



REPORT ON THE
HEALTH CONDITIONS IN
MADRAS STATE
1954

PRINTED BY THE SUPERINTENDENT
GOVERNMENT PRESS
MADRAS
1954

R

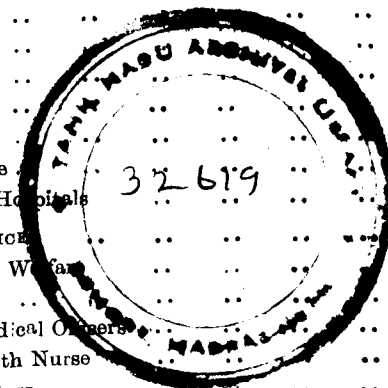
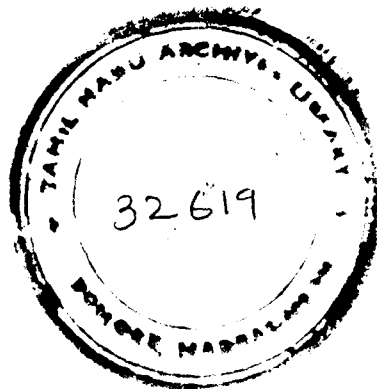
12.12.54

113

214

CONTENTS

	PAGES
CHAPTER I—VITAL STATISTICS	1-12
Population	1
Registration of Births and Deaths	1
Compilation of Births and Deaths Returns	4
Births	5
Births in districts	5
Births in municipalities	6
Births in census towns	6
Still-births	7
Deaths	7
Deaths in districts	8
Deaths in municipal towns	9
Deaths in census towns	10
Deaths by ages	10
Deaths by causes	11
General	12
CHAPTER II—COMMUNICABLE DISEASES CONTROL	12-41
Cholera	12
Dysentery and diarrhoea	15
Enteric fever	16
Smallpox and vaccination	16
Plague	19
Fever other than Malaria	22
Malaria	23
Filaria	33
Respiratory diseases	34
Tuberculosis	35
B.C.G. Vaccination	36
Leprosy	37
Veneral diseases	37
Yaws	38
Kala-Azar	38
Guinea-worm disease	40
Infectious Diseases Hospitals	41
CHAPTER III—HEALTH SERVICE	41-54
Maternity and Child Welfare	41
(1) Staff	42
(a) Women Medical Officers	43
(b) Public Health Nurse	43
(c) Health Visitors	43
(d) Maternity Assistants	43
(e) Other Staff	43
(2) Work done	43
(3) Health Visitors' Training School	43
(4) Finance	44
(5) Voluntary Organizations	44
(6) General	44



R,
L. 5. 8. 1. 7. 0. 5. 4
057

L. 5. 8. 1. 7. 0. 5. 4

244

	PAGES
(7) Assistance from UNICEF	45
(8) Infant mortality	45
(9) Maternal mortality	47
Industrial Hygiene	47
Residential and Industrial areas	48
Health, Education Propaganda and Publicity	48
Five-Year Plan, Community Projects and National Extension Service	51
Community Projects	51
Poonamallee Health Unit	52
Port and Marine Hygiene	54
CHAPTER IV—FOOD AND NUTRITION	54-66
Rainfall and Prices of Foodgrains	54
Nutrition	55
(1) Diet surveys	55
(2) Nutrition surveys	57
(3) Measures for combating malnutrition	58
(4) Laboratory Investigations	60
(5) Nutrition Education and Publicity	63
(6) Training of Personnel in Nutrition	63
(7) Other activities	64
Prevention of Food Adulteration	65
Hotel Sanitation	65
CHAPTER V.—ENVIRONMENTAL HYGIENE	66-70
Water-supply and drainage	66
National Water-supply and Sanitation Scheme	67
Rural and Urban Sanitation	67
Compost manufacture	68
Fairs and Festivals	68
Housing and building regulations	69
Water and Sewage Purification Committee	69
CHAPTER VI—GENERAL ADMINISTRATION	70-77
Staff and Personnel	70
Public Health Board	72
Orientation Training Centre, Poonamallee	73
Finance	76
CHAPTER VII—CONCLUDING REMARKS	77-78

CHARTS.

No. 1—Graph showing the trend of Birth and Death rates, 1944-54	80
No. 2—Graph showing the trend of Infant mortality rates, 1944-54	80
No. 3—Map of cholera mortality, 1954	81
No. 4—Deaths from cholera, 1945-54	82
No. 5—Deaths from dysentery and diarrhoea, 1945-54	83
No. 6—Map of smallpox mortality, 1954	84
No. 7—Deaths from smallpox, 1945-54	85
No. 8—Map of plague mortality, 1954	86

	PAGES
No. 9—Deaths from plague, 1945-54	87
No. 10—Deaths from respiratory diseases, 1945-54	88
No. 11—Deaths from fevers, 1945-54	89
No. 12—Infant mortality rates, 1945-54	90
No. 13—Maternal mortality rates, 1945-54	91
No. 14—Study of food supplements	92
No. 15—Malaria Organization Chart	93

ANNEXURES.

A. Statement showing births and deaths from detailed causes as per ages at deaths, in municipalities, with a population of 30,000 and above having Health Officers in the State in 1954	95-99
B. Statement showing live-births by months, sex and area in Madras State, 1954	100
C. Statement showing deaths by months, sex and area in Madras State, 1954	100
D. Statement showing the number of monthly village birth and returns due from each district and number not received for 1954	101
E. Still-births in districts exclusive of municipalities, in municipalities, and in districts inclusive of municipalities in 1954	101
F. Maternal deaths and death rates in municipalities, districts exclusive of municipalities and districts inclusive of municipalities in the State of Madras for the year 1954	102
G. Infantile deaths by age-groups in the municipalities in the State of Madras for 1954	102-103
H. Infantile deaths and death-rates in districts, exclusive and inclusive of municipalities in 1954	104
I. Malaria Control Schemes, 1954	105
J. Maternal and Child Health Services Outturn, 1954	106
K. Maternal and Child Health facilities 1954	107
L. Maternal and Child Health staff, 1954	108
M. Nutritive value of labouring prisoner's diet	109
N. Nutritive value of non-labouring prisoner's diet	110
O. Study of hostel diets	111
P. Analysis of food fishes	112
Q. Analysis of preserved foods	113
R. Average heights and weights according to age—Boys	114
S. Average heights and weights according to age—Girls	114
T. Statement showing the incidence of Leprosy in various districts of Madras State as per survey done by the State Leprosy Survey Unit, Vellore, during the year 1954	115
U. Statement showing the incidence of Leprosy in the Tirukkoyilur special Leprosy Control Scheme area as per survey done by the District Leprosy Survey Unit in Tirukkoyilur during the year 1954	115
V. Statement showing the number of cases of venereal diseases treated from 1st January to 31st December 1954 in the special Clinic in Madurai Municipality	116
W. Statement showing number of specimens examined in the Serological Laboratory of the Venereal Diseases Clinic in Madurai Municipality during 1954	117

	PAGES
X. (1) Loss of Vitamin 'C' due to various methods of cooking cabbage	118
(2) Loss of Vitamin 'C' in cooking Sweet Potato (white variety)	119
(3) Loss of Vitamin 'C' in cooking Radish (white)	120
(4) Vitamin 'C' in cooking Knol-Khol	121
Y. Health of minor ports, 1954	122-123

APPENDICES.

I. Births registered in districts and in the State during the year 1954	124-125
I-A. Still-births registered according to classes and sex in the municipalities in the State during the year 1954	126
II. Statement showing deaths registered in the districts in the State of Madras during the year 1954	127
III. Statement showing the deaths registered in the State of Madras during each month of the year 1954	128
IV. Deaths registered according to ages in the State of Madras during the year 1954	129-134
IV-A. Infantile deaths according to communities in the municipalities in the State of Madras during the year 1954	135-136
V. Deaths registered according to classes in the State of Madras during the year 1954	137
VI. Births and deaths from different causes registered in the State of Madras during the year 1954	138-165
VI-A. Deaths registered from certain causes in the municipalities of the State of Madras during the year 1954	166-169
VII. Deaths from cholera registered in the districts in the State of Madras during each month of the year 1954	170-171
VIII. Deaths from smallpox registered in the districts in the State of Madras during each month of the year 1954	172-173
IX. Deaths from fevers (excluding malaria) registered in the districts in the State of Madras during each month of the year 1954	174-175
IX-A. Deaths from malaria registered in the districts in the State of Madras during each month of the year 1954	176-177
X. Deaths from dysentery and diarrhoea registered in the districts in the State of Madras during each month of the year 1954	172-179
XI. Deaths from respiratory diseases registered in the districts in the State of Madras during each month of the year 1954	180-181
XII. Deaths from plague registered in the districts in the State of Madras during each month of the year 1953	182-183
XIII. Table showing the Health Services in rural and urban areas of the State of Madras during the year 1954	184
XIV. Statement showing the particulars of vaccinations in the Madras State for the calendar year 1954	185-192

REPORT ON THE HEALTH CONDITIONS IN
MADRAS STATE, 1954

CHAPTER I—VITAL STATISTICS.

POPULATION.

The extent of the present Madras State is 60,362 square miles and the population of the State as per 1951 census was 35,734,489. The mid-year estimated population of the State for 1954 was 37,314,000, the density of population being 618 per square mile. This estimate is based on the assumption that the population will increase during the decade 1951-1961 at the same average rate of increase each year as in the inter-census period 1941-1951. The vital statistics rates given in the report are calculated on the estimated populations unless otherwise stated.

There were 62 municipal towns including the City of Madras in the State with a population of 5,049,341 as per 1951 census. Areas which in the opinion of the Census Superintendent are sufficiently urban in character, have been declared as Census towns. The number of Census towns with a population of 5,000 and above was 213 with a total population of 2,706,361 as per 1951 census. The municipalities and the Census towns which have a population of over 5,000 have been taken as urban areas for vital statistics purposes. The rest of the State is considered as rural areas. As per 1951 census, the total urban population in the State was 7,755,702 and the rural population was 27,978,787 representing 21.7 and 78.3 per cent of the total population of the State. The estimated mid-year populations of the urban and rural areas of the State for 1954 are 8,452,000 and 28,862,000 respectively and the vital statistics recorded in these areas are referred to these populations.

REGISTRATION OF BIRTHS AND DEATHS.

The registration of births and deaths is compulsory in Madras City and in all the district municipalities. In the remaining areas of the State, registration is compulsory in those areas to which the Madras Registration of Births and Deaths Act (Madras Act III of 1899) has been extended. The Act III of 1899 has been extended practically throughout all the non-municipal areas of the State except for some zamindari areas and the hill tracts which form only a small proportion of the total area of the State. Even in these areas births and deaths are registered by the village headmen under the executive orders of the Revenue Department, although there is no legal obligation on the part of the public to register the vital events occurring in their households. The Act III of 1899 was extended to nine-villages in 1954.

The Madras Village Panchayats Act (Act XI of 1950) does not make the panchayats responsible for the registration of births and deaths occurring in their respective areas, although section 51 (h)

of the Act permits panchayats to incur expenditure on the registration of births and deaths. Such of those panchayats which want to undertake registration of births and deaths have to extend the relevant provisions of the Madras District Municipalities Act and the rules framed thereunder. At the end of 1954, fourteen panchayats have taken up birth and death registration work in their jurisdiction by this procedure.

How far the registration of births and deaths has been complete, has not so far been estimated on any scientific basis although the general opinion is that the recorded vital statistics are defective. There are however indications that the efficiency of registration of births and deaths after the World War II has suffered. For instance, the recorded birth and death rates in 1954 show that they have fallen to a great extent, as compared with average birth rate of 32.87 and death rate of 22.16 during 1939-43. This fall may be real or apparent or partly real and partly apparent. However it is not likely that the fall is wholly due to natural conditions. Defective registration and compilation of vital statistics might have contributed their share. As far as compilation is concerned, it might be said that there is very little deterioration, but in respect of defective registration it is difficult to assess its influence on the fall in the recorded birth and death rates. It is proposed to investigate this problem.

The percentages of unregistered births and deaths detected by the health staff to the total registered births and deaths in the State during 1944 to 1954 are given below :—

Year.	Percentage of unregistered births detected to total registered births.	Percentage of unregistered deaths detected to total registered deaths.
1944	1.72	1.19
1945	1.66	1.11
1946	1.38	0.73
1947	2.56	1.03
1948	2.36	1.44
1949	2.79	1.74
1950	2.14	1.21
1951	3.30	1.94
1952	3.23	1.73
1953	4.45	2.13
1954	4.51	2.35

The health staff have been devoting the same attention to the work of detecting unregistered events in all these years. These percentages therefore indicate that the defective registration is on the increase.

Correct birth and death records form the basis of many public health activities. They are also of value to all other administrative departments of the State and also to the individuals concerned to establish right to inherit property, to prove citizenship, etc. In view of the importance of vital statistics every effort should be made to improve the efficiency of registration. To improve registration in non-municipal areas the persons who fail to register

births and deaths as per the legal provisions should be prosecuted, so that it might have salutary effect on others. One of the routine duties of the health staff (Health Inspectors and Health Assistants) is to check up the birth and death registration in the villages visited by them, to detect unregistered births and deaths and get them registered. The defaulters are reported to the Tahsildars concerned for prosecution, as such power vests with them now. But the action taken by the Tahsildars does not serve as a deterrent as seen from the following statement :—

District.	Number of defaulters reported.	Number prosecuted.
South Arcot	5,796	567
Tiruchirappalli	2,372	668
Tirunelveli	2,907	85

It is therefore proposed that powers to prosecute these defaulters should be vested in the District Health Officers also. This is under the consideration of the Government.

Many Census towns have large populations and so the village headmen with their multifarious duties are unable to register efficiently all the births and deaths occurring therein. An extreme example is a Census town of Vikramasingapuram in Tirunelveli district with a population of about 33,000 (1954 mid-year estimated population) which consists of only one village. A single part-time Registrar will not be able to register efficiently the vital events occurring in such a large area. In order to improve the efficiency of births and deaths registration in Census towns, the bigger panchayats should take up registration and appoint full-time registers or registrar-cum-vaccinators to attend to births and deaths registration. In Ramnad district, 4 out of 11 panchayats have sent up proposals to take up birth and death registration during the year. It is hoped that other big panchayats will follow suit.

The question of registration of births and deaths occurring in the forest areas is still being examined. Although the number of births and deaths in forest areas will be few and far between, no vital events should escape registration altogether, especially if it be possible to arrange for registration.

During 1954, the district health staff detected 36,584 unregistered births and 6,303 unregistered deaths in the districts exclusive of municipalities, as against 35,389 unregistered births and 7,447 unregistered deaths detected in 1953. In municipal areas 7,879 unregistered births and 5,290 unregistered deaths were detected in municipalities in 1954 as against 7,978 unregistered births and 5,870 unregistered deaths detected in 1953.

Certain defects have been noticed in the working of the Madras Registration of Births and Deaths Act of 1899 and the rules framed thereunder. Under Section 6 of the Act a signboard has to be provided for the office of the Registrar of Births and Deaths. The District Health Officers have reported that they have not been put

up in many offices of the Registrars. The provision of the signboards besides satisfying the statutory requirements will educate the public regarding their obligation to register births and deaths. Any expenditure incurred in providing permanent signboards should be considered as money well spent.

Under rule 15 of the rules issued under the Act III of 1899, the registrars have to submit to the Tahsildars concerned on the 1st and the 15th of each month a list of defaulters for sanctioning prosecution against them. It is reported by some District Health Officers that such defaulters' lists are not generally being submitted by the registrars regularly. It is hoped that the Tahsildars will insist on submission of these lists by the registrars in future.

COMPILATION OF BIRTHS AND DEATHS RETURNS.

The births and deaths that occur during each month and year in each district and the State are being compiled from the monthly birth and death returns for the villages forwarded by the registrars through the Tahsildars concerned. As per instructions of this Department all the monthly birth and death returns relating to each taluk should be forwarded to me by the 8th of each succeeding month and such of the returns which could not be sent by the 8th should be forwarded by the 18th at the latest. But even by the end of the succeeding month when the vital statistics for the month are compiled, the birth and death returns from about 80 per cent of the villages alone are received. The arrear birth and death returns are not forwarded even six months after the month to which they relate even after several reminders to the Tahsildars. The annual vital statistics for 1954 were finalized in May 1955 and even then 3 per cent of the returns were not received as against 2 per cent in the previous year. Moreover, many arrear returns are being sent towards the close of the year when the attention of the District Collectors is specially drawn. This throws out of gear the work of compilation as the staff is provided to carry on only normal work. It is necessary that steps should be taken early after each month by the Tahsildars to obtain the arrear returns and forward them then and there so that the work of compilation could be uniformly spread over. Moreover, vital statistics compiled on the basis of incomplete returns or long after the period to which they relate, lose much of their value for the Health Department. Effective steps should be taken by the Revenue Department to see that the Tahsildars submit all the returns due for each month on the due dates. If the registrars failed to send the returns, the Collector should take steps under sub-section 18 (b) of the Act III of 1899, wherever the Act is in force.

The number and percentage of birth and death returns not received and therefore not included in the annual figures are given in Annexure D. The high proportion of arrears in the Nilgiris district (13.3 per cent) was due to the non-receipt of returns from the estates, from which the returns are not received promptly. The percentage of arrears in the other districts of South Arcot (8.9), Chingleput (4.4), North Arcot (3.7) and Ramanathapuram (3.6), is high and should be reduced.

BIRTHS.

The birth rates recorded in the State during the decade 1944 to 1953 and in 1954 are given below :—

Year.			Birth rate per 1,000 of mid-year estimated population.	Year.			Birth rate per 1,000 of mid-year estimated population.
1944	..	..	28.06	1950	..	..	29.89
1945	..	..	28.35	1951	..	..	26.93
1946	..	..	30.72	1952	..	..	29.56
1947	..	..	31.33	1953	..	..	26.45
1948	..	..	30.19	1954	..	..	26.39
1949	..	..	30.53				

The birth rate after hovering about 30 per mille from 1944 to 1950 has decreased to 26.39 in 1954. A straight line was fitted up to the observed birth rates during the decade (vide chart No. 1). Its equation is $y = 28.95 - 2.26 x$, the origin being 1949. The equation shows that there is very slight decline in the birth rate during the period.

The number of live births recorded in the State in 1954 was 984,827 (506,814 boys and 477,983 girls) giving a birth rate of 26.39 as compared with 26.45 in 1953. The birth rates corrected for the non-receipt of birth and death returns are 26.88 and 27.06 in 1953 and 1954 respectively. There has been little change in the registered birth rate in 1954 as compared with 1953, but it was however less than the average rate of 28.67 for the previous five years. There were 272,468 and 712,359 births in urban and rural areas respectively in 1954 giving birth rates of 32.24 and 24.68. These rates do not vary much as compared with the rates of 31.47 and 25.00 respectively in 1953. As usual the birth rate in urban areas was higher than that in rural areas.

The number of male births to every 100 female births was 106.0 in 1954 as against 105.7 in 1953.

Births in districts.—The number of births and the birth rates in each of the districts of the State in 1954 are given in Statement I of the Appendix. The birth rate varied from 22.44 in Coimbatore district to 33.77 in South Kanara district. The other districts with high birth rates were North Arcot (32.83) and the Nilgiris (32.39). The other districts with low rates were Malabar (22.93), Salem (23.42), Tiruchirappalli (23.59) and Tanjore (23.72). Compared with the birth rates recorded in 1953, the rates have increased in 8 districts and decreased in 5. But when compared to the average rates for the previous 5 years (1949 to 1953), the rates have decreased in 10 districts and increased in only 3 districts. The fall was large in Malabar district from the average rate of 32.45 to 22.93. The fall is not due to error in compilation as almost all the birth and death returns due from the district have been received. This large fall should therefore be investigated. The decrease in birth rates has also been large in Salem and Coimbatore districts as compared with the average rates.

The number of districts classified according to the recorded birth rates in 1953 and 1954 is given below :—

Birth-rates.	Number of districts.	
	1953.	1954.
20 and less than 25	5	5
25 and less than 30	6	5
30 and less than 35	1	3
35 and less than 40	1	..
	—	—
Total ..	13	13
	—	—

Births in municipalities.—The number of births registered in all the municipalities including Madras City was 207,225 (106,082 boys and 101,143 girls) in 1954 giving a birth rate of 37.39 as compared with 197,808 (101,542 boys and 96,266 girls) in 1953 giving a rate of 36.67. Births registered in each municipality with the corresponding birth rate are given in Statement VI of the Appendix. The distribution of municipalities according to the recorded birth rates in 1953 and 1954 is shown below :—

Birth-rates.	Number of municipalities.	
	1953.	1954.
15 and less than 20	1	2
20 and less than 30	12	7
30 and less than 40	27	28
40 and above	22	25
	—	—
Total ..	62	62
	—	—

The municipalities which recorded low birth rates in the year were Gobichettipalayam (19.91), Melapalayam (19.9), Cannanore (26.73), Rasipuram (27.40), and Bodinaickanur (27.50). Of these municipalities, Melapalayam (17.76), Gobichettipalayam (27.69), and Cannanore (25.20) recorded low rates in the previous year also. Registration in these and other towns which registered low rates should be improved. The municipalities which registered high birth rates were Mannargudy (57.06), Chingleput (53.41) and Palayamcottai (51.29). The high rates in these and other towns which recorded high rates were partly due to births among non-resident mothers. For example, in Mannargudy, the birth rate after excluding births among non-residents was 29.9 only. This difference could not be avoided as the registration and compilation of figures of births is now done according to place of occurrence and not according to place of residence.

Births in census towns.—The births registered in the Census towns in 1954 numbered 65,243 (34,089 boys and 31,154 girls) giving a birth rate of 22.42 as against 61,618 births with the birth rate of 21.63 in 1953. All the birth and death returns due from the Census towns were obtained after special effort made by the health staff. If the birth rate for 1953 is corrected for returns not received in that year, it will be 22.87. Compared with this correct rate a small reduction in 1954 is noticed.

Statement VI of the appendix gives the birth rates for each Census town of the State. The distribution of Census towns as per birth rates recorded in 1953 and 1954 is shown below :—

Birth-rates.	Number of census towns.	
	1953.	1954.
Below 10	17	13
10 and less than 15	25	20
15 and less than 20	39	53
20 and less than 30	91	80
30 and less than 40	29	35
40 and above	12	12
	—	—
Total ..	213	213
	—	—

Thirty-three Census towns (or about 15 per cent of the total number of Census towns) have recorded birth rates of less than 15 per mille. The low rates are partly due to defective registration and steps should be taken to rectify this avoidable defect as suggested in the previous paragraphs.

Still-births.—The number of still-births and the still-birth rates registered in the different areas of the State during 1953 and 1954 are given below :—

Area.	1953.			1954.		
	Number.	Rate per 1,000 live and still-births.		Number.	Rate per 1,000 live and still-births.	
(1)	(2)	(3)		(4)	(5)	
State	13,565	13.73		14,375	14.39	
Rural areas	4,099	5.70		4,177	5.83	
Urban areas	9,466	35.20		10,198	36.08	
Municipalities	8,315	40.34		9,190	43.47	
Census towns	1,151	18.54		1,008	15.21	

The still-birth rates in 1954 are a little higher than those in 1953 except in the census towns. The registered still-birth rates in rural areas is about one-sixth of that in urban areas. It is difficult to explain the low rate in rural areas in view of the fact that very little maternity services are available as compared with the urban areas. Defective registration of still-births in rural areas may be partly responsible for the low rates.

DEATHS.

The number of deaths and the death rates registered in the State during 1944 to 1954 are give below :—

Year.	Number of deaths.	Death-rate.
1944	795,760	24.43
1945	715,269	21.64
1946	591,162	17.63
1947	628,301	18.48
1948	585,581	16.99
1949	562,976	16.11
1950	681,373	19.24
1951	585,426	16.31
1952	565,015	15.54
1953	625,283	16.97
1954	502,001	13.45

A straight line was fitted up to the recorded death rates for the above period to show the trend and is exhibited in Chart No. I. The equation to the straight line is $y = 17.89 - 0.74 x$, where y represents the death rate and x the number of years, the origin being 1949. The fall in the death rate during 1944 to 1954 is about 0.74 per year, while the fall in the birth rate was only 0.26. If this should continue the excess of births over deaths will increase with the result that the population in the State will increase more rapidly than hitherto.

There were 502,021 deaths (255,759 males and 246,262 females) giving a death rate of 13.45 in 1954 as compared with 625,283 deaths (319,718 males and 305,565 females) in 1953 giving a death rate of 16.97. There is therefore a sharp fall in the death rate. The death rate corrected for non-receipt of returns on proportionate basis was 13.80 in 1954 as against 17.32 in 1953.

The sex ratio among deaths in 1954 was 103.9 males to 100 females as against 104.6 to 100 in 1954.

In urban areas 131,741 deaths were registered in 1954 and in rural areas 370,280 deaths. The death rates of 15.59 and 12.82 in urban and rural areas respectively register a large decrease from the rates of 19.77 and 16.13 respectively in 1953.

The distribution of deaths by months in each district in 1954 is given in Statement III of the appendix. The number of deaths recorded in each quarter of the year is abstracted below :—

1954.				Number of deaths.	Percentage to total.
First quarter	..	..	..	129,557	25.81
Second quarter	..	..	..	109,896	21.89
Third quarter	..	..	..	126,145	25.13
Fourth quarter	..	..	..	136,421	27.17
Total ..				502,021	100.00

As in 1953 the minimum number of deaths occurred in the second quarter and the maximum in the fourth.

Deaths in districts.—Statement II of the appendix gives the number of deaths and the death rate registered in each district for 1954 and the average death rate registered in the previous 5 years. The death rates ranged from 10.13 in Coimbatore district to 16.99 in Tiruchirappalli district.

The statement below gives the distribution of districts by death rates in 1953 and 1954 :—

Death-rates.				Number of districts.	
				1953.	1954.
10 and less than 15	..	..	..	6	11
15 and less than 20	..	..	..	7	2
Total ..				13	13

In consonance with the fall in the death rate in the State as a whole, the number of districts which registered death rates between 10 and 15 has almost doubled in 1954 as compared with 1953. In fact, the death rates recorded in all the districts have decreased in 1954 as compared with the rates in 1953. The decrease was large in the districts of Tirunelveli (7.59), Ramanathapuram (4.56) and Tanjore (4.33). The death rate recorded in each district was also less than the average rate for the district for the previous 5 years. The fall in the death rates in Tirunelveli district is most striking, it being nearly a third of the death rate in 1953. The death rates registered from the principal groups of causes in 1953 and 1954 in Tirunelveli district are shown below :—

Causes of deaths.				Death rate.	
				1953.	1954.
Cholera	..	..	..	1.54	0.09
Smallpox	..	..	..	0.29	0.03
Fevers	..	..	..	3.64	2.48
Malaria	..	..	..	0.04	0.02
Dysentery and Diarrhoea	..	..	..	1.74	0.98
Respiratory diseases	..	..	..	1.99	1.55
Other causes	..	..	..	14.24	10.74
Total ..				23.48	15.89

There has been a decrease in the death rate in all the causes listed above. Comparative freedom from cholera and smallpox and a large fall under "fevers" and "other causes" were responsible for the large reduction in the death rate in the district.

Deaths in municipal towns.—There were 101,249 deaths in 1954 giving a death rate of 18.27 as against 121,249 deaths with a death rate of 22.54 in 1953. In municipalities also there was a large fall in the death rate as compared with the previous year. The number of deaths and the death rate of each municipal town are given in Statement VI of the Appendix. The distribution of municipalities by the death rates in 1953 and 1954 is given below :—

Death rates.				Number of municipal towns.	
				1953.	1954.
Less than 15	..	..	..	11	21
15 and less than 20	..	..	..	28	29
20 and less than 30	..	..	..	22	11
30 and less than 35	..	..	..	1	1
Total ..				62	62

The municipalities which registered low death rates were Gobichettipalayam (7.97), Bodinaickanur (9.40), Mettupalayam (9.64), Ambur (10.42), Gudiyatham (10.46), Dharapuram (10.59) and Melapalayam (11.02). Of these, Gobichettipalayam (10.60) and Bodinaickanur (11.3) returned low rates in 1953 also. The causes for these comparatively low rates will be investigated. If it is due to defective registration, steps will be taken to improve it. The Mannargudi Municipality registered the highest death rate of 31.22.

Deaths in census towns.—The census towns recorded 30,492 deaths in 1954 giving a death rate of 10·40 as compared with 34,384 deaths in 1953 with a death rate of 12·07. The death rate in Census towns is low. This is probably due to defective registration.

The distribution of Census towns by the death rates in 1954 and 1953 is shown below :—

Death rates.	Number of census towns.	
	1953.	1954.
Less than 10	78	95
10 and less than 15	59	70
15 and less than 20	40	33
20 and less than 25	22	13
25 and less than 30	14	2
Total ..	213	213

The number of towns that registered death rates of 25 to 30 per mille has decreased from 14 in 1953 to 2 in 1954. Twenty-two towns registered low death rates of less than 5 per mille. Low rates were recorded in Tambaram in Chingleput district (1·6), Ottapalam in Malabar district (2·40), Senthamangalam in Salem district (2·80), Vettaikaranpudur in Coimbatore district (2·88) and Edappadi in Salem district (3·06). These incredibly low rates can only be ascribed to defective registration as the towns are not healthy resorts. It is necessary that immediate steps should be taken to improve the registration in Census towns. High death rates were recorded in Udayarpalayam in Tiruchirappalli district (28·45) and Palayampatti in Ramanathapuram district (25·85).

Deaths by ages.—The age composition of the population of the present Madras State is not available, as also for the composite Madras State. The Census authorities have however furnished the age distribution of a 10 per cent sample of the Census population of the composite State. Assuming that the age composition of the present Madras State will be the same as that of the sample population of the composite State, the populations by age groups of the present Madras State have been estimated and the age specific death rates have been calculated and given below :—

Age-group.	Estimated mid-year population.	Number of registered deaths.	Death rate.	
			1954.	1953.
Under 1 year	966,400	99,144	100·67 *	113·79 *
1 year and under 5 years	3,537,310	90,264	25·52	30·07
5 years and under 10 years	4,436,610	22,184	5·00	6·14
10 years and under 15 years	4,562,980	11,738	2·57	3·49
15 years and under 20 years	3,576,200	14,960	4·18	5·69
20 years and under 30 years	6,188,450	28,484	4·60	6·04
30 years and under 40 years	5,059,970	32,174	6·36	8·70
40 years and under 50 years	4,004,850	35,476	8·86	11·91
50 years and under 60 years	2,728,950	39,172	14·35	19·36
Over 60 years	2,252,330	128,425	57·02	74·93
Total ..	37,314,050	502,021	13·45	16·97

* Calculated on 1,000 live births.

It has already been stated that 3 per cent of the birth and death returns were not received in 1954 as against 2 per cent in 1953. But the correction due to the non-receipt of birth and death returns on proportionate basis will not seriously affect the rates. Compared with the age specific death rates in 1953, the rates in 1954

are less in all the age groups, the decrease being large in the age groups above 50 years. The age specific death rates exhibit the usual distribution. The death rate of 2·57 in the age group 10–15 years was the lowest. About 25·5 per cent of deaths was classified under the age group over 60 years.

Deaths by causes.—The following statement shows the number of deaths from the principal causes and the specific death rates recorded in the State in 1954 as compared with 1953.

Cause of deaths.	Number of deaths registered in		Death-rate.	
	1953.	1954.	1953.	1954.
Cholera	15,797	1,545	0·43	0·04
Smallpox	2,733	1,711	0·07	0·05
Plague	6	6	*	*
Malaria	2,279	1,981	0·06	0·05
Fevers other than malaria.	104,707	84,565	2·84	2·27
Dysentery and diarrhoea.	51,008	35,686	1·38	0·96
Respiratory diseases.	64,612	53,498	1·75	1·43
Deaths from child birth.	5,311	4,532	5·42 †	4·54 †
Injuries	7,852	7,124	0·21	0·19
Other causes	370,978	311,373	10·07	8·34
Total ..	625,283	502,021	16·97	13·45

* The rate is less than 0·01.

† Calculated on 1,000 live and still-births.

It will be evident from the statement that there has been an all-round reduction in the mortality from all causes of deaths except plague.

As in the previous year, 62 per cent of total deaths are classified under “other causes”. The details of these diseases causing this large proportion of deaths are not available and it is not possible to break down the figures in this group in view of the non-medical registrars employed in both rural and urban areas. In municipalities, however, qualified Sanitary Inspectors are employed and the causes of deaths are verified by them and registered under the guidance of the Health Officers. In order to study the health conditions in 39 municipalities with a population of 30,000 and above with Health Officers, the deaths were classified according to detailed causes and age groups. They have been compiled and tabulated in Annexure A. The analysis of 58,216 deaths that occurred in these municipalities in 1954 is available. Of these, the causes for 7,412 deaths (or 13 per cent of total deaths) are not known. Besides old age which was responsible for 7,451 deaths (or 13 per cent of the total deaths), the other important causes of deaths were convulsion (5,366 deaths), congenital malformation, malnutrition and prematurity (4,747 deaths), pneumonia (4,582 deaths), tuberculosis of lungs (3,108 deaths), dysentery (2,829 deaths) and diarrhoea (2,264 deaths).

GENERAL.

The salient features of the Vital Statistics recorded in the State during 1954 are :—

(1) A slight downward trend in the birth rates recorded during 1944 to 1954 although the birth rate of 26·39 in 1954 varied little from the birth rate of 26·45 in 1953.

(2) A decline in the death rates recorded in the decade 1945 to 1954 and a noticeable decline in the death rate from 16.97 in 1953 to 13.45 in 1954.

(3) A remarkable fall in the mortality from cholera and smallpox and all the other principal groups of diseases.

(4) A decrease of 13 points in the infant mortality rate from 113.79 in 1953 to 100.67 in 1954.

(5) A decrease in the maternal mortality rate from 5.42 in 1953 to 4.54 in 1954.

CHAPTER II—COMMUNICABLE DISEASES CONTROL.

CHOLERA.

The mortality from cholera in the State during the last five years as compiled from the birth and death returns, is given below :—

Year.						Number of deaths.	Death-rate per 1,000 of population.
1950	..	..	..	..	..	26,397	0.74
1951	..	..	..	..	..	12,717	0.35
1952	..	..	..	..	..	9,136	0.25
1953	..	..	..	..	..	15,797	0.43
1954	..	..	..	..	..	1,545	0.04

Compared with 1953, there was considerable fall in the number of deaths from cholera in 1954, the number of cholera deaths being nearly one-tenth of that in the previous year. The number of deaths from cholera registered in each district during each month of the year is given in statement VII of the Appendix. It will be seen therefrom that nearly 91 per cent of deaths from cholera occurred in January and February and that the four districts of Tanjore, Tirunelveli, Tiruchirappalli and South Arcot alone accounted for nearly two-thirds of the mortality.

There were 293 deaths from cholera in 1954 in the municipal areas including Madras giving a death rate of 0.05, as against 2,631 deaths with a rate of 0.49 in 1953. The municipalities that recorded high mortality were Palayamkottai (51 deaths), Tanjore (42) and Salem (26).

In the census towns with a population of 5,000 and above, only 108 deaths from cholera were recorded giving a rate of 0.04 in 1954 as against 1,171 deaths with a rate of 0.41 in 1953.

The rural areas in the State exclusive of municipalities and census towns registered 1,144 deaths representing a rate of 0.04 in 1954 as compared with 11,995 deaths with a rate of 0.43 in 1953.

As reported by Health Officers there were 4,365 attacks and 2,062 deaths from cholera during the year, as against 45,240 attacks and 21,484 deaths recorded during the previous year. The mortality furnished by Health Officers differs from that compiled from the birth and death returns for two reasons. The health staff visit villages affected with cholera and detect deaths from cholera, but they are not evidently registered in the death registers. It is also likely that deaths from cholera might have been classified as due to dysentery and diarrhoea by the registrars.

The severe epidemic of cholera which prevailed in the State in the year 1953, continued with less severity in the first quarter of the year. The infection during the month of January was comparatively heavier. It was however, brought under control by March, and from April the State was practically free from infection except for stray cases which occurred in Chingleput, Madurai, Ramanathapuram and Tirunelveli districts. In December an increase in incidence was noticed on account of infection reported from Tiruchirappalli and Coimbatore districts.

During the year, the incidence recorded in the month of January was the heaviest with 2,483 attacks and 1,367 deaths. Out of this, Tanjore district recorded the highest incidence with 582 attacks and 376 deaths, and Coimbatore district lowest with 2 attacks and 1 death. The other districts which were severely affected were Tirunelveli, South Arcot, Madurai, Ramanathapuram, Tiruchirappalli, Chingleput, Salem and North Arcot. Madras City recorded 35 attacks and 4 deaths and Malabar district only 7 attacks and 6 deaths. The districts of the Nilgiris, and South Kanara were free from infection. In the month of February the infection continued with less severity in most of the affected districts except Malabar district which was free during the month. Madurai district recorded the highest number of cases with 258 attacks and 89 deaths and Madras City the lowest with 3 attacks and nil deaths. In the month of March the infection further declined from 992 attacks and 454 deaths in February to only 253 attacks and 136 deaths. During this month also Madurai district recorded the highest incidence with 139 attacks and 58 deaths. Tanjore district came next with 47 attacks and 32 deaths. The other districts of South Arcot, Tiruchirappalli, Ramanathapuram, Tirunelveli, North Arcot, Salem and Coimbatore reported only stray cases. The districts of Chingleput, the Nilgiris, South Kanara and Malabar and Madras City were free.

In the month of April, only 38 attacks and 26 deaths occurred, out of which Tirunelveli alone recorded 33 attacks and 22 deaths. The districts of Madurai and Ramanathapuram each recorded 2 attacks and 2 deaths and the district of Chingleput only one attack. The other districts were completely free.

During the months from May to November, the State was practically free from infection, two or three districts reporting stray cases. In the month of December, an increase in the incidence was recorded due to infection in the districts of Tiruchirappalli and Coimbatore. Eighteen villages in Bhavani and Erode taluks of Coimbatore district were infected and 210 attacks and 71 deaths were reported. The infected villages were inspected and necessary instructions issued to the Public Health staff to carry out control measures. Prompt and vigorous measures adopted in the infected villages brought the infection under control quickly. In Tiruchirappalli district 43 attacks and 27 deaths were recorded. As a precautionary measure, the Regional Malariologist, Tanjore, was put in additional charge of cholera work in the district, to ward off further spread of infection, especially on account of the impending Vaikunta Ekadasi festival at Srirangam.

A special feature of the prevalence of cholera during the year was that except for the severe infection in the first quarter of the year which was only a continuation of the epidemic which started in 1953, there was no prevalence of the usual autumn-winter epidemic as in the previous years. Another noticeable feature was that the groundnut harvest season in Pollachi, Udumalpet and Coimbatore taluks in Coimbatore district passed off without any incidence of cholera as it used to be in the previous years. There was also no outbreak of epidemics even during the usual transplantation and harvest seasons in the State. The above facts are mainly due to the intensive inoculation campaigns conducted in the year 1953 and also to the timely precautionary measures adopted in the deltaic and other vulnerable areas by concentration of special Health Inspectors for carrying out anticipatory inoculations during the year.

To meet the situation, effective and prompt control measures were taken by the health staff. On account of the comparatively heavy infection in the first quarter of the year, in addition to the permanent and temporary and leave reserve of Health Inspectors, 32 posts of Health Inspectors were sanctioned up to 17th May 1954 exclusively for cholera control work. Another batch of 15 Health Inspectors was also sanctioned up to 31st March 1954 to serve as famine reserve for cholera duty in the areas affected with food and water scarcity conditions. The epidemic reserves were utilised in the cholera affected areas as and when necessity arose with a view to augment the cholera staff appointed by the local bodies.

In addition to the posting of special Health Inspectors, three mobile epidemic control vans and the departmental jeeps and also the Madras Fire Service vans for a short period, were detailed for cholera control work in the affected villages. The vans were used for transporting patients from infected places to the nearest isolation sheds for affording necessary treatment and for conveying staff and equipment, etc., to the infected villages.

Besides the inoculation campaigns carried out in the infected areas, chlorination of water sources was also done by the employment of cholera overseers and mazdoors. Necessary disinfectants, appliances, and other medicines were stocked and used as and when necessary. Saline transfusion was used for treatment of cases. Regular and intensive disinfection of infected houses, materials, etc., was done. Wide publicity was given to precautionary measures to be adopted by the public by means of posters, hand bills and beat of tom-tom during the epidemic. Rice donated by UNICEF was also distributed free to the patients and contacts in certain infected villages.

About 1,258,300 persons were inoculated against cholera, as against seven million persons inoculated in the previous year. The decrease in the number of inoculations performed is due to the absence of any severe epidemic of cholera during the year.

It is not an exaggeration to say that due to the very intensive and effective preventive and control measures taken by the public health staff, the State was free from any severe epidemic during the year.

DYSENTERY AND DIARRHOEA.

The number of deaths from dysentery and diarrhoea recorded during the period 1944 to 1954 and the death rates are given in the following statement:—

Year.	Number of deaths from dysentery and diarrhoea.	Death-rate per 1,000 of population.
1944	60,506	1.86
1945	48,668	1.47
1946	39,278	1.17
1947	46,715	1.37
1948	37,518	1.09
1949	35,498	1.02
1950	52,165	1.47
1951	46,638	1.30
1952	50,936	1.40
1953	51,008	1.38
1954	35,686	0.96

The recorded mortality rates from these diseases during the period 1944 to 1954 show that they fluctuate little about the average rate of 1.32. The equation of straight line fitted up to the death rates $Y = -0.036 X + 1.317$, shows that the death rates from these diseases have practically remained stationary.

Although there has been no change during the past decade, the number of deaths from this group of diseases has decreased from 51,008 in 1953 with a rate of 1.38 to 35,686 in 1954 with a rate of 0.96. These diseases caused 7.1 per cent of the total number of deaths in 1954 as against 8.2 per cent in 1953. The mortality decreased gradually from January, reached the minimum in April and again increased till it reached a second peak in December. The seasonal variation has followed the same pattern as in the previous year, unlike deaths from cholera which showed no winter peak.

In the urban areas there were 13,089 deaths from this group of diseases giving a death rate of 1.55 in 1954 as against 1.86 in 1953. In rural areas, 22,597 deaths were registered as against 35,778 in the previous year, the death rates being 1.07 and 1.25 respectively. There has been a decrease in the mortality in both rural and urban areas as compared with the previous year.

The number of deaths from these diseases recorded in each District during each month and the annual death rates for each district are given in Statement X of the Appendix. The death rates varied from 1.33 in Chingleput district to 0.57 in Malabar district. The death rates in all the districts were less than those of the average death rates for the previous five years.

In the municipal areas there were 10,798 deaths from dysentery and diarrhoea representing a rate of 1.95 in 1954, as compared with 12,705 deaths with a rate of 2.36 in 1953. The towns that returned high rates were Sivakasi (3.85), Chingleput (3.37), Mannargudi (3.31), Periyakulam (3.21), Tiruvallur (3.20) and Aruppukottai (3.13).

In the census towns with a population of 5,000 and above 2,291 deaths from these diseases were recorded giving a rate of 0.79 in 1954 as against 2,525 deaths with a rate of 0.89 in 1953.

ENTERIC FEVER.

Statistics regarding prevalence of enteric fever are not available for the non-municipal areas. The number of deaths from enteric fever that occurred in municipal areas alone are separately registered and compiled. During 1954 there were 1,034 deaths from this disease in all municipalities including Madras City, giving a death rate of 0.19, as against 1,106 deaths in 1953 with a death rate of 0.21. The municipalities that recorded high death rates were Tellicherry (0.61), Nagapattinam (0.46), Kozhikode and Dindigul (0.40 each), Palghat (0.39) and Mangalore (0.37). Necessary preventive measures such as inoculation, disinfection, chlorination of water supplies, etc., were adopted as soon as the occurrence of enteric fever cases were brought to the notice of the health staff.

SMALLPOX AND VACCINATION.

The number of registered deaths from smallpox and the death rates per 1,000 of population in the State during the period 1944 to 1954 are shown in the following table:—

Year.	Number of deaths from smallpox.	Rate per 1,000 of population.
1944	11,733	0.36
1945	12,772	0.39
1946	3,934	0.12
1947	1,510	0.04
1948	2,002	0.06
1949	1,660	0.05
1950	7,638	0.22
1951	8,518	0.24
1952	2,508	0.07
1953	2,733	0.07
1954	1,711	0.05

An examination of the above figures reveals that the mortality from smallpox after decreasing from 1944 and 1945 to a low figure of 1,510 in 1947, was more or less stationary up to 1949. It then increased considerably in 1950 and 1951 and has again declined to the low figure of 1,711 in 1954. The disease was comparatively mild during the past decade except for the epidemic years 1944-1945 and 1950-1951.

The total number of deaths compiled from the monthly birth and death returns received from the Tahsildars has decreased from 2,733 in 1953 with a rate of 0.07 to 1,711 giving a death rate of 0.05 in 1954. As per the daily reports received from the Health Officers, there were 4,591 attacks and 1,149 deaths in 1954 as against 3,119 attacks and 788 deaths in 1953. The mortality figures compiled from the daily reports received from the Health Officers for the State as a whole and for some of the districts are very much

less than those compiled from the birth and death returns. This is partly due to the fact that the village headmen do not send the daily reports in respect of all smallpox cases.

Sporadic cases of smallpox were reported from all districts, except Malabar district and the Madras City where it was prevalent in a mild form. The incidence was high in the districts of Madurai, Tiruchirappalli and Chingleput. Stray cases were reported from the Nilgiris and South Kanara districts. Statement VIII of the Appendix gives the number of monthly deaths from smallpox recorded in each district, the annual deaths and the death rates. All the districts recorded death rates less than the average rates for the previous five years except in Malabar where it was about the average.

The incidence was high in the first quarter owing to the prevalence of mild epidemic in Malabar, Tiruchirappalli and Chingleput districts and in Madras City. During the second and the third quarters stray cases were reported, while in the last quarter there was a slight increase in the incidence owing to the mild prevalence of the disease in Malabar, Madurai and Tiruchirappalli districts.

The distribution of deaths from smallpox as per broad age groups is as follows:—

Age group.	Number of deaths from smallpox.
Under one year	416
One year to 10 years	605
10 years and above	690
Total	1,711

Sixty per cent of total deaths from smallpox were in children under 10 years.

In rural areas, the mortality from the disease has considerably decreased from 2,254 in 1953 with a rate of 0.08 to 933 in 1954 with a rate of 0.03. There were 778 deaths from smallpox in urban areas in 1954 as compared with 479 deaths in 1953, the rates being 0.09 and 0.06 respectively. Out of 778 deaths recorded in 1954 in urban areas, 578 occurred in municipal areas representing death rates of 0.10 as against 253 deaths in 1953 giving a rate of 0.05. In the census towns with a population of 5,000 and above, there were 200 deaths from smallpox in 1954, the death rate being 0.07 as against the death rate of 0.08 in 1953.

The usual preventive and control measures were adopted against smallpox. Wherever possible, the patients were isolated. Generally preliminary census of all unprotected cases and unprotected persons was taken in the infected villages and this was followed up by intensive mass vaccination. All contacts including under-age children and those exposed to risks of infection were protected against smallpox. Additional Health Assistants and Special Health Inspectors were appointed for varying periods according to the necessity of the situation to combat the infection in the infected villages and also to reduce the pendency of unprotected cases. Besides routine vaccination, disinfection was carried out and mil-

18 REPORT ON THE HEALTH CONDITIONS IN MADRAS STATE, 1954

propaganda on smallpox and its preventive measures was also done in the infected places by magic lantern lectures, talks and distribution of leaflets. Every care was taken to verify vaccinated cases immediately and secondary vaccination was done where primary vaccination was not successful.

There was shortage of qualified vaccination staff during 1954 also and trained Health Assistants were continued in service to meet the emergency.

Vaccination.—The number of persons vaccinated during 1954 was 5,214,753 as against 4,541,274 in 1953. The percentage of persons vaccinated to the estimated mid-year population was 14.0 in 1954 as compared with 12.3 in 1953.

The number of vaccination operations performed during 1954 in different areas as compared with 1953 is shown below :—

Area.	Primary vaccination.		Re-vaccination.	
	1953.	1954.	1953.	1954.
Districts exclusive of municipal areas.	992,393	1,029,476	2,635,073	2,923,436
Poonamallee Health Unit.	2,471	2,197	10,364	10,662
Municipal areas ..	182,465	194,800	694,296	1,063,450
Railways	956	1,268	4,558	6,052
Ports and Medical Institutions.	2,302	14	55,303	32,688
Total ..	1,180,587	1,227,555	3,400,194	4,036,288

Compared with the previous year there has therefore been an increase in the total number of primary and revaccinations done in 1954. The number of operations done in the districts, municipal areas and the railways in 1954 is more than that in 1953, while it was a little less in Poonamallee Health Unit area. In ports and medical institutions there has been a large decrease.

The following statement shows the number of successful operations performed by the different agencies and percentage of successful operations to total operations for which results were known :—

Agency.	Number of successful vaccination operations.		Percentage of successful to total number of operations for which results are known.	
	Primary.	Re-vaccination.	Primary.	Re-vaccination.
Districts exclusive of municipal areas (local boards.)	753,879	231,723	96.5	14.0
Municipalities ..	186,742	100,189	99.4	12.1
Poonamallee Health Unit (Government).	1,912	1,282	95.5	15.7
Medical Institutions and Ports.	9	22,826	75.0	77.2
Railways ..	1,220	1,131	99.2	22.4
Total ..	943,762	357,151	97.1	14.1

The success rate for primary vaccination was very high in respect of operations done by all agencies, although it was comparatively low in medical institutions and ports. It was low in respect of re-

vaccinations performed by all except medical institutions and ports where it was high. Probably this might have been due to the fact of reactions of immunity being noted as success.

The routine vaccination work was suspended for two months in May and June in all the areas where smallpox was not in an epidemic form. This period was fully utilized by the Public Health staff for detection of vital events which escaped registration. Besides this, the work of preparation of unprotected person registers and bringing the unprotected cases registers up-to-date, was also attended to by them. Omissions in the registration of vital events were reported to the Revenue authorities for necessary action.

The posts of Additional Health Inspector, Saidapet range, and his peon were continued during the year for testing the potency of vaccine lymph before its despatch to the field health staff. The scheme worked satisfactorily.

A programme of effective immunisation by vaccination was suggested to the Health Officers for being carried out in their areas. The object of the programme is to secure effective re-vaccination by re-vaccinating all the persons in each village. One-tenth of the number of villages in the district will be selected and covered in a year. Another tenth of the villages will be selected in the second year and so on. Thus all persons in the district will be re-vaccinated within a period of ten years. Vaccination and re-vaccination will be conducted during all the months of the working season. Two supplies of vaccine lymph every month would be devoted exclusively to the conducting of primary vaccination and the other two supplies to conduct mass re-vaccination in the selected villages. The Health Officers were instructed to prepare fixed programmes on the basis of this new schemes for being worked out in the year 1955.

PLAGUE.

During the period there were 8 attacks and 6 deaths from plague in the State, all of which occurred in 4 villages in Hosur taluk, Salem district, as compared with 9 attacks and 6 deaths in 1953 reported from the same taluk. The other districts were free from human plague. The distribution of the plague incidence in the different quarters is given below :—

	Quarter.			Attack.	Death.
	I	II	III	IV	
I	..	..	..	2	2
II	..	..	..	5	3
III	..	..	..	1	1
IV	..	..	..	..	..
				8	6

Plague was occurring off and on in Hosur taluk, Salem district during 1953. During the current year, plague broke out in 4 villages (Dasirapally, Hosapuram, Bodasandiram and Tommasandiram) on 10th January 1954, 18th March 1954, 4th May 1954 and 22nd July 1954, respectively with 5 attacks and 3 deaths in the 3rd village and 1 attack and 1 death each in the other three villages. These villages are situated far apart from one another and

were previously treated with DDT 7 to 15 months before plague actually broke out in them. In all these villages human infection was preceded by rat falls. The source of infection could not be determined in any of the cases. Immediately after the report of infection, all the houses in the infected villages were sprayed with 2½ per cent DDT suspension, followed by insuflation of rat burrows and rat harbourages with 10 per cent DDT powder. Three thousand and thirty-five people in the infected and adjacent villages were inoculated against plague. Fresh cases did not occur in any of these villages after the preventive measures were carried out. The last attack of plague was on 31st July 1954 and since then the State has been free. All the villages in the neighbourhood of the infected villages were also treated with DDT as a precautionary measure and plague did not occur in any of them. Additional staff has been appointed in Hosur taluk since these outbreaks and more villages are now under anti-plague measures.

Rat falls occurred in one of the houses in the Mulky panchayat in South Kanara district during the month of April. This district was free from plague for many years previously. The smears of dead rats from this house showed plague organisms. Anti-plague measures were immediately organized and the whole village was sprayed with 5 per cent DDT suspension in the course of a week. No human case of plague occurred.

Stray cases of rat falls occurred in two villages in Coimbatore taluk in October and November 1954. Dead rats were not available for examination of smears. However, prompt anti-plague measures were undertaken. No human plague occurred in any of these places.

A fairly severe outbreak of plague occurred in the villages in Kuppam range in Palmaner taluk in Chittoor district in Andhra State from August to December 1954. Immediately anti-plague measures were carried out in the villages of Tiruppattur taluk of North Arcot district adjoining the infected villages. Plague did not occur in any of the villages.

Plague control measures in the State.—Anti-plague measures by the use of DDT treatment are being carried out as an 'off-season' measure on an intensive scale in all the plague endemic areas of the State since 1952. All the villages are given one round of DDT treatment at least once a year regularly. Twenty-one Health Inspectors and 67 DDT treatment units are working throughout the year carrying out anti-plague measures in the endemic areas of the Nilgiris district, Hosur taluk of Salem district, Kollegal and Sathyamangalam taluks of Coimbatore district and in the municipalities of Ootacamund, Coonoor, Coimbatore, Pollachi, Tiruppur and Udumalpet. The staff are working directly under the control of the Health Officers concerned, but the Special Plague Officer periodically visits all these areas and supervises the anti-plague measures and gives proper training to the field staff. Rat falls surveys are regularly carried out in these endemic areas under control to assess the results of the control programme. It has been found that in the areas under control, the general files

index even after one year of DDT treatment is one or less, which is considered too low for possible outbreak of plague in these controlled areas. The districts of Coimbatore and Nilgiris, where plague was occurring regularly for the past several years, have been free from plague continuously for the past three years. The details of anti-plague work carried out during the year in the different areas are given in the following table :—

(1) Number of plague endemic areas in the State	..	9
(2) Number of infected village units where anti-plague measures were carried out.	..	4
(3) Number of uninfected but endemic village units where 'off-season' anti-plague measures were carried out.	..	1,568
(4) Number of houses treated with DDT.	..	174,813
(5) Number of rodent burrows treated	..	923,973
(6) Number of cracks and crevices treated.	..	88,643
(7) Number of other rodent harbourages treated.	..	30,242
(8) Quantity of 10 per cent DDT powder used.	..	30,362 lb.
(9) Quantity of 50 per cent DDT wettable powder used.	..	18,930 lb.
(10) Number of shops where block fumigation was carried out with cyanogas.	..	2,145
(11) Quantity of cyanogas used	.. ..	611 lb.
(12) Number of rodents destroyed	.. ..	34,608
(13) Number of rodents examined	.. ..	7,575
(14) Number of plague-infected rodents.	..	2
(15) Number of anti-plague inoculations	..	5,230

Training in plague work was given by the Special Plague Officer to some Health Officers and Entomological Assistants during their course of training in malariology in the Central Malaria Laboratory. Special lectures on plague and its control were given by him to the trainees in the Orientation Training Centre at Poonamallee.

A rat flea survey was carried out in the Madras Port and in the adjoining Georgetown area in November and December 1954. The previous survey was done during December 1929 to January 1930. It has been found that the rat density in the harbour was low (20.1) when compared to that in the Georgetown area which was 86.5. Similarly, the general flea index in the harbour was also very low (0.41) while that in the Georgetown area was fairly high (3.33). The cheopis indices in both the places were extremely low 0.08 and 0.01 respectively. There was a higher preponderance of *X. cheopis* in the harbour area (20.7 per cent), while that in the Georgetown area was very low (0.2 per cent). The rat density, the general and specific flea indices and cheopis infestation in the two places surveyed have not shown any increase since the previous survey done 25 years ago. None of the rodents examined showed any signs of acute or chronic plague.

