr. Ngin Miang Seng	...	Dispensing Assistant
Mr. Stephen Teng ...	...	Laboratory Technician
Mr. Chionh Sin Peng	...	Laboratory Technician
Mr. Poon Phak Hey	...	Storekeeper

HOSPITAL BEDS

The bed-strength of the hospital is 1,023.

The number of patients at the end of the year is given in the following tables:

TABLE 85

Patients on 31-12-60 — By Race and Sex

Race	Male	Female	Total
Chinese	454	180	634
Indian	32	3	35
Malay	29	10	39
Eurasian ...	1	—	1
European	1	—	1
Total ...	517	193	710

TABLE 86

Patients on 31-12-60 — Adult and Children (under 14 years of age)

Male		Female		
Adult	Child	Adult	Child	Total
450	67	170	23	710

Admissions and Discharges

TABLE 87

Discharges and Deaths

	Male	Female	Total
Total patients remaining on 31-12-59 ...	633	225	858
Admissions	226	66	292
Discharges	301	97	398
Absconsions	22	1	23
Transfer to other Hospitals	17	7	24
Transfer from other Hospitals	13	9	22
Deaths	15	2	17

TABLE 88

ADMISSIONS FOR 1960—BY RACE

	CHINESE		INDIANS		MALAYS		TOTAL		Total No.
	Male	Female	Male	Female	Male	Female	Male	Female	
Adults ..	165	54	26	4	11	2	202	60	262
Child ..	22	6	..	..	2	..	24	6	30
Total ..	..	..	..	..	..	..	226	66	292

TABLE 89

Admissions for 1960 — By Causes

	Male	Female	Total
New positive cases	110	35	145
Absconded cases returned ...	15	1	16
Relapses	11	1	12
Negative cases for ulcers, orthopædic treatment, etc.	90	29	119
Total ...	226	66	292

TABLE 90

Discharges for 1960

	Male	Female	Total
Formerly positive cases discharged by the Board in 1960 ...	177	65	242
Formerly positive cases discharged by the Board in previous years	6	1	7
Conditional discharges under close surveillance	24	6	30
Negative cases on admission for ulcers orthopædic treatment, etc.	94	25	119
Total ...	301	97	398

DENTAL SERVICES

The dental officer has three clinic sessions a week in the hospital. Work is chiefly in exodontia, conservative dentistry and minor oral surgery. Prosthetic dentistry is done on all cases requiring it. The service is also extended to all discharged patients.

ALMONER'S DEPARTMENT

The two almoners, an investigator and their assistants are occupied fully with the patients in the home as well as with the out-patients. A whole range of problems that can arise with patients who are segregated for long periods for their rehabilitation and for the care of their families is part of the everyday work of the almoner's department.

Considerable help is received from charitable sources. A substantial contribution of food is supplied from the Catholic League of America. The civilian staff of the Royal Air Force, Seletar, have adopted 50 patients, visit the home and give food parcels. The Red Cross Branch, Seletar, gives clothes to the children where the Seletar Protestant Church helps in the education of 4 children. Other concerns and individuals contribute money to the Samaritan Fund administered by the Almoner's Department.

Much help continues to be given by the Singapore Leprosy Relief Association. It donates $100 a month to help/educate poor out-patient children.

THE LORONG BUANG KOK SCHOOL

The original section of the building was built by the Rotary Club, and the extensions were added by Government. Teachers include trained local teachers, nun-teachers and patient-teachers. Classes now are taken right up to Senior Cambridge level. The school passed out its first Senior Cambridge student in 1958 and its only candidate in 1959 was also successful. The few students who returned to their former schools on discharge have done well both scholastically and in games.

OCCUPATIONAL THERAPY DEPARTMENT

The work done is on a small scale "Cottage Industry". The work is done by both in-patients and out-patients.

Regular visits are made to out-patients to deliver materials and orders for various articles to be made and to collect finished articles. The work helps those patients who are severely disabled and unable to find jobs on discharge.

Main occupations are:

	No. of articles made for the year 1960
(1) Basketry and cane work	9,100
(2) Wastepaper and minute-paper baskets	2,400
(3) Embroidery	295
(4) Weaving	65
(5) Raffia work	50
(6) Knitting	9
(7) Rug making	3
Total ...	11,922

IRRAWADDY ROAD SKIN CLINIC

351 new patients were registered in 1960 bringing the total number of leprosy cases on the register to 3,524. 145 were positive cases and were admitted to Trafalgar Home for treatment. The other cases were treated in the clinic as out-patients.

Contacts of patients, both positive and negative are checked for evidence of Hansen's disease at least once a year. Efforts are maintained to get them checked six months. Health checks are carried out twice a month and average 70 contacts each session.

Contacts are given tuberculin test by Heaf method. Those with positive reaction are X-rayed. Children up to 16 years of age who have negative reactions are given B.C.G. vaccination.

FOSTERED CHILDREN

There are 23 children of patients who are inmates of Trafalgar Home. Their ages range from 1 month to 7 years. These children are fostered in healthy homes selected and approved by the Social Workers' Department. The Health staff visit these homes regularly to give advice to foster mothers on feeding, general health and hygiene of person and environment, immunisation, vaccination and any other problem that may arise.

Chapter Nineteen

PSYCHIATRY

WOODBRIDGE HOSPITAL

WOODBRIDGE HOSPITAL, situated 7½ miles from the City, is the centre for the mental health services of the State. It has a bed strength for 1,869. Out-patient clinics are held outside Woodbridge Hospital. A total of 4,187 in-patients and 4,156 out-patient attendances were recorded during the past twelve months. More than 2,000 patients were discharged from the hospital during the same period.

In 1960 the Matron was placed in-charge of both male and female nursing services. The number of psychiatric nurses was increased. There are now 96 nurses including 57 under training in psychiatry.

During the year, patient facilities were improved. All the wooden beds have been replaced by standard hospital beds. Wards have brightened up in appearance with window curtains in almost all the wards. Better style-texture clothing was supplied to patients. Ten more wards were provided with radio receivers. Food was maintained at a good standard even for the free patients.

TABLE 91

Admissions and Discharges

	Male	Female
Number Admitted	1,314	1,062
Forms of Admission:		
(*a*) Observation	1,241	1,043
(*b*) Certified	—	—
(*c*) Voluntary	17	14
(*d*) Remand	51	4
(*e*) Criminal Lunatic	4	—
(*f*) Vagrant	1	1
Number discharged	1,122	972
Absconded	1	—
Deaths	43	17

TABLE 92

Distribution by Race

	Remaining at the end of 1959	Admissions	Deaths	Absconded and Discharged
Europeans	4	13	2	15
Eurasians	13	23	2	14
Chinese	1,541	1,869	46	1,620
Indians and Pakistanis	165	326	6	332
Malays	88	136	4	106
Javanese	—	—	—	—
Others	—	9	—	8
Total ...	1,811	2,376	60	2,095

TABLE 93

DISTRIBUTION BY DIAGNOSIS

	Remaining at end of 1959	YEARLY TOTAL		Total Cases treated	Remaining at end of 1959	Absconded and Discharged 1960
		Admissions	Deaths			
Psychoses:—						
Schizophrenic disorders (dementia praecox) ..	688	1,396	16	2,084	1,180	888
Maniac-depressive reaction	417	553	15	970	328	627
Involutional melancholia ..	32	77	..	109	29	80
Paranoia and paranoid states	29	57	..	86	39	47
Senile psychoses ..	142	121	22	263	177	64
Other and unspecified psychoses	111	12	..	123	31	92
Psychoneuroses and disorders of personality:—						
Hysterical reaction ..	3	28	..	31	16	15
Neurotic-depressive reaction	62	47	1	109	77	31
Alcoholism	..	12	..	12	1	11
Other drug addiction ..	1	4	..	5	2	3
Other psychoneuroses and disorders of personality	200	27	..	227	15	212
Metal deficiency ..	126	42	6	168	137	25
Total ..	1,811	2,376	60	4,187	2,032	2,095

Out-patient services.—Out-patient services provide both follow-up and consultative service.

There has been a considerable increase in the attendance in the out-patient clinics mainly for the follow-up of discharged patients.

The increase in the out-patient attendance is also an indication of the greater confidence the public has developed for this type of service.

Tables 94 to 98 below reveal the statistics of the out-patient services of the year.

TABLE 94

OUT-PATIENTS—DISTRIBUTION BY SEX

Sex	Psychiatric Out-Patient Department General Hospital	Psychiatric Out-Patient Department Paya Lebar Clinic	Psychiatric Out-Patient Department Kallang Clinic	Psychiatric Out-Patient Department Bukit Timah Clinic	Total	Percentage of Total
Male	3,597	925	797	451	5,770	48.22
Female	3,409	1,056	1,251	482	6,198	51.78
Total ..	7,006	1,981	2,048	933	11,968	100.00

TABLE 95

OUT-PATIENTS—DISTRIBUTION BY RACE

———	Psychiatric Out-Patient Department General Hospital	Psychiatric Out-Patient Department Paya Lebar Clinic	Psychiatric Out-Patient Department Kallang Clinic	Psychiatric Out-Patient Department Bukit Timah Clinic	Total	Percentage of Total
Chinese	5,973	1,537	1,709	796	10,015	83.68
Indian	693	229	118	106	1,146	9.56
Malays	221	118	140	31	510	4.27
Eurasian	74	56	68	..	198	1.65
European	11	27	10	..	48	.41
Other Asians ..	34	14	3	..	51	.43
Total ..	7,006	1,981	2,048	933	11,968	100.00

TABLE 96

OUT-PATIENTS—DISTRIBUTION BY AGE

Years	Psychiatric Out-Patient Department General Hospital	Psychiatric Out-Patient Department Paya Lebar Clinic	Psychiatric Out-Patient Department Kallang Clinic	Psychiatric Out-Patient Department Bukit Timah Clinic	Total	Percentage of Total
0—10	44	10	..	2	56	.41
11—20	1,058	265	342	72	1,736	14.52
21—30	2,338	667	787	377	4,169	34.68
31—40	1,713	472	447	206	2,838	23.60
41—50	1,095	307	295	189	1,886	15.65
51—60	580	225	146	64	1,015	9.12
61—70	159	17	29	22	227	1.69
71—80	18	17	2	1	38	.32
81—90	1	1	..	..	2	.01
91—100	..	..	..	..	..	..
Total ..	7,006	1,981	2,048	933	11,968	100.00

TABLE 97

OUT-PATIENTS—DISTRIBUTION BY DIAGNOSIS

Diagnosis	Psychiatric Out-Patient Department General Hospital	Psychiatric Out-Patient Department Paya Lebar Clinic	Psychiatric Out-Patient Department Kallang Clinic	Psychiatric Out-Patient Department Bukit Timah Clinic	Total	Percentage of Total
Psychoses:—						
Schizophrenia Disorders (Dementia praecox) ..	2,803	659	568	337	4,367	36.43
Manic Depressive Reaction	145	110	18	80	353	3.12
Involuntional Melancholia	65	36	30	2	133	1.10
Paranoia and Paranoid States	38	2	15	2	57	.47
Senile Psychoses ..	23	19	13	13	68	.56
Other and Unspecified Psychoses	417	49	42	32	540	4.45
Psychoneuroses and Disorders of Personality						
Hysterical Reaction ..	606	68	23	20	717	6.05
Neurotic Depressive Reaction	1,462	110	65	47	1,684	14.00
Alcoholism	2	..	..	..	2	.01
Other Drug Addictions ..	24	1	..	2	17	.24
Other and unspecified Psychoneurotic Reaction and Disorders of Personality	211	40	19	7	277	2.32
Mental Deficiency						
Other and Unspecified Mental Deficiencies ..	226	45	40	39	350	2.80
N.Y.D. Observational ..	984	842	1,215	352	3,393	28.45
Total ..	7,006	1,981	2,048	933	11,968	100.00

TABLE 98

DISTRIBUTION BY SOURCES OF REFERRAL

Patients Referral by	Psychiatric Out-Patient Department General Hospital	Psychiatric Out-Patient Department Paya Lebar Clinic	Psychiatric Out-Patient Department Kallang Clinic	Psychiatric Out-Patient Department Bukit Timah Clinic	Total	Percentage of Total
Almoners	4	..	1	3	8	.07
City Council	8	5	1	..	14	.13
Children's Aid Society ..	..	2	..	..	2	.01
Female Out-Patient Department	170	..	..	..	170	1.52
Male Out-Patient Department	180	..	..	..	180	1.50
General Practitioner ..	70	7	2	..	79	.67
M.O. i/c Officials ..	38	..	..	..	38	.32
Old Cases under out-patient treatment (Repeat cases) ..	5,564	1,674	1,746	800	9,784	81.75
Other Hospitals	15	5	3	3	26	.22
Police	17	..	..	..	17	.14
Prisons and Courts ..	3	..	..	..	3	.02
Social Welfare Department ..	3	..	..	..	3	.02
School Clinics	23	4	2	..	29	.24
Wards of General Hospital ..	191	..	..	..	191	1.59
Relatives	51	23	13	2	89	.75
Woodbridge Hospital ..	651	261	280	125	1,317	11.00
Singapore Harbour Board ..	13	..	..	..	13	12
University of Malaya ..	3	..	..	..	3	.02
H. M. Naval Base ..	2	..	..	..	2	.01
Total ..	7,006	1,981	2,048	933	11,968	100.00

		Percentage
Number of New Attendances ..	2,889	24.13
Old Attendances	9,079	75.87
Total ..	11,968	100.00

Chapter Twenty

ST ANDREW'S ORTHOPÆDIC HOSPITAL

THIS HOSPITAL is of 120 bed capacity for treatment of orthopædic condition in children under 14 years of age.

It is run as a Unit of the General Hospital and has a resident medical officer. The consultant orthopædic surgeons and pædiatricians visit the hospital regularly.

Sister Eade (Matron) left in July and was replaced by Sister Chay Kwai Sin.

The Nurses' Home and the laundry have been repaired and the drains mended — but the servants' quarters have still not been repaired.

A total of 151 children were admitted, 142 were discharged or transferred; no death occurred in the hospital. The average number of beds occupied was 105.4.

The routine work and running of the hospital has gone smoothly and so has the children's other therapy, e.g. school, sewing, band-playing, etc. — thanks to the work of the teachers and many voluntary helpers.

The annual Concert was held on December 16th — the first of the many Christmas entertainments for the children.

Chapter Twenty-one

OUT-PATIENT SERVICES

THE OUT-PATIENT SERVICE runs the out-patient dispensaries and now includes the former City Council public dispensaries and the travelling dispensaries. It also runs the out-patient department and casualty unit of the General Hospital; the clinics for Government and City Council staff; and the institutional hospitals at Outram Road and Changi Prisons.

CASUALTY UNIT, GENERAL HOSPITAL

Casualty Unit of the General Hospital recorded a total of 477,485 cases from different sections of the Unit made up as follows:

TABLE 99

	NEW CASES			REPEAT CASES			Total
	Male	Female	Children	Male	Female	Children	
Casualty Department	46,711	12,371	23,615	13,130	3,380	7,032	106,239
Treat/Dressings ..	..	..	..	..	..	..	330,431
Admissions ..	..	..	..	..	..	..	40,815
Total ..	..	..	..	..	..	..	477,485

Staff.—At the end of the year there were 41 medical officers attached to the department and 12 medical officers in the City Council sections. Dr. Toh Chiong Hieng, L.M.S. (Singapore) was head of the service.

