

THE FIFTY-NINTH ANNUAL REPORT OF THE
DIRECTOR OF PUBLIC HEALTH

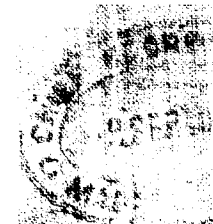
AND

THE THIRTY-THIRD ANNUAL REPORT OF THE
SANITARY ENGINEER

MADRAS

1922

G. I. Shetty



MADRAS
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செப்பனிருவதற்காக எடுத்துக்
கொள்ளப்பட்ட
மார்ச் மாதம் 1989 வருடம்
செப்பனிரு முடிந்த
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கிராமச்சி உதவியாளர்
கையொப்பம்

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INDEX TO THE ANNUAL REPORT OF THE DIRECTOR OF
PUBLIC HEALTH.

GENERAL POPULATION—	PARAS.
Rainfall	1—5
Prices	6
General population	7—11
VITAL STATISTICS	12—13
Births, districts	14—20
Births, rural towns	21
Births, municipalities	22—23
Deaths, districts	24—31
Deaths, rural towns	32
Deaths, municipalities	33—37
GENERAL HISTORY OF CHIEF DISEASES—	
General	38—39
Cholera	40—43
Small-pox	49—59
Plague	60—66
Fevers	67—71
Dysentery and diarrhoea	72—75
Respiratory diseases	76—81
Injuries	82
Rabies	83
Relapsing fever	84
Hookworm	85
Beri-Beri	86
Maternal deaths and child welfare and maternity relief	87
All other causes	88
MINES	89
SANITARY WORKS—	
Municipalities	90—101
District Boards	102—104
GENERAL REMARKS AND PERSONAL PROCEEDINGS	105—123

THE
FIFTY-NINTH ANNUAL REPORT
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DIRECTOR OF PUBLIC HEALTH, MADRAS,
1922.

GENERAL POPULATION.

RAINFALL.

THE average district rainfall of the Presidency during 1922 amounted to 47·89 inches against 46·64 in 1921. The distribution of the rainfall during the different seasons was as follows :—

	INCHES.
Inter-monsoon (January to May)	5·87
South-west monsoon (June to September)	22·21
North-east monsoon (October to December)	19·81
Total	47·89

2. As compared with 1921, fourteen districts (including the Agency Division) registered an increase in rainfall, a decrease occurring in twelve districts. An increase of more than 10 inches was recorded in Malabar (+21·88), South Kanara (+12·91), Madras (+11·36) and Tinnevely (+10·68). The decrease was marked in Kistna (—12·07) and Bellary (—9·81). Vizagapatam registered the highest decrease (—8·11 inches) as compared with the average.

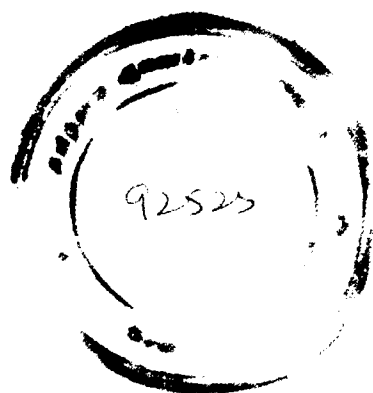
3. The total rainfall recorded in the inter-monsoon period, although in excess of the average, was less than that of 1921 by 0·94 inches. Eleven districts registered an increased rainfall during this period, South Kanara, Malabar and Tinnevely being the most conspicuous instances with an excess of 4·60, 3·31 and 2·50 inches, respectively, over the figures for 1921, and of 4·0, 3·72 and 3·26 inches over the average.

4. The south-west monsoon was generally weak, the average district rainfall being 4·63 inches less than that of the previous year and 2·44 inches below the average. Six districts (including the Agency) recorded an increased rainfall over that of 1921 and five over the average, the largest increases being returned by Malabar and South Kanara.

5. With the exception of four districts, the north-east monsoon was favourable throughout the Presidency, the average district rainfall being 19·81 inches against 12·99 in 1921 and an average of 14·51. Marked increases were registered in Madras (+22·7), Chingleput (+17·23), Chittoor (+15·88) and North Arcot (+14·28). In Ganjam, Tanjore and South Kanara there was a decrease of 6·58, 5·43 and 1·68 inches, respectively, as compared with the average.

PRICES OF FOOD GRAINS.

6. The favourable rainfall is reflected in the general reduction in price of the staple food grains. These prices, although in excess of the average, compare



favourably with those in 1921, and show marked reductions over those prevailing in 1920. The subjoined statement gives details :—

Grain.	Seers available per rupee in			Percentage rise in price above average in		
	1922.	1921.	Average.	1922.	1921.	1920.
Rice	5.5	5.5	7.4	34.5	40.0	73.9
Ragi	9.5	8.7	12.5	31.6	50.6	104.5
Cholam	9.0	8.2	12.0	33.3	53.7	98.5
Cumbu	8.8	7.8	11.5	30.7	53.8	95.3

The economic conditions in the Presidency during the year under report, judged by the cost of the staple grains, may therefore be said to have shown considerable improvement over those prevailing during the last quinquennium.

GENERAL POPULATION.

7. The population of the Presidency according to the census of 1921 was 42,759,827, exclusive of Europeans and Anglo-Indians who numbered 34,328. Vital statistical returns are not submitted to this department for—

- (1) Europeans and Anglo-Indians ... (34,328)
- (2) The majority of the Agency Population (1,284,174)
- (3) The inhabitants of the Laccadive Islands (9,472)
- (4) The inhabitants of the Banganapalle State (36,692)
- (5) The inhabitants of the Pudukkottai State (426,793)

The net population dealt with in this report therefore amounts to 42,759,827 — 1,757,131 or 41,002,696.

8. The total population for 1922, estimated according to previous intercensal increases, amounts to 42,928,089, whilst estimated according to natural increase the figure is 43,418,275. The difference between these two figures is due partly to irregularities in vital statistical returns and partly to the exclusion of the groups enumerated in the previous paragraph.

In the report for 1921, it was stated that future vital statistical rates would be based on "estimated population" instead of on the "census population." It has not been found possible to carry out this improvement without reference to the Public Health Commissioner with the Government of India. He is now in consultation with other Provincial Directors of Public Health on the matter, and, if the suggestion be adopted by him, the new system will be introduced from 1923.

9. As in previous years emigration was restricted to the Straits Settlements, Burma and Ceylon. During the last ten years, with the exception of 1914 and 1921, emigration,—though not disproportionate to the population of the Presidency—has always been in excess of immigration. The maximum loss, viz., 116,109, was registered in 1919, probably as the result of bad economic conditions. Subsequent years have, however, shown an improvement in this respect, as the following table indicates :—

Years.	Emigrants.	Immigrants excluding indentured emigrants.	Difference between columns (2) and (3).
(1)	(2)	(3)	(4)
1919	349,404	233,327	+ 116,109
1920	345,937	279,599	+ 66,308
1921	251,848	277,583	— 25,735
1922	326,744	298,509	+ 28,235

10. Under the District Municipalities Act, registration of births and deaths is compulsory in all municipalities. As regards the 52,000 (approximate) villages and towns in the Presidency, notification is compulsory only in 2,766, which is

something less than 5.4 per cent. of the total. The extension of compulsory notification and its enforcement are indispensable if improvement in the registration of vital statistics and in vaccination is to be obtained. With the exception of the Agency Division where no staff exists for birth and death registration, Act III of 1899 should be made applicable to all villages and rural towns. It is hoped that this recommendation which has been repeatedly urged in past years will be given effect to in the near future. Consultation with local authorities all over the Presidency has revealed a general consensus of opinion in favour of the extension of this Act, and no apparent reason exists for delaying further its general application.

11. Reference to the statistical tables at the end of this report will show that registration in many "compulsory areas" is infinitely worse than in "non-compulsory areas"; and yet during the year under report only 93 prosecutions were instituted for failure to report births and deaths. As no law is self-enforcing, the declaration of compulsory registration, in the absence of educated public opinion, demands resort to the penal clauses where necessary. This fact does not seem to be appreciated by those responsible for carrying out the provisions of the Act.

VITAL STATISTICS.

12. In discussing the question of vital statistics in this Presidency in last year's report, it was pointed out that the value of most of the statistical records was greatly vitiated by imperfect enumeration of domestic occurrences by Birth and Death Registrars, inaccuracies in the compilation of returns and other similar causes. These remarks were further amplified and illustrated in the Memorandum on vital statistics prepared by this Department and issued with G.O. No. 1395, P.H., dated 12th October 1922. The Superintendent of the 1921 Census Operations has, however, in paragraph 22 of volume I of his Report made the extraordinary statement that "it does not appear that the registration of births and deaths in the various districts of Madras is badly defective." As this statement is so entirely at variance with the facts in possession of the Public Health Department, it is necessary to examine the arguments adduced by the Census Superintendent in arriving at his conclusion.

(1) He states that the proportion of married women in the reproductive ages (15 to 40) to the total women population of all ages is lower in Madras Presidency than in the United Provinces, the Punjab and the Central Provinces and that, therefore, the birth-rate of Madras is lower than that of these provinces. In drawing this inference, the Census Superintendent appears to have ignored the fact that although Madras, compared with other provinces, has a lower percentage of married females, this is offset by the relatively greater proportion of the female to the male population. Madras also registers a larger number of married females for every 1,000 males and a higher percentage of married women in the reproductive ages than in the other provinces. The subjoined table confirms these remarks :—

Provinces.	Number of females for every 1,000 males.	Proportion of married females for every 1,000 married males.	Percentage of married females in the ages 15 to 40 to the total married females.
			PER CENT.
Madras	1,081	1,083	72
United Provinces	915	1,011	72
The Punjab	817	1,010	70
Central Provinces	1,008	1,008	68

In view of these peculiarities in the sex distribution and the civil condition of the Madras population, the smaller percentage of married women cannot materially affect the birth-rate.

Even assuming that the Census Superintendent's line of argument is correct, the birth-rate of Madras as compared with other provinces is disproportionately low to the number of married females in the reproductive ages. This may be seen from the following statement:—

	Percentage of married women in ages 15-40 to total female population.	Mean birth-rate per mille for 1911-21.
	PER CENT.	
Madras Presidency	32	30.7
Punjab	34	43.8
United Provinces	35	42.2
Central Provinces	36	45.5

It would be absurd to suggest that the fecundity rate of the female population in Madras is actually so much lower than that of the Punjab, Central Provinces and United Provinces. Moreover, if the average of the figures for these three provinces is applied to Madras, a birth-rate of 39.9 is obtained, a figure which closely approximates to the estimated rate of 42.5 per mille and one which has been repeatedly confirmed all over the Presidency by intensive examinations of groups of the population. The Census Superintendent's comparison of the birth-rate and the ratio of the married population of this Presidency with the corresponding statistics for the other provinces, instead of proving that registration of vital statistics is "not badly defective" in Madras, shows on the other hand that it is extremely defective.

(2) The next argument cited by the Census Superintendent is that the mortality of females before and at the child-bearing ages is considerably higher in Madras than in other provinces, and that therefore the birth-rate must necessarily be lower. In comparing the deaths in these age-groups in Madras with those of the Central Provinces, the Punjab and the United Provinces, the Census Superintendent has committed the fundamental error of ignoring differences in sex distribution in the different provinces. The relative proportion of females to males in the ages 5-15 and 15-30 is greater in Madras than in the other provinces under reference. Naturally, therefore, the total number of deaths in the female population in these age-periods must be greater in the former case. Before coming to any conclusion in this connexion, the Census Superintendent should have estimated the death-rates in the different age-groups. As he failed to do so, his argument is based on false premises.

The following statement shows the sex distribution and the relative mortality in the population of the different provinces in the age-groups 5-15 and 15-30:—

Provinces.	Number of females to every 1,000 males in the ages.		Ratio of deaths in females to every 100 male deaths in the population of the ages.			
	5-15.	15-30.	5-10.	10-15.	15-20.	20-30.
Madras	972	1,080	100	100	117	116
Central Provinces	929	1,079	90	107	110	109
United Provinces	839	903	100	115	118	109
The Punjab	782	802	113	138	133	125

It will be seen from these figures that the mortality in the female population of Madras in the age-period 10-15 compares favourably with that of all the other provinces; the same is the case in the ages 5-10 and 15-20 with the exception of the Central Provinces; in the age-group 20-30, Madras is better than the Punjab, but compares unfavourably with the Central Provinces and the United Provinces. On the whole, however, Madras figures are closely comparable with those of the Central Provinces, which records the highest birth-rate.

It may also be pointed out in this connexion that the one or two points unfavourable to Madras are more than counterbalanced by the low death-rate of its female population in these age-periods as compared with other provinces. This may be seen from the following figures:—

Province.	Mean death-rate per mille in the women population living in the ages			
	5-10.	10-15.	15-20.	20-30.
Madras	11	8	14	15
Central Provinces	18	16	21	23
United Provinces	17	15	20	23
Punjab	17	18	20	20

The statistics in the two foregoing tables demonstrate that the mortality among women in Madras before and during the reproductive ages is in every case less than that of the other Provinces. The line of argument adopted by the Census Superintendent is therefore also at fault in this instance.

(3) Emigration of males at the reproductive ages is cited as the next cause of the low birth-rate of Madras. The excess of emigrants over immigrants during the ten years 1911-20 was approximately 6.33 lakhs. In a total population of over 42½ millions in the Presidency, the influence of a net loss of 6.33 lakhs over a period of 10 years, or 60,000 per annum, must be infinitesimal. Emigration cannot therefore appreciably affect the birth-rate of the Presidency.

(4) Regarding inter-marriage of cousins, enquiries have led one to doubt if this custom is so universal as it is said to be. Even so, it is quite possible that a similar custom may be as common in the other provinces with which Madras is compared, while the census report is silent on this point. Any inference drawn from such doubtful data would seem to be of little value.

(5) The statistics cited by the Census Superintendent in support of his conclusions must now be considered. He states that the population under one year of age enumerated at the census of 1921 harmonises with the births recorded in 1920 less the deaths of children under one year of age in the latter year. The correctness of this statement is questionable. Taking the population for which vital statistical returns are made, the infant population enumerated at the census of 1921 exceeds the births registered in 1920 minus infantile deaths by 116,474. It cannot be said that this figure is a negligible one. Again, the Census Superintendent believes that harmony exists between the census figures and the vital statistical returns in spite of serious discrepancies in the two sets of figures in eight districts. The mere fact that the inconsistencies met with in the vital statistics of these eight districts, with a population of over 16 millions, are made good by the statistics of the remaining fifteen districts containing a population of 26 millions, proves by itself that registration is defective in every district.

(6) Lastly, in paragraph 14 of Chapter I of his Report, the Census Superintendent mentions defective registration of deaths during epidemics of influenza, cholera and plague as one of the causes which produce differences between the estimated natural increase in population and the increase recorded at the census. By referring to these differences and the omissions in the registration of deaths, the Census Superintendent has defeated all the arguments adduced by him in the previous paragraphs of his report. If registration is imperfect in the case of deaths from epidemics which are not so liable to escape notice as births, it is an obvious inference that omissions in the registration of the latter must be more numerous.

These criticisms of the census report are felt to be necessary as district officers responsible for the preparation of vital statistics returns in Madras Presidency are just becoming alive to the fact that those returns are capable of vast improvement; and it is entirely a matter for regret that the Census

Superintendent did not see his way to consult the Public Health Department before giving expression to opinions which it is feared will only handicap those who are making endeavours to effect very necessary improvement in registration.

13. In Government Memorandum No. 8121-1, P.H., dated 16th May 1921, local bodies were instructed to utilize the services of their vaccinators in the vaccination off-season to amend birth and death registers by the detection of omissions and errors in registration. Municipal Councils apparently ignored these instructions as, in no case, was any return made by those bodies. On the other hand, numerous instances have occurred where municipal councils and taluk boards have utilized the off-season as a convenient opportunity for employing their vaccinators in collection of revenues and in other duties, or for granting them leave. In many of the districts, on the other hand, the vaccinators were compelled to carry on vaccination during the hot months on account of the prevalence of smallpox. At the same time the work of the Vaccination Department in checking vital statistics was, on the whole, fair and was much better than in 1921. The following statement shows the numbers of unregistered births detected during the hot weather months of 1922 when routine vaccination was suspended.

District.	Number of unregistered births discovered.
Guntūr	5,498
Agency division	5,020
South Arcot	4,205
Kurnool	3,153
Salem	2,445
Madura	1,748
Nellore	1,660
Malabar	1,556
North Arcot	1,346
Trichinopoly	1,147
Ramnad	934
Kistna	920
Coimbatore	908
Tinnevely	895
Ganjām	798
Chittoor	759
Vizagapatam	687
Bellary	684
Gōdāvari	566
Cuddapah	538
Anantapur	505
South Kanara	375
Chingleput	306
Tanjore	262
Total	31,895

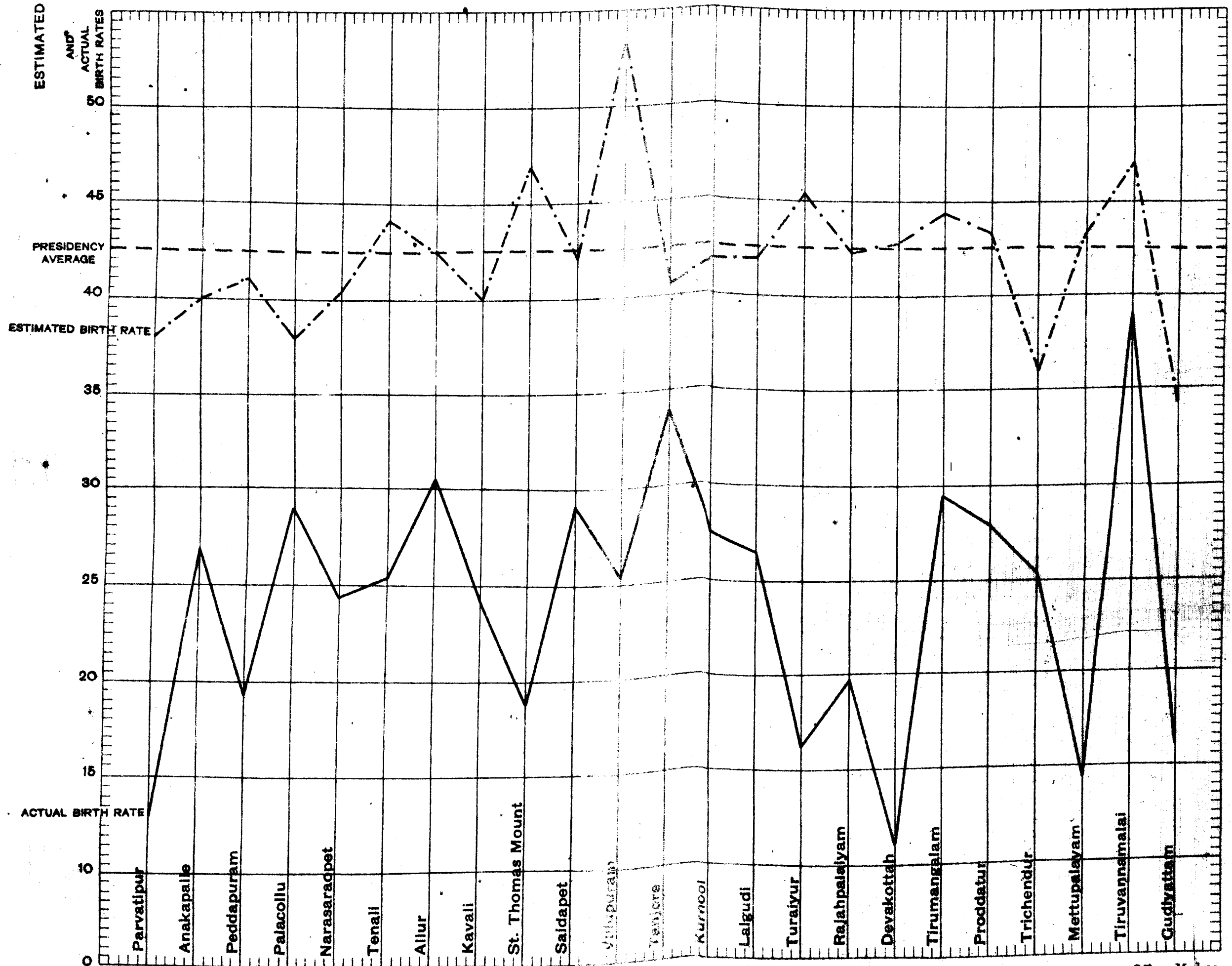
In addition to these omissions, Assistant Directors of Public Health detected during their inspections about 2,300 unregistered births. These large numbers give ample proof of the indifference of local bodies and village officers to this branch of administration. Now that District Health staffs are at work in each district, a great improvement in the detection of unregistered births may be anticipated, and there is every reason to hope that vital statistics for the Presidency will shortly attain a reasonable accuracy.

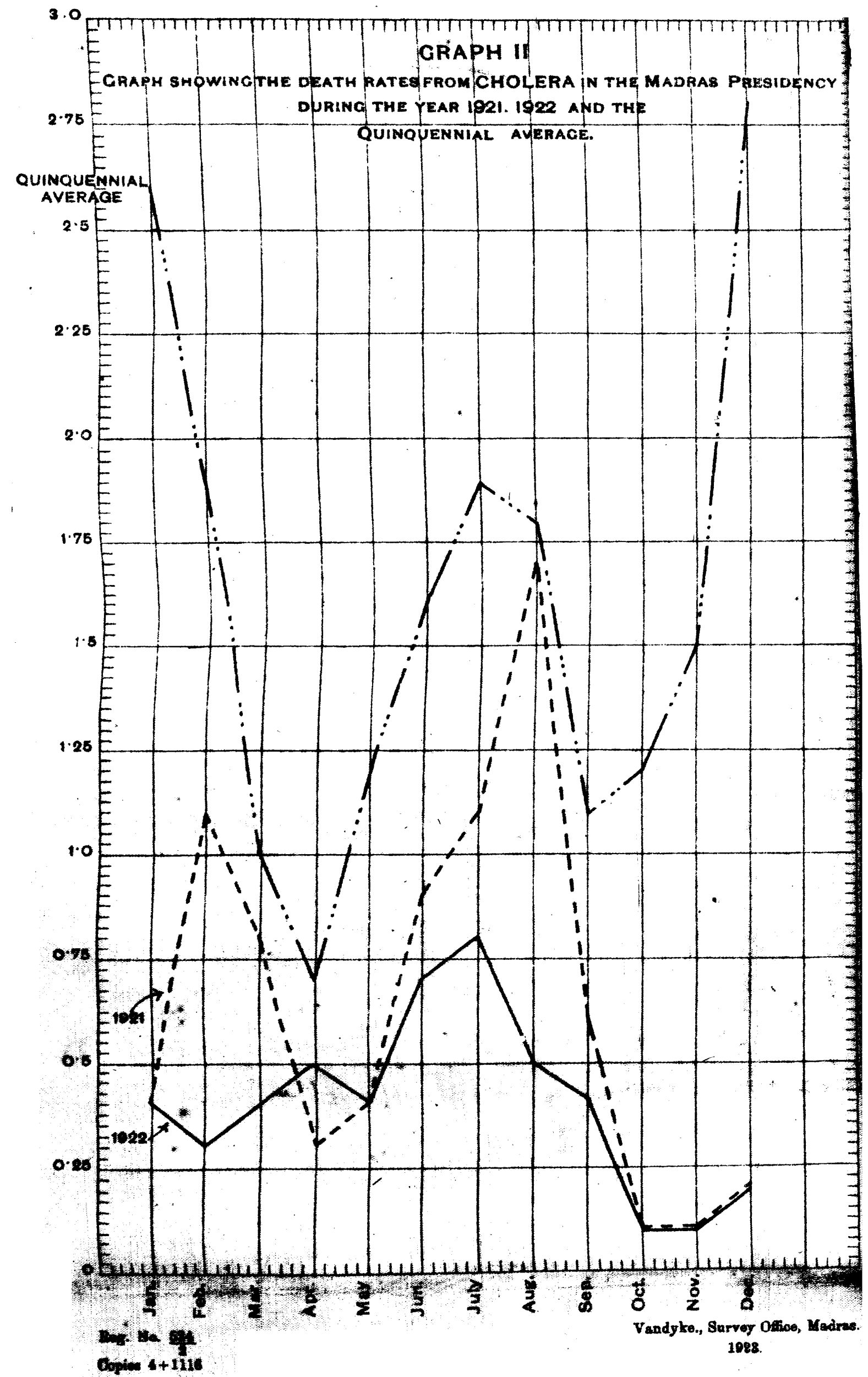
BIRTHS IN DISTRICTS.