Plague regulations under the Indian Epidemic Diseases Act, 1897, have been amplified and issued.

FEVERS OTHER THAN MALARIA.

The mortality from fevers other than malaria registered during the quinquennium 1950 to 1954 and the mortality rates are given below :—

Year.	Number of deaths from fevers other than malaria.	Death-rate per thousand of population.
1950	117,384	3.31
1951	100,158	2.79
1952	84,782	2.33
1953	104,707	2.84
1954	84,565	2.27

The fever death rates during the past five years show downward trend except for the year 1953. As compared with the previous year there has been a large fall in the number of deaths recorded under this group of diseases, the mortality rate decreasing from 2.84 in 1953 to 2.27 in 1954. The fever deaths other than that due to malaria accounted for 16.9 per cent of the total number of deaths in the State in 1954 as against 16.7 per cent in 1953.

In urban areas there were 14,459 deaths from fevers other than malaria giving a death rate of 1.71 in 1954, as against 17,475 in 1953 with a death rate of 2.12. In rural areas, 70,106 deaths were recorded in 1954 representing a rate of 2.43 in 1954 as compared with 87,232 deaths in 1953 giving a rate of 3.05. Both in the urban and rural areas there has been a reduction in the mortality. As usual, the death rate in the rural areas was higher than that in the urban areas. The pattern of seasonal variation was the same as in the previous year the minimum being recorded in April and the maximum in November.

Statement IX of the Appendix gives the monthly and annual number of deaths recorded in each district during 1954 as also the annual death rates compared with the average for the previous five years. The death rate from this group of diseases varied from 3.34 in Ramanathapuram district and 3.03 in North Arcot district to 1.37 in Malabar district and 1.24 in Tanjore district. Compared with the quinquennial average death rate, the death rate recorded in each of the districts was less than the average rate, the decrease being large in the districts of Chingleput, South Kanara, Coimbatore and Malabar.

In municipal areas there were 8,494 deaths from fevers other than malaria in 1954 as against 10,832 in 1953 representing death rates of 1.53 and 2.00 respectively. The municipalities that recorded high mortality rates were Aruppukottai (4.76), Rasipuram (3.32), Walajapet (3.23) and Sivakasi (3.08).

In the census towns with a population of 5,000 and above, the mortality from this cause has decreased from 6.643 in 1953 to 4.065 in 1954, the death rates being 2.33 and 2.05 respectively.

MALARIA.

The following statement shows the number of deaths from malaria and the death rates recorded during the period 1950 to 1954 :—

Year.	Number of deaths from malaria.	Death-rate per 1,000 of population.
1950	3,103	0.09
1951	2,561	0.07
1952	3,131	0.09
1953	2,279	0.06
1954	1,981	0.05

The recorded mortality rates tend to decrease. But it is difficult to accept this statement in view of the fact that the diagnosis of malaria deaths by the lay personnel employed for registration of deaths in rural areas is not dependable. The deaths from malaria and the death rates recorded in urban and rural areas during 1953 and 1954 are extracted below :—

		Number of deaths from malaria.		Death rate per 1000 of population.	
		1953.	1954.	1953.	1954.
Urban areas	.. ..	512	471	0.06	0.06
Rural areas	.. ..	1767	1,510	0.06	0.05
State	.. ..	2,279	1,981	0.06	0.05

There is very little variation in the mortality rates from malaria in the different areas in the State.

The mortality from malaria recorded in each month in each district is given in statement IX-A of the Appendix. The death rates ranged from 0.14 in Salem district to 0.01 in Tanjore district. In municipal areas, there were 340 deaths from malaria giving a rate of 0.06 in 1954 as against 409 deaths with a rate of 0.08 in 1953.

PART I (GENERAL)—MALARIA.

As a result of concerted anti-malaria work in the State for the last 8 years and more, malaria once a major problem in the State responsible for retardation of progress and considerable physical disability and mortality, is now a serious problem in remote hilly areas only.

This State is implementing the National Malaria Control Programme sponsored by the Government of India. Under this programme, the Government of India provide financial assistance to the States through grants of DDT, transport, anti-malaria drugs, sprayers and essential equipments, etc., during the operational period of 3½ years from 1953-54. During 1954, two units were functioning to benefit a population of 2 millions in the rural areas. One more unit was sanctioned for the urban areas of Madras. Salem, Tirunpur, Erode and Namakkal. The total value of supplies expected to be received by the State Government for the three control units allotted to Madras State for 3½ years is

Rs. 23,49,300. The savings to the State Government on account of the free supplies during the 3½ years are expected to be Rs. 10,34,250 and this amount will be utilized for extending malaria control operations to all other affected areas in the State.

Proposals have been made for extending the programme to benefit another half a million persons. With this extension, the entire State would be covered.

Though there are three main units, two for rural areas and one for urban, there are 22 sub-units functioning in the districts and five in towns. These cover not only endemic areas but also areas prone to epidemics, and areas where land colonisation, irrigation and hydro-electric projects are being implemented.

The control of malaria has been an outstanding success and has brought about economic progress. Virgin fertile areas, till now uninhabitable on account of malaria, have been opened out for cultivation and colonisation. Relief of human illness and suffering has changed the face of the country. Malaria has practically disappeared from South Kanara, North Malabar, North Salem, North Arcot and Chingleput districts. Places like Wynaad in Malabar district, formerly deemed as veritable death traps, have now become health resorts, for these places naturally blessed with a salubrious climate, are now free from malaria which was the chief handicap formerly impeding progress. In Wynaad more than 10,000 acres of land have been brought under cultivation and the population has increased largely due to immigration. In Kandanayakanur area, over 1,000 acres of virgin soil have been cultivated with cotton. Two new villages have sprung up. New orchards and pepper gardens have come into being in Malabar district. Marked decline of death rate and infant mortality and rise in birth rate have been recorded in several areas. Decline in Kalazar has been noticed as a collateral result of DDT spraying in the coastal area of Ramanathapuram district. Engineering projects have proceeded apace even though their venues lay in hyper-endemic tracts. A new era of health and happiness is dawning for the people living in erstwhile malarial tracts.

An organisation chart of the Malaria Branch is given as Chart No. 15. A classified list of anti-malaria schemes that functioned in the State during 1954 showing the area of operations, number of villages covered, population benefited and the authority financing the scheme is given in Annexure I. Twenty-two anti-malaria schemes were functioning in the districts, operating over nearly 10,000 square miles and covering nearly 3,000 villages and protecting a population of nearly 29.5 lakhs. The expenditure from State funds on anti-malaria works during the year was approximately Rs. 10.67 lakhs.

CENTRAL MALARIA LABORATORY AND MUSEUM.

The Central Malaria Laboratory is intended for the training of malaria personnel, especially higher personnel and for research and a museum is attached to it. The annual course in advanced Malariology and Mosquito Control was held for four Health Officers and

four Entomological Assistants. A shorter course was also held for the L.P.H. and B.S.Sc. students of the Madras University. Demonstrations and lectures were arranged for visiting students undergoing courses for the M.B.B.S., Nursing, Sanitary Inspectors and the School of Indigenous Medicine. Special training was also given to a Subedar of the Special Armed Police for carrying out efficient mosquito control in the Police Camp.

Studies on the eradication of *A. fluviatilis* in the Arimibra area, Malabar district, were continued. No *A. fluviatilis* could be collected in the area during the year under report. Based on these studies and after an intensive study of the entomological and parasitological factor, a central area in Wynaad taluk round about Penamram has been selected for withholding DDT spraying therefrom. Careful observations will be kept up to find out the conditions when DDT adult spraying may be suspended with absolute safety in any favourable area where control measures have been in vogue for a fairly long time. This area may perhaps be extended in future years, in concentric circles with the ultimate object of controlling malaria from large areas without the necessity for recurrent measures.

Studies on the development of resistance of *Culex fatigans* to Benzene Hexachloride were also made because such a resistance was first noticed in Kumbakonam and later was known to occur in other places also. Intensive studies in the field and direction to the field staff enabled the Kumbakonam Municipality to carry out satisfactorily their mosquito-abatement and anti-filariasis programme, which suffered for a short time due to the development of resistance to Benzene Hexachloride by culicine mosquitoes.

Further a useful modification of the Alessandirini method was devised at the Central Malaria Laboratory. Instead of using fuming nitric acid of density 1.52 which was not easily available in India, one could use concentrated nitric acid available locally by changing the proportion of sulphuric acid in the sulpho-nitric mixture. A note on which subject was published in the *National Society of India* for malaria and other mosquito-borne diseases, besides one on resistance in *Culex fatigans* to Gammaxene.

Studies on the larvicidal efficiency on the newer insecticides in the market were done both in the laboratory and in the field. A 50 per cent aromex-water emulsion was found to be a very effective larvicide. An alternative larvicide found suitable was also evolved using light diesel oil and cresol emulsified with an equal quantity of water with soap. Four to five ounces of cresol were added per gallon of oil before emulsifying.

The Central Malaria Laboratory also fitted out at its own premises a special health exhibition for University students of Biology, Medicine and Veterinary Science. The demonstration was largely self-explanatory and was divided into sections dealing with Parasitology, Hematology, Entomology and control of mosquito-borne diseases. The exhibition also included a "quiz" programme and a cinema show. The response from the College authorities was good.

REGIONAL MALARIA ORGANIZATIONS.

The Regional Malaria Organizations at Tanjore and Coimbatore continued to function during the year. Each organization was in charge of six or seven districts and was manned by a Regional Malariologist (Health Officer, Class I), assisted by a Senior Entomologist and three Entomological Assistants.

Consequent on the implementation of the National Malaria Control Programme with additions to the existing schemes, a re-distribution of the jurisdiction of the two Regional Malariologists has been ordered with a view to include about one million population in each unit. Salem district has been transferred from the jurisdiction of the Regional Malariologist, Coimbatore, to that of the Regional Malariologist, Tanjore. The following statement gives the number of candidates who underwent the prescribed courses in the Regional Malaria Organizations:—

	Health Inspectors and Sanitary Inspectors (one month's course).	Laboratory Assistants (three months' course).	Field Assistant (one month's course).
1. Regional Malaria Organization, Tanjore.	8	5	8
2. Regional Malaria Organization, Coimbatore.	31	12	28

Regional Malaria Organization, Coimbatore.—This region comprises the districts of South Kanara, Malabar, The Nilgiris, Coimbatore and North Arcot. The organization carried out 29 inspections of various anti-malaria schemes, 28 check-up surveys of sanctioned schemes for mosquito and disease control. Nine new areas were surveyed with a view to formulating schemes of mosquito control and eight other areas for malaria survey.

The Regional Malariologist was in administrative and technical charge of 5 anti-malaria schemes and offered technical advice to four schemes of the Public Works Department.

During the year under report, a few villages in Dharapuram, Coimbatore and Pollachi taluks witnessed localized outbreaks of malaria. The epidemics were promptly brought under control by carrying out in-door DDT residual spraying of the villages and intensive anti-parasite measures. The situation in these villages is being kept under close observation by periodic check-up surveys.

This organization participated in the following exhibitions:—

- (1) W.H.O. Day celebrations at Coimbatore.
- (2) Indian Red Cross Week at Coimbatore.
- (3) Hospital Day Celebrations in the Government Headquarters Hospital, Coimbatore.
- (4) Salem Town Exhibition.

The special investigations carried out include the following:—

(1) Monthly entomological surveys in Ponnani town, an area highly endemic for filariasis, with a view to determining the seasonal variations in the density of the vector species.

(2) Routine monthly rat-flea surveys in the different wards of Coimbatore Municipality.

(3) Special entomological surveys in Chowghat Panchayat area in order to determine the part played by *Mansonioides* and *Culex fatigans* in the transmission of filariasis in the town.

Regional Malaria Organization, Tanjore.—In May 1954 the National Malaria Control Programme was implemented in the region; 5 new schemes to cover the remaining malarious areas in the region were started one each in Tirunelveli, Ramanathapuram, Madurai, Salem and South Arcot districts in addition to the existing schemes at Ennore in Chingleput districts, the lower Palanis in Madurai district and the Project areas of Manimuthar, Papanasam and Tekkadi.

Malaria surveys were carried out in the Upper Palni villages, in Godalvai in Madurai district and in Araniyar Project area in Chingleput district. Two Health Inspectors, 6 Sanitary Inspectors, 5 Laboratory Assistants and 8 Field Assistants were given training in anti-malaria work by the organization. The organization also carried out investigations regarding development of resistance to Gammaxene by *C. fatigans* larvae in the field. Experiments were also conducted during this year to find out suitable alternative larvicides. The alternate use of oil combinations and Gammaxene P. 520 at 6 monthly intervals in the same year would give effective results and also avoid the development of resistance.

As a result of control measures under the Ennore Scheme close to Madras, Ennore and Kathivakkam villages are developing into popular industrial areas affording welcome relief to congestion and new opportunities for employment. Large tracts of fertile land which were lying waste in Gandamanayakanur (Madurai district) have also been brought under cultivation.

Thandikadi and five villages from the Nadumandalam group in Madurai district which were in the list of unhealthy localities have been declared as healthy, malaria having been fully controlled.

PART II—A BRIEF RESUME OF THE ANTI-MALARIAL SCHEMES OPERATING IN THE STATE.

1. *South Kanara District Anti-Malaria Scheme.*—This scheme first started in 1948 for malaria control in the malarious tracts of Puttur taluk was extended to all the malarious regions in Puttur, Karkal, Belthangady, Coondapur and Kasaragod taluks. The malaria transmission season extends from December to June, the recognized vectors in the area being *A. fluviatilis* primarily and *A. culicifacies* secondarily. Fifty-eight thousand and eighty-one structures received the benefit of DDT spraying and 4,955 fever cases of malarial origin were treated by the staff with anti-malarial drugs.

The striking results achieved by the control operations may be judged by the malario-metric data furnished below:—

Year.				Spleen rate. PER CENT.	Parasite rate. PER CENT.
1949	..	..	..	39.3	3.0
1950	..	..	..	23.5	1.0
1951	..	..	..	9.5	0.55
1952	..	..	..	4.6	0.22
1953	..	..	..	2.6	0.22
1954	..	..	..	1.2	0.01

It may be confidently said that malaria no longer constitutes a problem in the rich and fertile malnad areas of the district, which were once notoriously malarious.

2. *Wynaad Taluk Anti-Malaria Scheme.*—This extends over the entire Wynaad taluk. The malaria transmission season is from January to June. In all, 62,712 structures were benefited by the DDT spraying programme. A total of 699 fever cases received free treatment with anti-malaria drugs.

The results achieved by the measures were good, as the data furnished below will testify :—

Year.	Spleen rate.	Parasite rate.
	PER CENT.	PER CENT.
1953	9.2	0.9
1954	7.0	0.2

The infant parasite rate recorded during 1953 and 1954 was nil, thereby indicating complete cessation of malaria transmission in the operational zone. As a result of malaria control measures, new land development and colonization are proceeding at a rapid pace and the population of the taluk has increased from 1.43 lakhs in 1951 to 2.0 lakhs in 1954.

3. *Anti-Malaria Scheme, Nilambur.*—This scheme started functioning in 1949 as a W.H.O. Malaria Control Demonstration Project for carrying out control operations in the southern taluks of Malabar district. It extended its sphere of activity to the adjacent taluk of Gudalur in the Nilgiris district. Sixty-one thousand three hundred and ninety-eight structures in South Malabar district received DDT spraying. Four thousand nine hundred and fourteen fever cases were treated with anti-malaria drugs by the staff.

The results obtained are indicated below :—

Name of the section.	Pre-operational period.		At the end of 1954 control measures.	
	Spleen rate. PER CENT.	Parasite rate. PER CENT.	Spleen rate. PER CENT.	Parasite rate PER CENT.
1. Foot hill sector in Malabar district.	32.2	3.5	1.2	Under examination.
2. Attapadi sector	85.4	11.7	19.0	8.6
3. Gudalur sector	35.8	25.0	14.9	Under examination.

The infant parasite rate was 0.4 per cent in 1954 as against 1.4 in 1953 in South Malabar sector. The incidence of *A. fluviatilis*, the vector recorded during the year was the lowest.

4. *Amaravathi Reservoir Project.*—The scheme covers the headworks colonies of the project and the aboriginal settlements in the environs of the headworks division areas which were hyperendemic for malaria. Two thousand four hundred and thirty-eight structures received DDT indoor residual spraying. As valuable adjuncts to the spray killing of adult mosquitoes, intensive anti-larval measures and anti-parasite measures were also in progress. Four hundred and fifteen persons received free treatment. The incidence of malaria in the camps has been brought down to negligible levels. The percentages of malaria cases recorded in the local dispensary worked out to 2.4 per cent only during the year.

5. *New Settlers Colonies Anti-Malaria Scheme.*—It carries out malaria control operations in a continuous belt of foot-hill malarious tracts extending over the four taluks of Kozhikode, Kurumbranad, Kottayam and Chirakkal in Malabar district. During the year under report, 19,936 structures were sprayed with DDT. 635 malaria fever cases were treated with anti-malaria drugs. The following malario-metric data recorded in the scheme area will bear adequate testimony to the usefulness of the measures carried out :—

Name of taluk.	Percentage of spleen rates.		Percentage of parasite rates.	
	1949. (2)	1954. (3)	1949. (4)	1954. (5)
1. Kozhikode	28.3	2.6	16.4	0.4
2. Kurumbranad	25.7	2.6	18.0	6.1
3. Kottayam	27.4	9.1	11.2	3.4
4. Chirakkal	39.2	9.6	18.1	3.6

6. *Anti-Malaria Scheme, Coimbatore North.*—In the implementation of the National Malaria Control Programme, this scheme emerged as a result of the reorganization and merger of the existing anti-malaria scheme for the district and the Lower Bhavani Project Scheme. Rural endemic malaria control is limited to a number of hill and foot-hill villages in Kollegal and Gobichettipalayam taluks. The main bulk of control operations is carried out in the Lower Bhavani Project ayacut area where, as a result of the new irrigation facilities formidable malariogenic conditions were created. The *A. culicifacies* population increased. To prevent any possible outbreak of malaria, large-scale DDT spray was carried out where the vector density was high. Thirty-four thousand one hundred and fifteen structures were sprayed with DDT. The staff distributed anti-malaria drugs to 1,964 fever cases. Judged from the spleen and parasite rates and other data recorded in the scheme area, it may be said that rural endemic pockets in the operational area have almost been eradicated.

Year.	Gobichettipalayam taluk.		Kollegal taluk.	
	Spleen rate. PER CENT.	Parasite rate. PER CENT.	Spleen rate. PER CENT.	Parasite rate. PER CENT.
1950	53.7	8.7	52.8	4.0
1951	28.8	7.1	32.3	4.0
1952	14.7	4.1	17.3	4.0
1953	5.9	0.7	19.1	2.8
1954	..	..	2.8	0.7

Infant parasite surveys were all negative for plasmodial infection thereby conclusively indicating the complete stoppage of malaria transmission in the controlled area.

7. *Anti-Malaria Scheme, Coimbatore South.*—As in the case of the Anti-malaria scheme, Coimbatore North, this scheme was constituted during the latter part of the year by the reorganization of the existing schemes in the southern taluks of the district including the area comprising the Government Cinchona Plantations, Anamalais. During the year, 13,788 structures were sprayed with DDT. The number of malaria cases treated was 261. The incidence of malaria in the controlled zone has come down materially.

Out of the total admissions in the several dispensaries and hospitals in the scheme area, only 3.47 per cent were malaria cases. The cumulative spleen rates for the year worked out to only 4.9 per cent. The infant parasite rate recorded was nil.

8. *Anti-Malaria Scheme, North Arcot district.*—Malaria control work was first started in Chengam taluk of the district and its area of operations now extends over four taluks of Tirupattur, Chengam, Polur and Vellore. 21,304 structures received DDT indoor residual spraying. 3,583 malaria cases received treatment with anti-malarial drugs. The results have been satisfactory as shown by the data given below:—

Year.	Chengam taluk.				Tirupattur taluk.			
	Plain villages.		Javadi hill villages.		Plain villages.		Javadi hill villages.	
	Spleen rate.	Parasite rate.	Spleen rate.	Parasite rate.	Spleen rate.	Parasite rate.	Spleen rate.	Parasite rate.
	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	PER CENT.	PER CENT.	PER CENT.	PER CENT.	PER CENT.	PER CENT.	PER CENT.	PER CENT.
1948	20.8	1.2	..	..	..	..	..	..
1950	16.0	0.6	62.0	2.5	36	4.0	70.0	2.0
1952	4.0	0.5	13.4	3.2	7.5	0.2	7.4	1.8
1953	0.9	2.3	4.6	0.0	24.0	33.3	7.0	2.5
1954	1.1	0.0	2.4	0.0	7.5	3.7	4.4	0.0

Year.	Polur taluk.		Vellore taluk.	
	Spleen rate.	Parasite rate.	Spleen rate.	Parasite rate.
	(2)	(3)	(4)	(5)
	PER CENT.	PER CENT.	PER CENT.	PER CENT.
	(1)	(1)	(1)	(1)
1953	..	15.0	9.6	Data not available.
1954	..	1.3	0.5	3.3 2.0

9. *Malampuzha Reservoir Project.*—The project has almost been completed and the progress of work has so far not been hampered by malaria. There is at present no endemic malaria in the project area. A total of 5,639 structures received DDT spraying. The whole scheme area may now be deemed to be free from malaria.

10. *Walayar Reservoir Project.*—Malaria control operations under this scheme are carried out in the headworks camps and the villages that lie close to the camps. The number of structures sprayed in the headworks camps was 1,400 and 665 malaria fever cases received free quinine treatment.

11. *Mangalam Reservoir Project.*—The headworks camps are situated in a highly malarious foothill region with scattered aboriginal settlements all round the camps. Three hundred structures received DDT spray during each round of spraying. By continued anti-malaria measures, the incidence of malaria in this once hyper-endemic area is kept very low and within healthy limits. Consequently, the construction work is progressing according to plan.

12. *Extension to Anti-Malaria Scheme in the Nilgiris district.*—This scheme carried out malaria control operations from the middle of the year in the endemic pockets of malaria in the eastern slopes of the Nilgiris in Coonoor and Ootacamund taluks. The endemic pockets comprise Irula aboriginal settlements in the hill slopes. Seventy malaria cases were treated with anti-malarials. A total of

13. *Anti-Malaria Scheme, Ennore-Chingleput district.*—This scheme extends over an area of 52 square miles, covering 19 villages and 240 hamlets and benefiting a population of 17,229 directly. Adulticide measures with DDT were carried out in all the villages. These measures were supplemented with larvicidal measures in parts of the area. The spleen rates have shown a gradual decline. The cumulative spleen rate for the scheme area in Ponneri taluk was 30.1 per cent in 1949 as against 5 per cent in 1954.

14. *Anti-Malaria Scheme, Kalroyan Hills, South Arcot district.*—The villages coming under the scheme are on Kalroyan Hills. There are also a few villages at the foot of the hills. On the whole, there are 140 villages spread over an area of 300 square miles with a population of 15,000. The scheme began functioning from June 1954 and 77 villages were surveyed in detail and control measures undertaken.

15. *Anti-Malaria Scheme, Salem South.*—This scheme is intended to cover Kolli Hills, the Shevroys, Pachamalai Hills of Salem and Tiruchirappalli districts and Chinna Kalroyan and plains and foothill villages in Salem, Rasipuram, Namakkal and Attur taluks. Before the inception of the scheme a few villages in Pachamalai Hills were surveyed and control measures taken. This scheme started functioning from May 1954, and since then detailed surveys in 295 hill villages and 91 foothill villages were carried out. Survey done in 1954 revealed that all the 386 villages are highly endemic with malaria, the spleen rates varying from 43.1 per cent to 96.4 per cent and the parasite rates from 10.4 per cent to 25.7 per cent. Control measures have been started.

16. *Anti-Malaria Scheme, Salem North.*—During 1954, 320 villages spread over an area of 365 square miles benefiting a population of 78,286 were under control. Four hundred and twelve villages were under control of which 118 villages were eliminated from control as these villages have become healthy. Twenty-six new villages were added on this year. There was an epidemic of malaria in certain villages in Omalur taluk which was brought under control by adulticide spraying of 0.1 per cent of Pyrethrum extract followed by 5 per cent DDT spray. Fourteen thousand four hundred and eight fever cases were treated with anti-malarial drugs.

17. *Anti-Malaria Scheme, Ramanathapuram district.*—This scheme started functioning in May 1954 to cover all the malarious areas of the district. Prior to this, control of malaria was confined to larvicidal measures in Rameswaram Island and adulticide measures in Arjunapuram in Srivilliputhur taluk. Detailed investigation of the coastal villages of Ramanathapuram taluk and Rameswaram Island and foothill villages in Srivilliputhur taluk were carried out. Out of the 100 villages surveyed, 53 villages have been sprayed with DDT giving direct protection to a population of 16,207. The scheme confers collateral benefits in the shape of subsidence of Kalaazar in the sprayed villages.

An epidemic of malaria was noticed in the eastern half of Ramanathapuram taluk in June 1954. Control measures were promptly taken and the epidemic subsided and spleen rates have declined.

32 REPORT ON THE HEALTH CONDITIONS IN MADRAS STATE, 1954

18. *Anti-Malaria Scheme, Tirunelveli district.*—The entire Tirunelveli district comes under the scope of this scheme but its present activities are extended only to malarious tracts of Srivai-kuntam, Ambasamudram and Tiruchendur taluks with an area of roughly 149.53 square miles, comprising eight main villages and 48 hamlets with a total population of 120,879. The scheme began functioning from May 1954. Detailed investigations in Tuticorin Municipality and belt areas, the coastal areas of Srivai-kuntam and Tiruchendur taluks, Courtallam and surrounding areas, Kani settlements, Papanasam and Manimuthar Projects, were carried out. Control measures with DDT were carried out in the endemic areas of Tuticorin and belt areas. Control measures in other malarious areas will be taken up early in 1955.

19. *Anti-Malaria Scheme, Madurai district.*—The area of operations, at the beginning of the year was 115 square miles with a population of 25,305 in the Lower Palanis, Gandamanayakanur zamin area and Nadumandalam group of villages. Continued control measures brought down the spleen rates from 36.7 per cent in 1949 to 4.3 per cent in 1954. In the middle of the year the scheme was extended under the National Malaria Control Programme to the whole district. Detailed survey of all malarious areas of the district was carried out and control measures with DDT were taken up in lower Palani Hills, Gandamanur, the upper Palanis, Sirumalai hill villages and Nadumandalam group of villages.

Other anti-malaria schemes.—Anti-malaria schemes in the Manimuthar Project area, the Tekkadi and Periyar Dam Project area and Nadumandalam group of villages also functioned during the year.

Methods of malaria control adopted.—The main method of control is by eliminating or reducing to negligible proportions, the mosquito population by residual indoor spraying with DDT during the transmission season. This is supplemented by anti-larval work in urban areas, project areas and in selected areas in the districts and by the free distribution of anti-malarial drugs to malaria cases. Propaganda work was also carried out by the staff of the various anti-malaria schemes.

Observations in the areas where experiments were undertaken for the eradication of *A. fluviatilis* by following the adulticidal spray in the transmission season with anti-larval spraying in the non-transmission season, showed continued absence of the adults and larvae of *A. fluviatilis* for a second year in succession even though all control measures have been suspended. In areas where outbreaks of epidemic malaria had occurred, pyrethrum as an anti-adult spray has been used as a preliminary to DDT spray measures.

Proposed expansion of anti-malaria work in the State.—Proposals have been made for extending the National Malaria Control Programme to other areas where as yet control measures have not been undertaken, e.g., in the taluks of Rasipuram, Tiruchengode, Hosur and Omalur in Salem district where epidemic conditions of malaria were present and also in the few malarious tracts in the southern foothill regions of Palghat in Malabar district and in

few semi-urban pockets in Coimbatore district. It has been estimated that in the areas, a population of 500,000 will have to be protected. The Government of India have been addressed for allotting an additional one-half unit during 1955-56. Malaria control operations will be carried out in these areas as soon as the allotment is made.

Free Quinine Distribution Scheme.—The scheme of free distribution of quinine and other cinchona products was in force in 4,100 villages distributed in all the districts during the year under report. The distribution of drugs was done mostly through the village headman, school teachers, Rural Welfare and Co-operative Departments. The departmental staff also continued to be actively engaged in this line of work. Thirty-one additional agents were appointed for free distribution of quinine over and above the staff of the anti-malaria schemes and other agents who worked in this scheme in the previous year. In areas, where anti-malaria work was in progress, anti-parasitic and anti-larvicidal treatment constituted an important item of work in the programmes and was being carried out on an intensive scale throughout the year. 558.1 lbs. of quinine products and 40,878 tablets of quinine substitutes were consumed during 1954, as against 440.8 lbs. of quinine products and 26,498 tablets of synthetic anti-malarials in the previous year. The extra consumption of quinine is due to the fact that highly endemic areas as the Kolli and Pachamalai Hills were taken up for active control for the first time during this year.

Extension of the Madras Public Health Act, 1939.—The provisions of Chapter IX of the Madras Public Health Act, 1939, were extended to the following local areas during 1954:—

- (1) Coondapoor Panchayat Board (South Kanara).
- (2) Chowghat Panchayat (Malabar).
- (3) Tellicherry Municipality (Do.).
- (4) Wandiwash Panchayat (North Arcot).
- (5) Chennimalai Panchayat (Salem).
- (6) Singanallur Panchayat (Coimbatore).

FILARIASIS.

The Regional Malaria Organizations, Tanjore and Coimbatore, carried out Statewide surveys in many panchayats and municipalities. The number of filariasis surveys and re-surveys carried out by each organization is noted below:—

Regional Malaria Organization, Tanjore—59.

Do. Coimbatore—37.

Extensive and detailed surveys carried out in many panchayats and municipalities have revealed the prevalence of filariasis in varying degrees of endemicity in Chingleput, Tanjore, South Arcot, North Arcot, Tiruchirappalli, Malabar and South Kanara districts. There are two types of filarial diseases, viz., bancroftian and malayan filariasis. Both types are found in the State, the malayan type being confined to the South Malabar Coast.

The State Government continued to give grants to local bodies which implemented approved schemes for filariasis and mosquito control, one-third of the expenditure for filariasis control schemes and one-fourth to anti-mosquito schemes. Three municipalities and 46 panchayat boards implemented approved schemes of anti-filariasis and anti-mosquito measures for the first time in 1954.

34 REPORT ON THE HEALTH CONDITIONS IN MADRAS STATE, 1954

schemes for 26 panchayat boards and five municipalities were formulated and recommended to the local bodies for implementation.

Anti-larval work using BHC compounds mostly and DDT in certain cases is the main line of control adopted. BHC in the form of Gammaxine—P. 50 and Hexidol 950 has been found to be very economical for use as a larvicide. Anti-larval work carried out by the local bodies gives good results consistent with economy. It is however proposed to deal with the adult mosquitoes and the parasite factor in the human hosts to cut out directly the mosquito factor by the administration of Hetrazan to human carriers of Micro filaria. This last measure has been experimentally tried at Mangalore and Malaipatty.

SURVEY OF LACCADIVE AND AMINDIVI ISLANDS.

A partly consisting of the Regional Malariologist, Coimbatore, Senior Entomologist and other staff of the Regional Malaria Organization, Coimbatore, went to the Laccadive and Amindivi Islands for a Leprosy and Filaria survey.

RESPIRATORY DISEASES.

The mortality from respiratory diseases recorded during the decade 1944 to 1953 has been practically stationary, the death rates differing very little from the average rate of 1.94, as will be evident from the following table:—

Year.					Number of deaths from respiratory diseases.	Death-rate per 1,000 of population.
1944	..	..	..	..	79,330	2.44
1945	..	..	..	..	65,584	1.98
1946	..	..	..	..	65,109	1.94
1947	..	..	..	..	67,868	2.00
1948	..	..	..	..	64,473	1.87
1949	..	..	..	..	61,440	1.76
1950	..	..	..	..	69,838	1.97
1951	..	..	..	..	61,950	1.73
1952	..	..	..	..	69,662	1.92
1953	..	..	..	..	64,612	1.75
1954	..	..	..	..	53,498	1.43

There has however been a noticeable fall in the number of deaths from this group of diseases from 64,612 in 1953 to 53,498 in 1954, the death rates being 1.75 and 1.43 respectively. The average rate for the previous five years was 1.83. The mortality is the lowest in the past eleven years. Respiratory diseases caused 10.7 per cent of the total number of deaths in 1954 as against 10.3 in 1953. Although there was reduction in the mortality from this cause as compared with the previous year, the contribution of this group of diseases to total deaths was practically the same. This is due to the fact that there has been an all-round decrease in the deaths from other diseases and in the total number of deaths. As usual, the death rate from these diseases in the urban areas was higher than that in the rural areas. There were 22,593 deaths from respiratory diseases in urban areas giving a death rate of 2.67, as compared to 30,905 deaths in rural areas giving a death rate of 1.07 in 1951. There has been a reduction in the death rate from this cause in both the urban and rural areas, as the rates were 3.10 and 1.37 respectively in 1952.

The monthly and the annual number of deaths recorded under this group in each district and the annual death rate as compared with the average death rate for the previous five years for each district are given in statement XI of the appendix. The death rates ranged from 0.81 in Salem district and 0.83 in Tanjore district to 2.17 in the Nilgiris and 2.27 in Madurai district. The death rates recorded in all the districts were less than the average death rates for the previous five years. The deviation from the average rates was large in the districts of Tanjore and Coimbatore.

The number of deaths from respiratory diseases registered in the municipal areas including Madras was 19,852 giving a rate of 3.58 in 1954 as against 22,879 with a rate of 4.24 in 1953. Madras City and Madurai Municipality alone were responsible for 54 per cent of total mortality. The towns that registered high death rates were Palni (6.20), Kancheepuram (5.74), Madras (5.40) and Madurai (5.27). The last three towns reported high rates last year also.

Two thousand seven hundred and forty-one deaths from this group of diseases occurred in the census towns with a population of 5,000 and above in 1954 giving a death rate of 0.94 as against 2,693 giving a rate of 0.95 in 1953.

TUBERCULOSIS.

The curative and preventive medical care of tuberculosis continued to be under the Medical Department, the proposal to transfer the same to the Public Health Department having been dropped. Mass B.C.G. vaccination work in the State was started in November 1954 by the Public Health Department.

A summary of the work done at the Tuberculosis Institute, Egmore, is given below:—

The Institute carried out the diagnosis and treatment of those cases that were diagnosed as tuberculosis. It also functioned as a Tuberculosis Clinic undertaking the pre- and post-sanatorium treatment, the education of the patients and their contacts, domiciliary as well as screening of mass X-raying and carrying out B.C.G. vaccination programmes, among contacts in the City of Madras.

Forty-six thousand and twenty-three old and 12,758 new cases were attended to. Out of the 12,758 cases treated, 3,556 cases were diagnosed as suffering from tuberculosis; out of this, 3,203 or 90.1 per cent were cases of pulmonary tuberculosis and 353 or 9.9 per cent cases were found to be suffering from non-pulmonary tuberculosis. (A large number of the cases of tuberculosis were under the age group 16–35 years and in low income groups.

The Institute maintains a waiting list for admission of patients into the Government Tuberculosis Sanatorium, Tambaram.

Non-Gazetted Government servants, servants of local bodies and their families are given free costly medicines and drugs in the Institute and also in the clinics working in the four city hospitals.

The four clinics situated in the city hospitals were jointly maintained by the Government and the Corporation of Madras. Each clinic is manned by one Medical Officer and two Health Visitors. Nineteen thousand seven hundred and ten cases were examined in the four clinics out of which 6,488 were found to be suffering from

tuberculosis. Family contact work was done by each of the clinics. Family Planning advice was also given by the Medical Officers of the clinics and also by the Family Planning Officer of the Institute.

Financial assistance to 39 poor patients was given by the Madras City Tuberculosis Association on the advice of the clinics.

The Institute trains students of Medical Colleges and B.S.Sc. Courses, T.D.D. Course, Health Visitors, for students Orientation Course, etc., in tuberculosis.

Tuberculin testing of all school children and contacts of cases and B.C.G. Vaccination of non-reactors were also done. Sixty-three thousand two hundred and fifty cases were tuberculin tested and 15,674 were vaccinated.

Mass X-ray campaign in institutions like colleges, firms, police and labourers in companies was undertaken. All people coming in contact with tubercular patients were also X-rayed. Nineteen thousand three hundred and forty cases were thus X-rayed and out of them 1,384 were suspected and sent for further investigation. Eight hundred and forty-three cases were reported and they were thoroughly examined. Out of them, 36 were found to be active tuberculosis patients detected by mass miniature radiography.

B.C.G. VACCINATION.

In September 1954, the Government sanctioned the introduction of B.C.G. Vaccination on a mass scale in the State, by the establishment of a Central Administrative Unit at Madras, consisting of a Supervising Public Health Officer, a Publicity Officer and six Field Teams, each consisting of one Assistant Surgeon, six Health Inspectors and one Reserve Team of six Health Inspectors for carrying out tuberculin testing and B.C.G. Vaccination for non-reactors all over the State, to cover a population of 100 lakhs falling within the age group 1-25 years in the course of five or six years.

The B.C.G. Vaccination Scheme was inaugurated at Coimbatore on 14th November 1954. Coimbatore Municipality and its belt area were taken up first. B.C.G. Teams from Mysore and Travancore-Cochin also participated in the work in Coimbatore Municipality. The work in Coimbatore Municipality and belt area was completed by 25th December 1954. The scheme met with success. The following statement showing the work done up to the end of 1954 is given below :—

Serial number and place.	Period.	Population.	Total tested.	Total read.	Percentage read of tested.	Positive.	Percentage positive of read.	Vaccinated.
1. Coimbatore Municipality (Urban).	15th to 20th November 1954.	197,755	210,814	183,711	87.1	110,344	60	73,215
2. Coimbatore Belt area (Rural).	29th November to 25th December 1954.	300,000	230,077	192,875	83.8	95,983	49.7	95,328

Remarks.—1. Fourteen teams participated in the campaign (4 Mysore, 4 Travancore-Cochin State & 6 Madras teams).

2. Six Madras teams alone worked during this period. Outturn of work during December has evoked praise from Dr. Mahler, Senior B.C.G. Adviser, Government of India.

The Government have ordered that all district headquarters stations and their belt areas up to a radius of 5—6 miles should be taken up for B.C.G. Vaccination first, then all municipalities and finally rural areas. After completion of work in Coimbatore, the teams moved to Kozhikode at the end of December 1954. Before the end of the year 1955, it is hoped to complete mass vaccination in all district headquarters towns and belt areas and then proceed on a district basis.

The UNICEF has supplied free the necessary equipment for the scheme, such as station wagons, vaccination outfits, sterilisers, public address equipment and film projector.

LEPROSY.

The State Leprosy Survey Unit at Vellore and the District Leprosy Survey Unit at Tirukoilur continued to function during the year. The unit at Vellore consisted of one I Class Health Officer, one Health Inspector, one Health Visitor, and three peons. The unit carried out leprosy survey work in the districts of North Arcot, Chingleput, South Arcot, Salem, Tirunelveli, Ramanathapuram, Tanjore and Tiruchirappalli and covered a population of 179,998 in 177 villages. A detailed statement of the survey work carried out is given in Annexure T. The concerned District Health Officers were informed of the incidence of leprosy and requested to take necessary action wherever possible.

The unit at Tirukoilur consisted of one II Class Health Officer, one Health Inspector, and two peons. Resurvey was done in 30 villages of Tirukoilur, Special Leprosy Control Scheme Area. Data collected are given in Annexure U.

The Government have ordered that a treatment and study centre should function at Tirukoilur as a pilot project scheme for control of leprosy in the State. This scheme has been sponsored by the Government of India. According to this pilot scheme, the existing leprosy survey unit at Vellore will be abolished and that at Tirukoilur will be absorbed in the survey unit attached to the treatment and study centre at Tirukoilur. The survey unit will consist of one II Class Health Officer and three Health Inspectors. Leprosy survey work in other parts of the State will be undertaken by the Public Health Department and carried out as and when required with the help of the health staff trained in leprosy control and prevention work.

As in the previous years four batches of health staff were deputed for a period of six weeks for training in leprosy control work during the period April to September 1954.

VENEREAL DISEASES.

The proposal to transfer the control of Venereal Diseases from Medical to Public Health Department was dropped. The Venereal Diseases department continued to function under the Medical Department.

The Venereal Disease control clinic of the Madurai Municipality continued to function during the year. All the pregnant mothers in the municipal ante-natal clinics and maternity homes were systematically and serologically screened and positive reactors

and their sexual partners were treated at the clinic. Follow up of the treated pregnant women and the children born to them was systematically carried out in collaboration with the staff of the municipal maternity homes. The UNICEF supplied laboratory equipment and penicillin for the sole purpose of diagnosis and treatment of syphilis in pregnant women and pre-natal cases. The control of venereal diseases infection is primarily a social problem and consists of detection of the venereally-infected cases and bringing them under systematic treatment. Free treatment is given to known infected persons who volunteer for treatment after carrying out serological test and clinical examination. The history sheets of every case are carefully preserved.

A statement of the serological examination of blood of ante-natal cases conducted during the year in Madurai Municipality is given in Annexure W. The number of cases treated in the clinic is given in Annexure V. The number of specimens examined in the Serological laboratory of the Venereal Diseases clinic of the municipality is given in Annexure W.

YAWS.

Yaws is prevalent in the Avanashi and Tiruppur ranges of Coimbatore district. About 90 villages are reported to be infected. The Harijans are reported to be the worst affected persons. The World Health Organization proposed to undertake the 'Yaws' control campaign in Coimbatore district but they have not so far implemented the proposal. Yaws is also prevalent in the Nilambur area of Malabar district. The Malariologist, Malaria Control Team, Nilambur, purchased penicillin for the treatment of 'YAWS' cases in the Nilambur area.

RESEARCH.

Kala-Azar.—During the year, work was carried out on the epidemiological, entomological and control aspects of Kala-azar and Guinea-worm diseases.

A study of the Kala-azar cases treated in the various hospitals of the City for the past few years, reveals that while the incidence of the disease is fairly high in Georgetown, Triplicane, Choolai, Rayapuram, Park Town and Mylapore no part of the city is free from the disease.

The entomological collections of sandflies in different parts of the city are being continued with a view (1) to detecting natural infection of Kala-azar parasites (Leptomoned forms) in them—no infection was found so far, (2) to collect blood samples from the gut of freshly-fed sandflies to determine the host preference, and (3) to studying the sandfly prevalence. Results of 80 blood samples from the stomach of sandflies sent to the Malaria Institute of India for precipitin test, show that 32.5 per cent of the samples sent were positive for human blood. This observation is with particular reference to *P. argentipies*.

The species recorded during the year are—

P. argentipies Ann. & Brunn.

P. papatasili Scop.

P. Minutus Rond.

P. bailyi ver Compester.

A total of 2,794 sandflies was collected from Moolakothalam, Georgetown, Royapettah, Saidapet and Choolai divisions of the city after a search of 1,152 structures. Seventeen per cent of the total were *P. argentipies* females. Only one *P. Bailyi* variety compester was caught from Adyar.

The Research section assisted the Health Officer, Corporation of Madras, in an intensive survey of Kala-azar and sandfly prevalence in certain very badly affected localities of the city. Preliminary training in the field techniques, collections, identification and control measures against sandfly, was given to a unit of the Corporation staff. This survey was done with a view to take up anti-kala-azar measures in the worst kala-azar affected divisions of the city.

The entomological unit at Ramanathapuram continued the observations on the effect of DDT spraying on the control of Kala-azar disease and sandfly prevalence.

Three villages Kilakkarai, Periapattinam and Yervadi of Ramanathapuram taluk were selected for experimental work of control of Kala-azar. The purpose of the experiment was to study the effects of (1) DDT spraying of the villages together with treatment of Kala-azar cases, (2) DDT spraying of the village alone and (3) treatment of Kala-azar cases alone, in bringing down the incidence of Kala-azar.

The first round of DDT spraying was carried out in January 1953 in Kilakkarai and Periapattinam; Yervadi was left unsprayed. Active Kala-azar cases detected in Kilakkarai and Yervadi were given treatment. This part of the work is being carried out by a Municipal Unit comprising a Medical Officer and an orderly with headquarters at Ramanathapuram.

Thus, (1) in Kilakkarai a combination of DDT spraying of the village and treatment of Kala-azar cases, was carried out, (2) in Periapattinam, DDT spraying alone was done and (3) in Yervadi, treatment of Kala-azar cases alone was carried out.

Kilakkarai was divided into three divisions: (a) In January 1953, blocks 1 to 8, forming division 1, were sprayed with 200 mgms. of DDT per sq. ft., (b) blocks 9, 11 and 12, forming division 2, were sprayed with 100 mgms. of DDT per sq. ft. and (c) blocks 10 and 13, forming division 3 were left unsprayed.

Periapattinam was sprayed with 200 mgms. of DDT per sq. ft. A small portion of the village was left unsprayed for control.

Sandflies made their appearance eight months after the first spray (January 1953) in the area sprayed with 100 mgms. of DDT per sq. ft., whereas the other areas sprayed with 200 mgms. of DDT per sq. ft. continued to be free from the sandflies.

So in March 1954, blocks 9, 11 and 12 in Kilakkarai which were ordinarily sprayed with 100 mgms. DDT per sq. ft. were re-sprayed with a further deposit of 100 mgms. DDT per sq. ft. and blocks 10 and 13 which were left unsprayed in 1953 were sprayed with 200 mgms. per sq. ft. deposit of DDT. Blocks 1 to 8 sprayed with a dosage of 200 mgms. per sq. ft. of DDT in 1953 were left as they were. Collections of sandflies are being continued in both Kilakkarai and Periapattinam.

It was found that in Kilakkarai and Periapattinam where the experimental control measures were carried out by spraying DDT 200 mgms. per sq. ft. dosage, the sandflies were absent for a continuous period of 24 months and 21 months respectively. Observations are being continued to see how long one round of indoor residual spray with 200 mgms. of DDT per sq. ft. dosage will keep the area free from sandflies. Observations are also continued to assess the comparative efficacy of sandfly control alone in Periapattinam village, sandfly control combined with treatment with Kala-azar cases in Kilakkarai village, and treatment alone in Yervadi village on the future kala-azar incidence. It is too early now to draw any conclusion on these different methods.

Guinea-worm.—The districts mainly endemic for the disease are South Arcot, North Arcot, Salem, Coimbatore, portions of Tiruchirappalli, Madurai and Ramanathapuram. Biological control measures in South Arcot and chemical treatment by application of lime and bleaching powder in other districts are being carried out.

Encouraging reports are received from areas wherein cyclopidal fishes have been introduced and resurveys are being carried out to collect more data.

The following are the particulars of Guinea-worm disease in the State :—

Total number of Guinea-worm infected villages	..	309
Population at risk	.. .. .	297,615
Guinea-worm cases recorded	.. .. .	2,311
Number of villages where control measures were carried out.	.. .. .	226

The control measures are being attended to by the regular public health staff of the respective districts except in South Arcot where a reserve Sanitary Inspector has been specially appointed for the work. The public health staff also carried out intensive propaganda work on Guinea-worm disease and methods to combat it. Seven hundred and ten talks and 78 lectures and 7 magic lantern demonstrations were given to an audience of about 27,171 people and about 1,200 pamphlets were distributed.

Guinea-worm and cyclops surveys in North Arcot and Salem districts were carried out and suitable recommendations made.

Other diseases.—Besides the above, the following investigations also were carried out :—

(1) An investigation into the cause of an outbreak of the disease locally known as 'Ubboo Mariyayi' reported in Chinnasalem of South Arcot district, was carried out and necessary recommendations for the control of the disease made.

(2) Investigations were made into the cause of the outbreak of Infective Hepatitis in the Central Jails of Tiruchirappalli and Salem and suitable preventive measures have been suggested. The disease has been brought under control and no fresh cases have been reported.

(3) Two other investigations were carried out regarding (a) the outbreak of suspected 'virus encephalitis' in Ottapalam of Malabar district, and (b) the cause of death of large number of fishes in Bhavani river near Mettupalayam. It was found that the fishes died actually very high up the stream in the midst of forest about 20 miles above Mettupalayam and that the effluent discharges

from the bleacheries at Mettupalayam and from Aruvangadu cordite factory were not responsible for the same. The Fisheries Department carried out further investigations into the matter. It is learnt that the deaths were due to poisoning in the river by means of some wild plants by poachers high up in the forest area.

INFECTIOUS DISEASE HOSPITALS.

Among the control measures adopted in the case of communicable diseases, the most important of them is the isolation of infected persons and treatment. Therefore it is essential that isolation hospitals or sheds or wards in the hospitals should be provided in every local area. According to the Madras Public Health Act of 1939, every local authority may, or if the Government direct, shall provide hospitals or sheds or wards for treatment of persons suffering from infectious diseases.

2. The Government have approved the revised type design C.A. No. 365/1953 (based on C.A. No. 598/1945) together with the general specifications and schedule of quantities for the construction of infectious diseases hospitals. Six hundred copies of the type design have been printed and stocked with the Controller of Printing and Stationery, Madras, for distribution on payment to local authorities when demanded. One hundred copies of the same have been supplied to the Chief Engineer, Public Works Department (General and Buildings), Madras. All local authorities have been informed of this fact for adopting the type design.

3. As regards treatment of infectious diseases cases, all local authorities are bound to make provision for staff, medicine and equipment, etc. As most of them found it difficult to make such provisions, Government directed all local authorities that they should make a specific budget provision for such expenditure on treatment of cases of communicable diseases and communicate the same to the District Medical Officers, who will control the expenditure and notify the local authorities concerned from time to time and advise them whether extra provision is required and whether there have been saving in the expenditure.

CHAPTER III—HEALTH SERVICES.

MATERNITY AND CHILD WELFARE.

The benefits of maternity and child welfare services have been appreciated both by the public and the local bodies and this realisation has consequently led to the increase and extension of the maternity and child health services in both rural and urban areas. Some philanthropists have donated buildings and equipments for the opening of more child welfare centres and homes. Several local bodies also submitted proposals for opening maternity and child welfare centres in their areas, but most of them were deferred for want of finance. Some of the panchayats also either took over maternity and child welfare centres from the district boards or started new centres. The local bodies maintained 472 maternity and child welfare centres and maternity homes. The Government have also undertaken to provide these services in some special areas, such as Community Project areas, National Extension Service Blocks, Welfare Extension Projects and Poonamallee Health Unit and the number of maternity and child welfare centres

and homes run by the Government was 135. The following statement shows the number of maternity and child welfare centres and homes under the control of the various local bodies, the Government and the voluntary agencies. The voluntary agencies provide 66 maternity and child welfare centres. Thus, in all there were 673 maternity and child welfare centres and homes at the end of 1954.

	Maternity and Child Welfare Centres with beds.		Maternity and Child Welfare Centres without beds.	Maternity Homes.		Total number of Homes and Centres (Columns 1 + 3 + 4).
	Number.	Beds.		Number.	Beds.	
	(1)	(2)	(3)	(4)	(5)	(6)
District Boards	45	82	182	4	32	231
Major Panchayats	..	..	34	..	..	34
Municipalities	31	96	110	32	362	173
Corporation of Madras ..	..	..	17	17	226	34
Government Community Projects.	1	1	66	..	..	67
Government National Extension Service.	..	..	14	..	..	14
Government Social Welfare Extension Project.	..	..	23	..	..	23
Government Nilambur Malaria Unit.	..	..	4	..	..	4
Government Primary Centres.	20	40	..	..	..	20
Government Poonamallee Health Unit.	..	..	1	6	32	7
Voluntary Agency—						
Districts	..	..	..	..	..	44
Municipalities	..	..	..	..	..	22
Total	97	229	451	59	652	673

STAFF.

The sanctioned strength of maternal and child welfare staff in the State under the various agencies is shown in the following statement :—

Agency.	Women Medical Officers.			Public Nurse.	Resident Matron.	Health Visitors.	Assistant Maternity Tanta.
	Grade I.	Grade II.	Total.				
District Boards	8	5	13	..	..	17	245
Major Panchayats	..	..	..	..	..	..	..
Municipalities	19	20	39	..	..	48	394
Corporation of Madras.	28	3	31	..	..	88	290
Government Health Visitors' School.	..	1	1	1	..	..	..
Orientation Training Centre.	1	..	1	1	..	..	..
Government Community Projects.	..	..	..	..	..	14	56
Government Primary Centres.	..	..	..	..	..	..	16
Government Nilambur Malaria Unit.	..	..	..	..	..	4	5
Government Poonamallee Health Unit.	1	..	1	..	1	4	18
Total	57	29	86	2	1	175	1,014

Women Medical Officers.—The number of posts of Women Medical Officers (Maternity and Child Health) sanctioned was 13 in the district boards, 39 in municipalities, 31 in the Corporation of Madras and 2 under the Government. Out of a total of 84 sanctioned posts of Women Medical Officers (Maternity and Child Health) excluding the one in the Health Visitors' School and in the Orientation Training Centre, 10 were vacant for want of qualified hands.

Public Health Nurse.—One Public Health Nurse was appointed in the Health Visitors' School for teaching the pupil Health Visitors under the Government of India scheme.

Health visitors.—The total number of sanctioned posts in the local bodies was 157 of which 17 were sanctioned during 1954. There were 18 Health Visitors working in the Government schemes. Many posts under the local boards were vacant due to dearth of qualified hands.

Maternity assistants.—During the year under report, 118 new posts (88 under the Corporation of Madras, 20 under municipalities and 10 under district boards) were sanctioned, bringing the total number of maternity assistants to 1,014 (937 in the local body schemes and 77 in the Government schemes). The training of midwives is under the control of the Medical Department and many of them are absorbed soon after the training by the maternity and child welfare schemes of the local bodies. The number of maternity assistants employed by the local bodies, is quite inadequate to meet the requirements. It is very necessary that skilled midwifery services should be extended, especially to the rural areas.

Other staff.—Ten posts of compounders and 35 posts of Resident Matrons were also sanctioned. The Resident Matrons are largely responsible for the efficiency of work in maternity homes. One Resident Matron was appointed in the Poonamallee Health Unit in lieu of a Public Health Nurse. She is in overall charge of the maternity homes and centres in the unit.

Work done.—The maternity and child health staff conducted 11,618 clinics during 1954, which were attended by 81,180 pre-natal mothers, 47,251 nursing mothers, 41,543 infants, 44,158 pre-school children. The number of home visits paid by the Women Medical Officers, health visitors and maternity assistants were respectively 46,433, 152,485 and 544,660 in 1954. The details of visits by the various health staff are given in Annexure J. Nine thousand seven hundred and eighty-eight mothers' classes were also conducted and were attended by 232,253 mothers.

Health Visitors' Training School.—The Government Health Visitors' Training School completed sixteen years of its existence and so far, 187 Health Visitors have been awarded the Diploma in Health Visiting. Ten students selected in July 1953 completed their training in December 1954. A stipend of Rs. 25 each per month is given to the pupils by the Government. Another batch of 20 candidates were admitted in the Health Visitors' School in November 1954 under the Government of India Scheme for training health personnel for Community Projects.

The practical field training in both urban and rural areas is arranged at the Maternity and Child Welfare Centres of the Corporation of Madras, Poonamallee Health Unit and Chingleput municipality. They also work in the medical unit and creche of the Mangalapuram unit. The elementary schools at Poonamallee are also visited periodically by the students. The course includes excursions to various places of public health importance in and around Madras City. The students visited more than 24 places during 1954, such as, the Kilpauk Water Works, Red Hills, Ennore Malaria Station, Milk Factory at Saidapet and Ayanavaram, Leper Settlement, Tirumani, T.B. Sanatorium, Tambaram, King Institute, Guindy, Certified Schools and Vigilance Home, etc.

Refresher course for health visitors working under the local bodies is now arranged as a regular additional activity of the school. This course helps the health visitors to be conversant with the latest methods in maternal and child care and to improve the efficiency of maternity and child welfare staff in this State.