TABLE 100

STAFF ATTACHED TO THE OUT-PATIENT SERVICES

Clinic	Sessions	Medical Officers	Pharmacists	Sisters	Nurses	Nurses (Men)	Hospital Assistants	Laboratory Assistants	Dispensing Assistants
General Hospital Out-patient and Casualty Unit	Out-patient: 8 a.m. to 4 p.m. Casualty and Emergency Out-patients: 24 hours service	16	..	2	14	13	..	..	..
Kallang Outdoor Dispensary ..	Morning Sessions ..	4	1	1	3	..	1	1	1
Paya Lebar Outdoor Dispensary ..	Morning and Afternoon Sessions	2 (full time) 1 (part time)	..	..	2	..	1	..	..
Pegu Road Outdoor Dispensary ..	Morning and Afternoon Sessions	2 (full time 1 (part time)	..	..	2	..	..	..	2
Pasir Panjang Outdoor Dispensary	Morning and Afternoon Sessions (except Wednesday mornings)	1	..	..	1	..	1	..	..
Bukit Panjang Outdoor Dispensary	Morning and Afternoon Sessions	2	..	..	2	..	..	..	1
Bukit Timah Outdoor Dispensary ..	Morning and Afternoon Sessions	Part time work by M.O. Bt. Panjang	..	..	1	..	1	..	..

TABLE 100 — *continued*

STAFF ATTACHED TO THE OUT-PATIENT SERVICES

Clinic	Sessions	Medical Officers	Pharmacists	Sisters	Nurses	Nurses (Men)	Hospital Assistants	Laboratory Assistants	Dispensing Assistants
Kandang Kerbau General Outpatient Unit	Morning and Afternoon Sessions	2	..	..	1	..	..	..	..
Pulau Brani Clinic	Morning and Afternoon Sessions	..	..	..	..	..	1	..	..
Pulau Tekong Clinic	Morning and Afternoon Sessions	Part time work by M.O. Changi Prison	..	..	..	..	1	..	..
Rural East Dispensaries Service ..	*Changi Point*: 2 afternoon Sessions weekly	Do.	..	..	..	..	Part time work by H.A. i/c. Travelling Dispensaries	..	..
	Kampong Batak: 2 afternoon Sessions weekly	Do.	..	..	..	..		..	..
	Gulega Road: 1 afternoon Session weekly	Do.	..	..	..	..		..	..
Thomson Road Outdoor Dispensary	Morning and Afternoon Sessions	1	..	..	2	..	1	..	..
Holland Road Outdoor Dispensary	Once Weekly Morning Sessions	Part time work by M.O. Pasir Panjang	..	..	1 Part time	..	1 Part time	..	..

TABLE 100 — *continued*

STAFF ATTACHED TO THE OUT-PATIENT SERVICES

Clinic	Sessions	Medical Officers	Pharmacists	Sisters	Nurses	Nurses (Men)	Hospital Assistants	Laboratory Assistants	Dispensing Assistants
Lim Ah Pin Outdoor Dispensary ..	Morning and Afternoon Sessions	1	..	..	1	..	..	..	1
Jalan Kayu Outdoor Dispensary ..	Morning and Afternoon Sessions	1	..	..	1	..	..	..	1
Government Officials Clinics ..	Morning and Afternoon Sessions	3	..	..	3	..	..	..	..
Police Hospital	—	1	..	..	..	..	1	..	..
Police Families' Clinics ..	—	..	..	..	1	..	..	..	..
Changi Prison Hospital ..	—	1	..	..	..	..	3	..	..
Local Prison Hospital	—	1	..	..	..	6	2	..	..
Opium Treatment Centre ..	—	Part time M.O.	..	..	..	2	..	..	..

Casualty Section.—106,239 casualties were seen in 1960 against 93,181 in 1959, an increase of 13,058.

	1956	1957	1958	1959	1960
Road Accidents	4,047	4,790	5,760	6,964	5,580
Examination for Alcoholic Intoxication ...	1,035	1,082	1,319	1,563	1,410
Rape and other sexual offences ...	53	56	67	45	30

Treatment and Dressing Room.—This Section undertakes the dressing and treatment of the Out-patient and Casualty Units, Surgical and Medical Out-patient Units of the Hospital and injections of streptomycin of tuberculous out-patient cases from the Tan Tock Seng Hospital.

During the year under review 330,431 treatments were done, an increase of 18,667 from the previous year of 311,764.

Casualty Minor Theatre.—Minor surgery in the nature of stitchings of minor wounds and incisions of abscesses were carried out at the Casualty Minor Theatre. During the year, 16,756 stitchings of wounds and 2,089 incisions of abscesses were done.

Laboratory.—25,106 routine specimens were examined during the year.

Urine	16,032
Blood	6,647
Fæces	1,945
Swabs, etc.	482
Total ...	25,106

OUT-PATIENT DISPENSARIES

General Out-patients.—492,925 were recorded in 1960 against 427,090 in 1959, an increase of 65,835. 386 persons were examined for assessment of age from the Labour Department, Commissioner for Registration, Immigration and Police Departments. 613 male and 71 female positive tuberculosis cases were detected and referred to Tan Tock Seng Hospital.

Kallang Outdoor Dispensary.—This out-patient clinic functions every morning except Sundays and holidays. The School Clinic functions on Friday afternoons and Psychiatric Clinic on Tuesday afternoons.

During the year 237,057 patients were seen.

Paya Lebar Outdoor Dispensary.—This out-patient clinic is situated at the junction of Upper Serangoon Road/Yio Chu Kang Road. It is housed in a two-storey building with the old Post Office as extension. This clinic is occupied in the afternoons by School Clinic on Monday and Friday afternoons and Psychiatric Clinic on Tuesday and Thursday afternoons.

During the year 162,349 patients were seen.

Pegu Road Outdoor Dispensary.—This clinic is situated at Pegu Road off Balestier Road.

During the year 173,545 patients were seen.

Pasir Panjang Outdoor Dispensary.—This clinic is situated at 5½ milestone, Pasir Panjang Road.

During the year 44,827 patients were seen.

Bukit Panjang Outdoor Dispensary.—This clinic is situated at Jalan Teck Whye in Bukit Panjang Village area.

During the year 170,112 patients were seen.

Bukit Timah Outdoor Dispensary.—This clinic is housed in the Maternity and Child Health Clinic at Bukit Timah. The primary function of the clinic is to continue treatment of patients resident in this area, who have been discharged from the hospitals. A total of 50,211 attandences were recorded.

Kandang Kerbau General Out-patient Unit.—This clinic is for women and children only.

During the year 40,653 women and 74,996 children attended the Clinic.

Pulau Brani Clinic.—This clinic is situated at the island of Pulau Brani.

During the year 15,868 patients were seen.

Pulau Tekong Clinic.—This clinic is situated at the island of Pulau Tekong.

During the year 13,145 cases were recorded.

Rural East Dispensary Services.—The total attendances at the general out-patient clinics is shown below:

Changi Point Clinic	5,906
Kampong Batak Clinic	6,711
Gulega Road Clinic	6,327

These general out-patient clinics are housed in the Maternity and Child Health Clinics and function on sessional basis.

Thomson Road Outdoor Dispensary.—This clinic is situated at 5½ milestone, Thomson Road.

During the year 99,956 patients were seen.

Holland Road Clinic.—This clinic functions in the Holland Road Maternity and Child Health Clinic once a week on Wednesday mornings. The medical officer in charge of Bukit Panjang Outdoor Dispensary and his staff visit this clinic on Wednesdays.

During the year 7,491 patients were seen.

Mobile Dispensary Services.—Four travelling dispensaries, each with a hospital assistant in charge, visit rural areas and attend to minor illness.

During the year 193,890 attendances were recorded.

Lim Ah Pin Outdoor Dispensary.—This new clinic was opened on 28th August, 1960. It is housed in one wing of the Lim Ah Pin Community Centre, at Lim Ah Pin Road. The number of out-patient attendances from 28th August, 1960 to 31st December, 1960 were 18,829.

Jalan Kayu Outdoor Dispensary.—This is new standard-plan out-patient clinic, situated at the junction of Jalan Kayu/Yio Chu Kang Road, 8½ milestone. The clinic was opened on 2nd October, 1960. The out-patient attendances from 2nd October 1960 to 31st December, 1960 were 11,100.

The out-patient attendances at the General Hospital Out-patient Clinic, outdoor dispensaries and mobile dispensaries over the past five years are given in Table 101.

TABLE 101

ATTENDANCES AT STATIC AND MOBILE CLINICS, 1955 TO 1960

	1956	1957	1958	1959	1960
General Hospital Out-patient and Casualty Units ..	517,669	625,839	732,878	873,020	970,410
Kallang Outdoor Dispensary ..	..	43,978	169,897	197,165	237,057
Paya Lebar Outdoor Dispensary	53,082	74,171	115,503	148,568	162,349
Pegu Road Outdoor Dispensary	..	..	..	137,217	173,545
Pasir Panjang Outdoor Dispensary	..	2,340	23,371	46,862	44,827
Bukit Panjang Outdoor Dispensary	22,890	27,882	57,751	146,567	170,112
Bukit Timah Outdoor Dispensary	18,415	25,722	44,546	59,026	50,211
Kandang Kerbau Female Out-patient Clinic	84,097	94,728	93,368	124,181	160,859
Pulau Brani Clinic ..	..	..	8,793	10,879	15,868
Pulau Tekong Clinic ..	..	8,022	7,207	7,825	13,145
Rural East Clinics ..	9,647	10,961	10,862	14,390	18,944
Thomson Road Outdoor Dispensary	15,283	17,088	34,267	53,167	99,956
Holland Road Clinic ..	5,456	4,441	10,928	7,586	7,491
Four Travelling Dispensaries ..	77,068	78,436	122,107	167,755	193,890
Lim Ah Pin Outdoor Dispensary	..	..	..	..	18,829
Jalan Kayu Outdoor Dispensary	..	..	..	..	11,100
Total ..	803,607	1,013,608	1,431,478	1,994,640	2,348,593

CITY COUNCIL PUBLIC DISPENSARIES

The day-to-day administration of the three City staff dispensaries and eight public dispensaries and three mobile dispensaries were taken over by the Out-patient Services on 1st April, 1960.

The public dispensaries are situated at Stirling Road, Prince Phillip Avenue, Kee Seng Street, New Bridge Road, Aljunied Road, Upper Serangoon Road, Dunearn Road and Desker Road.

A fee of 50 cents is charged for each out-patient attendance. The number of out-patients attendances recorded at each dispensary are shown below:

	Out-patient Attendances
Stirling Road Public Dispensary	48,826
Prince Phillip Avenue Public Dispensary	41,712
Kee Seng Street Public Dispensary	28,639
New Bridge Road Public Dispensary	46,843
Aljunied Road Public Dispensary	93,022
Upper Serangoon Public Dispensary	40,777
Dunearn Road Public Dispensary	65,478
Desker Road Public Dispensary	52,589

STAFF CLINICS

Government Senior Officials' Clinic.—This clinic is situated at General Hospital. The staff consists of one medical officer, one staff nurse, one office boy and two attendants. This clinic provides medical care for Government senior officials and their families. The number of cases seen during the year are given below:

New Cases	4,713
Repeat Cases	9,426
Vaccinations and inoculations	2,004
Injections	2,307
Dressings	1,147

Medical Board numbered 75 and 965 recruits were examined.

Government Junior Officials' Clinic.—This clinic is situated at General Hospital. The staff consists of two medical officers, one staff nurse, one junior nurse and five hospital servants. The number of cases seen in the clinic are given below:

New Cases	7,310
Repeat Cases	22,682
Injections	7,294
Dressings	2,236

City Council Staff Clinics.—The main dispensary which was situated at the City Hall building was removed to Rochore House from 19th December, 1960.

Free medical attention is given to all staff and open vote employees of the City Council and Housing Board by the three staff dispensaries. Dependants of City Council employees are not eligible for medical attention at these dispensaries. City Council employees total roughly 13,000 comprised of about 4,000 staff and 9,100 daily rated workers. In addition, the dispensaries cater to 800 employees of Housing and Development Board and some of the staff of several Government Ministries. Employees are free to seek treatment from private practitioners in which case their medical certificates are accepted by the Council subject to endorsement by the Medical Officers i/c Staff.

During the year, a total of 139,830 cases were attended at the three dispensaries of which 83,063 were new cases.

The Senior Medical Officer i/c Staff is also performing the duties of Visiting Medical Officer to the three dispensaries at Johore maintained by the Water Department. Two visits are made to Johore every month by the Visiting Medical Officer.

POLICE HOSPITAL

The Police Training School Clinic and Hospital is for the members of the Police Force.

During the year, 8,271 out-patients attended the clinic and 367 recruits were examined. There were 338 patients admitted to the Police Training School Hospital in 1960.

Police Families' Clinic.—This clinic was staffed by one lady medical officer, one staff nurse and a police amah, but since April 1960, there was no medical officer on duty due to shortage of doctors in the Service. The staff nurse visits the various stations and gives advice to patients with minor illnesses and refers more serious cases to the nearest outdoor clinics or to General Hospital.

INSTITUTIONAL HOSPITALS AND CLINICS

Changi Prison Staff Clinic.—This clinic is situated at the entrance to the Changi Prison and is for the Prison staff and their families and for Government employees resident in this area. The Medical Officer in charge of Changi Prison, assisted by the medical staff of the Prison run this clinic. The clinic functions daily between 8.30 a.m. to 9.30 a.m. except Sundays and holidays. During the year, 4,623 patients attended this clinic.

Changi Convict Prison.—The Changi Prison Clinic and Hospital is staffed by a medical officer, three hospital assistants and three Prison orderlies.

The daily average number of prisoners in the Prison was 860. The total number of out-patient attendances during the year was 36,834. A total of 289 in-patients were admitted into the Prison Hospital. The number of minor operations performed during the year was 29. The Dental Officer visited the Prison once a week and examined 2,003 cases in the year as against 874 in 1959.

Local Prison, Pearl's Hill.—The Local Prison Clinic and Hospital is staffed by a medical officer, eight hospital assistants and Prison orderlies.

Total number of prisoners admitted to Prison during the year was 7,566, the daily average being 1,055.

The Prison Hospital has 100 beds. There were 2,481 admissions to the Hospital. Total out-patients treated at the clinic were 28,295.

Vaccination against small-pox were carried out on 7,595 cases. In the Prison Hospital there were 2,156 admissions for opium addictions, out of a total of 2,481 admissions, making 86.90 per cent.

The dental surgeon visited the Prison once a week; 1,432 dental cases were treated.

There is overcrowding in the Prison Hospital due to increased admissions of opium addicts cases for treatment. In order to relieve the congestion in the wards, some of the non-opium addict cases were transferred to Changi Prison Hospital.

Opium Treatment Centre.—During the year the Advisory Committee investigated 1,337 male addicts (including 48 volunteers) and 39 female addicts (nil volunteers). A total of 597 males (including 47 volunteers) were admitted to St. John's Island for rehabilitation. By the end of the year, 581 males had completed their rehabilitation and were discharged.

Opium Treatment Follow-up Clinic.—This clinic was conducted at the Out-patient Department, General Hospital on every Friday afternoon, for the follow-up of patients who have been released from St. John's Island. This clinic was moved to the Institute of Health in May this year. The number of patients' visits to the clinic was 1,373 during the year.

Chapter Twenty-two

LABORATORY SERVICES

THE FOLLOWING departments are for convenience grouped together as the Laboratory Services: Pathology, Blood Transfusion Service, Clinical Laboratories in the Hospitals, out-patient services; and City Council Bacteriology Laboratory (integrated on 1st April).

The Pathology Department comprises sections of Bacteriology, Biochemistry and Pathology which includes forensic pathology. The department shares the same building with the University department of Pathology and there is some sharing of work though not as much as might be possible.

The Blood Transfusion Service which began as a department of the General Hospital is now almost wholly independent.