14. The total number of births registered in the year under report amounted to 1,231,722 against 1,108,474 in 1921, an increase of 123,248 compared with the number registered in 1921. Calculated on the census population of 1921, the above figures yield birth-rates of 30.0 per mille for 1922 and 27.0 for 1921. Although the former rate still compares unfavourably with the estimated Presidency

GRAPH I

SHOWING ACTUAL BIRTH RATES & ESTIMATED BIRTH RATES AFTER LOCAL INVESTIGATION IN A NUMBER OF TOWNS & VILLAGES.





rate of 42.5, and is also slightly less than the decennial average of 30.3 per mille, it is 1.6 per mille in excess of the average for the quinquennium 1917—21. It is impossible at the present stage to state whether or not this increase is due to the efforts of the staff of this department in bringing registrars and compiling officers to a sense of their duty, but it is worth noting that (excluding the Agency) every district but four show considerable increases in the registered birth-rate, and in three of these four, viz., South Arcot, Bellary and South Kanara, the decreases are represented by fractions of a unit.

15. The birth-rates registered in the different districts are shown in the following statement:—

BIRTH-RATES IN 1922.

Name of the district.	Birth-rate for 1922.	Increase or decrease as compared with 1921.
Agency division	20.2	— 5.9
Rāmnaid	23.1	+ 4.7
Coimbatore	24.2	— 2.5
South Arcot	25.2	— 0.3
Trichinopoly	27.4	+ 2.0
Madura	27.6	+ 1.5
Kurnool	27.6	+ 0.9
The Nilgiris	28.0	+ 3.0
Salem	28.0	+ 5.3
Tanjore	28.1	+ 4.4
Cuddapah	29.2	+ 2.1
Ganjām	29.7	+ 3.0
Nellore	29.9	+ 5.3
Bellary	30.0	— 0.5
Godāvari	30.2	+ 3.1
Vizagapatam	31.2	+ 2.4
North Arcot	31.5	+ 3.6
Kistna	31.6	+ 1.5
Anantapur	32.0	+ 2.1
Chittoor	32.1	+ 9.3
Tinnevely	32.1	+ 1.5
Guntūr	33.0	+ 3.9
Chingleput	33.7	+ 2.5
Malabar	36.1	+ 3.7
South Kanara	36.8	— 0.6
Madras	41.2	+ 4.8

The highest birth-rates, as in 1921, were recorded in Madras City, South Kanara and Malabar. Three districts returned rates between 20 and 25 per mille, 10 districts between 25 and 30, and 10 between 30 and 35. The largest increases were returned from Chittoor (+ 9.3), Salem (+ 5.3) and Nellore (+ 5.3). The largest decrease was returned by the Agency Division (— 5.9), in which the registration staff is not under the control of the Public Health Department. With the exception of Madras City, the birth-rate exceeded the death-rate in every district.

The accompanying statement gives the registered birth-rates for 1922 in the different provinces of India:—

Provinces.	Birth-rate in	
	1922.	1921.
The Punjab	39.31	41.5
Central Provinces	35.80	37.9
United Provinces	32.17	34.4
Bihar and Orissa	35.03	34.6
Bombay	32.39	32.6
Burma	29.69	29.9
Assam	28.40	29.6
Bengal	27.40	28.0
Madras	30.00	27.0

The large numbers of unregistered births which have already been mentioned in paragraph 13 explain the position which this Presidency occupies in the table.

The estimated Presidency rate of 42.5 per mille is no empirical figure. The numerous investigations which have been carried out in different parts of the province show that the actual rates closely conform to this accepted average figure. From graph I in which the registered and the estimated rates after local investigation of a number of places are plotted out, it is obvious that, if only registration were properly done, the registered birth-rate of the Presidency would approximate closely to the rates of the other provinces in India.

16. The ratio of female to male births was 100:104.4 as compared with 100:104.7 in 1921 and 100:105.2 in 1920.

17. The registered birth-rates of the different communities for 1921 and 1922 are as follows:—

	Birth-rate per mille in	
	1922.	1921.
Hindus	29.9	27.2
Muhammadans	32.5	28.7
Indian Christians	27.0	24.1

As in previous years the Muhammadan community returned the highest birth-rate.

18. The subjoined statement gives the approximate number of births registered in the four quarters of 1922. The increase in the third quarter of the year is again apparent:—

	Number of births registered.
January to March	235,800
April to June	293,100
July to September	362,700
October to December	340,100

19. The proportion of still-births to live births was 11 to 1,000, the corresponding figures for 1921 being 9 to 1,000. The proportion of still born males to females was 120:100. The remarks made in last year's report regarding the extraordinary variations in the numbers of still-births registered in the different districts are again applicable. Of a total of 13,815 recorded during the year 7,539 were males and 6,276 females. 57 per cent. of the total were registered in the following six districts, viz.:—

	Per cent.		Per cent.
Malabar	17.6	Madras	9.1
Tanjore	9.7	Chingleput	6.0
South Kanara	9.4	Tinnevely	4.9

As in 1921, Malabar, Tanjore, South Kanara and Madras occupy the first four places in the list.

20. The birth-rate in the rural areas where Act III of 1899 was in force was 27.6 per mille against 30.3 in the non-compulsory areas. The corresponding rates for 1921 were 26.4 and 26.7. In 13 districts, the birth-rate in the non-compulsory areas exceeded the rate registered in the compulsory areas, the districts exhibiting this anomaly to a marked extent being Salem (—10.9), Kurnool (—9.9), North Arcot (—9.1), and Anantapur (—9.0).

The remarks made in this connexion in paragraph 17 of last year's report apply with equal force to these statistics.

BIRTHS IN RURAL TOWNS.

21. The number of rural towns with a population of over 5,000 inhabitants for which separate vital statistical returns were received was 215, one less than in 1921. The average birth-rate was 27.3, an increase of 4.7 in the rate registered in 1921. The variations in the rates for the two years ranged from —38.7 in Badvel town to +40.9 per mille in the town of Tuni. Extraordinary fluctuations such as these are sufficient proof that many of the recorded figures

are incredible. Annexure A classifies these towns according to their registered birth-rates and the following statement gives a summary:—

Registered birth-rate.	Number of towns.	
	1922.	1921.
Below 5 per mille	5	5
Between 5 and 10 per mille	5	15
Do. 10 and 20 do.	38	57
Do. 20 and 30 do.	93	96
Do. 30 and 40 do.	60	32
Do. 40 and 50 do.	13	8
Do. 50 and above	6	3

Although there has been a remarkable improvement in the statistics of rural towns as compared with 1921, the fact that 43 towns still have registered birth-rates under 20 per mille shows that much remains to be done. On the other hand, figures such as are recorded by Kilakarai town in Rāmnād district, where the birth-rate is said to be 71.1 per mille, are ridiculously high. An investigation made by the District Health Officer has shown that the rates have been wrongly calculated on a moiety of the population only, and the corrected figure gives a birth-rate of 39.8 per mille. The only possible conclusion is that in those cases the officers of the Revenue Department and the Presidents of the Union Boards have paid no attention to the instructions which have been issued through Collectors for the rectification of defects in registration. I would suggest to Government the desirability of impressing once more on Collectors and Presidents of Local Boards their responsibilities in this branch of administration.

BIRTHS IN MUNICIPALITIES.

22. Registration is compulsory under the District Municipalities Act in all of the 81 municipalities in the Presidency. The total municipal population according to the Census of 1921 is 3,016,909 and the average birth-rate for the year was 35.2 per mille against 31.2 in 1921 and 34.4, the quinquennial average. Details will be found in Annexure B. The highest rates were recorded in Periyakulam (53.5), Chingleput (47.4), Vellore (45.9) and Walajapet (45.6). The birth-rates varied from 20 to 25 per mille in 7 towns, from 25 to 30 in 20 towns, from 32 to 35 in 21 towns, 35 to 40 in 15 towns, and 40 to 45 in 10 towns. A rate below 20 per mille was returned by Tiruvalur (15.9), Gudiyāttam (16.1), Chirala (17.3) and Peddapur (19.4). These four towns also registered abnormally low rates in 1921, and the inference is that the administration of vital statistics in these places continues to be almost entirely neglected.

23. As compared with 1921, 65 municipalities returned a higher birth-rate, and 15 registered a decrease, this varying from —5.2 in Erode and —4.5 in Tiruvannāmalai to —0.4 in Hospet. Those which recorded appreciable increases include Saidapet (+18.7), Rajahmundry (+13.5), Bodinayakanur (+13.4), Salem (+11.9), Hindupur (+11.7), Kodaikānal (+11.0), Pollachi (+10.8) and Chirala (+10.5). These figures prove how defective the returns were for 1921. The average registered birth-rate for municipal towns is 7.6 in excess over the rate of the rural towns against a difference of 8.6 per mille in 1921.

DEATHS IN DISTRICTS.

24. Deaths registered during the year totalled 859,236 against 826,897 in 1921 which represent annual ratios of 21.0 and 20.2 as compared with a decennial average of 25.3 per mille. As many of the district returns were so incomplete in 1921 and as the year under report was comparatively healthy, it is probable that the increased rate is partly due to better registration and to greater accuracy in the returns.

From the subjoined statement it will be seen that 9 districts registered a death-rate below 20 per mille, in 13 the rate ranged between 20 and 25, in three it was between 25 and 30, whilst in Madras it was as high as 43.1. Rāmnād district again occupied the enviable position of having the lowest death-rate, but the

accuracy of its returns it is impossible to accept. The same remark applies to nine or ten of the districts nearest it on the list; although, as compared with 1921, 17 districts returned an increased death-rate, the increase being most marked in Bellary (+5.4), Madras (+4.5), Chittoor (+3.6) and Kurnool (+3.4). The largest decreases were recorded in the Agency Division (—7.4) and Gōdāvari (—5.0). In every case the death-rate was lower than that of the decennial average, the most striking differences being those of Anantapur and Bellary (—9.9), North Arcot (—8.3) and Kurnool and Salem (—7.3).

DEATH-RATES IN 1922.

Name of the district.	Death-rate for 1922.	Increase or decrease as compared with 1921.
Rāmnād	16.3	+ 2.8
Coimbatore	17.2	— 0.6
South Arcot	17.2	+ 1.1
North Arcot	17.4	+ 0.8
Nellore	18.7	+ 1.9
Agency division	18.8	— 7.4
Anantapur	19.4	+ 1.6
Salem	19.4	+ 1.0
Madura	19.9	+ 0.7
Trichinopoly	20.0	0.0
Chittoor	20.2	+ 3.6
Cuddapah	20.3	+ 0.7
Gōdāvari	20.6	— 5.0
Tinnevely	20.6	+ 1.8
Vizagapatam	21.1	— 2.4
South Kanara	21.2	+ 2.2
Ganjām	21.3	— 1.7
Chingleput	21.5	+ 1.8
Guntūr	23.0	— 2.8
Kurnool	23.0	+ 3.4
Malabar	23.4	+ 3.0
Kistna	23.7	— 1.9
Bellary	25.0	+ 5.4
The Nilgiris	25.2	+ 0.7
Tanjore	25.5	— 0.8
Madras	43.1	+ 4.5

The following statement shows the death-rates registered in the different provinces in India:—

Provinces.	Death-rate per mille in	
	1922.	1921.
The Punjab	22.07	30.1
United Provinces	25.01	39.6
Central Provinces	29.31	44.0
Bombay	23.61	26.0
Bihar and Orissa	24.13	32.8
Bengal	25.2	30.1
Burma	22.23	21.5
Assam	26.9	26.5
Madras	21.0	20.2

25. The mortality in the different quarters of the year is shown below:—

	Number of deaths registered.
First quarter	194,964
Second do.	191,130
Third do.	214,697
Fourth do.	258,445

The increase in the latter half of the year is due to the prevalence of small-pox, relapsing fever and plague.

26. The registered death-rates of the different communities are as follows:—

	Death-rate in	
	1922.	1921.
Hindus	21.0	20.4
Muhammadans	21.4	19.3
Christians	17.9	16.2

27. The proportion of female to male deaths was 100 : 103.4 as compared with 100 : 102.6 in 1921. In the age-periods 15—39, however, the mortality rates are 10.8 per mille for females and 9.9 for males. This difference represents an excess of nearly 13,000 deaths among women during the child-bearing age-periods, but this subject is so important that it will be dealt with separately in a later paragraph.

28. The registered infantile death-rate during the year under review was 166.4 per mille of registered births against 160.9 in 1921 and 187.9, the quinquennial average. Annexure C gives figures for the individual districts. The large variations in some of the districts as compared with 1921, e.g., Nellore (—42.5) and Coimbatore (+42.5) would seem to indicate grave inaccuracies in the registration of these deaths. All that can be said is that a large proportion of the general increase in the infantile death-rate is certainly due to the prevalence of smallpox which attacked young children in large numbers.

29. The subjoined table shows the infantile death-rates in districts for a series of twelve years from 1911. In twenty-one districts the infantile mortality for 1922 was less than the decennial average. This decrease was greatest in Cuddapah (—80.6), Nellore (—73.5) and North Arcot (—52.3).

The following table shows the deaths and death-rates among infants calculated on the births of the year for a series of years:—

Year.	Births.	Deaths of infants.	
		Total.	Rate per 1,000 registered births.
(1901—1910) Decennial average.	1,181,415	202,273	178.4
1911	1,226,488	224,951	183.4
1912	1,245,465	237,124	190.4
1913	1,288,618	231,970	180.0
1914	1,340,168	268,361	196.5
1915	1,249,434	233,113	186.6
1916	1,301,597	237,893	182.8
1917	1,295,078	251,194	194.0
1918	1,156,304	266,125	230.2
1919	1,021,218	196,962	192.9
1920	1,137,238	183,383	161.3
(1911—1920) Decennial average.	1,226,150	232,808	189.8
1921	1,108,474	178,335	160.9
1922	1,231,722	204,904	166.4

It will be seen from these figures that, excluding exacerbations caused by influenza, smallpox, etc., the infantile death-rate exhibits on the whole a tendency towards progressive decline. This decline can hardly yet be said to be due to increased activity in child welfare, and any further decrease in future years should not be credited to this agency without very clear proof. It must be remembered, however, that in a number of western countries the infantile death-rate has already been reduced to between 60 and 80 per 1,000 births, and the need for a very great increase in child welfare work in this Presidency is therefore obvious.

It is one of the important duties of District Health Committees to draw up child welfare programmes and advance these year by year. It may not be out of place to mention in this connexion the extraordinary attitude taken up by a District Board which, after training a lady health visitor at its own cost, declined to utilize her services, because of the sudden discovery that Indian mothers were quite conversant with matters relating to child welfare, the infantile mortality rate in this district in 1922 being over 190! On the other hand Madura District Board has in its employment a trained lady health visitor, who has been placed under the control of the District Health Officer, and it is understood that she has already done satisfactory work. It is hoped that other District Boards will see their way to follow this excellent example.

30. Infantile deaths when classified according to age at death are distributed as follows:—

Age at death.	Percentage of infantile deaths.
Under one week	31.7
One week to one month	16.8
One month to six months	22.3
Six months to twelve months	29.2

These percentages correspond closely to the figures given in last year's report, and taken with the mortality rates in Annexure C, amply prove the need for a more progressive policy in both maternity and child welfare relief. Individual districts display extraordinary variations in these percentages and the following are a few selected instances:—

Name of district.	Percentage of infantile deaths in first week of life.
1. Kistna	49.2
2. Tanjore	42.3
3. Ganjam	18.1
4. Coimbatore	11.6

These variations merely represent inaccuracy in the returns, as the districts showing the lowest percentages are equipped with neither maternity nor child welfare institutions. Inquiries have shown that a large number of village headmen are completely unaware of the orders requiring a detailed classification of infantile deaths. Collectors should be requested to issue circulars to all village officers on this subject.

31. The death-rate of the rural population where Act III of 1899 was in force was 18.5 per mille, whilst it was 20.6 per mille in the non-compulsory areas. Increases in the death-rates of compulsory areas as compared with the rates in the non-compulsory areas are noticeable in Tanjore (+ 7.6), Rāmnād (+ 7.3), Vizagapatam (+ 4.6) and Coimbatore (+ 3.8) while decreases are prominent in Kurnool (— 11.6), Salem (— 6.2) and North Arcot (— 5.4).

DEATHS IN RURAL TOWNS.

32. The number of deaths registered during 1922 in the 215 rural towns of the Presidency was 41,193 yielding a death-rate of 19.1 per mille against 17.6 in 1921. A complete list of these towns with their death-rates is attached as Annexure D. The following abstract shows the variations met with:—

Registered death-rate.	Number of towns.	
	1922.	1921.
Below 5.0 per mille	2	9
Between 5.0 and 10.0 per mille	17	27
" 10.0 and 20 "	97	97
" 20 and 30 "	79	60
" 30 and 40 "	17	7
" 40 and 50 "	2	3
" 50 and 60 "	1	2
" 60 and 70 "	(Kilakarai)	1
" 70 and 80 "	(Kilakarai)	

It is hardly necessary to repeat the remarks made last year regarding the absurdity of the figures in the first three groups, although, on comparison with the figures for 1921, a considerable improvement has been effected. Local enquiry into the figures for Kilakarai (Rāmnād district) has shown that the death-rate had been calculated on a population of 6,034 instead of one of 11,434. The correct death-rate for 1922 is therefore 30.5.

DEATHS IN MUNICIPALITIES.

33. Deaths registered in the 81 municipalities of the Presidency during the year numbered 93,511 as compared with 90,650 in 1921. The death-rate per mille in 1922 was 31.0 against 30.0 in 1921 and 38.1 the quinquennial average. A comparative statement of the death-rates in 1922 and 1921 in individual municipalities is appended as Annexure E. In 17 municipalities the death-rate was below 20 per mille, the lowest figures being registered in Poddāpur (13.9) and Chirala and Tiruvālūr (14.0). These towns also recorded incredibly low death-rates in 1921 and returned birth-rates of less than 20 per mille during the present year. As those three places are in no way health resorts, the recorded figures must be entirely untrustworthy. Nineteen municipalities returned death-rates varying from 20 to 25 per mille, twenty-two from 25 to 30 per mille, thirteen from 30 to 35 per mille, four from 35 to 40 and five from 40 to 60, and one, viz., Periyakulam, 70.6. Of the last mentioned 10 towns, the high death-rates recorded in Palni, Udamalpet, Hospet, Coimbatore and Periyakulam are due to epidemics of plague. In Madras, Madura, Calicut and Virudupatti, the high mortality is to be attributed to the prevalence of smallpox, and in the case of Kurnool to an excessive mortality under "fevers", which is the local registrar's synonym for "smallpox."

34. A comparison of the death-rates of municipalities in 1922 with the rates in 1921 shows that increases have occurred in 40 towns and decreases in 41. Marked increases are recorded in the plague-infected towns of Palni (+ 24.3), Periyakulam (+ 23.8), Coimbatore (+ 23.6), and Hospet (+ 23.4). The municipalities which showed greatest decreases are Salem (— 23.6), Gudiyāttam (— 18.8) and Tiruppūr (— 14.1). These decreases are due to the diminished prevalence of plague during the year under report.

35. During 1922 the average infantile mortality in the municipalities was 231.4 per mille of the registered births, against 220.5 in 1921 and 244.7, the quinquennial average. The rates were appallingly high in Coimbatore (352.8), Virudunagaram (332.9), Bozwada (329.8) and Madras (311.6) where violent epidemics of smallpox existed. Dindigul, Udamalpet, Tinnevely, Negapatam, Cuddalore, Chidambaram, Tanjore and Periyakulam returned infantile rates varying from 250 to 280 per mille. In 15 towns the rates were below 150 per mille. Nandyal recorded the lowest rate of 98.0, a figure 60.7 less than that recorded in 1921. As no child welfare work is being done in Nandyal, the only conclusion is that registration is extraordinarily defective.

36. Compared with 1921 increased infantile mortality rates were registered in 45 municipalities whilst decreases were recorded in 36. The increase was over 100 per mille in Coimbatore (+ 123.0) and Bōdināyakkanūr (+ 100.3). This excess was in both cases probably due to smallpox, but in Bōdināyakkanūr, it may also partly be the result of better registration, the rate for 1921 being only 96.7. Prominent instances of decline in infant mortality in the year are Ongole (— 83.5), Narasaraopet (— 74.6), Vizianagram (— 68.4), Chicacole (— 63.8) and Nandyal (— 60.7). The drop in Nandyal has already been commented on but the figures for the remaining four towns require investigation before useful comment can be made.

37. In accordance with the orders contained in paragraph 6 of G.O. No. 541, P.H., dated 10th April 1922 (reviewing the administration report for 1921), discussions have been held with the Municipal Councils of Bozwada, Ootacamund and Kodaikānal regarding the steps to be taken to combat the high infantile death-rate in these municipalities. Although there has been a fall in the infant mortality of each of these towns during the year under report, that could not

possibly have been the result of the decisions arrived at. The rate in Bezvada has been persistently high (about 300) for many years, and the appointment of a Health Officer and the opening of a child welfare institution are urgently necessary. The infantile mortality rate in Madras City, which has showed perceptible signs of decrease in recent years, jumped up to 331 in 1922. The achievements of the child welfare institutions there have been entirely masked by the epidemic of smallpox which undoubtedly was the cause of the increased death-rate.

The introduction of child welfare schemes in every municipality in the Presidency is perhaps too much to hope for, but Municipal Councils should realize that the "slaughter of the innocents," which has been, and still is, going on in the areas for which they are responsible, is an immense slur on their administration. A Memorandum on the subject of Maternity Relief and Child Welfare is under preparation and will be issued shortly.

GENERAL HISTORY OF CHIEF DISEASES.

38. The following table gives classified figures for the total registered deaths for the year 1922 together with the corresponding figures for the previous year:—

Diseases.	Deaths in		Increase or decrease in 1922.
	1922.	1921.	
Cholera	16,502	27,064	- 10,562
Smallpox	22,801	9,792	+ 13,009
Plague	9,193	11,875	- 2,682
Fevers	319,688	316,019	+ 3,669
Respiratory diseases	48,168	45,180	+ 2,988
Dysentery and diarrhoea	51,805	53,621	- 1,816
Other causes	391,081	363,346	+ 27,735
Total	859,238	826,897	+ 32,339

With the exception of smallpox and relapsing fever, it may be said that no serious epidemic occurred in the Presidency during 1922. It is probable therefore that part of the increase in the total registered deaths is due to greater accuracy of the vital statistical returns, but it is by no means easy to assess this factor.

39. Reference was made in the 1921 report to the general failure of the measures which had hitherto been practised in combating preventible disease which yearly claims an enormous number of victims. Although in the case of most districts, the history of previous epidemics is wanting, District Health staffs should make every attempt to collect and examine all available records; and this information, however imperfect it may be, supplemented by the experience of the next few years, should enable local bodies to forestall epidemics and avert their outbreak and spread by the application of timely preventive measures. The experience gained by the work and reports of the five district health officers employed last year, has already revealed the possibilities of a detailed study of epidemiology of disease in the Presidency. By making use of the results of the investigation published in last year's report regarding the epidemiology of cholera, in the course of a few months the District Health Officers of Kurnool, Trichinopoly and Tanjore, for example, were able to determine the foci of infection of cholera in their districts. If, in future, these foci are carefully controlled, specially just before the period when an outbreak of the disease may be expected, it is practically certain that the widespread dissemination of this disease which now occurs regularly will be arrested. Good work has also been done in connexion with the outbreak of relapsing fever in Tanjore and Trichinopoly districts. A recurrence of last year's epidemic was anticipated, and the prompt inception of preventive measures and of medical treatment, has, it is pleasing to note, resulted in a great decrease in the mortality as compared with 1921. With these practical examples before us, it is perhaps permissible to be a little more optimistic regarding the future public health administration of the Presidency than the figures in the above table would seem to justify. At the same time, it must be repeated that success will not be possible if revenue officers and local bodies maintain their present attitude of indifference and procrastination in reporting outbreaks of infectious disease. It is the first case of epidemic disease which is so important to the Public Health Department. Numerous instance could be quoted of inexcusable delay in making reports. For instance, over 50 deaths from cholera occurred in Arkōnam (North Arcot district) before the outbreak was brought to notice, and even then it was reported by the railway

authorities. Reports of smallpox outbreaks were kept back for weeks, if not months, in Tanjore, Conjeeveram and Vizagapatam, and it was only the suspicious increase in deaths from "measles" which led to local enquiry and correction of diagnosis.

CHOLERA.