A special refresher course for one month during January and February 1954 was conducted by Miss Lillian Bischoff, Public Health Nursing Consultant of the Technical Co-operative Mission, U.S.A. Eight health visitors deputed by the local bodies, the Corporation of Madras, one from the Nursery School, Vepery and the 10 pupil Health Visitors of the Health Visitors' School attended the course.

One Public Health Nurse was appointed at the Health School on 4th December 1954 for the special teaching of the 20 pupil Health Visitors trained under the Government of India scheme. The post of the Woman Medical Officer of the Health School was upgraded during the year.

Finance.—Government sanctioned a sum of Rs. 3,11,253 as grants for the maintenance of maternity and child welfare centres by the local bodies during 1954. The distribution of grants to the local bodies is shown below :—

	RS.
District Boards	93,758
Municipalities	2,13,283
Panchayats	4,212
	3,11,253

Voluntary organizations.—A few voluntary organizations continued to supplement the activities of the maternity and child welfare work undertaken by the local bodies and the Government. Particular mention however may be made of the Kasturibai Gandhi National Memorial Trust which has spread its work into almost every district. The State Welfare Extension Project, which is partly a voluntary organization, has been gradually extending its activities. Practically all the voluntary organizations receive aid either through local bodies or the Government.

General.—Although the number of midwives trained each year is large, skilled midwifery services are not adequately available to rural areas. To extend these services to these areas a proposal has been submitted to the Government. Each district board will employ

8 maternity assistants each year on a subsidy basis of Rs. 25 per mensem for each maternity assistant for domiciliary midwifery services alone around her village. It is proposed to try the proposal in the 3 districts of Tanjore, South Arcot and Tiruchirappalli as an experimental measure. Another proposal to extend the maternity services to twenty-four centres in backward areas in the State has also been sent to the Government and has since been sanctioned.

Assistance from the UNICEF.—At the end of the previous year, 24 maternity and child health centres under the local bodies, the Poonamallee Health Unit, and the Malaria Control Team, Nilambur, were in receipt of UNICEF assistance. Maternal and child health basic equipment, soap, drugs and diet supplements which included skim milk, whole milk and fish oil capsules, were supplied to them. Fifteen more maternity and child welfare centres in rural and urban areas were selected during 1954 for distribution of the gifts. The cost of the maternal and child health equipments (A & B types) and of the drugs and diet supplements supplied to these 15 centres only during 1954, was Rs. 13,724. The total cost of supplies of skim milk, whole milk, fish oil capsules and soap received during 1954 for distribution to all the 39 centres is estimated to be Rs. 46,724. During 1954, the UNICEF made a gift of 24 treadle and 8 hand operated sewing machines costing about Rs. 6,780 for distribution to the maternity and child welfare centres in the urban areas. Thus the total cost of articles received from the UNICEF during 1954 as free gift was Rs. 67,288. The State Government spent about Rs. 4,905 to meet the freight and incidental charges from Bombay to Madras and other packing charges for despatching the articles to the maternity and child welfare centres.

The supply of these gift articles of the UNICEF helped the mothers, infants and children in rural and urban areas. The distribution of skim milk and fish oil capsules at the maternity and child welfare centres also helped the infants a great deal in supplementing their diet.

Infant mortality.—The steady expansion of Maternity and Child Welfare Services will reduce the suffering and mortality of infants, children and mothers. It was pointed out in the report for 1953 that a steep decline was noticed in the recorded infant mortality during the period 1943–53. This fall has been maintained during 1954 also. The number of infant deaths decreased from 110,889 in 1953 to 99,144 in 1954 and the infant mortality rate has decreased from 113.79 to 100.67 per 1,000 live births. The infant deaths and the rates recorded in 1954 in rural and urban areas and in the State as compared with those in 1953 are shown below :—

		1953.		1954.	
		Number.	Rate per 1,000 live births.	Number.	Rate per 1,000 live births.
Urban Areas	.. ..	30,270	116.68	27,610	101.33
Rural Areas	.. ..	80,619	112.74	71,534	100.42
State	.. ..	110,889	113.79	99,144	100.67

The above statement shows that there has been a reduction in infant mortality in both urban and rural areas as compared with the previous year.

The infant mortality in the age groups under one year is tabulated below:—

Age group.	1954.			1953. State.
	Urban.	Rural.	State.	
Under 1 month ..	47.74	52.46	51.15	52.68
1 to 6 months ..	27.36	19.36	21.57	25.28
6 to 12 months ..	26.23	28.60	27.95	35.83
Under 1 year ..	101.33	100.42	100.67	113.79

From an examination of the above statement the following points emerge. Compared with 1953, there was practically no change in neo-natal mortality; there has been a large reduction of 22 per cent in the death rate of infants aged 6-12 months, and a fall of 15 per cent in the mortality rates for infants between 1-6 months. As in the previous year, the infant mortality rates for the age groups under one month and 6-12 months in the rural areas were slightly higher than those in the urban areas, while the rate for the age period 1-6 months was much less in rural areas than that in urban areas.

Annexure H gives the infant mortality and the rates registered in each district in 1954. The infant mortality rate ranged from 72.33 in Malabar district to 124.15 in Tirunelveli district which recorded the highest infant mortality rate in 1953 also.

There were 21,826 infant deaths in Municipalities in 1954 as against 23,969 in 1953 representing infant mortality rates of 105.33 and 121.17 per 1,000 live births respectively. The infant mortality rates varied from 45.70 in Udipi to 143.36 in Srivilliputtur. The other municipalities which returned high infant mortality rates were Sivakasi (142.06), Tirunelveli (139.13) and Madras (136.00). It is doubtful whether the recorded infant mortality rate of 45.70 in Udipi and the low rates in some other municipalities represent really a true picture, as the accuracy of rates depends on the accuracy of registration of infant deaths and live births.

In order to estimate the true infant mortality rate in rural areas and assess the causes of infant deaths an enquiry was conducted in the Poonamallee Health Unit area with a grant from the Indian Council of Medical Research. One thousand five hundred and six infants born to mothers who were brought under care of the Maternity and Child Welfare Centres in the Unit area during the period 15th August 1951 to 14th August 1952, were followed up till they completed one year or they died during infancy. The report on the enquiry was submitted to the Indian Council of Medical Research during the year. The estimated infant mortality rate was 140.92 per 1,000 live births. The principal causes of deaths were intestinal intoxication, asphyxia, prematurity, bronchitis, pyogenic infection (skin) and nutritional malnutrition.

Maternal mortality.—The number of mothers who died as a result of child-birth in the Madras Residuary State during the period 1944 to 1954 is given below. As the figures of still births for the Madras Residuary State for the years 1944 to 1951 are not available, the maternal mortality rates are not furnished for these years.

Year.				Number of deaths due to child birth.	Maternal Mortality rate per 1,000 (live and still births).
1944	..	..	..	9,195	..
1945	..	..	..	8,519	..
1946	..	..	..	8,243	..
1947	..	..	..	8,297	..
1948	..	..	..	7,363	..
1949	..	..	..	5,636	..
1950	..	..	..	6,424	..
1951	..	..	..	5,437	..
1952	..	..	..	5,511	5.07
1953	..	..	..	5,351	5.42
1954	..	..	..	4,532	4.54

The above figures show that the number of maternal deaths has steadily decreased. There was a decrease in the number of mothers who died as a result of child birth from 5,351 in 1953 to 4,532 in 1954, the maternal mortality rates being 5.42 and 4.54 respectively. In urban areas the maternal mortality was 1,605 in 1954 giving a maternal mortality rate of 5.68 per 1,000 live and still births, as against 5.54 in 1953. But in rural areas, the number of deaths due to child birth decreased from 3,860 in 1953 to 2,927 in 1954, the maternal mortality rates being 5.37 and 4.08 per 1,000 live and still births respectively. The maternal mortality rate was higher in urban areas than in rural areas. This might be partly due to the fact that many expectant mothers go to urban areas for confinement as there are better maternity services.

Statement II of the appendix gives the maternal mortality rates in the districts and Statement VI of the appendix the maternal mortality and the rates for each municipality and census towns. The maternal mortality rate varied from 3.00 in Ramanathapuram district to 7.38 in Tiruchirappalli.

In municipal areas, 1,248 maternal deaths were recorded in 1954 giving a rate of 5.77 per 1,000 live and still births. There was wide variation in the recorded maternal mortality rates in municipalities, varying from no deaths in Bodinayakanur and Kodaikanal and 0.81 in Cannanore and 1.13 in Chidambaram to 17.11 in Naga-pattinam.

INDUSTRIAL HYGIENE.

Under the Factories Act, 1948, Health Officers as Additional Inspectors of Factories visited the factories under their jurisdiction twice. Their observations with reference to ventilation, lighting, overcrowding, water-supply, etc., in factories were reported to the respective Inspectors of Factories for necessary action.

The sanitary conditions in factories were fair and no serious outbreak of communicable diseases occurred among the workers during the year. The health of the workers was generally good.

Mining was carried on in the districts of South Arcot, Salem, Coimbatore, The Nilgiris, Tirunelveli, Tiruchirappalli and Chingleput. Lignite mines are worked in South Arcot district, magnesite (surface quarrying) in Salem district, gypsum quarrying in Coimbatore and Tiruchirappalli districts, mica in the Nilgiris and limestone in Tirunelveli district. The Health Officers inspected most of the mines to ensure safety and health of the workers and reports were sent to the Chief Inspector of Mines. The general health conditions in the mines were fair.

In the colony which has sprung up around the Neiveli Lignite mines in South Arcot district, a Health Inspector has been posted. He attends to general sanitation and control of epidemics with a staff of one sanitary maistry and adequate sweepers and scavengers.

RESIDENTIAL AND INDUSTRIAL AREAS.

Thirty-six municipal councils and 91 panchayats have so far notified residential areas. Fresh proposals have been received from one municipality and one panchayat during the year. A large number of proposals for exclusion of areas from the notified residential areas were received and disposed of.

Thirty-eight municipalities and 128 panchayats have set apart industrial areas. The Town-Planning Department approved proposals for new industrial areas or additional industrial areas in 6 municipalities and 3 panchayats.

HEALTH EDUCATION, PROPAGANDA AND PUBLICITY.

Proposals under the First Five-Year Plan were submitted to the Government, for the establishment of a full Bureau of Health Education in charge of an Assistant Director of Public Health (Propaganda and Publicity), assisted by a Class I Health Officer and ancillary staff for the reorganization and intensification of propaganda activities and for the establishment of a Central Museum of Health in the City of Madras. The proposals have been partly sanctioned. A Class I Health Officer and the ancillary staff have been sanctioned. The sanction for the appointment of an Assistant Director of Public Health (Propaganda and Publicity), has not yet been accorded. Proposals for the establishment of a Health Museum at an estimated cost of Rs. 2,44,070 were submitted to Government as Part II Scheme for 1955-56. As the scheme has been deferred, fresh proposals have been sent for inclusion of the scheme in the Second Five-Year Plan.

A sum of Rs. 8,000 has been sanctioned as a recurring expenditure for the purchase of films. Forty-five films in Tamil were purchased and included in the film library. Another sum of Rs. 15,000 has been sanctioned for preparation of models and charts. Four plaster models, two mechanical models, seventeen oil coloured posters, two show cases, twenty-four colour films, several poster colour charts and five leaflets on health subjects have been prepared.

The amount of Rs. 17,000 sanctioned for the purchase of a propaganda van has been found to be insufficient. The Government have been addressed for an extra allotment of Rs. 4,000. Sanction for incurring an expenditure of Rs. 20,000 for production of films has been accorded. It is proposed to produce a film on Venereal Diseases. In consultation with the specialists on the subject, preliminary arrangements have been completed.

In and around Madras City, the Health, Education and Publicity branch of the Department took part in the health and social activities of various organizations, besides those of Governmental agencies. In co-operation with the educational, medical and other institutions, its activities have been extended. Special facilities, especially in audio-visual education, have been afforded to medical and non-medical trainees. As usual, this department participated in the All-India Congress Exhibition during 1953-54.

The routine activities on health, education and publicity are being carried out by the health staff in districts and municipalities through the medium of personal talks, group discussions, lectures, magic lantern demonstrations, health exhibitions, cinema shows, etc., aided by distribution of leaflets and pamphlets. The statement given below contains a summary of health propaganda work done by the Public Health staff during 1954.

(1) Lectures with magic lantern	...	...	3,043
(2) Lectures without magic lantern	...	...	8,041
(3) Talks	...	...	75,063
(4) Cinema shows	...	...	1,600
(5) Exhibitions	...	...	163
(6) Audience	...	...	3,200,232

Government called for proposals for the revival of the publication of Public Health Abstracts. Sanction has been accorded to print 500 copies of this quarterly periodical at the Government Press, for issue to Health Officers and others. The first issue was brought out in December 1954. The distribution of this publication to all local bodies and Women Medical Officers at cost price is under contemplation.

Several articles on various health subjects were translated into the local languages. Radio talks on Guineaworm and Plague were arranged. An article has been submitted to the Tamil Encyclopædia. Leaflets on tuberculosis, family planning, sanitation, mosquito control and nutrition, both in English and Tamil, were prepared. For guidance of under-graduate medical students, Women Medical Officers (Maternity and Child Health), Medical Officers who undergo refresher course, etc., 1,000 pamphlets on 'Food for Health' and 'Weaning and Feeding of Children' have been printed for free distribution.

Coloured posters on leprosy, published by the Hind Kusht Nivaran Sangh, New Delhi, have been purchased and stocked in the Central Bureau for sale to local bodies and others.

A close liaison has been maintained with the Regional Organization of the World Health Organization, the UNICEF, the British and American Information Services and Governmental and non-Governmental agencies.

Various voluntary organizations have willingly participated in health promotional activities in the State. The services rendered by them have been commendable.

The National Health Association of South India, Madras, conducted health education campaigns through talks and magic lantern demonstration on 25 occasions during the year. The association has been largely responsible for bringing into existence a 'Home' called 'Daya Sadan' at Konnen High Road, Perambur, Madras, where diseased destitutes are accommodated and cared for. The association has also successfully persuaded the Daya Sadan to organize a 'Leprosy Home' at Villivakkam for 100 affected persons. During an outbreak of cholera in Madras, the association undertook ameliorative and preventive measures especially in slum areas. It has also been associated with the free distribution of UNICEF gift milk to pregnant and nursing mothers and children.

The Guild of Service has been taking more responsibility in the field of social work both in the City and in the districts. The Guild has been actively co-operating with the Central Social Welfare Board in all its programmes and extension schemes, several of its members serving and working on both social welfare extension schemes and State Boards. The beggar home started by the Government at Melapakkam was visited by the members of the Guild of Service regularly.

With the co-operation of the Madras Rotary Club, the Guild started a Bala Vihar for special care of children. A medical centre has been built in the Nursery School at Mangalapuram. The gifts of milk powder, rice and other articles received from the UNICEF and other agencies have been distributed free to deserving cases in the City and the mufassal.

The Health Propaganda Board has been running as usual, the free reading room, the Public Health Library, and the Health Museum and participated in exhibitions including the one held at the S.I.A.A. grounds. Posters, charts, pamphlets, etc., were circulated amongst various institutions and agencies. The Board has been contemplating the provision of a Health Education Van for special coverage of slum areas in the City.

The Red Cross Society has been rendering very valuable service in the field of public health. By running free Maternity and Child Health Centres and giving grants in aid to a few more, the society has been able to cover one of the urgent problems of the day. In the matter of distribution of nutritional aids, such as milk powder, vitamin tablets, 'Multi-purposes' and 'Care' food packages and rice, economic aid in the shape of medicaments, hospital comforts and stores to various institutions and organizations, the society has been devoting admirable attention. As to training of the public in medical, social and allied public health work, the society has been undertaking quite a lot of useful work.

The value and extent of the health education and publicity activities of the Department, have been very much enhanced by the willing participation and co-operation of the various voluntary agencies.

FIVE-YEAR PLAN, COMMUNITY PROJECTS AND NATIONAL EXTENSION SERVICE.

The projects included and implemented under the First Five-Year Plan, in so far as the Public Health Department is concerned, are :—

- (1) Malaria control.
- (2) Nutrition Research.
- (3) Propaganda and Publicity.
- (4) Expansion of Health Services.
- (5) Training of Health Visitors.

The programmes under each of the schemes and the achievements thereof are outlined below :—

Malaria Control.—The details of work carried out are given under 'Malaria Control' in Chapter II.

Nutrition Research.—The activities under the Nutrition Branch of the department have been merged in the Five-Year Plan and the working of the branch is given under 'Nutrition' in Chapter IV.

Propaganda and Publicity.—The details of the scheme are given under "Health Education and Publicity". An expenditure of nearly Rs. 4 lakhs will be incurred in the Plan period. The proposals are being implemented.

Expansion of Health Services.—(a) *Primary Health Centres*; Eighteen Primary Health Centres to serve the villages with a total population of about 10,000 within five miles round each, were opened in North Arcot, Coimbatore and Malabar districts under Rural Welfare Scheme. Each dispensary was staffed with one Medical Officer, one Health Inspector, one Compounder and one midwife so that the public health and medical services may radiate to the villages in the area. The results achieved under this set up were not up to the expectations and it is proposed to replace these centres by mobile medical units.

(b) *Poonamallee Health Unit.*—The activities of the unit are detailed later.

Training of Health Visitors.—One of the main difficulties in implementing schemes under the Five-Year Plan is dearth of technical personnel. In respect of maternity and child welfare services in this and other States there is urgent need for qualified Health Visitors. In order that more Health Visitors, may be trained, the Government of India have given financial aid by which 60 pupil Health Visitors will be trained in a period of three years at a total cost of Rs. 1.56 lakhs, of which an expenditure of Rs. 60,350 will be borne by the State Government and Rs. 95,650 by the Central Government. This includes a capital expenditure of Rs. 70,000 borne entirely by the Central Government. The scheme has been taken up in November 1954.

COMMUNITY PROJECTS.

The four Community Projects and the four Community Development Blocks continued to function with the full complement of staff of 1 Health Inspector, 1 Health Visitor and 4 Maternity assistants for each block. During 1954-55, Government have converted 20 of the National Extension Service Blocks into Community

Development Blocks. Intensive public health activities were carried out in the area by the public health staff. Government have been addressed to accord sanction for public health staff to the newly converted Community Development Blocks on the usual pattern and also for the National Extension Service Blocks and orders of Government are awaited in the matter.

POONAMALLEE HEALTH UNIT.

The Poonamallee Health Unit was started in October 1935. In December 1945 it was reorganized and expanded to constitute an integrated health service and to serve as a field training centre for all categories of medical and health personnel, undergraduates and post graduates. The staff employed consisted of one Health Officer, Class I, one Medical Officer (Maternity and Child Health), Grade I, one Resident Matron, four Health Inspectors, four Health Visitors, 18 Maternity Assistants, four Health Assistants, four public health maistries, 46 public health menials, 2 fitters, 18 ayahs, 11 peons and 2 watchmen.

A recurring expenditure of Rs. 13,000 under rural water-supply scheme for putting up four new borewells in 1954-55 and for completing the four borewells already started in 1953-54 in the Health Unit and a sum of Rs. 4,500 for constructing private latrines, were sanctioned. Construction of a laboratory at a cost of Rs. 8,000 for the investigation and diagnosis and survey of maternal and infantile morbidity and the prevalence of various disease conditions and construction of an isolation shed at a cost of Rs. 1,500 for hospitalization of infectious cases, were also sanctioned. To meet the diet charges of mothers who confine in the maternity homes of the Unit, a sum of Rs. 1,000 was provided by Government.

The Unit serves 36 villages in Sriperumbudur taluk in Chingleput district with a population of 61,523 as per 1951 census. The total numbers of births and deaths recorded in the Unit area during the year 1954 were 2,369 and 1,103 respectively giving birth and death rates of 38.5 and 17.9 per mille of 1951 census population as against 28.7 and 21.2 during 1953. The births and deaths that occurred in five months in 1953 in the Poonamallee Panchayat in the Health Unit area with a large population were not available. The large increase in birth rate in 1954 as compared with 1953 is partly due to this. There were 300 infant deaths giving an infant mortality rate of 126.6 per 1,000 live births. There were 4 maternal deaths giving maternal mortality rate of 16 per 1,000 live and still-births. The staff detected 105 unregistered births and 70 unregistered death.

Cholera.—There was one death from cholera during the year under report.

Smallpox.—There were two attacks and no deaths in 1954 as against no attack and death in 1953. The four Health Assistants were continued during 1954 and they carried out systematic primary and revaccination. They performed 2,119 primary and 10,662 revaccinations.

Conservancy.—Four public health maistries and 46 mazdoors were employed in conservancy work. All the villages in the non-panchayat areas were cleaned once a week. Eight hundred and thirty-three private bore-hole latrines with water seal squatting slabs were constructed during 1954. As part of the programme for improving the activities of the Unit, it is proposed to provide 450 houses with sanitary convenience in a year at a cost of Rs. 10 per latrine, one-third cost being borne by the public.

Water-supply.—There are 54 bore wells, out of which 7 are out of order and require major repairs. The Industries Department has been addressed to carry out the repairs. Four bore wells were sunk but failed to yield water of the required quantity. No bore wells were put up during the year 1954-55 as the Department of Industries stated that the four bore wells could not be completed before the closure of the financial year for want of power drills. Arrangements are being made with the Industries Department for sinking these bore wells.

Anti-mosquito work.—Work was carried out in Kunrathur, Poonamallee and Tirumishi. The malaria unit attached to Regional Malariologist, Tanjore, visited the area during the year under report and conducted the survey.

Maternity and Child Welfare work.—The Unit has four main maternity and child welfare centres at Poonamallee, Tirumishi, Mangadu and Kunrathur and three sub-centres at Nazarathpet, Kovur and Pattu. There are six maternity homes functioning one in each of the centres excepting the one at Pattu. A sum of Rs. 1,000 per annum and Rs. 60 per mensem has been sanctioned towards diet charges for in-patients and incidental charges for the distribution of rice respectively. Difficult labour cases were removed to the Madras Lying-in Hospitals in the Ambulance Van.

The activities of the maternal and child health staff are shown below :—

(1) The number of admissions in all the Maternity Homes.	1,019
(2) The total number of births in the Health Unit area.	2,369
(3) Number of labour cases conducted by Health Unit staff.	1,875
(4) Number of cases conducted by other qualified Maternity Assistants.	88
(5) Percentage of cases that had skilled attention.	82.9
(6) Attendance at clinics—	
Antenatal old and new	9,364
Nursing mothers	10,308
Infants	6,813
Pre-school	5,965
Mothers' classes	18,334
Other activities	975
Minor ailments treated	30,110
Number given shark liver oil	11,342
Cases referred to hospitals	88

Food Adulteration Act.—Food Adulteration Act is in force only in Poonamallee Panchayat Area.

B.C.G. work.—A team of 42 Health Inspectors underwent training in B.C.G. Vaccination work. About 15,153 persons (i.e., about a fourth of the population of the Health unit area) were tested by Mantoux test out of which 7,740 were positive reactors. Four thousand, two hundred and nine negative reactors were given B.C.G. Vaccination.

Nursery scheme.—The nursery is now located in the compound of the Maternity Home, Poonamallee and is very popular.

UNICEF—Skim Milk Powder.—On an average 600 lbs. of skim milk powder were consumed in the six maternity homes and nursery every month. The skim milk powder was also distributed to the schools for preparation of curd along with midday meals. Whole milk was distributed to infants whose mothers are unable to breast feed them and toddlers for whom doctors specifically prescribe whole milk.

UNICEF rice.—Two hundred and fifty bags of rice were allotted to the Unit on 10th September 1954. Out of this, 202 bags were issued to the other institutions at Madras. The distribution of 7 bags of rice out of the remaining 48 bags during 1954 is as follows :—

Maternity Homes	..	..	1 bag of rice
Melmanamedu School	..	..	6 bags

The midday meals scheme was started at Melmanamedu School on 22nd November 1954.

On 24th December 1954, 35 bags of UNICEF rice were received from the Tahsildar, Sriperumbudur, for distribution in cooked form to children, expectant and nursing mothers attending the Maternity and Child Welfare Centres. Since this rice was slightly spoiled, it was issued to all the maternity and child welfare centres.

PORT AND MARINE HYGIENE.

A statement showing the health work done in minor ports in the State is given in Annexure Y.

CHAPTER IV—FOOD AND NUTRITION.

RAINFALL AND PRICES OF FOODGRAINS.

There was an increase in the average district rainfall from 51.1 inches in 1953 to 57.1 inches in 1954. The average rainfall in the south-west monsoon, and inter monsoon period in 1954 was higher than that in the corresponding periods in 1953, while it was about the same in the north-east monsoon, as will be seen in the following statement :—

Period.	Average district rainfall in inches.		
	1953.	1954.	Normal.
Inter-Monsoon (January to May)	6.6	10.6	7.7
South-West Monsoon (June to September).	29.0	31.1	28.8
North-East Monsoon (October to December).	15.5	15.4	18.1
Total	51.1	57.1	54.6

Compared with the normal rainfall, the amount of rainfall in 1954 was also higher, although it was less in the north-east monsoon owing to failure of the monsoon in November.

The estimated production of the principal foodgrains of rice, cholam, cumbu and ragi was higher in fasli 1953-54 than that in 1952-53 due mainly to favourable seasonal conditions. The percentage of increase in production was 36.0 in the case of rice, 27.9 in cholam, 38.8 in cumbu and 29.5 in ragi. The large increase in the production has influenced the prices of foodgrains as revealed in the following statement :—

Statement showing the average retail prices of rice, cholam, cumbu and ragi in the Madras State during 1954 in terms of rupees and two decimals of a rupee per standard maund of 3,200 tolas or 82.2/7 lbs.

Month 1954.	Rice.	Cholam.	Cumbu.	Ragi.
January	21.84	14.57	12.76	14.52
February	20.24	13.24	11.59	13.87
March	20.12	13.60	11.67	13.80
April	20.09	12.14	11.76	13.58
May	19.18	12.01	11.50	12.04
June	19.17	11.52	11.37	12.22
July	19.11	11.44	11.03	11.34
August	20.67	11.42	10.91	10.75
September	18.89	11.40	10.49	11.49
October	18.71	11.74	10.02	10.73
November	18.76	11.40	10.16	10.50
December	18.94	10.86	10.26	10.44
Average 1954	19.64	12.11	11.13	12.11
Average 1953	21.02	15.15	Not available.	

The price of rice and cholam was less than that in the previous year. The price of cumbu and ragi could not be compared with the previous year as the relevant data for 1953 are not available.

There was employment for agricultural labourers on account of favourable seasonal conditions and their wages also continued to be high.

There was informal rationing in the districts of Malabar, The Nilgiris and Hosdrug sub-taluk in South Kanara district during 1954. Consequent on complete decontrol in July 1954, all fair price shops in rural areas of the derationed districts were closed as and when the stocks held by them were disposed of. Procurement of rice in Tanjore and of millets was also discontinued.

NUTRITION.

Organization of the Nutrition Bureau.—The Nutrition organization of this department continued during the year without any change. There were two field units, one working in Poonamallee Health Unit area and the other in the Gandhigram Community Project area.

DIET SURVEYS.

During the year, 185 surveys were undertaken. The number of surveys and the number of families and institutions surveyed by the Central Nutrition Bureau and the Regional Nutrition Unit, Madurai, are given hereunder :—

	Number of surveys.	Number of families.	Number of Institutions.
Central Nutrition Bureau	59	259	8
Regional Nutrition Unit, Madurai	126	630	4
Total	185	889	12

The families surveyed represented four socio-economic groups with average monthly income of (i) less than Rs. 50, (ii) Rs. 50-100, (iii) Rs. 150-200 and (iv) above Rs. 200.

Rice formed the bulk of the diet consumed in almost all the families. Ragi, cumbu, cholam, etc., were also included in small quantities, especially among the low income groups. The diet, in general, was ill-balanced in all the families surveyed, though mostly adequate in respect of calories, due to the relatively high intake of cereals, as compared to that of pulses and other protective foods.

The following table gives the maximum, minimum and average consumption of foodstuffs per consumption unit per day in respect of 259 families surveyed in Poonamallee Health Unit area and 630 in Gandhigram Community Project area.

Food stuffs.	(1)	Poonamallee Health Unit			Average for all families.	Gandhigram Community Project area.			Average for all families.
		Maxi-mum.	Mini-mum.	Average		Maxi-mum.	Mini-mum.	Average	
		Among families actually consuming the food stuffs.				Among families actually consuming the food stuffs.			
		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		OZ.	OZ.	OZ.	OZ.	OZ.	OZ.	OZ.	OZ.
1 Cereals ..	100	23.74	7.79	13.19	100	27.8	12.07	18.8	
2 Pulses ..	100	2.54	0.42	1.18	100	4.08	0.014	1.41	
3 Leafy vegetables.	98.8	1.53	0.06	0.51	81.7	2.0	0.002	0.45	
4 Non-leafy vegetables.	100	3.22	0.20	1.34	100	4.91	0.03	1.84	
5 Roots and Tubers.	96.61	1.91	0.04	0.78	100	4.24	0.01	0.85	
6 Milk ..	89.8	6.58	0.02	2.14	77	7.1	0.02	2.11	
7 Milk products.	76.44	3.1	0.03	1.14	64.3	4.0	0.03	1.18	
8 Meat/Fish/Eggs.	62.04	1.48	0.01	0.48	90.8	2.91	0.01	0.56	
9 Fats and oils ..	100	0.89	0.04	0.34	97.6	1.1	0.01	0.29	
10 Condiments ..	100	2.67	0.13	0.94	100	4.4	0.13	1.0	
11 Fruits ..	35.44	0.39	0.015	0.12	45.24	2.1	0.01	0.88	
12 Nuts ..	64.32	0.7	0.003	0.15	67.5	1.4	0.01	0.43	
13 Sugar Jaggery	91.5	2.0	0.015	0.47	76.2	2.6	0.01	0.57	

It may be seen from the above statement that the consumption of pulses, vegetables particularly leafy vegetables, milk, milk products and flesh foods, was below the standards recommended for adequate nutrition. The consumption of leafy vegetables was totally absent in about 18 per cent of the families in Gandhigram Community Project area and even among the rest it was low. Few families included fruits in their diet.

The particulars of the diets of 116 out of 259 families in Poonamallee Health Unit area and 330 out of 630 families in Gandhigram Community Project area were utilised for calculating their average

content in the more important nutrients. The range of intake of different nutrients per consumption unit per day in the two areas, is shown in the following statement :—

Nutrients.	Poonamallee Health Unit area (116 families).			Gandhigram Community Project Area (330 families).		
	Maxi-mum.	Mini-mum.	Ave- rage.	Maxi-mum.	Mini-mum.	Ave- rage.
	(Per consumption unit per day).					
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1 Proteins—						
(a) Animal Protein (in gms).	11.68	0.6	4.96	18.27	0.23	4.54
(b) Vegetable Protein (in gms).	56.02	22.54	38.15	92.08	28.37	51.46
2 Fats (in gms)	43.51	4.17	19.79	66.02	4.49	23.16
3 Carbohydrates (in gms).	561.02	223.85	374.17	679.06	283.84	462.8
4 Calcium (in gms).	739.44	216.46	424.73	1811.02	203.28	562.5
5 Phosphorus "	1319.8	542.13	906.36	2403.38	408.12	1237.8
6 Iron "	30.45	6.96	18.06	53.46	14.52	27.14
7 Vitamin A (I.U.).	2232.04	84.35	871.99	3432.77	177.97	1012.51
8 Vitamin B 1 "	523.97	68.41	304.19	954.21	214.2	479.25
9 Vitamin C (in mgm).	87.01	4.79	43.41	117.65	5.77	38.79
10 Nicotinic Acid "	30.88	5.41	16.5	25.97	3.21	19.12
11 Riboflavin (in gms).	389.53	24.99	117.72	669.15	4.53	217.75

It will be observed that in respect of all the essential nutrients, the diets were in general, grossly deficient.

The caloric value of the diets in all the areas was predominantly made up by cereals. In certain families the diets were also defective in quantity providing low calories. The gross caloric value of the diets per day per consumption unit ranged between 3,709 and 1,372 in Gandhigram Community Project area and averaged to 1,770 and 2,364 respectively in the two areas. In Poonamallee Health Unit area the diets provided less than 2,000 calories in 80 per cent of the families, as against only 23 per cent in Gandhigram Community Project area, as will be seen from the following table giving the distribution of the families included in the diet surveys according to different levels of calorie consumption.

For correct valuation or comparison, these calorie levels will require to be reckoned with the corresponding income levels. In the Poonamallee area the families with monthly income above Rs. 100 included in these surveys formed only 6 per cent of the total as against 33 per cent in the Gandhigram area.

Calorie value per consumption unit.	Poonamallee Health Unit Area.		Gandhigram Community Project Area.	
	Number of families.	Percentage to total number of families.	Number of families.	Percentage to total number of families.
3000 and over ..	..	..	40	6.35
2500 to 3000 ..	25	9.65	180	28.57
2000 to 2500 ..	25	9.65	265	42.06
1500 to 2000 ..	132	50.96	135	21.43
1000 to 1500 ..	77	29.74	10	1.59
Total ..	259	100.00	630	100.00

NUTRITION SURVEYS.

In the areas surveyed for diet and in selected institutions, nutrition surveys of 2,639 children between the age group 5-16 years were conducted. The percentage of children with deficiency signs to the total number of children examined are given in the

statement below. The chief deficiency diseases revealed in the above surveys were Adipose Tissue deficiency (67.94 per cent), Pigmentation of conjecction (27.59 per cent), Conjunctival Xerosis (27.47 per cent), Tongue lesions (25.0 per cent), Skin lesions (22.62 per cent) lip lesions (16.71) per cent and teeth caries (12.0 per cent).

Deficiency signs.	Percentage of children with deficiency signs.
Conjunctival Xerosis	27.47
Conjunctival Pigmentation	27.59
Eye discharge	1.67
Corneal Xerosis	0.04
Corneal Vascularisation	5.15
Lids Excoriation	0.04
Folliculosis	2.2
Angular Conjunctivitis	0.19
Night Blindness	0.84
Mouth (a) Lips, Angular stomatitis	16.71
(b) Tongue	..
Colour	25.2
Surface	25.69
(c) Buccal Mucosa condition	0.04
(d) Gums (condition)	0.23
(e) Teeth	..
Fluorosis	1.36
Caries	11.37
Hair condition—	
Skin (a) General Appearance	22.62
Loss of elasticity	11.37
(b) Regional—	
Trunk	0.04
Face	0.04
Extremities	0.15
Adipose Tissue deficiency	67.94
Oedema	0.23
Bones—Stigmata of Rickets	0.11
Alimentary system (appetite deficient)	..
Stools Diarrhoeal	0.04

(b) *Biometric studies.*—The data of age, sex, heights and weights of children observed during the nutrition surveys and the All-India Khadi and Swadeshi Exhibition held during December 1953 and January 1954, were statistically analysed. The latter analysis covers the data relating to 6,693 children (4,714 boys and 1,979 girls). The annexures R and S give average heights and weights with standard deviation for each age group and sex separately.

MEASURES FOR COMBATING MAL-NUTRITION.

(i) *Distribution of skim milk.*

A long range scheme for distribution of UNICEF gift of skim milk among mal-nourished children and mothers through the maternity and child welfare centres and hospitals in the State, has been functioning since May 1954. The UNICEF has donated for this purpose 750 tons (15,00,000 lb.) skim milk powder for the years 1954 and 1955.

The following table shows the number of distribution centres and daily average number of beneficiaries under this scheme during the year :—

Month.	Numbers of M. & C.W. Centres and hospitals.	Infants under 1 year.	Children under 14 years.	Expectant and nursing mothers.	Total.
(1)	(2)	(3)	(4)	(5)	(6)
May	30	700	1,734	461	2,895
June	103	1,448	4,743	1,459	7,650
July	160	2,097	8,045	2,142	12,284
August	169	2,102	10,418	3,176	15,696
September	142	2,086	9,605	3,425	15,116
October	295	2,195	17,019	6,606	25,820
November	284	1,893	12,489	4,751	19,133
December	274	1,797	10,993	4,007	16,797

Proposals for the further expansion of the skim milk feeding programme to cover about 25,000 children attending the elementary schools in community projects areas, National Extension Service blocks, areas covered by the Nutrition Units and in Madras City, were worked out.

(ii) *Distribution of gift rice.*

The UNICEF released 1,500 tons (15,000 bags) of gift rice in August 1954 for feeding mal-nourished children and mothers through charitable and educational institutions, maternity and child-welfare centres, etc.

The programme of feeding with this rice commenced in September 1954 and the details of the daily average number of beneficiaries during the months September to December 1954 are shown below :—

Months.	Number of distributing centres.	Children under 14 years.	Expectant and Nursing mothers.	Total.
(1)	(2)	(3)	(4)	(5)
September	58	1,076	..	1,076
October	136	5,931	959	6,890
November	160	9,114	1,143	10,257
December	179	7,624	992	8,616

The Nutrition Bureau of this department has arranged the distribution of the above gift skim milk and rice, the Director of Public Health acting as the State Liaison Officer, for purposes of distribution, control and forwarding of periodic reports to the Government and the UNICEF.

(iii) *School feeding programme.*

(a) The Government scheme of free supply of midday meals to the children of eligible communities attending labour schools under Government was continued. On the average, about 76,000 children attending 915 schools were benefitted under this scheme. The Corporation of Madras continued its own scheme of provision of free midday meals to poor and ill-nourished children attending the Corporation Elementary Schools in Madras City. About 11,000 children were benefitted under this scheme.

(b) In the Regional Nutrition Unit, Madurai, a scheme for provision of subsidized midday meals to deserving school children functioned in 19 schools in the villages in Gandhigram Community Project area. About 1,900 pupils were benefitted daily. The meal served, comprised of 4 oz. of raw rice, 2 oz. of pulses, 4 oz. of vegetables, 4 oz. of buttermilk made from skim milk powder and 1 oz. of groundnut, the last being included only thrice a week. A similar scheme for provision of free midday meals to school children was undertaken by the Central Nutrition Bureau in four schools in Poonamallee Health Unit area.

The pattern of midday meals supplied was much the same in both unit areas. The meal is estimated to yield over 700 calories.

The UNICEF get rice and skim milk powder were utilized for the above schemes. The cost of one meal excluding the cost of rice and skim milk powder worked out to Re. 0-1-4 in Poonamallee Health Unit area and Re. 0-1-3 in Madurai. This expenditure was met from the voluntary contributions, received from the recipient children and from the provision of Rs. 2,500 per year for each of the Nutrition Units for ameliorative measures.

These school feeding programmes undertaken in the villages by the Nutrition Units have become more and more popular.

(iv) *Distribution of multi-vitamin tablets, shark-liver oil, yeast, etc.*

The distribution of food-supplements, viz., vitamin tablets, shark-liver oil, food yeast, etc., among school children and others found to suffer from specific food deficiencies during nutrition surveys, was continued by the two Nutrition units. In Madras City, 3,786 ill-nourished school children were thus given calcium lactate and shark liver oil and 1,918 children suffering from chronic stomatitis of nutritional origin were also given yeast. Similar distribution of food supplements to deserving children and mothers attending the maternity and child welfare centres was also undertaken in certain districts and municipalities.

(v) *Industrial canteens.*

There were 117 canteens attached to the various industrial concerns in the State. The Regional Nutrition Health Officer, Madurai, inspected several industrial canteens and advised the managements of the canteens towards improving the nutritive value of the foods served to the workers.

(vi) *Kitchen gardens.*

The promotion of kitchen gardens and school gardens has been one of the chief objectives of both the nutrition units and it formed the main theme of educative talks during the visits to villages by the field staff. As a result of continued persuasion, several vegetable gardens have been started in the schools and backyards of houses in the unit areas. Vegetable seeds were supplied free of cost wherever required.

LABORATORY INVESTIGATIONS.

The following studies were undertaken in the Nutrition laboratory during the year.

(i) *Nutrient values of preserved vegetables.*

'Vattals' or dried preserves of brinjal, cluster beans, bitter-gourd, 'manathakkali' and 'lady's-finger' purchased from the markets were analysed. The food value of these items as found by analysis, along with the calculated values of fresh samples have been tabulated in annexure Q. It is observed that from the point of view of the contents of protein, fat, carbohydrates and minerals, these 'vattals' retain most of their food values.

(ii) *Nutrient values of condiment preparations.*

Condiments form an appreciable proportion of South Indian dietaries and therefore some of the proprietary preparations of condiments named 'sambar powder' and 'rasam powder' were analysed. The values of the basic nutrients in these preparations have been tabulated in Annexure Q.

(iii) *Analysis of food fishes.*

The analysis of different food fishes was continued in collaboration with the Fresh Water Biology Section of the Fisheries Department. The analysis of the following samples were completed:—

(a) Ten samples of fishes, viz., Therattai, Perava, Keechan, Sankara, Kannankathoi, Pathi, Khazangan, Maddi, Nakkumeen and Vari and four samples of *Tilapia mossambica*, which belongs to a species of Indonesian origin and which promises to thrive well in South India. The food values of these fishes have been tabulated in Annexure P.

(b) Samples of fish meal biscuits received from the Fisheries, Technological Institute, Kozhikode, were analysed—vide Annexure Q. From its protein, fat and mineral values, these biscuits may be considered as a very useful fish product of indigenous origin.

(iv) *Analysis of cooked foods.*

Studies of the diets of the (1) labouring and non-labouring class prisoners in the Penitentiary and (2) the vegetarian and non-vegetarian sections of the hostels attached to the Y.M.C.A. College of Physical Education were undertaken. The studies of the diets of prisoners were carried out both on the basis of the chemical analysis of the cooked foods received from the Penitentiary and also of a similar diet prepared in the laboratory as per schedule. The data of these analysis showed that the diet received from the Penitentiary was fairly close to that prepared in the laboratory, except in respect of calories derived from the carbohydrates fraction of the diet. The diets provided in the hostels of the Y.M.C.A. which had been previously surveyed by the usual weightment methods, were studied by actual chemical analysis of the sample diets. The results of both studies were in agreement.

Annexures M. N. and O. summarize the results of the chemical analysis of the diets.

(v) *Estimation of Vitamin 'C' in foodstuffs.*

The visual titration method using the dye 2, 6-Dichlorophenol indophenol was employed in the estimation of Vitamin 'C' in a variety of vegetables and fruits which are commonly eaten in

South India. Amla (Nellikai), goa (two varieties), plantain (ripe two varieties), orange, tomato (small variety) and knol-kol were analysed. Their vitamin 'C' values are shown below:—

Name of Foodstuffs.	Vitamin 'C' in Mgms. per Gm.
Amla	354.3
Goa (variety 1 white pulp)	106.7
Goa (variety 2—red pulp)	77.7
Plantain 1. half-ripe	3.8
Plantain 2. fully ripe	2.2
Orange	31.8
Tomato (small variety)	3.9
Knol-khol	38.1

(vi) *Loss of Vitamin 'C' due to cooking.*

Studies on the loss of vitamin 'C' under different modes of cooking of sweet potatoes, cabbage, radish and knol-kol were undertaken. The vitamin 'C' values for the raw foodstuffs along with the values obtained after each mode of cooking with the percentage losses, have been tabulated in annexures X (1), (2), (3) and (4).

The above studies indicate that (a) cooking with excess quantity of water in an open vessel, as ordinarily, adopted, causes maximum destruction of vitamin 'C' to the extent of over 60 per cent, (b) cooking whole with skin, cooking by steam, cooking in boiling water (minimum quantity), cooking in a closed vessel and cooking with the addition of tamarind juice at the beginning of cooking, ensure minimum loss of vitamin 'C'.

(vii) *Examination of foodstuffs for wholesomeness for human consumption.*

(a) The occurrence at Tiruvannamalai of a widespread scare of poisoning by eating certain varieties of varagu was investigated. Different samples of varagu, as collected from local merchants and different houses in the town, were examined in the Nutrition laboratory. Feeding of a series of rats with the raw and cooked millet was first undertaken with no result. Injection of the fat extracted from the suspected samples into rows was then tried under advice from the King Institute and this clearly demonstrated the poisonous nature of some of the samples.

(b) Twenty-four barrels of skim milk powder of suspected quality held in the Stationary godowns, Madras were examined. Twenty-four samples from this stock were examined in the laboratory. Their acidity test, methylene blue reduction test, test on effects on feeding rats, etc., were carried out in addition to the physical examination for colour, taste, smell, lump formation, and the appearance of curds prepared with them. As a result of the different tests mentioned above, five of the samples were condemned as unfit and the remaining nineteen were passed fit for use.

(viii) *Animal experiments.*

Studies on the value of different supplements to rice diet were undertaken employing white rats. The basic diet used in these experiments was composed of the following ingredients for one day:—

	GMS.
Rice	22.25
Dhall	0.88
Brinjal	0.75
Green }	0.75
Plantain }	
Oil	0.125
Salt	0.25

In one experiment, 5 grams of sprouted bengalgram flour was added to this basic diet. In another experiment, rice was completely replaced by ragi. In a third experiment, cumbu was substituted to the extent of half the quota of rice in the basic diet. In the fourth experiment, 5 grams of skim milk powder supplemented the basic rice diet.

The average weekly gain in weight of the rats under each supplement, as compared to the basic rice diet, is shown in the chart No. 14. It may be seen that the best average rate of increase of weight of 5.3 grams per week was observed in the case of the rats supplemented with skim milk powder.

NUTRITION EDUCATION AND PUBLICITY.

Education of the public on matters relating to nutrition forms one of the major functions of the Nutrition Bureau. During the year, eleven nutrition exhibitions were put up in Madras City, and in the mufassal during special occasions. Nutrition lectures, group talks and cinema shows were conducted as a routine in the districts by the health staff and more intensively by the two nutrition units. The films on 'Food and Nutrition' were exhibited in different places to an audience of about 10,000. The All-India Radio at Madras, Tiruchirappalli and Kozhikode together broadcast 42 talks on general matters pertaining to Food and Nutrition. A special radio talk on 'School Health Services' prepared by the Nutrition Bureau was also broadcast in English and in the regional languages.

The Nutrition Department of the Women's Christian College organized with the assistance of the health staff several educative campaigns regarding nutrition in the districts through lectures and demonstrations in schools and other institutions in several districts.

TRAINING OF PERSONNEL IN NUTRITION.

Under the scheme for training health personnel in public health nutrition work with a view to intensify nutrition work in rural areas, two batches of candidates were given full courses of lectures, demonstrations and practical work, each course extending for one month. These training courses were held simultaneously by the Central Nutrition Bureau at Madras and the Regional Nutrition Unit at Madurai. Fifty-eight candidates (27 Health Inspectors, 28 Sanitary Inspectors and 3 Health Visitors) underwent the course of training successfully.

Nutrition lectures and demonstrations for post-graduates, undergraduates, etc., were organized for the following groups :—

- (1) Three batches of Health Officers and five batches of Medical Officers as part of their general refresher course.
- (2) Five batches of candidates including doctors, public health nurses, health inspectors, health visitors, etc., from Community Projects as part of the Orientation Training Course at Poonamallee.
- (3) The B.T. students in the Meston Training College, Madras, students of the Lady Wellington Training College, Madras, St. Christopher Training College, Madras, Y.M.C.A. College of Physical Education, Madras, and Stella Mary's College, Madras.
- (4) L.P.H. class students in the Madras Medical College; and
- (5) Candidates deputed by the Madras Hotel Proprietors' Association.

OTHER ACTIVITIES.

(i) The widespread prevalence of certain eye diseases in Blathur village in North Malabar, with a suspected nutritional back-ground, was investigated by the Nutrition Bureau during April 1954 and again in July 1954. The investigation included a house to house enquiry for cases and the starting of specific treatment at a central place in the village. The incidence of eye diseases among children in the local school and also of schools in the neighbouring villages was also ascertained with a view to assess the special factors responsible for the higher incidence at Blathur. A rapid diet and nutrition survey carried out in April 1954 showed that there was no abnormal feature which could account for the eye diseases prevalent. Smears from the scrapings of the eyes of the affected persons, showed that the cases were of varied aetiology, some of old trachoma with super-added catarrhal conjunctivitis. There were 5 cases of blindness, partial or complete, among the 31 cases which came up for treatment in July and about 19 of them appeared to be suffering from chronic stages of untreated trachoma. All the cases were treated with 3 to 4 daily applications of terramycin, auremycin ophthalmic ointment. Most cases showed quick response to this treatment, except the few which appeared to require surgical attention. Arrangements were also made for the distribution of skim milk, fish liver oil, vitamin tablets, etc., to deserving cases and school children in the local elementary school. One Health Inspector was specially posted for this work with required equipments to continue the treatment. Till December 1954, 155 persons were treated for eye diseases and out of this, except for 20 to 30 really refractory cases the others attained clinical cure. Among other remedial measures undertaken in the area may be mentioned the distribution of about 230 lb. of skim milk powder among about 100 children, 23 lb. of cod liver oil among 90 persons, about 16,000 vitamin tablets and 5.00 vitamin (A & D) capsules among 475 persons. The treatment is being continued by the Health Inspector specially posted for this purpose, and necessary arrangements have also been made for the treatment of the refractory cases at the nearest hospital.

(ii) The Third Half-Yearly Nutrition Conference was held on 4th May 1954 to review the progress made and to consider further measures in the field of nutrition work in the State.

PREVENTION OF FOOD ADULTERATION.

During the year under review the Madras Prevention of Adulteration Act was in force in the City of Madras, 61 municipalities and 81 panchayats, making a total of 143 local bodies. The Act was extended to six panchayats, viz., Tambaram (Chingleput district), Badagara (Malabar district), Kollegal (Coimbatore district), Attur (Salem district), Arantangi (Tanjore district) and Polur (North Arcot district).

The number of samples of food analysed under the Madras Prevention of Adulteration Act was 11,525 in 1954. Of these, 4,867 samples (or 42.2 per cent) were found adulterated. The articles of food sampled most were milk, gingelly oil, coffee, ghee and coconut oil. Adulteration was very high in butter (54.5 per cent), milk (51.7 per cent), turmeric (46.2 per cent), dhall and flours (44.8 per cent) and ghee (36.2 per cent). The average fine imposed on offenders under the Act continued to be low (Rs. 36).

Government have amended again rule 28-B of the rules issued under the Madras Prevention of Adulteration Act so as to make it compulsory on the part of hotel keepers to put up notice boards stating (1) which of the sweets and savouries are made in ghee and (2) which of them are not made in ghee. An amendment was also made to rule 37, whereby the merchants are required to affix a proper label on the containers of coffee, chicory mixtures and the previous procedure of either delivering a separate label or a notice to the purchaser along with the article sold, will have to be discontinued.

As the dates of hearing of food adulteration cases were not being communicated to the prosecuting Sanitary Inspectors by the Magistrates, the High Court issued instructions that the dates of hearing should be intimated to them. It has also advised the Magistrates that when a case ends in acquittal, a copy of the judgment should be immediately supplied to the Prosecuting Sanitary Inspectors as soon as it is delivered.

HOTEL SANITATION.

The Government passed orders on the report of the Hotel Sanitation Committee, accepting its recommendations in general. Instructions were issued to all Health Officers and local bodies to take necessary action to implement the various recommendations of the Committee on the following matters :—

- (1) Provision of utensils and other sanitary arrangements.
- (2) Opening of cheap canteens for the poor.
- (3) Prevention of infection through human carriers.
- (4) Inspection and supervision.
- (5) Sterilization of utensils.
- (6) Sanitary control by the Public Health Department.
- (7) Inspection of hostel and hospital kitchens.
- (8) Education of the Public and Co-operative measures.

66 REPORT ON THE HEALTH CONDITIONS IN MADRAS STATE, 1954

As recommended by the Hotel Sanitation Committee, the Government also constituted two standing expert committees for:

(1) Evolving type designs of model restaurants, standards of accommodation, equipment, lighting, ventilation, etc., particularly the lay-out of kitchen and the designing of suitable cooking ranges and sterilization and dish washing equipment, and

(2) working out suitable standards for appraisal of the sterilization of equipment and utensils by bacteriological examinations and suggesting bacteriological standards for certain foods, like ice-creams, ice-cream salads, etc.

The work of the Committees is in progress.

CHAPTER V—ENVIRONMENTAL HYGIENE.

WATER-SUPPLY AND DRAINAGE.

The progress made during 1954 in the execution of water-supply and drainage schemes and the investigation of new schemes was good. As the Union Government have proposed to give financial assistance to the State Government to the tune of Rs. 2 crores for these schemes, they are being executed expeditiously by the Sanitary Engineering Department and it is hoped to complete the schemes included under the first Five-Year Plan by March 1956.

The Water-Supply and Drainage Committee constituted in 1947 suggested a list of priorities for water-supply and drainage schemes and the Government have approved the first Five-Year Plan for these schemes to be executed in accordance with the priority. The rank fixed in the priority list is overlooked in cases where the local body is able to finance the scheme from its own funds.

Twenty-eight municipal and other water-supply schemes and 14 drainage schemes were under execution and the total budgeted expenditure was about Rs. 42.79 lakhs and 6.52 lakhs respectively. The figures include the Composite Water-Supply Schemes for Tiruchendur, Kayalpatnam and other villages coming under the Rural Water-Supply Scheme with a budget allotment of Rs. 0.52 lakhs.

Plans and estimates for 10 schemes (9 water-supply and 1 drainage) were forwarded to the Chief Engineer and 24 schemes (21 water-supply and 3 drainage) were under various stages of design.

Eighteen schemes (15 water-supply and 3 drainage) in urban and rural areas were under various stages of investigation.

Technical sanction for 28 schemes, the cost of which aggregated to Rs. 6.55 lakhs in respect of plans and estimates prepared for Municipal Water-Supply and Drainage Schemes, was accorded by the Sanitary Engineer.

Rural water-supply.—After the comprehensive programme for the execution of well works in the rural areas was dove-tailed into

the Five-Year Plan, the Government approved a three-year programme beginning with 1953-54 under the Five-Year Plan. The number of works to be executed during each of the three years was fixed as follows:—

	Year.	Number of works.
1953-54 ...		3,170
1954-55 ...		2,380
1955-56 ...		2,206
Total ...		7,756

The number of wells completed in the year 1953-54 was 1,330 under the scheme. The allotment made was Rs. 39.64 lakhs. During the year, 1,189 works were completed, 2,275 works were under execution and 1,735 were not taken up. One thousand forty-two works were undertaken for the benefit of Harijans and a sum of Rs. 7.48 lakhs was spent on them.

A change in the policy was introduced during the second half of 1954. In executing works under the scheme, no contribution was being collected from the beneficiaries. It has since been decided that in future a minimum contribution of 25 per cent should be collected from the beneficiaries on works undertaken, the balance being met from the local and State funds. The contribution from the beneficiaries is being enforced to serve uniformity. However, in respect of drinking water wells for the benefit of Harijans and poor and backward people, no contribution from the beneficiaries is insisted upon.

NATIONAL WATER-SUPPLY AND SANITATION SCHEME.

A scheme has been drawn up at the instance of the Government of India to provide water-supply and sanitation to villages endemic for cholera and with a population of less than 5,000. The programme is intended to cover the areas most affected by cholera in the districts of Tanjore, South Arcot, Tiruchirappalli, Tirunelveli and Ramanathapuram. The Government of India have formally approved the proposals. A provision of Rs. 75 lakhs has been made for rural water-supply and Rs. 45 lakhs for sanitation. The proposals are expected to be implemented soon after the final acceptance of the scheme by the Union Government is received.

Water Analysis.—The periodical examination of samples of water collected from all the protected water supplies in the State was carried out at the King Institute, Guindy, for the purpose of maintaining a check over the hygienic quality of water supplied. Water supplied in 42 municipalities, 10 panchayat boards, 21 jails and certified schools, 21 institutions and swimming pools and 54 Railway stations in the State was systematically examined.

RURAL AND URBAN SANITATION.

The provision of sanitary conveniences of approved types both in the rural and urban areas was pushed through by persuasion, propaganda and by enforcing the provisions of the Madras Public Health Act, wherever necessary. During the year under report, 10,443 private latrines were constructed in the rural and urban areas and 985 public latrines with 1,393 seats were provided.

Intensive measures were taken for the provision of improved types of latrines in the rural areas. The number of such latrines constructed was 1,585, of which 429 were public and 1,156 private.