The clinical laboratories form sections of hospital units, hospitals and out-patient dispensaries. Each is separately under the charge of the Head of Department. The division of work between the unit laboratories and the central hospital laboratory and these with the laboratories in the Pathology Department is not clear.

The City Laboratory functions as the clinical laboratory for the Middleton Hospital for infectious diseases (which does not have one of its own), and provides a laboratory service for general practitioners in investigations for infectious diseases. Its main function however is as a public health and sanitary laboratory.

PATHOLOGY DEPARTMENT

During the year under review the activities of this Department were characterised by a general expansion of routine work and a further upward trend in number of specimens examined. The overall figure is 169,961 as compared with 180,089 (including Hæmatology) in 1959.

The work of the Department includes:

(1) necropsies (Coroner and Hospital cases) at the General, Tan Tock Seng and Kandang Kerbau Hospitals;

(2) histological examinations of biopsy and necropsy specimens from Government hospitals, clinics and general practitioners;

(3) bacteriological investigations from the Government hospitals, clinics, dispensaries and private practitioners;

(4) serological tests of blood and cerebro-spinal fluids from hospitals, clinics, dispensaries and private practitioners;

(5) the preparations of T.A.B., cholera and autogeneous vaccines for the use of the Government hospitals, clinics, dispensaries and private practitioners;

(6) the carrying out of various clinical laboratory examinations of pregnancy and other miscellaneous examinations;

(7) biochemical investigations for the Government hospitals and private practitioners;

(8) training of all Medical Laboratory Technicians in the Ministry of Health. This training is based on that of the Institute of Medical Technology, London. Examinations were carried out in 1960 under a Board of Examiners with the Senior Pathologist as Chairman (*ex-officio*).

CHANGES IN DEPARTMENTAL ROUTINE

The Bacteriologist Section of the City Health Department was integrated with this Department from 1st April, 1960. Investigations of specimens were carried out by the Staff of this section, as shown in Table 102.

Dr. Tan Kheng Khoo, Medical Officer, proceeded to United Kingdom on Study Leave in August. With his departure the Staff situation which was already acute, became worse. It was found that due to lack of trained and experienced Pathologists, the Section on Morbid Histology suffered heavily, and work in this Department was considerably slowed down, with resultant delay in sending out reports in such cases. Arrangements were made with the University of Malaya, whereby Pathologists from the Department of Pathology (University of Malaya) rendered assistance in the preparation and report on Morbid Histology.

Dr. L. S. da Silva retired Senior Pathologist was re-employed on a sessional basis of two hours every morning to help in this Section.

The Bacteriological Section of the City Council was integrated from 1st April with the Department of Pathology. The Blood Transfusion Department was also placed under the control of the Department of Pathology. Both these Departments continued their functions with the Senior Pathologist in the control of the administration.

Dr. K. Shanmugaratnam, Acting Senior Pathologist, proceeded to Tokyo in October, to attend a Symposium in Geographic Pathology. He read a paper, the subject being "Liver Cancer and Cirrhosis in Singapore". This paper is to be published in A.C.T.A. in due course.

Mr. Chua Chor Kai, a senior Laboratory Technician, went to I.M.R. (Kuala Lumpur) for a few days to study the technique of the S.E.L. Test (Sensitised Erythrocyte Lysis Test) in the investigation of Leptospirosis. The department is grateful to the I.M.R. for this co-operation and assistance accorded to this Department. Since his return, we have been able to include this test in investigations on Leptospirosis. Out of a total of 101 investigations, 25 cases were found to be positive. It would appear that this is a useful and promising test in the Leptospiral investigation.

Publication by members of the Staff.—A case of histoplasmosis in Singapore was published in *Singapore Medical Journal*, Vol. 1 No. 3, September 1960, by Dr. Tan Kheng Khoo and Dr. M. Adams of the Department with Dr. N. Kuratnam of the Ear, Nose and Throat Department.

Teaching.—The teaching of forensic medicine was carried out by Dr. K. S. Ratnam.

TOTAL NUMBER OF YEARLY INVESTIGATIONS

	1953	1954	1955	1956	1957	1958	1959	1960
1. Necropsy	2,329	2,025	2,172	2,336	2,627	2,576	2,509	2,497
2. Histology	6,203	7,039	8,728	9,444	10,120	11,374	12,658	15,162
3. Bacteriology	14,250	25,617	33,406	44,576	50,107	43,357	45,340	46,951
4. Serology	45,810	58,011	74,200	74,196	71,746	72,347	77,776	80,130
5. Biochemistry	..	..	..	..	..	..	10,312	15,221
Total ..	68,592	94,614	128,932	156,526	164,148	162,038	180,089	169,961

The total number of examinations is 169,961. Although this figure is less than the 1959 figure, being due to the withdrawal of hæmatological examinations, nevertheless there has been a corresponding increase in most of the other sections.

Staff:

Senior Pathologist (Acting)	...	Dr. K. Shanmugaratnam, L.M.S. (Singapore), M.D. (Singapore), D.C.P. (London), Ph.D. (London). 1-1-60 to 31-10-60.
Pathologist (Acting)	...	Dr. A. O. Aaron, L.M.S. (Singapore). 1-1-60 to 30-10-60. 1-11-60 to 31-12-60 (Acting Senior Pathology).
Senior Registrars ...	...	Vacant.
Biochemist ...	...	Dr. Leong Peng Chong.
Medical Officers ...	..	Dr. Tan Kheng Khoo, M.B., B.S. (Adelaide), went on study leave to U.K. in August 1960. Dr. M. Adams, M.A. (Leyden). Dr. D. B. Wadhwani, M.B.B.S. (Bombay). Dr. W. Brodie, Mrach to June 1960. Dr. De Souza, M.B.B.S., February to March 1960. Dr. J. Yin Chu Hon, M.B.B.S., February to March 1960. Dr. L. S. da Silva.

The staff position in November 1960, already acute, became precarious when in November, Dr. K. Shanmugaratnam, Acting Senior Pathologist, was appointed as Professor of Pathology, leaving only Dr. A. O. Aaron, Dr. Wadhwani and Dr. M. Adams in the Department. The Section of Morbid Histology suffered severely. But for the continued assistance from the University Department of Pathology and re-employment of Dr. L. S. da Silva in December 1960, a complete breakdown was avoided. It is hoped that this situation will be remedied by the recruitment of trained pathologists from Israel and elsewhere early next year.

Other changes of Staff

Chief Clerk (re-employed)	1
Clerk	1
Stenographer	vacant
Storekeeper	1
Laboratory Technicians	9
Laboratory Technicians in training	14
Typist	1
Laboratory Attendants	29
Office Boy	1

MEDICO-LEGAL RETURNS 1960

Total number of cases	120
(1) Bacteriological Examinations	192
(2) Wasserman Test	2
(3) V.D.R.L.	2
(4) G.C.F.T.	2
(5) Blood	1
(6) Toad's Test	13
(7) Bones	4
(8) Corpse	1
(9) Foetus	4
(10) Finger Nail Clippings	1
(11) Human Organs	18
(12) Miscellaneous	1

POST MORTEM EXAMINATION 1960

Total Number of Necropsies —— 2,497

(1) Coroner's Cases —— 1,179 (48 per cent).

These necropsies were conducted by the staff of the Government Department of Pathology.

(2) Hospital Cases —— 1,318

AGE, SEX, AND RACE DISTRIBUTION OF AUTOPSIES ON ALL DEATHS (CORONER'S AND WARD CASES) 1960

Age	Chinese		Indians		Malays		Others		Total		Grand Total
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	
Under 1 year ..	516	404	5	3	..	1	..	..	521	408	920
1—10	164	156	7	3	5	1	..	1	176	161	337
11—20	53	24	3	1	7	3	2	..	65	28	93
21—30	75	32	14	6	6	1	4	1	99	40	139
31—40	75	40	27	1	5	..	1	..	108	41	149
41—50	139	45	48	4	5	1	2	..	194	50	244
51—60	223	44	43	2	3	1	3	2	272	49	321
61—70	148	30	11	1	1	..	2	..	162	31	193
Over 71	51	23	6	..	1	1	1	1	59	25	84
Total ..	1,444	798	164	21	33	9	15	5	1,656	833	2,489

Autopsies of Unknown Cases .. 8

2,497

A comparison of certain causes of death established by post mortem examination in 1960 with corresponding figures since 1956.

——	1956	1957	1958	1959	1960
Tuberculosis	125	124	83	55	52
Hypertension	71	51	86	27	33
Coronary Disease ..	86	85	73	94	107
Cardio-vascular Syphilis ..	20	19	31	14	22
Malaria	1	1	..	1	..
Beri Beri	6	11	21	18	21
Amœbiasis	4	4	3	7	4
Bacillary Dysentery ..	4	3	6	2	2
Typhoid	1	..	3	1	3
Diphtheria	8	3	4	6	2
Lobar Pneumonia ..	58	45	39	28	50
Malignant Tumours ..	109	113	91	119	106

An analysis of the main causes of death in Coroner's Cases for 1960 and the preceeding 4 years.

	1956	1957	1958	1959	1960
Total Necropsis	2,336	2,627	2,576	2,509	2,497
Coroner's Cases	1,042	1,255	1,170	1,229	1,179
Injuries from cutting and piercing Instruments ..	21	21	29	43	37
Injuries by blunt Instruments ..	10	10	15	19	12
Injuries by Firearms ..	23	7	5	7	3
Hanging	51	77	58	80	71
Drowning	72	68	67	81	39
Caustic-soda poisoning ..	42	28	13	19	11
Other Forms of Poisoning ..	26	16	21	23	13
Vehicle Accidents	160	162	194	191	154
Other Forms of Violence and Unnatural Deaths ..	139	152	159	219	189
Death From All Forms of Violence and Unnatural Causes	544	541	561	682	529

TABLE 102

BACTERIOLOGICAL SECTION

Total number of Bacteriological examinations done	46,951
1. Throat and nasal swabs (culture)	
Number examined	7,793
(*a*) Hæmolytic streptococci isolated	485
(*b*) G. diptheriæ isolated	225
(*c*) H. influenzæ isolated	839
2. Sputum	
Number examined	1,968
(*a*) Pathogenous isolated	403
3. Pus and Ear Swabs	
Number examined	3,666
4. Pleural and Synovial Fluid	
Number examined	650
5. Blood cultures	
Number examined (total)	1,610
(*a*) Salmonella typhi isolated	29
(*b*) Staphylococcous aureus isolated	75
(*c*) Streptococcus viridans isolated	20
(*d*) Meningococcus isolated	1
6. Cerebro-spinal fluid	
Number examined (total)	747
(*a*) H. influenza isolated	8
(*b*) Pneumicocci isolated	6
(*c*) Hæmolytic strepticocci isolated	3
(*d*) N. meningococci isolated	3
(*e*) Streptococcus viridans isolated	1

TABLE 102 — *continued.*

7. Urethral and vaginal swabs	
Number examined (total)	254
N. Gonococcous isolated	14
8. High Vaginal swabs	
Number examined	1,204
(*a*) Staphylococcous aureus isolated	192
(*b*) Hæmolytic streptococcous isolated	155
(*c*) B. Coli	155
(*d*) Clostridis welchii	24
(*e*) Clostridis tetani	2
(*f*) Neisseræ gonorrhrea	2
(*g*) Anærobic streptococci	1
9. Eye swabs	
Number examined (total)	259
(*a*) Stephylococcus aureus	81
(*b*) Streptococcus pneumoæ	5
(*c*) Kochs Weeks bacilli	3
10. Urine Culture	2,688
11. Stool and Rectal swabs	
Number examined (total)	3,090
(*a*) Salmonella typhi isolated	15
(*b*) Salmonella typhi Xmurium	13
(*c*) Salmonella (unknown)	15
(*d*) Shigella sonnei	9
(*e*) Shigella Flexner	23
(*f*) Salmonella derby	2
(*g*) Salmonella Welterden	1
(*h*) Salmonella Chester	1
(*i*) Salmonella Javia	1
(*j*) Salmonella Anatum	1
12. Agglutination tests for enteric organisms (Widal)	
Number examined	3,572
13. Agglutination tests for glandular fever (Paul Brunnel)	
Number examined	146
Positives	2
14. Blood clot cultures for enteric group	
Number examined (total)	1,835
Salmonella typhi isolated	45
Other Salmonella	3
15. Stomach wash out	
Number of specimens examined	58
16. Mycology	
Specimens examined	60

TABLE 102 — *continued*

17.	Toad Test (for pregnancy)	327
18.	Sterility Tests	1,259
19.	Blood test for Leptospirosis (Agglutination and S.E.L. Test) ...	429
20.	Culture for Leptospirosis	164
21.	Animal Inoculations	187
22.	Virulence Test for K.L.B.	187
23.	Clinical Examinations	54
24.	Culture for Amœbæ	1,488
25.	Antibiotic sensitivity examinations	10,648

SEROLOGY — ANNUAL RETURN FOR 1960

Total number of Tests performed (Blood):

V.D.R.L. (Qualitative)	60,133
Kahn Test (Qualitative)	9,932
Kahn Test (Quantitative)	28
Wassermann Reaction	3,831
Gonococcus Complement Fixation Test	569
Filarial Complement Fixation Test	659
Total ...	75,152

Total number of Tests performed (C.S.F.):

V.D.R.L. (Qualitative)	1,799
Kahn Test (Qualitative)	1,641
Wassermann Reaction	830
Lange's Colloidal Gold Curve	708
Total ...	4,978

DEPARTMENT OF PATHOLOGY

SEROLOGY

Annual Return for 1960 (Blood)

	V.D.R.L.				KAHN TEST				K.T. (Q)	WASSERMANN REACTION					G.C.F.T				
	Positive	Doubtful	Negative	Total	Positive	Doubtful	Negative	Total	Total	Positive	Doubtful	Negative	A.C.	Total	Positive	Doubtful	Negative	A.C.	Total
January	105	117	4,155	4,377	112	88	564	764	3	58	145	52	..	255	4	2	18	..	24
February	168	162	5,543	5,873	135	126	530	791	3	120	76	113	2	311	4	3	31	1	39
March	133	168	4,878	5,179	113	132	633	878	3	104	56	139	4	303	9	4	32	3	48
April	141	195	4,547	4,883	136	155	525	816	7	116	62	196	..	374	3	1	17	..	21
May	127	176	4,655	4,958	108	138	678	924	4	108	53	106	5	272	3	1	15	..	19
June	131	161	4,607	4,899	123	124	633	880	2	103	41	131	..	275	2	3	27	1	33
July	166	181	4,809	5,156	149	147	542	838	1	90	67	245	3	405	11	5	24	2	42
August	117	211	4,868	5,196	107	163	606	876	1	77	56	216	1	350	11	11	59	3	84
September ..	121	194	4,603	4,918	109	176	530	815	1	118	70	181	4	373	8	7	60	1	76
October	101	167	4,424	4 692	91	123	660	874	..	93	46	154	2	295	17	12	22	3	54
November ..	125	179	4,911	5,215	115	151	487	753	2	95	48	190	2	335	9	12	68	1	90
December ..	123	158	4,506	4,787	112	126	485	723	1	85	39	157	2	283	7	5	27	..	39
Total ..	1,558	2,069	56,506	60,133	1,410	1,649	6,873	9,932	28	1,167	759	1,880	25	3,831	88	66	400	15	569

DEPARTMENT OF PATHOLOGY

SEROLOGY

Annual Return for 1960 (C.S.F.)