40. The number of deaths from cholera registered during 1922 was 16,502 (0·4 per mille), against 27,064 (0·7 per mille) in 1921 and a quinquennial average rate of 1·7 per mille. This figure is the lowest on record. The districts of Kurnool, Bellary and Cuddapah which returned only 9, 38 and 88 deaths respectively in 1921 were very heavily infected in 1922, returning 3,793, 3,546 and 1,190 deaths respectively. Ganjam with 2,997 deaths as against 3,553 in 1921 was also badly infected, and these four districts alone accounted for nearly 70 per cent of the aggregate for the Presidency. The Nilgiris enjoyed complete immunity. Gōdāvari (1 death compared with 4,696 in 1921), the Agency, Rāmnād, Madras and Tinnevely districts each returned less than 20 deaths. Decreased mortality was also marked in Trichinopoly (654 against 1,098), Malabar (105 against 2,242), and Tanjore (650 against 5,890). In the last named district, most of the cases occurred in the first few months of 1922 as a continuation of the epidemic which existed in the latter half of the previous year. Only six districts, viz., Kurnool, Bellary, Cuddapah, Anantapur, North Arcot and South Kanara registered an increased death-rate when compared with 1921, and the first two only compare unfavourably with the quinquennial average. The rates of all other districts in the Presidency show a decrease.

Graph II exhibits the death-rates from cholera in the Presidency as compared with the rates of 1921 and the quinquennial average.

41. The incidence of cholera in the different quarters of the year is shown in the accompanying table—

						Number of deaths from cholera.	
						1922.	1921.
First quarter	...	...	...	...	...	3,725	7,889
Second "	...	...	...	...	...	5,646	5,828
Third "	...	...	...	...	...	5,640	11,628
Fourth "	...	...	...	...	...	1,591	1,719

The 1922 figures corroborate the observations made in last year's report and those made in the preceding paragraph. Practically all the cholera during 1922 occurred in the northern districts which receive their rainfall from the south-west monsoon.

It is once more to be noted that a decrease in "cholera" is accompanied by a decrease in "diarrhoea and dysentery." A graph for these combined "bowel diseases" is given. The close relationship between the curves for "cholera" and "diarrhoea and dysentery" is also significant of defective registration.

42. Further investigation is being made into the relationship, if any, between cholera on the one hand and rainfall and humidity on the other. This investigation, while not yet complete, would seem to indicate that a definite correlation does exist, but it is not possible meantime to make a more definite statement.

43. Forty-one municipalities registered a total of 1,016 deaths from cholera, representing a rate of 0·3 per mille against the corresponding figures of 2,463 and 0·8 per mille in 1921 and 1·5 per mille for the quinquennium 1917—21. The municipalities of Dhārāpuram (10·0), Palni (5·9), Adōni (4·6), Kurnool (3·0), Nandyal (4·6) and Bellary (1·9) returned 65 per cent of the total mortality. Details are given in Annexure G. Amongst the 40 municipalities which remained completely free from cholera, Rajahmundry, Cocanada, Kumbakonam and Mayavaram were heavily infected in 1921. Enquiries conducted in infected towns which were equipped with protected water supply failed to produce any evidence implicating the protected supply as a source of infection.

44. The rules prescribed for combating cholera in municipal towns remain in force. They will probably become more effective when municipalities which

do not have Health officers of their own, recognize the advantage of utilizing and co-operating with district health staffs.

45. Forty-nine rural towns registered 711 deaths from cholera against 78 towns with 1,125 deaths in 1921. The death-rate was high in Kosgi (11·2), Pamidi (10·1), Kamalapuram (7·8), Rasampet (6·8) and Tekkali (5·7).

46. Of 40,850 villages and towns for which vital statistical returns were received, deaths from cholera were registered in 1,799 as compared with 3,225 in 1921 and 5,002 in 1920.

47. Three of the eight cholera parties were disbanded in April 1922, and the Sanitary Inspectors were distributed amongst the five districts in which the Government ordered the experimental introduction of the District Health Scheme. A fourth party was disbanded in the latter portion of the year to provide additional funds for the training of Health Officers. The remaining four parties, in addition to their usual work in the cholera infected districts, took an active part in the supervision of sanitary arrangements during the festivals at Tiruvannāmalai and Srirangam. Towards the end of the year one party was sent to South Arcot district to carry out preventive measures against relapsing fever, an epidemic of which had broken out in Vriddhachalam taluk.

48. Of the methods employed for the purification of water, it is becoming more and more certain that chlorination is infinitely the best. The Director, King Institute, has emphasized the superiority of this method over hankinisation, and all district health officers have, during their training, been given detailed instruction in the methods of using chlorine for the purification of village wells and water-supplies.

SMALLPOX.

49. The wave of epidemic smallpox which was forecast in paragraph 48 of last year's report occurred even sooner than was anticipated, for during 1922, a grave increase occurred in the mortality from smallpox, the number of deaths registered from this cause being 22,801, an increase of 13,009 over the number recorded in 1921. Estimated per mille of population, the death-rate was 0·5 as compared with 0·2 in 1921 and 0·8 for the preceding quinquennium. Not a single district remained free from infection; but Malabar and the eleven districts comprised in the East Coast, Central and Southern divisions returned the largest number of deaths. The mortality in these districts ranged from 1,000 to 2,382 (in Madura) the total amounting to nearly 70 per cent of the aggregate mortality for the Presidency. The intensity of infection in those districts lying between Madras City and Cape Comorin is very striking. In the case of three districts only, viz., Guntūr, Kurnool and the Agency the incidence was less than in 1921, the largest decrease being recorded in Kurnool with a death-rate of 0·3 in 1922 as compared with 0·6 in the preceding year.

50. The registered mortality, great as it is, does not by any means represent actual facts. The following abstract compiled from a statement submitted by the District Health Officer of Tanjore lends force to this remarks:—

Tanjore taluk.

	Number of infected villages.	Number of attacks.	Number of deaths.
According to the returns submitted by the revenue authorities to the Director of Public Health.	Nil.	Nil.	Nil.
According to the Tahsildar's records	15	146	53
According to posting registers in Collector's office	56	(Figure not available.)	165
According to enquiries made by the District Health Staff	59	723	184

These statistics, moreover, do not relate to the whole of Tanjore taluk. The District Health Officer during his examination of the posting registers in the

Collector's office came across the names of villages in which deaths from smallpox had been registered but which had not been reported to him by the tahsildar. Enquiries conducted by part of the district health staff, over a period of 14 days, in villages reported to be infected and in adjoining villages, revealed many discrepancies, and it is certain that if time had permitted, hundreds of omissions would have been detected. It is probably not too much to say that large numbers of deaths from smallpox are included in the figures given for "fevers" and "other causes." If space permitted, similar instances could be given for other districts.

51. Curves showing the monthly incidence of smallpox during 1921 and 1922 and the average incidence during the last 10 years are given in the accompanying graph No. IV.

52. The following statement gives the number of registered deaths from smallpox in children and adults:—

Age.							Number of deaths from smallpox.
Under 1 year	...	...	...	...	...	...	7,690
1 to 10 years	...	...	...	...	...	...	8,476
Above 10 years	...	...	...	...	...	...	6,635

These figures show that no less than 16,166 deaths out of a registered total of 22,801 occurred among children under 10 years of age. Before these figures were available, local inspections had made it evident that the disease was particularly prevalent in the child population of the Presidency, and in several municipalities, by far the greatest number of deaths from smallpox occurred among children under one year of age. One of the main functions of local bodies and municipalities is to carry out vaccination work, and prevailing conditions have proved with certainty that few of these bodies have been alive to their responsibilities in this connexion. In one municipality, the vaccinator's post remained vacant for months during the whole of which period a smallpox epidemic took its daily toll of victims. In other towns, smallpox was deliberately concealed, whilst it is a common practice to employ the vaccinators on duties outside their proper sphere. It is to be hoped that the epidemic which has raged during the year under report will serve as sufficient warning to those who have deliberately, or otherwise, neglected the important duty of having the populations for whom they are responsible properly protected against this loathsome disease.

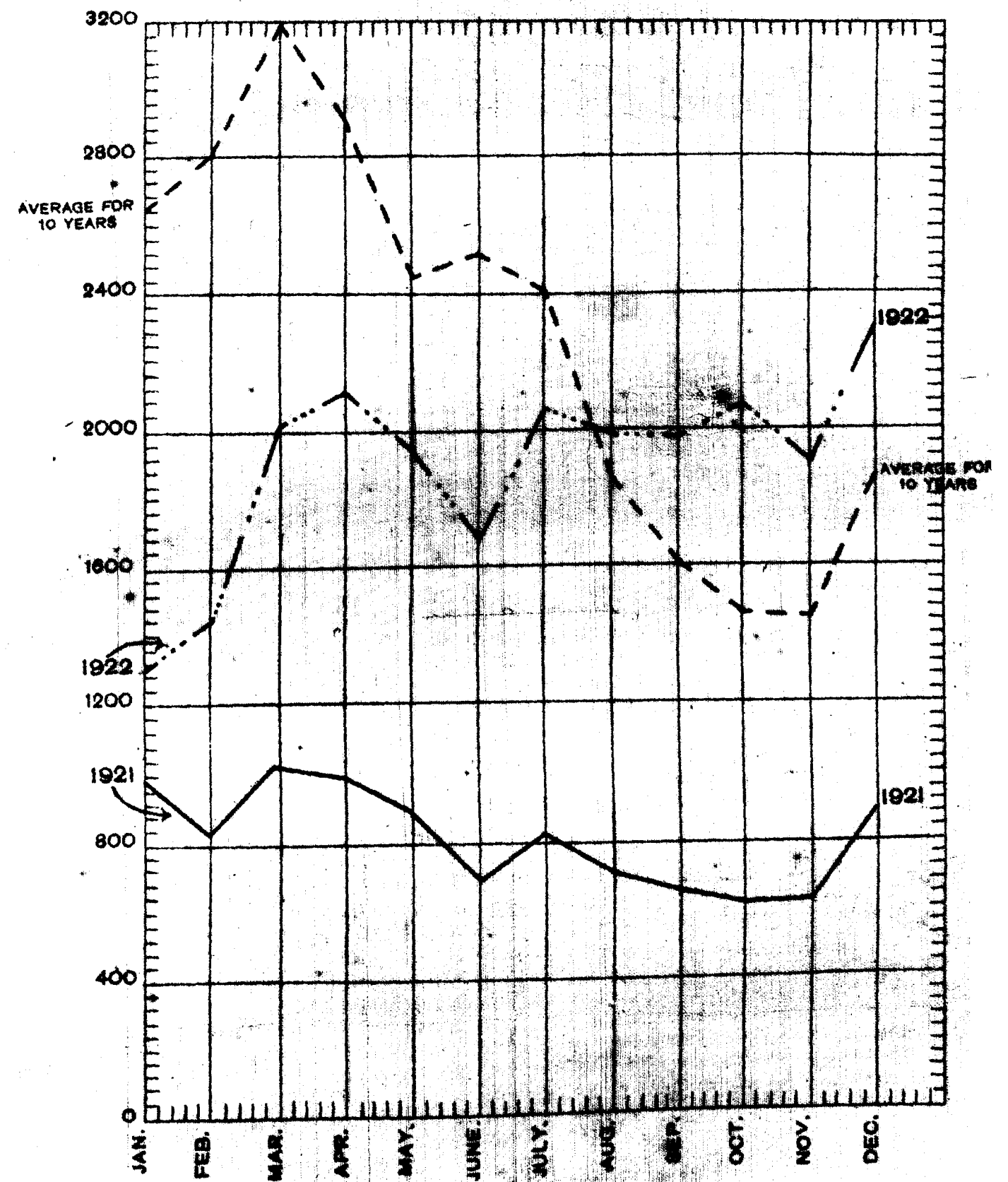
53. Sixty-five municipalities registered deaths from smallpox, the aggregate mortality being 5,412 against 846 in 1921. These figures yield a death-rate of 1·8 and 0·3 respectively, the quinquennial average being 1·1 per mille. Nearly 1,100 deaths were reported from each of the cities of Madras and Madura, these figures representing 40 per cent. of the aggregate for municipal towns. Other towns which registered a high death-rate were Virudunagaram (8·3 per mille), Udumalpet (7·3), Cochin (6·9), Pollachi (5·6), Coimbatore and Saidapet (4·5) and Karur (4·2). In no instance was there any marked decrease in the incidence of smallpox as compared with 1921.

54. The remark made in paragraph 50 regarding defective registration of smallpox in districts applies with greater force to municipalities. Instances could be multiplied indefinitely but it will suffice to mention three of the worst examples. In a recent inspection of Saidapet municipality it was found that 123 attacks and 123 deaths had been recorded. In no place in the Presidency has the death-rate been anything like 100 per cent and the inference, therefore, is that scores of cases of smallpox escaped detection. A similar state of affairs was found in Conjeevaram which has registered a smallpox death-rate of only 1·7 in spite of an epidemic which raged in the town for months; whilst in Madura town most of the deaths among young children were registered as "measles" until a local inspection was made by the Director of Public Health.

55. One hundred and thirty rural towns registered 1,390 deaths from smallpox against 65 towns with 379 deaths in 1921. The towns which recorded the highest number of deaths were Nellikuppam (67), Paramagudi (91), Sōlavandān (45) and Udipi (45).

GRAPH IV

GRAPH SHOWING MONTHLY INCIDENCE OF SMALLPOX
DURING 1921-1922 AND THE AVERAGE INCIDENCE
DURING THE LAST TEN YEARS ENDING 1921.



Reg. No. 524
Copies 4 + 1116

Vandyke, Survey Office, Madras.
1922.

56. The total number of villages and towns which reported deaths from this cause was 4,487 as compared with 2,637 in 1921 and 3,608 in 1920.

57. Of all preventible diseases, smallpox is that which is perhaps most easily controlled. Its incidence is closely associated with the state of vaccination in the community. In their review of the Vaccination Report for 1921-22 (G.O. No. 1496-P.H., dated 31st October 1922), Government have drawn attention to the extraordinary variations which exist in the vaccinal condition of the population in the different districts and towns. Detailed instructions on the subject have been given in the Public Health Department's Memorandum on smallpox (issued with G.O. No. 765-A, P.H., dated 1st June 1922).

58. Frequent complaints have recently been made to the effect that vaccinated children have fallen victims to smallpox. In every case which was investigated, it was found that the vaccination vesicles were spurious or the cicatrices were so small that the operation had conferred little if any protection against the disease. No instance of death from smallpox in any child which had been properly vaccinated was brought to light. Many vaccinators have failed to obey the definite instructions laid down for the proper carrying out of the operation of vaccination. In thousands of cases children are returned as successfully vaccinated, if they shown even one small vesicle, but the degree of protection conferred by such a result is negligible. Now that District Health staffs have been appointed all over the Presidency, it is anticipated that the increased supervision of vaccination work which will be possible will gradually bring about improvement in this connexion. That this is no pious hope is evidenced by the fact that the District Health Officer in Trichinopoly district was able to double the number of successful vaccinations in the district in a few months.

59. It must be remembered also that primary vaccination does not afford immunity against smallpox for life. Protection lasts for about 7 years, after which re-vaccination is necessary. The proportionate increase in the percentage of successful re-vaccinations in the different age groups given in the accompanying table demonstrates the decline in the degree of protection conferred by primary vaccination :—

Age-group.	Re-vaccinations.	Fully developed pustular reaction.	Percentage giving pustular reaction.
12th year	1,435	321	22.3
12th to 20th year	794	108	13.6
21st to 25th "	818	155	18.9
26th to 30th "	613	139	22.6
31st to 35th "	465	135	29.03
36th to 40th "	386	190	49.2
Over 40 years	1,238	768	62.04

NOTE.—The statistics in this table and the one below are taken from Dr. Gin's lecture at the Koch Institute for Infectious Diseases in Berlin.

Again, before vaccination became compulsory, smallpox was chiefly a disease of children. After infantile vaccination was made compulsory and was enforced in Germany with military discipline, the disease became one of adults. This is demonstrated by the following statistics :—

Mortality from Smallpox in Berlin.

	1758-74.	1870-72.	1916-17.
Percentage of deaths over 40 years ...	0.07	25.85	80.56
Do. between 30 and 40 years ...	1.25	27.13	7.32
Do. under 30 years ...	98.7	49.02	2.12

Smallpox in this Presidency is, however, still a disease of young children. It follows that the protection of the child population is ridiculously inadequate,

and sufficient indication therefore exists of the urgent necessity for a more effective policy on the part of local bodies in connexion with both primary vaccination and re-vaccination.

PLAGUE.

60. Mortality from this disease declined from 11,875 in 1921 to 9,193 in 1922 representing a death-rate of 0·3 and 0·2 per mille, respectively, the quinquennial rate being 0·3 per mille. Fourteen districts registered deaths from plague, but nearly 94 per cent of the total mortality occurred in the following five which occupied an identical position in 1912 :—

Deaths from plague.

Coimbatore	...	...	...	...	...	...	...	3,008
Salem	...	...	...	...	...	...	...	2,011
Madura	...	...	...	...	...	...	...	1,614
North Arcot	...	...	...	...	...	...	...	1,058
Bellary	...	...	...	...	...	...	...	951
								<u>8,682</u>

In the Nilgiris, South Arcot, Rāmnād and Trichinopoly deaths from plague ranged from 38 to 101.

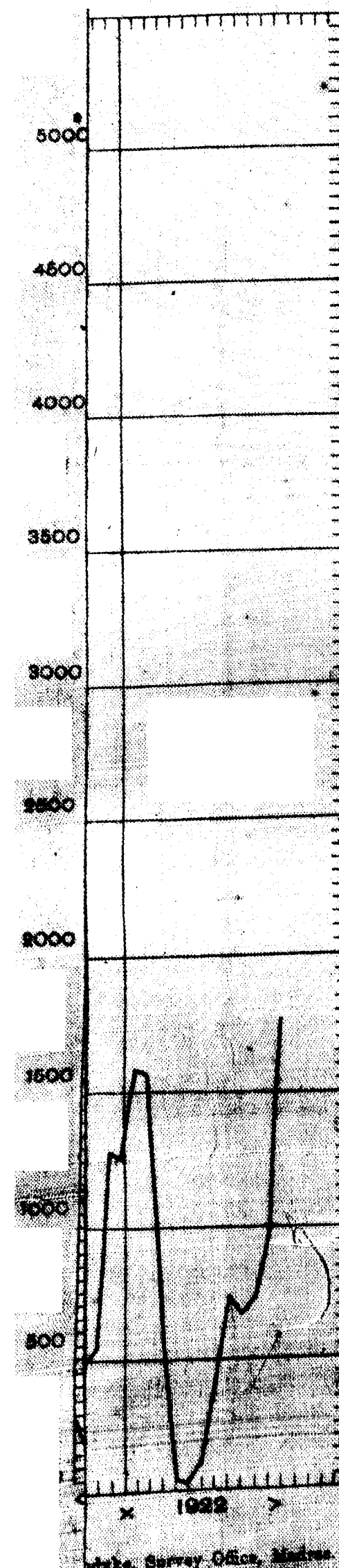
61. The monthly incidence of mortality from plague in Madras Presidency during the last 10 years is exhibited in the accompanying graph No. V.

62. Local investigations have proved that the figures given for plague in 1921 were very much under-estimated. In Mēttupālaiyam in Coimbatore district, for example, 188 deaths from plague had actually been registered whereas the number given in the annual return was only 16. It is anticipated that the number of omissions is not so great this year although doubtless many deaths from plague have been concealed under "fevers" and "other causes." This error should now be gradually eliminated.

63. The number of deaths from plague in municipal towns was 3,002, or 792 less than in 1921, the rates for the two years being respectively 1·0 and 1·8 per mille. Of the 27 municipalities which were infected, six towns registered only one death each, and 7 returned between one and ten deaths. Coimbatore (810), Periyakulam (418), Hospet (343), Palni (309), Udampet (117), Tirupattūr (161), Tiruvannāmaiai (218) and Gudiyāttam (226) were all heavily infected. The municipalities in the districts of Bellary, Coimbatore, North Arcot and Madura, contributed 2,835 deaths or more than 42 per cent of the aggregate district mortality. Compared with 1921 Coimbatore, Udampet, Hospet, Palni and Periyakulam registered marked increases in plague mortality, while Tirupattūr and Gudiyāttam were some what better than in the previous year. Deaths from pneumonic plague, the most fatal type of the disease, were registered in Ootacamund, Cannanore, Calicut and Wellington Cantonment. Fortunately the disease was confined to a limited number of households and their contacts, and quickly died out.

64. Nineteen rural towns recorded 442 deaths from plague against 19 towns with 773 deaths in 1921. These figures represent 0·2 and 0·4 per mille, respectively. The largest number of deaths was registered in Dharmapuri (184), Tirupuvanam (91), Kurichechi (37), Pallikonda (35) and Mēttupālaiyam (30).

65. Except in the Nilgiris and Madura districts and in the Municipalities of Madura and Kodaikānal, the administration of plague preventive measures was extremely unsatisfactory. Other local authorities failed conspicuously to recognize their duty at the initial stage of the outbreaks, and their half-hearted attempts to check the mortality after the epidemic had assumed unmanageable proportions naturally proved futile. The most notable failures in this connexion include the Municipal councils of Periyakulam, Palni, Coimbatore and Hospet. For example, between 25th July 1922 and 29th March 1923 in Coimbatore town, with



a population of 65,788, there were no less than 1,471 attacks and 1,087 deaths. Only 2,399 persons were inoculated, but of these only 3 were attacked and only one died. In spite of repeated warnings of the imminence of a plague epidemic, the local authorities did little or nothing to prevent the spread of the disease and a terrible mortality resulted.

66. In prominent contrast to these, brief reference must be made of the active and successful measures taken in Wellington, Ootacamund and in Madura district and town. The Military authorities in Wellington carried out an immediate intensive rat-catching campaign, combined with inoculation of the population, and although 9 deaths occurred, the outbreak was quickly and permanently stamped out. In Ootacamund the quick succession of deaths in one family from pneumonia aroused suspicion, and the diagnosis of pneumonic plague was speedily arrived at. Inoculation of persons in the infected locality, isolation of contacts, and evacuation of the houses stopped further spread of the epidemic which was very virulent in type, the Sub-Assistant Surgeon and a hospital attendant in the Plague Hospital both unfortunately succumbing to the disease.

Perhaps the most successful work on a large scale was carried out in Madura district. By the untiring efforts of Mr. Fairbairn, the Deputy Collector, and the Medical and Public Health staffs working under him, nearly 2·08 lakhs of people, or approximately 93 per cent of the population in the infected villages of Periyakulam taluk, were inoculated in the course of a few months; whereas in Coimbatore district where the mortality was very high, the number of inoculations was almost negligible. The decreased death-rate in Madura district may be put down almost entirely to the enthusiasm of the officers who spared neither time nor trouble in persuading the population of the value of preventive inoculation.

These instances serve to illustrate the supreme importance of promptly carrying out all the preventive measures which have been given in detail in the Memorandum on Plague issued with G.O. No. 897-A, P.H., dated the 24th June 1922. Unless the local bodies of all infected areas make similar earnest attempts, there is little chance of arresting these recurring deadly epidemics.

The following statement gives actual numbers of inoculations done in the different districts :—

District.	Number of plague inoculations done in 1922.
Madura	207 691
Salem	14,938
Malabar	11,326
Bellary	8,641
The Nilgiris... ..	4,210
Coimbatore	2,672
Trichinopoly	1,941
North Arcot	457
Ramnad	61
South Kanara	Nil.
Total	251,937

FEVERS.

67. Deaths registered under this head numbered 319,688 against 316,019 in 1921, the rates per mille of population being 7·8 and 7·7, respectively. As in previous years, Vizagapatam recorded the highest rate of 18·5. The other districts which returned a rate of over 10 per mille are Ganjām (15·7), Agency (13·8), Guntūr (12·0) Cuddapah (11·9), Kurnool (11·8), Gōdāvari, Kistna and Nellore (11·1 to 10·7). The lowest rate was registered in Coimbatore (3·0). The only district which exhibits an extraordinary variation is Nellore which registered 10·7 in 1922 against 5·2 in the previous year.