A proposal for provision of improved and sanitary type of latrines in the villages in the State is under the consideration of the Government. According to this scheme, every house-owner will be persuaded to provide a sanitary bore-hole latrine in his house by supplying to him squatting slabs, lending boring tools and giving him technical advice. Squatting slabs will be sold to him at less than cost price. The local bodies have already been permitted by Government to manufacture squatting slabs and to issue them to the public at a cost or at less than cost price, as a sort of inducement to construct the latrines. Three ranges in each district are proposed to be taken up each year. The issue of squatting slabs to the public at a cost less than cost price is now undertaken in the Health Unit area, Poonamallee. It is found that in this area even the small amount required for putting up the latrines appeared to be beyond the means of the people, especially of the poor labouring classes who are most affected by epidemics. It has therefore been suggested in the proposals for the second Five-Year Plan sent to Government that in such cases Government may meet in the first instance the cost of the materials for constructing the latrines, viz., squatting slabs, platform and enclosure, lend the tools free, get the latrine constructed in each house by utilizing labour alone under the supervision of the Health Inspectors and raiistries of the Public Health Department and recover later a portion of the cost from the local body concerned and treat the balance as subsidy. Before the scheme is put into operation in the whole State, the Government decided to introduce the scheme in the three districts of Coimbatore, Madurai and South Arcot and sanctioned a sum of Rs. 46,000 towards the cost of the scheme for one year. Specific proposals for the introduction of the scheme in these three districts are being worked out in consultation with the Presidents of the District Boards concerned and will be put into operation soon.

COMPOST MANUFACTURE.

Sixty municipalities and 243 panchayat boards manufactured 255,219 tons of compost of which 213,808 tons were sold during the year. The Inspector of Municipal Councils and Local Boards has stated that due to the accumulation of compost manure prepared during the previous year and to drought conditions in some districts and to sentimental objections in Malabar, appreciable sales were not effected and that the production was also consequently affected.

FAIRS AND FESTIVALS.

During the year under report about 500 fairs and festivals were held. One-fourth of the above festivals was notified festivals. Necessary sanitary arrangements were made for the festivals and there was no outbreak of any epidemic disease. This year the Indian National Congress held its session at Avadi (Chingleput district). Several lakhs of people attended the Congress. It too went off without any untoward happening.

HOUSING AND BUILDING REGULATIONS.

Housing.—Eighty-two designs for housing schemes of Co-operative Societies, local authorities, Director of Harijan Welfare and Industrial Labour Housing, were prepared and furnished and 113 designs of dwelling houses were also either approved or prepared by the Town-Planning Department. A large number of designs for buildings, such as, municipal offices, schools, quarters, markets, bus-stands, parks, play-grounds, etc., were prepared.

Building Regulations.—The building regulations and the provisions of the Madras District Municipalities Act relating to street control continued to be satisfactorily enforced in municipalities and enforced better in panchayats than hitherto. Nine hundred and thirty-five building appeals seeking relaxation from the operation of building rules were disposed of during the year.

WATER AND SEWAGE PURIFICATION COMMITTEE.

The Water and Sewage Purification Committee met five times during 1954 and considered the following main subjects:—

(1) *A combined drainage scheme for the abatement of the nuisance from the tannery wastes in Chromepet and Pallavaram areas in Chingleput district.*—After visiting some of the tanneries, the Committee decided to have a thorough analysis carried out in the King Institute, Guindy, of the various types of wastes produced in the tanneries with a view of evolving a suitable procedure for the treatment and disposal of these wastes, so that the existing nuisance may be abated.

(2) *Large scale experiment on the use of the breakpoint method of chlorination for treating the Red Hills Lake water before filtration.*—Detailed experiments already conducted by the Committee at the Government Experimental Filter Station on this method of treating Red Hills Lake water before filtration had proved its efficiency in eliminating the odour trouble usually present in the filtered water. The Committee had therefore recommended that this method of treatment should be put to a full scale trial using 7 of the 16 filter beds at the Corporation Water Works.

(3) *The scheme for a 10-million gallon a day rapid sand filter plant for Madras.*—The Committee recommended that for the pre-treatment of the water it would be advantageous to install a flocculator and clarifier with mechanical equipment for continuous desludging.

(4) *Pilot plant experiments on the treatment of tannery wastes at Vaniyambadi.*—On a representation made to the Union Minister for Industries and Commerce by the residents of Vaniyambadi and Ambur, in connexion with the discharge of the tannery wastes into the irrigation channel, Palar river and as a result of the discussion the Union Minister had with the Director of Public Health and the Sanitary Engineer to Government, it was proposed that a pilot plant should be installed at Vaniyambadi for conducting experiments on treatment and disposal of the tannery wastes in the

area. The Committee resolved to depute an analytical unit from the King Institute to conduct these experiments at Vaniyam-badi.

(5) *Fish cultivation and removal in Red Hills Lake and Cholavaram Lake.*—The Committee decided that fish cultivation and removal on a commercialized basis should not be permitted in the case of the Red Hills Lake, as that would involve a serious potential public health risk.

(6) *Proposal for the treatment of Red Hills Lake water with copper sulphate, ammonia and chlorine and supply of the treated water to the city without filtration.*—The proposal of the City Water Analyst regarding chemical treatment of Red Hills Lake water was considered by the Committee. It was of opinion that it would not be in the interest of the consumers to dispense with filtration of the drinking water supply and rely solely on chemical treatment for purification and that it would not be a safeguard against water borne diseases.

CHAPTER VI—GENERAL ADMINISTRATION.

STAFF AND PERSONNEL.

During the year under report, I succeeded Dr. K. S. Viswanathan as the Director of Public Health, Madras, consequent on the latter's retirement from service. The strength of the Assistant Directors of Public Health was increased by one. One Assistant Director of Public Health, five Health Officers (Class I) and three Health Officers (Class II) and eight Health Inspectors retired from service during the year. One Assistant Director of Public Health, five Health Officers (Class I) and two Health Officers (Class II) were re-employed with the sanction of Government, after their attaining the age of superannuation.

Refresher courses for Health Officers were conducted at the three Centres at Madras, Tanjore and Coimbatore. One Health Officer (Class I), and one Health Officer (Class II), underwent training in the Malaria Institute at Delhi. Four Health Officers (Class I) and four Health Officers (Class II) underwent training given in the Central Malaria Laboratory, Madras, for a period of six weeks. Two Health Officers (Class I) were deputed for higher studies under the T.C.A. Fellowship.

In view of the fact that recruitment to the posts of Health Officers (Class II) has not been satisfactory, proposals were sent to Government during 1954 for the unification of the two cadres of Health Officers of Class I and Class II into a single cadre of Health Officers on a scale of Rs. 160—20/2—200—25/2—450—50/2—600, the graduates being started on Rs. 250 per mensem. Government have since accepted the proposal.

It was proposed to Government that 5 per cent of the posts of the Health Inspectors may be converted into selection posts on the grade of Rs. 140—5—190. This has since been accepted by the Government.

The strength of the Officers in the Public Health Department on 31st December 1954 was as follows:—

Director of Public Health	1
Officer-in-charge, of Orientation Training Centre, Poonamallee in the grade of Deputy Director of Public Health	1
Assistant Directors of Public Health including the Professors of Hygiene in the two Medical Colleges at Madras	6
Health Officers, Class I	57 *
Health Officers, Class II	58 †
Chief Entomologist	1
Senior Entomologists including one in Madras Medical College	6
Statistician	1
Malaria Engineer	1
Medical Officer (Maternity and Child Health), Grade I, Health Unit, Poonamallee and Orientation Training Centre	2
Medical Officer (Maternity and Child Health), Grade II, Health Visitors' School, Kilpauk	1
Public Health Assistant Engineer, Orientation Training Centre	1

* These include two posts of Regional Malarialogists, one post of Health Officer to assist the Assistant Director of Public Health in charge of Malaria, five posts of Health Officers in anti-malaria schemes, one post of Regional Nutrition Health Officer, one post of Health Officer to assist the Assistant Director of Public Health in charge of Nutrition, one post of Health Officer (Propaganda and Publicity), one post of Supervising Public Health Officer and Officer-in-charge, Central administrative Unit, B.C.G. Vaccination, Madras, one post of Publicity Officer, B.C.G. Vaccination, one post of Assistant in charge, Orientation Training Centre, Poonamallee, three posts of Assistants to the Professors of Hygiene, one post of Research Health Officer, one post of Special Plague Officer, one post of Health Officer, Health Unit, Poonamallee, and one post of State Leprosy Survey Officer, Vellore.

† Out of these, two posts of Assistant District Health Officers are kept in abeyance. The remaining 56 include three posts of Health Officers in anti-malaria schemes, one in Rameswaram Panchayat Board, one post of Health Officer, District Leprosy Survey Unit, Tirukoilur, and three posts of Assistant Municipal Health Officers.

The strength of the Madras Public Health Subordinate services as on 31st December 1954 was as follows:—

Health Inspectors	430
Entomological Assistants	21
Resident Matron, Grade III	1
Statistical Assistants	2
Chemical Assistant	1
Public Health Nurses	2
Health Visitors	22
Vaccinators	10
Draughtsman	1
Artist and Photographer	1
Technician (Propaganda)	1
Librarian	1
Laboratory Technician (Nutrition)	1
Laboratory Technician (Malaria)	1
Laboratory Assistants (Nutrition)	8

Laboratory Assistants (Malaria)	25
Laboratory Attendants (Nutrition)	2
Laboratory Attendants (Research)	1
Laboratory Attendants (Plague)	1
Attenders (Guineaworm Control)	3
Field Assistants	195
Maternity Assistants including those under Community Project areas	79
Drivers	38
Peons for the Ranges	269
Cleaners	21
Mechanic	1
Fitters	2

The following is the approximate strength of the public health staff employed under the district boards, the municipal councils and the Corporation of Madras, in the State:—

Lady Superintendents in charge of Maternity and Child Welfare	1
Medical Officers (Maternity and Child Health)	54
Health Visitors	59
Maternity Assistants (Maternity and Child Health)	587
Sanitary Inspectors	306
Health Assistants (Vaccination)	585
Health Assistants (Registration of Births and Deaths)	113
Resident Matrons in charge of Maternity Homes	11
Compounders (Maternity and Child Health)	6

In addition to the above staff a large number of inferior personnel is employed for conservancy and other works.

A few posts of Medical Officers (Maternity and Child Health) and Health Visitors were kept vacant and several posts of Health Assistants were filled up by emergency trained candidates for want of qualified candidates. As in the previous years the local board staff were detailed for work during epidemics and festivals in other areas.

PUBLIC HEALTH BOARD.

Two meetings of the Public Health Board were held during 1954, one in May and the other in December. The important decisions reached by the Board are detailed below.

The Board discussed the question of financing water-supply schemes in municipalities, as the progress in this regard was slow due to lack of funds. It commended to Government the suggestion that water-supply schemes should be run on a commercial basis as in the United States of America and United Kingdom and that 'Water revenue' should be raised on the basis of consumption.

As regards water-supply for panchayats with a population of 10,000 and above, the Board recommended to Government that a priority list might be prepared.

In respect of rural water-supply schemes, the Board recommended to Government that their execution might be entrusted to the district boards in two or three districts as an experimental measure to see whether the schemes would be implemented without delay.

The Board discussed proposals for the Second Five-Year Plan for water-supply and drainage schemes for the State. It was of opinion that the staff for the schemes in non-municipal urban areas was inadequate, and resolved that necessary additional staff should be provided for rural water-supply schemes.

The Board resolved that flush-out latrines should be constructed in the offices of the district boards, panchayats and in hospitals, dispensaries and Government offices as a measure of popularizing the use of such type of latrines.

The suggestion of shifting the cattle-yards from the city of Madras to places outside the limits of the city was recommended to Government for adoption.

As it was felt that adequate propaganda on nutrition was not carried out, the Board resolved that all municipalities should be advised to hold nutrition stalls in exhibitions organized in their areas and that the Government should provide two more nutrition propaganda vans for carrying out education on nutrition in all the districts.

The Board recommended to Government that the district boards may be advised to provide at their cost a van and a 16 m.m. projector to the district health staff for purposes of carrying out effective health education.

The resolutions of the Board were duly considered by the Government and necessary orders were issued to implement those accepted by them.

ORIENTATION TRAINING CENTRE, POONAMALLEE.

Objective of the Orientation Scheme.—The medical and health personnel working in the Community Project areas consist of doctors (men and women), public health nurses, health visitors, sanitarians (Health and Sanitary Inspectors) and maternity assistants (midwives). The doctors are mostly recruited from the Medical Departments of the States concerned or directly recruited by the Community Project Department. The rest of the personnel are drafted from the regular Health Departments of the States. It was felt that the average doctor and the other personnel working in the Community Project areas were in need of an intensive training in not only public health and preventive medicine, but also of instruction in the philosophy underlying Community Project work. Doctors recruited from medical departments or recruited directly have a knowledge of only curative work and do not have a preventive bias. None of the medical and health personnel working in these projects possess any training in "Extension technique", and it was considered necessary that they should be trained to bring their technical knowledge to village level, to make the right approach to village people, to get the latter interested in matters concerning their health, and to create in them the initiative for a better way of living. To meet these needs the Director-General of Health Services, New Delhi, in consultation with the Community Project Administration, put up a scheme for Orientation Training of the above personnel. Advantage was taken of the offer by the Ford Foundation to finance the scheme in a way agreeable to the Community Projects Administration and the States concerned, namely, the Foundation is to meet the entire non-recurring cost, and the recurring cost for the

first two years of operation, after which the participating States would make a contribution on a sliding scale, namely, half of the recurring cost during the third year, and two-thirds during the fourth year. Three training centres were started in the Indian Union, one near Delhi for the States in the north, one near Calcutta for the States in the north-East, and the third at Poonamallee for the Southern States. The period of training was to be for two months and the trainees were to be deputed by each participating State in batches of 5, headed by a doctor, each batch consisting of one doctor (man or woman), one Public Health nurse (woman) where available, one Health Visitor (woman), one Sanitarian (man or woman) and two maternity assistants (women). After the training at the above Orientation Training Centre, the trainees will be posted to their respective Community Project areas. The course of training batch by batch will go on throughout the scheme period of four years, during which, it is expected that the entire medical and public health staff working in the Community Project areas would have received this Orientation Training.

Orientation Training Centre, Poonamallee.—Poonamallee was selected for the Orientation Training Scheme because of the facilities for training in rural health work already available in the Health Unit there. The Ford Foundation placed the necessary funds for the starting of a scheme at the disposal of the Madras State Government through the Union Government as follows:—

Non-recurring.—Rs. 1,90,650 (for the construction and equipment of permanent buildings for the training course and quarters for the staff).

Recurring.—Rs. 1,13,000 (to meet the recurring cost connected with the training).

The Madras Government sanctioned the budget for this training scheme for one year. The training centre was started on 15th February 1954 and five batches were trained till December 1954.

The teaching staff consists of—

- (1) Officer-in-charge in the Grade of Deputy Director of Public Health;
- (2) Assistant Officer-in-charge in the Grade of First-class Health Officer;
- (3) Public Health Assistant Engineer (part-time);
- (4) Woman Medical Officer, Grade I;
- (5) Public Health Nurse; and
- (6) Senior Health Inspector.

With the exception of a whole-time Public Health Engineer, the full complement of staff has been working since the commencement of the scheme.

Syllabus.—A skeleton syllabus received from the Director-General of Health Services, is being followed with suitable modifications as shown below:—

- (1) The Philosophy of Community Project and Extension work.
- (2) Health Education.
- (3) Food and Nutrition.
- (4) Communicable Diseases.
- (5) Environmental Sanitation.

(6) Maternal and Child Health.

(7) Elements of Social Medicine.

(8) Special Lectures on the Preventive and Social aspects of some of the more important diseases in South India by Professors of Madras Medical College, and other Specialists.

(9) Elementary knowledge of mental health.

(10) Positive Health: Organization of community recreation programme.

Instructions are given by lectures, seminars, group discussions and field work. In the forenoon, the trainees are taken to villages for field work and for domiciliary visits and for practical work and to important clinics and hospitals. Visits to the Tuberculosis Sanatorium and clinics are also arranged.

It will be seen that the above course is very comprehensive and includes all subjects that have to be handled at village level by doctors and health personnel working in Community Projects. Special emphasis is laid on Extension Technique and health education and every attempt is made to instill into the trainees the philosophy underlying Community development and extension schemes with a view to create in their minds the right attitude to work of this kind. A special feature of the training programme is practical work by the trainees themselves along with villagers in the construction of cheap types of rural latrines, smokeless chulas, simple open drains, soak pits, compost pits, urinals, etc. This is found to be the best method of educating the rural population, and at the same time teaches them the dignity of manual labour.

Personnel trained.—The training was started on 15th February 1954 and the following medical and health personnel have been trained so far:—

Number of batches.	Number of trainees.					Total.
	Doctors.	H. Is.	H. Vs.	P.H. Nurse.	Maternity Assistants.	
I Batch	3	4	..	1	4	12
II Batch	4	4	3	1	10	22
III Batch	2	4	2	1	9	18
IV Batch	4	4	3	..	9	20
V Batch	2	5	3	1	7	18
Total	15	21	11	4	39	96

Permanent buildings.—The Public Works Department has started constructing the permanent buildings for the Orientation Training Centre, and the work is in progress. It is expected that these will be handed over within three months. These buildings are being put up in the vacant site of nearly 3½ acres in the compound of the Government school for the blind. At present, the course is being held in the two vacant barracks in the campus of the Blind school.

Future of the scheme.—The present scheme is for four years from 1954, after which the training programme will come to an end. The Ford Foundation authorities have agreed to hand over the buildings and equipments, etc., to the Madras Government for such use as may be deemed necessary by them. The question of utilizing this gift from the Ford Foundation for expanding the activities of the Poonamallee Health Unit will be considered then.

FINANCE.

The actual expenditure incurred by the composite Madras State on "Public Health" during the first half of 1953-54 is detailed below :—

Under the control of the Director of Public Health.

(a) Staff—	RS.	RS.
Pay of officers	2,19,985	10,15,87
Pay of Establishments	3,95,523	
Dearness Allowance	1,97,124	
Travelling Allowance and other Compensatory Allowances.	2,03,244	
(b) Other Charges	..	2,52,453
(c) Grants to local bodies	..	52,448
Total ..		13,20,777

Expenditure incurred by other heads of departments under "39. Public Health" is not available.

The actual expenditure incurred by the Madras State on Public Health during the second half of 1953-54 is detailed below :—

Under the control of Director of Public Health.

(a) Staff—	RS.	RS.
Pay of officers	1,60,038	7,86,224
Pay of establishments	2,98,564	
Dearness Allowance	1,50,406	
Travelling Allowance and other Compensatory Allowances.	1,77,216	
(b) Other Charges	..	* 3,79,343
(c) Grants to local bodies	..	4,00,321
Total ..		15,65,888

Under the control of other Departmental officers.

(a) Director of King Institute	6,64,194	22,80,748
(b) Board of Revenue	23,34,476	
(c) Sanitary Engineer	8,02,605	
(d) Director of Industries and Commerce.	28,158	
(e) Director of Town Planning	22,099	5,39,993
(f) Director of Medical Services	† 30,179	
(g) Charges in England	4,247	
(h) Grants for Public Health Purpose ..	..	
Grand total "39. P.H." ..		43,86,629

* Includes a sum of Rs. 5,046 recovered from the Ford Foundation Fund.

† Includes Rs. 10,256, being grants to Provincial Research Committee.

‡ The amount represents grants to local bodies including the Corporation of Madras for water-supply and drainage grants and excludes a sum of Rs. 4,00,321 as grants to local bodies relating to this department.

Besides the sum of Rs. 15,65,888 controlled by the Director of Public Health, a sum of Rs. 5,567 was also spent during the second half of 1953-54 on Vital Statistics establishment.

Information in respect of district boards, municipalities excluding major panchayats in the Residuary Madras State and the Corporation of Madras, for 1953-54, is furnished below :—

Serial Number.	Head.	Expenditure		
		Corporation of Madras.	Other municipalities.	District Boards.
(1)	(2)	(3)	(4)	(5)
		RS.	RS.	RS.
1	Medical relief	10,68,769	10,62,882	35,56,617
2	Preventive medicine	65,85,424	1,05,22,710	18,95,513
3	Town-Planning	3,65,242	3,83,042	2,67,233
4	Water-supply and Drainage.	51,49,320	47,69,604	..
5	Lighting	10,29,783	10,43,291	..
6	Education	9,70,266	78,71,401	3,04,56,076
7	Railways	..	..	3,18,184
8	Other—General	76,47,409	2,38,65,531	2,57,41,078
Total ..		2,28,16,213	4,95,18,461	6,22,34,701

Serial Number.	Head.	Receipts excluding Government grants and contributions.		
		Corporation of Madras.	Other municipalities.	District Boards.
(1)	(2)	(3)	(4)	(5)
		RS.	RS.	RS.
1	Medical relief	72,370	29,212	98,300
2	Preventive medicine	5,15,267	27,58,418	2,50,401
3	Town-Planning	78,909	3,35,029	1,79,565
4	Water-supply and Drainage.	45,64,182	48,81,476	..
5	Lighting	12,60,060	10,94,725	..
6	Education	80,972	62,98,800	2,68,50,713
7	Railways	..	..	2,67,502
8	Other—General	1,58,05,891	2,33,59,103	2,59,58,808
Total ..		2,23,77,651	3,87,56,763	5,36,05,289

The total receipts under revenue for the second half of 1953-54 of the Madras State was Rs. 2,301.97 lakhs. The expenditure incurred by the State on "39. Public Health" for the same period was Rs. 43.87 lakhs and that on "38. Medical" was Rs. 134.67 lakhs.

It is laid down in the Madras Public Health Act that every municipality should earmark 30 per cent of its income for expenditure on public health and medical relief and every district board and panchayat 12½ per cent. Many of the municipalities and district boards have spent more than the prescribed minimum.

The percentage of expenditure on public health to total sum spent on Public Health and Medical Relief was 24.6. Out of the sum spent on Public Health Administration 35.7 per cent was controlled by the Director of Public Health.

CHAPTER VII—CONCLUDING REMARKS.

The health conditions in the State during 1954 were definitely better than during 1953 as revealed by the vital statistics indices. The birth rate was about the same as in the previous year and less than the average for the previous five years. There was a remarkable fall in the death rate as compared with the previous year and the average for the previous five years. The recorded death rates during the period 1944 to 1954 show a steady decline. An all round

decrease is registered in the mortality from all the principal groups of causes of deaths, as compared with 1953. Only sporadic cases of cholera and smallpox were reported during the year except for the continuation of the epidemic in a mild form in the beginning of the year. Plague has ceased to be a public health problem. The contribution of deaths due to fevers, dysentery and diarrhoea and respiratory diseases was very much less when compared to the previous year. Similarly, the death rates in all the age groups have decreased as compared with the previous year. The infant mortality rate, a sensitive index of conditions of health in an area, has registered a large fall. Likewise, the maternal mortality rate has also decreased.

Besides the noticeable reduction in mortality, the public health measures undertaken by the department have conferred other benefits. The anti-malaria work spread over the vast malarious tracts has not only reduced sickness and consequent incapacitation caused by malaria, but also rendered it possible to carry on various irrigation and hydro-electric projects without hindrance and to colonise uninhabitable virgin land.

During the year, the organization to carry on B.C.G. vaccination on a mass scale as a preventive measure was set up after careful and mature consideration. The scheme was inaugurated first in Coimbatore town and its belt area. The response from the public was very good. It is hoped it will afford great relief to the vulnerable sections of the population.

The UNICEF supplied 375 tons of skim milk and 1,500 tons of rice for distribution to the nursing mothers and infants in various places in the State. This has been a welcome supplement to the poor diets consumed by them.

During the year under report proposals were sent to Government for unification of the cadres of I and II Class Health Officers so that the scale of pay of medical graduates joining this department may be made attractive. The Government have since accepted this proposal and it is hoped that the vacant posts of Health Officers will soon be filled up.

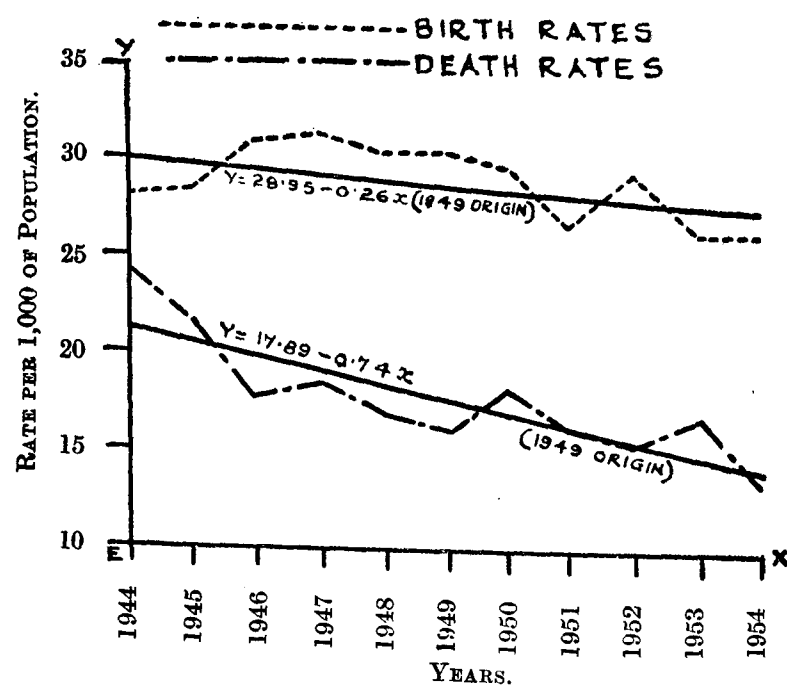
It was proposed that five per cent of the sanctioned posts of the Health Inspectors might be converted into a selection grade with a higher scale of pay. This has also since been accepted by Government.

The work of the health staff in all categories has been generally satisfactory.

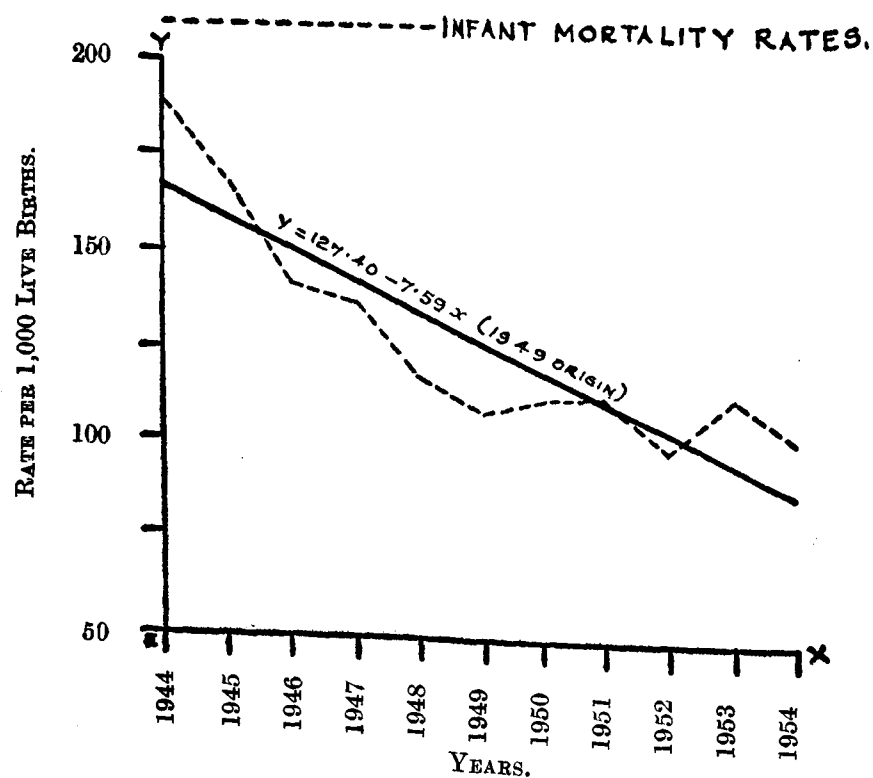
T. S. ADISUBRAMANIAM,
Director of Public Health.

CHARTS, GRAPHS AND MAPS.

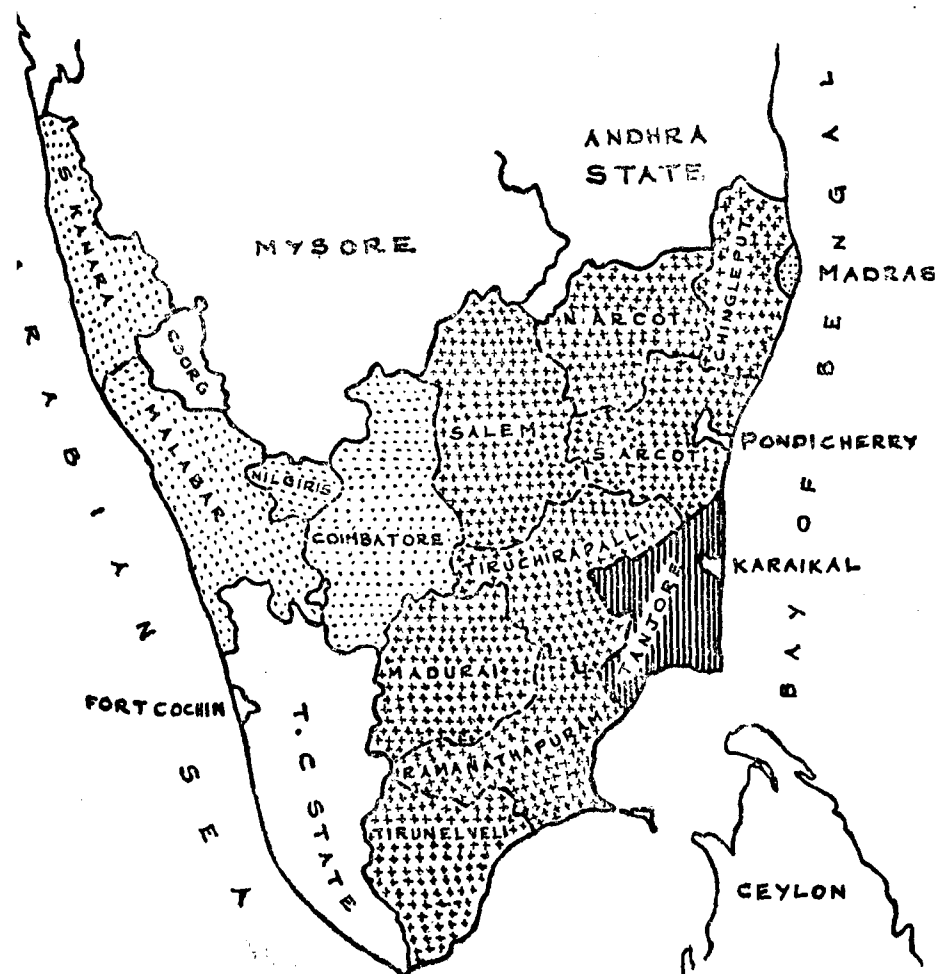
No. 1.—BIRTH AND DEATH RATES, 1944-54.



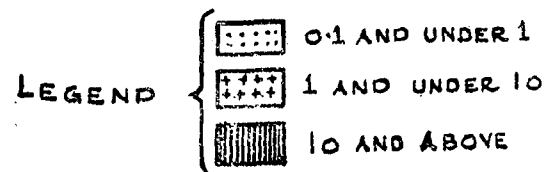
No. 2.—INFANT MORTALITY RATES, 1944-54.



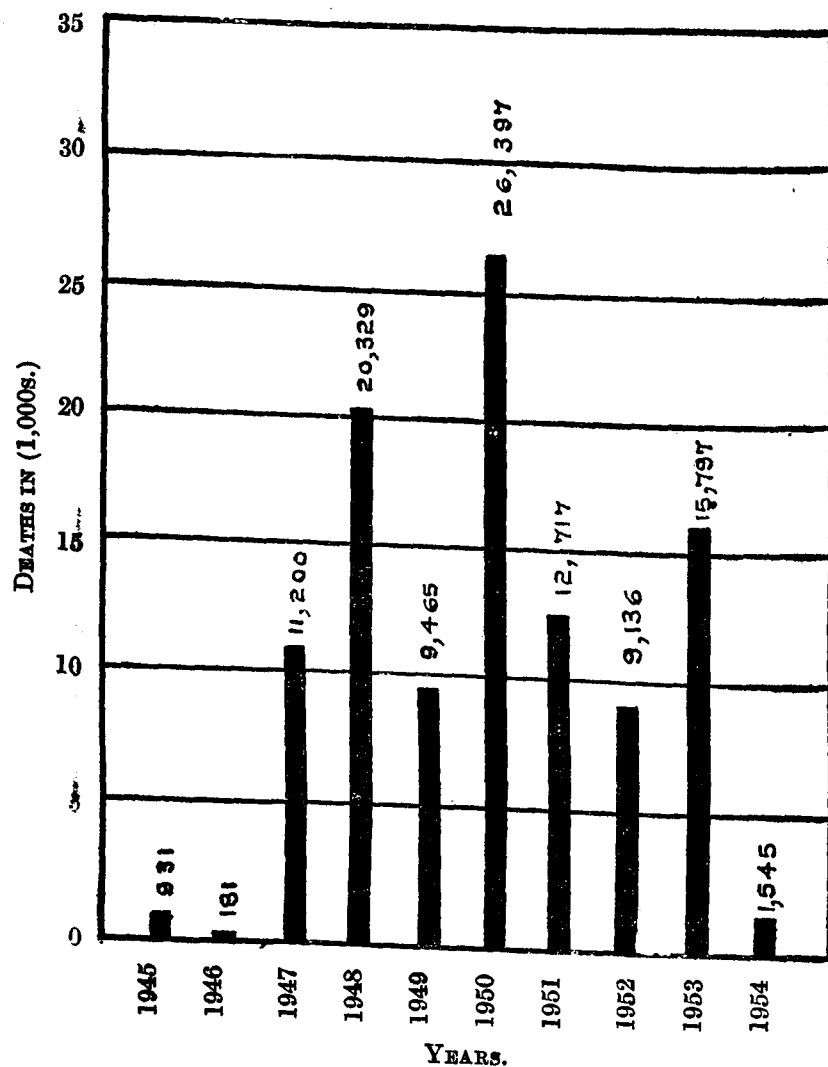
No. 3.—MAP OF CHOLERA MORTALITY, 1954.



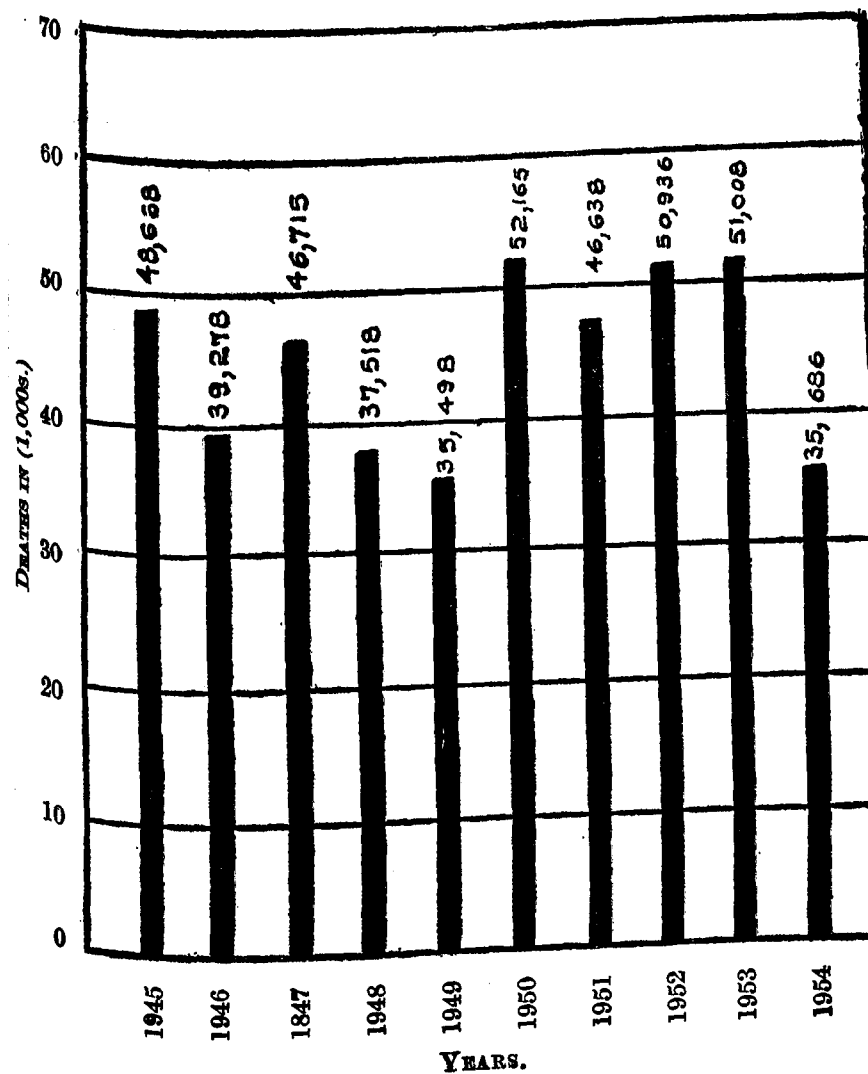
DEATH RATES PER 100,000 OF POPULATION



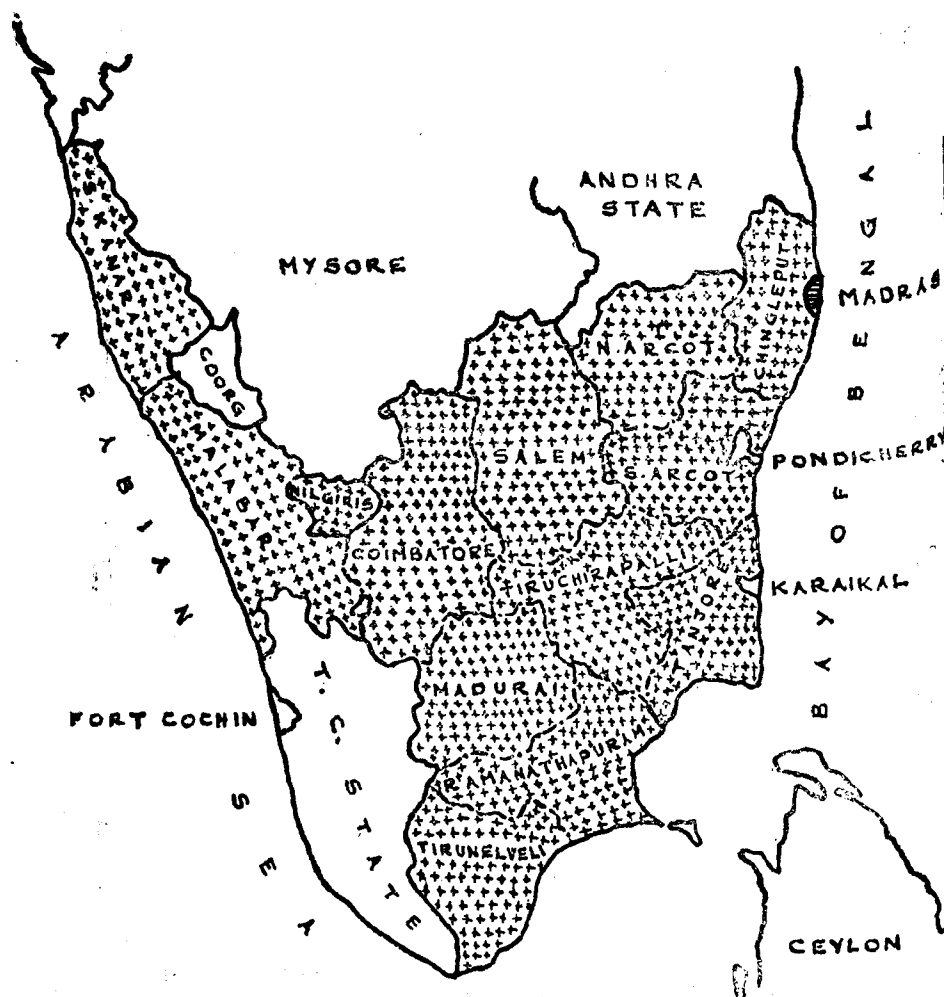
No. 4.—DEATHS FROM CHOLERA, 1945-54.



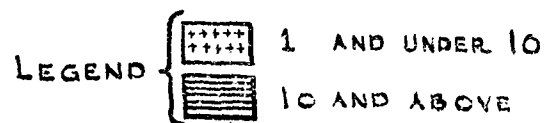
No. 5.—DEATHS FROM DYSENTERY AND DIARRHŒA, 1945-54.



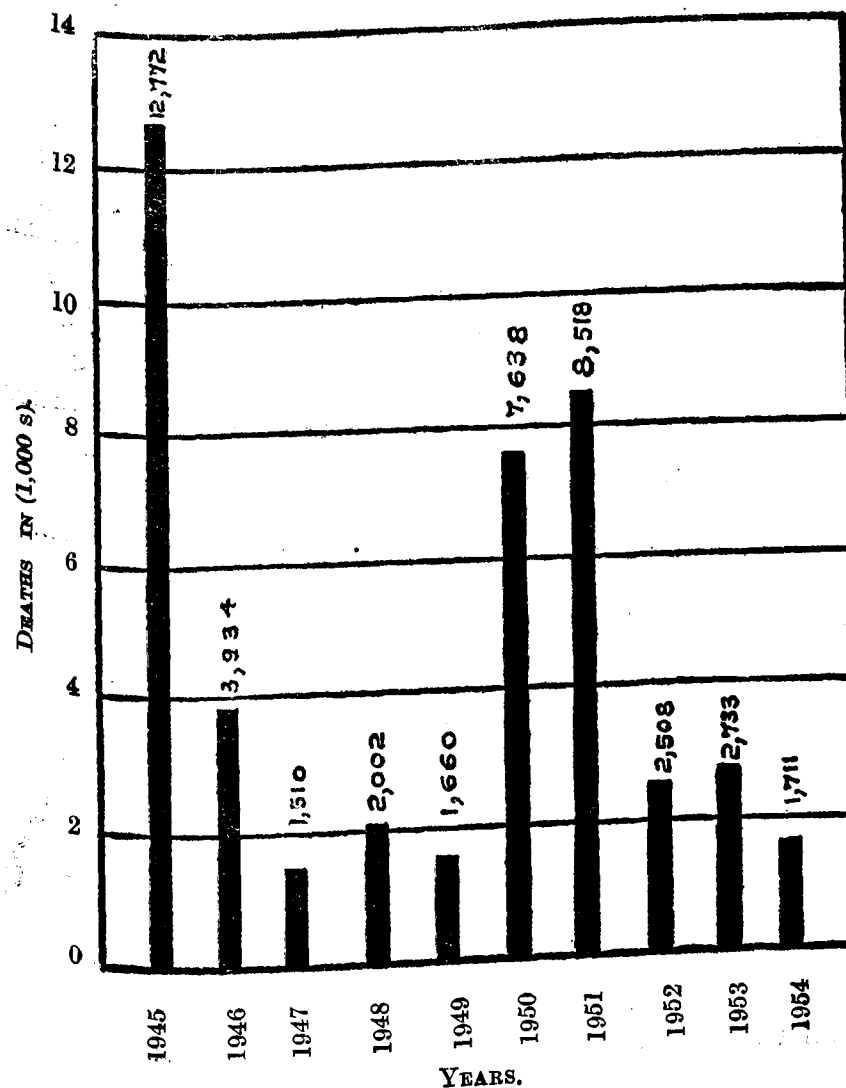
No. 6.—MAP OF SMALLPOX MORTALITY, 1954.



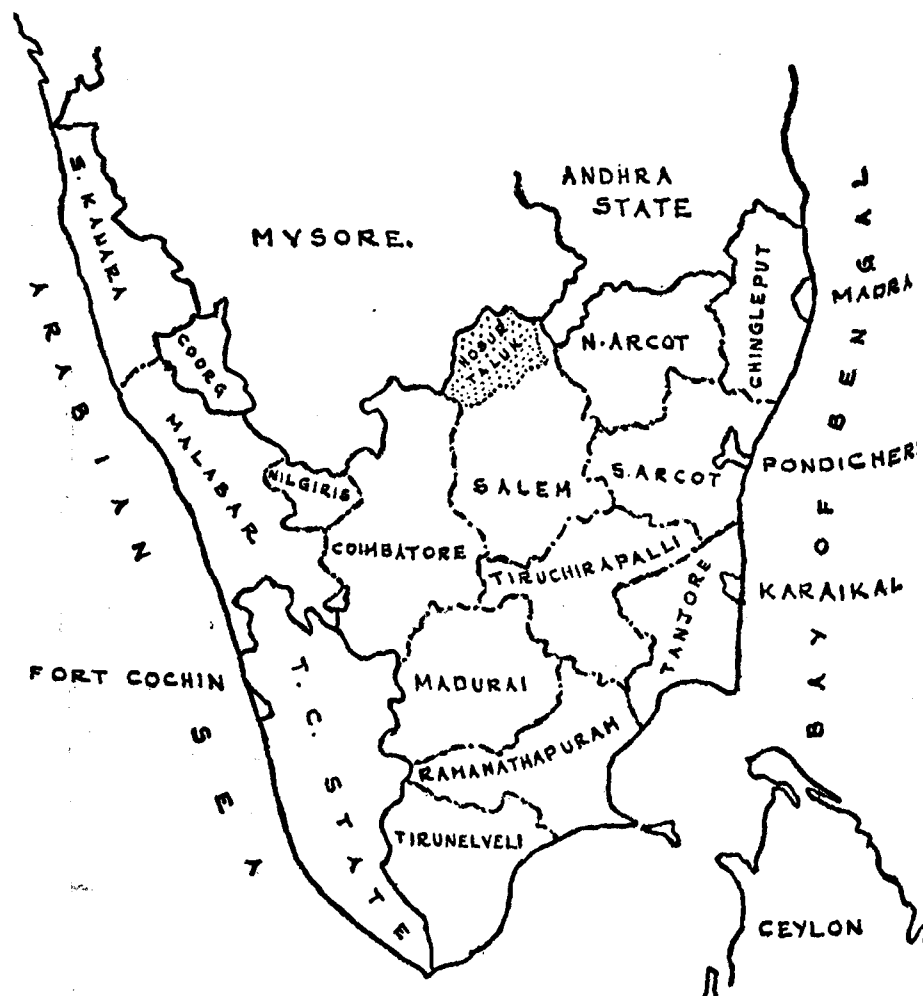
DEATH RATES PER 100,000 OF POPULATION



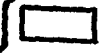
No. 7.—DEATHS FROM SMALLPOX, 1945-54.



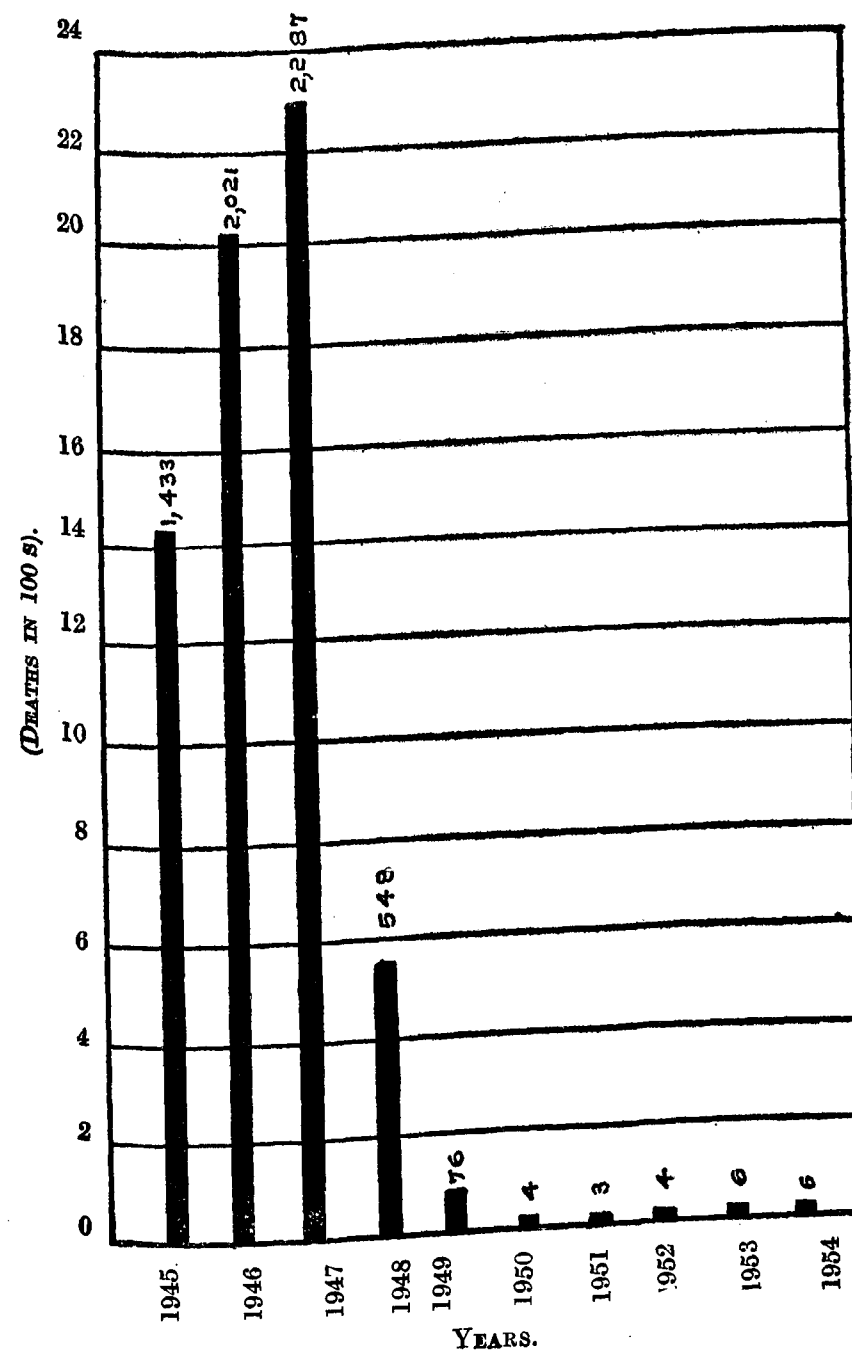
No. 8.—MAP OF PLAGUE MORTALITY, 1954.



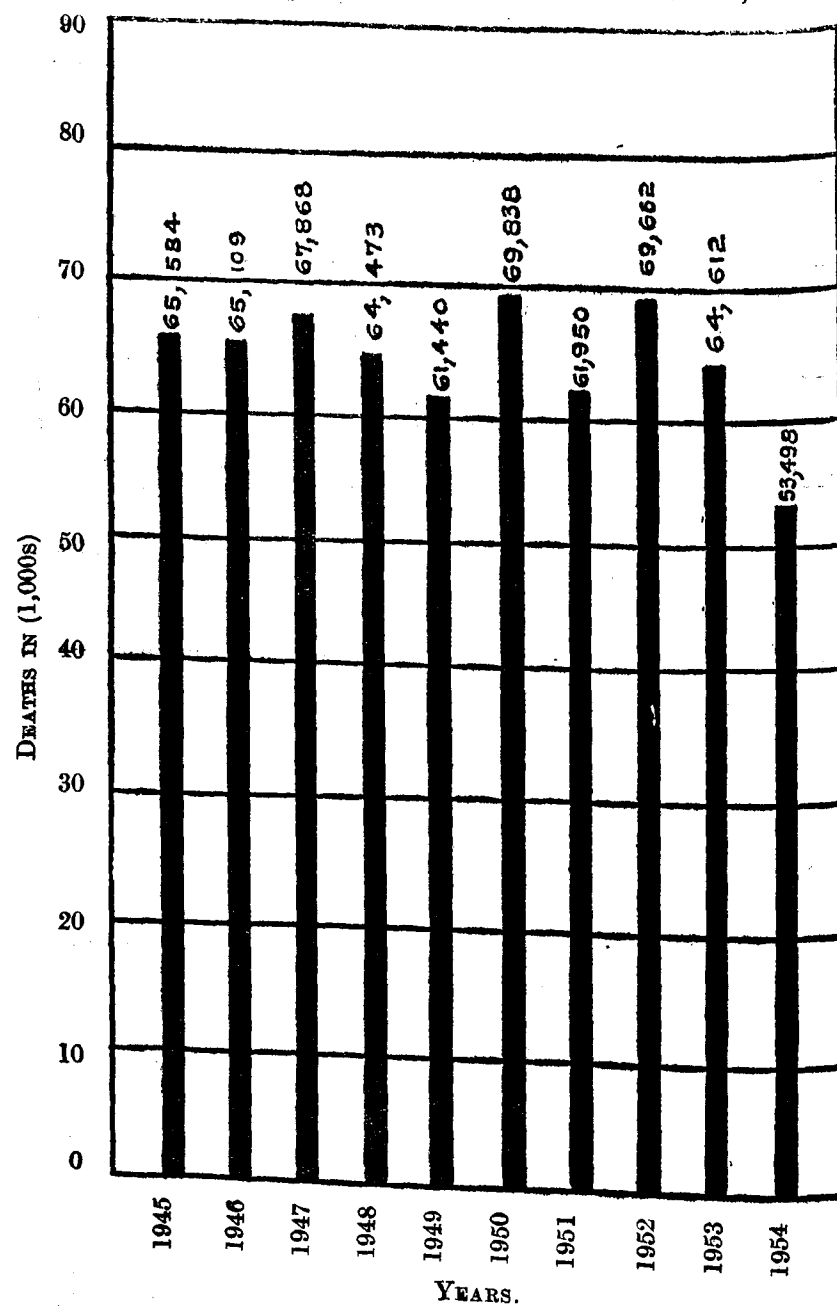
DEATH RATES PER 100,000 OF POPULATION

LEGEND {  FREE AREAS
 0.2

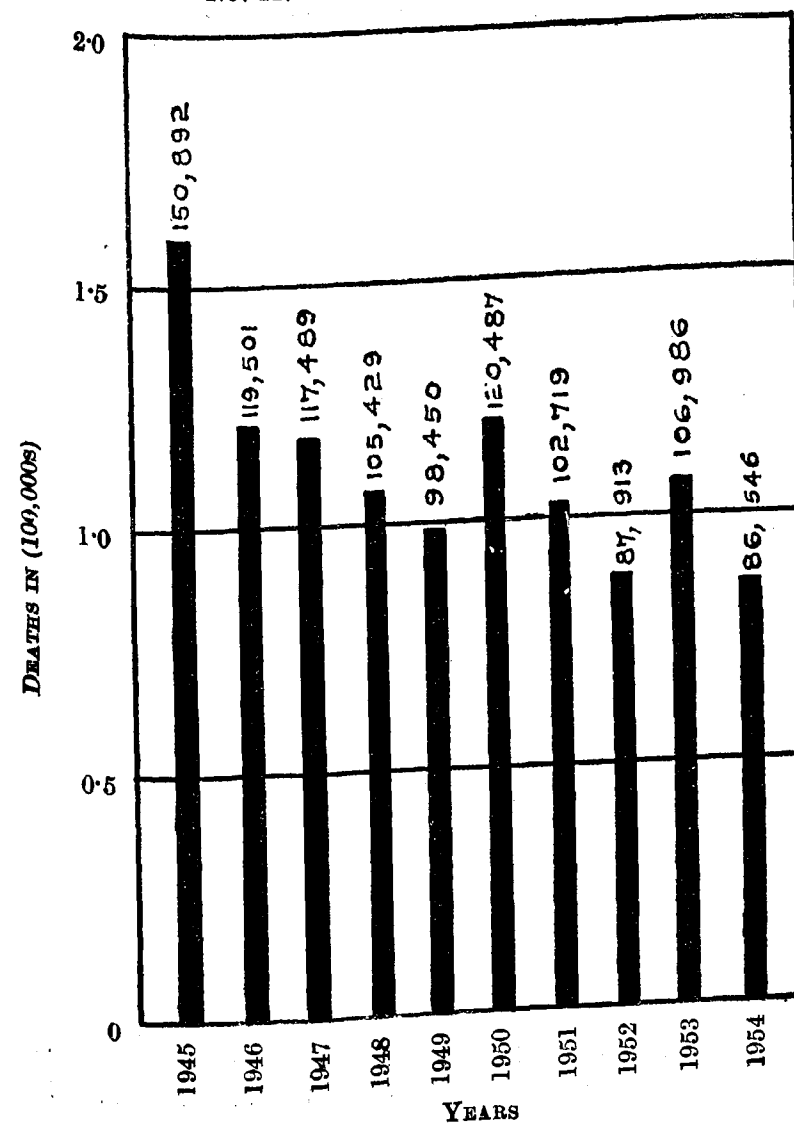
No. 9.—DEATHS FROM PLAGUE, 1945-54.