Month	V.D.R.L				KAHN TEST				WASSERMANN REACTION					COLL. GOLD
	Positive	Doubtful	Negative	Total	Positive	Doubtful	Negative	Total	Positive	Doubtful	Negative	A.C.	Total	Total
January	9	2	105	116	7	1	99	107	4	4	41	..	49	70
February	7	2	98	107	6	1	85	92	5	2	61	..	68	45
March	17	4	108	129	11	2	99	112	12	2	81	3	98	72
April	5	3	101	109	5	2	93	100	3	..	60	1	64	36
May	10	..	121	131	9	..	113	122	7	2	70	..	79	57
June	12	1	114	127	5	1	103	109	8	2	74	2	86	74
July	12	3	113	128	9	3	116	128	7	5	38	..	50	69
August	12	1	195	208	7	1	200	208	7	..	93	1	101	77
September	8	2	180	190	3	2	185	190	4	2	97	..	103	91
October	10	6	176	192	5	3	137	145	8	6	69	2	85	41
November	13	4	183	200	11	1	154	166	3	2	24	6	35	39
December	9	4	149	162	8	4	150	162	3	3	2	4	12	37
Total ..	124	32	1,643	1,799	86	21	1,534	1,641	71	30	710	19	830	708

HISTOLOGY

Total number of sections:	15,162
1. Sections from Biopsies:	
(*a*) Total number of cases	8,906
*(*b*) Total number of tissues	9,563
(*c*) Total number of sections	12,372
2. Sections from Necropsies:	
(*a*) Total number of cases	938
(*b*) Total number of sections	2,790

*(Including 737, Cytological examinations).

AN ANALYSIS OF THE HISTOLOGICAL DIAGNOSIS

1.	Inflammatory		2,178
2.	Tuberculosis		307
3.	Benign Tumours		830
4.	Malignant Tumours:		
	(*a*) Nasopharynx	185	
	(*b*) Cervix	117	
	(*c*) Oesophagus	79	
	(*d*) Colon and Rectum	46	
	(*e*) Skin	98	
	(*f*) Breast	53	
	(*g*) Stomach	79	
	(*h*) Others	766	
		—	1,423
5.	Others		4,825
	Total ...		9,563

ANALYSIS OF TISSUES EXAMINED

1.	Anal and Ischio-rectal tissues	213
2.	Animal tissues	29
3.	Appendix	665
4.	Acitic fluid	57
5.	Adrenals	2
6.	Bladder	38
7.	Blood vessels	21
8.	Bones	119
9.	Bone marrow	6
10.	Brain and Meninges	13

ANALYSIS OF TISSUES EXAMINED — *continued.*

11.	Breast	195
12.	Bronchus	56
13.	Bronchial smears	3
14.	Blood Films (Sex determination)	32
15.	Blood films and Bone marrow smears ...	7
16.	Cervix	840
17.	Colon and Rectum	57
18.	Conjunctiva and Cornea	11
19.	Ear	71
20.	Endometrium	1,775
21.	Eye and Eyelids, etc.	45
22.	Fallopian tube	119
23.	Gall bladder and Common bile duct ...	156
24.	Heart muscle and Pericardial fluid ...	34
25.	Hydrocele fluid	2
26.	Intestines (small)	41
27.	Joints and Synovial tissues	81
28.	Kidney	61
29.	Larynx	82
30.	Liver	300
31.	Lung	137
32.	Lymph nodes	527
33.	Mastoid Antrum	12
34.	Mesentery	6
35.	Muscles	36
36.	Mouth and Dental diseases	51
37.	Mediastinum	3
38.	Medico-legal	1
39.	Nerves and Sympathetic ganglia	38
40.	Nose and Nasopharynx and Sinuses ...	338
41.	Nails	1
42.	Oesophagus	112
43.	Omentum	24
44.	Ovary	295
45.	Palate	11
46.	Pancreas	18
47.	Parathyroid	3
48.	Penis	36

ANALYSIS OF TISSUES EXAMINED — *continued.*

49.	Peritoneum and Peritonel fluid	13
50.	Pharynx	5
51.	Placenta	12
52.	Pleura	15
53.	Pleural fluid	178
54.	Prostate	94
55.	Pituitary	1
56.	Retro-peritoneal tissues	22
57.	Salivary gland	39
58.	Scrotum	14
59.	Skin and Subcutaneous tissues	867
60.	Spleen	45
61.	Sputum	450
62.	Stomach and Duodenum	291
63.	Spinal cord and Meninges	4
64.	Suprarenal	2
65.	Testis and Spermatic cord	35
66.	Thyroid	244
67.	Tongue	34
68.	Tonsils	50
69.	Trachea	10
70.	Thymus and Thoracic tissues	4
71.	Urethra	13
72.	Ureter	8
73.	Urine	8
74.	Uterus	229
75.	Umbilicus and Cord	11
76.	Vagina	31
77.	Vocal cord	28
78.	Vulva	23
79.	Vomit	3
	Total ...	9,563

ANNUAL RETURN 1960

BACTERIOLOGY LABORATORY III

(Miscellaneous)

I. MEDIA PREPARATION

Agar Media	1,925,000 c.c.
Broth Media	900,000 c.c.
Egg Media	20,000 c.c.
Meat Media	20,000 tubes
Serum Media	48,000 c.c.
Sugar Media (Lactose, Saccharose, Glucose, Maltose, Mannite, Dulcite, Xylose, Inulin, Dextrin and Starch)	61,000 c.c.
Physiological Saline	181,000 c.c.

II. VACCINE PREPARATION

Autogenous Vaccine	200 c.c.
T.A.B. Vaccine	27,425 c.c.
Cholera Vaccine	13,315 c.c.

III. PREPARATION OF AGGLUTINABLE SUSPENSIONS

B. typhosus 'H'	6,000 c.c.
B. typhosus 'O' (Concentrated)	300 c.c.
B. typhosus 'Vi' (Concentrated)	200 c.c.
B. paratyphosus A 'H'	6,000 c.c.
B. paratyphosus B 'H'	300 c.c.
B. paratyphosus B 'O' (Concentrated)	200 c.c.
B. paratyphosus C 'H'	300 c.c.
B. paratyphosus C 'O' (Concentrated)	200 c.c.
B. proteus OXK (Concentrated)	400 c.c.
B. proteus OX19 (Concentrated)	400 c.c.

IV. MISCELLANEOUS TESTS

1. Toad Test (for pregnancy)	Positive 116	Negative 211	327 cases
2. Sterility Test			1,259
Biological Solutions	1,094		
Bones (from Bone Bank) ..	113		
Surgical Dressings	52		
3. Anti-biotic Assays and Bacteriocidal Tests			7

4. Blood Test for Leptospirosis 429

(*a*) Agglutination 328

Strains	Negative 1/40	Positive 1/40	1/80	1/160	1/320 and above
L. bataviæ	239	18	9	17	45
L. ictero-hæmorrhagiæ ..	284	9	23	9	3
L. canicola	294	16	7	9	2
L. medanensis ..	265	30	20	9	4
L. rahmat	—	—	—	—	1

(*b*) S.E.L. Test 101

Negative 1/20	Positive 1/20	1/80	1/320	1/280	1/5,120
76	6	7	8	1	3

5. Culture for Leptospirosis 164

Specimens	Total	Positive	Negative
Blood	55	1	54
Blood clot (after SEL)	101	—	101
Urine	6	—	6
C.S.F.	2	—	2

6. Animal Inoculations 128

(*a*) Leptospirosis 42

Specimens	Total	Died of Leptospirosis	Negative
Blood	39	3	36
Urine	3	—	3

(*b*) Tuberculosis 14

Specimens	Total	Positive	Negative	Not Ready
Pus ..	6	1	4	1
Urine ..	3	—	2	1
C.S.F. ..	1	—	1	—
Miscellaneous fluid, tissues, etc.	4	1	2	1

(*c*) T.B. Cultures for Typing 13

Human Strain	Bovine	Not Ready
8	—	5

(*d*) Miscellaneous Experimental Inoculation 59

	Total	Positive	Negative
B. friedlanders ..	31	17	17
B. tetanus ..	14	7	7
Histoplasma ..	2	1	1
Blastomycocis ..	4	—	4
Toxoplasma ..	2	—	2
Toxin from food ..	5	—	5
B. welchii ..	1	1	—

7. Virulence Test for K.L.B. 187

Positive	Negative
45	142

8. Clinical Examinations, etc. 54

Blood count	2
Urine for F.E. and M.E.	21
Stools for M.E.	3
Dark Ground for Spirochætes	13
Urethral Smears	11
Scrapings for Fungus	2
Miscellaneous	2

9. Preparation of Anti-biotic Discs 328,000
(Penicillin, Streptomycin, Chlortetracycline, Neomycin, Chloramphenicol, Oxytetracycline, Tetracycline Hyd, Spiramycin, Polymixin, Oleanomycin, Kanamycin, Sigmamycin, Trisulphonamide NF, and Erythromycin)

V. CULTURE FOR AMŒSA 1,488

Specimens	Total	Positive M.E. Troph or cycts.	Positive Culture E. hist.	E. coli.	E. nana.
Stools ..	1,339	38	83	5	13
Rectal swabs	16	2	2	—	1
Pus from liver and other sources	38	—	2	—	—
Sputum ..	6	—	—	—	—
Appendix ..	89	—	—	—	—

Trichomonas homonis grown from stool culture .. 10

Rare types of amœba grown from stool culture .. 2
(Dientamœba fragilis, Iodamœba butschlii)

VI. MAINTENANCE OF STOCK CULTURES 178

Leptospira	13
M. tuberculosis	4
C. diphtheriæ	3
E. histolytica	6
V. cholera	6
Shigella, Salmonella, Clostridium, Brucella, etc.	146

The total number of analyses carried out was 15,221.

Blood:		Urine:	
potassium	3,948	inorganic phosphorus ...	90
sodium	3,906	17-ketosteroids ...	81
chlorides	3,851	creatinine	79
electrophoresis of serum proteins ...	607	hæmoglobin ...	66
calcium	527	methæmoglobin ...	65
bilirubin	418	calcium	51
inorganic phosphorus ...	372	amino-acids ...	20
abnormal hæmoglobins	271	sodium	19
alkali reserve ...	157	potassium	18
alkaline phosphatase ...	154	chlorides	17
creatinine	65	17-ketogenic steroids ...	16
serum transaminases ...	58	total nitrogen ...	16
pyruvic acid ...	57	vitamin C	12
acid phosphatase ...	19		
glucose tolerance test ...	18	Fæces:	
thymol turbidity ...	17	fat	36

The following miscellaneous tests were also carried out:

Blood: vitamin C, cephalin cholesterol, fibrinogen, lipids, cæruloplasmin, creatine, ammonia, amino-acids, uric acid, non-protein nitrogen, salicylate, iron, magnesium acid phosphatase.

Urine: glucose, phenylpyruvic acid, 5-hydroxyindoleacetic acid, 17-hydroxy-corticosteroids, paper chromatography of urinary proteins, porphyrins, creatine, salicylate, copper.

Fæces: urobilinogen, trypsin, calcium.

Chemical analyses of urinary and biliary calculi.

Chemical analyses of hospital diets.

The following is the report on the work carried out in this Laboratory during the year 1960.

SECTION A — PUBLIC HEALTH SPECIMENS

Source	1959	1960
1. Medical Officer i/c Staff	9,478	11,044
2. Medical Officer i/c Outdoor Dispensaries ...	133	376
3. Maternity and Infant Welfare Clinics and Creches ...	9,296	10,136
4. Middleton Hospital	17,973	23,554
5. St. Andrew's Mission Hospital	5	—
6. Kwong Wai Siu Hospital	—	—
7. Johore and Tebrau Water Works	305	187
8. Private Medical Practitioners	2,489	1,985
9. Rats from Plague Prevention Section	3,841	4,022
10. Ecto-parasites from Plague Prevention Section ...	6,442	4,538
Total ...	49,962	55,842

SECTION B — WATER EXAMINATIONS

1. Routine from Water Engineer	13,770	12,881
2. Routine from Council Swimming Pools	4,155	4,908
3. Miscellaneous sources	778	414
4. Algæ and other specimens	189	116
5. Wash water from City Cleansing Department ...	35	35
Total ...	68,889	74,196

Malaria.—450 blood films were examined for malaria parasites. One blood film was positive for P. falciparum. Four blood films were positive for P. vivax.

Tuberculosis	Positive	Negative	Total
1. Sputum specimens	40	1,518	1,558
2. Fæces specimens	—	1	1
3. Milk specimens	—	24	24
4. Pathological exudates	—	2	2
Total ...	40	1,545	1,585

Enteric Fever	Positive	Negative	Total
Agglutination with Salmonella typhi ...	146	765	911
Agglutination with Salmonella paratyphi A.	10	354	364
Agglutination with Salmonella paratyphi B.	22	342	364
Agglutination with Salmonella paratyphi C.	10	354	364
Blood clot culture — Salmonella typhi isolated	71	490	561
Blood clot culture — paratyphi A. ...	1	—	1
Blood clot culture — paratyphi B. ...	1	—	1
Fæces culture — Salmonella typhi isolated ...	313	2,230	2,543
Fæces culture — paratyphi B.	3	—	3
Urine culture — Salmonella typhi isolated ...	34	2,114	2,148
Total ...	611	6,649	7,260
Agglutination with Vi Antigen	—	—	911
Grand Total ...	611	6,649	8,171

Tropical Typhus.—A total of 676 specimens of blood were examined for Weil Felix Reaction and all were negative.

Dysenteries	Positive	Negative	Total
Amœbic — Entamœbæ histolytica ...	21	2,606	2,627
Bacillary — Shigella flexneri	112		
Bacillary — Shigella shigæ	1	2,251	2,404
Bacillary — Shigella sonnei	40		
Total ...	174	4,857	5,031

Plague.—No specimens of human origin were received. 4,022 rats were dissected and none showed any signs of plague infection. 4,538 ecto-parasites combed from the rats were examined. The species and distribution of all rats and ecto-parasites are given in the attached table.

Cerebro-spinal Fever.—No specimens were received.

Cholera.—No specimens were received.

Leprosy.—A total of thirteen skin smears were examined, of which three were positive.

Diphtheria.—A total of 16,335 specimens were cultured for examination and C. diphtheriæ was demonstrated in 2,558 specimens.

	Miscellaneous Examinations	Positive	Negative	Total
1.	Pathological exudate for General Examination	—	—	30
2.	Urine for General examination	—	—	2,443
3.	Pus and Urine for Gonococci	31	338	419
4.	Blood for Hæmoglobin percentage	—	—	16
5.	Blood for Total red cell, total white cell and differential count	—	—	375
6.	Blood for B.S.R.	—	—	9
7.	Blood for Kahn Reaction	43	3,758	3,801
8.	Cerebro-spinal fluid for Kahn reaction	—	1	1
9.	Fæces for Occult Blood	—	1	1
10.	Fæces for Intestinal parasites	—	—	10,314
11.	Sundried humus and sludge	—	—	32
12.	Ice Cream	—	—	475
13.	Milk	—	—	64
14.	Milk and Aerated water bottles for sterility test	—	—	37
15.	Tap water for presence of worms	—	—	10
16.	Preserved vegetables	—	—	6
17.	Cooked food for food-poisoning group	—	—	110
18.	Cheese	—	—	18
19.	Ovaltine	—	—	1
20.	Chilli bean curd (preserved)	—	—	1
21.	Aerated water	—	—	18

Organisms morphologically resembling Clostridium botulinum were found in mussels, brought in along with other food remnants from a suspected outbreak of botulism in a family in which one child had died and some others had developed respiratory paralysis. Further identification of the organisms was not possible due to the non-availability of Clostridium botulinum anti-toxin in Singapore. Botulism does not appear to have been reported from Singapore before this outbreak in September 1960.