68. The incidence of a high fever death-rate in the Agency Division and in Ganjām is undoubtedly due to malaria.

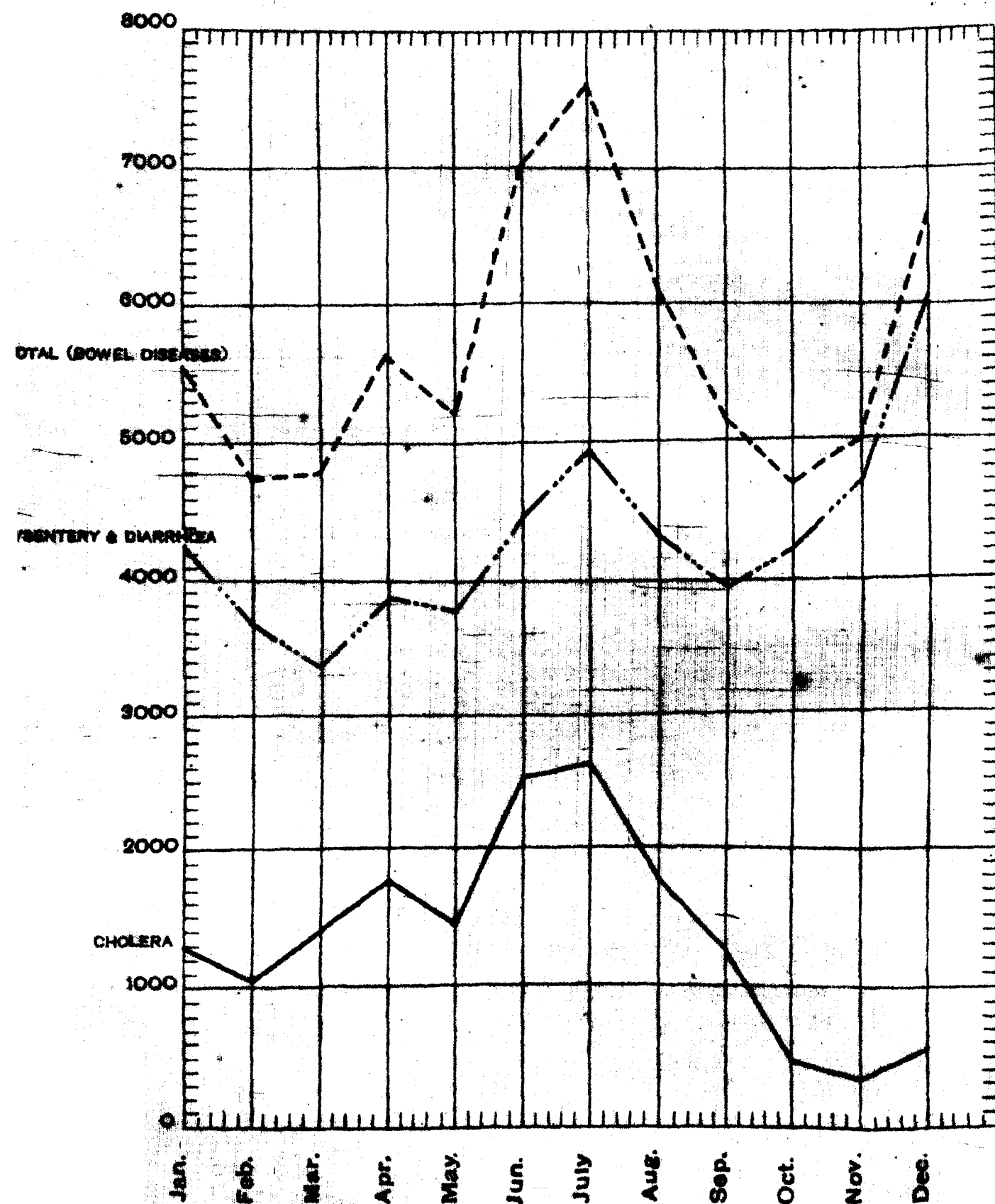
With reference to paragraphs 18 and 20 of G.O. No. 80-P.H., dated 26th January 1921 and G.O. No. 541-P.H., dated 10th January 1922, an investigation was carried out in Vizagapatam district in order to determine, if possible, the causes for the continuous high fever death-rate registered there. A preliminary reference to the posting registers of some of the Taluk Officers, e.g., in Bobbili, showed that more than 95 per cent of the deaths returned by village headmen were classified under "fevers." In some months and in some places "fevers" were cent per cent of the total registered mortality. Were it not for the municipal statistics and the figures furnished by a few intelligent village munsifs, the percentage of fever deaths to total mortality would have been over 95 instead of the registered percentage of 87. As it was impossible to believe that the inhabitants of Vizagapatam district were immune from all other diseases except "fevers," intensive enquiries were instituted in a number of place in different parts of the district, and the summary of the results of the investigation of 399 deaths registered as "fevers" is shown in the following table:—

Actual cause of death		Number of cases	Percentage to total investigated
Total fevers, 117	Malaria ...	24	29.3
	Typhoid ...	6	
	Fevers of uncertain origin.	87	
Total respiratory diseases 75	Pneumonia	4	1.88
	Consumption	10	
	Other respiratory diseases	61	
Diarrhoea and dysentery		50	12.5
Maternal deaths		21	5.3
Small-pox		4	1.0
Accidents (drowning, etc.)		4	1.0
Rabies		2	0.5
Nervous diseases		14	3.5
Intestinal complaints other than dysentery and diarrhoea		12	3.0
Beriberi and dropsy		14	3.5
Leprosy		3	0.8
Rheumatism		3	0.8
Tumours		8	2.0
Other causes		77	19.2
Total		399	100.0

Although separate columns are provided in the returns for the first seven diseases on the above list and the deaths under the remaining heads in the statement should be classified under "Other causes," all the 399 deaths have been posted under fevers, whilst only 117 should find a place in that column. Although it is perhaps too much to expect a village headman to classify deaths under malaria, typhoid, etc., it should certainly be possible for him to differentiate "fevers" from diarrhoea and dysentery, small-pox, rabies, maternal deaths and accidents. The excuse given for this state of affairs was that it was *mumool* to register deaths under "fevers." The wholesale concealment of these diseases under "fevers" reveals a most hopeless state of mismanagement by the registrars and a deplorable lack of supervision by the Revenue Officers, and the same remarks are applicable to many other places in the Presidency. It is obviously impossible to draw any definite conclusion as to public health conditions from statistics so faulty as these, and one of the first and most important functions of the District Health staffs will be to correct similar vagaries in the other districts named in paragraph 67 above.

Although the vital statistical returns do not contain definite information of the mortality from typhoid fever, this disease is probably responsible for a considerable proportion of "fever" deaths. The number of typhoid cases treated at the Government General Hospital, Madras, has increased from 79 cases in 1910 to 564 in 1922, the maximum of 706 being recorded in 1920. A similar increase

GRAPH III
SHOWING BOWEL DISEASES, OR TOTAL NUMBER OF
DEATHS FROM CHOLERA, DYSENTERY AND
DIARRHŒA IN MADRAS PRESIDENCY
DURING 1922.



Reg. No. 524

Copies 4 + 1116

* Vandyke, Survey Office, Madras.
1923.

has been registered in many other institutions. A specific outbreak was brought to the notice of this department by the Sub-Assistant Surgeon in charge of the local hospital in the village of Desur (population 3,312) near Wandiwash in North Arcot district where in the course of a few weeks 30 attacks were registered with 8 deaths. Investigation showed that the infection was probably spread by a village well which had long be neglected and disused. In any case when the people were prohibited from using the water, the epidemic completely subsided. The out-break is quoted here not only to show that typhoid epidemics occur, but also to demonstrate to local bodies the necessity of devoting increased attention to the protection of rural water supplies.

69. Unlike the districts, municipal towns registered a decrease of 1,412 deaths under fevers, the actual figures for 1922 and 1921 being 13,888 and 15,300 which give rates of 4.6 and 5.6 per mille. The highest rate of 14.5 was returned by Kurnool. In Hindupur and Rajahmundry, the rate rose from 6.6 and 5.2 in 1921 to 13.3 and 10.7 in 1922. The cause of these variations is not known. Ongole and Narasaraopet, as in 1921, also registered rates over 10 per mille. With the exception of Villupuram (5.4 in 1922 and 9.7 in 1921), no other marked variations are to be noted.

70. The number of deaths registered under fevers in rural towns was 11,711 representing 5.5 per mille, the corresponding figures for the previous year being 11,527 and 5.3 per mille. Kilakkarai in Ramnad district returned the highest rate of 25.2 against 26.4 in 1921 and 57.7 the quinquennial average. Corrected rates for births and death for this town have already been received and the figures for "fevers" should also be correspondingly reduced by half.

71. The number of villages and town which registered deaths from fevers was 34,406 as compared with 28,265 in 1921.

DYSENTERY AND DIARRHŒA.

72. A steady decline in the mortality from dysentery and diarrhoea has taken place from 1918, and this decline is associated with a similar progressive fall in the number of deaths registered from cholera. The following table gives actual figures :—

Year.	Deaths from dysentery and diarrhoea.	Cholera.
1918	79,841	122,263
1919	74,074	93,262
1920	56,402	31,139
1921	53,621	27,064
1922	51,805	16,502

Graph No. III shows the similarity in the curves for "cholera" and "dysentery and diarrhoea," and it is probable that this is due not only to the greater prevalence of diarrhoeal complaints during a cholera epidemic, but also to the concealment of cholera cases.

The death-rate is 1.3 for 1922 against 1.3 in 1921 and 1.7 per mille the quinquennial average. Excluding Madras with its usual high rate (8.0), the districts which have recorded a considerable deviation from the Presidency average are the Nilgiris (3.9), Malabar (2.3), South Kanara and Coimbatore (2.1) and Chingleput (2.0). The lowest rates, 0.4 and 0.3, were returned by Vizagapatam and Nellore, but it has already been shown that many of the so-called "fever" deaths in the former district were really due to "dysentery and diarrhoea," and probably similar misrepresentation of facts is responsible for the low rate in Nellore district where registration is still badly done.

73. Municipal towns returned 10,974 deaths under this head which represents a rate of 3.6 per mille, the corresponding figures for 1921 being 12,397 deaths and 4.1. The towns which returned a high death-rate were Palamcottah (8.4), Madras (8.0), Periyakulam (7.1), Coimbatore (6.5), Chingleput (6.4), Calicut (5.9), Dhârapuram (5.2), Vizianagram (5.1), and Dindigul (5.0). The lowest rates of 0.3, 0.4 and 0.9 were recorded in Anantapur, Hindupur and Tenali.

74. 2,557 deaths were registered in rural towns against 2,598 in 1921. These figures represent a rate of 1.2 per mille. Ponnāni, Bhavāni, Bhuvanagiri, Tiruppuvanam and Uttiramerur recorded high death-rates ranging from 5 to 6 per mille.

75. 12,337 villages and towns registered 51,805 deaths under dysentery and diarrhoea in 1922.

RESPIRATORY DISEASES.

76. The number of deaths registered under respiratory diseases was 48,166 (1.2 per mille) against 45,180 (1.1 per mille) in 1921 and a quinquennial average of 1.3. Excluding Madras (9.5) the death-rate from this cause varied from the maximum of 4.4 in the Nilgiris and 3.0 in Kistna to 0.3 in Ganjām and Vizagapatam. It is perhaps natural that the death-rate should be high in the Nilgiris, but the extraordinary fluctuations in the rates of other districts can only be assigned to bad registration. The statement given in paragraph 68 illustrates this remark.

77. As regards the monthly incidence, nearly 6,000 deaths were registered in December, four to five thousand per month from September to November and an average of 3,500 in the remaining months.

78. In municipalities 9,939 deaths from this cause were recorded during the year against 9,365 in 1921 representing annual ratios of 3.3 and 3.1 per mille, respectively. The highest rates were returned by Madras (9.5), Ootacamund (9.1) and Tirupati (8.1). Tirupati has so constantly returned a high mortality from "respiratory diseases" that a special local enquiry was undertaken. The total number of deaths from respiratory diseases according to the annual return was 144. Examination of the death register showed that the actual number was 63, the difference being due to the inclusion of deaths from "infantile convulsions." Of the 63 deaths, 48 were made the subject of individual enquiry and as many as 15 were found to be due to other causes. Hence the actual number of deaths due to respiratory diseases during the year 1922 was 48, which gives a rate of 2.7 per mille as compared with the Presidency municipal average of 3.3 per mille. Examination of the local hospital statistics did not reveal any excessive admission rate for "respiratory diseases," and, in fact, fully corroborated the findings of the local enquiry. Seven towns, viz., Nellore, Tiruvālūr, Proddatūr, Hospet, Vāniyambādi, Dhārāpuram and Udampet did not report even a single death from this cause. Registration in these towns must be as defective as it has been shown to be in Tirupati. These instances illustrate the degree of error which still exists in municipal registration.

79. A total of 2,666 deaths from respiratory diseases was registered in 180 rural towns against 2,061 deaths in 160 towns in 1921 representing annual ratios of 1.3 and 1.0 per mille, respectively. The death-rate was highest in Paramagudi (17.3), Sembiam (10.5), Tiruvottiyūr (9.6). These high figures require investigation, as they are almost certainly due to faulty registration.

80. 10,726 villages and towns registered deaths from respiratory diseases in 1922 against 11,430 in 1921.

81. The term "Respiratory diseases" is a general nomenclature including not only pneumonia, asthma, and other bronchial diseases but also tubercular disease of the lungs. From the standpoint of prevention, the last of these affections is the most important, and a special enquiry into its incidence in one or two of the large towns, like Madura and Trichinopoly, would be worth carrying out. According to the report of the Health Officer of the Madras Corporation for 1921, the death-rate from this disease was 1.8 per mille against a death-rate of 6.7 from other respiratory diseases. The Health Officer is no doubt correct in surmising that the latter includes a large number of deaths from tuberculosis.

INJURIES.

82. The number of deaths registered under this head during 1922 was 8,182 the death-rate per mille being 0.2.

RABIES.

83. Deaths registered as being due to rabies increased from 89 in 1921 to 220 in the year under report. As in the former year, Malabar and Kistna returned the largest number of deaths, 41 and 34 respectively. In Chingleput, there were 26 deaths against nil in 1921, in South Arcot and Coimbatore (18 deaths each) and in Tanjore (12). The mortality in these six districts amounted to nearly 68 per cent of the total. The districts of Madras, Guntūr and the Agency Division did not register a single death from this cause. In view of the figures contained in the statement in paragraph 68, little reliance can be placed on the district statistics relating to rabies, but in any case they would seem to support the statement made in paragraph 71 of last year's report, which the Government in their review thought was doubtful.

In municipal towns, the deaths registered from this cause numbered 43 against 33 in 1921. Masulipatam, Salem, Tanjore, Rajahmundry, Coimbatore and Cannanore each returned 3 deaths.

RELAPSING FEVER.

84. A detailed report on the outbreak of relapsing fever in Tanjore and Trichinopoly districts was submitted to Government on 17th November 1922 and was reviewed by them in G.O. No. 73-P.H., dated 15th January 1923. The danger of spread of this epidemic disease to other districts which was mentioned in last year's report has unfortunately been realized. The epidemic in Tanjore and Trichinopoly districts reached its maximum from January to March 1922 during which months the mortality from "fevers" in these areas was from 8 to 16 times higher than the mean. Up to the end of June 1922, 9,060 attacks and 3,382 deaths were reported, the death-rate amounting to 37.3 per cent of the attacks, whilst in some villages as many as 66 per cent of the cases died. The infection in both districts was confined to members of the depressed classes. During the hot weather months the infection gradually died down and only with the onset of the colder months did further reports begin to come in. Towards the end of August 1922, the District Medical and Sanitary Officer, Tanjore, reported an extension of the infection in two additional taluks, but, on the contrary, the district of Trichinopoly does not seem to have experienced any further severe outbreak.

In September 1922, however, the disease was reported from South Arcot district (Vriddhachalam taluk), which is separated from Trichinopoly district only by the river Vellar, and the infection spread rapidly from village to village during the succeeding months. Between October 1922 and March 1923, the number of infected villages totalled 53, and 1,410 cases and 691 deaths were registered in this district. The mortality rate was very high all over this taluk amounting to approximately 49 per cent of attacks, but in the village of Periyannisalur (population, 1,589), there were 81 attacks and 81 deaths, and in others practically cent per cent of those attacked died.

Further outbreaks of the disease were reported from Bellary district (Bellary taluk) from October 1922, Guntūr district (Bapatla taluk) from November 1922, Nellore district (Ongole) from November 1922, Guntūr town in January 1923, and Bezwada town (Kistna district) in February 1923. Madras City has also reported 64 cases and 4 deaths among municipal scavengers in three different localities in the town since December 1922 and the latest report announces an outbreak in Anantapur district (Pennakonda taluk).

The infection is therefore gradually spreading all over the Presidency in the slow insidious fashion characteristic of the disease. Map No. I attached shows the areas now infected. Preventive and curative measures have been adopted so far as funds have permitted, and district boards have, in several instances, made special grants for the relief of the fever-stricken victims who almost without exception belong to the depressed classes. In the presence of such a widespread epidemic, it is, however, manifestly impossible for local bodies to meet the whole cost of necessary relief measures, and it is a regrettable fact that in more than

one district, District Medical and Sanitary Officers have reported that numbers of those affected have died of starvation, those for whom they labour remaining entirely indifferent to their fate. Every endeavour has been made by this department to spread information by leaflets, lectures, etc., regarding methods of prevention and these have met with very considerable success. All District Health Officers and their staffs have been warned to be on the look out for any unusual outbreak of fever.

Major Cragg, I.M.S., who has been for some years investigating this disease in Northern India, is of opinion that the climatic conditions in Madras Presidency are, if anything, unfavourable to the louse (*Pediculus*) which is the carrier of the infective agent, and that the fever will probably not appear in epidemic form in any one area for more than two years. This, however, does not relieve either Government, local bodies, or private agencies from taking every possible step to limit a disease which has already produced such an immense amount of suffering and mortality.

HOOKWORM.

85. Dr. Kendrick of the Rockefeller Foundation continued in charge of the "Ankylostomiasis Bureau" during the year under review. A general idea of the infection rate in each district having been obtained, it was decided during 1922 to devote additional time and energy to conducting a wide publicity and educational campaign throughout the Presidency. To strengthen this campaign, control demonstrations were given, so that the work might be followed up by some responsible local agency, and as an additional help a Memorandum drawn up by the Public Health Department was issued with G.O. No. 765-P.H., dated 1st June 1922, which requested Presidents of District Boards and Chairmen of Municipal Councils to report through the Director of Public Health the steps they proposed taking for the control of hookworm infection. A large number of the replies received clearly indicated the need for the publicity campaign. The Chairmen of 15 Municipal towns reported that hookworm infection did not exist in their towns or that cases of hookworm infection were unknown. It has of course been impossible in the course of six months to correct by hookworm surveys such mistaken ideas in all these towns, but as examples of what these may be expected to reveal, the results obtained in Bezwada and Masulipatam may be quoted, where the Municipal Chairmen state that "hookworm is not prevalent in the municipality" and "hookworm is unknown in the town and no steps therefore are proposed to be taken." In Bezwada 1,280 persons were examined and 1,049 or 81.6 per cent were found infected. In Masulipatam, of 284 persons examined, 212 or 74.6 per cent were found infected.

During the year 124 lectures were delivered to audiences aggregating 25,874 and about 100,000 pamphlets and leaflets were distributed throughout the Presidency, whilst the Publicity Bureau and the Public Press have also given valuable support. It is difficult to estimate the results which accrue from a campaign of this sort, but there can be no doubt as to its value. Soil pollution, through which hookworm and other parasitic infections are obtained, is not only due to an insufficient number of latrines. As Dr. Kendrick has said, "in many places there are latrines which are never used, and the people require to be taught that such things exist, how they are to be used, and what purpose they serve." It is only by means of a campaign such as is now being conducted in the Presidency that this knowledge can be diffused, and it is to be hoped that no shortsighted policy of retrenchment will be allowed to interfere with the progress of this beneficent piece of work.

BERI-BERI.

86. The topographical distribution indicates that this disease is confined to the districts in the East Coast North Division of the Presidency. In Masulipatam, for example, a large proportion of the total deaths are registered as beri-beri, whilst in Bezwada in 1922, deaths from beri-beri amounted to 8 per cent of the

total mortality. This figure probably gives an exaggerated idea of the prevalence of the disease, as, in those districts where beri-beri is known to exist, all cases in which dropsy has been a predominant symptom, are classified under the former head. At the same time the disease is without doubt very common in the Circar districts.

The over-milling of rice is held to be the chief aetiological factor in the production of the disease, but the restriction of its high incidence to certain definite areas, and the fact that rice is milled in much the same way all over the Presidency, would suggest that there must be other unknown causative factors. The problem certainly requires further investigation before introducing the legal restrictions regarding rice-milling which have been suggested. The subject is one which is to be discussed at the forthcoming meeting of the Far Eastern Association of Tropical Medicine in Singapore when it is to be hoped further light will be thrown on the matter. It is proposed to conduct an investigation during the present year.

MATERNAL DEATHS AND CHILD WELFARE AND MATERNITY RELIEF.

87. The total number of deaths registered under maternal causes was 2,613 against 1,864 deaths registered in 1921, representing 2.1 and 1.8 per thousand births respectively. These figures are, of course, preposterously low, as may be recognized from the fact that for rural areas the death-rate is 1.3 whilst the rate for municipal towns, which are better equipped with maternity relief agencies, is 13.7 per thousand births. The extraordinary variations in the rates of the different districts and municipalities (figures for which are given in Annexure F) have been repeatedly proved by local investigation to be due to the registration of large numbers of the deaths from puerperal causes under "Fever" or "other causes." A rough estimate of the total mortality from child birth can be arrived at by calculating the death-rate for each age-period of the sex population. The mortality among females is lower than that of males of all ages except during the child-bearing periods from 15—40. When calculated on the total female population in these age-periods this excess rate represents approximately 20,000 deaths. This revised figure gives a maternal death-rate of about 9 per thousand births which is probably not an under-estimate, when one remembers that the rate even in Western countries is not less than 4 per thousand births.

The cause of this high death-rate may be recognized from the fact that, calculated even on the low registered birth-rate, the proportion of confinements attended by midwives in the rural areas of the Presidency is barely 3 per cent the figure ranging from 1 to 6 per cent. In the case of municipalities the maximum and minimum figures attained are 63 per cent (Chingleput) and 2 per cent in Srivilliputtur. Calculated on the estimated birth-rate of 42.5 per thousand, these percentages would of course be still less. Detailed figures are given in Annexure N. Inadequacy of maternity relief, apart from causing a high death-rate among mothers, swells the infantile mortality. Investigation in places such as Madura, Trichinopoly and Ootacamund has shown that the death-rate among children under one week whose births were attended by unqualified midwives was infinitely greater than among those whose births were conducted by qualified midwives. In view of the grave inadequacy of maternity relief and the appalling mortality from causes associated with pregnancy and child-birth, it is the duty of all local bodies to concert measures for their improvement. A number of voluntary organizations are already engaged in this work, and the Madras Presidency Maternity and Child Welfare Association is successfully extending its activities. This Association has now six Baby Welcome Centres in Madras City, quite apart from the Corporation Child Welfare Scheme, and has also got centres in Cuddalore, Madanapalle, Tanjore, Madura, Coonoor, Ootacamund, Coimbatore, Trichinopoly, Tinnevely, Mangalore, Vizagapatam and Berhampur. Some of these mufassal centres provide only for babies, but others such as Mangalore, where nine midwives are employed, Cuddalore and Trichinopoly, carry on both branches of activity. Local Bodies and particularly municipalities which have not yet done anything in these directions should take stock of all their resources and make a start in this

beneficent work. That it is not essential to have large funds before commencing, has been proved by the Cuddalore centre which, opened only a few months ago, has progressively developed, and has by means of increasing subscriptions always had a credit balance. Although considerable advance has been made in the year under review, much still remains to be done, and the figures given in this report under "maternal and infantile mortality" should be sufficient incentive to those who possess any sense of civic responsibility, and who desire to serve their fellow-men.

ALL OTHER CAUSES.

88. The deaths registered under this miscellaneous head aggregated 380,286 yielding a death-rate of 9.3 per mille as compared with 355,428 (8.7 per mille) in 1921. The above figure amounts to nearly 45 per cent of the total mortality in the Presidency. The death-rate under this heading was over 10 per mille in 11 districts, and the lowest rates were recorded in Vizagapatam (1.5) and Ganjam (1.9).

In rural towns the death-rate was 9.8 per mille against 9.1 in 1921 and in municipalities 15.6 against 14.8. The attention of District Health Officers will be drawn to the necessity of analysing as far as possible this mass of figures, on which at present no useful comment can be made.

MINES.

89. The following paragraph is added with reference to G.O. Mis. No. 886, P.H., dated 27th July 1921:—

(a) The districts in which mining operations were conducted in 1922 were the same as in previous years, viz., Anantapur, Kurnool, Nellore, Salem and Vizagapatam. In addition, the Alagilawada Manganese Mines in Bellary district were worked for a short time.

(b) *General Health.*—The health of the mining population is reported to have been satisfactory. There were no epidemics among the population of any of the mines. There was one case of smallpox and one of mumps among the sweeper staff attached to the medical department of the North Anantapur Gold Mines. Seventeen workmen were vaccinated in this mine during the year.

(c) *Water-supply and conservancy.*—No advance worth the name has been made in the matter of water-supply and conservancy. The arrangements for water-supplies in Anantapur and Nellore were satisfactory as reported by the Director of Industries. In the North Anantapur Mines, pipe distribution from a storage reservoir was in force. In Nellore and Salem, wells formed the sources of supply. No information has been furnished regarding water-supplies in Vizagapatam and Kurnool.