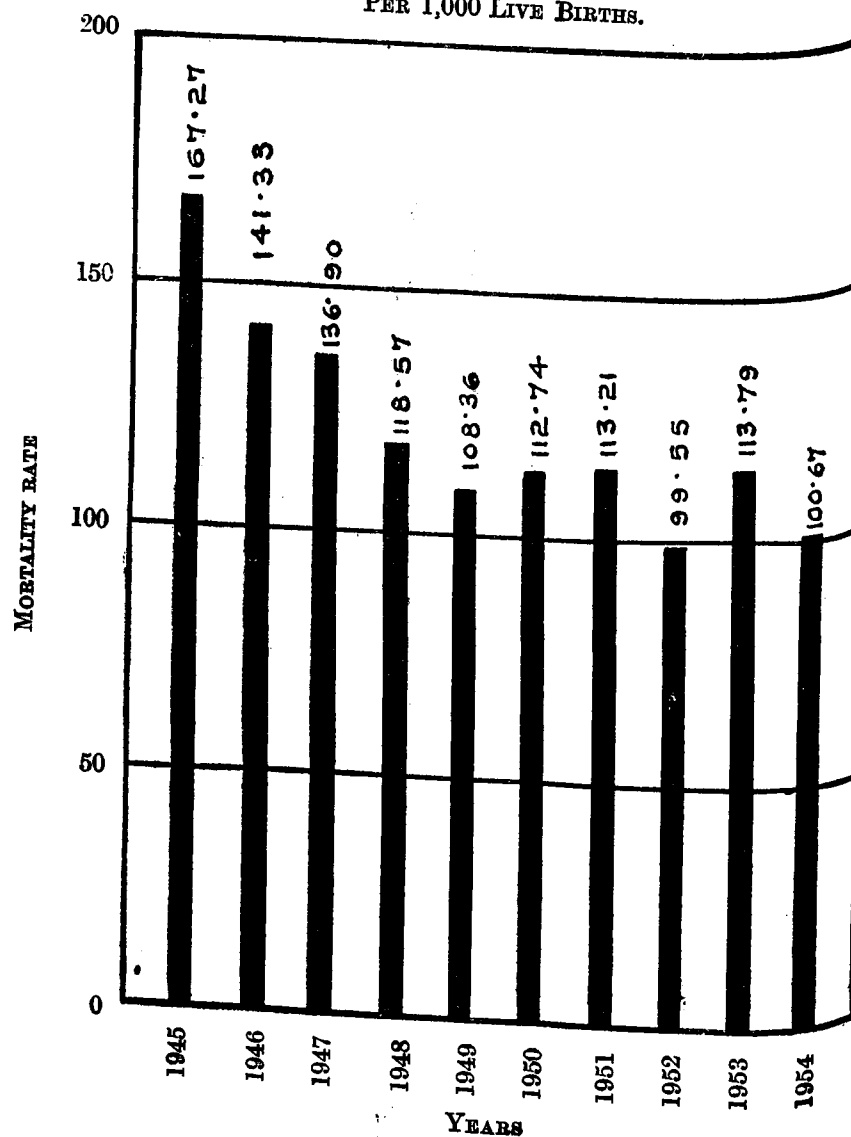
No. 10.—DEATHS, FROM RESPIRATORY DISEASES, 1945-54.



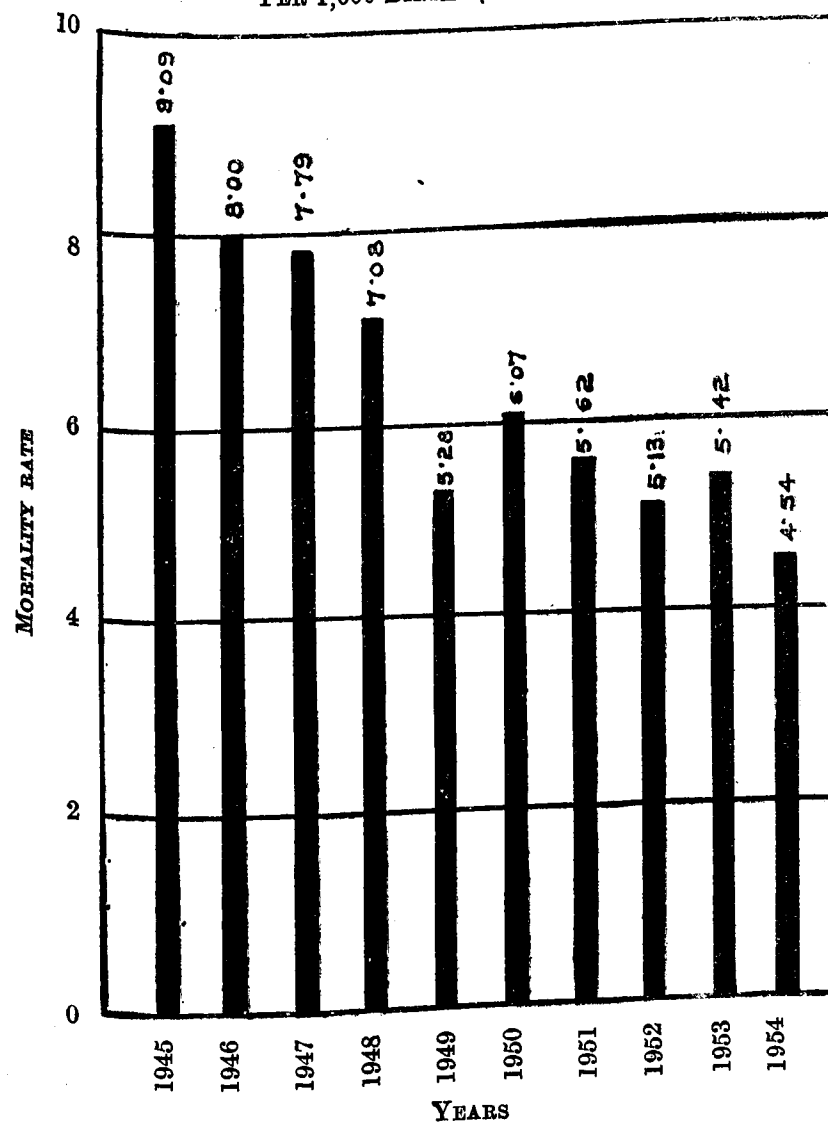
No. 11.—DEATHS FROM FEVERS, 1945-54.



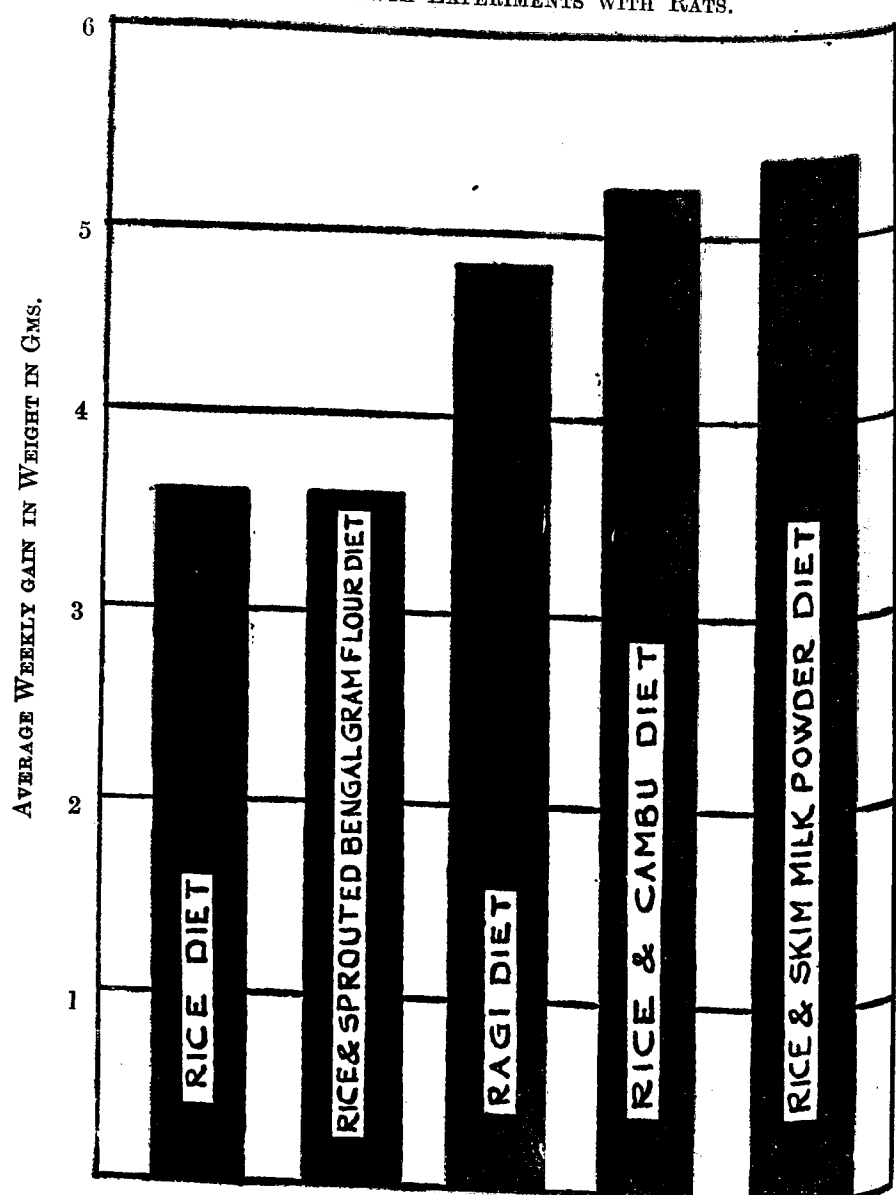
No. 12.—INFANT MORTALITY RATES, 1945-54.
PER 1,000 LIVE BIRTHS.



No. 13.—MATERNAL MORTALITY RATES, 1945-54.
PER 1,000 BIRTHS (LIVE AND STILL).



No. 14—STUDY OF FOOD SUPPLEMENTS.
GROWTH EXPERIMENTS WITH RATS.



No. 15.—MALARIA OF
ATION CHART, MADRAS STATE, 1954.

DIRECTOR OF PUBLIC HEALTH, MADRAS.

ASSISTANT DIRECTOR OF PUBLIC HEALTH (MALARIA).

Malaria Engineer.

Assistant to
A.D.P.H. (Malaria)
Senior Office
Assistant 1,
U.D.C. 2,
L.D.C. 1,
Steno-typist 1,
Peons 4.

Chief Entomologist
L.T. 1, L.A. 1,
F.A. 2.

	Malaria Control Unit No.	I Tauxors Headquarters.
H.O., Class I (R.M.) ..	1 L.A.	 Accountant
S.E.	" " "	" " " U.D.C.
E.A.	3 F.F.	7 Steno-typist
C.	" " "	" " " Feous
H.I.	1 C.	2
		7

Malaria Control Unit No. II Colimbatore Headquarters.									
H.O. Class I (R.M.)	1	L.A.	..	..	3	Accountant	..	1	1
S.E.	1	F.A.	..	7	U.D.C.	..	..	1	1
F.A.	3	D.	..	2	Steno-typist	..	..	1	1
H.I.	1	C.	..	2	Pensions	..	..	1	7

Ennore	Salim Anti-Malaria Scheme (South)	Salim district (North), Dharmapuzh	Amudai	Manit	Karayan	Ramanathapuram district	Trinervelli district	Madras	South	Wynand	New	Malan-	Gudalur	Coimbatore	Walayar	Coimbatore	Mangalam	North	Anara
Anti-Malaria Scheme, Chingleput district.	Salim Anti-Malaria Scheme (South)	Salim district (North), Dharmapuzh	Amudai	Manit	Karayan	Ramanathapuram district	Trinervelli district	Madras	South	Wynand	New	Malan-	Gudalur	Coimbatore	Walayar	Coimbatore	Mangalam	North	Anara
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9
10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14

An abstract of total malaria staff employed in Madras State.

Serial number.	Abbreviation.	Explanation.	Numbers.
1	A.D.P.H.	Assistant Director of Public Health	28
2	M.E.	Regional Entomologist (H.O.I.)	107
3	M.E.	Assistant to Assistant Director (H.O.I.)	28
4	C.E.	Chief Entomologist	18
5	H.O.I.	Health Officer, Class I	20
6	H.O.I.	Health Officer, Class II	7
7	H.O.I.	Senior Entomologist	7
8	H.E.	Entomological Assistant	3
9	H.E.	Health Officers	10
10	H.V.	Health Visitors	7
11	H.V.	Maternity Assistant	3
12	M.A.	Ayaks	10
13	M.A.	Laboratory Technicians	113
14	L.T.	Laboratory Technicians	113

An abstract of total malaria staff employed in Madras State.

ANNEXURE A.

Statement showing births and deaths from detailed causes as per ages at deaths, in municipalities with a population of 30,000 and above having Health Officers in the State in 1954.

ANNEXURE A.

Statement showing births and deaths from detailed causes as per ages at deaths, in municipalities with a population of 30,000 and above having Health Officers in the State in 1954.

Municipalities selected—Bodinayakanur, Cannanore, Chidambaram, Coimbatore, Cuddalore, Dindigul, Erode, Gudiyattam, Kancheepuram, Karankudi, Karur, Kozhikode, Kumbakonam, Mangalore, Madurai, Mayuram, Nagapattinam, Ootacamund, Palni, Palayamkottai, Palghat, Periyakulam, Pollachi, Pudukkottai, Rajapalayam, Salem, Srirangam, Srivilliputhur, Tanjore, Tellicherry, Tiruchirappalli, Tirunelveli, Tiruppur, Tiruvannamalai, Tuticorin, Vaniyambadi, Vellore, Villupuram and Virudhunagar.

Age at the time of death.	Infectious diseases.										Fever.				Respiratory diseases.				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
	Estimated mid-year population for 1954.	Cholera.	Plague.	Smallpox.	Measles.	Chicken-pox.	Typhoid.	Diphtheria.	Others.	Malaria.	Influenza.	Relapsing fever.	Kala Azar.	Rheumatic fever.	Other fevers.	Tuberculosis of lungs.	Pneumonia.	Others.	
Under one year.	Under one month.	..	..	..	..	..	..	..	..	..	..	..	..	..	17	..	24	85	
Under one week.	Over one week	..	..	..	1	..	..	4	1	1	..	..	..	..	33	..	45	25	
Over one month and not exceeding six months.	Over one month and not exceeding six months.	..	..	10	5	..	..	6	1	1	..	..	..	..	149	..	235	178	
Over six months and not exceeding 12 months.	Over six months and not exceeding 12 months.	..	..	21	6	..	3	29	2	..	2	..	..	..	177	1	415	196	
Total under one year	Total under one year	..	1	31	12	..	4	39	3	2	3	..	..	..	376	1	719	484	
1 and under 5 years	1 and under 5 years	..	36	61	62	5	43	174	3	15	6	..	..	..	925	23	1,944	967	
5 and under 10 years	5 and under 10 years	..	39	25	15	1	85	27	1	12	2	..	..	..	352	34	554	120	
10 and under 15 years	10 and under 15 years	..	18	1	..	..	93	5	..	12	5	..	..	..	139	55	181	34	
15 and under 20 years	15 and under 20 years	..	17	3	..	..	105	1	..	11	..	..	1	2	109	32	188	27	
20 and under 25 years	20 and under 25 years	..	39	37	..	..	154	1	..	41	..	..	1	8	237	26	255	113	
25 and under 30 years	25 and under 30 years	..	39	22	..	..	68	..	..	36	..	..	..	1	284	81	217	190	
30 and under 35 years	30 and under 35 years	..	31	12	1	1	60	..	2	24	..	..	..	13	256	646	204	156	
35 and under 40 years	35 and under 40 years	..	15	8	..	2	28	..	..	11	1	..	1	23	299	400	208	206	
40 and under 45 years	40 and under 45 years	..	21	..	..	..	18	..	..	..	..	..	..	30	215	189	152	236	
45 and under 50 years	45 and under 50 years	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
50 years and upwards	50 years and upwards	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
Total of all ages	Total of all ages	2,829	2,264	1,081	1,049	4,049	820	2,102	8	1,388	950	353	40	0.61	0.004	0.003	11	11	11
Rate per 1,000 of population	Rate per 1,000 of population	0.85	0.68	0.32	0.31	0.31	0.19	0.43	0.002	0.29	0.11	0.004	0.003	0.004	0.003	0.004	0.003	0.003	

REPORT ON THE HEALTH CONDITIONS IN MADRAS STATE, 1954

Age at the time of death.

Age at the time of death.																		
	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)	(28)	(29)	(30)	(31)	(32)	(33)	(34)	(35)	(36)	(37)
Under one year.	Under one month.	Under one month.	Under one month.	Under one month.	Under one month.	Under one month.	Under one month.	Under one month.	Under one month.	Under one month.	Under one month.	Under one month.	Under one month.	Under one month.	Under one month.	Under one month.	Under one month.	Under one month.
Under one week	Under one week	..	53	9	2	5	7	2	..	1	16	..	..	..	..	..	..	..
Over one week	Over one week	4	32	7	4	1	1	6	..	1	3	..	1	..	..	..	..	..
Over six months and not exceeding 12 months.	Over six months and not exceeding 12 months.	162	204	23	49	21	1	9	1	2	1	2	1	..	..	..	..	..
Total under one year ..	Total under one year ..	240	435	59	65	32	10	22	1	5	22	2	2	..	..	..	..	..
1 and under 5 years ..	1 and under 5 years ..	1,401	729	107	506	282	19	59	59	44	2	..	..	..	..	..	..	..
5 and under 10 years ..	5 and under 10 years ..	380	145	41	97	26	29	43	32	18	1	..	..	..	..	..	..	..
10 and under 15 years ..	10 and under 15 years ..	72	50	22	29	12	14	38	14	20	..	..	..	..	..	..	..	..
15 and under 20 years ..	15 and under 20 years ..	38	37	43	29	16	11	38	16	11	..	..	..	..	..	..	..	..
20 and under 25 years ..	20 and under 25 years ..	99	179	174	39	16	241	164	52	39	5	..	..	..	..	..	..	..
25 and under 30 years ..	25 and under 30 years ..	123	184	178	81	47	360	197	78	40	3	..	..	..	..	..	..	..
30 and under 35 years ..	30 and under 35 years ..	153	184	178	91	47	365	269	162	56	3	..	..	..	..	..	..	..
35 and under 40 years ..	35 and under 40 years ..	180	182	178	92	64	307	216	216	65	2	..	..	..	..	..	..	..
40 and under 45 years ..	40 and under 45 years ..	202	189	106	97	33	437	270	320	55	..	..	..	..	..	..	..	..
45 and under 50 years ..	45 and under 50 years ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
50 years and upwards ..	50 years and upwards ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Total of all ages ..	Total of all ages ..	2,829	2,264	1,081	1,049	820	2,102	1,388	950	353	40	0.61	0.004	0.003	0.004	0.003	0.004	0.003
Rate per 1,000 of population ..	Rate per 1,000 of population ..	0.85	0.68	0.32	0.31	0.31	0.19	0.43	0.002	0.42	0.29	0.11	0.004	0.003	0.004	0.003	0.004	0.003

REPORT ON THE HEALTH CONDITIONS IN MADRAS STATE, 1954

Municipalities selected.—Bodinayakanur, Cannanore, Chidambaram, Coimbatore, Cuddalore, Dindigul, Erode, Gudiyattam, Kancheepuram, Karaikudi, Karur, Kozhikode, Kumbakonam, Mangalore, Madurai, Mayuram, Nagapattinam, Ootacamund, Palni, Palayamkottai, Palghat, Periyakulam, Pollachi, Pudukkottai, Rajapalayam, Salem, Srirangam, Srivilliputtur, Tanjore, Tellicherry, Tiruchirappalli, Tirunelveli, Tiruppur, Tiruvannamalai, Tuticorin, Vaniyambadi, Vellore, Vilupuram and Virudhunagar—cont.

Age at the time of death.	Diseases of the nervous system.				Accident of pregnancy and child-birth.				Deficiency diseases.				Malignant diseases.				
	Convulsions.	Cerebral hemorrhage.	Tetanus.	Epilepsy.	Others.	Puerperal.	Abortion.	Other accidents and diseases of pregnancy and parturition.	Beri-Beri.	Rickets.	Others.	Allimentary tract.	Genito-urinary.	Breast.	Other regions.	Ankylostomiasis.	Diabetes.
Under one year.	620	2	14	..	19	..	..	7	..	1	11	..	..	..	..	..	..
Under one month.	656	4	13	2	9	..	..	2	..	23	12	..	1	..	..	..	..
Over one month and not exceeding six months.	1,267	..	4	..	14	..	..	..	..	58	46	..	..	..	..	..	..
Over six months and not exceeding 12 months.	831	..	6	2	18	..	..	..	..	82	44	..	..	..	2	..	..
Total under one year	3,424	6	37	4	60	..	..	9	..	281	113	..	1	..	3	1	..
1 and under 5 years	1,792	3	43	4	53	..	..	1	2	41	224	1	..	1	5	3	..
5 and under 10 years	106	1	48	5	22	..	..	..	..	9	36	..	..	..	2	..	..
10 and under 15 years	11	1	34	9	14	..	1	..	..	2	13	..	..	..	6	..	..
15 and under 20 years	4	1	26	14	23	28	14	114	..	..	18	..	..	..	7	..	..
20 and under 25 years	11	3	70	24	55	146	26	342	..	..	45	..	..	..	15	8	..
25 and under 30 years	3	14	79	15	80	51	24	188	1	..	52	1	2	1	14	15	..
30 and under 35 years	2	11	68	8	116	3	5	28	..	..	87	13	3	1	46	26	..
35 and under 40 years	..	1	12	9	238	..	..	1	1	..	97	10	7	..	33	24	..
40 and under 45 years	..	16	24	..	397	..	..	..	..	..	57	10	..	1	18	76	..
45 and under 50 years	13	28	12	..	..	..	..	..	..	..	..	..	..	..	..	..	..
50 years and upwards	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Total of all ages	5,366	90	431	92	1,043	282	60	886	5	408	733	26	18	4	171	100	100

Age at the time of death.	Remarks.												
	Total deaths from all other causes.												
	(50)	(51)	(52)	(53)	(54)	(55)	(56)	(57)	(58)	(59)	(60)	(61)	(62)
Under one year.													
Under one month.													
Over one week	..	..	..	..	..	..	..	..	..	..	..	..	..
Over one month and not exceeding six months.	..	..	..	..	..	..	..	..	..	..	..	..	..
Over six months and not exceeding 12 months.	..	..	..	..	..	..	..	..	..	..	..	..	..
Total under one year	143	3	4,574	51	839	40	..	166	74	7,451	7,412	58,216	17-46
1 and under 5 years	..	..	..	..	..	..	..	..	..	..	..	..	..
5 and under 10 years	..	..	..	..	..	..	..	..	..	..	..	..	..
10 and under 15 years	..	..	..	..	..	..	..	..	..	..	..	..	..
15 and under 20 years	..	..	..	..	..	..	..	..	..	..	..	..	..
20 and under 30 years	..	..	..	..	..	..	..	..	..	..	..	..	..
30 and under 40 years	..	..	..	..	..	..	..	..	..	..	..	..	..
40 and under 50 years	..	..	..	..	..	..	..	..	..	..	..	..	..
50 and under 60 years	..	..	..	..	..	..	..	..	..	..	..	..	..
60 years and upwards	..	..	..	..	..	..	..	..	..	..	..	..	..
Total of all ages	143	3	4,747	51	839	40	..	166	74	7,451	7,412	58,216	17-46
Rate per 1,000 of population	0-04	0-0009	1-42	0-02	0-2	0-01	..	0-05	0-02	2-24	2-22	17-46	..

ANNEXURE B.

Statement showing live-births by months, sex and area in Madras State, 1954.

Serial number and names of months.	Rural.			Urban.			Total.		
	Males.	Females.	Total.	Males.	Females.	Total.	Males.	Females.	Total.
1 January ..	26,426	25,097	51,523	9,620	9,026	18,646	36,046	34,123	70,169
2 February ..	23,421	22,193	45,614	9,000	8,597	17,597	32,221	30,792	63,013
3 March ..	24,101	22,741	46,842	10,458	9,776	20,234	34,562	32,517	67,079
4 April ..	23,776	21,779	45,555	10,717	9,909	20,716	34,493	31,778	66,271
5 May ..	23,070	20,823	43,893	11,023	10,429	21,452	39,093	37,252	76,345
6 June ..	30,509	28,893	59,402	11,061	10,629	21,690	42,138	39,954	82,092
7 July ..	31,810	28,932	60,742	11,791	11,225	23,016	43,134	40,157	83,291
8 August ..	33,472	31,131	64,603	12,216	11,187	23,403	45,688	42,363	88,051
9 September ..	35,126	32,688	67,814	12,676	11,939	24,615	47,802	44,627	92,429
10 October ..	36,191	34,688	70,879	12,998	12,660	25,658	49,189	47,348	96,537
11 November ..	37,446	35,301	72,747	14,259	13,106	27,425	51,705	48,467	100,172
12 December ..	36,999	35,363	72,362	13,781	13,232	27,013	50,778	48,600	99,378
Total ..	366,673	345,686	712,359	140,171	132,297	272,468	506,844	477,983	984,827

ANNEXURE C.

Statement showing deaths by months, sex and area in Madras State, 1954.

Serial number and names of months.	Rural.			Urban.			Total.		
	Males.	Females.	Total.	Males.	Females.	Total.	Males.	Females.	Total.
1 January ..	19,431	18,258	37,689	6,348	5,913	12,261	25,829	24,171	50,000
2 February ..	15,620	14,880	30,500	5,602	5,238	10,840	21,222	20,118	41,340
3 March ..	13,861	13,550	27,411	5,708	5,098	10,806	19,569	18,648	38,217
4 April ..	12,972	12,192	25,164	5,249	4,756	10,005	18,221	16,948	35,169
5 May ..	14,013	13,506	27,519	5,164	4,805	9,969	19,177	18,311	37,488
6 June ..	13,722	13,512	27,234	5,183	4,819	10,007	18,910	18,331	37,241
7 July ..	15,211	14,857	30,068	5,196	5,007	10,203	20,407	19,864	40,271
8 August ..	15,786	15,847	31,633	5,892	5,668	11,560	21,678	21,515	43,193
9 September ..	15,862	15,312	31,174	5,866	5,641	11,507	21,728	20,953	42,681
10 October ..	15,985	15,828	31,813	5,315	5,070	10,385	21,300	20,898	42,198
11 November ..	17,118	16,795	33,913	6,157	5,584	11,741	23,275	22,379	45,654
12 December ..	18,118	17,994	36,112	6,325	6,132	12,457	24,443	24,126	48,569
Total ..	187,749	182,531	370,280	68,010	63,731	131,741	255,759	246,262	502,021

ANNEXURE E.

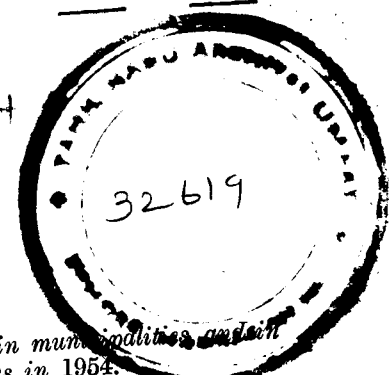
Still-births in districts exclusive of municipalities, in municipalities and districts inclusive of municipalities in 1954.

Districts.	Districts exclusive of municipalities.		Municipalities.		Districts inclusive of municipalities.		Total.
	Males.	Females.	Males.	Females.	Males.	Females.	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Madras ..	..	..	844	729	844	729	1,573
Chingleput ..	..	..	183	170	388	351	739
North Arcot ..	205	181	467	401	729	606	1,335
South Arcot ..	262	205	287	289	502	479	981
Tanjore ..	215	190	580	510	806	699	1,505
Tiruchirappalli ..	226	189	349	301	536	432	968
Madurai ..	187	131	493	402	645	549	1,194
Ramanathapuram ..	152	147	244	167	404	319	723
Tirunelveli ..	160	152	275	218	583	512	1,095
Salem ..	308	294	219	202	364	308	672
Coimbatore ..	145	106	536	460	625	527	1,152
Nilgiris, The ..	89	67	49	48	128	120	248
Malabar ..	79	72	341	291	724	580	1,304
South Kanara ..	383	289	68	67	499	387	886
Total ..	2,842	2,343	4,935	4,256	7,777	6,598	14,375

ANNEXURE D.

Statement showing the number of monthly village birth and death returns due from each district and number not received for the year 1954.

Districts.	Number of returns due for 1954.	Number of returns not received in 1954.	Percentage of returns not received to total number due.
(1)	(2)	(3)	(4)
Chingleput ..	26,076	1,152	4.4
North Arcot ..	24,216	888	3.7
South Arcot ..	27,204	2,429	8.9
Tanjore ..	29,945	306	1.0
Tiruchirappalli ..	19,246	223	1.2
Madurai ..	12,852	150	1.2
Ramanathapuram ..	18,336	657	3.6
Tirunelveli ..	13,080	58	0.4
Salem ..	19,284	485	2.5
Coimbatore ..	14,340	99	0.7
Nilgiris, The ..	2,520	336	13.3
Malabar ..	10,104	218	2.2
South Kanara ..	9,708	Nil.	..
Total ..	226,911	7,001	3.09

P
L 15. 2117234
N 52

ANNEXURE F.

Material deaths and deaths rates in municipalities, districts exclusive of municipalities and districts inclusive of municipalities in the State of Madras for the year 1954.

Serial number and name of districts.	Municipalities.		Districts exclusive of municipalities.		Districts inclusive of municipalities.	
	Number.	Rate per 1,000 births (live and still).	Number.	Rate per 1,000 births (live and still).	Number.	Rate per 1,000 births (live and still).
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1 Madras	150	2.47	..	..	150	2.47
2 Chingleput	45	8.24	158	3.44	203	3.44
3 North Arcot	98	6.38	253	3.05	351	3.05
4 South Arcot	83	9.92	358	5.07	441	5.07
5 Tanjore	154	8.72	374	6.46	528	6.46
6 Tiruchirappalli ..	80	6.35	458	7.60	538	7.60
7 Madurai	153	6.52	180	3.21	333	3.21
8 Ramanathapuram ..	63	8.68	110	2.36	173	2.36
9 Tirunelveli	107	11.08	398	6.46	505	6.46
10 Salem	65	7.56	270	3.60	335	3.60
11 Coimbatore	135	6.37	147	2.56	282	2.56
12 The Nilgiris	15	4.81	24	2.88	39	2.88
13 Malabar	91	6.45	343	3.34	434	3.34
14 South Kanara	9	1.82	211	3.67	220	3.67
Total	1,248	5.77	3,284	4.20	4,532	4.20

ANNEXURE G.

Infantile deaths by age groups in the municipalities in the State of Madras for the year 1954.

Serial number and name of municipalities.	Under one year.		1-6 months.		6-12 months.		Total under one year.	
	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1 Madras	1,737	1,344	1,347	1,242	1,218	1,171	4,302	3,757
2 Kancheepuram ..	107	81	68	44	33	43	208	168
3 Tiruvallur	17	10	9	16	13	11	39	37
4 Chingleput	42	35	8	14	18	15	68	64
5 Vellore	140	113	66	71	67	49	273	233
6 Tiruvannamalai ..	29	29	16	27	12	20	57	76
7 Gudiyattam	38	23	28	23	20	13	86	59
8 Vaniyambadi	40	34	26	19	22	29	88	82
9 Tirupattur	14	26	8	12	10	12	32	50
10 Walajapet	10	10	9	6	8	6	27	22
11 Ambur	41	23	11	13	16	14	68	50
12 Arni	29	24	17	25	15	16	61	65
13 Cuddalore	61	48	36	35	31	35	128	118
14 Chidambaram	32	17	20	14	17	11	69	42
15 Villupuram	32	32	22	10	25	19	79	61
16 Tindivanam	20	18	13	8	12	11	45	37

ANNEXURE G—cont.

Infantile deaths by age groups in the municipalities in the State of Madras for 1954—cont.

Serial number and name of municipalities.	Under one year.		1-6 months.		6-12 months.		Total under one year.		
	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Total.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Jore	137	126	37	34	28	36	202	196	398
Abakonam	84	76	35	36	29	27	148	139	287
Apattinam	54	28	38	37	36	27	128	92	220
Arur	41	51	17	16	17	13	75	80	155
Marudai	33	47	23	21	22	16	78	84	162
Arur	28	24	11	4	9	14	48	42	90
Chirappalli	203	162	56	48	78	82	337	292	629
Ar	37	31	23	20	16	15	76	66	142
Angam	39	28	10	10	13	12	53	50	103
Chikkottai	40	37	10	7	7	8	57	52	109
Arur	537	436	300	254	236	260	1,093	950	2,043
Ar	91	69	29	30	23	23	143	122	265
Ar	26	27	6	10	12	5	44	42	86
Ar	44	25	13	12	17	8	74	45	119
Ar	45	35	12	10	12	8	69	53	122
Ar	10	12	9	7	4	2	23	21	44
Ar	39	30	32	30	23	23	94	83	177
Ar	75	38	30	23	18	18	123	79	202
Ar	31	28	16	13	25	16	72	57	129
Ar	19	17	18	14	15	11	52	42	94
Ar	38	19	18	14	13	13	69	46	115
Ar	50	26	15	15	28	18	93	59	152
Ar	51	47	17	15	24	30	92	92	184
Ar	126	103	46	36	52	33	224	172	396
Ar	109	81	61	46	32	28	202	155	357
Ar	67	52	26	20	12	16	105	88	193
Ar	19	15	14	7	20	27	53	49	102
Ar	109	123	79	75	72	89	260	287	547
Ar	14	18	7	7	5	9	26	34	60
Ar	330	262	127	117	104	133	561	512	1,073
Ar	37	30	30	20	19	18	86	68	154
Ar	72	49	28	19	17	16	117	84	201
Ar	63	43	26	24	22	29	111	96	207
Ar	18	9	3	4	3	2	24	15	39
Ar	44	29	11	10	10	8	65	47	112
Ar	23	17	10	2	6	9	39	28	67
Ar	16	24	3	5	4	7	23	36	59
Ar	56	68	22	9	11	9	89	86	175
Ar	34	30	19	15	8	9	61	54	115
Ar	185	121	66	63	68	64	319	248	567
Ar	65	55	31	32	16	32	112	119	231
Ar	45	18	12	17	13	9	70	44	114
Ar	34	25	14	14	10	10	58	49	107
Ar	25	22	15	17	14	10	54	49	103
Ar	72	40	34	27	28	26	134	93	227
Ar	13	10	4	3	5	7	22	20	427
Total	5,728	4,530	3,167	2,848	2,793	2,760	11,688	10,138	21,826

ANNEXURE H.

Infantile deaths and death-rates in districts, exclusive and inclusive of municipalities in 1954.

Serial number and districts.	Infantile deaths in the municipalities in the districts.		Infantile deaths in the districts exclusive of municipalities.		Infantile deaths in districts inclusive of municipalities.	
	Number.	Infantile mortality rate per 1,000 live-births.	Number.	Infantile mortality rate per 1,000 live-births.	Number.	Infantile mortality rate per 1,000 live-births.
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1 Madras	8,059	136.00	..	..	8,059	136.00
2 Chingleput	584	114.31	5,621	123.58	6,205	122.64
3 North Arcot	1,329	91.66	7,883	95.62	9,212	95.08
4 South Arcot	579	74.29	7,173	102.17	7,752	99.39
5 Tanjore	1,312	79.18	6,141	106.79	7,453	100.61
6 Tiruchirappalli ..	983	82.33	7,128	118.90	8,111	112.84
7 Madurai	2,679	118.75	6,018	107.81	8,697	110.96
8 Ramanathapuram ..	1,053	98.60	4,109	88.87	5,162	90.70
9 Tirunelveli	1,048	114.36	7,661	125.62	8,709	124.15
10 Salem	607	74.24	7,681	102.82	8,288	100.00
11 Coimbatore	1,912	94.65	5,423	94.62	7,335	94.63
12 Nilgiris, The	290	96.06	752	91.93	1,042	93.04
13 Malabar	1,122	83.30	7,227	70.89	8,349	72.33
14 South Kanara	269	56.08	4,501	79.24	4,770	77.43
Total ..	21,826	105.34	77,318	99.43	99,144	100.67

N.B.—Please see Statement IV-A of the appendix for infantile mortality rates in municipalities.

ANNEXURE I.

Malaria Control Schemes, 1954.

Scheme.	Area in square miles.	Villages.	Hamlet.	Population.	Financed by
(1)	(2)	(3)	(4)	(5)	(6)
1 Anti-Malaria Scheme, North Arcot district.	2,241	325	..	45,000	State.
2 Anti-Malaria Scheme, Coimbatore, North.	791	556	..	300,000	Do.
3 Anti-Malaria Scheme, Coimbatore, South.	110	103	..	27,000	Do.
4 Anti-Malaria Scheme, South Kanara district.	1,500	196	..	215,000	State and District Board.
5 Anti-Malaria Scheme, The Nilgiris district.	215	45	..	25,000	State.
6 Anti-Malaria Scheme, Nilambur ..	400	42	..	142,000	Do.
7 Anti-Malaria Scheme, Wynad taluk.	821	26	..	200,000	Do.
8 Anti-Malaria Scheme, New Settler's Colony.	285	26	..	81,080	Do.
9 Malampuzha Project ..	120	65	..	200,000	Do.
10 Mangalam Project	4	1	..	2,000	Do.
11 Walayar Project	3	1	..	3,000	Do.
12 Amaravathi Reservoir Project ..	3	1	..	6,000	Do.
13 Anti-Malaria Scheme, Ennore ..	52	19	42	17,229	Do.
14 Manimuthar Project	12	Blocks 2	..	10,000	Do.
15 Anti-Malaria Scheme, Nadumandalam.	50	2	16	3,800	State and District Board.
16 Anti-Malaria Scheme, Thekkadi and Periyar Dam.	Camp and dam-site.	2	..	150	State.
17 Anti-Malaria Scheme, Ramana-thapuram district.	..	100	..	16,207	Do.
18 Anti-Malaria Scheme, Madurai district.	115	..	..	25,305	State and District Board.
19 Anti-Malaria Scheme, Kalroyan Hills (South Arcot district).	300	140	..	15,000	State.
20 Anti-Malaria Scheme, Tirunelveli district.	149.53	8	48	120,879	State and District Board.
21 Anti-Malaria Scheme, Salem South.	2,230	790	..	1,418,670	State.
22 Anti-Malaria Scheme, Salem South.	365	320	..	78,286	State and District Board.
Total ..	9,763.53	2,770	106	2,951,606	

Besides these, anti-malaria schemes in the Manimuthar Project area, the Tekkadi and Periyar Dam Project area and Nadumandalam group of villages also functioned during the year.

ANNEXURE J.

Maternal and Child Health Services Outturn, 1954.

	Districts.
1 Brought under care—	
Total number of mothers	61,407
Pre-natal	52,588
Labour	36,032
Infants	32,182
Pre-school	13,339
2 Home visits—	
(a) Women Medical Officers	15,379
(b) Health visitors—	
Pre-natal	20,790
Post-natal	10,895
Infants	13,335
Pre-school	3,222
(c) Maternity Assistants—	
Pre-natal	137,120
Post-natal	10,853
Infants	52,723
3 Clinics—	
Number held	2,126
Pre-natal	14,314
Infants	16,349
Pre-school	17,736
Nursing mothers	16,536
4 Other activities—	
Mothers' classes—	
Number held	4,132
Attendance	81,537
5 Lantern lectures—	
Number	2
Attendance	230
6 Schools visited for health education—	
Number of schools visited	392
Number of lectures given	1,065
Attendance	47,330

ANNEXURE K.

Maternal and Child Health Facilities, 1954.

	Districts.	Municipalities.
	SQ. MILES.	SQ. MILES.
Area	57,831.35	294.03
Finance—		
(a) Income of local bodies	Rs. 3,87,79,181	Rs. 4,01,17,751
(b) Amount spent on maternal and child health	Rs. 3,71,448	Rs. 9,21,982
(c) Proportion	0.96	2.30
Institutions—		
(a) Centres—		
Government	131	..
Local bodies	227	175
Private	44	22
(b) Homes—		
Government	..	..
Local bodies	4	26
(c) Maternity beds—		
Government	602	1,021
Local bodies	244	783
Private	161	338
Personnel—		
(a) Women Medical Officers—		
Maternal and Child Health schemes (Government and local bodies).	14	70
Hospitals	76	76
Private	25	63
(b) Health visitors—		
Maternal and Child Health schemes	21	136
Hospitals	..	3
Private	..	..
(c) Maternity Assistants—		
Maternal and Child Health schemes	263	674
Institutions (Government and Local Fund dispensaries).	363	159
Institutions (private)	74	26
Private practice	15	145
(d) Resident matrons—		
Maternal and Child Health schemes	1	9
(e) Compounders—		
Maternal and Child Health schemes	..	35

ANNEXURE L.

Maternal and Child Health Staff, 1954.

Districts.	Centres maintained by				Women Medical Officers.				Health visitors.				Maternal Assistance.	
	Government.		Local bodies.		Government.		Local bodies.		Government.		Local bodies.		Government.	
	R	U	R	U	R	U	R	U	R	U	R	U	R	U
1 North Arcot ..	8	..	15	7	..	..	..	1	..	..	1	2	..	..
2 Chingleput ..	7	..	23	6	..	..	1	2	..	..	..	1	..	..
3 Madras (Corporation and health unit).	7	..	..	34	1	..	..	31	4	..	..	88	18	..
4 South Arcot ..	4	..	16	12	..	..	1	3	..	..	1	1	..	..
5 Tanjore ..	..	..	32	14	..	..	2	4	..	..	4	3	..	..
6 Tiruchirappalli.	8	..	14	12	..	..	1	3	..	..	1	7	..	..
7 Madurai ..	13	..	23	7	..	..	1	7	..	..	3	8	..	..
8 Ramanathapuram.	1	..	16	17	..	..	1	5	..	..	2	4	..	..
9 Tirunelveli ..	5	..	15	16	..	..	1	2	..	..	1	2	..	..
10 Salem ..	9	..	32	8	..	..	2	2	..	..	..	4	..	..
11 Coimbatore ..	22	..	19	13	..	..	2	5	..	..	2	10	..	..
12 The Nilgiris ..	..	..	10	7	..	..	..	2	..	..	..	2	..	..
13 South Malabar ..	14	..	9	5	..	..	..	..	..	..	..	1	..	..
14 North Malabar.	3	..	14	8	..	..	1	2	..	..	..	1	..	..
15 South Kanara ..	30	..	23	9	..	..	..	1	..	..	2	2	..	..
Total ..	131	..	261	175	1	..	13	70	4	..	17	136	18	..

R = Rural, U = Urban.

Nutritive value of labouring prisoner's diet—(a) As received from the Penitentiary, Madras. (b) As prepared in the Nutrition Laboratory. (c) As calculated from the prescribed schedule.

Serial number and details.		Dry weight in grams.	Nutrients in grams.							
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
		Protein.	Fat.	Carbo- hydrates.	Ash.	Crude fibres.	Calcium.	Phospho- rus.	Iron Mgms.	Calorific.
A										
1 Breakfast	135	18.78	2.10	99.33	6.64	8.15	0.151	0.478	11.6	491
2 Midday Meal	258	39.62	32.85	163.24	13.88	7.41	0.395	0.723	41.6	1,116
3 Night Meal	200	23.44	5.22	148.84	14.70	7.80	0.264	0.350	24.0	734
Total	593	81.84	41.17	411.41	35.22	23.36	0.810	1.551	87.2	2,341
B										
1 Breakfast	80	8.93	1.41	59.99	7.232	2.44	0.2512	0.241	5.6	288
2 Midday Meal	301	40.15	35.64	204.59	15.652	4.97	0.4700	0.546	30.1	1,300
3 Night Meal	260	31.06	9.52	196.53	14.050	8.84	0.3484	0.491	15.6	996
Total	641	80.14	46.57	461.11	36.934	16.25	1.0696	1.278	51.3	2,584
C										
As calculated from schedule.		90.70	46.15	503.00	44.65	..	1.034	1.668	51.65	2,789

ANNEXURE N.

Nutritive value of non-labouring prisoner's diet—(a) As received from the Penitentiary, Madras. (b) As prepared in the Nutrition Laboratory. (c) As calculated from the prescribed schedule.

Serial number and details.		Dry weight in grams. (2)	Nutrients in grams.								Remarks.		
			Protein. (3)	Fat. (4)	Carbo- hydrates. (5)	Ash. (6)	Crude fibres. (7)	Calcium. (8)	Phospho- rus. (9)	Iron- Mgms. (10)	Calories. (11)	(12)	
A													
1 Breakfast	..	150	23.63	1.56	111.53	8.40	4.88	0.120	0.199	11.3	554		
2 Midday Meal	..	210	36.02	40.99	102.28	16.97	13.34	0.445	0.344	31.5	922		
3 Night Meal	..	197	29.44	3.54	136.70	13.92	13.40	0.296	0.384	15.0	696		
Total	..	557	89.09	46.09	350.51	39.29	31.62	0.861	0.927	57.8	2,172		
B													
1 Breakfast	..	170	27.40	2.28	131.83	6.19	2.30	0.173	0.340	23.8	657		
2 Midday Meal	..	203	31.06	36.96	120.00	11.12	4.06	0.376	0.346	36.0	937		
3 Night Meal	..	195	24.86	8.86	142.50	11.04	7.70	0.336	0.352	36.0	749		
Total	..	568	83.32	48.10	394.33	28.35	14.06	0.885	1.038	95.8	2,343		
C													
As calculated from schedule.		..	84.65	49.83	432.3	45.0	..	0.979	1.678	45.2	2,515		

STUDY OF HOSTEL DIETS.

Vegetarian Hostel diet from Y.M.C.A. College, Saidapet.

Serial number and details.		Dry weight in grams.	Nutrients in grams.										
			Protein.	Fat.	Carbo- hydrates.	Ash.	Crude fibres.	Calcium.	Phospho- rus.	Iron- m. gms.	Calories.	Riboflavin.	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)		
<i>Non-vegetarian Hostel diet from Y.M.C.A. College, Saidapet.</i>													
1 Breakfast	..	201	17.68	34.88	136.50	7.04	4.90	0.224	0.578	22.00	931	1,600	
2 Midday Meal	..	466	67.39	47.00	298.76	34.21	18.64	1.490	1.911	51.26	1,887	1,840	
3 Night Meal	..	407	48.00	42.00	270.60	28.65	17.70	0.450	0.736	48.00	1,652	1,200	
Total	..	1,074	133.07	123.88	705.86	70.90	41.24	2.164	3.225	121.26	4,470	4,640	

ANNEXURE P.

Analysis of Food Fishes.

Serial number and name.	Average length in cms.	Average weight in gms.	Per cent edible portion.	Nutrients per 100 gms.								
				Moisture.	Protein.	Fat.	Carbo-hydrates.	Ash.	Calcium.	Phosphorus.	Iron m. gms.	Calories.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
1 Tilapia Mossambica— Sample No. I	8	24.73	58.20	74.1	15.90	5.67	0.34	3.99	0.721	0.334	10.3	116
2 Tilapia Mossambica— Sample No. II	7	121.67	55.50	76.5	15.81	3.66	1.21	2.82	0.696	0.362	5.4	101
3 Tilapia Mossambica— Sample No. III	12	35.0	59.90	76.08	15.10	4.60	0.50	3.72	0.376	0.396	7.2	104
4 Tilapia Mossambica— Sample No. IV	11	13.0	57.30	73.30	17.52	3.996	2.84	2.35	0.880	0.612	6.3	117
5 Nakku meen	19	49.8	83.4	75.32	18.08	1.43	0.92	4.20	0.940	0.563	6.8	90
6 Vari	13	47.0	62.0	72.41	17.84	3.68	2.75	3.32	0.404	0.447	4.3	103
7 Terattal (or) Cheepumeen	8	24.2	67.94	77.66	16.20	2.44	0.51	3.195	0.461	0.460	10.1	89
8 Prouva	16	36.3	66.05	65.6	19.47	12.03	..	3.32	0.669	0.392	6.4	186
9 Keechan	13	29.7	59.57	73.86	18.43	1.39	1.99	4.328	1.294	0.579	13.0	94
10 Sankara	12	33.6	66.9	76.72	16.42	0.82	1.76	4.284	1.153	0.515	11.64	80
11 Kanankathal	18	92.3	58.82	72.35	19.95	4.97	0.21	2.522	0.372	0.392	10.07	125
12 Pathi	17	61.6	5.15	73.99	18.31	3.12	1.55	2.98	0.157	0.437	2.90	107
13 Kazhangan	21	81.6	60.0	71.50	21.87	4.88	..	3.53	0.673	0.543	6.30	131
14 Maddi	11.5	18.5	54.62	76.93	17.66	11.44	..	3.43	0.320	0.406	6.7	174

Analysis of Preserved Foods.

Serial number and name of food analysed.	Moisture.	Nutrients per grams.							Calories per 100 m. gms. (10)	Remarks.
		Protein. (3)	Fat. (4)	Carbo-hydrates. (5)	Ash. (6)	Calcium. (7)	Phosphorus. (8)	Iron m. gms. (9)		
(1)	(2)									(11)
<i>Condiments.</i>										
Sambar powder—										
Sample I	5.0	15.79	23.62	50.71	4.88	0.240	0.459	54.5	475	Purchased from market.
Sambar powder—										
Sample II	10.0	12.82	20.23	45.98	10.92	0.256	0.330	32.0	418	Do.
Sample III	7.1	16.89	17.21	53.74	5.06	0.248	0.462	36.4	437	Do.
3 Rasam powder ..										
<i>'Vattals'—Vegetable preserves.</i>										
1 Brinjal vattal	13.30	10.96	2.25	71.91	1.58	0.169	0.280	16.5	351	
Do. fresh	91.5	1.30	0.3	6.4	0.5	0.02	0.06	1.3	34	
2 Cluster beans vattal ..	23.0	13.79	0.924	48.50	13.79	0.379	0.256	16.55	257	
Do. raw fresh	82.5	3.7	0.2	9.9	1.4	0.13	0.05	5.8	56	
Do. Bittergourd vattal ..	22.90	9.83	1.42	53.89	11.96	0.296	0.361	19.3	268	
Do. fresh	92.4	1.6	0.2	4.2	0.8	0.02	0.07	2.2	25	
4 Manathakkali vattal ..	15.6	10.41	8.79	39.12	26.08	0.307	0.338	18.74	276	
Do. fresh	82.1	5.9	1.0	8.9	2.1	0.41	0.07	20.5	68	
5 Ladiesfinger vattal ..	15.36	15.30	1.080	47.72	20.65	0.122	0.331	17.9	261	
Do. fresh	83.0	2.2	0.2	7.7	0.7	0.09	0.08	2.3	41	
<i>Fish products.</i>										
1 Fishmeal biscuit—										
Sample 'A'	9.10	9.36	24.49	56.01	1.04	0.072	0.058	8.3	483	Received from Technological Institute, Kozhikode.
Sample 'B'	9.38	9.54	24.43	55.66	0.940	0.076	0.051	6.0	481	

Fish products.

Received from Technological Institute, Kozhikode.

ANNEXURE R.

Average Heights and Weights according to age.

BOYS.

Age in years.	Number examined.	Average height in inches.	Standard deviation.	Average weight in lb.
3	85	35.7	1.65	28.0
4	108	37.2	1.89	29.6
5	195	39.6	2.24	32.7
6	171	41.7	2.41	36.1
7	178	43.7	2.44	39.3
8	228	45.7	2.62	42.9
9	169	48.3	2.55	47.6
10	349	50.5	2.34	52.5
11	355	52.1	2.65	56.4
12	636	53.3	2.67	59.4
13	400	55.4	2.85	65.2
14	419	57.6	3.19	72.6
15	436	59.3	3.1	79.1
16	490	60.8	3.02	85.5
17	147	62.7	2.41	94.3
18	152	62.7	2.6	95.7
19	100	63.5	2.54	99.4
20	96	64.3	2.44	109.7
4,714				

ANNEXURE S.

Average Heights and Weights according to age.

GIRLS.

Age in years.	Number examined.	Average height in inches.	Standard deviation.	weight in lb.
3	82	35.7	1.88	27.5
4	86	37.0	1.93	29.0
5	105	39.4	2.54	32.3
6	137	41.1	2.44	34.9
7	154	43.4	2.01	38.5
8	163	45.8	2.52	42.7
9	127	47.8	2.4	47.1
10	167	50.2	2.48	52.9
11	157	52.1	2.5	56.6
12	176	53.2	3.13	60.1
13	152	55.5	2.46	69.0
14	111	57.5	2.99	77.0
15	94	58.0	2.3	79.9
16	93	58.7	2.61	84.9
17	43	58.7	3.24	86.9
18	68	59.1	2.44	89.4
19	33	59.1	2.44	89.7
20	51	60.3	2.54	95.1
1,979				

ANNEXURE T.

Statement showing the incidence of Leprosy in the various districts of Madras State as per survey done by the State Leprosy Survey Unit, Vellore, during the year 1954.

Name of taluk.	Number of villages.	Population surveyed.	Number of cases.			Gross incidence.	Open case rate.
(1)	(2)	(3)	Neural.	Open.	Total.	(7)	(8)
<i>North Arcot district.</i>							
udiyatham	16	9,020	72	58	130	14.4	44.6
beyyar	8	6,100	62	28	90	14.9	31.1
ruppathur	11	8,500	68	15	83	9.8	18.1
alajapet	5	3,750	38	10	48	12.8	20.9
ruvannamalai	16	16,541	256	102	358	21.7	20.8
mi	3	2,580	28	13	41	15.7	32.0
<i>Chingleput district.</i>							
muneri	10	7,950	57	13	70	9.0	18.6
perumbudur	3	2,413	21	11	32	13.3	34.4
ancheepuram	15	5,595	48	8	56	10.0	17.8
ruvallur	15	9,684	95	27	122	12.6	22.1
<i>South Arcot district.</i>							
ddalore	18	15,650	96	40	136	8.7	29.4
<i>Salem district.</i>							
sur	10	7,732	37	9	46	5.9	19.6
<i>Tirunelveli district.</i>							
abasamudram	8	19,637	53	37	90	4.6	41.1
<i>Ramanathapuram district.</i>							
villiputhur	11	14,531	98	47	145	10.0	32.8
<i>Tanjore district.</i>							
ajore	5	12,008	93	21	114	9.5	18.4
panasam	2	4,450	76	11	87	19.6	12.6
ambakonam	2	3,543	13	3	16	4.6	18.8
tyuram	12	19,464	148	47	195	10.0	24.1
<i>Tiruchirappalli district.</i>							
siri	7	10,850	48	49	97	8.9	50.5
ukkoyilur Special Leprosy Control Scheme area.	30	24,896	902	299	1,201	48.2	24.8

ANNEXURE U.

Statement showing the incidence of Leprosy in the Tirukkoyilur Special Leprosy Control Scheme area as per survey done by the District Leprosy Survey Unit, Tirukkoyilur, during the year 1954.

Number of villages resurveyed	30
Area in square miles	170
Total population examined	24,896
Percentage of population examined	80.7
Total number of cases	1,201
Number of open cases	299
Number of neural cases	902
Number of adult cases—Male	617
Number of adult cases—Female	337
Number of child cases—Male	164
Number of child cases—Female	83
Gross incidence	48.2
Open case rate	24.8 per cent.
Child rate	20.5 per cent.