Source (Pipe supply):	Year's average total colonies per ml. at 37°C in 24 hours	Year's average presumptive coliform count per 100 m.
MacRitchie Reservoir Valve Tower	148	31
Peirce Reservoir Valve Tower	299	13
Seletar Reservoir Suction well	181	61
Pontian Reservoir Valve Tower	190	48
Bukit Timah Reservoir — Clear Water Tank	13	Less than 1
Woodleigh Reservoir — Clear Water Tank	11	Less than 1
Gunong Pulai Reservoir — Clear Water Tank	10	0
Terbrau Reservoir — Clear Water Tank	9	Less than 1
Bedok Clear Water Tank	20	Less than 1
Pontian Camp Supply	14	Less than 1
Pearl's Hill Reservoir Tank 1	9	Less than 1
Pearl's Hill Reservoir Tank 2	8	Less than 1
Fort Canning Service Reservoir	10	0
Taps:		
Bacteriological Laboratory	11	0
Lorong Lalat Office	40	Less than 1
Havelock Road Office	11	0
Pasir Panjang Office	14	Less than 1
Dunearn Road Office	8	Less than 1
Joo Chiat Office	13	Less than 1
Average of six taps	16	Less than 1

		Year's average total colonies per ml. at 37°C in 24 hours	Year's average presumptive coliform count per 100 m.
Public Swimming Pools (City Council):			
Mount Emily:			
Inlet End		7	0
Outlet End		7	Less than 1
Yan Kit:			
Shallow Pool		7	0
Practice Pool		7	0
Main Pool (Inlet)		7	0
Main Pool (Outlet)		7	0
Farrer Park:			
Shallow Pool (Inlet)		7	0
Shallow Pool (Outlet)		9	0
Main Pool (Inlet)		8	Less than 1
Main Pool (Outlet)		9	Less than 1
River Valley:			
Shallow Pool (Inlet)		8	0
Shallow Pool (Outlet)		8	0
Main Pool (Inlet)		8	0
Main Pool (Outlet)		9	0
Miscellaneous Samples:			
Singapore Swimming Club	208		
Tanglin Club	102		
Chinese Swimming Club	51		
Other sources	53		
Total	414		
Algæ and Other Samples:			
Algæ	116		
Sewage Effluent	—		

Wash water from City Cleansing Department.— A total of 35 samples were examined and the results obtained were satisfactory.

Staff.—Miss E. R. McIntyre was transferred to this Laboratory on 13th January, 1960, without warning or posting orders, in the place of the clerk Mr. Lim Thuan Ing. On 29th December, 1960, on the eve of his vacation leave and no-pay leave extending over a period of 76 days which was granted in July 1960, Mr. Lim Thuan Ing was transferred back to this sub-department (without any provision for a relief) and Miss E. R. McIntyre posted to Middleton Hospital.

The above as well as memorandum No. H.O. 102/A dated 25th March, 1960 threatening disciplinary action for alleged overspending — when in the opinion of the City Assistant Treasurer, there was no over expenditure at all — all seem to indicate a hostile attitude towards this sub-department.

The post of City Bacteriologist remained vacant throughout the year. The Assistant Health Officer (Bacteriology) carried out the duties of the City Bacteriologist in addition to his own, which included roster duties at Middleton Hospital.

On 1st April, 1960, the Government Senior Pathologist took over the supervision of the work in this laboratory.

TABLE 103

PLAGUE PREVENTION

The following is a return of Rats caught for the Year 1960

Source	R. Norvegicus		R. Rattus		R. Concolor		M. Musculus		Crocidura	Total Rats	Total Pregnant Rats	Total Dead Rats	Fleas X. Cheopies	Fleas Others	Total Fleas	Mite	T. Lewisi		Average Fleas per rat	Remarks
	M.	F.	M.	F.	M.	F.	M.	F.									+ve	−ve		
City Health	805	1,670	18	11	87	192	107	42	114	3,046	244	42	4,085	..	4,085	77	12	313	1.34	..
Government Health ..	9	39	14	31	47	93	158	124	..	515	30	84	209	..	209	22	..	..	0.41	..
S.H.B.	38	55	62	96	28	16	..	..	..	295	9	..	124	..	124	21	1	..	0.42	..
Port Health	1	5	43	85	15	12	4	1	..	166	8	166	..	..	..	..	..	..	..	Fumigated HCN
Total ..	853	1,769	137	223	177	313	269	167	114	4,022	291	292	4,418	..	4,418	120	13	313	..	..
Grand Total ..	2622		360		490		436		114	4,022	291	292	4,418	..	4,418	120	326		..	..
Pregnant Rats ..	..	229	..	13	..	27	..	22	..	..	291	..	..	..	..	..	..	..	..	..

All the Rats were dissected and none were found infected with Plague.
One hundred and twenty three live rats were sent to the Department of Parasitology, University of Malaya, Singapore.
Eighty two live rats were sent to D.A.D.A.H. HQ. Singapore Base District.
One live rat was sent to the Department of Zoology, University of Malaya, Singapore.
These rats are not included in the above totals.

THE BLOOD TRANSFUSION CENTRE

The Blood Transfusion Centre is in the General Hospital, but serves all hospitals in Singapore (except the British Military Hospital).

Staff.—A trainee medical officer was appointed to the department and at the end of the year proceeded to the United Kingdom on a fellowship to train in the National Blood Transfusion Service and to read for the M.R.C.P. specialising in Hæmatology.

A Donor Organiser was engaged in July. It is probably significant that since his appointment, there were more donors in the second half of the year (3,684) as against the first half of the year (2,843).

The training of laboratory technicians is now undertaken in the Department of Pathology. Two who had completed the three-year training course have returned to the Department.

Work.—12,874 blood donations were received and the number of transfusions given was 12,595. Most of the blood used was for patients in the surgical wards of the General Hospital and for women in the Kandang Kerbau Hospital.

TABLE 104

DONORS AND RECIPIENTS

	Donors	Recipients
1956 ...	7,987	7,769
1957 ...	9,221	9,092
1958 ...	9,952	9,622
1959 ...	11,602	11,209
1960 ...	12,874	12,595

ANALYSIS OF DISTRIBUTION

General Hospital	7,515
Kandang Kerbau Hospital ...	4,200
R.A.F. Hospital, Changi ...	177
Other Government Hospitals ...	217
Other Hospitals	486
Total ...	12,595

The laboratory is open at all times for the grouping and cross matching of blood. It is a credit to the staff attached to it that there have been no incompatible blood transfusions resulting in death. The laboratory also provides a hæmatological laboratory service which work is gaining in importance, complexity and in volume.

It is also the central depot for the preparation, cleaning and distribution of all apparatus for intravenous therapy for all the hospitals. During the year 13,969 blood giving sets, 17,520 saline giving sets and 14,374 taking sets were made up and distributed.

Blood Donors.—Blood donations are given voluntarily, and no payment is made for blood neither are charges made for any blood transfusion. It is more likely that the fear attached to blood donation and lack of public spirit rather than the lack of payment to donors that makes it so difficult to recruit a sufficient number of donors.

Increasing numbers of Chinese are coming up as donors and they form the largest group of donors. Donations from Europeans are falling but they still form a good proportion of donors. Police and military personnel continue to give valuable support.

The response from relatives and friends of patients who receive transfusions was better but is not yet really satisfactory.

TABLE 105

CATEGORIES OF DONORS AND RECIPIENTS BY RACE

Donors	Male	Female	Total No.	Recipients	Male	Female	Total No.
Chinese ...	5,341	239	5,580	Chinese ...	4,916	4,220	9,136
Europeans ...	2,512	193	2,705	European ...	178	123	301
Indian ...	1,587	17	1,604	Indian ...	796	708	1,504
Malay ...	2,132	27	2,159	Malay ...	543	975	1,518
Eurasian ...	688	17	705	Eurasian ...	53	54	107
Others ...	119	2	121	Others ...	15	14	29
Total ...	12,379	495	12,874	Total ...	6,501	6,094	12,595

TABLE 106

CATEGORIES OF DONORS 1956–1960

	1956	1957	1958	1959	1960
Voluntary Civilian Donations ...	4,996	5,371	5,061	5,549	7,073
Donations from Service Personnel . .	2,162	2,955	2,926	2,506	2,376
Relatives:					
Taken	859	1,583	1,965	2,826	3,468
Offered and rejected	133	107	401	353	352
New donors	3,394	3,788	4,197	5,153	6,527
Voluntary donors:					
Offered and rejected	443	244	408	285	560

Blood Donors Association.—This Association was inaugurated on 25th September. It is an independent registered society whose aims are to help recruit new donors and act as a liason body between donors and the Blood Transfusion Service.

Chapter Twenty-three

PHARMACEUTICAL SERVICE

THE Pharmaceutical Service comprises the Government Pharmaceutical Laboratory and Store and the dispensaries attached to hospitals and out-patient clinics. During the year under consideration the service was under the management of Mr. S. K. Lingam, M.P.S., DIP.PHARM. He was assisted by Mr. Lim Cheng Min, M.P.S., DIP.PHARM., during the first half of the year. He resigned his post in August 1960. Mr. Wee Keng Boon, a senior Pharmacist, attached to the Department was away in United Kingdom on a Departmental Scholarship to study for the Pharmaceutical Chemist Examination. There was a considerable increase in the demand for drugs, chemicals and surgical equipment because of the expansion of the Medical Services during the year The overall cost of supplies was kept within the provision in the estimates by undertaking local manufacture of many pharmaceutical preparations from imported bulk chemicals instead of buying the finished preparations from commercial sources. It is proposed to expand the manufacturing facilities by building and equiping additional manufacturing laboratories. As a first step in this direction a sum of $40,000 was made available to build a Tablet Laboratory. This Laboratory is excepted to be completed in 1961.

The physical integration of the City Medical Stores with the Government Pharmaceutical Laboratory and Store was completed in December 1960. As a result of this integration the Government Pharmaceutical Laboratory and Store was made responsible for supplying all the requirements of medicines and surgical supplies to Dispensaries and Clinics under the control of the City Council. The City Stores staff comprising 1 pharmacist, 2 hospital assistants, 1 storekeeper, 5 attendants, 2 watchmen and 1 driver was transferred to Government Pharmaceutical Laboratory and Store. A total of 38 consumer units of the City Council consisting of City dispensaries, Maternal and Child Health clinics, mobile dispensaries, Water Works dispensaries and creches had to be supplied in addition to the 100 units previously supplied by Government Pharmaceutical Laboratory and Store. The increased volume of work was handled satisfactorily without any serious breakdown in supplies.

The staff position at the end of the year is summarised in Table 107.

TABLE 107

STAFF OF THE PHARMACEUTICAL SERVICE

	Pharmaceutical Chemist	Pharmacists	Pupil Pharmacists	Dispensing Assistants
Ministry of Health Headquarters ...	—	1	—	—
Government Pharmaceutical Laboratory and Store ...	—	4	—	6
Kandang Kerbau Hospital ...	—	2	—	5
Tan Tock Seng Hospital ...	—	1	—	5
Trafalgar Home	—	1	—	1
Woodbridge Hospital	—	1	—	1
Middle Road Hospital	—	1	—	2
Outpatient Services	—	4	—	8
General Hospital	—	6	—	32
Total ...	—	21	—	60

The pharmacist attached to Ministry Headquarters is engaged in full time duties as an Inspector of Poisons. His duties include inspection of licensed premises, Poison records, investigations into illegal import — sale of poisons and checking of inward declarations covering import of veterinary medicines to prevent import of veterinary poisons without licence. Information concerning illegal imports and sales are transmitted to O.C. Commercial Crimes to institute proceedings, at which the Inspector of Poisons is required to give evidence. Many successful proceedings were taken against offenders under the Poisons, Med. (Advt. and Sale) and Dangerous Drugs Ordinances, but as the Ministry does not maintain a record of prosecutions, details of these are not available for inclusion in this report.

Five vacancies for pharmacists remained unfilled because of the general shortage of qualified persons in the country. More dispensing assistants were recruited during the year, but since these officers have to undergo a three-year period of training their usefulness was limited. Owing to the shortage of pharmacists, many dispensaries were managed by senior dispensing assistants, who generally discharged their duties to the satisfaction of the senior officers responsible for the clinics. The Dispensing Assistants Service was introduced only a few years ago, to replace the hospital assistants who had been trained in dispensing and were attached permanently to dispensaries. Many of the latter are due for retirement.

MANUFACTURE OF MEDICINES

About 60 per cent of the items of medicines, laboratory solutions and veterinary medicines are prepared in the Government Pharmaceutical Laboratory and Store from imported bulk chemicals and drugs. The manufacturing programme includes preparation of injections, transfusion solutions, reagent solutions, tablets, mixtures, creams, ointments, etc. A full range of equipment including tabletting machines, steam generator, stills, mixing machines, driers, etc. are utilised to undertake manufacture of pharmaceuticals. The volume of production over the years 1954 to 1960 is given in Table 108.

The laboratories increased the volume of production to cope with increased demand from Hospitals and Clinics. The net value of the cost of material used in the manufacture of finished products amounted to $847,040 compared with $800,163 in 1959. There was a considerable reduction in the price of raw materials during the year as a result of a general fall in prices of chemicals and drugs. Over 105 million tablets were produced in 1960, which is an increase of 15 million tablets over the 1959 production. Similar increase in production was achieved in respect of transfusion solutions, injections, suppositories, etc. The establishment charges amount to 17 per cent of the value of products but such charges are not passed on to the consumer. Even if such charges are added to the price of supplies, the cost of all items will be well below the cost of commercial supplies. All the products turned out by the department are batch tested for sterility by the Department of Pathology and for purity or content of active drug by the Department of Chemistry. Both these departments have assisted in devising methods of formulation and experimental work, and their co-operation is greatly appreciated.

TABLE 108

PRODUCTION IN THE GOVERNMENT MEDICAL STORE, 1954 TO 1960

	1954	1955	1956	1957	1958	1959	1960
Tablets (Millions) ..	23.2	39.4	45.6	56.4	54.9	90.7	105.8
Ampoules (No.) ..	150,400	324,400	563,700	440,000	535,600	593,569	608,352
Multidose Injection Vials (No.) ..	72,900	73,900	29,400	19,200	17,000	20,690	28,810
Sterile Transfusion Fluids (pint bottles)	12,500	18,500	37,500	76,700	74,600	104,061	144,090
Eyedrop/Eardrop Vials (No.)	..	..	13,600	14,000	44,500	69,040	99,230
Tinctures, Infusions, Extracts (Gallons) ..	845	1,625	2,250	2,318	3,300	4,800	5,500
Emulsions (Gallons) ..	341	590	476	490	500	700	780
Mixtures, Lotions, Liniments (Gallons)	4,100	14,700	8,900	8,190	8,950	11,700	15,200
Antiseptic Fluids (Gallons) ..	..	..	4,740	7,290	8,300	8,600	9,500
Linctus and Syrups (Gallons) ..	3,300	1,260	1,360	2,620	7,700	11,300	16,200
Ointments and Creams (lb.)	5,800	8,600	7,700	10,800	10,900	20,000	21,600
Ointments and Creams in Tubes (No.) ..	..	9,500	20,100	52,300	71,450	80,900	69,800
Laboratory Reagent Solutions (litres) ..	554	880	436	520	640	490	1,100
Suppositories and Pessaries (No.) ..	6,300	19,900	18,900	33,900	33,100	63,830	88,600

STORES SECTION

The Stores section consists of three large go-downs in Silat Road and two others in McAlister Road. Approximately 1.5 million dollars worth of drugs, chemicals, surgical equipment and dressings are kept in the godowns at any one time. This represents sufficient stock to meet all foreseeable requirements for six months. It is not possible to reduce the stock further as it takes about 6–8 months for items ordered through Crown Agents to be received. Owing to increased competition from suppliers and Crown Agents' change in policy of inviting continental suppliers, the prices charged for most items of chemicals and drugs were less than the previous years. The total value of purchases during the year amounted to a little over 3.2 million dollars, of which about 1 million dollars worth was purchased locally and the rest through Crown Agents. A total of 2.5 million dollars worth of goods was taken by hospitals and clinics. The value of stores in stock at the end of the year was 1.7 million dollars. A total of 700 Bills of Lading and 6,000 parcels received through the Post Office was handled by the stores. The total value of write off items due to deterioration and redundency amounted to a little over 4,000 dollars which is $\frac{1}{8}$ per cent of the stocks handled. A total of 9,000 Medical Stores Requisitions were handled during the year. The number of items issued per working day was about 300. The receipts and issues are machine posted and balanced daily by a staff of 3 Accounting Machine Operators. Table 109 gives the main items of expenditure on drugs and pharmaceuticals.