Except in Anantapur where latrine and conservancy arrangements existed, no special arrangements seem to have been made elsewhere. I would reiterate the remarks contained in paragraph 76 (c) and (d) of the report for 1921 as the importance of making efficient arrangements in the matter of conservancy and water-supply cannot be exaggerated.

(d) The housing conditions of the employees in the mines appear to be on the whole satisfactory.

(e) Medical relief for the mining population is still inadequate, none of the mining centres with the exception of North Anantapur Gold Mines having any medical institution.

SANITARY WORKS—CIVIL.

MUNICIPALITIES.

90. No addition was made to the number of municipalities in the Presidency during 1922.

91. In G.O. No. 195-P.H., Mis., dated 2nd February 1923, the Director of Public Health has been appointed a Statutory Inspector of all Municipal Councils and Local Boards concerning matters of public health, other than those relating to hospitals and dispensaries. This was found necessary on account of the difficulties experienced by the Director of Public Health in inspecting certain municipalities, and the unsatisfactory position generally which he held in relation to municipalities and local boards.

92. The Director of Public Health had until recently no voice in Public Health administration within the municipal limits of Madras City. In G.O. No. 1602-P.H., Mis., dated 2nd Nov. 1922, the Government have ordered that articles 1039 and 1040 of the Civil Medical Code be so amended that his jurisdiction should extend over all municipalities including Madras City.

93. Owing to the financial position, progress has been at a standstill in the matter of water-supply and drainage schemes.

The subjoined statement shows the position of water-supply and drainage schemes in 1922:—

MUNICIPAL AREAS.

Water-supply.				Drainage.			
Opened.	Under execution.	Sanctioned.	Investigated, under investigation, investigation ordered, etc.	Opened.	Under execution.	Sanctioned.	Investigated, under investigation, investigation ordered, etc.
Adoni. Berhampur. Beawada. Chidambaram. Coimbatore. Coonoor. Cuddalore. Dindigul. Erode. Gadag. Guntur. Kodakānal. Kumbakonam. Kurnool. Madura. Masulipatam. Negapatam. Nellore. Ootacamund. Periyakulam. Salem. Tanjore. Tirupati. Trichinopoly. Vellore. Vizagapatam (including Waltair). Vizianagaram.	Adoni (improvements). Anantapur Chingleput. Cuddalore (improvements). Conjeevaram (water-works improvements). Kodakānal (water-works improvements). Madura (water-works improvements). Negapatam (service reservoir). New Engineering College. Rameswaram.	Conjeevaram. Cuddalore. Ungole (water-supply).	Bellary. Calicut. Chidambaram. Chittoor. Coimbatore (water-supply). Coimbatore (Forest College). Dharmaparam. Gobichettipalayam (water supply). Kodakānal (extension). Madras (distribution). Mangalore. Mannargudi. Nandyal. Narasaraopet. Salem Jail (water supply). Palghat. Palni. Parakkimedi. Pollachi. Rajahmundry. Srirangam. Srivillipattur. Tiruvār.	Ootacamund. Madura. Vellore. Kumbakonam (Part I Conservancy lane). New Engineering College.	Adoni. Tellicherry (Chalai ward).	Anakāpalle. Bellary. Berhampur. Beawada. Bimlipatam. Calicut. Chidambaram. Chingleput. Chittoor. Coimbatore. Cochin. Cuddalore. Erode. Guntur. Kumbakonam. Kurnool. Mangalore. Mannargudi. Nandyal. Negapatam. Ootacamund (improvements to main sewer). Ootacamund (improvements to septic tanks). Poddapattur. Periyakulam. Rajahmundry.	

Water-supply.				Drainage.			
Opened.	Under execution.	Sanctioned.	Investigated, under investigation, investigation ordered, etc.	Opened.	Under execution.	Sanctioned.	Investigated, under investigation, investigation ordered, etc.
Rameswaram (opened during execution).	Salem (water-works improvements). Tanjore (water-works improvements). Tuticorin (Tambaparni scheme). Vizagapatam (water-works improvements).		Tiruvannāmalai Trichinopoly (water-supply improvement). Vāniyambādi. Walajapet. Tiruppur.				Salem. Srirangam. Tanjore. Tenali. Tinnevely. Tirupati. Trichinopoly. Vāniyambādi. Vizianagaram.

The attention bestowed by some municipal councils on their water purification plant leaves much to be desired. Perhaps the worst instance in this respect was met with in Adōni where the water after passing through the filter beds was many times worse than before it entered, owing to the fact that the beds had been entirely neglected for years. It must be remembered that plant of this kind requires constant trained supervision if it is to be kept in working order.

94. Government have not passed final orders on the Committee's Report on the disposal of sewage and of the waste products of conservancy. They have, however, suggested the deputation of an officer to China and Japan to study the systems in use in these countries.

95. The population for which conservancy arrangements were made amounts to 3,028,859. The number of sanitary inspectors, peons and scavengers employed by municipalities showed a slight decrease of 239 in all, but there was an increase of 95 in the strength of the sanitary overseers, maistries and sweepers.

96. The District Health scheme which was experimentally introduced in the five districts of Vizagapatam, Kistna, Kurnool, Tanjore and Trichinopoly during 1922 passed its probationary period successfully. Madura District Board asked the Public Health Department for a District Health Officer in October, and paid his salary from their own funds until the complete scheme for the Presidency was introduced on 1st April 1923. It has so happened that outbursts of epidemic disease tested the scheme severely. Small-pox was universal, and, in addition, Kurnool had a bad outbreak of cholera, Tanjore and Trichinopoly experienced a widespread epidemic of relapsing fever, whilst Madura passed through a severe plague epidemic. In all the six districts, the new District Health officers and the district health staffs worked strenuously and were able to prove that they could prevent preventable disease.

In preparation for the introduction of the complete scheme, another batch of thirteen Civil Assistant Surgeons was deputed to the Medical College for training as health officers. One was dismissed during the session, and the remaining twelve passed the final examination, although only one succeeded in taking the B.S. Sc. Degree. With the exception of one who is a permanent Civil Assistant Surgeon, all have been appointed District Health officers in the District Health scheme.

Government have been addressed separately as to the desirability of training an additional five candidates during the present year, as there is not yet a sufficient reserve for sickness and leave vacancies.

At the end of 1921, Health officers were employed in only five municipalities in the Presidency, viz., in Trichinopoly, Calicut, Tuticorin, Coimbatore and Ootacamund. During 1922, the municipalities of Salem, Negapatam, Rajahmundry and Cocanada have appointed Health officers from the list of locally trained candidates, whilst Madura obtained a Health Officer with British qualifications. In the vacancy caused by the appointment of Dr. B. Ethirajulu Nayudu, Health Officer, Trichinopoly, as acting Assistant Director of Public Health, Dr. C.S.G. Pillai, M.B., D.P.H., was appointed. The municipalities of Bezwada and Kumbakonam though repeatedly advised to appoint Health officers have not yet decided to do so, although in the former town, the municipality has appealed twice during the year to the District Board, Kistna, for the services of the District Health Officer. The enormous infantile death-rate and the extremely unsatisfactory insanitary conditions existing in these towns are sufficient reasons for insisting on the appointment of these officers. Trained men are available, and as Government pays 75 per cent of the salary, there seems no object in further delay.

97. The number of public latrines of all description was 1,966 which represents an increase of 20 over that of last year. It is regrettable that municipal councils still show a preference for insanitary enclosures, and are reluctant to adopt standard types. The total public latrine accommodation is still far short of requirements in most municipalities, and promiscuous defecation in streets, lanes and other unauthorized places therefore must go on. The remedy lies in the provision of a greater number of standard types of latrines and it is hoped that the Municipal Councils referred to in paragraph 84 of last year's report will give very early attention to this matter which is so closely connected with public health. Tiruvannāmalai Municipality has reduced its public latrines from 8 to 3 during the year under report and must now be included amongst the offenders reported last year.

98. The total number of private latrines was 172,280 as against 171,987 last year, an increase of 293. Of these 148,986 or 86.5 per cent were conserved compared with 85.2 per cent in the previous year. The percentage of private latrines under municipal management was below 50 in the municipalities of Peddapuram, Saidapet, Srivilliputtur, Chittoor, Dhārāpuram and Udamalpet. With the exception of Dharapuram, all the others are old offenders and these municipal authorities should be reminded once again of the importance of extending private scavenging service to as great an extent as possible. In fourteen towns all private latrines were under municipal agency. Out of 432,465 houses which were of a class that should possess private latrines, only 39.8 per cent were provided with them. Municipal councils must be asked to enforce the provisions of the Municipal Act in this connexion. So far they have failed to do so.

99. Improvements to trenching grounds and the advantages of sewage farming in the disposal of sewage and nightsoil were subjects which were constantly discussed during local inspections, but little or no advance has been made in this direction. The lack of response is probably largely due to local prejudice which can only be gradually removed.

100. As regards septic tanks, this Department is not aware whether any action has been taken on the suggestion made in last year's report.

101. According to information furnished by municipalities, the total allotment for sanitation amounted to Rs. 37,22,601 and the expenditure to Rs. 23,47,455 against Rs. 37,02,487 and Rs. 25,82,859, respectively, in the previous year. The provision for sanitation amounted to 45.7 per cent of the income and expenditure during nine months of the year was 56.6 per cent of the allotment. Of the total allotment, conservancy absorbed Rs. 18,89,196 and the improvement of water-supply Rs. 8,91,327. The Municipalities of Anakapalle, Tiruvalur, Erode, Udamalpet and Palghat spent more than 80 per cent of their allotments. In 11 Municipalities, viz., Berhampur, Vellore, Bimlipatam, Masulipatam, Palacole, Guntūr, Saidapet, Kumbakonam, Virudunagaram, Uddapah and Cochin the expenditure was less than 50 per cent of the allotment.

DISTRICT BOARDS.

102. A statement showing the position of water-supply and drainage schemes during 1922 in rural areas is appended below. Financial stress made it impossible to make any progress.

Statement showing the position of water-supply and drainage schemes in the year 1922.

RURAL AREAS.

Opened.	Under execution.	Sanctioned.	Investigated, under investigation, investigation ordered, etc.
<i>Water-supply.</i>			
Nil.	New Engineering College, Guindy.	Panruti	Arrot. Aruppukkottai. Alagarkovil. Bodinayakanur. Gobichettipalayam. Guntakal. Hindupur. Hampi. Kalahasti. Madakasira. Mettpalayam. Palacole. Pallavaram (Oriminal Settlement) Penukonda. Poddapuram. Pollachi. Proddatur. Ranipet. Tiruppur. Tirupattur. Tiruchanur. Tirukkalligundram. Udamalpet. Uravakonda.
<i>Drainage.</i>			
Nil.	New Engineering College, Guindy.	Nil.	Lunatic Asylum. New Council Chamber, Madras.

Water-supply, Drainage and Conservancy.—Attention is invited to paragraphs 90-93 of the report for 1921. Conservancy arrangements existed in 998 villages, of which 867 were unions. Excluding the districts of Chingleput, Tinnevely and Bellary for which information has not been furnished, this gives a percentage of 2.1 to the total number of villages. Local Bodies must bear in mind the importance of employing suitable menial staffs for every-day sanitation, for, without this, no improvement in conservancy can be expected. In most unions the arrangements are of a primitive nature and conservancy is much neglected owing both to inadequate menial staff and want of supervision. It is hoped that the district health staffs will be able to get increased attention paid to conservancy in the rural areas.

103. The aggregate expenditure on sanitation for the nine months of 1922-23 for which information is available was Rs. 9,85,213 or 65.2 per cent of the allotment against Rs. 8,18,417 or 53.3 per cent in 1921. While the district boards of Ganjam, Chingleput, Chittoor and the Nilgiris spent more than 75 per cent of their allotment, Bellary 68 per cent, Trichinopoly 67 per cent and Tanjore 66 per cent, in some of the other districts the expenditure reached only a small percentage, South Kanara being last with an expenditure of only 38.8 per cent of the total allotment.

104. *Maintenance of village sanitary books.*—This record was maintained in all districts except the Nilgiris, South Kanara, Malabar, Salem and North Arcot. It has been only partially maintained in the districts of Rāmnād, Guntūr, Coimbatore, Anantapur and Kistna.

GENERAL REMARKS AND PERSONAL PROCEEDINGS.

105. I returned from privilege leave on 3rd January and continued to hold the appointment of Director of Public Health throughout the year, the Government confirming me in that appointment in G.O. No. 135-P.H., Routine, dated 31st August 1922.

106. The following tabular statement gives an outline of the inspections and visits made by me during the year under report:—

Inspections.

Date.	Place.	Remarks.
20th January 1922 ...	Chittoor	Inspection of town extension site.
24th to 27th January 1922...	Mangalore	Routine inspection of municipality.
28th to 30th January 1922...	Calicut	Do.
3th and 6th February 1922.	Saler	Inspection of sanitation and vaccination in the union.
7th to 10th February 1922...	Jeypore and Koraput ...	Anti-malarial inspection with the Sanitary Engineer and inspection of sanitation and vaccination.
12th February 1922 ...	Rajahmundry	Inspection of tannery sites and drainage.
Do.	Nidadavole	Joint inspection of railway borrow pits with the Deputy Chief Engineer, Madras and Southern Mahratta Railway and the President, Taluk Board.
13th February 1922...	Beawada	Inspection of drainage with the Sanitary Engineer.
Do.	Mangalagiri	Inspection of water-supply with the Sanitary Engineer.
16th to 21st February 1922.	Puri	Conference with Director of Public Health of Orissa and Orissa with reference to G.O. No. 99-P.H., Mys., dated 21st January 1922, regarding the importation of cholera into Ganjam district from Puri festival.
23rd to 26th February 1922.	Madura	Routine inspection of municipality.
7th April 1922	Chingleput	Do.
2nd May 1922	Jalarpet	Detailed inspection of vaccination.
Do.	Tirupattur	Inspection of extension site.
8th May 1922	Coimbatore	Inspection of smallpox infected places.
11th May 1922	Mettpalayam	Detailed vaccination inspection.
12th May to 12th July 1922.	Ootacamund	Attended Public Health Board meetings. Consultation with the Chairman, Collector regarding the prevention of importation of epidemics, such as plague, cholera, etc. Investigation into the question of high infantile mortality with the Sub-Committee appointed by the Municipal Council. Inspection of insanitary and dangerous houses and of congested localities.
10th June 1922	Trichinopoly	To attend the District Health Board meeting with reference to G.O. No. 806-A., P.H., dated 9th June 1922.
12th July 1922	Godalar	Inspection of vaccination and vital statistics.
16th to 18th July 1922 ...	Gudiyattam, and Vellore	Investigation of plague in North Arcot district and inspection of Central Jail, Vellore.
21st and 22nd July 1922 ...	Tinnevely	Local and Municipal Conference.
26th to 27th July 1922 ...	Waltair	District Health Board meeting and inspection of vaccination and vital statistics.
29th July 1922	Kurnool	Do.
31st July 1922	Beawada	Do.
4th and 5th August 1922 ...	Bellary	Inspection of sanitary arrangements in the Mappila Jail and of the cholera party's work in Bellary district.
6th August 1922	Cuddapah	Inspection of site for the District Medical and Sanitary Officer's quarters.
10th September 1922 ...	Chingleput	Inspection of drainage scheme with the Sanitary Engineer.
11th September 1922 ...	Ranipet	Inspection of Hookworm campaign with the Surgeon-General.
15th and 16th September 1922.	Kumbakonam	Routine inspection of municipality.
17th September 1922 ...	Trichinopoly	To address the District Board meeting regarding the measures necessary for the prevention of malaria in Kadvour and relapsing fever in the district.
19th to 21st September 1922.	Kodaikānal	Investigation into the question of high infantile mortality with the Sub-Committee appointed by the Municipal Council, and to discuss plague measures with the Chairman, Municipal Council, and the Sub-Collector, Periyakulam.
23rd and 24th September 1922	Tanjore	District Health Board meeting and inspection of vaccination and vital statistics.
25th September 1922 ...	Trichinopoly	District Board meeting. Inspection with the Chairman, Municipal Council, of new burial ground sites, town extension sites and sites for new skin-godowns.

Inspections—cont.

Date.	Place.	Remarks.
2nd and 8th October 1922 ...	Mangalore ...	Local and Municipal Conference.
6th to 8th October 1922 ...	Bellary ...	Local and Municipal Conference and inspection of water-supply.
9th October 1922 ...	Adoni ...	Inspection of water works, market and the new slaughter-house.
6th and 7th November 1922 ...	Vellore ...	Local and Municipal Conference.
8th November 1922 ...	Tirupati ...	Inspection of town extension scheme, inspection of sanitation and vaccination and attendance at the sub-committee meeting of the Municipal Council.
18th and 19th November 1922 ...	Vizianagram ...	Joint inspection with the Surgeon-General and the Sanitary Engineer of the Nelliampara Jute Mills site.
20th November 1922 ...	Chicacole ...	Inspection of vital statistics.
21st November 1922 ...	Berhampur ...	Do
22nd November 1922 ...	Chitrapur ...	Inspection of water works and inspection of vaccination and vital statistics in the Peddapur and Ganjam Unions.
24th November 1922 ...	Rajammundry ...	Inspection of water works sites, rice mills and the Central Jail.
25th November 1922 ...	Masulipatam ...	Inspection of water works, and vital statistics.
26th November 1922 ...	Nellore ...	Inspection of vaccination and vital statistics.
15th and 16th December 1922 ...	Coonoor ...	Inspection of the causes of high infantile death-rate in the municipality in accordance with orders of Government.
16th December 1922 ...	Wellington ...	Consultation with Military authorities in connection with the plague outbreak in the Cantonment.
16th December 1922 ...	Coimbatore ...	Inspection of hospital drainage.
17th to 19th December 1922 ...	Cannanore ...	Routine inspection of municipality.
19th December 1922 ...	Shoranur ...	Inspection of vaccination.
20th to 23rd December 1922 ...	Cochin ...	Routine inspection of municipality.

107. Routine inspections were carried out in seven municipalities, viz., Mangalore, Calicut, Madura, Chingleput, Kumbakonam, Cannanore and Cochin. Only when Municipal Councils agree to come into the District Health scheme will it be possible to transfer this routine inspection work to District Health Officers.

108. The five Local and Municipal District Conferences gave me welcome opportunities of personal discussion with Presidents of District Boards and others responsible for Public Health administration in rural areas and municipalities. From the Public Health Department's point of view, these conferences continue to be of the greatest value.

109. *Propaganda*.—One of the greatest problems to be reckoned with in this country is the entire ignorance of the masses in regard to health matters. What is wanted, therefore, is an intelligent interest on the part of the educated classes (particularly municipal councillors and members of local boards) and a willingness on their part to devote thought and leisure to the improvement of the unhealthy conditions under which their less fortunate country-men live. In paragraph 32 of G.O. No. 1354-A. P.H., dated 10th October 1921, Government indicated the lines on which health propaganda work might be carried on and placed before local bodies the following somewhat ambitious programme for their consideration:—

(1) *Maternity and Infant Welfare*—

- (a) Advice to expectant mothers.
- (b) Arrangement for proper attendance during delivery.
- (c) Care of the infant for a month after delivery.

(2) *Propaganda work*—

- (a) Public lectures.
- (b) Literature.
- (c) Instruction in Hygiene in High Schools.
- (d) Instruction in Hygiene of teachers under training.

(3) *Propaganda on the following subjects*—

- (a) Prevention of malaria.
- (b) Prevention of tuberculosis.
- (c) Prevention of hookworm.
- (d) Prevention of venereal diseases.

(e) Maternity and Child welfare.

(f) Revaccination.

(4) *Ambulance and First Aid*.

(5) *Utilisation of students and Boy Scouts and Girl Guides on Public Health work*.

(6) *House-to-house visits and ward-war supervision in Municipal areas*.

At my instance, the following resolutions were passed unanimously at each of the Local and Municipal Conferences held during the year:—

"I. In order to spread knowledge regarding epidemics and other health matters this Conference recommends that Local Bodies and Municipalities should form local committees, e.g., ward committees, which should undertake propaganda in public health work in schools, markets, etc., in their own areas."

"II. In view of the generally high infantile mortality both in municipal and rural areas, this Conference recommends the formation of local branches of the Central Health and Welfare Association."

Later in the year a circular was issued inviting the attention of all Chairmen of Municipal Councils, Presidents of District Boards and Presidents of Taluk Boards to these resolutions.

As regards the first, it was suggested that each ward representative in municipal areas and each member in local board areas should form a local committee of prominent citizens (with himself as Chairman), and that these Committees should try to arouse public interest in public health matters by means of lectures, demonstrations, talks and by distribution of leaflets. Each Municipal Council and Taluk Board was also asked to prepare and circulate weekly or monthly statements of births and deaths (especially those due to infectious diseases and those of infants), so that comparisons could be drawn between individual wards or local board divisions and a spirit of competition aroused. The response to this appeal has been decidedly encouraging.

The subject matter of the second resolution has already been dealt with in paragraph 87.

In G.O. No. 859-P.H., dated 19th October 1921, Government asked for a brief monthly report of the health propaganda work done in each district, but, as it was difficult to collect the necessary information, they accepted, in G.O. No. 1574, Mis., dated 18th November 1921, my suggestion that future reports should be submitted quarterly.

It would serve no useful purpose, even if space permitted, to repeat here details already given in the periodical reports. Generally speaking, the response has been meagre, but there are signs that District Boards and Municipalities are beginning to take a more active interest. It is also worth noting that far more systematic propaganda work was done during 1922 in the five districts which had District Health officers than in any of the other districts, and the appointment of a District Health Committee and a District Health Officer in each district in the Presidency should tend to hasten the rate of progress on this all-important branch of public health work. Detailed memoranda prepared by this department for the guidance of District Health Committees and District Health staffs and dealing at length with cholera, hookworm, smallpox, plague and vital statistics were issued with G.Os. Nos. 764-P.H., dated 1st June 1922, 765-P.H., dated 1st June 1922, 765-A, P.H., dated 1st June 1922, 897-A, P.H., dated 24th June 1922, and G.O. No. 1395-P.H., dated 12th October 1922. These memoranda were prepared with very considerable care, and, if the policies indicated in them are adopted, a considerable improvement in the public health of the Presidency may be anticipated.

This brief outline would be incomplete without making mention of the splendid work done by the Ankylostomiasis Bureau under the direction of Dr. Kendrick of the Rockefeller Foundation. The Public Health Department works in close co-ordination with Dr. Kendrick and his assistants, and I desire to record here my gratitude for the constant and valuable help received from them.

110. Whilst at headquarters, the monthly and quarterly inspections of the Penitentiary, and the meetings of the Public Health Board, Water Filtration

Committee and the Madras Town and Suburban Improvement Trust occupied considerable time.

111. In December 1922 the Government appointed a committee including the Surgeon-General (President), the Director, King Institute, the Sanitary Engineer to Government, the Secretary to Government, Local Self Government and Public Works Department Railways and the Agents and Chief Medical Officers of the three railway systems in this Presidency, with the Director of Public Health as Secretary, to consider and suggest improvements in the sanitary administration in Railways and the amelioration of the condition of the railway passengers from a health point of view. The Committee was asked to consider, among other things, the feasibility of adopting a Railway Sanitary Code on the lines of the American Railway Sanitary Code which is considered to be the last word on the subject. The first meeting was held on 8th December 1922 when a number of points were referred to a medical Sub-Committee. The Sub-Committee's report is now in the Press.

112. Dr. Matthew continued to be in charge of fairs and festivals and was during the absence on sick leave of Dr. S. Jesudoss, in additional charge of the Central Range. Dr. Jesudoss died in October, and in the vacancy thus caused, Dr. B. Ethirajulu Nayudu, L.M. & S., B.S.Sc., Health Officer, Trichinopoly Municipality, was appointed and posted to the Central Range. Dr. R. Adiseshan remained in charge of vital statistics, while Drs. Ubhaya and Subramaniam continued to work in the Southern and Northern Ranges, respectively. The good work done by Dr. Adiseshan in the field of vital statistics, and of Drs. Adiseshan and Ubhaya during the epidemic of relapsing fever in Tanjore and Trichinopoly districts, has already been acknowledged by Government.