Statement showing the number of cases of Venereal diseases treated from 1st January to 31st December 1954 in the special clinic in Madurai Municipality.

Month.	Number of new cases.			Number of old cases.			Total number of cases.			Number of antenatal cases. (female).	Ante-natal contacts (male).	
	Male.	Female.	Children.	Total.	Male.	Female.	Children.	Total.				
January	10	10	..	20	15	25	..	40	25	35	60	..
February	10	9	..	19	26	34	..	60	36	43	79	9
March	41	25	..	66	158	185	..	293	199	180	359	6
April	47	26	1	74	248	123	8	379	295	149	453	8
May	70	54	1	125	246	227	2	475	316	281	600	25
June	61	58	..	119	176	102	..	368	237	250	487	20
July	78	64	1	143	203	204	..	407	281	268	550	22
August	89	107	..	196	543	471	3	1,017	632	578	1,213	6
September	88	74	1	158	369	439	..	808	452	513	966	9
October	97	73	1	171	364	364	5	723	451	437	894	15
November	169	158	..	327	714	762	..	1,476	883	920	1,803	24
December	200	214	..	414	918	981	..	1,899	1,118	1,195	2,313	26
Total	955	872	5	1,832	3,970	3,957	18	7,945	4,925	4,929	9,777	131

Total number of cases = 1,832.

Total number of cases = 1,832.

ANNEXURE W.

Statement showing number of specimens examined in the Serological Laboratory of the Venereal diseases clinic in Madurai Municipality during 1954.

Serial number and name of the institution.	Blood for V.D.R.L.			Smear for Gonococci.			Smear for Dink ground examination.			Total number of antenatal cases treated.
	Number of specimen.	Positive.	Negative.	Number of specimen.	Positive.	Negative.	Number of specimen.	Positive.	Negative.	
1 Special Clinic (V.D.)	3,389	1,171	2,718	1,881	907	974	72	41	31	* 321
2 Mani Maternity Municipal Home	676	47	629	..	..	..	..	..	..	..
3 Rayaloo Iyer Maternity Municipal Home	1,432	169	1,263	..	..	..	..	..	..	..
4 D.T. Maternity Municipal Home	893	107	786	..	..	..	..	..	..	..
5 Lady Willagdon Maternity Municipal Home	507	39	468	..	..	..	..	..	..	..
6 Ponnagaram Maternity Municipal Home	14	2	12	..	..	..	..	..	..	..
Total	3,522	364	3,158	..	..	..	..	..	..	..
7 Registered Private Practitioners	4,177	828	3,259	..	..	..	..	..	..	..
	11,528	2,363	9,165	1,881	907	974	72	41	81	321

* All positive cases were treated free of cost with 'PAM' (Procaine Penicillin 'G' in oil with 2 per cent Aluminium Monostearate) donated by UNICEF at a total dosage of 4'8 million units in doses of 8 injections for each patient.

Total number of Specimens Positive	3,311
Total number of Specimens Negative	10,170
Grand total	13,481

- All positive cases were treated free of cost in units in doses of 8 injections for each patient.

Total number of Specimens Positive	3,311
Total number of Specimens Negative	10,170
Grand total	<u>13,481</u>

ANNEXURE X (1).

Loss of Vitamin 'C' due to various methods of cooking Cabbage.

Number	How cooked.	Ascorbic acid in mgms. per 100 gms.	Amount of Vitamin 'C' destroyed in cooking.	Percent- age of loss.	Remarks.
(1)	(2)	(3)	(4)	(5)	(6)
1	Raw cabbage	94	..	..	Cooking time—15 minutes in all cases.
2	Cooked in excess cold water open cooking (cut into pieces).	28	66	68.4	Cooking by steam ensures minimum loss.
3	Cut into pieces and steamed	55	39	41.5	Cooking in the ordinary way in an open vessel in large quantity of cold water causes maximum destruction.
4	Cooked in acid medium (dilacetic acetic acid added in the beginning).	36	58	61.7	Cooking in minimum water brought to boil already and cooking thus in a closed vessel reduces the loss to an appreciable extent.
5	Cooked in minimum water—Cut into pieces—Closed cooking.	37.5	56.5	60.0	Cooking with tamarind juice added in the beginning has slight protective action due to the acidity of the juicy added and therefore loss is reduced to a some extent.
6	Cooked in boiling water—Closed cooking—Minimum water.	47.0	47.0	50	....
7	Cooked with tamarind juice added in the beginning ..	37.5	56.6	60	....
8	Cooked with tamarind juice added at the end of cooking.	28	66	68.4	....

ANNEXURE X (2).

Loss of Vitamin 'C' on cooking Sweet Potato (white variety).

Number	How cooked.	Ascorbic acid in mgms. per 100 gms.	Amount of Vitamin 'C' destroyed	Percent- age of loss.	Remarks.
(1)	(2)	(3)	(4)	(5)	(6)
1	Sweet potato, raw	23.85	..	..	Cooking time—15 minutes in all cases.
2	Cooked with skin, whole ..	14.5	9.35	39.2	Steaming ensures minimum loss of Vitamin 'C'.
3	Steamed with skin, whole ..	14.7	9.15	38.4	Ordinary cooking with large amount of cold water—Open cooking causes maximum destruction of Vitamin 'C',—About two-thirds of the 'C' content is destroyed.
4	Cut into big slices and steamed	14.4	9.45	39.6	Baking over the fire which is usually done by poorer section of the people causes loss to the extent of about 60 per cent.
5	Cut into big slices and cooked in acid medium (dilacetic acid).	14.4	9.45	39.6	Cooking in acid medium or by addition of tamarind juice at the beginning of cooking reduced to the extent of loss to a degree because of the protective action of the acid.
6	Cut into large slices and cooked in minimum water—Closed cooking.	14.0	9.85	41.30	Next alternative to steaming, is to cook in big slices in minimum water brought to boil already and cooked in a closed vessel.
7	Cut into small pieces and cooked in minimum water—Closed cooking.	10.0	13.85	58.1	....
8	Cut into small pieces and cooked in boiling water—Closed cooking.	11.1	12.75	53.1	....
9	Baked over the fire, whole with the skin	10.0	13.85	58.1	....
10	Cut into small pieces and cooked in excess cold water—Open cooking.	7.7	16.15	67.7	....
11	Cut into small pieces and steamed	12.0	11.85	50.0	....
12	Cooked with tamarind juice added (small pieces) in the beginning.	10.0	13.85	58.0	....
13	Cooked with tamarind juice added at the end of cooking.	8.0	15.85	66.5	....

ANNEXURE X (3).

Loss of Vitamin 'C' in cooking Radish (white).

Number.	How cooked.	Vitamin content in 100 gms. (3)	Vitamin destroyed in cooking (4)	Percentage destroyed in cooking (5)	Remarks.
(1)	(2)	(3)	(4)	(5)	(6)
1	Raw radish (white)	16.6	..	..	1 Cooking in the usual way causes maximum destruction of Vitamin C.
2	Cooked in the ordinary way with excess of cold water cut into small pieces and cooked in an open vessel.	6.3	10.3	62.0	2 Cooking by steam ensures minimum loss or destruction.
3	Cooked in water brought to boil in a closed vessel—Minimum water used.	8.3	8.3	50	3 Cooking in boiling water or minimum water in a closed vessel, cut into big slices reduces the loss.
4	Cooked in minimum water cut into big slices—Closed cooking.	8.3	8.3	50	4 Cooking with the addition of tamarind juice either at the beginning of cooking or at the end of cooking do not materially differ in the final vitamin C values.
5	Cooked by steaming	8.3	8.3	50	....
6	Cooked in acid medium (by adding dil. acetic acid at the beginning).	6.6	10.0	60	....
7	Cooked with tamarind juice added at the beginning of cooking.	6.6	10.0	60.0	....
8	Cooked with tamarind juice added at the end of cooking.	6.0	10.6	63.8	....

ANNEXURE X (4).

Vitamin 'C' in cooking Knol-khol.

Number.	How cooked.	Vitamin content in 100 gms. (3)	Vitamin destroyed in cooking (4)	Percentage destroyed in cooking (5)	Remarks.
(1)	(2)	(3)	(4)	(5)	(6)
1	Raw Knol-khol	80.0	..	..	1 Cooking in the ordinary way causes maximum destruction of vitamin C.
2	Cooked in the ordinary way—cut into small pieces and cooked in excess of cold water—in an open vessel.	30.0	50.0	62.5	2 Cooking by steam causes maximum loss. The extent upto loss is less than about 20 per cent.
3	Cooked in water brought to boil—cooked in a closed vessel (cut into pieces).	44.0	36.0	45.0	3 Cooking in minimum water cut into big pieces and cooked in a closed vessel reduces the loss to an appreciable extent.
4	Cooked in minimum water cut into big slices—closed cooking.	53.3	26.7	33.4	....
5	Cooked in acid medium (by adding dil. acetic acid at the beginning).	30.0	50.0	62.5	....
6	Cooked by steaming	66.7	13.3	16.7	....

Health of Minor Ports, 1954.

Serial number and name of ports.

(1)	Serial number and name of ports.	Foreign ports.						Coastal ports.					
		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
	1 Porto Novo	..	..	..	..	..	Passenger crew inspected.	Cargo vessels.	Cargo inspected.	Cargo crew inspected.	Passenger vessels.	Passengers inspected.	Passenger crew inspected.
	2 Kijakkarai	26	..	..	..	..	..	157	..	..	..	..	..
	3 Tondi	..	..	..	..	..	..	31	..	..	..	..	..
	4 Adirampattinam	..	..	..	..	..	..	..	..	..	..	..	..
	5 Dhanushkodi	..	..	..	..	..	..	..	..	..	..	..	..
	6 Kulasekharapattinam	..	..	..	..	..	..	..	..	158	57,925	7,100	..
	7 Mulki	..	..	..	..	..	..	..	..	..	..	..	..
	8 Cannanore	..	..	..	..	..	..	24	..	..	..	..	..
	9 Malpe	..	..	..	..	..	..	28	..	..	..	..	..
	10 Tellicherry	2	1	1,025	..	..	..	373	..	..	64	..	..
	11 Kozhikode	5	..	..	..	..	..	68	..	..	1	..	..
	12 Cuddalore	91	..	..	..	..	..	246	..	..	39	..	..
	13 Pamban	1	..	..	..	..	..	41	..	..	..	..	..
	14 Coondapoor	..	..	..	..	..	..	181	..	..	2	..	..
	15 Nagapattinam	..	..	..	..	..	..	244	..	..	..	..	..
	16 Mangalore	83	..	..	495	..	..	65	..	..	..	..	..
	17 Hungercota	..	..	..	..	..	..	2,079	..	..	64	..	..
	18 Tuticorin	183	115	..	..	..	..	153	..	..	..	..	..
					103	..	..	180	..	1,200	..	30	50

Serial number and name of ports.

[illegible]

APPENDIX VITAL STATISTICS OF THE No. I.—Births registered in districts

Serial number.	Estimated mid-year population for 1954.			Districts.	Estimated mid-year population for which death returns were received.		
	Males.	Females.	Total.		Males.	Females.	Total.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1	829,263	766,096	1,595,359	Madras	829,263	766,096	1,595,359
2	962,374	984,688	1,947,062	Chingleput	962,374	984,688	1,947,062
3	1,472,399	1,480,632	2,953,030	North Arcot	1,472,399	1,480,632	2,953,030
4	1,417,433	1,415,341	2,832,770	South Arcot	1,417,433	1,415,341	2,832,770
5	1,540,971	1,581,366	3,122,433	Tanjore	1,540,971	1,581,366	3,122,433
6	1,514,226	1,533,469	3,047,695	Tiruchirappalli	1,514,226	1,533,469	3,047,695
7	1,515,038	1,525,186	3,040,224	Madurai	1,515,038	1,525,186	3,040,224
8	1,011,208	1,102,937	2,114,146	Ramanathapuram	1,011,208	1,102,937	2,114,146
9	1,220,366	1,292,411	2,512,777	Tirunelveli	1,220,366	1,292,411	2,512,777
10	1,775,186	1,764,099	3,539,285	Salem	1,775,186	1,764,099	3,539,285
11	1,734,937	1,719,390	3,454,327	Coimbatore	1,734,937	1,719,390	3,454,327
12	180,883	164,852	345,735	The Nilgiris	180,883	164,852	345,735
13	2,452,177	2,582,471	5,034,648	Malabar	2,452,177	2,582,471	5,034,648
14	876,032	948,115	1,824,147	South Kanara	876,032	948,115	1,824,147
	18,503,054	18,810,982	37,314,036	Total for the State ..	18,503,054	18,810,982	37,314,036
				* Urban areas ..	..	..	..
				† Rural areas ..	..	..	..

* Municipalities and rural towns.

GENERAL POPULATION. in the State during the year 1954.

Number of births registered (excluding still-births).			Ratio of births per 1,000 of estimated mid-year population.			Average of the ratios published for the previous five years.		
Males.	Females.	Total.	Males.	Females.	Total.	Males.	Females.	Total.
(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
80,182	29,074	59,256	18.93	13.22	37.15	22.90	21.71	44.60
35,902	24,693	50,595	13.65	13.02	26.67	13.97	13.15	28.06
40,880	47,071	96,951	16.89	15.94	32.83	15.48	14.58	30.07
40,178	37,821	77,999	14.18	13.85	27.53	13.66	12.76	26.39
38,090	35,986	74,076	12.20	11.52	23.72	13.73	12.81	26.53
37,134	34,755	71,889	12.18	11.40	23.59	13.52	12.86	26.29
40,036	38,349	78,385	13.17	12.61	25.78	14.16	13.20	27.37
39,568	27,342	56,910	13.99	12.93	26.92	14.51	13.58	28.10
38,092	34,059	70,151	14.36	13.55	27.91	15.23	14.46	29.57
43,013	39,867	82,880	12.15	11.26	23.42	14.19	13.27	27.46
40,312	37,199	77,511	11.67	10.77	22.44	13.20	12.35	25.55
5,867	5,532	11,199	16.39	16.00	32.39	15.93	14.95	30.88
59,235	56,188	115,423	11.77	11.16	22.93	16.37	15.67	32.45
31,555	30,047	61,602	17.30	16.47	33.77	18.34	17.42	35.76
406,844	477,983	984,827	13.58	12.81	26.39	14.77	13.90	28.67
140,171	132,297	272,468	16.59	15.65	32.24	..	..	34.61
345,673	345,686	712,359	12.70	11.98	24.68	..	..	27.06

† Districts exclusive of municipalities and rural towns.

REPORT ON THE HEALTH CONDITIONS IN MADRAS STATE, 1954

No. I-A.—Still-births registered according to classes and sex in the municipalities in the State, during the year 1954.

		Still-births.											
Municipalities.		Hindus.		Muslims.		Christians.		Other classes.		Total.			
		Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Total.	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	
1	Madras	740	69	68	32	36	26	2	2	844	729	1,573	
2	Kancheepuram	95	91	5	3	..	..	..	..	100	95	195	
3	Tiruvallur	11	16	1	..	..	1	..	..	12	16	28	
4	Chingleput	69	57	1	2	..	..	..	..	71	59	130	
5	Vellore	144	123	18	16	5	4	..	..	167	143	310	
6	Tiruvannamalai	72	37	6	5	2	1	..	..	80	43	123	
7	Guduvattam	29	32	6	8	..	..	..	..	35	40	75	
8	Vaniyambadi	18	21	14	18	2	..	..	..	34	39	73	
9	Tirupattur	62	58	8	6	..	2	..	..	70	66	136	
10	Walajapet	9	11	1	1	..	..	..	..	10	12	22	
11	Ambur	13	6	6	12	..	..	..	..	19	18	37	
12	Arni	48	39	4	1	..	..	..	..	52	40	92	
13	Cuddalore	91	97	4	6	2	4	3	8	100	115	215	
14	Chidambaram	71	65	3	5	..	..	..	..	74	70	144	
15	Villupuram	76	52	2	7	3	..	..	..	81	59	140	
16	Tindivanam	31	42	1	3	..	..	..	..	32	45	77	
17	Tanjore	121	93	4	4	6	6	..	..	131	103	234	
18	Kumbakonam	181	187	18	15	4	9	..	..	198	181	379	
19	Nagapattinam	40	49	9	3	2	4	..	..	51	56	107	
20	Mayuram	73	76	8	3	1	2	..	..	77	81	158	
21	Mannargudi	79	61	2	7	2	..	..	..	83	68	151	
22	Tiruvavur	35	39	5	2	..	..	..	..	40	41	81	
23	Tiruchirappalli	169	126	32	29	29	33	..	..	230	188	418	
24	Karur	35	40	1	2	1	..	..	..	37	42	79	
25	Srirangam	17	12	..	..	..	..	..	..	17	12	29	
26	Pudukottai	63	50	2	5	..	4	..	..	65	59	124	
27	Mathurai	328	253	15	10	21	10	..	..	359	273	632	
28	Dindigul	32	50	4	11	13	7	..	..	49	68	117	
29	Bodinayakanur	11	4	..	1	2	..	..	..	13	5	18	
30	Periakulam	22	21	1	5	1	1	..	..	24	27	51	
31	Palani	34	20	2	1	4	3	3	2	36	21	57	
32	Kodikkannal	4	2	1	1	..	..	..	..	12	8	20	
33	Rajapalayam	20	6	..	1	..	..	..	..	20	7	27	
34	Srivilliputtur	17	22	1	..	1	..	..	..	19	22	41	
35	Virudhunagar	53	32	1	1	1	1	..	..	55	34	89	
36	Karaikudi	31	20	1	2	..	..	..	..	32	22	54	
37	Devakottai	29	27	1	3	6	1	..	..	36	31	67	
38	Sivakasi	19	10	2	..	2	..	..	..	23	10	33	
39	Aruppukottai	56	37	..	2	3	2	..	..	59	41	100	
40	Tuticorin	45	28	2	6	9	11	..	..	56	45	101	
41	Tirunelveli	34	35	4	2	1	..	..	..	39	37	76	
42	Palayamkottai	146	112	16	13	11	6	..	..	173	131	304	
43	Melapalayam	2	1	..	3	1	1	..	..	7	5	12	
44	Salem	185	175	15	14	7	4	..	..	207	193	400	
45	Rasipuram	12	9	..	..	..	..	..	..	12	9	21	
46	Coimbatore	228	197	16	7	17	7	..	..	261	211	472	
47	Erode	70	51	8	8	1	3	..	..	79	62	141	
48	Tiruppur	41	50	1	..	2	..	..	..	44	50	94	
49	Pollachi	46	57	2	5	1	1	..	..	49	63	112	
50	Dharmapuri	10	11	3	2	2	2	..	..	15	15	30	
51	Udumalpet	40	29	2	4	1	2	..	..	43	35	78	
52	Mettupalayam	27	18	2	1	1	..	..	..	30	19	49	
53	Gobichettipalayam	15	3	..	1	..	1	..	..	15	5	20	
54	Ootacamund	15	14	4	4	1	2	..	..	20	20	40	
55	Coonoor	24	19	2	4	3	5	..	..	29	28	57	
56	Kozhikode	116	105	60	44	6	9	..	..	181	158	339	
57	Palghat	49	38	5	4	..	..	1	..	55	42	97	
58	Tellichery	31	31	16	11	5	5	..	..	52	47	99	
59	Cannanore	8	4	11	5	1	..	..	..	20	9	29	
60	Cochin	9	12	3	12	21	11	..	..	33	35	68	
61	Mangalore	30	26	1	9	14	11	..	..	45	46	91	
62	Udupi	20	17	..	2	3	2	..	..	23	21	44	
Total of all municipalities		4,246	3,595	425	444	257	204	7	12	4,985	4,255	9,240	

REPORT ON THE HEALTH CONDITIONS IN MADRAS STATE, 1954

No. II.—Statement showing deaths registered in the districts in the district of Madras during the year 1954.

Serial number. (1)	Districts. (2)	Area in square miles. (3)	Average estimated mid-year population.		Number of deaths registered.		Ratio of deaths per 1,000 of estimated mid-year population.		Average of published rates for the previous five years.		Number of maternal deaths.		Maternal death rate per 1,000 births (live and still). (15)
			Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	
			(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	
1	Madras	49	32,551	17,230	15,901	33,181	20.84	20.76	20.80	31.23	31.87	31.53	2.47
2	Chingleput	3,054	621	14,452	13,791	28,243	15.02	14.75	14.89	19.45	18.43	18.98	3.97
3	North Arcot	4,674	632	20,829	19,389	40,218	14.15	13.10	13.62	18.54	17.86	18.04	3.57
4	South Arcot	4,204	674	19,315	18,360	37,675	13.63	12.97	13.30	17.80	16.92	17.36	5.58
5	Tanjore	3,740	835	22,607	21,936	44,543	14.97	13.87	14.27	18.22	17.59	17.82	6.99
6	Tiruchirappalli	5,514	553	26,141	25,681	51,772	17.26	16.71	16.99	18.53	17.77	18.15	7.38
7	Madurai	4,910	619	22,002	21,161	43,163	14.52	13.87	14.20	17.86	16.74	17.32	4.18
8	Ramanathapuram	4,849	486	14,637	14,391	29,028	14.47	13.05	13.73	18.87	17.19	18.00	3.00
9	Tirunelveli	4,343	579	20,065	19,874	39,939	16.44	15.38	15.89	21.91	20.35	21.22	7.09
10	Salem	7,083	501	19,947	19,288	39,135	11.18	10.93	11.06	13.02	12.58	12.80	3.55
11	Coimbatore	7,080	487	17,927	17,064	34,991	10.33	9.92	10.13	15.37	14.40	14.75	3.53
12	The Nilgiris	984	352	2,093	2,019	4,112	11.57	12.25	11.89	13.54	14.71	14.09	3.41
13	Malabar	5,844	862	27,433	26,309	53,792	11.21	10.19	10.68	14.38	13.54	13.97	3.72
14	South Kanara	4,044	451	11,081	11,148	22,229	12.65	11.76	12.19	14.71	14.16	14.39	3.52
Total		60,362	255,759	246,262	502,021	13.82	13.09	13.45	17.29	16.39	16.83	16.83	4.54
Urban areas		..	68,010	63,731	131,741	..	..	15.59	..	..	19.89	19.89	5.63
Rural areas		..	187,749	182,531	370,280	..	..	12.82	..	..	16.02	16.02	4.08

No. III.—Statement showing the deaths registered in the State of Madras during each month of the year 1954.

REPORT ON THE HEALTH CONDITIONS IN MADRAS STATE, 1954

Serial number.	Districts inclusive of municipalities.	(1)	(2)	Deaths registered in the State of Madras during each month of the year 1954.												Total.
				January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	
(1)				(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
1	Madras	2,798	2,778	2,823	2,431	2,459	2,408	2,362	3,181	3,350	2,545	2,800	3,256	2,800	3,256	33,181
2	Chingleput	3,009	2,426	2,391	1,929	2,037	2,016	2,157	2,347	2,125	2,695	2,484	2,627	2,484	2,627	28,243
3	North Arcot	3,951	2,924	2,916	2,030	2,966	2,946	3,127	3,637	3,870	3,640	3,850	3,761	3,850	3,761	40,213
4	South Arcot	3,295	2,743	2,501	2,634	2,907	2,914	3,045	3,487	3,653	3,441	3,699	3,356	3,699	3,356	37,675
5	Tanjore	5,877	4,670	3,816	3,496	3,152	2,782	3,189	3,308	3,315	3,128	3,230	4,780	3,230	4,780	44,543
6	Tiruchirappalli	6,382	4,887	3,878	3,363	3,827	3,750	3,975	4,136	4,308	4,624	5,146	4,996	5,146	4,996	51,772
7	Madurai	4,489	4,022	3,852	2,873	2,962	3,044	3,376	3,409	3,467	3,491	4,064	4,114	4,064	4,114	43,163
8	Ramanathapuram	3,031	2,400	2,102	2,006	1,996	1,871	1,862	2,304	2,510	2,725	3,271	2,950	3,271	2,950	29,028
9	Tirunelveli	5,137	3,639	3,480	2,797	2,707	2,483	2,643	2,849	2,919	3,126	3,939	4,415	3,939	4,415	39,939
10	Salem	3,670	2,983	2,559	2,746	3,432	3,123	3,266	3,428	3,443	3,422	3,506	3,507	3,506	3,507	39,125
11	Coimbatore	3,376	2,764	2,335	2,457	2,583	2,751	2,750	3,093	2,780	2,778	3,285	4,039	3,285	4,039	34,991
12	The Nilgiris	235	325	369	335	407	314	354	361	362	346	359	345	359	345	4,112
13	Malabar	3,903	3,509	3,599	4,051	4,446	5,137	6,107	5,771	4,644	4,285	3,997	4,323	3,997	4,323	53,792
14	South Kanara	2,032	1,775	1,593	1,421	1,557	1,682	2,053	2,082	1,935	1,932	2,024	2,100	2,024	2,100	22,229
Total for the State				50,000	41,340	38,217	35,169	37,438	37,241	40,271	43,193	42,681	42,198	45,654	48,569	502,021
Rate per 1,000 of estimated population for the State.				15.78	14.44	12.06	11.47	11.83	12.14	12.71	13.63	13.92	13.82	14.89	15.33	13.45
Total for urban areas				12,261	10,840	10,806	10,005	9,969	10,007	10,203	11,560	11,507	10,385	11,741	12,457	131,741
Rate per 1,000 of estimated population.				17.08	16.72	15.05	14.40	13.89	14.41	14.21	16.10	16.56	14.47	16.90	17.35	15.59
Total for rural areas				37,739	30,500	27,411	25,164	27,519	27,234	30,068	31,633	31,174	31,813	33,913	36,112	370,280
Rate per 1,000 of estimated population.				15.40	13.78	11.13	10.71	11.23	11.48	12.27	12.90	13.14	12.98	14.30	14.73	12.82

The death rates have been calculated with reference to the number of days in each month.

REPORT ON THE HEALTH CONDITIONS IN MADRAS STATE, 1954 129

No. IV.—Deaths registered according to ages in the State of Madras during the year 1954.

No. IV.—Deaths registered according to ages in the State of Madras during the year 1954.																		
Serial number.	Municipalities and rural towns in the districts of	Not exceeding one month.						Over one month and not exceeding six months.						Over six months and not exceeding twelve months.				
		Males.			Females.			Total of columns (5) and (8).	Males.			Females.			Total.	Males.	Females.	Total.
		Under one week.	Over one week.	Total.	Under one week.	Over one week.	Total.		(10)	(11)	(12)	(13)	(14)	(15)				
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)				
1	Madras	1,141	596	1,737	864	480	1,344	3,081	1,347	1,242	2,589	1,218	1,171	2,389				
2	Chingleput	158	113	271	122	59	181	452	168	150	318	143	154	297				
3	North Arcot	277	171	448	223	127	350	798	262	259	521	260	234	494				
4	South Arcot	115	104	219	89	88	177	396	140	122	262	132	109	241				
5	Tanjore	377	190	567	334	172	506	1,073	233	224	457	205	193	398				
6	Tiruchirappalli	284	175	459	232	148	380	839	167	153	320	197	208	405				
7	Madurai	556	345	901	436	218	684	1,585	414	359	773	373	375	748				
8	Ramanathapuram	247	227	474	153	208	361	835	217	179	396	216	199	315				
9	Tirunelveli	397	301	698	297	246	543	1,241	307	261	568	282	260	542				
10	Salem	117	84	201	123	82	205	406	126	110	236	131	143	274				
11	Coimbatore	459	254	713	365	190	555	1,268	278	234	512	219	254	473				
12	The Nilgiris	66	32	98	71	35	106	204	45	35	80	30	28	58				
13	Malabar	263	119	382	181	72	253	635	169	163	332	164	154	308				
14	South Kanara	70	48	118	53	23	76	194	47	44	91	59	47	106				
Total for municipalities and rural towns.		4,327	2,759	7,286	3,543	2,178	5,721	13,007	3,920	3,535	7,455	3,619	3,520	7,148				
Rate per 1,000 live births for age periods under one year.		16.61	10.13	26.74	13.00	8.00	21.00	47.74	14.39	12.97	27.36	13.23	12.95	26.23				
Total for the State		14,062	14,204	28,266	10,749	11,360	22,109	50,375	11,216	10,031	21,247	13,970	13,552	27,522				
Rate per 1,000 live births for age periods.		14.23	14.42	28.70	10.91	11.54	22.45	51.15	11.39	10.18	21.57	14.19	13.76	27.95				

No. IV.—Deaths registered according to ages in the State of Madras during the year 1954—cont.

Serial number	Municipalities and rural towns in the districts of	Total under one year.			One and under five years.		Five and under ten years.		Ten and under fifteen years.		Fifteen and under twenty years.	
		Males.		Females.	Total.	Males.	Females.	Males.	Females.	Males.	Females.	
		Columns (8), (10) and (13).	Columns (9), (11) and (14).	(16)			(17)		(18)		(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)
1	Madras ..	4,302	3,757	8,059	3,972	4,144	794	722	282	271	304	338
2	Chingleput ..	582	435	1,067	390	411	134	98	67	56	76	60
3	North Arcot ..	970	843	1,813	780	144	171	177	99	100	94	160
4	South Arcot ..	491	408	899	394	362	84	85	41	57	42	91
5	Tanjore ..	1,005	923	1,928	558	579	163	179	112	116	131	204
6	Tiruchirappalli ..	823	741	1,564	751	802	239	244	90	92	113	145
7	Madurai ..	1,688	1,418	3,106	1,525	1,657	301	298	109	149	157	157
8	Ramanathapuram ..	907	739	1,646	957	1,023	185	167	68	87	87	110
9	Tirunelveli ..	1,287	1,064	2,351	825	904	218	208	72	105	104	139
10	Salem ..	458	458	916	460	511	183	194	108	110	111	143
11	Coimbatore ..	1,210	1,043	2,253	974	1,032	280	262	109	104	151	145
12	The Nilgiris ..	173	169	342	90	102	18	32	12	17	15	16
13	Malabar ..	705	570	1,275	646	829	183	192	84	73	77	83
14	South Kanara ..	224	167	391	212	183	44	62	22	27	46	38
Total for municipalities and rural towns.		14,825	12,786	27,610	12,484	13,274	2,941	2,920	1,275	1,364	1,508	1,879
Rate per 1,000 live births for age periods under one year.		54.41	46.92	101.33	(Rates above one year have not been calculated as the figures for population for the age groups are not available)							
Total for the State ..		53,452	45,692	99,144	44,420	45,844	11,020	11,164	5,649	6,089	6,754	8,206
Rate per 1,000 live births for age periods.		54.28	46.39	100.67	25.27	25.76	5.00	5.00	2.46	2.68	3.76	4.61

Serial number	Municipalities and rural towns in the districts of	20 and under 30 years.		30 and under 40 years.		40 years.		50 years.		60 years.		70 years.		80 years.		90 years.	
		Males.		Females.		Males.		Females.		Males.		Females.		Males.		Females.	
		Columns (9), (10) and (13).	Columns (9), (10) and (13).	Columns (9), (10) and (13).	Columns (9), (10) and (13).	Columns (9), (10) and (13).	Columns (9), (10) and (13).	Columns (9), (10) and (13).	Columns (9), (10) and (13).	Columns (9), (10) and (13).	Columns (9), (10) and (13).	Columns (9), (10) and (13).	Columns (9), (10) and (13).	Columns (9), (10) and (13).	Columns (9), (10) and (13).	Columns (9), (10) and (13).	Columns (9), (10) and (13).
1	Madras ..	1,009	1,142	2,151	(28)	924	1,271	823	1,522	935	2,307	2,795	17,280	15,901	(38)		
2	Chingleput ..	137	224	361	(27)	171	188	149	251	160	566	533	2,565	2,347	(37)		
3	North Arcot ..	244	307	551	(26)	287	316	219	342	197	828	720	4,077	3,814	(36)		
4	South Arcot ..	156	218	374	(25)	203	217	150	246	155	565	498	2,429	2,227	(35)		
5	Tanjore ..	348	524	872	(24)	434	615	411	684	419	1,420	1,478	5,429	5,267	(34)		
6	Tiruchirappalli ..	311	422	733	(23)	386	464	307	540	325	1,122	1,044	4,846	4,508	(33)		
7	Madurai ..	424	559	983	(22)	538	602	400	742	468	1,271	1,325	7,299	6,969	(32)		
8	Ramanathapuram ..	199	294	493	(21)	273	299	242	408	265	816	831	4,203	4,031	(31)		
9	Tirunelveli ..	240	448	688	(20)	350	425	322	535	345	1,292	1,265	5,310	5,150	(30)		
10	Salem ..	204	292	496	(19)	206	216	188	274	219	668	632	2,899	2,953	(29)		
11	Coimbatore ..	296	454	750	(18)	375	408	273	411	247	1,131	1,055	5,314	4,990	(28)		
12	The Nilgiris, The ..	37	56	93	(17)	34	69	37	65	38	126	113	681	614	(27)		
13	Malabar ..	299	283	582	(16)	279	389	228	459	240	1,009	963	4,216	3,731	(26)		
14	South Kanara ..	97	111	208	(15)	80	151	64	177	124	426	373	1,512	1,229	(25)		
Total for municipalities and rural towns.		4,001	5,394	9,395	(14)	4,540	5,630	3,813	6,656	4,137	14,047	13,625	68,010	63,731	(13)		
Rate per 1,000 live births for age periods under one year.		12,113	16,366	15,410	(13)	16,764	19,846	15,630	22,054	17,118	65,036	63,389	255,759	246,282	(12)		
Total for the State ..		4,09	5,07	6,17	(12)	6,54	9,75	7,94	15,89	12,76	59,57	54,62	13,82	13,09	(11)		
Rate per 1,000 live births for age periods.		4.09	5.07	6.17	(11)	6.54	9.75	7.94	15.89	12.76	59.57	54.62	13.82	13.09	(10)		

Rate per 1,000 live births for (groups for urban areas are not available.)

REPORT ON THE HEALTH CONDITIONS IN MADRAS STATE, 1954

Serial number.	Districts exclusive of municipalities and rural towns.	Not exceeding one month.					Total of columns (5) and (8).	Over one month and not exceeding six months.					Over six months and not exceeding twelve months.					Serial number.
		Males.		Females.		Total.		Males.		Females.		Total.	Males.		Females.		Total.	
		Under one week.	Over one week.	Under one week.	Over one week.			Under one week.	Over one week.	Under one week.	Over one week.		Under one week.	Over one week.	Under one week.	Over one week.		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	
1	Chingleput	729	712	1,441	556	641	1,197	2,685	475	432	907	759	834	1,593	1	1	1	
2	North Arcot	694	1,427	2,121	497	1,144	1,641	3,762	807	729	1,536	1,120	981	2,101	2	2	2	
3	South Arcot	541	1,090	1,631	407	838	1,245	2,876	897	772	1,669	1,137	1,171	2,308	3	3	3	
4	Tanjore	955	1,046	2,001	649	781	1,430	3,431	531	456	987	582	525	1,107	4	4	4	
5	Tiruchirappalli	820	852	1,672	565	728	1,293	2,965	694	555	1,249	1,235	1,098	2,333	5	5	5	
6	Madurai	738	852	1,590	642	676	1,318	2,908	545	497	1,042	832	809	1,641	6	6	6	
7	Ramanathapuram	352	704	1,056	234	437	721	1,777	340	305	645	529	565	1,094	7	7	7	
8	Tirunelveli	974	1,036	2,010	774	882	1,656	3,666	556	542	1,098	813	781	1,594	8	8	8	
9	Salem	985	1,416	2,351	740	1,175	1,915	4,266	736	603	1,339	918	849	1,767	9	9	9	
10	Coimbatore	968	932	1,900	779	733	1,512	3,412	416	387	803	433	434	867	10	10	10	
11	Nilgiris, the	77	125	202	51	112	163	365	45	41	86	123	126	249	11	11	11	
12	Malabar	1,007	734	1,741	742	562	1,304	3,045	850	794	1,644	1,198	1,187	2,385	12	12	12	
13	South Kanara	745	519	1,264	570	423	993	2,257	404	383	787	672	663	1,335	13	13	13	
Total of districts exclusive of municipalities and rural towns.		9,535	11,445	20,980	7,206	9,182	16,388	37,968	7,296	6,496	13,792	10,351	10,023	20,374				
Rate per 1,000 live births for age period under one year.		13.38	16.07	29.45	10.12	12.89	23.01	52.46	10.24	9.12	19.36	14.53	14.07	23.60				

Total of districts exclusive of municipalities and rural towns.

Rate per 1,000 live births for age period under one year.

REPORT ON THE HEALTH CONDITIONS IN MADRAS STATE, 1954

Serial number.	Districts exclusive of municipalities and rural towns.	Total under one year.				One and under five years.				Five and under ten years.				Ten and under fifteen years.				Fifteen and under twenty years.				Serial number.						
		Males.		Females.	Total.	Males.		Females.	Total.	Males.		Females.	Total.	Males.		Females.	Total.	Males.		Females.	Total.							
		Columns (5), (10) and (13).	Columns (8), (11) and (14).	Columns (6), (9) and (12).		Columns (5), (10) and (13).	Columns (8), (11) and (14).	Columns (6), (9) and (12).		Columns (5), (10) and (13).	Columns (8), (11) and (14).	Columns (6), (9) and (12).		Columns (5), (10) and (13).	Columns (8), (11) and (14).	Columns (6), (9) and (12).		Columns (5), (10) and (13).	Columns (8), (11) and (14).	Columns (6), (9) and (12).			Columns (5), (10) and (13).	Columns (8), (11) and (14).	Columns (6), (9) and (12).			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)	(28)	(29)
1	Chingleput	..	..	..	675	2,463	5,138	1,918	1,996	548	603	295	311	386	395	1	1	1	1	1	1	1	1	1	1	1	1	
2	North Arcot	..	..	..	4,048	3,351	7,399	3,580	3,647	860	905	331	326	561	655	2	2	2	2	2	2	2	2	2	2	2	2	
3	South Arcot	..	..	..	3,665	3,138	6,803	3,306	3,329	520	833	427	434	424	581	3	3	3	3	3	3	3	3	3	3	3	3	
4	Tanjore	..	..	..	3,114	2,411	5,525	2,076	1,896	565	568	511	535	591	693	4	4	4	4	4	4	4	4	4	4	4	4	
5	Tiruchirappalli	..	..	..	3,601	2,946	6,547	3,610	3,570	855	849	399	437	393	538	5	5	5	5	5	5	5	5	5	5	5	5	
6	Madurai	..	..	..	2,967	2,624	5,591	2,748	2,684	621	611	396	345	424	414	6	6	6	6	6	6	6	6	6	6	6	6	
7	Ramanathapuram	..	..	..	1,925	1,591	3,516	2,243	2,347	458	471	269	274	263	347	7	7	7	7	7	7	7	7	7	7	7	7	
8	Tirunelveli	..	..	..	3,379	2,979	6,358	2,642	2,853	692	658	328	373	356	413	8	8	8	8	8	8	8	8	8	8	8	8	
9	Salem	..	..	..	4,005	3,367	7,372	2,726	2,847	820	796	376	444	589	774	9	9	9	9	9	9	9	9	9	9	9	9	
10	Coimbatore	..	..	..	2,749	2,333	5,082	1,742	1,709	460	485	378	409	413	487	10	10	10	10	10	10	10	10	10	10	10	10	
11	Nilgiris, the	..	..	..	370	330	700	277	304	56	57	45	50	39	41	11	11	11	11	11	11	11	11	11	11	11	11	
12	Malabar	..	..	..	3,789	3,285	7,074	3,686	3,698	1,022	1,055	424	519	556	638	12	12	12	12	12	12	12	12	12	12	12	12	
13	South Kanara	..	..	..	2,340	2,039	4,379	1,382	1,690	302	353	195	268	251	301	13	13	13	13	13	13	13	13	13	13	13	13	
Total of districts exclusive of municipalities and rural towns.		..	..	..	38,627	32,907	71,534	31,936	32,570	8,079	8,244	4,374	4,725	5,246	6,327													
Rate per 1,000 live-births for age period under one year.		..	..	..	54.22	46.20	100.42	100.42	100.42	100.42	100.42	100.42	100.42	100.42	100.42													
(Rates for rural areas above one year have not been calculated as the figures for population or age groups are not available.)																												

Total of districts exclusive of municipalities and rural towns.

Rate per 1,000 live-births for age period under one year.

(Rates for rural areas above one year have not been calculated as the figures for population or age groups are not available.)

REPORT ON THE HEALTH CONDITIONS IN MADRAS STATE, 1954

Serial number	Twenty and under thirty years.		Thirty and under forty years.		Forty and under fifty years.		Fifty and under sixty years.		Sixty years and upwards.		Total of all ages.	
	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.
1 Chingleput	(27)	(28)	(29)	(30)	(31)	(32)	(33)	(34)	(35)	(36)	(37)	(38)
2 North Arcot	536	656	652	706	933	706	976	832	2,968	2,776	11,887	11,444
3 South Arcot	699	875	793	874	1,119	833	1,055	832	3,706	3,227	16,752	15,575
4 Tanjore	699	989	1,006	1,083	1,298	1,022	1,557	1,193	3,634	3,476	16,986	16,193
5 Tiruchirappalli	741	1,101	1,077	1,361	1,432	1,233	1,554	1,389	5,467	5,432	17,178	16,669
6 Madurai	893	1,365	1,336	1,670	1,737	1,403	1,930	1,735	6,541	6,560	21,295	21,123
7 Ramanathapuram	670	826	896	933	1,166	1,080	1,395	1,314	3,420	3,361	14,703	14,192
8 Tirunelveli	445	527	639	695	857	729	823	752	2,512	2,627	10,434	10,360
9 Salem	579	851	783	883	1,034	916	1,226	1,079	3,736	3,719	14,755	14,724
10 Coimbatore	757	1,062	907	1,015	1,254	1,063	1,295	1,047	4,219	3,915	16,943	16,335
11 Nilgiris, the	488	751	684	779	806	714	847	658	4,046	3,749	12,613	12,074
12 Malabar	61	83	87	115	107	92	96	73	324	255	1,462	1,405
13 South Kanara	1,156	1,331	1,402	1,514	1,749	1,400	1,931	1,479	7,502	7,659	23,267	22,578
Total of districts exclusive of municipalities and rural towns.	393	550	505	596	674	521	663	593	2,364	3,008	9,569	9,919
	8,117	10,972	10,767	12,224	14,216	11,817	15,398	12,931	50,989	49,764	187,749	182,531

(Rates above one year have not been calculated as the figures for population for age groups for rural areas are not available.)

REPORT ON THE HEALTH CONDITIONS IN MADRAS STATE, 1954 135

No. IV-A.—Infantile deaths according to communities in the municipalities in the State of Madras during the year 1954.

Municipalities.	Hindus.		Muslims.		Christians.		Others.		Total.	
	Number.	Rate per 1,000 live-births.	Number.	Rate per 1,000 live-births.	Number.	Rate per 1,000 live-births.	Number.	Rate per 1,000 live-births.	Number.	Rate per 1,000 live-births.
Madras district—										
Madras	6,780	131.64	944	196.83	326	114.07	..	..	8,059	136.0
Chingleput district—										
Kancheepuram	365	121.75	10	103.38	1	29.41	..	..	376	120.28
Tiruvallur	69	112.01	7	129.63	..	..	..	..	76	110.95
Chingleput	123	104.68	7	83.33	2	51.28	..	..	132	101.69
North Arcot district—										
Vellore	392	90.51	96	107.87	18	72.87	..	..	506	92.54
Tiruvannamalai	113	86.66	19	100.53	1	27.03	..	..	133	86.93
Gudiyattam	127	84.72	18	54.22	..	..	..	..	..	78.76
Vaniyambadi	60	109.76	100	141.84	4	142.86	..	..	170	122.48
Tirupattur	51	58.69	31	91.99	..	..	..	..	82	66.88
Walajahpet	42	90.52	7	114.75	..	..	..	..	49	92.80
Ambar	69	93.50	46	82.00	3	83.33	..	..	188	88.39
Arni	119	109.58	7	86.42	..	..	..	..	126	106.78
South Arcot district—										
Cuddalore	225	76.35	9	53.89	3	36.59	9	41.47	246	72.53
Chidambaram	105	68.31	6	71.43	..	..	..	..	111	68.14
Villupuram	122	80.74	13	91.55	5	54.95	..	..	140	80.23
Tindivanam	60	77.02	7	82.35	1	41.67	14	116.67	82	81.35
Mangalore district—										
Tanjore	350	82.96	19	76.31	29	72.50	..	..	398	81.76
Kumbakonam	264	73.41	16	82.47	7	32.86	..	..	287	71.57
Nagapattinam	121	64.84	90	230.77	9	97.83	..	..	220	93.70
Mayuram	143	66.67	3	60.00	9	155.17	..	..	155	68.80
Mannargudi	150	93.13	9	118.42	2	45.45	1	250.00	162	88.72
Tiruvavur	67	59.71	21	181.03	2	71.43	..	..	90	71.09
Tiruchirappalli district—										
Tiruchirappalli	495	89.79	76	70.57	58	54.56	..	..	629	81.53
Karur	128	115.11	11	54.73	3	61.22	..	..	142	104.26
Srirangam	103	93.72	..	..	..	..	..	..	103	91.84
Pudukkottai	102	64.63	4	37.74	3	53.57	..	..	109	62.68
Madurai district—										
Madurai	1,911	136.80	75	78.70	57	51.35	..	..	2,043	127.43
Dindigul	218	114.52	22	62.86	30	76.14	..	..	265	101.77
Bodinayakanur	83	81.93	2	62.50	1	90.91	..	..	86	81.44
Periyakulam	96	94.68	16	81.22	7	76.92	..	..	119	91.40
Palni	106	104.54	7	56.45	9	236.84	..	..	122	103.78
Kodalkanal	12	108.11	3	83.33	24	122.45	5	100.00	44	111.96
Ramanathapuram district—										
Rajapalayam	171	92.83	5	52.63	3	100.00	..	..	177	91.76
Srivilliputtur	189	142.64	5	200.00	8	135.59	..	..	202	143.36
Virudunagar	115	59.00	4	47.06	10	80.65	..	..	129	59.78
Karaikudi	87	71.31	5	46.73	2	57.14	..	..	94	69.02
Devakottai	106	107.83	5	92.59	4	81.63	..	..	115	105.89
Sivakasi	137	138.66	11	234.04	4	114.29	..	..	162	142.06
Pudukottai	181	114.20	3	50.00	..	..	..	..	184	110.78
Tirunelveli district—										
Tuticorin	315	120.32	18	123.29	63	75.18	..	..	396	109.94
Tirunelveli	305	139.59	45	141.07	7	112.90	..	..	357	139.13
Palayamkottai	161	94.15	6	28.85	26	90.59	..	..	193	87.53
Melapalayam	38	153.85	62	117.20	2	133.33	..	..	102	128.9

No. IV-A.—Infantile deaths according to communities in the municipalities in the State of Madras during the year 1954—cont.

Municipalities.	Hindus.		Muslims.		Christians.		Others.		Total.	
	Number.	Rate per 1,000 live-births.	Number.	Rate per 1,000 live-births.	Number.	Rate per 1,000 live-births.	Number.	Rate per 1,000 live-births.	Number.	Rate per 1,000 live-births.
Salem district—										
Salem	526	76.03	19	46.34	2	12.27	..	..	547	74.74
Rasipuram	58	91.63	1	21.23	1	200.00	..	..	60	97.97
Coimbatore district—										
Coimbatore	917	107.47	90	134.33	66	108.11	..	..	1,073	108.94
Erode	139	62.47	11	48.25	4	31.50	..	..	154	64.94
Tiruppur	183	91.59	15	85.23	3	36.14	..	..	201	118.94
Pollachi	187	113.40	19	123.38	1	29.41	..	..	207	98.94
Dharapuram	31	53.32	4	40.40	4	65.57	..	..	39	64.94
Udamalpet	102	91.56	8	78.43	2	125.00	..	..	112	64.94
Mettupalayam	60	69.69	7	47.95	..	..	..	..	67	64.94
Gobichettipalayam	57	83.10	2	54.01	..	..	..	..	59	64.94
The Nilgiris district—										
Ootacamund	129	103.20	21	83.00	25	65.45	..	..	175	92.94
Coonoor	77	110.32	14	111.11	24	80.00	..	..	115	101.94
Malabar district—										
Kozhikode	232	75.46	271	112.12	14	42.42	..	..	567	87.94
Palghat	192	91.69	37	81.68	..	..	2	32.26	231	89.94
Tellicherry	63	62.38	43	74.65	8	40.2	..	..	114	63.94
Cannanore	44	79.42	59	102.79	4	53.33	..	..	107	86.94
Cochin	29	97.32	29	77.75	45	62.67	..	..	103	74.94
South Kanara district—										
Mangalore	141	54.23	21	55.56	65	72.38	..	..	227	56.94
Udipi	40	53.76	1	20.00	1	8.00	..	..	42	48.94
Grand total ..	18,243	106.15	2,540	116.90	1,012	77.08	31	61.75	21,826	106.94

No. V.—Deaths registered according to classes in the State of Madras during the year 1954.

Serial number.	Districts.	Number of deaths registered.								Serial number.
		Christians.		Muslims.		Hindus.		Other classes.		
		Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	
		(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	
1	Madras	863	818	1,877	1,077	14,536	13,405	4	1	1
2	Chingleput	271	272	313	239	13,807	13,222	61	58	2
3	North Arcot	298	265	1,246	1,008	19,191	18,009	94	107	3
4	South Arcot	416	413	422	410	18,255	17,538	222	199	4
5	Tanjore	723	701	1,140	1,193	20,614	19,947	91	90	5
6	Tiruchirappalli	1,256	1,227	757	746	24,089	23,620	39	38	6
7	Madurai	818	730	738	700	20,346	19,661	100	70	7
8	Ramanathapuram	549	494	731	757	13,320	13,100	37	40	8
9	Tirunelveli	1,910	1,908	1,042	1,058	16,996	16,614	117	94	9
10	Salem	145	155	374	368	19,280	18,709	48	56	10
11	Coimbatore	323	282	494	486	17,016	16,225	64	71	11
12	Nilgiris, The	241	245	153	189	1,675	1,572	24	13	12
13	Malabar	760	721	8,878	8,421	17,776	17,093	69	74	13
14	South Kanara	848	761	1,439	1,473	8,719	8,847	75	67	14
Total, Madras State ..		9,421	8,992	19,613	18,730	225,680	217,562	1,045	978	

Ratio of deaths per 1,000 of estimated population.										Serial number.
Districts.	Christians.		Muslims.		Hindus.		Other classes.*			
	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.		
	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)		
..	12.51	14.10	22.08	23.96	21.76	21.14	..	..	1	
put ..	14.26	14.32	14.90	11.95	14.99	14.81	..	..	2	
Arcot ..	12.96	10.19	12.85	9.80	14.24	13.39	..	..	3	
Arcot ..	14.34	12.15	9.81	8.91	13.59	13.01	..	..	4	
..	14.40	14.02	13.52	10.89	14.70	14.05	..	..	5	
rappalli ..	17.21	16.14	12.02	11.66	16.64	16.09	..	..	6	
..	15.73	14.04	12.10	11.11	14.51	13.93	..	..	7	
athapuram ..	10.76	8.98	11.25	8.14	14.88	13.70	..	..	8	
..	14.81	12.64	13.71	12.16	16.74	15.95	..	..	9	
..	12.08	11.92	7.79	7.83	11.59	11.32	..	..	10	
..	8.50	7.62	10.98	11.57	10.31	9.89	..	..	11	
..	9.64	10.21	10.93	15.75	11.02	11.31	..	..	12	
..	8.35	8.19	10.31	9.81	11.51	10.42	..	..	13	
..	11.01	9.06	11.33	10.91	12.88	12.07	..	..	14	
Total, Madras State ..	12.77	11.74	11.87	10.68	13.94	13.29	..	..		

* As the figures for deaths are small, the rates for other classes have not been calculated.

No. VI.—Births and deaths from different causes registered in the State of Madras during the year 1954.

Serial number	(1)	Districts and towns.	(2)	Births.			(3)	Deaths.					Serial number.
				Males.	Females.	Total.		Birth-rate per thousand of population.	Cholera.	Smallpox.	Plague.	Malaria.	Fever.
				(4)	(5)	(6)		(7)	(8)	(9)	(10)	(11)	(12)
1	Chingleput	..	..	20,860	19,940	40,800	1,553,000	26.27	118	114	..	99	3,280
2	North Arcot	..	..	39,526	37,518	77,044	2,387,000	32.28	32	92	..	100	7,964
3	South Arcot	..	..	34,061	31,989	66,050	2,491,000	26.52	138	104	..	61	5,752
4	Tanjore ..	..	..	26,398	24,867	51,265	2,510,000	20.42	340	80	..	21	3,043
5	Tiruchirappalli	..	..	28,152	26,416	54,568	2,436,000	22.40	151	119	..	118	8,070
6	Madurai	..	..	25,771	24,667	50,438	2,175,000	23.19	106	59	..	97	6,004
7	Ramanathapuram	..	..	20,163	18,787	38,950	1,550,000	25.03	58	72	..	26	5,590
8	Tirunelveli	..	..	25,362	24,008	49,370	1,718,000	28.74	120	49	..	39	4,756
9	Salem ..	..	..	36,428	33,496	69,924	3,020,000	23.15	50	40	6	389	9,179
10	Coimbatore	..	..	27,734	25,435	53,169	2,731,000	19.47	14	30	..	106	4,650
11	Nilgiris, The	..	..	3,795	3,627	7,422	250,000	19.69	1	..	..	23	886
12	Malabar	..	..	60,596	48,365	98,961	4,482,000	22.08	14	158	..	276	6,291
13	South Kanara	..	..	27,827	26,571	54,398	1,553,000	35.03	2	16	..	155	4,641
	Total for rural areas	..	..	366,673	345,686	712,359	28,862,000	24.68	1,144	933	6	1,510	70,106

Serial number.	Districts and towns.	Deaths—cont.											Total deaths from all causes.	Serial number.
		Suicides.			Injuries.			Total.		All other causes.*	(22)			
		Dysentery and diarrhoea.	Respiratory diseases.	Males.	Females.	Wounds and accidents.	Snake bite and killed by wild beasts.	Infants.	(20)			(21)		
(1)		(13)	(14)	(15)	(16)	(17)	(18)	(19)						
1	Chingleput	1,917	2,269	45	40	74	35	10	204	15,330	23,331	1		
2	North Arcot	2,643	2,381	101	97	211	32	2	443	18,672	32,327	2		
3	South Arcot	2,788	2,406	69	85	177	57	..	388	21,382	33,019	3		
4	Tanjore ..	1,254	1,726	97	92	119	48	6	358	27,625	33,847	4		
5	Tiruchirappalli	2,327	2,465	68	68	273	36	2	451	28,717	42,418	5		
6	Madurai	2,207	3,939	45	61	194	61	3	364	16,119	28,895	6		
7	Ramanathapuram	861	1,985	29	27	67	22	..	145	12,057	20,794	7		
8	Tirunelveli	1,701	2,470	21	25	116	26	5	193	20,151	29,479	8		
9	Salem ..	1,842	1,933	128	118	282	61	2	591	19,253	33,283	9		
10	Coimbatore	1,237	2,518	58	65	142	55	..	320	15,812	24,687	10		
11	Nilgiris, the	238	418	6	..	11	11	..	28	1,273	2,867	11		
12	Malabar	2,523	4,611	246	168	499	142	4	1,059	30,913	45,845	12		
13	South Kanara	1,059	1,784	61	44	225	34	3	367	11,464	19,485	13		
	Total for rural areas	22,597	30,905	974	890	2,390	620	37	4,911	238,168	370,270			

* "All other causes" includes deaths of mothers from child-birth. The number of deaths and the death rates from this cause per 1,000 (live and still) births are given separately in columns (34) and (35) respectively.

No. VI.—Births and deaths from different causes registered in the State of Madras during the year 1954—cont.