TABLE 109

MAIN ITEMS OF EXPENDITURE ON DRUGS AND PHARMACEUTICALS

	Quantity 1958	Cost 1958	Quantity 1959	Cost 1959	Quantity 1960	Cost 1960
		$		$		$
Tetracyclines ..	..	204,400	..	170,200	..	134,800
Streptomycin (grm) ..	497,500	133,700	688,900	97,500	774,800	92,950
Procaine Penicillin Injection (M.U.)	363,700	70,100	427,500	64,000	705,500	70,000
Penicillin V Tablets ..	1,145,000	44,700	4,435,500	82 ,500	3,926,000	48,700
Chloramphenicol ..	..	21,800	..	32,800	..	57,300
Penicillin Injections (M.U.)	112,200	21,700	90,000	9,400	31,140	3,900
All Antibiotics ..		496,400		456,400		407,650
Sod. Aminosalicylate and Isoniazid	..	238,100	..	263,000	..	284,000
Intramascular Iron Injections (amps) ..	77,100	81,400	82,500	81,700	95,000	81,550
Corticosteroids ..	..	76,600	..	44,700	..	64,300
Vitamins	..	51,600	..	34,300	..	48,900
Sulphonamides (kg) ..	2,750	49,300	4,230	33,800	6,700	97,000
Antihistamines ..	..	46,000	..	68,300	..	69,900
Tolbutamide Tabs. ..	776,000	38,000	1,800,200	35,900	2,400,000	21,600
Codeine Phosphate (lb.) ..	177	36,000	438	104,300	280	61,700
Chlorpromazine ..	..	30,000	..	40,600	..	27,000
Insulin (Plain, P.Z. and Lente)	18½ m.u.	26,300	21 m.u.	28,600	30.6 m.u.	38,700
Alcohol (B.P. and Industrial (gal.)	8,950	17,500	8,100	15,600	16,700	31,300
Acetazolamide Tabs. ..	103,500	16,900	84,400	8,100	46,200	950
Cod Liver Oil (gal.) ..	2,600	12,000	1,800	5,800	3,350	15,000
		1,216,100		1,221,100		1,249,550

PART IV

THE CHEMISTRY DIVISION

Chapter Twenty-four

CHEMISTRY DIVISION

GENERAL

WITH the abolition of the post of Pan-Malayan Director of Chemistry in 1960, the Department of Chemistry is now fully Malayanised. The staff list is shown hereunder.

Chief Chemist and Chief Inspector of Dangerous Materials: Chia Chwee Leong, M.SC., F.R.I.C.

Senior Chemist and Senior Inspector of Dangerous Materials: Lim Chin Hua, B.SC., D.I.C., A.R.I.C.

Chemist and Inspector of Dangerous Materials:

Lee Kum Tatt, B.SC., PH.D., A.R.I.C., M.C.I.C.

Phang Sing Eng, M.SC., A.R.I.C.

Tan Jake Meng, B.SC., DIP.CHEM.ENG., A.R.I.C.

Chou Kai Chih, B.SC., D.I.C., A.R.I.C.

Miss P. R. Williams, M.SC.

M. C. Dutt, M.SC., A.R.I.C.

Theng Chye Yam, B.A. (Mod.), M.SC.

Lim Han Yong, B.SC.

Assistant Inspector of Dangerous Materials:

Ch'ng Beng Han, B.SC.

Ang Eng Ann, B.SC.

Aw Soon Cheong, B.SC.

Chief Laboratory Assistant: Thng Soon Tee.

Laboratory Assistant, Special Grade: Pwee Sye Cheow, Chow Weng Seng.

Executive Officer: Ismail bin. H. M. Zain.

Laboratory Assistants: Eight.

Clerical Officers: Five.

Clerical Assistant: One.

Laboratory Attendants: Fifteen.

Watchman: One.

A new post of Senior Chemist and Senior Inspector of Dangerous Materials was created during the year and this post was filled by Mr. Lim Chin Hua on promotion.

In July and November respectively, two chemists, Messrs. Phang Sing Eng and Tan Jake Meng, returned from training in the United Kingdom. Mr. Phang Sing Eng was awarded a Master of Science Degree by the

University of Birmingham after a year of research in the analytical techniques of Microchemistry. During his second year's training, he was attached to N. E. Home Office Forensic Science Laboratory, Harrogate, Laboratory of the Government Chemist and Isotope School, Harwell.

Mr. Tan Jake Meng was awarded a Diploma in Graduate Studies (Chemical Engineering) by the University of Birmingham after a year's course. His training during the second year included periods with H.M. Factory Inspectorate, Home Office Explosive Branch, Inspectorate of Alkali etc. Works, Water Pollution Research Laboratory, Herts, and Isotope School, Harwell.

Mr. Chou Kai Chih, Chemist, was awarded a Departmental Fellowship under the Colombo Plan Technical Co-operation Scheme. He left for Australia in June to take up a two-year course leading to a M.Sc. Degree at the Department of Animal Husbandry, University of Sydney.

The number of posts for chemists was increased by one and this additional post was filled in September by the appointment of Mr. Lim Han Yong, B.SC. (Hons.), University of Malaya.

Four chemists and one Executive Officer attended the Political Study Course arranged for senior officers by the Government.

In December, Mr. Ch'ng Beng Han, Assistant Inspector of Dangerous Materials, reported for duty after completing his training in handwriting comparison.

In April all the three posts of Assistant Inspectors of Dangerous Materials were filled with the appointment of Mr. Aw Soon Cheong, B.SC., Nanyang University.

All the eight posts of Laboratory Assistants, Higher Division, were filled with the appointment of two laboratory assistants in July and August respectively. Mr. Ho Yan Hon, laboratory assistants, was put in charge of the store.

In May, Dr. C. Marcus, Permanent Secretary to the Ministry of Health and Director of Medical Services accompanied by Dr. Ho Guan Lim, visited the Department and were conducted around the laboratories and given an insight into the type of work carried out for various Government departments.

Other visits were made by Dr. R. Sansonnens, Chief Medical Officer, Laboratory Health Services Section of W.H.O. Headquarters in Geneva, Dr. R. Sudjono, Head of the Crime Laboratory at the Indonesian National Police Headquarters, Djakarta, and groups of students from Victoria School, Raffles Girls' School and Gan Eng Seng School.

The Senior Chemist gave one lecture to Customs Officers on the services provided by the Department of Chemistry in connection with the many statutory functions of the Customs Department.

Three lectures were given by the Senior Chemist to officers of the Criminal Investigation Department on scientific aids to criminal investigations.

Court attendances by chemists have decreased. There were 70 court appearances in 1960 compared with 142 court appearances in 1959. Approximately 58 per cent of these court appearances were in connection with opium-smoking cases.

During the year the number of samples analysed and examinations carried out was 20,616 compared with 19,637 in 1959. Of the 20,616 samples, 117 samples consisting of sodium arsentie and rubber latices were from the Collector of Federal Customs Duties. These samples analysed for compliance with the statutory colour requirement of the Federation Poisons (Sodium Arsenite) Ordinance, 1949 and for dry rubber content respectively. There has been a decrease in samples from the Police Department and other Government departments and a slight decrease in samples from the Ministry of Health. Samples from the Customs Department showed an increase of approximately 30 per cent on previous year's samples, 8,801 compared with 6.752 in 1959. This increase was due to increased samples of methylated spirits, beer and samsoo. There was a slight increase in non-official samples because of more samples of petroleum for flash point tests.

The distribution of work for the past ten years is shown on the charts on pages 171 and 172. A summary of the work of the various sections and publication of research work in scientific journals are shown hereunder.

DISTRIBUTION OF LABORATORY WORK

Sections	SOURCE						
	Customs	Medical	Police	Other Departments	Non-Official	Total Samples	Total Cases
Forensic	820	18	3,122	129	203	4,292	1,184
Health	504	1,045	3	364	75	1,991	21
Miscellaneous ..	111	19	105	485	33	753	..
Revenue	7,482	1	..	..	1,239	8,722	..
Toxicology ..	..	2,126	148	3	40	2,317	847
Dangerous and Hazardous Materials ..	..	2	424	1	2,114	2,541	..
Total ..	8,917	3,211	3,802	982	3,704	20,616	2,052

PUBLICATIONS

The Colorimetric Determination of Phenacetin in Tablet Mixtures, *J. Pharm. Pharmacol.*, 1960, 12, 624–630, Lee Kum Tatt and Chan Chian Seng.

The Identification and Determination of Nitrogenous Organic Bases with Ammonium Reinechate, *J. Pharm. Pharmacol.*, 1960, 12, 666–676, Lee Kum Tatt.

Quantitative Isolation of Alkaloids from Plant Materials, Nature, 1960, 88, 65–66, Lee Kum Tatt.

A Continuous Extractor for use in Toxicological Analysis, *J. Pharm. Pharmacol.*, 1960, 7, 437–441, A. S. Curry and S. E. Phang.

In 1960 fees for non-official work amounted to $144,251 compared with $131,468 for 1959. Inspection of tankers and compartments in ships for detection of inflammable petroleum vapour accounted for approximately 73 per cent of the fees and testing of flash points of non-dangerous petroleum approximately 18 per cent of the fees.

FORENSIC SECTION

This section covers all work connected with criminal investigations such as crime against person or property, document examination and offences under the various ordinances such as the Customs, Dangerous Drugs, Poisons, and Corrosive Substances Ordinances.

Toxicology is reported under a separate section. The bulk of the work carried out was for the Police and Customs Departments. Some blood stains and opium exhibits were submitted for examination by the North Borneo Police Department.

The number of exhibits examined in 1960 was less than that for 1959 by 1,317, although the number of cases showed an increase of 242. The main contributing factor was the small number of documents examined, 171 compared with 950 in 1959. In 1959, it was reported that the full-time Document Examiner was in the United States of America. In the absence of a handwriting expert, the type of documents examined had to be restricted to those for erasures, both mechanical and chemical, which did not involve comparison of handwriting.

The work carried out was in connection with arson cases, the examination of blood and seminal stains, hairs and fibres, narcotics, documents, drugs and poisons, firearms, smuggled goods such as gold and tobacco, adulterated and illicit liquors, hit-and-run or stolen vehicles, and with miscellaneous investigations some of which were non-routine and required much of the Chemist's time.

Blood and Semen Stains

The number of exhibits for blood and semen stains showed a decrease compared with the number for the previous year. Over 740 exhibits were examined for blood and of the positive ones for human blood approximately two-thirds were grouped as well.

Firearms Cases

In most of the cases involving identification of bullets positive matching of the fine markings on bullets was obtained. The case in which Singapore so-called "Public Enemy No. 1" was shot dead is worthy of mention. A party of Police officers raided a premises to arrest the deceased, a leader of a kidnap gang who was much wanted by the Police for murder and kidnapping. A gun battle ensued after which he was found dead in his room with two 0.38 Enfield revolvers by his side. Among the exhibits examined were three bullets recovered from the deceased, 12 bullets recovered from the premises, two 0.38 Enfield and one Smith and Wesson revolvers recovered from the premises, five Police 0.38 Webley revolvers and two Police 9 mm. Sterling sub-machine guns. Of the three bullets recovered from the deceased, one 0.38

bullet was identified as having been fired from one of the Police revolvers. From the general class characteristics, the other two 9 mm. bullets could not have been fired from any of the three revolvers recovered from the premises, thus eliminating any case of suicide, nor from any of the five Police revolvers but from the Police sub-machine guns. The two bullets were distorted and there were insufficient fine markings on these bullets to enable a satisfactory matching with the fine markings on the test bullets to be obtained. It was therefore not possible to state which of the two Police sub-machine guns had fired one of these or both bullets.

Acid Cases

There were eighteen cases of throwing of acids or harmful substances. In most of these cases sulphuric acid was found on the clothings of the victims. Other identified substances were caustic soda, formic acid, pepper and chilli.

Theft Cases

In one case a shop was broken into by cutting the chain holding the padlock with a wire cutter found near the scene. The laboratory was able to establish by examination of the markings on the cut ends of the chain that the wire cutter was in fact the tool used for cutting the chain.

In another case of house-breaking and theft, a suspect crowbar was submitted a few days later for examination. At the tip of the crowbar there was some red paint said to be similar in colour to that on the door of the house in question. However on examination the paint on the crowbar was quite different from the paint on the door.

Vehicles

Vehicles were examined either in connection with "hit-and-run" cases or obliteration of serial numbers stamped on the frame of bicycles or engine block. In most of the cases of obliteration of the serial number the laboratory was successful in restoring the filed-off numbers.

In a case of a man who was knocked down and killed early in the morning, smear of blue paint was found on the clothing of the deceased. When the suspect car was submitted (approximately a month after the incident) for examination, it was found that the blue paint on the clothing was similar to that from the car.

On some occasions the Chemist was requested by the Police to visit scene of accidents. In one case there was a head-on collision between a fire-tender and a taxi and several persons in the taxi including the driver were killed. Examination of the tyre marks and other evidence at the scene of the accident revealed that the fire-tender was on the wrong side of the road when the accident occurred.

Gold

There were four cases of importation of gold articles without permit. The articles included gold bars, rings, bangles and brooches. The gold bars were found to be of 99.9 per cent purity.

Liquors

The number of illicit liquor cases increased over last year but the number of exhibits remained approximately the same. Out of twelve cases of suspected adulteration of beers and stouts, in two cases only was evidence of adulteration detected.

Tobacco

The number of smuggled tobacco exhibits showed a further decrease compared with the number received in 1959. As reported in the previous year's report, locally-manufactured cigarettes with their lower duty rates made smuggling of this commodity less worth-while. The decrease in the number of tobacco exhibits was also partly due to an amendment to the Customs Ordinance. Previous to the amendment, it was necessary to open, examine and if necessary test the contents of ten per cent of the number of packages. This involved a considerable amount of time by the Chemist in the supervision of his subordinate staff in the mechanical operation of opening hundreds of packets of cigarettes, counting and repacking, apart from taking representative samples for weighing and analysis. With the amendment to the Customs Ordinance, it was sufficient to open, examine and, if necessary, test the contents of such proportion of the goods seized as the Customs Officer might determine. This has resulted in a considerable reduction in the number of exhibits to be examined and the time saved in the supervision of the mechanical operation can now be devoted to investigation.

Chandu Opium

The majority of the chandu and opium exhibits came from the Narcotics Branch of the Singapore Police Department. The exhibits consisted of chandu, chandu dross and paraphernalia used in opium smoking. The exhibits from the Customs Department consisted mainly of seizure of raw opium. 89 assays for moisture and morphine contents were carried out. A small number of exhibits was submitted by the North Borneo and Sarawak Governments. Out of a total of 1,837 exhibits, only 13 were not found to be opium or chandu as originally suspected.