113. Proposals relating to the re-allocation of the duties of Assistant Directors of Public Health on a functional basis, in place of the present territorial basis, were submitted to Government and orders are awaited. Now that the complete District Health Scheme for the Presidency has been introduced this change seems to be entirely desirable, as much of the routine work has been handed over to District Health Officers. If my proposals are accepted, all Assistant Directors of Public Health will have their headquarters in Madras from 1st October 1923 by which time it is hoped that District Health Officers will have found their feet. Owing to financial stringency, it is proposed to reduce the number of Assistant Directors of Public Health from five to three. If this reduction is made, there must be a corresponding reduction in the special investigations, e.g., in vital statistics, in epidemiology, etc., to which more and more time has been given during the last two years. It is hoped, therefore, that as soon as the financial horizon clears, Government will once more see their way to sanction the full complement of six Assistant Directors.

114. The recent abolition of the Publicity Board was a set back to the publication and distribution of health leaflets and literature, but other agencies such as the new Madras Health Council, recently inaugurated by Her Excellency Lady Willingdon, and the Health Propaganda Board will, it is hoped, be able to take its place. The memoranda on "Propaganda work and voluntary associations" prepared by Major Cunningham, L.M.S., and myself, and issued with G.O. No. 234-P.H., dated 8th February 1923, give the lines on which activities in this direction should be developed. District Health Committees may be assured that the Madras Health Council and the Health Propaganda Board will place every resource they possess at their disposal, but it is to be remembered that leaflets, posters, pictures and lantern slides must all portray and describe local conditions if they are to be of real value. It has unfortunately not been possible to obtain sanction for a grant for "Health Lectures" but local District Health Officers and their staffs are expected to do a considerable amount of health propaganda work of this nature. The slides, pictures and posters in course of preparation in Madras are available for this purpose.

115. In G.O. No. 1722-P.H., dated 13th December 1922, Government have passed orders on Dr. Matthew's report on Fairs and Festivals Centres, which as

Government state "should mark an epoch in the administration of Public Health in the Madras Presidency, provided local bodies follow the lead he has given." A memorandum of instructions for the control of fairs and festivals, based on Dr. Matthew's report was prepared, and has been issued with G.O. No. 1723-P.H., of 13th December 1922. An Act similar to the Bihar and Orissa "Places of Pilgrimage Act" would seem to be necessary in this Presidency, and it is hoped that Government will see their way to introduce a bill of this kind at an early date.

116. The amalgamation of the vaccination and sanitation departments was sanctioned in G.O. No. 817, P.H., dated 10th June 1922, and the Deputy Inspectors of Vaccination and Sanitary Inspectors of cholera parties were given a uniform pay on the scale of Rs. 60—5—120, with a selection grade of 15 per cent on Rs. 125—5—150. The above orders were given effect to from 1st April 1922, and the initial pay of Deputy Inspectors of Vaccination (old style) and cholera party Sanitary Inspectors was fixed on this scale. As a result of the introduction of the complete District Health Scheme the old designation of "Deputy Inspector of Vaccination" has disappeared, and the members of the District Health staffs have been given the designation of "District Health Inspector." Each District Health Inspector will not only supervise vaccination work in his own area, but will, under the control of his District Health Officer, attend to every branch of public health administration, including epidemics, the control of fairs and festivals, health propaganda work and sanitation in rural areas. With effect from 1st April 1923, Government have sanctioned the employment of 205 District Health Inspectors, in lieu of 103 Deputy Inspectors of Vaccination and 80 Cholera Party Sanitary Inspectors, the whole cost being met from provincial funds. Each District Health Officer will have from 8—13 District Health Inspectors under him, and he has been given power to concentrate part or all of his District Health Inspectors at a given centre as occasion arises, e.g., on the outbreak of epidemic diseases or for the sanitary control of a fair or festival. The complete scheme has been launched under good auspices and after a fair trial in five districts, and, provided it receives the good will and co-operation of local bodies, it should justify its existence. That it has been possible to extend the Public Health Department to this extent during a period of acute financial stringency, speaks well for the Presidency.

117. Government have recently approved of the model by-laws, prepared by the By-laws Committee and framed under the Local Boards and District Municipalities Acts for the guidance of district boards and municipalities. These have been commended, in G.O. No. 402, L. and M., dated 10th February 1923, to all municipal councils and district boards for adoption. It is hoped that all local bodies will take early advantage of this strenuous piece of work.

118. The Vaccination Code, which has been for many years the guide in all matters connected with vaccination, is now under revision. As it has not been revised for many years and as the Public Health Department has since been completely re-organized, this useful pamphlet requires to be practically re-written from beginning to end. The revised edition will, it is hoped, be ready for issue in the course of a few weeks.

119. Forty-one candidates qualified as Sanitary Inspectors and Assistant Sanitary Inspectors. Eight Sanitary Inspectors in the employment of local bodies took the quinquennial training and 38 the vaccination course.

120. The rules for the education and discipline of Sanitary Inspectors and the syllabuses of instruction for their training have been thoroughly revised and brought up to date.

121. The Director of Public Health has been recently empowered to grant exemptions from the qualifications prescribed for Sanitary Inspectors.

122. The service registers of the office establishment and of Deputy Inspectors of Vaccination were duly maintained. In order to bring the system of incremental increase of pay for District Health Inspectors on a proper basis, a

confidential report form has been introduced, and the award of increments to these officers will be made on these annual reports.

123. The office sustained a serious loss by the premature retirement, for reasons of health, of M.R.Ry. N. Annaji Rao, B.A., who had been office manager for a period of over eleven years. I take this opportunity of placing on record my appreciation of the painstaking and careful manner in which he carried out his onerous duties.

A. J. H. RUSSELL,

M.A., M.D., D.P.H., D.T.M., Major, I.M.S.,

Director of Public Health, Madras.

ANNEXURE A.

Birth-rate in rural towns for 1922.

Number and Rural towns.	Birth-rate per mille for 1922.	Increase or decrease + or -	Number and Rural towns.	Birth-rate per mille for 1922.	Increase or decrease + or -
<i>Below 20 per mille.</i>					
1. Pandalgudi ...	6.1	- 4.0	23. Kambam ...	15.6	+ 8.5
2. Arkonam ...	6.6	- 1.5	24. Toraiyur ...	16.2	- 1.1
3. Bukkapatnam ...	8.0	+ 1.0	25. Kollegal ...	17.0	+ 3.2
4. Repalli ...	8.6	- 7.7	26. Krishnagiri ...	17.1	+ 2.4
5. Chetpet ...	9.5	+ 2.3	27. Narasapatnam ...	17.1	- 3.7
6. Devakottai ...	11.0	+ 8.5	28. Kandamur ...	17.2	+ 6.9
7. Chinnamanur ...	11.5	- 7.7	29. Pernampattu ...	17.5	+ 1.0
8. Ranipettai ...	12.0	+ 4.3	30. Ponnur ...	17.6	+ 4.5
9. Guntakal ...	12.2	+ 8.4	31. Kanigiri ...	18.1	- 7.8
10. Ichchapuram ...	12.5	- 7.3	32. Rasipuram ...	18.5	- 5.8
11. Tiruparankunram ...	12.6	- 9.3	33. Vempalli ...	18.6	- 14.5
12. Kadayam ...	12.7	+ 2.7	34. Narasapur ...	18.6	+ 4.9
13. Parvatipuram ...	13.0	+ 2.7	35. Addanki ...	18.7	+ 0.2
14. Chebrolu ...	13.6	+ 4.1	36. St. Thomas' Mount ...	18.8	+ 11.5
15. Kavaripakkam ...	13.9	- 11.2	37. Polur ...	18.9	+ 0.1
16. Pallikondal ...	14.2	+ 9.3	38. Sholinghur ...	18.9	- 1.2
17. Chinnamarangi ...	14.2	- 4.1	39. Udangudi ...	18.9	- 2.1
18. Gooty ...	14.4	+ 1.9	40. Tiruvattur ...	19.1	+ 13.9
19. Muttupalsiyam ...	14.6	- 0.2	41. Palladam ...	19.5	+ 3.6
20. Haiyangudi ...	14.8	- 7.4	42. Hikkavolu ...	19.6	- 5.0
21. Pallavaram ...	15.4	+ 5.5	43. Rajapalaiyam ...	19.6	+ 10.3
22. Visharam ...	15.4	+ 4.9			
<i>Between 20 and 25 per mille.</i>					
1. Kamalapuram ...	20.1	- 1.3	20. Vaitbisvarankoil ...	23.0	+ 0.6
2. Sivaganga ...	20.1	+ 3.6	21. Penukonda ...	23.3	- 6.6
3. Chikasturpet ...	20.6	+ 7.9	22. Allur-Kothapatnam ...	23.4	+ 7.3
4. Dharmavaram ...	21.1	- 1.3	23. Tirupattur ...	23.5	+ 4.7
5. Bobbili ...	21.1	- 2.8	24. Sriruppam ...	23.6	+ 1.7
6. Uravakunda ...	21.2	+ 4.1	25. Arni ...	23.7	- 8.0
7. Karachi ...	21.2	+ 9.9	26. Arcot ...	23.7	- 1.4
8. Kamudi ...	21.2	+ 7.7	27. Alvarthirunagari ...	23.8	- 3.1
9. Kallakurehi ...	21.4	- 6.4	28. Dharmapuri ...	24.1	+ 14.0
10. Samalkot ...	21.6	+ 16.8	29. Nidadavolu ...	24.1	+ 1.4
11. Ravadrug ...	21.9	+ 6.0	30. Kavali ...	24.3	+ 14.1
12. Wellington ...	22.0	+ 2.8	31. Sattur ...	24.3	+ 7.5
13. Amabasamudram ...	22.0	- 2.5	32. Kolluru ...	24.6	+ 11.7
14. Kampli ...	22.1	- 0.8	33. Sankaranayanarkoyil ...	24.6	- 0.4
15. Venkatagiri ...	22.2	+ 5.5	34. Kadiri ...	24.8	+ 8.2
16. Gobichettipalaiyam ...	22.3	- 7.6	35. Penukonda ...	24.8	+ 11.7
17. Bamidi ...	22.4	- 0.0	36. Sendamangalam ...	24.8	+ 18.4
18. Badvel ...	22.7	- 3.7	37. Tirukkottur ...	24.8	+ 8.4
19. Karaikudi ...	22.7	+ 6.5	38. Nunguneri ...	24.9	- 3.5
<i>Between 25 and 30 per mille.</i>					
1. Russellkonda ...	25.1	+ 3.3	29. Nattam ...	27.6	+ 3.0
2. Amalapuram ...	25.1	- 3.8	30. Attili ...	27.7	+ 6.9
3. Tiruchendur ...	25.3	+ 0.5	31. Panruti ...	28.1	+ 0.2
4. Uttamapalaiyam ...	25.5	+ 7.0	32. Dowlishwaram ...	28.2	+ 8.4
5. Porto-Novo ...	25.5	- 0.6	33. Sholavandan ...	28.2	+ 2.2
6. Surandai ...	25.6	- 3.4	34. Muttupet ...	28.2	+ 2.6
7. Athirampatnam ...	25.8	- 1.4	35. Kalladaikarichi ...	28.3	+ 3.2
8. Vetapalem ...	26.0	+ 1.8	36. Watrap ...	28.4	- 4.8
9. Vennkonda ...	26.0	+ 1.9	37. Pallapatti ...	28.4	- 1.7
10. Tirukkattupalle ...	26.2	+ 1.3	38. Yellamauchili ...	28.5	+ 6.4
11. Valuru ...	26.3	+ 16.6	39. Koilpatti ...	28.6	+ 4.5
12. Tindivanam ...	26.4	- 7.2	40. Kalahasti ...	28.6	+ 9.1
13. Tondi ...	26.5	+ 7.8	41. Gudivada ...	28.9	+ 7.3
14. Lalgudi ...	26.5	+ 18.2	42. Udipi ...	28.9	+ 0.6
15. Nellikuppam ...	26.6	- 8.0	43. Puliyampatti ...	29.0	- 0.8
16. Tenkasi ...	26.8	+ 6.5	44. Madugula ...	29.0	+ 5.4
17. Sivagiri ...	26.8	+ 4.3	45. Tiruvadamurndur ...	29.2	- 1.9
18. Rayachoti ...	26.9	- 7.5	46. Manohamnallur ...	29.2	+ 9.9
19. Pedana ...	26.9	+ 0.9	47. Bhuvanagiri ...	29.4	- 0.0
20. Pattakottai ...	27.0	+ 2.2	48. Sator ...	29.5	+ 8.3
21. Palvonda ...	27.1	- 0.0	49. Tirumangalam ...	29.6	+ 11.2
22. Sembiam ...	27.2	+ 19.8	50. Vedaranniyam ...	29.6	+ 1.8
23. Sattanapalle ...	27.3	+ 5.0	51. Kosgi ...	29.7	+ 0.9
24. Bapatla ...	27.4	- 2.7	52. Tiruvadi ...	29.7	+ 5.3
25. Kottur ...	27.5	+ 7.6	53. Madanapalli ...	29.8	+ 13.4
26. Pithapuram ...	27.5	+ 13.0	54. Allurped ...	29.9	- 3.1
27. Jagzayyspotta ...	27.6	+ 6.8	55. Vallam ...	29.9	+ 2.6
28. Tanuku ...	27.5	- 3.6			

ANNEXURE A—cont.

Birth-rate in rural towns for 1922—cont.

Number and Rural towns.	Birth-rate per mille for 1922.	Increase or decrease + or -	Number and Rural towns.	Birth-rate per mille for 1922.	Increase or decrease + or -
<i>Between 30 and 35 per mille.</i>					
1. Sermadevi	30.1	+ 5.4	19. Amber	32.9	- 2.2
2. Yaligi	30.2	+ 2.5	20. Punganur	33.0	+ 8.3
3. Allaru	30.5	+13.9	21. Badagara	33.0	- 8.2
4. Manjalagiri	30.6	+ 2.3	22. Rajampettah	33.1	-15.2
5. Srungavarapukota	30.7	+ 4.7	23. Kavalpatnam	33.2	+ 3.3
6. Aruppukottai	30.8	+ 6.5	24. Tekkali	33.3	+ 2.5
7. Tranquebar	30.8	+ 4.6	25. Nuzvid	33.3	+ 9.6
8. Ramachandrapur	30.9	+ 6.7	26. Mentupettah	33.5	+16.3
9. Tiruvottiyur	31.0	+13.9	27. Kondakur	33.6	+ 1.8
10. Sriraiikuntam	31.0	+ 1.3	28. Tirukalikunram	33.7	+ 7.2
11. Pattamadai	31.1	+ 5.4	29. Vasudevavallur	33.7	- 1.4
12. Shiyali	31.2	+ 5.7	30. Ayyampatti	33.8	+ 7.7
13. Paliyangudi	31.3	+ 5.6	31. Niampatnam	33.9	+15.9
14. Madurantakam	31.4	+ 5.2	32. Udaiyarpalayam	34.0	- 1.1
15. Atur	31.7	+18.8	33. Tiruppuvanam	34.1	+ 7.6
16. Vridhachalam	31.8	+ 3.1	34. Tirutturippundi	34.1	+10.4
17. Abiramam	31.9	+11.5	35. Kadayasallur	34.6	+ 6.0
18. Cheyur	32.1	+ 7.8	36. Sriperumbudur	34.7	+ 2.1
			37. Ittiyapuram	34.9	- 1.7
<i>Between 35 and 40 per mille.</i>					
1. Wandiwash	35.0	+19.8	13. Paramagudi	38.1	+10.0
2. Narasannapeta	35.2	+ 2.7	14. Valavanur	38.1	+15.1
3. Hosur	35.2	+15.6	15. Kottalai	38.1	+ 8.6
4. Viravanallur	35.3	+ 1.6	16. Goruzalla	38.4	+19.3
5. Poonamallee	35.5	+22.3	17. Namakkal	38.6	+ 8.1
6. Rameswaram	35.5	+ 7.9	18. Manamadurai	39.1	+15.0
7. Jammalamadugu	35.7	- 1.4	19. Karkala	39.3	- 6.8
8. Achinta	35.8	+27.9	20. Tiruchengodu	39.7	+ 2.4
9. Veeragattam	36.1	+10.8	21. Yemmiganur	39.8	- 0.1
10. Tiruvallur	36.6	+15.1	22. Sattur	39.9	+11.0
11. Tiruttani	37.0	+22.4	23. Mulki	39.9	+ 2.1
12. Sompeta	37.4	+ 3.0			
<i>Between 40 and 45 per mille.</i>					
1. Chodavaram	40.1	+ 5.4	7. Kasaragod	42.9	+ 0.2
2. Vadakkuvalliyur	40.3	- 5.2	8. Harpanahalli	43.0	- 0.2
3. Ariyalur	40.8	+ 9.3	9. Kuleskarapattanam	43.1	+ 0.2
4. Kolipara	41.1	+ 6.8	10. Uttiramerur	44.7	+18.0
5. Bāmuṇḍ	41.4	+ 2.9	11. Ponnani	44.8	+18.2
6. Coondapur	41.3	+ 2.4			
<i>Between 45 and 50 per mille.</i>					
1. Tuni	45.8	+40.0	2. Nāyadupet	45.8	+20.8
<i>Between 50 and 60 per mille.</i>					
1. Kottur	50.4	+ 5.2	3. Sattankulam	59.5	- 4.6
2. Eral	51.9	+ 2.8	4. Bhavani	59.8	+30.0
<i>Between 60 and 75 per mille.</i>					
1. Gadar	60.1	+34.7	2. Kilakarai	71.1	+11.6

ANNEXURE B.

Birth-rate in municipalities for 1922.

No.	Municipalities.	Birth-rate for 1922.	Increase or decrease (+ or -).	No.	Municipalities.	Birth-rate for 1922.	Increase or decrease (+ or -).
<i>Below 20 per mille.</i>							
1. Tiruvālar	...	15.9	+1.4	3. Chirāla	...	17.3	+10.5
2. Gudiyāttam	...	18.1	- 2.6	4. Peddāpur	...	19.4	+ 1.2
<i>Between 20 and 25 per mille.</i>							
1. Berhampur	...	20.7	-0.5	5. Tiruppur	...	23.0	+7.8
2. Erode	...	20.8	- 5.2	6. Narasaraopet	...	24.5	+3.0
3. Srirangam	...	21.8	+2.6	7. Nandyal	...	24.8	-0.6
4. Anantapur	...	22.9	+1.2				
<i>Between 25 and 30 per mille.</i>							
1. Tenali	...	25.3	+2.6	11. Cuddapah	...	27.7	+ 3.7
2. Villupuram	...	25.4	+4.2	12. Coimbatore	...	27.8	- 2.5
3. Sivakāsi	...	25.5	-0.6	13. Proddattūr	...	27.9	- 2.5
4. Coonoor	...	25.5	-0.7	14. Tirupati	...	27.9	+ 2.5
5. Tadpatri	...	26.2	+1.7	15. Parlākimedi	...	28.2	- 0.5
6. Anakāpalle	...	26.9	+0.6	16. Chittoor	...	28.4	+ 3.9
7. Adoni	...	27.2	+1.6	17. Nellore	...	28.5	+ 0.9
8. Kumbakonam	...	27.5	+5.7	18. Palakollu	...	28.8	+ 8.9
9. Mangalore	...	27.5	-0.8	19. Saidapet	...	29.0	+18.7
10. Chidambaram	...	27.6	+2.7	20. Mannārgudi	...	29.2	+ 2.9
<i>Between 30 and 35 per mille.</i>							
1. Karūr	...	30.2	+ 3.6	12. Vizianagram	...	33.7	+ 0.0
2. Māyavaram	...	30.3	+ 5.1	13. Bellary	...	33.7	+ 2.3
3. Negapatam	...	30.4	+ 4.3	14. Bezwada	...	33.8	+ 8.3
4. Ellore	...	31.2	+ 1.1	15. Vizagapatam	...	34.1	+ 8.1
5. Vāniyambādi	...	31.8	- 1.0	16. Tanjore	...	34.1	+ 3.6
6. Palni	...	32.1	- 3.3	17. Rajahmundry	...	34.2	+13.5
7. Cocanada	...	32.7	+ 3.6	18. Hospet	...	34.4	- 0.4
8. Boonāyakkannūr	...	32.7	+13.1	19. Ongole	...	34.5	+ 2.1
9. Pollachi	...	32.9	+10.8	20. Srivillipattūr	...	34.7	+ 1.9
10. Dhārūpuram	...	33.1	+ 3.8	21. Conjeevaram	...	34.9	+ 2.4
11. Masulipatam	...	33.6	+ 4.6				
<i>Between 35 and 40 per mille.</i>							
1. Virudhunagar	...	35.0	+ 9.1	9. Guntūr	...	39.0	+ 1.6
2. Pālamcōttah	...	35.2	+ 1.9	10. Ootacamund	...	39.6	+ 2.7
3. Kurnool	...	35.2	+ 1.7	11. Tiruvannāmalai	...	39.1	- 4.6
4. Hindupur	...	35.5	+11.7	12. Udampalpet	...	39.3	+ 8.1
5. Oallout	...	36.4	+ 1.0	13. Palghat	...	39.5	+ 1.6
6. Chittoor	...	37.3	+ 2.9	14. Cochin	...	39.7	+ 1.0
7. Trichinopoly	...	38.6	+ 8.9	15. Dindigul	...	39.9	+ 0.6
8. Cannanore	...	38.6	+ 4.2				
<i>Between 40 and 45 per mille.</i>							
1. Tellicherry	...	40.2	+ 4.6	6. Salem	...	42.4	+11.9
2. Tirupattūr	...	40.7	+ 3.3	7. Kodaikānal	...	42.5	+11.0
3. Bimlipatam	...	41.0	+ 3.4	8. Ouddalore	...	42.7	+ 4.3
4. Madras	...	41.2	+ 4.8	9. Tuticorin	...	43.1	+ 9.4
5. Madurai	...	41.4	+ 4.0	10. Tinnevely	...	43.2	+ 2.6
<i>Between 45 and 50 per mille.</i>							
1. Walajapet	...	45.6	+5.0	3. Chingleput	...	47.4	+ 2.6
2. Vellore	...	45.9	+2.6				
<i>Between 50 and 55 per mille.</i>							
Periyakulam		53.5	+6.5				

ANNEXURE C.

Infantile death-rates in districts for 1922.

Number and districts.	Infantile death-rate for 1922.	Increase or decrease (+ or -).	Number and districts.	Infantile death-rate for 1922.	Increase or decrease (+ or -).
<i>Between 100 and 150 per mille.</i>					
1. Cuddapah ...	109.2	+ 5.0	3. Ganjam ...	142.7	- 2.4
2. Nellore ...	116.3	- 42.5	7. Godavari ...	145.7	- 40.2
3. North Arcot ...	137.5	+ 15.7	8. Chittoor ...	147.3	- 15.6
4. Rāmraḍ ...	140.3	+ 19.0	9. Agency Division ...	149.2	- 23.5
5. Vizagapatam ...	141.7	- 18.8			
<i>Between 150 and 200 per mille.</i>					
1. Malabar ...	152.7	+ 11.5	9. South Arcot ...	177.3	+ 28.3
2. Kurnool ...	154.0	+ 12.0	10. Tinnevely ...	177.9	+ 11.9
3. Anantapur ...	157.9	+ 13.7	11. Guntur ...	179.4	- 36.8
4. Bellary ...	159.8	+ 20.0	12. Trichinopoly ...	184.5	+ 24.5
6. South Kanara ...	163.5	+ 27.4	13. Nilgiris, The ...	190.6	- 11.3
6. Coimbatore ...	173.3	+ 42.5	14. Tanjore ...	193.4	- 2.9
7. Madura ...	175.1	+ 33.1	15. Chingleput ...	195.4	+ 12.3
8. Salem ...	175.3	- 3.8			

Between 200 and 250 per mille.

1. Kistna ... 207.1 | - 3.1

Between 250 and 300 per mille.

Nil.

Between 300 and 350 per mille.

1. Madras ... 311.0 | + 27.8

ANNEXURE D.

Death-rates in rural towns during 1922.