Serial number	Districts and towns.	Death rate per 1,000 of estimated mid-year population.													Ratio per 1,000 births (live and still).	Serial number.
		(23)	(24)	(25)	(26)	(27)	(28)	(29)	(30)	(31)	(32)	(33)	(34)			
		Cholera.	Smallpox.	Plague.	Malaria.	Fever.	Dysentery and diarrhoea.	Respiratory dis- ease.	Injuries.	All other causes.	Total deaths.	Average of published ratios for the pre- vious five years.	Number of maternal deaths.			
1	Chingleput ..	0.08	0.07	..	0.06	2.11	1.23	1.46	0.13	9.87	15.02	17.73	144	1		
2	North Arcot ..	0.01	0.04	..	0.04	3.34	1.10	1.00	0.19	7.82	13.54	17.45	229	2		
3	South Arcot ..	0.06	0.04	..	0.02	2.31	1.12	0.97	0.16	8.58	13.26	17.18	323	3		
4	Tanjore ..	0.14	0.03	..	0.01	1.21	0.50	0.69	0.14	10.77	13.49	16.72	322	4		
5	Tiruchirappalli ..	0.06	0.05	..	0.05	3.31	0.96	1.01	0.18	11.79	17.41	17.43	428	5		
6	Madurai ..	0.05	0.03	..	0.04	2.76	1.01	1.81	0.17	7.41	13.28	14.86	170	6		
7	Ramanathapuram ..	0.04	0.04	..	0.02	3.59	0.55	1.28	0.09	7.75	13.36	17.18	71	7		
8	Tirunelveli ..	0.07	0.03	..	0.02	2.77	0.99	1.44	0.11	11.73	17.16	21.36	315	8		
9	Salem ..	0.02	0.01	0.002	0.13	3.04	0.61	0.64	0.20	6.37	11.02	12.44	239	9		
10	Coimbatore ..	0.01	0.01	..	0.04	1.70	0.45	0.92	0.12	5.79	9.04	13.29	133	10		
11	Nilgiris, the ..	0.01	..	..	0.09	3.54	0.95	1.67	0.11	5.09	11.47	12.18	23	11		
12	Malabar ..	0.003	0.04	..	0.06	1.40	0.56	1.03	0.24	6.90	10.23	13.29	329	12		
13	South Kanara ..	0.001	0.01	..	0.10	2.99	0.68	1.15	0.24	7.38	12.55	14.06	201	13		
	Total of rural areas ..	0.04	0.03	0.002	0.05	2.43	0.78	1.07	0.17	8.25	12.82	16.02	2,927	4.08		

No. VI.—Births and Deaths from different causes Registered in the State of Madras during the year 1954—cont.

REPORT ON THE HEALTH CONDITIONS IN MADRAS STATE, 1954

Serial number.	Districts and towns.	(1)	(2)	(3)	Births.		(7)	Deaths.				Serial number.	
					(4) Males.	(5) Females.		(6) Total.	(8) Cholera.	(9) Smallpox.	(10) Plague.		(11) Malaria.
1	M.T.C. Madras	..	..	1,595,400	30,182	29,074	37.15	7	305	..	105	3,349	1
Municipalities and Rural Towns.													
Madras.													
Chingleput.													
2	M.T.C. Kancheepuram	..	..	88,200	1,560	1,566	35.45	..	4	..	4	47	2
3	M.T.C. Tiruvallur..	..	..	20,900	355	330	32.78	..	2	..	1	17	3
4	M.T.C. Chingleput	..	..	24,300	669	629	53.41	..	2	..	4	46	4
5	M.T.C. Poonamallee	..	..	21,300	409	379	37.00	..	..	..	..	51	5
6	T.C. Uthiramerur	..	..	12,100	218	207	35.12	..	1	..	2	37	6
7	T.C. Alandur	..	..	16,400	187	167	21.59	..	7	..	..	55	7
8	T.C. Pallavaram	..	..	12,600	110	114	17.78	..	..	..	1	23	8
9	T.C. Tiruvottiyur	..	..	25,200	170	166	13.33	..	..	..	..	105	9
10	T.C. Trukkalkundram	..	..	12,000	136	108	19.92	..	13	..	..	43	10
11	T.C. Madurantakam	..	..	9,100	186	160	38.03	1	..	..	..	54	11
12	T.C. Walsajhed	..	..	7,500	111	117	30.40	..	..	..	..	27	12
13	T.C. Chelveyur	..	..	5,200	92	87	34.42	..	..	..	..	21	13
14	T.C. Arni	..	..	6,400	74	56	20.31	..	..	..	..	23	14
15	T.C. St. Thomas' Mount	..	..	17,100	237	229	27.25	..	3	..	..	37	15
16	T.C. Villivakkam	..	..	12,100	83	92	14.46	..	..	..	..	30	16
17	T.C. Sripurambudur	..	..	7,700	87	76	21.17	..	..	..	1	31	17
18	T.C. Tambaram	..	..	24,000	293	219	21.34	..	..	..	..	15	18
19	T.C. Kumbakonam	..	..	13,000	44	38	6.31	..	..	..	..	4	19
20	T.C. Kurnathi	..	..	8,800	21	18	4.43	..	..	..	..	6	20

B. TOWNS.
MUNICIPALITIES AND RURAL TOWNS.
Madras.

Chingleput.

North Arcot.

21	M.T.C. Vellore	..	117,500	2,804	2,984	46.53	..	..	..	..	69	21
22	M.T.C. Tiruvannamalai	..	43,000	800	730	35.59	..	..	..	..	46	22
23	M.T.C. Guduvayalur	..	50,000	964	877	36.82	..	..	..	..	76	23
24	M.T.C. Vazhuvayal	..	41,200	700	632	36.82	..	..	..	..	46	24
25	M.T.C. Tiruvannamalai	..	43,000	800	730	35.59	..	..	..	..	46	25
26	M.T.C. Tiruvannamalai	..	43,000	800	730	35.59	..	..	..	..	46	26
27	M.T.C. Tiruvannamalai	..	43,000	800	730	35.59	..	..	..	..	46	27
28	M.T.C. Tiruvannamalai	..	43,000	800	730	35.59	..	..	..	..	46	28
29	M.T.C. Tiruvannamalai	..	43,000	800	730	35.59	..	..	..	..	46	29
30	M.T.C. Tiruvannamalai	..	43,000	800	730	35.59	..	..	..	..	46	30
31	M.T.C. Tiruvannamalai	..	43,000	800	730	35.59	..	..	..	..	46	31
32	M.T.C. Tiruvannamalai	..	43,000	800	730	35.59	..	..	..	..	46	32
33	M.T.C. Tiruvannamalai	..	43,000	800	730	35.59	..	..	..	..	46	33
34	M.T.C. Tiruvannamalai	..	43,000	800	730	35.59	..	..	..	..	46	34
35	M.T.C. Tiruvannamalai	..	43,000	800	730	35.59	..	..	..	..	46	35
36	M.T.C. Tiruvannamalai	..	43,000	800	730	35.59	..	..	..	..	46	36
37	M.T.C. Tiruvannamalai	..	43,000	800	730	35.59	..	..	..	..	46	37
38	M.T.C. Tiruvannamalai	..	43,000	800	730	35.59	..	..	..	..	46	38
39	M.T.C. Tiruvannamalai	..	43,000	800	730	35.59	..	..	..	..	46	39
40	M.T.C. Tiruvannamalai	..	43,000	800	730	35.59	..	..	..	..	46	40
41	M.T.C. Tiruvannamalai	..	43,000	800	730	35.59	..	..	..	..	46	41
42	M.T.C. Tiruvannamalai	..	43,000	800	730	35.59	..	..	..	..	46	42

South Arcot.

43	M.T.C. Cuddalore	..	71,900	1,741	1,672	47.47	21	..	..	1	72	43
44	M.T.C. Chidambaram	..	37,600	820	809	43.33	..	7	..	2	39	44
45	M.T.C. Villupuram	..	38,000	904	840	45.90	..	1	..	..	42	45
46	M.T.C. Tiruvannamalai	..	31,200	499	509	32.31	..	7	..	..	61	46
47	M.T.C. Tiruvannamalai	..	14,000	203	205	29.14	..	1	..	..	22	47
48	M.T.C. Tiruvannamalai	..	15,400	197	178	24.35	..	1	..	..	41	48
49	M.T.C. Tiruvannamalai	..	23,200	342	315	19.44	..	1	..	..	25	49
50	M.T.C. Tiruvannamalai	..	17,300	240	211	39.07	..	1	..	..	27	50
51	M.T.C. Tiruvannamalai	..	7,100	129	104	34.37	..	3	..	..	22	51
52	M.T.C. Tiruvannamalai	..	10,400	109	104	20.48	..	..	..	..	9	52
53	M.T.C. Tiruvannamalai	..	10,600	107	101	19.26	..	..	..	1	12	53
54	M.T.C. Tiruvannamalai	..	12,200	156	145	24.67	..	2	..	6	31	54
55	M.T.C. Tiruvannamalai	..	10,800	113	106	20.28	..	..	..	..	20	55
56	M.T.C. Tiruvannamalai	..	11,700	141	121	22.39	..	..	..	..	18	56
57	M.T.C. Tiruvannamalai	..	8,800	91	76	13.98	..	..	..	..	14	57
58	M.T.C. Tiruvannamalai	..	8,700	155	113	30.80	..	..	..	..	34	58
59	M.T.C. Tiruvannamalai	..	7,000	89	103	27.71	..	..	..	..	30	59
60	M.T.C. Tiruvannamalai	..	5,200	81	83	32.50	..	..	..	..	30	60

Tanjore.

61	M.T.C. Tanjore	..	1,11,900	2,517	2,351	43.71	42	5	..	..	120	61
62	M.T.C. Kumbakonam	..	99,800	2,008	2,002	41.08	..	1	..	..	60	62
63	M.T.C. Nagapattinam	..	59,500	1,196	1,152	39.47	..	6	..	..	128	63
64	M.T.C. Mayavaram	..	32,000	937	889	29.94	..	..	..	..	135	64
65	M.T.C. Mannargudi	..	28,900	609	657	43.80	..	..	..	..	83	65
66	M.T.C. Tiruvannamalai	..	17,800	222	176	22.36	..	..	..	..	42	66
67	M.T.C. Vedaranyam	..	16,100	435	423	53.29	..	..	..	..	25	67
68	M.T.C. Shiyal	..	9,100	125	118	27.37	..	..	..	..	8	68
69	M.T.C. Papanasam	..	18,300	125	118	14.91	..	..	..	1	11	69
70	M.T.C. Tanquebar	..	8,000	220	182	50.25	..	..	..	..	16	70
71	M.T.C. Kuttalam	..	15,100	51	57	7.15	..	..	..	..	17	71
72	M.T.C. Tiruvadanapur	..	20,100	177	158	16.67	..	..	..	..	29	72
73	M.T.C. Pattukkottai	..	14,100	153	117	19.36	..	..	..	..	35	73
74	M.T.C. Adirampattinam	..	10,000	155	134	28.90	..	..	..	..	32	74
75	M.T.C. Ayyampattinam	..	10,000	155	134	28.90	..	..	..	..	32	75

REPORT ON THE HEALTH CONDITIONS IN MADRAS STATE, 1954

REPORT ON THE HEALTH CONDITIONS IN MADRAS STATE, 1954

Serial number.	Districts and towns.	Deaths—cont.										Total deaths from all other causes.	Serial number.
		Injuries.					All other causes.						
		Dysentery and diarrhoea.	Respiratory diseases.	Males.	Females.	Wounds and accidents.	Snake bite and killed by wild beasts.	Rabies.	Total.	All other causes.			
(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)		
1	M.T.C. Madras	4,534	8,601	72	42	244	130	..	483	15,792	33,181	1	
MUNICIPALITIES AND RURAL TOWNS—cont.													
Madras.													
Chingleput.													
2	M.T.C. Kanchespuram	169	506	6	3	6	..	3	18	1,053	1,801	2	
3	M.T.C. Tiruvallur	67	30	..	1	..	..	..	1	210	329	3	
4	M.T.C. Chingleput	82	88	..	1	23	1	..	26	324	572	4	
5	T.C. Ponnasalee	46	29	..	..	..	..	..	1	180	307	5	
6	T.C. Ettimamer	23	19	2	1	1	..	..	5	117	206	6	
7	T.C. Alandur	32	13	2	..	6	1	..	9	92	76	7	
8	T.C. Palavaram	6	1	..	..	..	..	..	3	43	334	8	
9	T.C. Tiruvotiyur	51	34	2	2	4	..	..	8	136	121	9	
10	T.C. Tirukkalkundram	10	22	..	..	..	..	..	..	33	65	10	
11	T.C. Maduranakam	26	15	..	..	4	..	..	4	65	165	11	
12	T.C. Vadajabad	16	28	..	..	1	..	..	1	62	124	12	
13	T.C. Cheyyur	2	2	..	..	..	..	..	2	37	64	13	
14	T.C. Arni	6	12	..	..	..	..	..	..	45	86	14	
15	T.C. St. Thomas' Mount	12	12	1	..	1	..	..	2	68	134	15	
16	T.C. Villivakkam	8	3	..	..	2	..	..	2	84	128	16	
17	T.C. Sriperumbudur	22	11	..	..	..	..	..	..	65	129	17	
18	T.C. Tambaram	11	6	..	..	..	..	..	..	5	89	18	
19	T.C. Kunrathur	14	6	..	..	..	2	..	2	27	54	19	
20	T.C. Ponneri	2	1	1	..	..	..	1	2	24	35	20	

North Arcot.

21	211	441	1	4	55	1	62	1,520	2,306	21			
22	36	108	1	1	13	..	16	268	576	22			
23	91	61	..	..	2	..	17	339	576	23			
24	41	62	..	..	2	..	17	339	576	24			
25	61	62	..	..	2	..	17	339	576	25			
26	61	62	..	..	2	..	17	339	576	26			
27	61	62	..	..	2	..	17	339	576	27			
28	61	62	..	..	2	..	17	339	576	28			
29	61	62	..	..	2	..	17	339	576	29			
30	61	62	..	..	2	..	17	339	576	30			
31	61	62	..	..	2	..	17	339	576	31			
32	61	62	..	..	2	..	17	339	576	32			
33	61	62	..	..	2	..	17	339	576	33			
34	61	62	..	..	2	..	17	339	576	34			
35	61	62	..	..	2	..	17	339	576	35			
36	61	62	..	..	2	..	17	339	576	36			
37	61	62	..	..	2	..	17	339	576	37			
38	61	62	..	..	2	..	17	339	576	38			
39	61	62	..	..	2	..	17	339	576	39			
40	61	62	..	..	2	..	17	339	576	40			
41	61	62	..	..	2	..	17	339	576	41			
42	61	62	..	..	2	..	17	339	576	42			

South Arcot.

43	130	167	4	6	33	3	51	819	1,261	43			
44	50	41	1	2	15	..	8	519	658	44			
45	68	110	1	2	12	..	13	297	539	45			
46	46	28	..	..	20	..	27	297	539	46			
47	25	16	..	..	1	..	1	117	171	47			
48	22	10	..	..	3	..	3	117	171	48			
49	21	10	..	..	3	..	3	117	171	49			
50	15	10	..	..	3	..	3	117	171	50			
51	..	10	..	..	3	..	3	117	171	51			
52	..	10	..	..	3	..	3	117	171	52			
53	13	17	..	..	2	..	3	117	171	53			
54	14	17	..	..	2	..	3	117	171	54			
55	1	1	..	..	1	..	3	117	171	55			
56	3	1	..	..	1	..	3	117	171	56			
57	2	2	..	..	1	..	3	117	171	57			
58	16	22	..	..	1	..	3	117	171	58			
59	18	22	..	..	1	..	3	117	171	59			
60	18	22	..	..	1	..	3	117	171	60			

Tanjore.

61	180	236	1	2	24	2	39	1,735	2,347	61			
62	144	240	..	..	22	..	27	1,018	1,486	62			
63	99	82	..	..	19	..	20	841	1,486	63			
64	47	55	..	..	14	..	13	709	853	64			
65	106	61	..	..	17	..	11	731	853	65			
66	52	20	..	..	10	..	1	317	438	66			
67	34	13	..	..	7	..	1	317	438	67			
68	3	13	..	..	1	..	1	258	303	68			
69	1	5	..	..	1	..	1	107	124	69			
70	1	5	..	..	1	..	1	121	139	70			
71	4	4	..	..	2	..	1	158	139	71			
72	2	6	..	..	2	..	1	37	60	72			
73	15	15	..	..	1	..	1	137	193	73			
74	17	14	..	..	1	..	1	161	229	74			
75	5	15	..	..	1	..	1	115	158	75			

REPORT ON THE HEALTH CONDITIONS IN MADRAS STATE, 1954

REPORT OF THE HEALTH CONDITIONS IN MADRAS STATE, 1954

Serial number	Districts and towns	Death rate per 1,000 of estimated mid-year population.										Number of maternal deaths.	Average of published rates for the last five years.	Number of maternal deaths.	Rate per 1,000 births (live and still).	Serial number.
		Cholera.	Smallpox.	Plague.	Malaria.	Typhoid.	Dysentery.	Respiratory diseases.	Injuries.	All other causes.	Total deaths.					
1	M.T.C. Madras	0.04	0.19	..	0.07	2.10	2.34	5.40	0.30	9.90	20.80	31.55	150	2.47	1	2.47
2	M.T.C. Kanchipuram	..	..	..	0.05	0.53	1.91	5.74	0.20	11.94	20.42	26.23	33	9.94	2	9.94
3	M.T.C. Tiruvallur	..	..	..	0.05	0.81	3.21	1.44	0.05	10.04	15.74	27.48	11	1.40	3	1.40
4	M.T.C. Chingleput	..	..	..	0.10	1.30	3.57	3.62	0.05	13.33	23.58	27.66	11	7.70	4	7.70
5	M.T.C. Poonamallee	..	..	..	..	3.06	2.16	1.96	0.41	8.45	14.41	15.76	..	7.04	5	7.04
6	M.T.C. Tirumangaluru	..	..	..	0.17	3.06	1.96	1.57	0.16	9.67	17.02	22.68	..	2.83	6	2.83
7	M.T.C. Alandur	..	..	..	0.03	3.35	1.96	0.79	0.32	8.41	12.68	13.47	..	..	7	..
8	M.T.C. Pallavaram	..	..	..	..	4.17	2.02	0.43	0.16	5.40	13.25	11.08	..	..	8	..
9	M.T.C. Tiruvotiyur	..	..	..	..	3.33	0.83	1.83	0.44	7.14	13.13	12.66	..	..	9	..
10	M.T.C. Tirukalukundram	..	..	..	..	5.93	2.86	1.65	0.38	7.12	13.44	14.64	..	..	10	..
11	M.T.C. Madhavakkam	..	..	..	..	3.60	2.13	3.73	0.13	6.93	16.53	21.77	..	..	11	..
12	M.T.C. Walajabad	..	..	..	..	4.04	0.88	1.88	0.38	7.12	13.44	14.64	..	..	12	..
13	M.T.C. Cheyur	..	..	..	..	8.59	0.94	0.70	0.12	3.98	7.10	9.59	..	..	13	..
14	M.T.C. St. Thomas' Mount	..	..	..	..	2.16	0.66	0.25	0.17	8.44	16.75	..	..	..	14	..
15	M.T.C. Villivakkam	..	..	..	0.05	2.43	0.46	1.43	..	8.44	16.75	..	..	..	15	..
16	M.T.C. Sriperumbudur	..	..	..	0.08	4.03	0.46	1.43	0.15	2.08	4.15	..	..	..	16	..
17	M.T.C. Panambur	..	..	..	0.08	0.31	1.08	0.46	0.23	2.73	3.98	..	..	..	17	..
18	M.T.C. Kumbakonam	..	..	..	..	0.63	0.23	0.11	..	..	..	..	..	..	18	..
19	M.T.C. Kumbakonam	..	..	..	..	0.63	0.23	0.11	..	..	..	..	..	..	19	..
20	M.T.C. Ponneri	..	..	..	..	0.63	0.23	0.11	..	..	..	..	..	..	20	..

B. TOWNS—cont.
MUNICIPALITIES AND RURAL TOWNS—cont.
Madras.

Chingleput.

North Arcot.

South Arcot.

Tanjore.

Tanjore.

Tanjore.

Tanjore.

Tanjore.

Tanjore.

Tanjore.

Tanjore.

Tanjore.

Tanjore.

Tanjore.

Tanjore.

Tanjore.

Tanjore.

Tanjore.

Tanjore.

Tanjore.

Tanjore.

Tanjore.

Tanjore.

Tanjore.

Tanjore.

Tanjore.

Tanjore.

Tanjore.

Tanjore.

Tanjore.

Tanjore.

Tanjore.

Tanjore.

Tanjore.

Tanjore.

Tanjore.

Tanjore.

Tanjore.

Tanjore.

Tanjore.

Tanjore.

Tanjore.

Tanjore.

Tanjore.

Tanjore.

Tanjore.

Tanjore.

Tanjore.

Tanjore.

Tanjore.

Tanjore.

Tanjore.

Tanjore.

REPORT ON THE HEALTH CONDITIONS IN MADRAS STATE, 1954

Serial number.	Districts and towns.	Births.			Estimated population for which returns are to be received.	(3)	Deaths.					Serial number.			
		Males.	Females.	Total.			(6)	(7)	(8)	(9)	(10)		(11)	(12)	
(1)	(2)	(4)	(5)	(6)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
B. TOWNS—cont.															
MUNICIPALITIES AND RURAL TOWNS—cont.															
Tanjore—cont.															
76	T.C. Tiruvadi ..	134	126	260	12,000	134	126	260	21,87	..	..	..	..	16	76
77	T.C. Valam ..	90	91	181	8,900	90	91	181	30,34	..	..	..	..	17	77
78	T.C. Tiruthurai ..	276	272	548	12,100	276	272	548	45,89	..	..	..	..	21	78
79	T.C. Tiruthurai ..	97	82	179	10,400	97	82	179	17,21	..	..	..	..	28	79
80	T.C. Tirukattupalli ..	162	154	316	7,400	162	154	316	19,70	..	..	..	..	3	80
81	T.C. Kuthanallur ..	128	126	254	12,600	128	126	254	30,16	..	..	..	..	6	81
82	T.C. Tirumalaivasal ..	119	108	227	5,800	119	108	227	38,14	..	..	..	..	3	82
83	T.C. Valanchangl ..	164	138	302	6,100	164	138	302	48,51	..	..	..	..	27	83
84	T.C. Aranthangi ..	97	94	191	9,800	97	94	191	18,49	..	..	..	..	10	84
85	T.C. Nannilam ..	194	169	363	8,900	194	169	363	40,79	..	..	..	..	18	85
86	T.C. Kodavasi ..	74	87	161	7,900	74	87	161	20,38	..	..	..	..	4	86
87	T.C. Orathanad ..	54	49	103	5,100	54	49	103	26,20	..	..	..	..	18	87

MUNICIPALITIES AND RURAL TOWNS—cont.

Tanjore—cont.

76	T.C. Tiruvadi ..	12,000	134	126	250	21.97	18	17	76
77	T.C. Vallam ..	8,900	90	91	181	20.34	17	17	77
78	T.C. Tirubalupundi ..	12,100	276	272	548	45.29	21	21	78
79	T.C. Muchupet ..	10,400	182	154	179	17.21	3	3	79
80	T.C. Tirukkattappalli ..	7,400	128	126	316	42.70	8	8	80
81	T.C. Kurlanallur ..	12,600	119	108	254	20.16	3	3	81
82	T.C. Tirumalaivasal ..	5,800	164	138	227	39.14	27	27	82
83	T.C. Vandanam ..	6,100	137	101	302	49.51	10	10	83
84	T.C. Arandhangal ..	9,800	194	161	191	19.49	18	18	84
85	T.C. Nannilam ..	7,900	74	87	363	46.79	4	4	85
86	T.C. Kodavasa ..	8,900	54	49	161	20.38	..	..	86
87	T.C. Orathanad ..	5,100	..	..	103	20.20	..	..	87

Tiruchirappalli.

88	M.T.C. Tiruchirappalli ..	238,700	4,064	3,451	7,715	32.33	9	21	75
89	M.T.C. Karur ..	47,000	697	665	1,362	28.03	7	6	89
90	M.T.C. Srirangam ..	48,000	891	848	1,739	36.22	..	..	90
91	M.T.C. Pudukkottai ..	25,900	296	333	629	30.10	..	..	91
92	T.C. Golden Rock (R.C.) ..	2,700	145	72	168	6.61	..	..	92
93	T.C. Golden Rock (P.B.) ..	14,100	178	153	298	30.72	2	1	93
94	T.C. Thiruvannamalai ..	14,600	159	192	370	26.24	2	2	94
95	T.C. Tiruvallur ..	8,900	114	182	321	21.99	..	..	95
96	T.C. Tholtham ..	11,300	182	182	192	21.57	..	..	96
97	T.C. Arivayal ..	10,200	182	182	282	24.96	..	..	97
98	T.C. Pannal ..	9,000	144	116	282	24.96	..	..	98
99	T.C. Pannal ..	9,000	144	116	282	24.96	..	..	99
100	T.C. Pannal ..	9,000	144	116	282	24.96	..	..	100
101	T.C. Pannal ..	9,000	144	116	282	24.96	..	..	101
102	T.C. Pannal ..	9,000	144	116	282	24.96	..	..	102
103	T.C. Pannal ..	9,000	144	116	282	24.96	..	..	103
104	T.C. Pannal ..	9,000	144	116	282	24.96	..	..	104
105	T.C. Pannal ..	9,000	144	116	282	24.96	..	..	105
106	T.C. Pannal ..	9,000	144	116	282	24.96	..	..	106
107	T.C. Pannal ..	9,000	144	116	282	24.96	..	..	107
108	T.C. Pannal ..	9,000	144	116	282	24.96	..	..	108
109	T.C. Pannal ..	9,000	144	116	282	24.96	..	..	109
110	T.C. Pannal ..	9,000	144	116	282	24.96	..	..	110
111	T.C. Pannal ..	9,000	144	116	282	24.96	..	..	111
112	T.C. Pannal ..	9,000	144	116	282	24.96	..	..	112
113	T.C. Pannal ..	9,000	144	116	282	24.96	..	..	113
114	T.C. Pannal ..	9,000	144	116	282	24.96	..	..	114

Madurai.

115	M.T.C. Madurai ..	402,700	8,047	7,991	16,032	39.76	16	95	917
116	M.T.C. Dindigul ..	88,700	1,327	1,267	2,604	30.39	12	3	143
117	M.T.C. Bodinayakanur ..	32,700	722	518	1,056	27.50	12	12	143
118	M.T.C. Periyakulam ..	37,700	620	556	1,302	39.82	11	11	143
119	M.T.C. Palani ..	23,500	551	221	1,176	34.24	..	..	143
120	M.T.C. Kodaikanal ..	20,800	236	207	482	16.91	..	..	143
121	T.C. Gudalur ..	11,000	186	158	463	31.27	..	..	143
122	T.C. Thevaram ..	20,400	215	188	433	21.23	..	..	143
123	T.C. Chinnamanur ..	17,800	176	199	294	16.52	..	..	143
124	T.C. Tirumangalam ..	12,900	212	199	539	31.86	..	..	143
125	T.C. Tirumangalam ..	20,500	284	255	539	26.29	..	..	143
126	T.C. Allinagar ..	13,900	32	84	195	13.18	..	..	143
127	T.C. Solingan ..	14,800	111	102	182	19.78	..	..	143
128	T.C. Usilampatti ..	9,200	180	209	401	36.13	..	..	143
129	T.C. Usilampatti ..	11,000	192	209	401	36.13	..	..	143
130	T.C. Kambal ..	15,600	171	137	308	19.74	..	..	143
131	T.C. Badagundu ..	11,000	141	141	282	25.64	..	..	143
132	T.C. Melur ..	10,100	126	76	160	15.84	..	..	143
133	T.C. Nattam ..	14,300	94	79	173	12.34	..	..	143
134	T.C. Tiruppur ..	8,000	73	76	149	21.63	..	..	143
135	T.C. Tiruppur ..	8,000	73	76	149	21.63	..	..	143
136	T.C. Elumalai ..	4,500	..	..	..	..	..	..	143
137	T.C. Elumalai ..	4,500	..	..	..	..	..	..	143
138	T.C. Elumalai ..	4,500	..	..	..	..	..	..	143

Ramanathapuram.

139	M.T.C. Ramanathapuram ..	65,700	976	953	1,929	29.36	..	..	99
140	M.T.C. Srivilliputhur ..	42,300	739	670	1,409	33.81	..	..	99
141	M.T.C. Virudhunagar ..	50,200	1,120	1,038	2,158	42.99	..	..	99
142	M.T.C. Karakkudi ..	26,500	587	517	1,066	32.74	..	..	99
143	M.T.C. Devakottai ..	58,000	587	483	1,070	43.82	..	..	99
144	M.T.C. Sivakasi ..	58,000	587	483	1,070	43.82	..	..	99
145	M.T.C. Aruppukottai ..	23,800	546	536	1,082	31.34	..	..	99
146	T.C. Ramanathapuram ..	23,800	546	536	1,082	31.34	..	..	99
147	T.C. Paramagudi ..	15,600	226	226	397	25.45	..	..	99
148	T.C. Paramagudi ..	15,600	226	226	397	25.45	..	..	99
149	T.C. Sivaganga ..	15,600	226	226	397	25.45	..	..	99

REPORT ON THE HEALTH CONDITIONS IN MADRAS STATE, 1954

Deaths—cont.		Injuries.										Total.		All other causes.*		Serial number.	
Districts and towns.		Suicides.					Wounds and accidents.		Snake-bite and killed by wild beasts.		Rabies.		Total.		Total deaths from all other causes.		
		Males.					Females.										
		(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)						
Dysentery and diarrhoea.		(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)						
Respiratory diseases.		(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)						
Males.		(15)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)						
Females.		(16)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)						
Suicides.		(17)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)						
Wounds and accidents.		(18)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)						
Snake-bite and killed by wild beasts.		(19)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)						
Rabies.		(20)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)						
Total.		(21)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)						
All other causes.*		(22)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)						
Total deaths from all other causes.		(23)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)						
Serial number.		(24)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)						
Districts and towns.		(25)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)						
Respiratory diseases.		(26)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)						
Males.		(27)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)						
Females.		(28)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)						
Suicides.		(29)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)						
Wounds and accidents.		(30)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)						
Snake-bite and killed by wild beasts.		(31)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)						
Rabies.		(32)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)						
Total.		(33)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)						
All other causes.*		(34)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)						
Total deaths from all other causes.		(35)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)						
Serial number.		(36)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)						
Districts and towns.		(37)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)						
Respiratory diseases.		(38)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)						
Males.		(39)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)						
Females.		(40)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)						
Suicides.		(41)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)						
Wounds and accidents.		(42)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)						
Snake-bite and killed by wild beasts.		(43)	(1														

REPORT ON THE HEALTH CONDITIONS IN MADRAS STATE, 1954 151

[illegible]

No. VI.—Births and deaths from different causes registered in the State of Madras during the year 1954—cont.

Death rate per 1,000 of estimated mid-year population.

Serial number.	Districts and towns.	From all causes.										Number of maternal deaths.	Ratio per 1,000 births (live and still).	Serial number.
		Cholera.	Smallpox.	Plague.	Malaria.	Measles.	Dysentery.	Respiratory diseases.	Injuries.	All other causes.	Total deaths.	Average published ratio for the previous five years.		
76	T.C. Tiruvadi ..	..	..	..	..	..	0.35	0.50	0.17	10.83	13.16	13.94	11.49	76
77	T.C. Vallam ..	..	..	..	..	..	0.11	0.67	..	13.93	16.85	17.97	77	77
78	T.C. Tiruthurai ..	..	..	..	..	..	1.65	0.66	0.33	9.83	14.21	18.97	78	78
79	T.C. Tiruthurai ..	..	..	..	..	..	2.31	0.87	0.19	11.73	17.88	14.43	79	79
80	T.C. Tirukottai ..	..	..	..	..	..	0.54	2.46	0.33	8.84	13.57	23.57	80	80
81	T.C. Tirunelveli ..	..	..	..	..	..	0.48	..	..	21.55	15.57	17.52	81	81
82	T.C. Tirunelveli ..	..	..	..	..	..	0.52	..	..	9.18	8.57	..	82	82
83	T.C. Tirunelveli ..	..	..	..	..	..	1.97	0.41	..	6.73	8.57	..	83	83
84	T.C. Tirunelveli ..	..	..	..	..	..	0.41	0.41	..	14.94	20.78	..	84	84
85	T.C. Tirunelveli ..	..	..	..	..	..	1.80	0.25	..	13.54	14.30	..	85	85
86	T.C. Tirunelveli ..	..	..	..	..	..	..	..	..	8.82	8.82	..	86	86
87	T.C. Tirunelveli ..	..	..	..	..	..	..	..	..	..	..	..	87	87

MUNICIPALITIES AND RURAL TOWNS—cont.

Tanjore—cont.

Tiruchirappalli.

88	M.T.C. Tiruchirappalli	0.04	0.45	..	0.01	0.31	1.28	2.05	0.25	12.52	16.46	22.96	5.90	88
89	M.T.C. Karur ..	..	..	..	..	..	1.17	1.47	0.26	10.32	15.87	18.54	5.55	89
90	M.T.C. Srirangam ..	..	..	..	..	..	1.48	1.33	0.40	10.38	14.38	20.85	6.97	90
91	M.T.C. Pudukkottai ..	..	..	..	..	..	2.04	1.44	0.33	10.50	15.70	20.40	8.59	91
92	T.C. Golden Rock (P.B.) ..	..	..	..	..	..	2.15	0.94	0.14	9.28	14.40	18.37	1.56	92
93	T.C. Golden Rock (P.B.) ..	..	..	..	..	..	0.12	0.24	..	3.11	3.71	12.09	3.36	93
94	T.C. Thevayyarpatti ..	..	..	..	..	..	0.72	1.24	..	9.48	16.50	11.21	3.05	94
95	T.C. Tiruvallur ..	..	..	..	..	..	2.98	0.62	0.13	12.13	17.79	24.02	3.05	95
96	T.C. Tiruvallur ..	..	..	..	..	..	1.58	1.46	0.13	7.81	11.85	14.47	3.21	96
97	T.C. Tiruvallur ..	..	..	..	..	..	2.12	2.12	0.13	17.44	19.93	23.93	3.21	97
98	T.C. Tiruvallur ..	..	..	..	..	..	2.12	2.12	0.13	17.44	19.93	23.93	3.21	98
99	T.C. Tiruvallur ..	..	..	..	..	..	2.12	2.12	0.13	17.44	19.93	23.93	3.21	99
100	T.C. Tiruvallur ..	..	..	..	..	..	2.12	2.12	0.13	17.44	19.93	23.93	3.21	100
101	T.C. Tiruvallur ..	..	..	..	..	..	2.12	2.12	0.13	17.44	19.93	23.93	3.21	101
102	T.C. Tiruvallur ..	..	..	..	..	..	2.12	2.12	0.13	17.44	19.93	23.93	3.21	102
103	T.C. Tiruvallur ..	..	..	..	..	..	2.12	2.12	0.13	17.44	19.93	23.93	3.21	103
104	T.C. Tiruvallur ..	..	..	..	..	..	2.12	2.12	0.13	17.44	19.93	23.93	3.21	104
105	T.C. Tiruvallur ..	..	..	..	..	..	2.12	2.12	0.13	17.44	19.93	23.93	3.21	105
106	T.C. Tiruvallur ..	..	..	..	..	..	2.12	2.12	0.13	17.44	19.93	23.93	3.21	106
107	T.C. Tiruvallur ..	..	..	..	..	..	2.12	2.12	0.13	17.44	19.93	23.93	3.21	107
108	T.C. Tiruvallur ..	..	..	..	..	..	2.12	2.12	0.13	17.44	19.93	23.93	3.21	108
109	T.C. Tiruvallur ..	..	..	..	..	..	2.12	2.12	0.13	17.44	19.93	23.93	3.21	109
110	T.C. Tiruvallur ..	..	..	..	..	..	2.12	2.12	0.13	17.44	19.93	23.93	3.21	110
111	T.C. Tiruvallur ..	..	..	..	..	..	2.12	2.12	0.13	17.44	19.93	23.93	3.21	111
112	T.C. Tiruvallur ..	..	..	..	..	..	2.12	2.12	0.13	17.44	19.93	23.93	3.21	112
113	T.C. Tiruvallur ..	..	..	..	..	..	2.12	2.12	0.13	17.44	19.93	23.93	3.21	113
114	T.C. Tiruvallur ..	..	..	..	..	..	2.12	2.12	0.13	17.44	19.93	23.93	3.21	114

Madurai.

115	M.T.C. Madurai ..	0.04	0.24	..	0.01	2.27	1.62	5.27	0.24	11.85	21.54	28.95	6.84	115
116	M.T.C. Dindigul ..	0.02	0.04	..	0.01	1.73	1.94	1.50	0.31	10.27	15.82	18.71	7.35	116
117	M.T.C. Bodinayakanur ..	..	..	..	0.01	1.48	3.21	1.28	0.03	5.91	9.40	16.17	5.61	117
118	M.T.C. Periyakulam ..	..	..	..	0.15	0.83	3.21	4.19	0.52	11.10	20.00	24.17	8.92	118
119	M.T.C. Pudukkottai ..	..	..	..	0.19	0.24	2.15	6.20	0.29	10.19	19.56	25.81	12.01	119
120	M.T.C. Kodaikanal ..	..	..	..	0.09	0.25	1.30	4.58	0.61	6.19	13.07	14.23	2.07	120
121	T.C. Gudalur ..	..	..	..	0.05	2.26	0.25	0.87	0.14	3.89	5.98	9.18	2.07	121
122	T.C. Gudalur ..	..	..	..	0.05	2.26	0.25	0.87	0.14	3.89	5.98	9.18	2.07	122
123	T.C. Gudalur ..	..	..	..	0.05	2.26	0.25	0.87	0.14	3.89	5.98	9.18	2.07	123
124	T.C. Gudalur ..	..	..	..	0.05	2.26	0.25	0.87	0.14	3.89	5.98	9.18	2.07	124
125	T.C. Gudalur ..	..	..	..	0.05	2.26	0.25	0.87	0.14	3.89	5.98	9.18	2.07	125
126	T.C. Gudalur ..	..	..	..	0.05	2.26	0.25	0.87	0.14	3.89	5.98	9.18	2.07	126
127	T.C. Gudalur ..	..	..	..	0.05	2.26	0.25	0.87	0.14	3.89	5.98	9.18	2.07	127
128	T.C. Gudalur ..	..	..	..	0.05	2.26	0.25	0.87	0.14	3.89	5.98	9.18	2.07	128
129	T.C. Gudalur ..	..	..	..	0.05	2.26	0.25	0.87	0.14	3.89	5.98	9.18	2.07	129
130	T.C. Gudalur ..	..	..	..	0.05	2.26	0.25	0.87	0.14	3.89	5.98	9.18	2.07	130
131	T.C. Gudalur ..	..	..	..	0.05	2.26	0.25	0.87	0.14	3.89	5.98	9.18	2.07	131
132	T.C. Gudalur ..	..	..	..	0.05	2.26	0.25	0.87	0.14	3.89	5.98	9.18	2.07	132
133	T.C. Gudalur ..	..	..	..	0.05	2.26	0.25	0.87	0.14	3.89	5.98	9.18	2.07	133
134	T.C. Gudalur ..	..	..	..	0.05	2.26	0.25	0.87	0.14	3.89	5.98	9.18	2.07	134
135	T.C. Gudalur ..	..	..	..	0.05	2.26	0.25	0.87	0.14	3.89	5.98	9.18	2.07	135
136	T.C. Gudalur ..	..	..	..	0.05	2.26	0.25	0.87	0.14	3.89	5.98	9.18	2.07	136
137	T.C. Gudalur ..	..	..	..	0.05	2.26	0.25	0.87	0.14	3.89	5.98	9.18	2.07	137
138	T.C. Gudalur ..	..	..	..	0.05	2.26	0.25	0.87	0.14	3.89	5.98	9.18	2.07	138

Ramanathapuram.

139	M.T.C. Ramanathapuram ..	0.02	..	..	..	1.50	1.83	2.18	0.06	7.60	13.26	22.13	6.65	139
140	M.T.C. Srivilliputhur ..	0.12	..	..	..	2.08	2.22	1.68	0.35	14.66	21.13	28.18	10.03	140
141	M.T.C. Virudhunagar ..	0.04	..	..	..	2.73	2.41	2.11	0.10	7.91	14.60	24.95	2.23	141
142	M.T.C. Karaikal ..	0.05	0.05	..	..	1.66	0.79	0.82	0.10	9.83	13.30	18.03	4.94	142
143	M.T.C. Karaikal ..	..	..	..	..	2.00	1.40	0.96	0.23	13.13	16.76	19.19	4.34	143
144	M.T.C. Karaikal ..	..	..	..	..	3.08	3.85	3.32	0.16	13.11	22.67	26.34	10.88	144
145	M.T.C. Sivakasi ..	..	..	..	..	4.76	3.13	1.77	0.04	8.79	20.45	25.51	2.84	145
146	M.T.C. Aruppukottai ..	0.04	0.12	..	..	4.65	3.04	3.23	0.12	6.62	17.00	17.00	8.18	146
147	M.T.C. Ramanathapuram ..	0.08	..	..	..	3.61	1.34	0.55	0.04	6.13	11.77	12.24	1.83	147
148	T.C. Paramudi ..	0.06	1.09	..	..	2.05	1.03	1.15	0.33	9.18	8.46	16.03	2.35	148
149	T.C. Sivaganga ..	0.27	0.13	..	..	7.73	0.30	1.93	..	12.40	23.00	18.61	13.76	149

REPORT ON THE HEALTH CONDITIONS IN MADRAS STATE, 1954

(1)	(2)	Districts and towns.	Births.		Deaths.					(12)
			(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Serial number.			Males.	Females.	Total.	Birth-rate per 1,000 of estimated population mid-year	Cholera.	Smallpox.	Plague.	Malaria.
150		Tirupattur	272	288	560	31.10	8	3	..	22
151		T.C. Abiramam	101	81	182	17.17	..	..	..	11
152		T.C. Annam	114	125	239	26.56	..	..	..	18
153		T.C. Annam	118	125	243	28.61	..	..	..	153
154		T.C. Annam	122	131	253	28.61	..	..	..	40
155		T.C. Annam	122	131	253	28.61	..	..	..	8
156		T.C. Annam	122	131	253	28.61	..	..	..	13
157		T.C. Annam	122	131	253	28.61	..	..	..	47
158		T.C. Annam	122	131	253	28.61	..	..	..	29
159		T.C. Annam	122	131	253	28.61	..	..	..	8
160		T.C. Annam	122	131	253	28.61	..	..	..	10
161		T.C. Annam	122	131	253	28.61	..	..	..	3
162		T.C. Annam	122	131	253	28.61	..	..	..	23
163		T.C. Annam	122	131	253	28.61	..	..	..	164
164		T.C. Annam	122	131	253	28.61	..	..	..	50
165		T.C. Annam	122	131	253	28.61	..	..	..	4
166		T.C. Annam	122	131	253	28.61	..	..	..	9
167		T.C. Annam	122	131	253	28.61	..	..	..	17
168		T.C. Annam	122	131	253	28.61	..	..	..	3

MUNICIPALITIES AND RURAL TOWNS—cont.

Ramanathapuram—cont.

169		T.C. Tirupattur	272	288	560	31.10	8	3	..	22	150
170		T.C. Annam	101	81	182	17.17	..	..	..	11	151
171		T.C. Annam	114	125	239	26.56	..	..	..	18	152
172		T.C. Annam	118	125	243	28.61	..	..	..	40	153
173		T.C. Annam	122	131	253	28.61	..	..	..	8	154
174		T.C. Annam	122	131	253	28.61	..	..	..	13	155
175		T.C. Annam	122	131	253	28.61	..	..	..	47	156
176		T.C. Annam	122	131	253	28.61	..	..	..	29	157
177		T.C. Annam	122	131	253	28.61	..	..	..	8	158
178		T.C. Annam	122	131	253	28.61	..	..	..	10	159
179		T.C. Annam	122	131	253	28.61	..	..	..	3	160
180		T.C. Annam	122	131	253	28.61	..	..	..	23	161
181		T.C. Annam	122	131	253	28.61	..	..	..	164	162
182		T.C. Annam	122	131	253	28.61	..	..	..	50	163
183		T.C. Annam	122	131	253	28.61	..	..	..	4	164
184		T.C. Annam	122	131	253	28.61	..	..	..	9	165
185		T.C. Annam	122	131	253	28.61	..	..	..	17	166
186		T.C. Annam	122	131	253	28.61	..	..	..	3	167
187		T.C. Annam	122	131	253	28.61	..	..	..	17	168

Tirunelveli.

189		M.T.C. Tirunelveli	1,831	1,771	3,602	38.79	4	4	..	53	189
190		M.T.C. Tirunelveli	1,237	1,260	2,497	38.79	11	..	..	20	190
191		M.T.C. Tirunelveli	1,166	1,080	2,246	38.79	51	..	..	118	191
192		M.T.C. Tirunelveli	1,166	1,080	2,246	38.79	51	..	..	118	192
193		M.T.C. Tirunelveli	1,166	1,080	2,246	38.79	51	..	..	118	193
194		M.T.C. Tirunelveli	1,166	1,080	2,246	38.79	51	..	..	118	194
195		M.T.C. Tirunelveli	1,166	1,080	2,246	38.79	51	..	..	118	195
196		M.T.C. Tirunelveli	1,166	1,080	2,246	38.79	51	..	..	118	196
197		M.T.C. Tirunelveli	1,166	1,080	2,246	38.79	51	..	..	118	197
198		M.T.C. Tirunelveli	1,166	1,080	2,246	38.79	51	..	..	118	198
199		M.T.C. Tirunelveli	1,166	1,080	2,246	38.79	51	..	..	118	199
200		M.T.C. Tirunelveli	1,166	1,080	2,246	38.79	51	..	..	118	200
201		M.T.C. Tirunelveli	1,166	1,080	2,246	38.79	51	..	..	118	201
202		M.T.C. Tirunelveli	1,166	1,080	2,246	38.79	51	..	..	118	202
203		M.T.C. Tirunelveli	1,166	1,080	2,246	38.79	51	..	..	118	203
204		M.T.C. Tirunelveli	1,166	1,080	2,246	38.79	51	..	..	118	204
205		M.T.C. Tirunelveli	1,166	1,080	2,246	38.79	51	..	..	118	205
206		M.T.C. Tirunelveli	1,166	1,080	2,246	38.79	51	..	..	118	206

Salem.

207		M.T.C. Salem	3,691	3,800	7,491	38.11	26	3	1	68	207
208		M.T.C. Salem	3,691	3,800	7,491	38.11	26	3	1	68	208
209		M.T.C. Salem	3,691	3,800	7,491	38.11	26	3	1	68	209
210		M.T.C. Salem	3,691	3,800	7,491	38.11	26	3	1	68	210
211		M.T.C. Salem	3,691	3,800	7,491	38.11	26	3	1	68	211
212		M.T.C. Salem	3,691	3,800	7,491	38.11	26	3	1	68	212
213		M.T.C. Salem	3,691	3,800	7,491	38.11	26	3	1	68	213
214		M.T.C. Salem	3,691	3,800	7,491	38.11	26	3	1	68	214
215		M.T.C. Salem	3,691	3,800	7,491	38.11	26	3	1	68	215
216		M.T.C. Salem	3,691	3,800	7,491	38.11	26	3	1	68	216
217		M.T.C. Salem	3,691	3,800	7,491	38.11	26	3	1	68	217
218		M.T.C. Salem	3,691	3,800	7,491	38.11	26	3	1	68	218
219		M.T.C. Salem	3,691	3,800	7,491	38.11	26	3	1	68	219
220		M.T.C. Salem	3,691	3,800	7,491	38.11	26	3	1	68	220
221		M.T.C. Salem	3,691	3,800	7,491	38.11	26	3	1	68	221
222		M.T.C. Salem	3,691	3,800	7,491	38.11	26	3	1	68	222
223		M.T.C. Salem	3,691	3,800	7,491	38.11	26	3	1	68	223
224		M.T.C. Salem	3,691	3,800	7,491	38.11	26	3	1	68	224
225		M.T.C. Salem	3,691	3,800	7,491	38.11	26	3	1	68	225

REPORT ON THE HEALTH CONDITIONS IN MADRAS STATE, 1954

REPORT ON THE HEALTH CONDITIONS IN MADRAS STATE, 1954

Serial number.	Districts and towns.	Deaths.		Cholera.	Smallpox.	Plague.	Malaria.	Typhoid.	Birth-rate per 1,000 of population.	Total.	Males.	Females.
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
226	M.T.C. Coimbatore	220,200	5,048	4,777	9,825	44.61	3	30	10	175	8	175
227	M.T.C. Erode	59,500	1,301	1,279	2,580	40.56	10	3	10	85	18	85
228	M.T.C. Tiruppur	59,000	1,217	1,040	2,257	38.27	1	3	1	59	5	59
229	M.T.C. Pollachi	47,000	923	914	1,837	38.83	1	2	1	80	2	80
230	M.T.C. Dharmapuri	25,300	403	383	786	29.09	1	1	1	92	1	92
231	M.T.C. Udumalpet	25,200	643	599	1,232	48.89	1	1	1	86	1	86
232	M.T.C. Mettupalayam	20,800	514	520	1,034	33.57	1	1	1	28	1	28
233	M.T.C. Gobichettipalayam	35,000	355	342	697	19.91	1	1	1	10	1	10
234	T.C. Kollegal	19,500	349	320	669	34.31	1	1	1	23	1	23
235	T.C. Kuthir	25,500	219	201	420	18.66	1	1	1	30	1	30
236	T.C. Kottur	15,800	149	152	301	19.29	1	1	1	23	1	23
237	T.C. Palladam	18,000	146	146	292	14.90	1	1	1	23	1	23
238	T.C. Bhavani	18,000	146	146	292	14.90	1	1	1	23	1	23
239	T.C. Avanashi	18,000	146	146	292	14.90	1	1	1	23	1	23
240	T.C. Vellalore	12,300	151	141	292	23.74	1	1	1	15	1	15
241	T.C. Singanailur	22,000	155	155	310	16.92	1	1	1	27	1	27
242	T.C. Sattayamangalam	15,700	200	187	387	24.65	1	1	1	19	1	19
243	T.C. Sullur	7,000	57	66	123	13.67	1	1	1	16	1	16
244	T.C. Kunniamuthur	17,000	124	107	231	13.92	1	1	1	17	1	17
245	T.C. Peelamedu	17,800	105	102	207	13.10	1	1	1	24	1	24
246	T.C. Annur	8,200	92	76	168	19.09	1	1	1	24	1	24
247	T.C. Anamalai	10,700	109	120	229	21.40	1	1	1	29	1	29
248	T.C. Vettakarapudur	14,600	85	74	159	10.89	1	1	1	4	1	4

The Nilgiris.

249	M.T.C. Ootacamund	45,200	941	944	1,885	41.70	1	1	1	6	1	6
250	M.T.C. Coonoor	25,500	553	514	1,067	42.30	1	1	1	6	1	6
251	T.C. Kotagiri	13,200	184	184	368	28.61	1	1	1	6	1	6
252	T.C. Wellington	11,500	134	134	268	23.33	1	1	1	6	1	6
253	M.T.C. Kozhikode	169,500	3,441	3,043	6,484	38.26	1	1	1	136	1	136
254	M.T.C. Palghat	74,300	1,376	1,233	2,609	35.12	1	1	1	43	1	43
255	M.T.C. Ponnani	41,300	924	861	1,785	43.21	1	1	1	25	1	25
256	M.T.C. Calicut	45,500	611	592	1,203	26.73	1	1	1	13	1	13
257	M.T.C. Coochin	21,500	702	687	1,389	64.66	1	1	1	15	1	15
258	T.C. Ponnani	23,500	83	88	171	7.35	1	1	1	2	1	2
259	T.C. Panthalayini	23,000	177	162	339	14.66	1	1	1	2	1	2
260	T.C. Badagara	23,000	220	242	462	20.10	1	1	1	2	1	2
261	T.C. Feroke	23,000	126	99	225	9.85	1	1	1	2	1	2
262	T.C. Tirukandiyur	23,000	131	112	243	10.43	1	1	1	2	1	2
263	T.C. Tanur	23,000	130	127	257	10.74	1	1	1	2	1	2
264	T.C. Shoranur	23,000	102	93	195	8.46	1	1	1	2	1	2
265	T.C. Ottapalam	27,500	102	95	197	7.09	1	1	1	2	1	2
266	T.C. Manjeri	12,000	119	95	214	17.83	1	1	1	2	1	2

South Kanara.

267	M.T.C. Mangalore	129,100	2,004	1,874	3,878	30.05	1	1	1	136	1	136
268	M.T.C. Udipi	21,300	443	471	919	43.15	1	1	1	43	1	43
269	T.C. Kasargod	28,400	224	256	480	18.18	1	1	1	25	1	25
270	T.C. Coondapoor	18,400	164	153	317	17.23	1	1	1	13	1	13
271	T.C. Pottul	11,700	236	225	461	39.40	1	1	1	15	1	15
272	T.C. Karkal	15,400	252	208	460	29.85	1	1	1	28	1	28
273	T.C. Mulki	11,000	152	120	272	24.78	1	1	1	11	1	11
274	T.C. Rattal	13,600	91	68	159	11.69	1	1	1	23	1	23
275	T.C. Headrug	22,100	157	106	263	11.90	1	1	1	23	1	23
Total for Urban areas		8,452,000	140,171	132,297	272,468	32.24	401	778	1,144	14,459	471	14,459
Total for Rural areas		28,862,000	366,673	345,686	712,359	24.68	6	933	6	70,106	1,510	70,106
Total for the State		37,314,000	506,844	477,983	984,827	26.39	6	1,711	6	84,565	1,981	84,565

REPORT ON THE HEALTH CONDITIONS IN MADRAS STATE, 1954

REPORT ON THE HEALTH CONDITIONS IN MADRAS STATE, 1954

Serial number.	Districts and towns.	Deaths—cont.										Total deaths from all other causes.*	Total.	(21)	(22)
		Injuries.					Diseases.								
		Males.		Females.		Total.	Dysentery and diarrhoea.		Respiratory diseases.		Total.				
(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)						
B. TOWNS—cont.															
MUNICIPALITIES AND RURAL TOWNS—cont.															
Coimbatore—cont.															
226	M.T.C. Coimbatore	616	855	1	3	72	1	1	78	2,806	4,571	228			
227	M.T.C. Erode	97	175	1	3	21	1	1	32	674	1,044	227			
228	M.T.C. Tiruppur	97	117	5	4	16	1	1	26	535	839	227			
229	M.T.C. Pollachi	94	134	1	1	16	1	1	22	520	834	229			
230	M.T.C. Namapuram	86	33	1	1	2	1	1	3	183	268	230			
231	M.T.C. Udumalpet	39	47	1	1	3	1	1	7	300	434	231			
232	M.T.C. Mettupalayam	32	31	1	1	6	1	1	9	179	297	232			
233	M.T.C. Gobichettipalayam	15	56	1	1	1	1	1	3	192	279	233			
234	M.T.C. Gobichettipalayam	21	27	1	1	1	1	1	7	152	237	234			
235	T.C. Kollegal	9	32	1	3	1	1	1	4	59	136	235			
236	T.C. Kottur	2	10	1	1	1	1	1	1	34	127	236			
237	T.C. Paladani	16	13	1	1	1	1	1	1	116	174	237			
238	T.C. Bhavani	1	1	1	1	1	1	1	1	75	180	238			
239	T.C. Avaneeshi	1	1	1	1	1	1	1	1	111	130	239			
240	T.C. Vellalore	21	16	1	1	5	1	1	6	130	240	240			
241	T.C. Singanailur	18	17	1	1	1	1	1	1	137	241	241			
242	T.C. Sattamangalam	11	6	1	1	1	1	1	1	18	242	242			
243	T.C. Sullur	11	31	1	1	1	1	1	1	40	243	243			
244	T.C. Kunnamuthur	3	1	1	1	1	1	1	1	38	244	244			
245	T.C. Peelamedu	11	31	1	1	1	1	1	1	57	245	245			
246	T.C. Annur	10	2	1	1	1	1	1	1	38	246	246			
247	T.C. Annamalai	2	9	1	1	1	1	1	1	67	247	247			
248	T.C. Vettakarampudur	2	9	1	1	1	1	1	1	18	248	248			
The Nilgiris.															
249	M.T.C. Ootacamund	39	195	1	2	13	1	1	15	359	615	249			
250	M.T.C. Coonoor	33	98	1	1	9	1	1	14	256	417	250			

The Nilgiris.