Drugs

The number of exhibits examined for the presence of dangerous drugs or poisons listed in the Poisons Ordinance has doubled; 386 samples involving 83 cases as compared with 182 samples involving 50 cases for 1959. Among the dangerous drugs or poisons detected were Indian hemp, morphine, pethidine, codeine, procaine, penicillin, sulphonamides, adrenaline and ephedrine. Many of the exhibits which from shops having no licence to sell poisons required confirmation of the presence of the poisons declared on the labels. A few samples including herbal powder contained general "unknowns". The identification of listed poisons occurring in such products has presented a problem to the laboratory. The examination of these products is difficult and initially may require considerable amount of experiments. With the existing staff and the demands for routine work, not much time can be devoted to these essential developments in techniques and methods.

TABLE 110

FORENSIC SECTION

DISTRIBUTION OF WORK 1960

Class of Work	SOURCE						
	Customs	Medical	Police	Other Depart-ments	Non-Official	Total Samples	Total Cases
Arson	..	..	37	..	..	37	16
Blood and Semen ..	..	..	771	..	84	855	222
Chandu and Opium ..	219	..	1,562	..	56	1,837	620
Documents ..	2	..	39	128	2	171	48
Drugs	27	14	308	..	37	386	83
Firearms cases ..	1	..	75	..	15	91	15
Gold	57	..	..	..	..	57	4
Liquors:							
Adulterated ..	..	..	60	..	..	60	12
Illicit	333	..	3	..	1	337	45
Tobacco	151	..	..	..	..	151	30
Vehicles	..	..	36	1	4	41	23
Miscellaneous ..	30	4	231	..	4	269	66
Total ..	820	18	3,122	129	203	4,292	1,184

HEALTH SECTION

Food and Drugs Ordinance

As explained in the 1959 Annual Report samples from rural areas taken over by the City Council were submitted to the City Analyst's Department for analysis. Nevertheless, 20 samples were submitted to the Department of Chemistry for examination. These samples consisted of milk and coffee mixture for compliance with standards laid down in the Ordinance, canned meat products for perservatives, vegetable oils for the presence of mineral oil or adulterant and fruits for the presence of arsenic. All were found to comply with the Food and Drugs Regulations.

Other Foods

Informal samples, submitted by the Public Health Inspectors, for compliance with regulations or determination of some specific constituent included milk, condensed milk, areated water, coffee mixture and canned meat products. One sample of meat source was found to contain benzoic acid (1,360 parts per million of benzoic acid) far in excess of the 250 parts per million permitted in the Food and Drugs Regulations.

Samples submitted by the General Hospital from contractors for examination included coffee, ground-nut oil and milk powder. As a result of a complaint, one sample of peanut oil was submitted which, on examination, was found to be slightly rancid and to contain a small amount of cotton-seed oil.

Samples from commercial sources and other Government Departments included sugar, fresh milk, palm oil, canned salted vegetables and margarine. Three tins of margarine were submitted by the Commercial Crime Branch of the Police Department. The contents of two tins were found to be dissimilar to that of the other tin said to be genuine.

Other Medicines and Drugs

The number of samples received from the Government Pharmaceutical Laboratory and Store was 772 compared with 865 for 1959. These samples were examined for compliance with British Pharmacopœia Standards or their contents. Three samples of sodium carbonate were assayed for the Tan Tock Seng Hospital.

The Royal Air Force sent in, for testing for compliance with standards, ten samples of anæsthetic gases used in their hospital.

The usual determinations of moisture and morphine contents of raw opium were carried out for the Customs Department with a view to the ultimate sale of the opium for medicinal uses.

Metallic Contamination

From the routine samples submitted by the Customs Department for spirit strength determinations, 415 samples were selected at random and checked for lead and copper contents.

Two samples of brandy, one sample of "other liquor", one sample of bitters and four samples of imported samsoo were found to contain copper in excess of the statutory limit. These were therefore recommended for prohibition of importation.

The prohibition of importation of a sample of imported medicated samsoo was recommended on account of its high lead content.

Sewage

The number of samples analysed showed a decrease of approximately 25 per cent. Most of the samples were from septic tanks. With the exception of one sample submitted by the Royal Air Force, these samples from rural areas were submitted by the Government Health Department and the Sewerage Department of the Public Works Department.

Water

Eight samples of well water from the rural areas submitted by Public Health Inspectors were found to be bacteriologically unsatisfactory. Two samples of stream water from one of the neighbouring islands were found to be contaminated with B. Coli.

Commercial firms submitted water samples for chemical and bacteriological examinations. These samples were from ships and land storage tanks and were bacteriologically satisfactory. One sample from a ship was found to be contaminated with sea water.

When an outbreak of typhoid cases occurred in one of the neighbouring islands, the water supply was treated by means of the Katadyn process. Samples of the treated water were submitted by the Public Health Division for examination. Bacteriological results indicated that the samples of water were free from B. Coli.

Other water samples were from swimming pools.

TABLE 111

HEALTH SECTION

DISTRIBUTION OF WORK 1960

Class of Work	SOURCE						
	Customs	Medical	Police	Other Depart-ments	Non-Official	Total Samples	Total Cases
Food and Drugs Ordinance	..	20	..	..	..	20	20
Foods: Other ..	..	77	3	4	12	96	1
Medicines and Drugs: Other	89	772	..	..	20	881	..
Metallic contamination	415	..	..	..	..	415	..
Sewage	..	135	..	348	1	484	..
Water	..	41	..	12	42	95	..
Total ..	504	1,045	3	364	75	1,991	21

MISCELLANEOUS SECTION

General

Two hydrometers were checked as to their accuracy for the Customs Department. One clinical thermometer from the General Hospital was checked and calibrated.

From the Department of Primary Production a number of samples of fertilizer and animal feeding stuff was assayed.

Metals, Minerals and Chemicals

Out of fifty-two samples of sodium arsenite analysed for the Collector of Federal Customs Duties, five samples were found to be slightly deficient in colour. Two samples were found to have a blue colouring matter whose intensities were approximately 40 per cent and 50 per cent respectively of that prescribed.

As a result of the Customs (Protective Duties) Order, 1960, which levies duties on soap but not synthetic detergents, nine samples were submitted by the Customs Department for analysis as to the presence of soap. Other samples excluding gold examined for the Customs Department comprised ingots of silver and coins. In one case, the average silver content of the ingots was found to be 96.3 per cent and in the other 22 per cent. The coins suspected to be silver were found on analysis to consist essentially of copper and zinc.

The Public Works Department submitted for analysis, soap, detergent, cement paint and stalactites removed from the concrete beam under the Merdeka Bridge. Out of twenty-nine samples of soap examined for compliance with Public Works Department Stores Specifications, fifteen samples were found not to comply with the specifications in respect of one or more constituents. No sea water was detected in the samples of stalactites.

Book preservatives were prepared for the Director of Legal Aid, Tan Tock Seng Hospital, Meteorological Department and Customs Department. Solutions for testing hypo on films and phenolised starch paste in bulk were prepared for the Chief Surveyor and Commissioner for Registration respectively. The Chief Surveyor submitted three samples of soil for moisture and specific gravity determination.

One hundred and five tins of "Anonfu" containing the poisonous insecticide parathion were hydrolysed to a less toxic substance before disposal.

Commercial samples included steel drillings for manganese and carbon content, chemicals, ores and soap. One chemical was found to contain a substance not specified on the label.

Micro Film

Out of 403 samples of micro film tested for residual hypo content for the Chief Surveyor, four samples were found to contain residual hypo.

Oils

The samples examined comprised anti-malaria oil from the Public Health Division and petroleum solvents from the Customs Department for classification in connection with revenue collecting.

TABLE 112

MISCELLANEOUS SECTION

DISTRIBUTION OF WORK 1960

Class of Work	SOURCE						
	Customs	Medical	Police	Other Depart-ments	Non-Official	Total Samples	Total Cases
General	5	1	..	8	11	25	..
Metals, Minerals and Chemicals ..	88	10	105	71	21	295	..
Micro-film ..	..	..	..	403	..	403	..
Oils	18	8	..	3	1	30	..
Total ..	111	19	105	485	33	753	..

REVENUE SECTION

The work described under this heading assisted the Customs and in the assessment of duty. A total of 5,745 liquor samples were submitted by the Customs Department for the determination of spirit strength and/or volume on which duty is based. Accurate analytical determination is therefore of the utmost importance. The constant examination on check samples submitted by the Customs Department has shown a high degree of accuracy of the analytical determinations.

European-type Liquors

The number of samples showed a slight increase over that for last year.

Apart from the determination of their spirit strengths and volume, they were checked for metallic contents and conformity with the Food and Drugs Regulations which specify spirit strength minima for brandy, whisky, rum, gin and sherry and an ester minimum for brandy.

On account of their low spirit strength or low ester content, fourteen samples of brandy were refused classifications as such and could only be classified as "Other Liquor" for duty purposes. Similarly one gin was classified as "Other Liquor" on account of its low spirit strength. One sample of sherry was also found to be under strength (below 30 per cent Proof Spirit) and could not be sold as sherry under the Food and Drugs Regulations.

In several cases where samples were found to contain either a maximum copper content or a minimum spirit strength permitted under the Food and Drugs Regulations, letters were written to the importers so that they could notify their suppliers of the fact.

Difficulty regarding the labelling of liquors was still being encountered. Frequently with liquors imported from America, American units of spirit strength, and volume were printed on the label. These units differ from the Imperial units used (One American quart is equivalent to 4/5 of the Imperial quart and 100 per cent American Proof is approximately 87 per cent British Proof). Such labels, therefore, were likely to be misleading to the public and the importers were informed.

Samsoo

There has been an increase of Chinese liquor samples, 3,941 compared with 3,053 for 1959. The increase was due to the import of a large number of a new type of liquor known as "Ginseng Wine". Each bottle of Ginseng Wine contains a Ginseng root which is said to preserve health, invigorate the system and prolong life.

Methylated Spirit

The number of samples of methylated spirit checked for adequate methylation has increased considerably.

Normally ten per cent of the total number of drums from a consignment was checked. But in three consignments of methylated spirit, insufficient methylation was detected in a few drums and all drums from each of the consignments had to be checked. Drums thus found inadequately methylated were denatured with kerosene or pyridine as the case may be.

Denaturation

There has been an increase in the total number of drums of alcohol denatured. One perfume manufacturer used more than twice the number of drums of denatured alcohol over last year.

The usual denaturants used to denature alcohol for perfume manufacture is five per cent essential oil or one per cent dimethylphthalate. However, the Federation Customs require as denaturants the addition of two per cent essential oil, one per cent dimethylphthalate and five per cent methyl alcohol. These drums were then required to be sealed after denaturation if they were to be sent to the Federation of Malaya. Similarly, if samples of methylated spirit from a consignment were found to be adequately denatured, the drums of methylated spirit must be sealed by a Chemist and certificates issued to that effect before these drums were allowed entry into the Federation.

A new denaturant was used to denature alcohol for use in the tobacco industry. The alcohol was denatured with tobacco dust (1 pound tobacco dust to every 6.3 Imperial gallon of alcohol).

Toddy

There has been a decrease in the number of toddy samples. The standard of these samples was lower when compared with that for last year. Only about half of the samples examined was classified as good, that is, pure fresh toddy.

Rubber Latex

Forty-one latex samples were submitted by the Collector of Federal Customs Duties, for the determination of dry rubber content and specific gravity.

TABLE 113

REVENUE SECTION

DISTRIBUTION OF WORK 1960

Class of Work	SOURCE						
	Customs	Medical	Police	Other Departments	Non-Official	Total Samples	Total Cases
Denaturation of Spirit	..	..	..	..	318	318	..
Liquors:							
European type ..	1,203	1	..	..	9	1,213	..
Samsoo ..	3,941	..	..	..	..	3,941	..
Toddy	101	..	..	..	..	101	..
Methylated Spirit ..	2,196	..	..	..	912	3,108	..
Rubber Latex ..	41	..	..	..	..	41	..
Total ..	7,482	1	..	..	1,239	8,722	..

TOXICOLOGY SECTION

The toxicology section was kept busy throughout the year as can be seen from the following table:

TABLE 114

NUMBER OF SAMPLES ANALYSED

	1958	1959	1960
Poisoning Cases (Exhibits and Specimens) ...	644	1,128	1,071
Urine for opium and metals	141	657	942
Urine and blood for alcohol	271	355	304

Poisoning Cases

As usual this comprised the largest amount of work carried out in this section. The poisons detected and examined covered a large variety of material as indicated in Table 115. Almost all of these were examined as a result of their having been used as a means of committing suicide or having been accidentally swallowed especially by children. Careful check was always maintained by this Department by analysing those organs in cases where the

cause of death was not immediately apparent or otherwise suspicious. Only one case which appeared to have evidence of such poisoning was met with when a quantity of barbiturate was detected in a stomach. The Chemist concerned with the analysis was an important witness in the court proceedings relating to this case.

Examinations of stomach washouts of patients who had swallowed, accidentally or otherwise, odd and unusual substances which were ineffectual, or generally never considered as poisons but nevertheless could be harmful were carried out. The type of substances encountered this year included matchstick heads, napthalene, gentian violet, sealing wax, iron powder, motor-car lubricating oil, powdered glass, "Brasso", carbon tetrachloride, compound tincture of benzoin and toilet water. Besides these unusual "poisons", other common household products met with were methyl salicylate, turpentine, kerosene, "Dettol", "Clorox", calamine lotion, "eusol", methylated spirit, soap and synthetic detergents. Among the detergents, one was found to be the cationic type which came from a hair shampoo.

However, in spite of the above, this year there was a larger proportion of the more sophisticated type of suicide drugs as seen by the number of cases involving barbiturates, non-barbiturate hypnotic like "doriden", "dormwell", "valamin" and other brominated ureides.

Following on last year's discovery that phenacetin in Chinese medicine was responsible for a number of cases of cyanosis in infants, further samples of medicine were analysed in connection with similar cases. A number of these was found to contain phenacetin.

There was also another sample of Chinese medicine which was suspected to have caused one day of blindness to a child of 9 years. When analysed this sample, which was labelled as containing aspirin, phenacetin and caffeine, was found to contain quinine instead of caffeine. It is believed action was immediately taken against this gross mislabelling of a drug.

Death from parathion was established in one case although this insecticide was banned from the State. In another case, the stomach of a deceased child was found to contain traces of p-nitrophenol, a product which could have come from the hydrolysis of parathion.

Other organo-phosphorous insecticides met with were the permitted malathion and diazinon. Although considered safe when used in normal agriculture practice, a few of the cases involving these were fatal.

Malathion was also detected in a sample of rice used to poison a neighbour's chicken. Fortunately, the rice was untouched, presumably because of the highly unpleasant odour of malathion.

Not so fortunate were two dogs, one of which was found dead following an attempted burglary at a house and the other died presumably due to malicious poisoning. On examination of their stomachs, strychnine was detected in each case. Pieces of meat tied with string were also found in the stomach of the former dog.

A specimen of goat's rumen contents was also received from Brunei. The goat died of symptoms similar to dicoumarol poisoning. On examination, traces of a substance of phenolic nature was detected. There was, however, insufficient confirmation that it was dicoumarol.

Another interesting case was one where a patient had taken durian and alcoholic liquor together and developed symptoms of vomitting and drowsiness. This seemed to bear out the local belief that it is dangerous to mix these two foodstuffs however delectable they may be. The stomach wash-out of this patient was found to have a strong and distinctive odour of durian and to contain alcohol.