No.	Rural towns.	Death-rates for 1922.	Increase or decrease (+ or -).	No.	Rural towns.	Death-rates for 1922.	Increase or decrease (+ or -).
<i>Below 20 per mille.</i>							
1. Chetput ...		1.7	- 3.4	59. Kollegal ...		15.1	+ 4.1
2. Pandalgudi ...		4.6	- 2.8	60. Ambur ...		15.1	- 0.4
3. Guntakal ...		5.8	+ 2.7	61. Abiramam ...		15.2	+ 5.3
4. Repalle ...		5.4	- 6.5	62. Pittapuram ...		15.3	+ 7.1
5. Ranipettai ...		6.1	+ 2.1	63. Tirukkoyilūr ...		15.3	+ 4.4
6. Pernampattu ...		6.3	+ 1.6	64. Devakkotta ...		15.4	+ 7.5
7. Bukkapattanam ...		6.7	+ 0.6	65. Karkala ...		15.4	- 1.4
8. Rayachoti ...		7.0	- 5.2	66. Palladam ...		15.5	+ 9.0
9. Kanigiri ...		8.0	- 15.6	67. Samalkot ...		15.5	+ 12.5
10. Rajapālaiyam ...		8.4	+ 4.2	68. Tirupattūr ...		15.5	+ 2.9
11. Narasapattanam ...		8.5	- 3.0	69. St. Thomas' Mount ...		15.7	+ 6.6
12. Rayadrug ...		8.6	- 1.8	70. Mettapālaiyam ...		15.7	+ 0.6
13. Tiruvattūr ...		8.7	+ 5.5	71. Pallkonda ...		15.7	- 2.2
14. Chinnamanur ...		8.9	- 7.6	72. Surada ...		15.9	- 2.3
15. Kambanur ...		9.2	+ 5.1	73. Yadiki ...		16.0	+ 2.5
16. Visharam ...		9.3	- 0.5	74. Nidadavole ...		16.0	- 5.4
17. Kaveripakkam ...		9.3	- 7.5	75. Cheyur ...		16.1	- 1.6
18. Arcot ...		9.4	- 1.2	76. Madanapalle ...		16.2	+ 5.5
19. Kadayam ...		9.6	+ 2.8	77. Kamudi ...		16.2	+ 4.7
20. Pallavaram ...		10.3	+ 3.1	78. Badagara ...		16.3	- 9.7
21. Ichēbāpuram ...		10.3	- 7.2	79. Yellamanchili ...		16.3	+ 1.2
22. Knrichi ...		10.5	+ 4.9	80. Dharmāvaram ...		16.4	+ 4.2
23. Vempalle ...		10.5	- 12.6	81. Porto Novo ...		16.5	- 0.5
24. Alluru ...		10.5	+ 0.8	82. Sattenapalle ...		16.6	- 4.5
25. Gooty ...		10.6	+ 1.2	83. Tirakkalikundram ...		16.8	+ 1.0
26. Udangudi ...		10.6	+ 1.2	84. Polur ...		16.8	+ 3.3
27. Ponner ...		11.2	- 0.6	85. Bassekonda ...		17.0	- 9.4
28. Haiyangudi ...		11.2	- 2.8	86. Kandamur ...		17.0	+ 8.2
29. Chinnameranji ...		11.2	- 6.8	87. Paliyangudi ...		17.0	+ 5.2
30. Kaval ...		11.3	+ 4.5	88. Pedana ...		17.0	+ 3.5
31. Kolluru ...		11.4	+ 5.0	89. Amalapuram ...		17.2	- 6.1
32. Sankarasaayanarkoyil ...		11.5	- 0.4	90. Vetapalem ...		17.2	+ 5.5
33. Sivagiri ...		11.5	+ 1.1	91. Nisampattanam ...		17.3	+ 6.8
34. Chilakalurpet ...		11.7	+ 0.8	92. Vasudevanallur ...		17.3	+ 1.6
35. Penukonda ...		12.3	- 2.2	93. Valuru ...		17.4	+ 9.6
36. Arni ...		12.4	- 4.7	94. Pattamadai ...		17.4	- 5.4
37. Settur ...		12.5	+ 3.8	95. Kallakurichi ...		17.7	- 7.4
38. Kandukur ...		12.6	- 3.0	96. Saluru ...		17.7	- 3.1
39. Sholingur ...		12.7	- 1.6	97. Kalahasti ...		17.9	+ 5.3
40. Turaiyur ...		12.7	- 0.4	98. Penukonda ...		18.0	+ 5.4
41. Venkatagiri ...		13.2	+ 1.9	99. Viraghattam ...		18.0	+ 7.2
42. Arkonam ...		13.2	+ 1.7	100. Tondi ...		18.2	+ 1.8
43. Tiruchondur ...		13.2	- 2.6	101. Lalgudi ...		18.2	+ 10.8
44. Narasapur ...		13.3	- 3.3	102. Manachanallur ...		18.2	+ 1.4
45. Chebrole ...		13.4	- 0.7	103. Alluru Kottapattanam ...		18.5	+ 7.1
46. Pāvattipuram ...		13.5	+ 3.2	104. Uttamapālaiyam ...		18.7	+ 3.1
47. Bikkavole ...		13.7	- 10.4	105. Aruppukkōttai ...		18.8	+ 1.0
48. Kadiri ...		13.8	+ 2.1	106. Ambasamudram ...		19.0	- 1.9
49. Krishnagiri ...		13.8	+ 0.6	107. Jaggayyapeta ...		19.1	- 4.2
50. Adanki ...		13.9	- 1.3	108. Mandapeta ...		19.2	+ 4.4
51. Wandiwash ...		13.9	+ 4.7	109. Mulki ...		19.2	- 0.5
52. Pallikonda ...		14.0	+ 11.4	110. Mangalagiri ...		19.3	- 9.1
53. Nayudupet ...		14.1	+ 0.7	111. Oondespoor ...		19.3	- 3.3
54. Kadaiyasaallur ...		14.1	+ 0.8	112. Harpanahalli ...		19.4	Nil.
55. Bobbili ...		14.1	- 4.5	113. Ramachandrapuram ...		19.4	- 0.6
56. Gobiohettipālaiyam ...		14.3	+ 0.5	114. Watrap ...		19.5	- 1.0
57. Alisabad ...		14.3	- 2.2	115. Puttukkottai ...		19.5	- 2.2
58. Tirupparankundram ...		14.5	- 18.1	116. Tenkasi ...		19.5	+ 3.9

Between 20 and 25 per mille.

1. Kampli ...	20.1	+ 6.5	15. Karaikudi ...	21.0	+ 3.0
2. Kotturu ...	20.1	- 34.5	16. Vaidiavarankoyil ...	21.0	+ 1.2
3. Attali ...	20.1	+ 6.2	17. Srungavarappakota ...	21.1	- 9.0
4. Udaiyarpālaiyam ...	20.1	+ 0.4	18. Tanuku ...	21.2	- 0.1
5. Bapatla ...	20.2	+ 1.7	19. Nattam ...	21.3	+ 3.3
6. Adirampattanam ...	20.2	- 4.9	20. Attur ...	21.5	+ 7.7
7. Kulasekharapattanam ...	20.3	+ 0.0	21. Jammalamadugu ...	21.6	- 3.4
8. Gudivāda ...	20.3	+ 4.1	22. Kāsaragōd ...	21.6	+ 1.9
9. Tranquebar ...	20.3	- 6.3	23. Vadakkuvalliyur ...	21.6	- 0.4
10. Badvel ...	20.4	- 20.0	24. Tindivanam ...	21.7	- 3.2
11. Rasipuram ...	20.7	+ 0.7	25. Nellikuppam ...	21.7	+ 6.0
12. Nanguneri ...	20.8	+ 2.7	26. Sompetta ...	22.0	- 4.5
13. Tuni ...	20.9	- 17.4	27. Wellington ...	22.0	+ 0.7
14. Uraivakonda ...	21.0	+ 6.6	28. Sireguppa ...	22.2	+ 3.6

ANNEXURE D—cont.

Death-rates in rural towns during 1922—cont.

No.	Rural towns.	Death-rates for 1922	Increase or decrease (+ or -).	No.	Rural towns.	Death-rates for 1922.	Increase or decrease (+ or -).
<i>Between 20 and 25 per mille—cont.</i>							
29.	Narasannapeta	22.2	- 1.5	41.	Srivaikuntam	23.2	+ 2.6
30.	Tirumangalam	22.5	+ 3.6	42.	Rasaupet	23.6	- 1.4
31.	Manamadurai	22.5	+ 3.5	43.	Nuzvid	23.6	- 2.8
32.	Madurantakam	22.6	+ 6.4	44.	Pamidi	23.7	+ 8.4
33.	Dowlaisahweram	22.6	- 0.3	45.	Sermadevi	24.0	+ 4.7
34.	Venukonda	22.6	- 0.4	46.	Poonamallee	24.1	+ 15.0
35.	Sendamangalam	22.6	+ 15.0	47.	Sriperebaddar	24.4	- 3.6
36.	Kolliparai	22.7	- 12.1	48.	Udipi	24.6	+ 5.1
37.	Vedāranthiyam	22.8	+ 1.0	49.	Vallam	24.6	- 1.4
38.	Kamalapuram	23.0	+ 3.2	50.	Sivaganga	24.7	+ 4.0
39.	Shiyali	23.1	- 8.5	51.	Kallidaikurichi	24.9	+ 6.8
40.	Achanta	23.2	+ 14.9				
<i>Between 25 and 30 per mille.</i>							
1.	Kovilpatti	25.0	+ 5.5	15.	Sholavandan	26.5	- 26.7
2.	Kayalpattanam	25.1	- 5.2	16.	Ettaiyapuram	26.5	+ 4.7
3.	Dharmapuri	25.2	+ 14.4	17.	Punganur	26.6	- 7.4
4.	Chodavaram	25.4	+ 1.7	18.	Paliyampatti	26.7	+ 0.4
5.	Ariyalur	25.7	- 1.3	19.	Muttapet	27.0	- 7.8
6.	Tekkali	25.8	+ 5.5	20.	Tiruvadamardur	27.4	- 8.7
7.	Tiruchengodu	25.9	+ 6.0	21.	Sattur	27.5	- 0.4
8.	Panruti	26.0	- 6.5	22.	Paramagudi	27.9	+ 8.5
9.	Gurjara	26.3	- 7.2	23.	Valavanur	28.2	+ 1.7
10.	Mudugula	26.3	- 7.5	24.	Yemmiganura	28.7	+ 8.1
11.	Sembiam	26.4	+ 21.0	25.	Pallapatti	29.0	+ 10.0
12.	Ponnani	26.4	+ 3.8	26.	Kalittalai	29.3	- 10.3
13.	Bhuvanagiri	26.4	+ 0.6	27.	Alvartirunagiri	29.4	+ 7.3
14.	Tiruvallur	26.5	+ 10.8	28.	Uttiramerar	29.6	+ 11.0
<i>Between 30 and 35 per mille.</i>							
1.	Vridhachalam	30.4	- 1.6	9.	Namakkal	32.4	+ 7.5
2.	Tiruvottiyūr	30.9	+ 12.4	10.	Gudur	32.7	+ 13.9
3.	Viravanallūr	31.0	+ 8.2	11.	Tirutturaiyandi	32.7	+ 5.7
4.	Ramnād	31.7	Nil.	12.	Ramaswaram	33.3	- 15.5
5.	Tiruvadi	31.8	- 0.4	13.	Sattankulam	33.8	- 4.8
6.	Eral	31.9	+ 6.8	14.	Tiruttani	34.0	+ 16.0
7.	Kosgi	32.0	+ 3.3	15.	Hosur	34.0	+ 5.1
8.	Kottar	32.2	- 11.4				
<i>Between 35 and 40 per mille.</i>							
1.	Bhāvāni	37.9	+ 12.1	2.	Tiruppuvanam	38.7	+ 10.4
<i>Between 40 and 50 per mille.</i>							
1.	Ayyampettai	40.7	+ 11.8	2.	Tirukkattupalli	40.8	+ 8.2
<i>Between 50 and 60 per mille.</i>							
1.	Kilakarai					57.7	- 10.6

ANNEXURE E.

Death-rates in municipalities for 1922.

No.	Municipalities.	Death-rates for 1922.	Increase or decrease (+ or -).	No.	Municipalities.	Death-rates for 1922.	Increase or decrease (+ or -).
<i>Below 20 per mille.</i>							
1.	Peddūpur	13.9	- 10.1	10.	Narasaraopet	18.0	- 3.6
2.	Chirāla	14.0	+ 7.1	11.	Proddatūr	18.0	- 7.5
3.	Tiruvālūr	14.0	- 6.4	12.	Chittoor	18.3	- 7.5
4.	Bethampur	15.0	- 9.7	13.	Hindupur	18.5	+ 2.6
5.	Vaniyambādi	16.0	- 2.9	14.	Kodaikānal	19.1	+ 3.9
6.	Sivakāsi	16.4	+ 1.0	15.	Bodinayakkanūr	19.3	+ 7.8
7.	Tenali	17.2	- 3.3	16.	Vilupuram	19.7	+ 2.5
8.	Tadipatri	17.4	- 0.5	17.	Ellore	19.9	- 1.1
9.	Mangalore	17.6	- 1.9				
<i>Between 20 and 25 per mille.</i>							
1.	Anantapur	20.1	- 0.1	11.	Erode	22.5	+ 0.5
2.	Tiruppur	20.5	+ 5.2	12.	Ottanore	22.6	- 0.4
3.	Chittoor	20.8	- 2.5	13.	Maulipatam	22.8	- 1.8
4.	Adoni	21.0	+ 3.9	14.	Palakole	23.7	- 1.0
5.	Parākimedi	21.2	- 7.8	15.	Nandyal	23.7	+ 3.6
6.	Anakāpalle	21.3	- 1.7	16.	Saidapet	23.9	+ 14.9
7.	Bimlipatam	22.0	- 0.8	17.	Cocanada	24.3	- 10.8
8.	Srivilliputtar	22.0	- 0.2	18.	Strangam	24.7	+ 1.7
9.	Vellore	22.1	+ 0.4	19.	Tirupati	24.8	- 1.6
10.	Gudiyattam	22.2	- 18.8				
<i>Between 25 and 30 per mille.</i>							
1.	Cuddapah	25.5	+ 6.1	12.	Palghat	27.8	- 5.6
2.	Coonoor	25.6	+ 5.0	13.	Ootacamund	28.1	- 1.5
3.	Pollachi	25.7	+ 1.6	14.	Chidambaram	28.2	- 0.5
4.	Vizianagram	25.8	- 8.3	15.	Mannargudi	28.5	- 4.9
5.	Vizagapatam	26.0	- 1.9	16.	Palāmoottah	28.5	+ 5.0
6.	Bellary	26.0	+ 5.6	17.	Chingleput	28.7	- 1.5
7.	Tellicherry	26.1	- 3.4	18.	Māyavaram	28.7	- 7.3
8.	Rajahmundry	27.3	+ 0.7	19.	Taticorin	28.9	+ 0.8
9.	Ongole	27.3	- 6.0	20.	Nellore	29.7	- 0.4
10.	Conjeevaram	27.4	+ 1.6	21.	Dhārāpuram	29.8	+ 2.5
11.	Kumbakonam	27.6	- 7.7	22.	Trichinopoly	29.9	+ 2.2
<i>Between 30 and 35 per mille.</i>							
1.	Tinnevely	30.0	+ 6.3	8.	Cochin	32.5	+ 4.2
2.	Guntūr	30.2	- 7.5	9.	Dhārāpuram	32.7	+ 11.7
3.	Nagapatam	30.7	+ 0.2	10.	Cuddalore	33.2	+ 6.9
4.	Walajapet	30.9	+ 2.8	11.	Bezwada	34.7	- 6.3
5.	Karūr	31.4	+ 6.7	12.	Salem	34.8	- 23.6
6.	Tirupattur	31.5	+ 5.2	13.	Tanjore	34.9	- 0.3
7.	Tiruvannāmalai	31.9	- 2.8				
<i>Between 35 and 40 per mille.</i>							
1.	Madura	36.1	+ 0.8	3.	Virudhunagar	37.7	- 2.6
2.	Calicut	36.8	+ 2.4	4.	Kurnool	39.3	+ 9.7
<i>Between 40 and 60 per mille.</i>							
1.	Madras	43.1	+ 4.5	4.	Hospet	47.9	+ 23.4
2.	Palni	45.2	+ 24.3	5.	Coimbatore	52.8	+ 23.6
3.	Udumalpet	46.5	+ 16.7				
<i>Above 60 per mille.</i>							
1.	Periyakulam	70.6	+ 23.8				

ANNEXURE F.

Infantile death-rates in municipalities during 192

No.	Municipalities.	Death-rates for 1922.	Increase or decrease + or -	No.	Municipalities.	Death-rates for 1921.	Increase or decrease + or -
<i>Below 100 per mille.</i>							
1.	Nandyal	98.0	- 60.7				
<i>Between 100 and 150 per mille.</i>							
1.	Cannanore	105.1	- 18.7	8.	Calicut	127.4	- 40.8
2.	Sivakasi	120.6	+ 18.2	9.	Berhampur	132.9	- 42.9
3.	Anantapur	122.1	- 10.4	10.	Tadpatri	135.1	+ 36.8
4.	Vaniyambadi	122.2	- 17.6	11.	Tiruvalur	138.4	- 43.1
5.	Mangalore	123.9	- 14.6	12.	Kodaikānal	142.9	- 27.5
6.	Vellore	125.4	+ 13.7	13.	Bimlipatam	143.3	+ 11.6
7.	Tellicherry	126.3	- 38.5	14.	Chittoor	147.8	+ 8.6
<i>Between 150 and 200 per mille.</i>							
1.	Chicacole	151.2	- 63.8	14.	Anakapalle	181.0	- 23.0
2.	Peddapur	151.9	- 43.6	15.	Erode	184.5	+ 21.6
3.	Proddatur	153.2	- 26.6	16.	Chirala	184.9	+ 69.6
4.	Srivilliputtur	156.4	+ 7.6	17.	Vizianagaram	185.7	- 63.4
5.	Hospet	160.3	+ 3.8	18.	Chingleput	186.7	+ 7.8
6.	Coonoor	164.0	+ 4.0	19.	Nellore	192.5	- 35.8
7.	Cocanada	168.9	- 36.3	20.	Rajahmundry	193.4	+ 16.6
8.	Tirupattur	169.2	- 45.2	21.	Mannargudi	194.6	+ 13.8
9.	Hindupur	171.9	- 24.0	22.	Ongole	195.1	- 63.5
10.	Tiruvannāmalai	174.1	- 2.9	23.	Tenali	195.6	+ 9.6
11.	Tiruppur	176.0	+ 36.6	24.	Sirangam	198.0	+ 4.6
12.	Adoni	176.4	+ 14.9	25.	Rodnayakkanur	197.0	+ 100.3
13.	Gudiyattam	177.6	+ 25.1				
<i>Between 200 and 250 per mille.</i>							
1.	Dhārāpuram	200.4	+ 41.8	16.	Tuticorin	214.1	- 24.4
2.	Masulipatam	200.7	- 34.0	17.	Salem	218.5	- 40.6
3.	Tirupati	201.6	- 10.6	18.	Walajapet	218.6	+ 27.0
4.	Palni	204.6	+ 53.0	19.	Kurnool	220.2	- 1.6
5.	Villupuram	205.4	+ 15.7	20.	Cochin	220.2	- 20.8
6.	Madura	206.3	+ 10.9	21.	Vizagapatam	221.4	+ 24.0
7.	Karur	206.9	+ 19.7	22.	Bellary	222.3	- 30.7
8.	Trichinopoly	207.6	+ 12.3	23.	Tantr	222.3	- 5.4
9.	Ellore	208.8	+ 9.7	24.	Kumbakonam	223.8	- 27.0
10.	Saidapet	209.1	+ 0.8	25.	Mayavaram	224.1	+ 27.8
11.	Cuddapah	209.1	+ 63.8	26.	Conjeevaram	224.2	- 23.4
12.	Narasaraopet	209.4	- 74.6	27.	Ootacamund	227.2	- 22.3
13.	Pollachi	209.7	+ 8.2	28.	Palghat	234.6	+ 35.8
14.	Parākimedi	210.6	+ 15.1	29.	Palamcottah	245.3	
15.	Palakolle	212.4	- 9.1				
<i>Between 250 and 300 per mille.</i>							
1.	Dindigul	251.2	+ 14.2	5.	Cuddalore	262.1	+ 29.7
2.	Odampet	253.7	+ 16.6	6.	Chidambaram	265.3	- 16.8
3.	Tinnevely	256.0	+ 42.7	7.	Tanjore	269.4	+ 27.2
4.	Negapatam	257.4	+ 17.7	8.	Periyakulam	260.0	+ 69.1
<i>Above 300 per mille.</i>							
1.	Madras	311.6	+ 27.8	3.	Virudhunagar	332.9	+ 96.7
2.	Bezwada	329.8	- 29.0	4.	Coimbatore	352.8	+ 123.0

ANNEXURE G.

I. Districts.—Incidence of mortality from cholera.

Districts.	Number of deaths in 1922.	Rate for 5 years ending 1921.	Rate for 1922.	Districts.	Number of deaths in 1922.	Rate for 5 years ending 1921.	Rate for 1922.
1. The Nilgiris	..	0.4	..	14. South Kanara	35	1.6	0.03
2. Madras	17	0.6	0.03	15. Nellore	143	1.7	0.1
3. Vizagapatam	167	1.0	0.1	16. Salem	2.8	1.7	0.1
4. Coimbatore	811	1.3	0.4	17. Tanjore	650	1.7	0.3
5. Kurnool	3,793	1.4	4.2	18. Tirnevelly	12	1.7	0.01
6. South Arcot	63	1.4	0.1	19. Ganjam	2,997	1.8	1.6
7. Trichinopoly	654	1.4	0.3	20. Madras	836	1.9	0.4
8. Anantapur	531	1.5	0.6	21. Chittoor	100	2.1	0.1
9. Chingleput	63	1.5	0.14	22. North Arcot	92	2.1	0.1
10. Guntur	174	1.5	0.1	23. Agency Division	9	2.1	0.04
11. Bellary	3,546	1.6	4.0	24. Kistna	204	2.2	0.1
12. Malabar	105	1.6	0.03	25. Godavari	1	2.5	0.001
13. Rannād	11	1.6	0.01	26. Cuddapah	1,190	2.6	1.3

II. Municipalities.—Incidence of mortality from cholera.

Municipalities.	Number of deaths in 1922.	Rate for 5 years ending 1921.	Rate for 1922.	Municipalities.	Number of deaths in 1922.	Rate for 5 years ending 1921.	Rate for 1922.
1. Kodaikanal	..	..	..	42. Tiruvalur	..	1.7	..
2. Vizianagaram	1	0.1	0.03	43. Dindigul	7	1.7	0.2
3. Ongole	..	0.2	..	44. Cannanore	..	1.7	..
4. Periyakulam	..	0.2	..	45. Peddapur	..	1.8	..
5. Adoni	139	0.2	4.6	46. Masulipatam	10	1.8	0.2
6. Kurnool	85	0.3	3.0	47. Palamcottah	1	1.8	0.03
7. Tirupattur	1	0.3	0.1	48. Tiruvannāmalai	..	1.8	..
8. Cuddalore	1	0.5	0.02	49. Coimbatore	31	1.8	0.5
9. Vizagapatam	2	0.6	0.04	50. Mangalore	..	1.8	..
10. Narasaraopet	4	0.6	0.3	51. Kumbakonam	..	1.9	..
11. Madras	17	0.6	0.3	52. Salem	3	1.9	0.1
12. Srivilliputtur	..	0.6	..	53. Calicut	4	2.0	0.1
13. Walajapet	..	0.6	..	54. Tellicherry	3	2.0	0.1
14. Ootacamund	..	0.6	..	55. Anantapur	6	2.1	0.6
15. Bimlipatam	..	0.7	..	56. Saidapet	..	2.2	..
16. Chidambaram	..	0.7	..	57. Hindupur	..	2.2	..
17. Tuticorin	..	0.7	..	58. Ellore	1	2.3	0.02
18. Cuddapah	28	0.7	1.3	59. Mayavaram	..	2.3	..
19. Cocanada	..	0.8	..	60. Dhārāpuram	162	2.3	10.0
20. Bellary	76	0.8	1.9	61. Palghat	3	2.3	0.1
21. Vellore	1	0.8	0.02	62. Hospet	53	2.5	2.9
22. Negapatam	6	0.9	0.1	63. Gudiyattam	..	2.5	..
23. Berhampur	13	1.0	0.4	64. Anakapalle	..	2.7	..
24. Chirala	..	1.0	..	65. Tenali	..	2.8	..
25. Trichinopoly	81	1.0	0.3	66. Erode	..	2.8	..
26. Sirangam	..	1.0	..	67. Parākimedi	24	2.9	1.3
27. Tanjore	20	1.0	0.3	68. Rajahmundry	..	2.9	..
28. Virudhunagar	..	1.0	..	69. Nellore	2	2.9	0.1
29. Coonoor	..	1.0	..	70. Karur	9	2.9	0.5
30. Villupuram	..	1.1	..	71. Tadpatri	..	3.2	..
31. Sivakasi	..	1.1	..	72. Tinnevely	..	3.3	..
32. Guntur	..	1.2	..	73. Mannargudi	22	3.5	1.0
33. Conjeevaram	..	1.2	..	74. Cochin	..	3.5	..
34. Tirupati	8	1.2	0.3	75. Nandyal	83	3.9	4.6
35. Pollachi	2	1.3	0.2	76. Tirupattur	1	5.1	0.1
36. Palakollu	1	1.4	0.1	77. Rodnayakkanur	..	5.2	..
37. Madura	3	1.4	0.03	78. Chittoor	..	5.3	..
38. Chingleput	..	1.5	..	79. Vaniyambadi	..	6.4	..
39. Chicacole	..	1.5	..	80. Palni	104	6.9	6.9
40. Bezwada	21	1.6	0.7	81. Proddatur	1	5.6	0.1
41. Odampet	..	1.6	2.0				

ANNEXURE H.