251	M.T.C. Coonoor	2	2	1	1	1	1	1	1	1	1	1	1	1	615
252	M.T.C. Coonoor	2	2	1	1	1	1	1	1	1	1	1	1	1	249

Malabar.

253	M.T.C. Kozhikode	176	401	76	2	2	2	2	2	2	2	2	2	95	2,354
254	M.T.C. Palghat	59	194	23	3	3	3	3	3	3	3	3	3	29	991
255	M.T.C. Tellicherry	31	103	23	1	1	1	1	1	1	1	1	1	30	491
256	M.T.C. Cannanore	8	113	7	1	1	1	1	1	1	1	1	1	9	401
257	M.T.C. Cochin	57	74	3	1	1	1	1	1	1	1	1	1	3	380
258	M.T.C. Ponnani	4	22	3	1	1	1	1	1	1	1	1	1	3	308
259	T.C. Panthalayini	2	15	4	1	1	1	1	1	1	1	1	1	5	125
260	T.C. Badagara	11	24	2	1	1	1	1	1	1	1	1	1	4	112
261	T.C. Perole	3	9	1	1	1	1	1	1	1	1	1	1	3	33
262	T.C. Irurukandiyur	1	4	1	1	1	1	1	1	1	1	1	1	1	68
263	T.C. Tanur	4	22	2	1	1	1	1	1	1	1	1	1	2	73
264	T.C. Shoranur	4	15	3	1	1	1	1	1	1	1	1	1	2	113
265	T.C. Ottapalam	3	14	2	1	1	1	1	1	1	1	1	1	2	38
266	T.C. Manjeri	5	16	4	1	1	1	1	1	1	1	1	1	4	58

South Kanara.

267	M.T.C. Mangalore	50	249	29	2	2	2	2	2	2	2	2	2	37	1,120
268	M.T.C. Udipi	10	44	25	1	1	1	1	1	1	1	1	1	26	218
269	T.C. Kasargod	4	35	3	1	1	1	1	1	1	1	1	1	4	110
270	T.C. Coondapoor	1	6	1	1	1	1	1	1	1	1	1	1	2	77
271	T.C. Puthur	2	6	1	1	1	1	1	1	1	1	1	1	2	125
272	T.C. Karkal	2	8	1	1	1	1	1	1	1	1	1	1	2	92
273	T.C. Mukki	1	11	3	1	1	1	1	1	1	1	1	1	1	65
274	T.C. Banival	2	11	3	1	1	1	1	1	1	1	1	1	1	36
275	T.C. Hosdurg	6	22	2	1	1	1	1	1	1	1	1	1	2	49
Total for Urban areas		13,089	22,593	1,498	202	205	65	2,213	77,737	131,741	370,280	502,021	102	275	275
Total for Rural areas		22,597	30,905	2,390	890	925	37	4,911	288,168	370,280	502,021	102	275	275	275
Total for the State		35,686	53,498	3,888	1,092	1,138	102	7,124	315,905	370,280	502,021	102	275	275	275

* All other causes include deaths of mother from child births. The number of deaths and death rates from this cause per 1,000 (live and still) births are given separately in columns (34) and (35) respectively.

[illegible][illegible]

REPORT ON THE HEALTH CONDITIONS IN MADRAS STATE, 1954

Serial number and municipalities.	Pneumo- nia.		Other respiratory diseases.		Pulmonary Tubercu- losis.		Diphtheria.		Cerebro- spinal fever.		Deaths under one year.		Infant mortality per 1,000 births.	Total.
	Deaths.	Rate per mille.	Deaths.	Rate per mille.	Deaths.	Rate per mille.	Deaths.	Rate per mille.	Deaths.	Rate per mille.	Males.	Females.		
1 Madras district—														
1 Madras ..	..	..	775	0.49	403	0.25	..	..	..	..	4,302	3,757	136.00	3,059
2 Chingleput district—														
2 Chingleput ..	372	4.22	20	0.96	99	1.12	2	0.02	3	0.03	208	168	120.28	376
3 North Arcot district—														
3 North Arcot ..	179	1.52	147	1.25	115	0.99	17	0.14	..	..	273	233	92.54	506
4 South Arcot district—														
4 South Arcot ..	84	1.17	22	0.31	61	0.35	7	0.10	2	0.03	128	118	75.08	246
5 Tanjore district—														
5 Tanjore ..	83	0.75	27	0.24	126	1.13	14	0.13	..	..	202	196	81.76	398
6 Tiruchirappalli district—														
6 Tiruchirappalli ..	212	0.89	66	0.28	211	0.88	22	0.09	..	..	337	292	81.53	629
7 Madurai district—														
7 Madurai ..	1,398	3.47	283	0.70	448	1.10	46	0.11	2	0.004	1,093	950	127.43	2,043
8 Kanyakumari district—														
8 Kanyakumari ..	52	0.79	30	0.40	41	0.97	..	..	..	..	128	79	43.30	207
9 Tirunelveli district—														
9 Tirunelveli ..	107	1.00	174	1.63	129	1.21	..	..	..	..	202	153	69.78	355
10 Salem district—														
10 Salem ..	405	1.79	121	0.53	259	1.14	36	0.16	..	..	260	287	73.02	547
11 Coimbatore district—														
11 Coimbatore ..	357	1.62	348	1.53	150	0.68	40	0.18	1	0.004	561	512	109.21	1,073
12 The Nilgiris district—														
12 The Nilgiris ..	147	3.25	42	0.93	6	0.13	1	0.02	..	..	89	86	92.84	175
13 Malabar district—														
13 Malabar ..	57	0.84	55	0.32	289	1.70	11	0.06	11	0.06	319	248	87.45	567
14 South Kanara district—														
14 South Kanara ..	64	0.50	85	0.66	100	0.78	8	0.06	1	0.01	134	93	58.54	227
15 Mangalore ..	4	0.19	15	0.70	25	1.17	..	..	1	0.05	22	20	45.70	42
16 Udupi ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Total for the State	5,012	0.90	3,447	0.62	3,920	0.71	267	0.05	31	0.006	11,688	10,138	1,257	21,826

REPORT ON THE HEALTH CONDITIONS IN MADRAS STATE, 1954

Serial number.	Districts.	(1)	(2)	Number of each circle and municipalities.	(3)	Number of villages and towns or groups of which a monthly return is received.	Number of villages and towns or groups of which a monthly return is received.					
							January.	February.	March.	April.	May.	June.	July.	August.
					(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
1	Madras ..	..	..	1	5	2	..	..	..	..	..	..
2	Chingleput ..	..	..	10	102	11	6	1	..	..	..	..
3	North Arcot ..	..	..	19	39	12	2	..	..	..	..	..
4	South Arcot ..	..	..	12	112	49	4	1	..	1	..	..
5	Tanjore ..	..	..	17	321	77	12	1	..	..	..	..
6	Tiruchirappalli ..	..	..	14	122	49	..	1	1	..	..	..
7	Madurai ..	..	..	14	58	62	11	4	1	..	..	..
8	Ramanathapuram ..	..	..	16	61	13	9	..	..	..	..	..
9	Tirunelveli ..	..	..	12	189	19	9	9	2	..	..	..
10	Salem ..	..	..	13	53	27	8	2	..	..	..	..
11	Coimbatore ..	..	..	18	6	7	..	..	..	..	..	..
12	Nilgiris, the ..	..	..	5	..	..	..	..	..	..	..	..
13	Malabar ..	..	..	15	8	5	..	..	..	..	1	..
14	South Kanara ..	..	..	8	..	..	..	..	..	..	..	..
Total for the State ..		..	..	174	1,076	333	61	19	4	1	1	6
					18,855							

Serial number.	Districts.	Total.				Ratio of deaths per 1,000 of estimated population.						
		September.	October.	November.	December.	Males.	Females.	Total.	Males.	Females.	Total.	Average of the rates published for the last five years.
		(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)
1	Madras ..	..	..	..	..	4	3	7	0.005	0.004	0.004	0.20
2	Chingleput ..	..	2	..	..	65	57	122	0.07	0.06	0.06	0.41
3	North Arcot ..	4	..	..	1	29	31	60	0.02	0.02	0.02	0.34
4	South Arcot ..	..	..	..	..	90	78	168	0.06	0.06	0.06	0.64
5	Tanjore ..	..	..	..	..	212	199	411	0.14	0.13	0.13	0.81
6	Tiruchirappalli ..	..	1	7	9	117	73	190	0.08	0.05	0.06	0.53
7	Madurai ..	..	..	..	2	80	58	138	0.05	0.04	0.05	0.73
8	Ramanathapuram ..	..	..	..	..	46	37	83	0.05	0.03	0.04	0.30
9	Tirunelveli ..	..	..	1	..	105	124	229	0.09	0.10	0.09	0.69
10	Salem ..	..	..	..	1	45	47	92	0.03	0.03	0.03	0.34
11	Coimbatore ..	4	..	..	10	12	16	28	0.007	0.009	0.008	0.45
12	Nilgiris, the ..	..	..	..	..	1	..	1	0.006	..	0.003	0.02
13	Malabar ..	..	..	..	..	6	8	14	0.002	0.003	0.003	0.01
14	South Kanara ..	..	1	1	..	2	..	2	0.002	..	0.001	0.005
Total for the State		8	4	9	23	814	731	1,545	0.04	0.04	0.04	0.04

No. VIII.—Deaths from Smallpox registered in the districts in the State of Madras during each month of the year 1954.

Serial number.	Districts.	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
				Number of circles of registration (taluk and municipalities).	Number of villages and towns of groups from each of which a monthly return received.	January.	February.	March.	April.	May.	June.	July.	August.
1	Madras ..	..	..	1	1	30	37	57	37	18	21	16	15
2	Chingleput ..	..	..	10	2,176	48	14	9	22	4	12	3	1
3	North Arcot ..	..	..	19	2,026	13	3	1	8	9	8	8	11
4	South Arcot ..	..	..	12	2,271	16	11	9	4	6	10	5	3
5	Tanjore ..	..	..	17	2,464	46	22	1	..	4	4	8	7
6	Tiruchirappalli ..	..	..	14	1,515	37	26	11	3	3	..	16	10
7	Madurai ..	..	..	14	1,077	9	15	7	4	8	5	10	19
8	Ramanathapuram ..	..	..	16	1,535	44	11	..	..	..	8	1	10
9	Tirunelveli ..	..	..	12	1,094	25	2	4	4	4	1	3	5
10	Salem ..	..	..	13	1,609	5	7	3	..	3	..	..	1
11	Coimbatore ..	..	..	18	1,203	15	10	9	6	5	17	2	1
12	Nilgiris, the ..	..	..	5	220	..	..	..	..	2	..	4	5
13	Malabar ..	..	..	15	847	50	56	46	18	11	11	6	7
14	South Kanara ..	..	..	8	817	1	3	..	3	3	..	..	6
	Total for the State ..	..	..	174	18,855	339	217	169	109	80	97	82	101

Serial number.	Districts.	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)
		September	October.	November.	December.	Males.	Females.	Total.	Under one year.	One year under ten years.	Ten years and above.	Males.	Females.	Total.	Average of ratio published for the previous five years.
1	Madras ..	..	..	..	..	136	169	305	41	123	141	0.16	0.22	0.19	0.32
2	Chingleput ..	..	..	..	..	77	69	146	52	55	39	0.08	0.07	0.08	0.23
3	North Arcot ..	..	..	..	..	44	65	109	29	51	29	0.03	0.04	0.04	0.18
4	South Arcot ..	..	..	..	..	55	67	122	32	41	49	0.04	0.05	0.04	0.17
5	Tanjore ..	..	..	..	..	46	51	96	34	32	30	0.03	0.03	0.03	0.13
6	Tiruchirappalli ..	..	..	..	..	70	82	152	26	56	70	0.05	0.05	0.05	0.08
7	Madurai ..	..	..	..	..	79	78	157	65	44	48	0.05	0.05	0.05	0.14
8	Ramanathapuram ..	..	..	..	..	56	67	123	51	41	31	0.06	0.06	0.06	0.14
9	Tirunelveli ..	..	..	..	..	36	39	75	30	18	27	0.03	0.03	0.03	0.15
10	Salem ..	..	..	..	..	22	23	45	10	43	12	0.01	0.01	0.01	0.13
11	Coimbatore ..	..	..	..	..	36	29	65	10	10	25	0.02	0.02	0.02	0.12
12	Nilgiris, the ..	..	..	..	..	7	5	12	1	3	8	0.04	0.03	0.03	0.05
13	Malabar ..	..	..	..	..	165	123	288	33	86	169	0.07	0.05	0.06	0.06
14	South Kanara ..	..	..	..	..	9	7	16	2	2	12	0.01	0.01	0.01	0.04
	Total for the State ..	89	114	123	191	837	874	1,711	416	605	690	0.05	0.05	0.05	0.13

No. IX.—Deaths from Fevers (Excluding Malaria) registered in the districts in the State of Madras during each month of the year 1954.

Serial number.	Districts	(1)	(2)	(3)	(4)	January.	February.	March.	April.	May.	June.	July.	August.
						(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
1	Madras ..	..	..	1	1	298	287	352	282	281	282	248	273
2	Chingleput ..	..	..	10	2,176	387	455	460	243	307	281	284	265
3	North Arcot ..	..	..	19	2,028	895	682	717	595	646	645	680	832
4	South Arcot ..	..	..	12	2,271	553	494	419	393	529	509	513	615
5	Tanjore ..	..	..	17	2,464	339	423	256	299	197	253	248	244
6	Tiruchirappalli ..	..	..	14	1,515	399	756	687	680	746	725	727	695
7	Madurai ..	..	..	14	1,077	825	842	790	554	486	484	599	552
8	Ramanathapuram ..	..	..	16	1,535	665	587	447	465	464	376	469	595
9	Tirunelveli ..	..	..	12	1,094	673	718	620	448	386	346	406	370
10	Salem ..	..	..	13	1,609	1,001	785	686	783	934	807	841	832
11	Coimbatore ..	..	..	18	1,203	534	414	324	345	405	465	433	490
12	Nilgiris, the ..	..	..	5	220	41	82	98	59	99	85	75	60
13	Malabar ..	..	..	15	847	522	482	454	607	553	731	766	768
14	South Kanara ..	..	..	8	817	485	423	368	353	351	349	459	408
Total for the State ..		174	18,855	8,117	7,430	6,678	6,086	6,384	6,338	6,748	6,999	6,999	6,999

Serial number.	Districts.	September.	October.	November.	December.	Total.			Ratio of deaths per 1,000 of estimated mid-year population.			Average of the ratio published for the previous five years.
						Males.	Females.	Total.	Males.	Females.	Total.	
(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)		
1	Madras ..	..	..	..	..	..	..	..	..	..	2.76	
2	Chingleput ..	275	268	217	286	1,672	1,677	3,349	2.02	2.19	2.10	
3	North Arcot ..	272	376	319	303	1,925	2,027	3,952	2.00	2.17	2.08	
4	South Arcot ..	949	790	801	721	4,544	4,409	8,953	3.09	2.98	3.03	
5	Tanjore ..	553	570	563	570	3,195	3,086	6,281	2.25	2.18	2.22	
6	Tiruchirappalli ..	336	449	416	410	1,897	1,973	3,870	1.23	1.25	1.24	
7	Madurai ..	658	834	866	766	4,463	4,576	9,037	2.95	2.98	2.97	
8	Ramanathapuram ..	615	588	705	618	3,939	3,719	7,658	2.60	2.44	2.52	
9	Tirunelveli ..	709	740	817	737	3,496	3,565	7,061	3.46	3.23	3.34	
10	Salem ..	457	500	634	671	3,074	3,155	6,229	2.52	2.44	2.48	
11	Coimbatore ..	788	825	851	842	5,042	4,933	9,975	2.84	2.80	2.82	
12	Nilgiris, the ..	442	441	522	582	2,737	2,660	5,397	1.58	1.55	1.56	
13	Malabar ..	89	84	85	90	492	455	947	2.72	2.76	2.74	
14	South Kanara ..	549	475	481	523	3,356	3,555	6,911	1.37	1.38	1.37	
		420	434	433	460	2,384	2,559	4,943	2.72	2.70	2.71	
Total for the State ..		7,112	7,374	7,710	7,579	42,216	42,349	84,565	2.28	2.25	2.27	
											2.82	

No. IX-A.--Deaths from Malaria registered in the districts in the State of Madras during each month of the year 1954.

Serial number.	District.	Number of circles of registration (towns and municipalities).												Total for the State ..
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	
1	Madras ..	..	..	1	1	3	8	6	10	3	5	14		
2	Chingleput ..	..	..	10	2,176	10	20	10	9	4	6	6		
3	North Arcot ..	..	..	19	2,026	6	6	7	9	17	1	16		
4	South Arcot ..	..	..	12	2,271	1	5	2	5	5	2	2		
5	Tanjore ..	..	..	17	2,464	3	5	3	2	1	3	5		
6	Tiruchirappalli ..	..	..	14	1,515	16	18	12	5	6	11	7		
7	Madurai ..	..	..	14	1,077	14	17	11	10	5	8	14		
8	Ramanathapuram ..	..	..	16	1,535	8	5	4	1	8	2	3		
9	Tirunelveli ..	..	..	12	1,094	3	10	7	1	4	1	6		
10	Salem ..	..	..	13	1,609	10	28	13	6	46	53	39		
11	Coimbatore ..	..	..	18	1,203	23	21	12	11	9	22	11		
12	Nilgiris, the ..	..	..	5	220	4	1	3	..	..	1	5		
13	Malabar ..	..	..	15	847	27	12	11	24	32	40	30		
14	South Kanara ..	..	..	8	817	14	5	28	14	18	9	16		
				174	18,855	142	161	129	107	164	138	173		

Serial number.	Districts.	Total.				Ratio of deaths per 1,000 of estimated mid-year population.						
		September.	October.	November.	December.	Males.	Females.	Total.	Males.	Females.	Total.	
		(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)
1	Madras ..	..	6	23	19	55	50	105	0.07	0.07	0.07	0.07
2	Chingleput ..	..	14	12	3	54	61	115	0.06	0.07	0.06	0.05
3	North Arcot ..	..	18	19	23	80	62	142	0.05	0.04	0.05	0.10
4	South Arcot ..	..	9	8	15	36	38	74	0.02	0.03	0.03	0.03
5	Tanjore ..	..	2	2	1	16	17	33	0.01	0.01	0.01	0.03
6	Tiruchirappalli ..	..	14	9	15	71	71	142	0.05	0.05	0.05	0.05
7	Madurai ..	..	22	20	14	89	61	150	0.06	0.04	0.05	0.05
8	Ramanathapuram ..	..	..	1	10	22	22	44	0.02	0.02	0.02	0.02
9	Tirunelveli ..	..	3	5	6	22	28	50	0.02	0.02	0.02	0.05
10	Salem ..	..	54	78	59	252	227	479	0.14	0.13	0.14	0.09
11	Coimbatore ..	..	10	15	15	90	76	166	0.05	0.04	0.05	0.08
12	Nilgiris, the ..	..	6	1	1	13	11	24	0.07	0.07	0.07	0.23
13	Malabar ..	..	20	37	19	157	137	294	0.06	0.05	0.06	0.20
14	South Kanara ..	..	12	19	13	93	70	163	0.11	0.11	0.09	0.20
	Total for the State ..	186	232	224	160	1,050	931	1,981	0.06	0.05	0.05	0.08

No. X.—Deaths from Dysentery and Diarrhoea registered in the districts in the State of Madras during each month of the year 1954.

Serial number.	Districts.	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
				Number of circles of registration (talukas and municipalities).	Number of villages or groups of villages and towns from each of which a monthly return is received.	January.	February.	March.	April.	May.	June.	July.	August.
1	Madras ..	..	..	1	1	354	282	258	295	321	304	319	509
2	Chingleput ..	..	..	10	2,176	230	311	331	128	118	131	165	249
3	North Arcot ..	..	..	19	2,026	335	203	145	153	235	225	310	349
4	South Arcot ..	..	..	12	2,271	337	252	175	244	199	184	257	312
5	Tanjore ..	..	..	17	2,464	365	228	174	143	117	104	133	145
6	Tiruchirappalli ..	..	..	14	1,515	387	255	184	162	157	185	218	244
7	Madurai ..	..	..	14	1,077	389	409	512	161	176	211	231	289
8	Ramanathapuram ..	..	..	16	1,535	188	155	141	106	98	97	94	135
9	Tirunelveli ..	..	..	12	1,094	401	426	412	116	79	76	93	109
10	Salem ..	..	..	13	1,609	213	169	112	136	174	189	211	213
11	Coimbatore ..	..	..	18	1,203	248	167	155	147	132	176	207	227
12	Nilgiris, the ..	..	..	5	220	22	22	35	28	32	29	27	23
13	Malabar ..	..	..	15	847	182	190	159	285	316	288	448	335
14	South Kanara ..	..	..	8	817	162	125	79	57	49	71	85	104
	Total for the State ..	174	18,855	3,813	3,194	2,872	2,161	2,203	2,270	2,798	3,243		

Serial number.	Districts.	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)
		September.	October.	November.	December.	Males.	Females.	Total.	Males.	Females.	Total.	Average of the ratio published for the previous five years.
1	Madras ..	..	..	..	..	..	..	..	..	..	..	3.99
2	Chingleput ..	..	..	..	..	..	..	..	..	..	..	1.38
3	North Arcot ..	..	..	..	..	..	..	..	..	..	..	2.02
4	South Arcot ..	..	..	..	..	..	..	..	..	..	..	1.46
5	Tanjore ..	..	..	..	..	..	..	..	..	..	..	1.00
6	Tiruchirappalli ..	..	..	..	..	..	..	..	..	..	..	1.11
7	Madurai ..	..	..	..	..	..	..	..	..	..	..	1.20
8	Ramanathapuram ..	..	..	..	..	..	..	..	..	..	..	1.31
9	Tirunelveli ..	..	..	..	..	..	..	..	..	..	..	1.26
10	Salem ..	..	..	..	..	..	..	..	..	..	..	0.87
11	Coimbatore ..	..	..	..	..	..	..	..	..	..	..	1.40
12	Nilgiris, the ..	..	..	..	..	..	..	..	..	..	..	0.99
13	Malabar ..	..	..	..	..	..	..	..	..	..	..	0.93
14	South Kanara ..	..	..	..	..	..	..	..	..	..	..	1.31
	Total for the State ..	3,320	2,949	3,209	3,654	17,890	17,796	35,686	0.97	0.95	0.96	

No. XI.—Deaths from Respiratory diseases registered in the districts in the State of Madras during each month of the year 1954.

Serial number.	Districts.	(1)	(2)	(3)	(4)	Number of villages or groups of towns from which death return received.											
						January.	February.	March.	April.	May.	June.	July.	August.				
						(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)				
1	Madras	..	..	1	1	692	721	783	585	655	638	597	778				
2	Chingleput	..	..	10	2,176	289	422	451	224	175	182	207	249				
3	North Arcot	..	..	19	2,026	272	246	292	297	285	251	281	295				
4	South Arcot	..	..	12	2,271	226	201	188	237	236	243	237	286				
5	Tanjore	..	..	17	2,464	263	264	189	217	192	146	198	197				
6	Tiruchirappalli	..	..	14	1,515	338	304	275	238	221	206	261	293				
7	Madurai	..	..	14	1,077	643	750	760	437	454	443	537	587				
8	Ramanathapuram	..	..	16	1,535	298	270	229	239	206	212	214	235				
9	Tirunelveli	..	..	12	1,094	400	577	564	260	227	222	231	226				
10	Salem	..	..	13	1,609	212	215	202	236	249	254	239	242				
11	Coimbatore	..	..	18	1,203	372	356	316	337	325	328	345	344				
12	Nilgiris, the	..	..	5	220	50	58	55	70	67	49	54	66				
13	Malabar	..	..	15	847	383	343	350	393	420	529	611	640				
14	South Kanara	..	..	8	817	202	147	138	132	159	185	201	200				
Total for the State		..	..	174	18,855	4,640	4,874	4,790	3,902	3,871	3,888	4,203	4,638				

Serial	Districts.	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	Average of the Ratio published for previous years.
1	Madras	..	..	..	..	..	..	..	..	..	..	..	..
2	Chingleput	..	..	..	..	..	..	..	..	..	..	..	..
3	North Arcot	..	..	..	..	..	..	..	..	..	..	..	..
4	South Arcot	..	..	..	..	..	..	..	..	..	..	..	..
5	Tanjore	..	..	..	..	..	..	..	..	..	..	..	..
6	Tiruchirappalli	..	..	..	..	..	..	..	..	..	..	..	..
7	Madurai	..	..	..	..	..	..	..	..	..	..	..	..
8	Ramanathapuram	..	..	..	..	..	..	..	..	..	..	..	..
9	Tirunelveli	..	..	..	..	..	..	..	..	..	..	..	..
10	Salem	..	..	..	..	..	..	..	..	..	..	..	..
11	Coimbatore	..	..	..	..	..	..	..	..	..	..	..	..
12	Nilgiris, the	..	..	..	..	..	..	..	..	..	..	..	..
13	Malabar	..	..	..	..	..	..	..	..	..	..	..	..
14	South Kanara	..	..	..	..	..	..	..	..	..	..	..	..
Total for the State		..	4,697	4,784	4,749	29,015	24,483	53,498	1,57	1,30	1,43	1,83	..

REPORT ON THE HEALTH CONDITIONS IN MADRAS STATE, 1954

No, XII.—Deaths from Plague registered in the districts in the State of Madras during each month of the year 1954.

Serial number.	Districts.	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
				Number of villages or groups of villages and towns from each return is received.	Number of villages or groups of villages and towns from each return is received.	January.	February.	March.	April.	May.	June.	July.	August.
1	Madras ..	..	..	1	1	..	..	..	..	..	..	..	..
2	Chingleput ..	..	..	10	2,176	..	..	..	..	..	..	..	..
3	North Arcot ..	..	..	19	2,026	..	..	..	..	..	..	..	..
4	South Arcot ..	..	..	12	2,271	..	..	..	..	..	..	..	..
5	Tanjore ..	..	..	17	2,464	..	..	..	..	..	..	..	..
6	Tiruchirappalli ..	..	..	14	1,515	..	..	..	..	..	..	..	..
7	Madurai ..	..	..	14	1,077	..	..	..	..	..	..	..	..
8	Ramanathapuram ..	..	..	16	1,535	..	..	..	..	..	..	..	..
9	Tirunelveli ..	..	..	12	1,094	..	..	..	..	..	..	..	..
10	Salem ..	..	..	13	1,609	..	..	..	..	..	..	..	..
11	Coimbatore ..	..	..	18	1,203	..	..	..	..	..	..	..	..
12	Nilgiris, the ..	..	..	5	220	..	..	..	..	..	..	..	..
13	Malabar ..	..	..	15	847	..	..	..	..	..	..	..	..
14	South Kanara ..	..	..	8	817	..	..	..	..	..	..	..	..
	Total for the State ..	..	..	174	18,855	1	..	1	..	3	..	1	..

REPORT ON THE HEALTH CONDITIONS IN MADRAS STATE, 1954

Serial number	Districts.	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
				Number of villages or groups of villages and towns from each return is received.	Number of villages or groups of villages and towns from each return is received.	January.	February.	March.	April.	May.	June.	July.	August.
1	Madras ..	..	..	1	1	..	..	..	..	..	..	..	..
2	Chingleput ..	..	..	10	2,176	..	..	..	..	..	..	..	..
3	North Arcot ..	..	..	19	2,026	..	..	..	..	..	..	..	..
4	South Arcot ..	..	..	12	2,271	..	..	..	..	..	..	..	..
5	Tanjore ..	..	..	17	2,464	..	..	..	..	..	..	..	..
6	Tiruchirappalli ..	..	..	14	1,515	..	..	..	..	..	..	..	..
7	Madurai ..	..	..	14	1,077	..	..	..	..	..	..	..	..
8	Ramanathapuram ..	..	..	16	1,535	..	..	..	..	..	..	..	..
9	Tirunelveli ..	..	..	12	1,094	..	..	..	..	..	..	..	..
10	Salem ..	..	..	13	1,609	..	..	..	..	..	..	..	..
11	Coimbatore ..	..	..	18	1,203	..	..	..	..	..	..	..	..
12	Nilgiris, the ..	..	..	5	220	..	..	..	..	..	..	..	..
13	Malabar ..	..	..	15	847	..	..	..	..	..	..	..	..
14	South Kanara ..	..	..	8	817	..	..	..	..	..	..	..	..
	Total for the State ..	..	..	174	18,855	1	..	1	..	3	..	1	..

No. XIII.—Table showing the health services in Rural and Urban areas of the State of Madras during the year 1954.

Serial number	Districts.	Rural areas.										Urban areas.											
		(1)	(2)	Whole time.	Part time.	Medical graduates holding public health qualifications.	Epidemic staff.	Sanitary Inspectors.	Health Inspectors.	Males.	Females.	Other Health staff.	School Medical Officers.	Other Medical staff.	Whole time.	Part time.	Medical graduates holding public health qualifications.	Sanitary Inspectors.	Health Inspectors.	Males.	Females.	School Medical Officers.	Other Health staff.
1	Madras	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
2	Chingleput	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
3	North Arcot	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
4	South Arcot	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
5	Tanjore	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
6	Tiruchirappalli	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
7	Madurai	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
8	Ramanathapuram	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
9	Tirunelveli	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
10	Salem	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
11	Coimbatore	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
12	Nilgiris, The	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
13	North Malabar	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
14	South Malabar	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
15	South Kanara	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Total for the State		..	..	8	..	14	10	52	217	458	36	393	..	150	18	..	27	375	31	213	46	10	505

Note.—The statement does not include the posts of Reserve Health Officers and the Provincial staff at headquarters.

No. XIV.—Statement showing the particulars of vaccinations in the Madras State for the calendar year 1954.

No. XIV.—Statement giving the particulars of vaccinations in the Madras State for the calendar year 1954.

Serial number and name of district.	Total number of persons vaccinated.					Primary vaccination.									
	Mid-year population for 1954.	Males.	Females.	Total.	(5)	Successful.					Unsuccessful.	(12)	(13)		
						Total number of operations.	(7)	(8)	(9)	(10)				(11)	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)			
Districts.															
1 Chingleput ..	1,597,000	76,426	67,918	144,344	47,075	21,912	14,822	1,513	68	38,315	1,055	7,705			
2 North Arcot ..	2,053,000	117,325	91,674	208,999	91,972	54,719	18,579	3,293	228	76,824	2,755	12,393			
3 South Arcot ..	2,833,000	241,216	190,962	432,178	87,439	40,414	22,404	2,532	779	66,125	2,443	18,871			
4 Tanjore ..	3,122,000	150,762	133,518	284,280	81,121	24,427	27,883	3,889	590	58,989	2,890	19,942			
5 Tiruchirappalli ..	3,043,000	189,283	150,410	339,693	83,020	29,879	20,502	5,638	721	56,430	2,606	23,784			
6 Madurai ..	3,040,000	319,060	251,905	571,055	91,212	43,363	17,319	3,816	459	64,462	2,376	24,374			
7 Ramanathapuram ..	2,114,000	109,251	91,248	200,499	59,793	18,121	18,787	2,305	213	39,426	1,290	19,077			
8 Tirunelveli ..	2,513,000	124,294	105,548	229,842	78,005	30,052	18,022	5,451	229	53,754	2,723	21,618			
9 Salem ..	3,339,000	178,342	139,468	317,810	94,370	33,050	24,405	4,285	316	62,056	3,143	29,171			
10 Coimbatore ..	3,454,000	169,950	132,860	302,810	102,523	34,932	28,506	5,657	303	69,398	3,213	29,912			
11 Nilgiris, The ..	346,000	20,010	14,149	34,159	9,015	3,985	3,302	383	83	7,750	70	1,19			
12 Malabar (North) ..	5,035,000	136,080	142,082	278,162	66,962	16,863	26,470	6,314	943	50,590	1,215	15,157			
13 Malabar (South) ..	1,824,000	115,326	111,136	226,512	61,147	32,219	16,324	1,607	105	50,255	583	10,309			
14 South Kanara ..	35,719,000	2,107,968	1,805,155	3,913,123	1,029,476	414,744	276,447	57,032	5,656	753,879	27,321	248,076			
Total ..	..	6,235	6,546	12,781	2,197	1,430	446	36	..	1,912	90	195			
Poonamallee Health Unit.															

Serial number and name of district.	Number of cases in which the results were known (Col. (6)).		Percentage successful cases of which the results were known (Col. (10)).		Number of cases in which the results were known (Col. (10)).		Percentage successful cases of which the results were known (Col. (10)).		Total successful cases at all ages (Col. (11)).		Total successful cases at all ages (Col. (11)).	
	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)
Districts.												
1 Chingleput ..	39,870	97,32	98,070	6,589	50,079	41,402	50,008	11'83	44,904	44,904	44,904	44,904
2 North Arcot ..	79,579	95'54	121,131	8,144	65,897	47,090	74,641	11'00	84,968	84,968	84,968	84,968
3 South Arcot ..	65,568	96'14	145,766	21,204	170,066	134,496	191,270	11'00	87,329	87,329	87,329	87,329
4 Tanjore ..	61,179	95'28	209,175	14,845	94,727	99,005	109,572	13'65	73,134	73,134	73,134	73,134
5 Tiruchirappalli ..	59,236	95'60	258,881	19,294	117,353	122,264	136,617	14'12	75,924	75,924	75,924	75,924
6 Madurai ..	66,838	96'45	438,847	40,270	219,581	218,996	269,351	14'02	104,732	104,732	104,732	104,732
7 Ramanathapuram ..	40,716	96'83	143,886	9,789	56,568	77,929	69,357	14'75	49,215	49,215	49,215	49,215
8 Tirunelveli ..	56,477	95'18	159,643	13,059	70,097	76,487	83,156	15'70	66,813	66,813	66,813	66,813
9 Salem ..	65,199	95'15	224,538	8,742	104,649	110,147	114,591	8'52	71,798	71,798	71,798	71,798
10 Coimbatore ..	72,611	95'55	241,496	14,214	94,799	92,483	100,013	13'04	83,612	83,612	83,612	83,612
11 Nilgiris, The ..	7,820	93'10	25,341	2,880	16,076	6,385	18,956	15'19	10,630	10,630	10,630	10,630
12 Malabar (North) ..	51,905	97'65	212,933	22,893	118,457	71,583	141,359	16'20	73,483	73,483	73,483	73,483
13 Malabar (South) ..	61,164	93'11	267,296	26,944	144,654	95,694	171,602	15'70	86,949	86,949	86,949	86,949
14 South Kanara ..	50,835	95'70	166,633	21,856	90,949	13,828	112,805	19'38	72,111	72,111	72,111	72,111
Total ..	781,400	96'43	2,923,436	231,723	1,423,926	1,267,187	1,653,649	14'00	986,602	986,602	986,602	986,602
Poonamallee Health Unit.	2,002	95'50	10,662	1,282	6,866	2,514	8,143	15'73	3,194	3,194	3,194	3,194

REPORT ON THE HEALTH CONDITIONS IN MADRAS STATE, 1954

Serial number and name of municipality.	(14) Number of cases in which the results are known.	(15) Percentage of successful cases in which the results were known. Column (15) ÷ Column (14).	Revaccination.			(19) Unknown.	(20) Number of cases in which the results were known. Column (16) ÷ Column (19).	(21) Percentage of successful cases in which the results were known. Column (17) ÷ Column (20).	(22) Total successful operations.
			(16) Total number of operation.	(17) Successful—Total of all ages.	(18) Unsuccessful.				
1 Madras	50,047	99.95	359,628	13,632	273,992	71,984	287,644	4.75	63,682
2 Kancheepuram	3,354	99.94	24,690	3,427	18,691	2,772	22,018	15.56	6,779
3 Tiruvallur	628	98.13	2,613	261	2,107	247	2,836	11.02	816
4 Chengalpattu	902	98.13	3,028	299	3,027	402	2,626	11.39	1,139
5 Villupuram	4,069	99.45	4,815	623	3,016	1,106	3,709	16.80	4,670
6 Tiruvannamalai	1,000	100.00	4,766	188	4,516	62	4,704	4.00	1,188
7 Gudiyatham	1,489	99.06	3,472	115	3,635	322	3,711	3.65	1,630
8 Vaniyambadi	2,002	99.25	745	84	627	34	3,711	11.81	2,071
9 Tiruppur	1,267	99.84	1,472	237	1,189	46	1,426	16.82	1,502
10 Walajpet	1,289	100.00	801	134	490	177	1,015	21.47	556
11 Ambur	1,289	97.52	1,185	656	339	110	1,015	64.63	1,913
12 Chidambaram	2,681	100.00	1,936	349	1,378	209	1,177	20.21	1,168
13 Cuddalore	734	99.16	13,030	2,262	9,710	1,058	11,979	18.89	4,934
14 Chidambaram	981	99.59	2,711	197	934	1,280	1,431	34.73	1,228
15 Villupuram	741	98.37	4,914	180	4,706	28	4,886	3.68	1,145
16 Tiruvallur	2,861	97.71	7,811	112	3,654	4,045	3,768	9.27	886
17 Tiruvallur	2,284	99.91	18,127	948	11,414	1,208	12,350	14.21	3,809
18 Kumbakonam	1,734	100.00	7,942	1,466	5,711	1,208	6,353	11.33	3,748
19 Kumbakonam	1,168	100.00	3,905	1,387	4,936	1,589	1,234	21.83	3,121
20 Mayavaram	1,199	94.58	3,015	118	2,764	723	2,832	4.09	1,234
21 Manavaram	1,020	100.00	1,315	115	721	479	836	13.73	1,401
22 Tiruvallur	1,311	99.70	15,357	3,095	10,577	688	12,871	12.16	8,110
23 Tiruchirappalli	1,014	99.63	16,474	2,199	8,707	3,802	10,672	16.53	2,775
24 Tiruchirappalli	2,739	99.86	15,357	1,454	8,707	1,35	1,231	14.31	2,775
25 Pudukkottai	20,620	99.82	1,366	192	1,039	135	1,436	16.00	2,917
26 Pudukkottai	1,342	99.86	1,366	192	1,039	135	1,436	16.00	2,917
27 Madurai	1,307	99.82	1,366	192	1,039	135	1,436	16.00	2,917
28 Bodinayakanur	1,093	100.00	1,366	192	1,039	135	1,436	16.00	2,917
29 Palani	374	100.00	704	270	5,728	92	612	44.12	612
30 Kodaikanal	1,871	99.37	8,282	615	4,121	1,920	6,343	6.70	2,775
31 Kodaikanal	1,103	99.64	7,092	685	4,121	1,920	6,343	6.70	2,775
32 Rajapalayam	1,513	100.00	7,352	1,114	5,312	1,076	6,456	13.89	3,194
33 Srivilliputtur	1,588	100.00	7,352	1,114	5,312	1,076	6,456	13.89	3,194
34 Virudhunagar	734	99.13	1,521	728	4,435	281	3,958	20.62	1,907
35 Karaikal	914	99.36	1,521	728	4,435	281	3,958	20.62	1,907
36 Karaikal	1,500	99.36	1,521	728	4,435	281	3,958	20.62	1,907
37 Karaikal	1,500	99.36	1,521	728	4,435	281	3,958	20.62	1,907
38 Karaikal	1,500	99.36	1,521	728	4,435	281	3,958	20.62	1,907
39 Karaikal	1,500	99.36	1,521	728	4,435	281	3,958	20.62	1,907
40 Karaikal	1,500	99.36	1,521	728	4,435	281	3,958	20.62	1,907
41 Karaikal	1,500	99.36	1,521	728	4,435	281	3,958	20.62	1,907
42 Karaikal	1,500	99.36	1,521	728	4,435	281	3,958	20.62	1,907
43 Karaikal	1,500	99.36	1,521	728	4,435	281	3,958	20.62	1,907
44 Karaikal	1,500	99.36	1,521	728	4,435	281	3,958	20.62	1,907
45 Karaikal	1,500	99.36	1,521	728	4,435	281	3,958	20.62	1,907
46 Karaikal	1,500	99.36	1,521	728	4,435	281	3,958	20.62	1,907
47 Karaikal	1,500	99.36	1,521	728	4,435	281	3,958	20.62	1,907
48 Karaikal	1,500	99.36	1,521	728	4,435	281	3,958	20.62	1,907
49 Karaikal	1,500	99.36	1,521	728	4,435	281	3,958	20.62	1,907
50 Karaikal	1,500	99.36	1,521	728	4,435	281	3,958	20.62	1,907
51 Karaikal	1,500	99.36	1,521	728	4,435	281	3,958	20.62	1,907
52 Karaikal	1,500	99.36	1,521	728	4,435	281	3,958	20.62	1,907
53 Karaikal	1,500	99.36	1,521	728	4,435	281	3,958	20.62	1,907
54 Karaikal	1,500	99.36	1,521	728	4,435	281	3,958	20.62	1,907
55 Karaikal	1,500	99.36	1,521	728	4,435	281	3,958	20.62	1,907
56 Karaikal	1,500	99.36	1,521	728	4,435	281	3,958	20.62	1,907
57 Karaikal	1,500	99.36	1,521	728	4,435	281	3,958	20.62	1,907
58 Karaikal	1,500	99.36	1,521	728	4,435	281	3,958	20.62	1,907
59 Karaikal	1,500	99.36	1,521	728	4,435	281	3,958	20.62	1,907
60 Karaikal	1,500	99.36	1,521	728	4,435	281	3,958	20.62	1,907
61 Karaikal	1,500	99.36	1,521	728	4,435	281	3,958	20.62	1,907
62 Karaikal	1,500	99.36	1,521	728	4,435	281	3,958	20.62	1,907
Total for municipalities	187,799	99.44	1,083,450	100,189	731,834	231,377	832,073	12.04	286,931
Total for districts exclusive of municipalities.	781,400	96.48	2,923,436	231,723	1,423,926	1,267,787	1,655,640	14.00	986,062
Poonamallee Health Unit.	2,002	95.50	10,062	1,232	6,866	2,514	8,148	15.73	3,194
By Medical Subordinate and Port Health Officer	12	75.00	32,688	22,326	6,733	3,129	29,559	77.22	22,835
Railways	1,230	99.19	6,052	1,131	8,910	1,011	5,041	22.44	2,351
Total for the State	972,443	97.05	4,096,286	357,151	2,173,319	1,605,818	2,530,470	14.11	1,300,913

REPORT ON THE HEALTH CONDITIONS IN MADRAS STATE, 1954



DEPARTMENT OF HEALTH, EDUCATION AND LOCAL ADMINISTRATION

(Health)

G.O. No. 424, 6th February 1956

Public Health—Administration Report—1954—Reviewed.

VACCINATION.

Summary of Statement XIV.

Agencies.	Total number of persons vaccinated.		Total number of operations.		Percentage of successful cases in which the results were known.	Number of children successfully vaccinated.				Total successful operations at all ages.		
	(1)	(2)	(3)	(4)		(5)	(6)	(7)	(8)		(9)	(10)	(11)
		Primary vaccl.	Revacclination.	Primary vaccl.	Revacclination.	Primary vaccl.	Revacclination.	0-1 year.	1-5 years.	5-10 years.		
Districts (exclusive of municipalities) ..	989,687	2,923,436	1,029,476	2,923,436	96.48	14.00	414,744	276,447	57,032	985,602		
Municipalities ..	192,240	1,063,450	194,600	1,063,450	99.44	12.04	130,613	50,146	5,554	286,931		
Poonanallie Health Unit ..	2,119	10,632	2,197	10,632	97.50	15.73	1,430	446	86	3,194		
By medical subordinates and Port Health Officers ..	1,268	23,832	2,114	32,638	75.00	77.22	559	572	86	22,735		
Railways ..	1,187,321	4,027,432	1,227,555	4,036,238	99.19	22.44	547,351	327,015	62,707	2,351		
State total ..					97.05	14.11				1,200,913		

READ—the following papers :—

From the Director of Public Health, dated 18th July 1955,
R. No. 46250/1 Vs/55.From the Director of Public Health, dated 3rd August 1955,
R. No. 46250/1 Vs/55.

Order—No. 424, Health, dated 6th February 1956.

Recorded.

2. *Vital Statistics.*—The registration of births and deaths was compulsory in the State excepting some of the zamindari areas and the hill tracts which form only a small proportion of the total area of the State. Even in these non-compulsory areas, registration of vital events was done by the village headmen under executive orders of the Board of Revenue. The vital statistical indices for the year recorded a steady improvement in the health conditions in the State as compared with the previous year.

The salient features are—

- A slight reduction in the birth rate from 26.45 in 1953 to 26.39 in 1954.
- A noticeable fall in the death rate from 16.97 in 1953 to 13.45 in 1954.
- A decrease in infant mortality rate from 113.79 in 1953 to 100.67 in 1954.
- A remarkable fall during the year in the mortality from cholera and small-pox and all other principal groups of diseases in the State.

3. *Communicable diseases control.*—(1) Cholera was not prevalent in any severe epidemic form, in major portion of the State. The total number of

deaths from cholera during the year was only 1,545 against 15,797 during 1953, the death rate during the year being 0.04 per 1,000 population as against 0.43 during 1953. The municipalities that recorded high mortality were Palayamkottai, Tanjore and Salem. The highest incidence was recorded in the Tanjore district while the districts of the Nilgiris and South Kanara were free from infection.

(ii) *Dysentery and diarrhoea*.—The number of deaths registered under this head in 1954 was 35,686 compared to 51,008 in 1953 and 50,936 in 1952. The death rates in all the districts were less than those of the average death rates for the previous years.

(iii) *Enteric fever*.—There were 1,034 deaths from this disease in 1954 in all the municipalities including Madras City as against 1,106 deaths in 1953.

(iv) *Smallpox*.—There were 1,711 deaths under this head during 1954 as against 2,733 in 1953 and 2,508 in 1952. Sixty per cent of the total deaths from small-pox, were children under ten years of age. The incidence of the disease was mainly in the Chingleput, Malabar, Tiruchirappalli and Madurai districts and Madras City. The recorded death rate in all the districts was less than the average rate for the previous five years except in Malabar where it was about the average.

Over 9 lakhs of primary vaccinations and 3 lakhs of revaccinations were performed during the year. It is expected that under the programme of effective immunization by vaccination and revaccination in each village, to be adopted by the department, the disease will be completely under control.

(v) *Plague*.—There were eight attacks and six deaths from this disease as against nine attacks and six deaths in 1953 and 23 attacks and 12 deaths in 1952. All the attacks in 1953 and 1954 occurred in Hosur taluk, Salem district. D.D.T. spraying was continued in all the plague endemic areas and the disease was well under control.

(vi) *Fevers other than malaria*.—There was an appreciable fall in the number of deaths under this head from 104,707 in 1953 to 81,565 in 1954. The death rate was higher in the rural areas than that in the urban areas and the pattern of seasonal variation was the same as in the previous year, the minimum being recorded in April and the maximum in November.

(vii) *Malaria*.—The diagnosis of deaths from malaria by the lay persons employed for registration of deaths in rural areas is not dependable. Still the recorded rates of mortality from malaria tend to decrease. As against 2,272 deaths in 1953 there were 1,981 deaths during the year under review. About twenty-three anti-malarial schemes functioned during the year strengthened by assistance under the National Malaria Control Programme. The scheme of free distribution of quinine and other cinchona products and indoor spraying of D.D.T. were amongst the measures adopted for the control of malaria in the State.

(viii) *Filariasis*.—The Regional Malaria Organizations, Tanjore and Coimbatore, carried out surveys in many panchayats and municipalities, prepared schemes of control and commended them to the local bodies concerned for adoption. Three municipalities and 46 panchayat boards implemented approved schemes of anti-filariasis and anti-mosquito measures for the first time in 1954.

(ix) *Respiratory diseases*.—There was a fall in the number of deaths under this cause from 64,612 in 1953 to 53,498 in 1954. Madras City and Madurai Municipality alone were responsible for 54 per cent of the total mortality.

(x) *Tuberculosis*.—Forty-six thousand and twenty-three old and 12,758 new cases were attended to at the Tuberculosis Institute, Egmore. Out of 12,758 cases treated, 3,556 cases were diagnosed as suffering from tuberculosis; out of this 3,203 or 90.1 per cent were of pulmonary tuberculosis and 353 or 9.9 per cent cases were found to be suffering from non-pulmonary tuberculosis. A large number of the cases of the tuberculosis fell under the age group 16–35 years and in low income groups. The scheme of mass B.C.G. vaccination work in the State was introduced in November 1954. The UNICEF has supplied free the necessary equipment for the scheme such as station wagons, vaccination outfits, sterilizers, public address equipment and film projector.

(xi) *Venereal diseases*.—The venereal diseases control clinic of the Madurai Municipality continued to function during the year. The UNICEF supplied laboratory equipment and penicillin for the sole purpose of diagnosis and treatment of syphilis in pregnant women and the natal cases.

(xii) *Yaws*.—Yaws is prevalent in the Avanashi and Tiruppur ranges. The World Health Organization has proposed to undertake a 'Yaws Control Campaign' in Coimbatore district.

(xiii) *Kala Azar*.—The sandfly survey undertaken in Madras City and in Ramanathapuram district continued. D.D.T. spraying was done in the endemic areas of Ramanathapuram district.

(xiv) *Guinea worm*.—The districts endemic for the disease are South Arcot, North Arcot, Salem and Coimbatore. Biological control measures in South Arcot and chemical treatment by application of lime and bleaching powder in other districts were carried out by the Public Health staff. Intensive propaganda through lectures, magic lanterns and pamphlets was also undertaken for the control of the disease.

(xv) *Infectious diseases hospitals*.—Local bodies were advised to make specific provision in their Budgets for the construction of the infectious diseases hospitals as the isolation of infected persons and treatment is the most important of the control measures adopted in the case of communicable diseases.

4. *Health Services*—(i) *Maternity and Child Welfare*.—During the year, the local bodies and other agencies maintained 673 Maternity and Child Welfare Centres and Maternity Homes including the services provided by Government in the Community Project areas, National Extension Schemes Blocks, Welfare Extension Projects and the Poonamallee Health Unit. Besides the candidates trained in the Government Training School for Health Visitors, another 20 candidates were admitted into the school in November 1954 under the Government of India scheme for training health personnel for Community Projects. Refresher courses are given to Health Visitors so as to enable them to be conversant with the latest methods in Maternity and Child Care and to improve the efficiency of the service.

The UNICEF supplied maternal and child health equipment, soap, drugs and diet supplements for distribution in Maternity and Child Welfare Centres in this State. The number of infant deaths decreased from 110,889 in 1953 to 99,144 in 1954 and the mortality rate decreased from 113.79 to 100.67 per 1,000 live births.

(ii) *Industrial hygiene*.—Health Officers in their capacity as Additional Inspectors of factories continued to visit the factories in their jurisdiction and their observations with regard to ventilation, sanitation, lighting, etc., were reported to the Inspector of Factories for necessary action. The Health Officers also inspected the mines in their areas to ensure safety and health of the workers and sent reports to the Chief Inspector of Mines.

(iii) *Residential and industrial areas*.—Thirty-six municipal councils and 91 panchayats have so far notified residential areas in 1954 as against 30 municipal councils and 81 panchayats during 1953. Thirty-eight municipalities and 128 panchayats have set apart industrial areas in 1954 as against 36 municipalities and 122 panchayats in 1953.

(iv) *Health Propaganda and Publicity*.—Health propaganda was carried on in the State by means of leaflets, pamphlets, posters and also by participation in exhibitions. Several voluntary agencies willingly participated in health promotional activities in the State. The Health Propaganda Section was strengthened with the employment of a Health Officer and necessary staff.

(v) *Poonamallee Health Unit*.—The unit continued to serve as a field training centre for all categories of medical health personnel, under-graduates and post-graduates. It served 36 villages in the Sriperambudur taluk covering a population of over 60,000. Skimmed milk powder, whole milk and gift rice were distributed to all the expectant and nursing mothers and children who visited the maternity home in the Poonamallee Health Unit.

The Orientation Training Centre started at Poonamallee with the assistance of the Ford Foundation gives courses of training, batch by batch, to the medical and public health staff working in the community project areas and it is hoped that within a period of four years all the Public Health and medical staff working in the Community Project areas would have received the training.

5. *Food and nutrition*.—During the year, 185 surveys were undertaken covering 889 families and 12 institutions. The surveys showed that in respect of all essential nutrients, the diets were, in general, grossly deficient. The following measures amongst others were adopted for combating malnutrition. A long range scheme for distribution of UNICEF gift skim milk amongst mal-nourished children and mothers through the maternity and child welfare centres and hospitals has been functioning in the State. UNICEF gift rice was also distributed to mal-nourished children and mothers through charitable and educational institutions and maternity and child welfare centres. The school feeding programme was continued both by the Government and the Corporation of Madras.

Besides rice and milk powder, other food supplements, viz., multi-vitamin tablets, shark liver oil, food yeast were distributed to deserving children and others by the nutrition units and through the maternity and child welfare centres. Several industrial canteens were visited by the Health staff and the managements advised towards improving nutritive value of the foods supplied there.

Nutrition education was carried on by organizing exhibitions, radio talks and films.

6. *Environmental hygiene*—(i) *Water-supply and drainage*.—There was considerable progress in 1954 in the execution of water-supply and drainage schemes. Twenty-eight municipal and other water-supply schemes and 14

drainage schemes were under execution during the year. Under rural water-supply scheme 1,189 works were completed and 2,275 works are under execution. The Government have recently sanctioned a scheme to provide water-supply and sanitation in villages endemic for cholera and with a population of not more than 5,000 in the districts of South Arcot, Tanjore, Tiruchirappalli, Ramanathapuram and Tirunelveli districts under the National Water-supply and Sanitation Scheme of the Government of India.

(ii) *Rural and urban sanitation*.—Intensive measures were taken for provision of improved types of latrines in rural areas. The number of such latrines constructed, comprised of 429 public and 1,156 private latrines. Under the second Five-Year Plan it is proposed to encourage with subsidy the construction of more water seal squatting slab latrines in rural areas.

(iii) *Compost manufacture*.—Sixty municipalities and 243 panchayats manufactured compost during the year.

(iv) *Fairs and festivals*.—As usual, sanitary arrangements of fairs and festivals was well attended to and there was no outbreak of any epidemic disease.

(v) *Housing and building regulations*.—A large number of designs for buildings, such as municipal offices, schools, quarters, markets, bus-stand, parks, playgrounds, etc., were prepared and approved by the Town-Planning department.

(vi) *The Water and Sewage Purification Committee* met five times during the year and made recommendations on some of the important public health matters such as treatment of tannery wastes, chlorination of water supplied to city, etc.

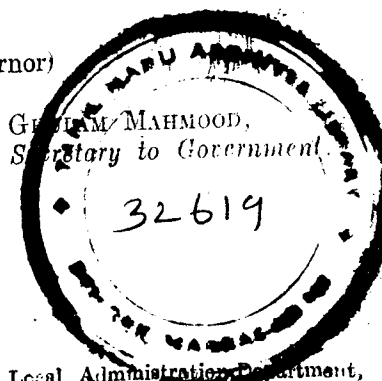
(vii) *Training*.—Two Health Officers were deputed for higher studies under T.C.A. fellowship. Eight Health Officers underwent training at the Malaria Research Laboratory at Madras and two Health Officers underwent training at the Malaria Institute at Delhi.

Finance.—Besides the expenditure incurred by the State on Public Health and on Medical, the local bodies in the State spent on public health more than the prescribed minimum.

General.—The Public Health Administration in the State during the year continued to be satisfactory.

(By order of the Governor)

K. G. MAHMOOD,
Additional Secretary to Government.



to Director of Public Health.
Director of Medical Services.
Public Department.
Director-General of Health Services, New Delhi.
Public (Information and Publicity) Department.
Consul for United States of America at Madras.
Secretary to Government of Andhra, Health and Local Administration Department,
Kurnool.

R
L: 5. 2117/56
158