One plant stem was identified by the Botanic Gardens as that of a Diffenbachia species which was a common decorative plant found in local gardens. The child who chewed this plant had swollen tongue and lips.

There were six cases of carbon monoxide poisoning. In one case where a woman was killed by an explosion from a kerosene stove her blood was found to contain 10 per cent carboxy-hæmoglobin. The other five cases were a group of people in a room who were overcome, fortunately not fatally, by gas from a leaking pipe.

An unusual examination was that of a tea-pot containing drinking water which the owner claimed to be smelling of urine. The presence of urine, apparently, added in for some vindictive reasons, was confirmed by analysis.

As seen from Table 115 on page 169 sodium hydroxide still continued to be the largest single group of poisons met with in toxicological analysis, although this was very much less in number than in the years prior to 1958 when there was no legislation on the sale of this commodity. The extreme physical anguish caused by sodium hydroxide both in fatal cases and even especially when non-fatal does were taken, and the general lack of knowledge of this effect especially among people who would choose to use this as a means of committing suicide, probably merits an even stricter control over its sale.

Table 115 also indicates a large number of cases with nil results in the analysis. This year, in addition to those cases where specimens were submitted in order to rule out any possibility of chemical poisoning, there was a large proportion of food poisoning cases submitted for the same reason. This unusual increase in food poisoning cases is believed to be due to an increased awareness among the public to seek medical attention whatever may be their complaints. Although this state of affairs would mean an increase in the number of those samples where a larger proportion of negative finding would result, the overall effect taken over a wider consideration is of course a commendable one.

Blood, Urine and Vomit for Alcohol

These specimens were analysed for ethyl alcohol content in order to assist the doctors in assessing the degree of drunkenness of their patients or the pathologists in their post-mortem examination in connection with a variety of circumstances like, disorderly conduct, fighting, traffic accidents, poisoning etc. Almost all the specimens were blood and urine which normally are the best specimens to provide a picture on the chemical aspects of drunkenness of the patient.

The total number of 304 specimens included four received from hospitals run by the Military Forces.

Clinical Specimens

The clinical specimens received and analysed totalling 942 in all, were distributed as follows:

TABLE 114

NUMBER OF CLINICAL SPECIMENS AND CASES

	Number of Specimens	Number of Cases
Opium alkaloids ...	870	870
Lead	57	47
Arsenic	11	8
Copper	2	1
Silver	1	1
"Saridon"	1	1
Total ...	942	928

As indicated in the table, the examination of specimens for opium alkaloids continued to form the largest group. Last year's figure for specimens for opium alkaloids was 539. These, as in previous years, were specimens of urine from patients of the Opium Treatment Centre whose examination was required to confirm whether or not they had recently been smoking opium. Out of the above 870 specimens, 509 were found to contain morphine or codeine or both.

All the other examinations were carried out on behalf of the General Hospital. In the case of examination for lead, significant amounts were found in 40 of the 57 specimens of urine. A number of these specimens was from patients whose occupation predisposed them towards lead poisoning, for example, printer and tinsmith etc. In one case, face powder was suspected to be the source of the poison but analysis showed it to contain 1 part per million lead.

Arsenic was looked for also mainly in urine specimens. Three specimens were stools in suspected food poisoning cases where however no arsenic was detected.

Copper was found to be present in the two specimens of urine from a patient suspected to be suffering from Wilson's disease.

Silver was looked for in a specimen of urine from a suspected agyria case. It was however found to be absent.

"Saridon" was suspected in another case. However, on analysis of the urine specimen only caffeine, one of the constituents of Saridon, was detected.

TABLE 115

SUBSTANCES FOUND AND NUMBER OF CASES

Acetarsol	1	Chloral hydrate	2
Acetic acid	1	Chloroquine	1
Aluminium hydroxide ...	1	Chlorphenyramine ...	1
Ammonium chloride ...	1	Cinnamon oil	1
Ammoniated mercury ...	2	Codeine	1
Amphetamine	1	Comp. Benzion Tint. ...	1
Antipyrine	2	Creosote	1
A.P.C.	7	Cresol	2
Arsenic	2	Cyclizine	1
Aspirin	3	D.D.T.	3
Barbiturates	32	D.D.T. and gammexane ...	6
Benadryl	3	Detergents	10
Bismuth carbonate ...	1	Dettol	5
Boric acid	1	Diazinon	1
Brasso	1	Diffenbachia species ...	1
Brominated ureides ...	13	Doriden	2
Caffeine	3	Dormwell	2
Calamine lotion ...	2	Ephedrine	3
Calcium carbonate ...	3	Ethyl alcohol	2
Calcium gluconate ...	1	Ethyl morphine	3
Camphor	4	Eucalyptus oil	7
Carbon monoxide ...	6	Eusol	1
Carbon tetrachloride ...	1	Flavin	1

TABLE 115—*continued*

Gammexane	5	Parathion	1
Gentian violet	1	Penicillin	3
Glass, powdered ...	1	Pethidine	1
Hydrochloric acid ...	3	Phenacetin	7
Hydroxyanthraquinone drugs	2	Phenergan	3
Hypochlorites	5	Phenolphthalein ...	3
Indian hemp	1	Phenols	5
Iodine and Iodide ...	3	Phenothiazine compounds ...	2
Iron (filing)	1	p-Nitrophenol	1
Iron sulphate	1	Potassium bromide ...	1
Iron gluconate	1	Potassium cyanide ...	1
Jeyes fluid	3	Promazine	1
Kerosene	8	Quinine	2
Largactil	1	Salicylic acid	13
Lead	1	Saridon	1
Lubricating oil	1	Sealing wax	1
Malathoin	6	Soap	10
Match heads	1	Sodium carbonate ...	9
Meprobamate	1	Sodium hydroxide and alkali	53
Mercury,m etallic ...	1	Strychnine	2
Methylated sirit ...	4	Sulpha drugs	4
Methyl salicylate ...	21	Theophylline	2
Morphine an dopium ...	7	Tuba resins	2
Naphthalene	2	Urine	1
Nikethimide	1	Valamin	2
No poisons detected ...	289	Zinc oxide	1

TOXICOLOGY SECTION

DISTRIBUTION OF WORK 1960

Class of Work	SOURCE						
	Customs	Medical	Police	Other Depart-ments	Non-Official	Total Samples	Total Cases
Blood and urine for alcohol	..	300	..	..	4	304	165
Poisoning cases:							
Exhibits ..	..	160	143	1	13	317	
Specimens ..	..	724	5	2	23	754	682
Clinical Specimens ..	..	942	..	..	..	942	..
Total ..	..	2,126	148	3	40	2,317	847

DANGEROUS AND HAZARDOUS MATERIALS SECTION

Enquiries from the Singapore Harbour Board regarding the classification of dangerous goods in transit through, or to be landed at the State of Singapore, showed a further increase, 115 compared with 81 for 1959.

Explosives

Eleven inspections of blasting explosive, detonators and fuses involving forty-one consignments to be landed in the State of Singapore were carried out on ships. Forty-four samples of commercial blasting explosives were taken for stability and exudation tests prescribed under the Arms and Explosives Ordinance. Two hundred and sixty-eight certificates permitting the landing of explosives (including fireworks) or the off-loading into lighters in the case of transit cargoes were issued.

Out of 118 samples of fireworks examined for the Arms and Explosives Branch, Police Department, 13 samples were found to contain chlorate and one sample was found to contain picric acid. Furthermore three out of these 14 samples contained explosive composition exceeding one-fifth of an ounce allowed under the Arms and Explosives (Explosives) Rules. One sample of rocket-type of fireworks containing chlorate was also labelled "Forbidden to be issued to person under 18 years". Chlorate and picric acid are prohibited ingredients under the above-mentioned rules, and the importation of fireworks containing such ingredients are prohibited into the State of Singapore.

On behalf of the Police Department, 27 inspections of explosive magazines (including one floating magazine) were made prior to renewal of licences.

Three inspections of sites on neighbouring islands for two new magazines were made on behalf of the Police. In connection with the storage of up to 50 tons of explosives, two sites were inspected. One was found to be unsuitable but the other was suitable provided the two houses on the island were demolished. The third inspection was in connection with the storage of up to 200 tons of explosives and the chosen site was found to be satisfactory. Comments on the plan for the magazine were also made.

Petroleum

This year the number of non-dangerous petroleum for flash point test again increased, from 876 for 1959 to 1,208 for 1960. The majority of the samples was from bulk shipment.

Under the Petroleum Ordinance, vessels which carry petroleum have to be certified gas-free by Chemists and Assistant Inspectors of Dangerous Materials, who are Inspectors under the Petroleum Ordinance, prior to repairs in the docks or within the limits of any port. These inspections of ships for freedom from inflammable petroleum vapour are done during and outside office hours and during holidays whenever requested by the shipping firms. The number of ship inspections carried out this year was approximately the same as that for last year.

Previously the Royal Navy made use of the departmental facilities for having their ships tested at the Naval Base prior to repairs although not statutorily required since the Naval Base dockyard is not a place declared to be a port under the Ordinance. Since October this year no inspection of naval vessels was carried at the Naval Base as this work was undertaken by their Dockyard Officers with the introduction of the Dockyard Laboratory. The number of ship inspections done for the Royal Navy was 20 compared with 59 in 1959.

There were fifteen occasions when ships were certified as not being gas-free.

Inspections of Premises

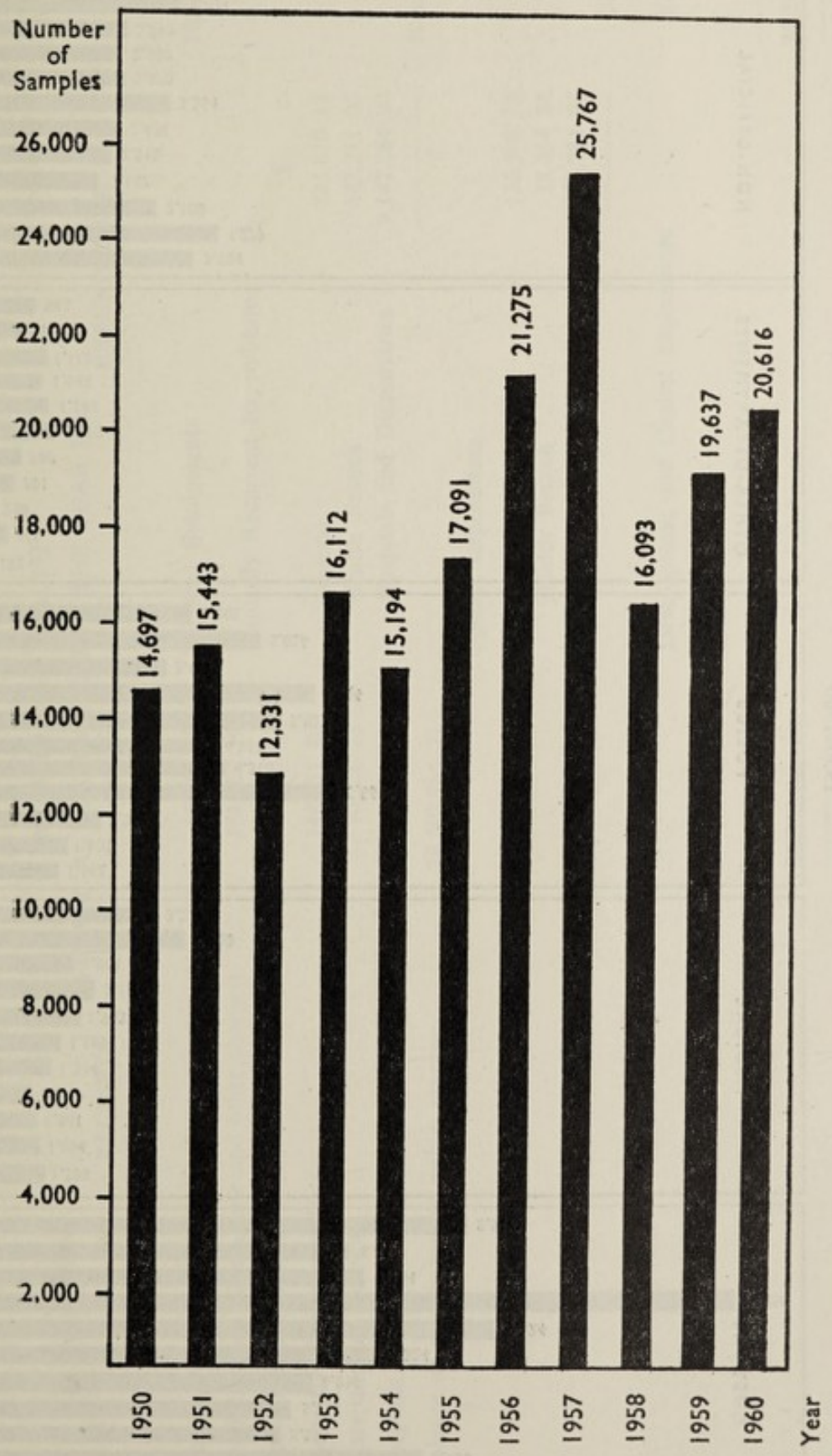
Three inspections were carried out during the year. One concerned the granulating room and the air-conditioned tablet room of the Government Medical Store. The sources of the emission of particles were found to be the mixer, the grinder and sieve and the rotary tablet machines and it was recommended that some form of enclosed or exhaust system be installed to reduce the particle hazards.

DANGEROUS AND HAZARDOUS MATERIALS SECTION

DISTRIBUTION OF WORK 1960

Class of Work	SOURCE						
	Customs	Medical	Police	Other Depart-ments	Non-Official	Total Samples	Total Cases
Explosives:							
Inspection ..	..	..	279	..	..	279	..
Industrial ..	..	..	..	..	44	44	..
Fireworks ..	..	..	118	..	..	118	..
Magazine ..	..	..	27	..	..	27	..
Petroleum:							
Flash-point tests ..	..	..	..	..	1,208	1,208	..
Ship inspections ..	..	..	..	..	862	862	..
Premises:							
Inspections ..	..	2	..	1	..	3	..
Total ..	..	2	424	1	2,114	2,541	..

TOTAL SAMPLES ANALYSED BY THE DEPARTMENT OF CHEMISTRY SINGAPORE
1950–1960



NUMBER OF SAMPLES FROM VARIOUS SOURCES ANALYSED BY THE DEPARTMENT OF CHEMISTRY, SINGAPORE
1950–1960

MINISTRY OF HEALTH

FINANCIAL STATEMENT FOR THE YEAR 1960

RECEIPTS

	$	c.
Licence Fees	16,410	00
Health Branch (Quarantine and other charges) ...	181,680	10
Medical Stores Sales	236,730	22
Chemistry Department Fees	144,251	80
Miscellaneous Receipts	70,926	73
Hospitals Bills (Fees, etc.)	1,310,677	64
Balance of cost borne by public revenue ...	28,592,765	71
	30,553,442	20

EXPENDITURE

	$	c.	$	c.
Personal Emoluments			18,829,248	93
Annually Recurrent Expenditure:				
General	823,810	13		
Health Branch	642,211	05		
Hospitals and Dispensaries ...	9,147,284	90		
			10,613,306	08
Special Expenditure:				
General	136,508	18		
Health Branch	15,054	34		
Hospitals and Dispensaries ...	153,784	86		
			305,347	38
Development and Capital Expenditure ...			805,539	81
			30,553,442	20

Patients waiting for Streptomycin injection. *Ministry of Culture*

Patient being seen by a Medical Officer. *Ministry of Culture*

Almoner interviewing a patient. *Ministry of Culture*

Post-operative patients exercising under supervision of the Physiotherapist.

Ministry of Culture

Laboratory Staff at work.

Ministry of Culture

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