I. Districts.—Incidence of mortality from smallpox.

Districts.	Number of deaths in 1922.	Rate for 5 years ending 1921.	Rate for 1922.	Districts.	Number of deaths in 1922.	Rate for 5 years ending 1921.	Rate for 1922.
1. Kurnool ..	244	0.4	0.3	14. Vizagapatam ..	390	0.7	0.2
2. Godavari ..	168	0.5	0.1	15. Kistna ..	963	0.8	0.4
3. Madras ..	1,115	0.5	2.2	16. Malabar ..	1,025	0.8	0.3
4. Tinnevely ..	1,264	0.5	0.7	17. Nellore ..	588	0.8	0.4
5. Anantapur ..	582	0.6	0.6	18. Rāmnād ..	1,585	0.8	0.9
6. Ganjam ..	886	0.6	0.5	19. The Nilgiris ..	35	0.9	0.8
7. Agency Division ..	10	0.6	0.1	20. Salem ..	822	0.9	0.4
8. Chingleput ..	1,445	0.7	1.0	21. South Kanara ..	529	0.9	0.4
9. Chittoor ..	478	0.7	0.4	22. Bellary ..	600	1.0	0.7
10. Coimbatore ..	1,197	0.7	0.5	23. Gunur ..	360	1.0	0.2
11. Cuddapah ..	514	0.7	0.6	24. South Arcot ..	1,885	1.0	0.8
12. Madras ..	2,382	0.7	1.2	25. Tanjore ..	1,587	1.1	0.7
13. Trichinopoly ..	1,047	0.7	0.6	26. North Arcot ..	1,129	1.2	0.6

II. Municipalities.—Incidence of mortality from smallpox.

Municipalities.	Number of deaths in 1922.	Rate for 5 years ending 1921.	Rate for 1922.	Municipalities.	Number of deaths in 1922.	Rate for 5 years ending 1921.	Rate for 1922.
1. Peddapuram ..	..	..	..	42. Ellore ..	32	1.0	0.7
2. Walajapet ..	..	0.1	..	43. Trichinopoly ..	178	1.0	1.5
3. Parlakemudi ..	..	0.1	..	44. Kumbakonam ..	165	1.0	2.6
4. Chirala ..	2	0.1	0.1	45. Tinnevely ..	142	1.0	2.2
5. Proddatur ..	2	0.1	0.1	46. Berhampur ..	6	1.1	0.1
6. Chingleput ..	..	0.2	..	47. Vizagapatam ..	4	1.1	0.6
7. Cuddalore ..	34	0.2	0.7	48. Chittoor ..	11	1.1	2.1
8. Sivakasi ..	..	0.2	..	49. Tiruppur ..	38	1.2	0.02
9. Srivilliputtur ..	..	0.2	..	50. Vizianagram ..	1	1.2	0.1
10. Bimlipatam ..	..	0.3	..	51. Bezwada ..	4	1.2	4.2
11. Villupuram ..	38	0.3	1.6	52. Karur ..	77	1.2	0.7
12. Tirupati ..	5	0.3	0.3	53. Dharmaparam ..	12	1.2	2.2
13. Bodinayakkanur ..	58	0.3	2.9	54. Palni ..	38	1.2	7.3
14. Vaniyambadi ..	..	0.8	..	55. Udumalpet ..	75	1.2	2.8
15. Tadipatri ..	14	0.4	1.2	56. Negapatam ..	152	1.4	0.8
16. Palakollu ..	2	0.4	0.1	57. Erode ..	18	1.4	0.2
17. Guntur ..	10	0.4	0.2	58. Annakapalle ..	5	1.5	7.7
18. Tuticorin ..	49	0.4	1.1	59. Madras ..	63	1.5	3.2
19. Palamcottah ..	126	0.4	2.7	60. Periyakulam ..	93	1.5	2.0
20. Adoni ..	70	0.4	2.8	61. Palghat ..	27	1.6	0.6
21. Srirangam ..	25	0.5	1.1	62. Masulipatam ..	8	1.6	0.3
22. Madras ..	1,115	0.5	2.2	63. Tellicherry ..	2	1.7	0.1
23. Saidapet ..	123	0.5	4.5	64. Ongole ..	2	1.7	0.8
24. Nellore ..	80	0.6	2.2	65. Mayavaram ..	24	1.7	8.3
25. Tanjore ..	109	0.6	1.8	66. Virudunagaram ..	3	1.7	0.1
26. Kodakanal ..	..	0.6	..	67. Gudiyattam ..	12	1.9	0.4
27. Conjeevaram ..	105	0.7	1.7	68. Dindigul ..	34	1.9	3.0
28. Kurnool ..	12	0.7	0.4	69. Anantapur ..	10	2.1	0.2
29. Nandyal ..	..	0.7	..	70. Rajahmundry ..	31	2.1	2.5
30. Bellary ..	..	0.7	..	71. Coonoor ..	125	2.1	2.4
31. Hindupur ..	..	0.7	..	72. Salem ..	3	2.2	0.2
32. Vellore ..	50	0.7	1.0	73. Tirupattur ..	..	2.2	..
33. Pollachi ..	67	0.7	5.6	74. Narasaraopet ..	..	2.9	1.6
34. Chioacole ..	4	0.8	0.2	75. Mannargudi ..	34	2.9	4.4
35. Coenada ..	52	0.8	0.6	76. Coimbatore ..	294	2.9	..
36. Tenali ..	7	0.8	0.4	77. Mangalore ..	..	2.9	..
37. Chidambaram ..	29	0.8	1.3	78. Tiruvannamalai ..	8	3.3	0.2
38. Tiruvallur ..	4	0.9	0.2	79. Calicut ..	117	3.5	1.4
39. Cuddappah ..	37	0.9	1.0	80. Cannanore ..	..	3.7	..
40. Hospet ..	..	0.9	..	81. Cochin ..	142	3.9	6.9
41. Ootacamund ..	8	0.9	0.4				

ANNEXURE I.

I. Districts.—Incidence of mortality from plague.

Districts.	Number of deaths in 1922.	Rate for 5 years ending 1921.	Rate for 1922.	Districts.	Number of deaths in 1922.	Rate for 5 years ending 1921.	Rate for 1922.
1. Ganjam ..	..	..	..	14. Cuddapah ..	..	0.03	..
2. South Arcot ..	62	..	0.03	15. Malabar ..	252	0.04	0.1
3. Agency division ..	..	..	..	16. Vizagapatam ..	..	0.05	..
4. Godavari ..	..	0.0004	..	17. South Kanara ..	7	0.1	0.01
5. Nellore ..	..	0.0006	..	18. Guntur ..	..	0.1	..
6. Tinnevely ..	..	0.002	..	19. The Nilgiris ..	38	0.3	0.3
7. Chingleput ..	..	0.003	..	20. North Arcot ..	1,053	0.4	0.5
8. Tanjore ..	..	0.005	..	21. Kurnool ..	1	0.5	0.001
9. Trichinopoly ..	101	0.007	0.1	22. Salem ..	2,011	0.9	1.0
10. Kistna ..	..	0.01	..	23. Anantapur ..	5	1.0	0.01
11. Rāmnād ..	94	0.02	0.1	24. Madras ..	1,614	1.0	0.8
12. Chittoor ..	..	0.02	..	25. Coimbatore ..	3,003	1.4	1.4
13. Madras ..	1	0.02	0.003	26. Bellary ..	951	4.4	1.1

II. Municipalities.—Incidence of mortality from plague.

Municipalities.	Number of deaths in 1922.	Rate for 5 years ending 1921.	Rate for 1922.	Municipalities.	Number of deaths in 1922.	Rate for 5 years ending 1921.	Rate for 1922.
1. Berhampur ..	..	..	..	42. Cannanore ..	1	0.1	0.04
2. Parlakimedi ..	..	..	..	43. Tenali ..	..	0.2	..
3. Chioacole ..	..	..	..	44. Vellore ..	14	0.2	0.3
4. Rajahmundry ..	..	..	..	45. Bezwada ..	..	0.3	..
5. Peddapuram ..	..	..	..	46. Ootacamund ..	10	0.3	0.6
6. Ellore ..	..	..	..	47. Coonoor ..	10	0.5	2.5
7. Palakollu ..	..	..	..	48. Ongole ..	..	0.6	..
8. Narasaraopet ..	..	..	..	49. Tiruvannamalai ..	218	0.8	9.9
9. Cuddalore ..	..	..	..	50. Palghat ..	..	0.8	..
10. Chidambaram ..	..	..	..	51. Nandyal ..	..	1.0	..
11. Villupuram ..	1	..	0.1	52. Cuddapah ..	..	1.1	..
12. Kumbakonam ..	..	..	..	53. Tellicherry ..	..	1.1	..
13. Mayavaram ..	..	..	..	54. Madras ..	53	1.2	0.4
14. Tiruvallur ..	..	..	..	55. Guntur ..	..	1.4	..
15. Mannargudi ..	..	..	..	56. Kurnool ..	..	1.4	..
16. Kodakanal ..	9	..	2.1	57. Virudunagaram ..	..	1.7	..
17. Palamcottah ..	..	..	..	58. Anantapur ..	..	1.8	..
18. Coenada ..	..	0.004	..	59. Hindupur ..	..	2.2	..
19. Masulipatam ..	..	0.004	..	60. Tadipatri ..	..	2.2	6.3
20. Tuticorin ..	..	0.004	..	61. Erode ..	145	2.2	..
21. Nellore ..	..	0.01	..	62. Vizagapatam ..	..	2.3	..
22. Conjeevaram ..	..	0.01	..	63. Chirala ..	418	2.3	25.4
23. Srirangam ..	..	0.01	..	64. Periyakulam ..	1	3.0	0.02
24. Tanjore ..	..	0.01	..	65. Dindigul ..	..	3.2	..
25. Negapatam ..	..	0.01	..	66. Dharapuram ..	309	3.3	17.6
26. Tinnevely ..	..	0.01	..	67. Palni ..	1	3.6	0.1
27. Cochin ..	..	0.01	..	68. Vaniyambadi ..	..	4.0	..
28. Annakapalle ..	..	0.02	..	69. Bodinayakkanur ..	6	5.3	0.5
29. Bimlipatam ..	..	0.02	..	70. Pollachi ..	161	6.3	9.9
30. Madras ..	1	0.02	0.002	71. Tirupattur ..	1	6.4	0.03
31. Saidapet ..	..	0.02	..	72. Bellary ..	810	6.5	12.3
32. Chingleput ..	..	0.02	..	73. Coimbatore ..	4	6.7	0.4
33. Trichinopoly ..	3	0.02	0.2	74. Tiruppur ..	..	7.1	0.1
34. Karur ..	35	0.02	1.9	75. Mangalore ..	6	7.3	9.9
35. Sivakasi ..	..	0.03	..	76. Gudiyattam ..	26	8.1	..
36. Proddatur ..	..	0.03	..	77. Walajapet ..	343	8.2	18.7
37. Vizianagram ..	..	0.04	..	78. Hospet ..	..	8.3	..
38. Chittoor ..	..	0.04	..	79. Adoni ..	117	8.6	11.4
39. Tirupati ..	..	0.04	..	80. Udumalpet ..	29	10.3	0.6
40. Calicut ..	71	0.04	0.9				
41. Srivilliputtur ..	..	0.1	..				

ANNEXURE J.

I. Districts—Incidence of mortality from fevers.

Districts.	Number of deaths in 1922.	Rate for 5 years ending 1921.	Rate for 1922.	Districts.	Number of deaths in 1922.	Rate for 5 years ending 1921.	Rate for 1922.
1. Tinnevely ..	8,000	6.6	4.2	14. Malabar ..	27,446	11.0	8.9
2. Madras ..	2,135	5.9	4.1	15. Kistna ..	22,823	11.8	10.7
3. Tanjore ..	14,202	5.0	6.1	16. Anantapur ..	3,671	12.2	8.8
4. South Arcot ..	9,479	6.6	4.1	17. Salem ..	16,860	18.0	8.6
5. Coimbatore ..	6,741	6.7	3.0	18. The Nilgiris ..	1,046	13.8	8.6
6. Chingleput ..	5,710	6.9	8.8	19. Godavari ..	16,389	14.0	11.1
7. Madras ..	7,124	7.0	3.5	20. Guntur ..	21,818	11.9	12.0
8. Ramnad ..	10,170	7.9	5.9	21. Bellary ..	3,653	16.8	4.2
9. North Arcot ..	8,480	8.0	3.1	22. Cuddapah ..	10,601	18.0	11.9
10. Trichinopoly ..	10,754	8.0	5.6	23. Ganjam ..	28,842	19.6	15.7
11. Chittoor ..	6,901	9.0	5.4	24. Agency division ..	2,918	21.2	13.6
12. Nellore ..	14,827	9.2	10.7	25. Kurnool ..	10,808	24.8	11.8
13. South Kanara ..	9,054	10.0	7.3	26. Visagapatam ..	41,257	24.9	15.5

II. Municipalities—Incidence of mortality from fever.

Municipalities.	Number of deaths in 1922.	Rate for 5 years ending 1921.	Rate for 1922.	Municipalities.	Number of deaths in 1922.	Rate for 5 years ending 1921.	Rate for 1922.
1. Vaniyambadi ..	36	0.1	1.7	43. Srivilliputtur ..	137	7.5	6.4
2. Coonoor ..	30	1.0	2.5	44. Kloro ..	216	7.7	6.7
3. Cuddalore ..	79	2.4	1.6	45. Kumbakonam ..	299	6.6	5.6
4. Mangalore ..	56	3.0	1.0	46. Tadipatri ..	63	7.7	5.4
5. Conjeevaram ..	15	3.1	0.3	47. Villupuram ..	95	7.8	5.1
6. Pollachi ..	70	3.2	5.9	48. Mayavaram ..	173	7.8	5.1
7. Palni ..	9	3.6	0.5	49. Tuticorin ..	240	8.0	5.3
8. Vellore ..	113	3.7	2.3	50. Palakollu ..	135	8.1	4.6
9. Sivakasi ..	74	3.8	5.1	51. Nellore ..	163	8.1	6.1
10. Trichinopoly ..	285	4.1	2.4	52. Visagapatam ..	271	8.3	6.0
11. Tiruppur ..	46	4.3	4.2	53. Saidapet ..	191	8.4	5.2
12. Cannanore ..	122	4.5	4.4	54. Madras ..	435	8.8	4.3
13. Udumalpet ..	23	5.1	2.2	55. Karur ..	78	8.8	1.5
14. Palamcottah ..	128	5.2	2.7	56. Tiruvannamalai ..	32	8.9	13.3
15. Chidambaram ..	128	5.3	6.7	57. Hindupur ..	165	8.9	6.9
16. Dharapuram ..	55	5.4	3.4	58. Palghat ..	315	9.0	4.8
17. Tellicherry ..	98	5.4	3.5	59. Poddapur ..	70	9.2	1
18. Negapatam ..	143	5.5	2.6	60. Tenali ..	188	9.4	10.7
19. Tinnevely ..	219	5.5	4.1	61. Rajahmundry ..	577	9.4	5.6
20. Srirangam ..	95	5.6	4.1	62. Tirupati ..	96	9.6	0.5
21. Salem ..	299	5.7	5.7	63. Adoni ..	14	9.9	3.2
22. Cochin ..	115	5.7	5.5	64. Bellary ..	198	10.3	6.3
23. Calicut ..	480	5.8	5.8	65. Cuddapah ..	122	10.4	8.7
24. Madras ..	2,135	5.9	4.2	66. Chittoor ..	142	10.6	7.1
25. Tiruvallur ..	65	6.0	2.7	67. Coimbatore ..	381	10.7	7.6
26. Bimlipatam ..	35	6.2	4.7	68. Periyakulam ..	136	10.9	6.8
27. Chingleput ..	22	6.4	1.9	69. Berhampur ..	365	11.1	5.8
28. Gudiyattam ..	68	6.4	2.8	70. Parakkimedi ..	97	11.2	5.8
29. Erode ..	79	6.8	3.4	71. Visianagram ..	381	11.3	5.4
30. Ootacamund ..	11	6.8	0.6	72. Tirupattur ..	29	11.5	1.0
31. Dindigul ..	63	7.0	2.0	73. Annapalle ..	174	11.7	6.6
32. Virudhunagar ..	148	7.0	6.8	74. Guntur ..	292	11.9	6.1
33. Coimbatore ..	329	7.0	5.0	75. Hospet ..	54	12.1	2.9
34. Rodinayakanur ..	83	7.1	4.1	76. Proddatur ..	93	12.4	5.8
35. Chittoor ..	44	7.1	2.5	77. Anantapur ..	74	12.5	5.4
36. Masulipatam ..	217	7.2	4.9	78. Narasaraopet ..	130	13.8	11.5
37. Walajahpet ..	36	7.2	3.6	79. Ongole ..	160	14.5	11.2
38. Mannargudi ..	102	7.3	1.2	80. Kurnool ..	459	18.0	16.5
39. Kodakanal ..	5	7.3	3.5	81. Nandyal ..	115	27.4	6.8
40. Beawada ..	154	7.4	7.4				
41. Tanjore ..	441	7.4	4.7				
42. Chirala ..	72	7.5					

ANNEXURE K.

I. Districts—Incidence of mortality from dysentery and diarrhoea.

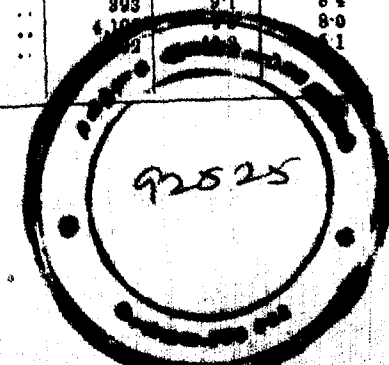
Districts.	Number of deaths in 1922.	Rate for 5 years ending 1921.	Rate for 1922.	Districts.	Number of deaths in 1922.	Rate for 5 years ending 1921.	Rate for 1922.
1. Nellore ..	460	0.5	0.3	14. Agency Division ..	227	1.3	1.1
2. Cuddapah ..	328	0.7	0.6	15. Madras ..	2,387	1.4	1.2
3. Kurnool ..	642	0.7	0.7	16. Chittoor ..	1,644	1.5	1.8
4. Visagapatam ..	905	0.7	0.4	17. South Arcot ..	2,467	1.5	1.1
5. Anantapur ..	673	0.9	0.7	18. Bellary ..	1,036	1.6	1.2
6. Ramanad ..	1,872	0.9	0.8	19. Kistna ..	1,313	1.6	0.6
7. Guntur ..	1,563	1.0	0.9	20. Coimbatore ..	4,847	2.6	2.1
8. Ganjam ..	1,928	1.1	1.1	21. North Arcot ..	3,986	2.7	1.4
9. Tanjore ..	2,469	1.1	1.0	22. Chingleput ..	2,970	2.8	2.0
10. Godavari ..	765	1.2	0.5	23. Malabar ..	8,654	3.2	2.6
11. Tinnevely ..	1,786	1.2	0.9	24. South Kanara ..	2,625	3.3	3.1
12. Trichinopoly ..	1,644	1.2	0.9	25. Nilgiris ..	476	5.1	3.9
13. Salem ..	1,555	1.3	0.7	26. Madras ..	4,106	5.5	8.0

II. Municipalities—Incidence of mortality from dysentery and diarrhoea.

Municipalities.	Number of deaths in 1922.	Rate for 5 years ending 1921.	Rate for 1922.	Municipalities.	Number of deaths in 1922.	Rate for 5 years ending 1921.	Rate for 1922.
1. Sivakasi ..	84	0.4	2.8	42. Tuticorin ..	122	3.6	2.7
2. Hindupur ..	5	0.8	0.4	43. Bellary ..	75	3.6	1.9
3. Proddatur ..	27	0.9	1.7	44. Negapatam ..	166	3.7	3.1
4. Adoni ..	32	1.1	1.1	45. Salem ..	97	3.8	1.8
5. Anantapur ..	3	1.2	0.3	46. Tiruppur ..	30	3.8	2.8
6. Villupuram ..	7	1.4	0.4	47. Karur ..	61	3.9	3.3
7. Bodinayakanur ..	22	1.6	1.1	48. Berhampur ..	27	4.0	0.8
8. Tadipatri ..	24	1.6	2.1	49. Trichinopoly ..	380	4.0	3.2
9. Pollachi ..	38	1.6	3.0	50. Palghat ..	175	4.0	3.8
10. Masulipatam ..	56	1.7	1.3	51. Walajahpet ..	33	4.1	3.3
11. Nandyal ..	27	1.7	1.5	52. Cannanore ..	70	4.2	2.6
12. Vaniyambadi ..	37	1.7	1.8	53. Tellicherry ..	45	4.2	1.8
13. Kloro ..	76	1.8	1.7	54. Tirupati ..	51	4.3	2.9
14. Kodakanal ..	6	2.0	1.4	55. Beawada ..	89	4.4	2.0
15. Guntur ..	70	2.2	1.5	56. Hospet ..	60	4.5	3.3
16. Narasaraopet ..	11	2.2	1.0	57. Parakkimedi ..	48	4.7	2.6
17. Chidambaram ..	42	2.2	1.9	58. Coonoor ..	28	4.7	2.7
18. Kurnool ..	72	2.3	2.6	59. Palni ..	42	4.8	2.4
19. Vellore ..	58	2.3	1.3	60. Mangalore ..	100	4.8	1.9
20. Nellore ..	48	2.4	1.3	61. Gudiyattam ..	65	4.9	2.9
21. Kumbakonam ..	78	2.4	1.2	62. Conjeevaram ..	149	5.0	2.4
22. Tenali ..	20	2.5	0.9	63. Dharapuram ..	84	5.0	5.2
23. Tiruvallur ..	36	2.5	1.5	64. Calicut ..	498	5.1	5.9
24. Srirangam ..	57	2.5	2.4	65. Cuddalore ..	81	5.4	4.1
25. Udumalpet ..	35	2.6	2.4	66. Bimlipatam ..	63	5.4	3.2
26. Saidapet ..	35	2.7	1.8	67. Ootacamund ..	48	5.5	3.0
27. Mayavaram ..	35	2.8	1.2	68. Chittoor ..	293	5.5	4.4
28. Chirala ..	28	2.8	1.2	69. Tanjore ..	76	5.6	3.5
29. Ongole ..	28	2.9	1.5	70. Virudhunagar ..	34	6.0	2.1
30. Palakollu ..	33	2.9	2.3	71. Tirupattur ..	43	6.0	2.0
31. Mannargudi ..	58	3.0	2.7	72. Cochin ..	43	6.1	1.9
32. Srivilliputtur ..	64	3.0	2.0	73. Erode ..	117	6.7	7.1
33. Cuddapah ..	48	3.0	2.3	74. Periyakulam ..	91	7.1	4.2
34. Rajahmundry ..	76	3.1	1.4	75. Tiruvannamalai ..	424	7.2	6.5
35. Cuddalore ..	160	3.2	3.2	76. Coimbatore ..	186	7.2	5.0
36. Madras ..	376	3.2	2.7	77. Visagapatam ..	176	8.2	3.9
37. Tinnevely ..	124	3.2	2.3	78. Chingleput ..	75	8.6	6.4
38. Chittoor ..	24	3.2	1.3	79. Palamcottah ..	393	9.1	8.4
39. Poddapuram ..	17	3.2	1.2	80. Madras ..	4,106	9.2	8.0
40. Annapalle ..	26	3.5	1.3	81. Visianagram ..	115	9.2	5.1
41. Coimbatore ..	79	3.5	1.5				

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ANNEXURE L.

I. Districts.—Incidence of mortality from respiratory diseases.

Districts.	Number of deaths in 1922.	Rate for five years ending 1921.	Rate for 1922.	Districts.	Number of deaths in 1922.	Rate for five years ending 1921.	Rate for 1922.
1. Ganjam ..	624	0.3	0.3	14. Kurnool ..	1,047	1.2	1.1
2. Nellore ..	606	0.4	0.5	15. Chingleput ..	1,995	1.4	1.3
3. Vizagapatam ..	731	0.4	0.3	16. Malabar ..	4,461	1.4	1.5
4. Tinnevely ..	1,160	0.5	0.6	17. Bellary ..	1,125	1.5	1.3
5. Tanjore ..	1,363	0.6	0.6	18. Coimbatore ..	2,299	1.5	1.0
6. Salem ..	831	0.7	0.4	19. North Arcot ..	2,060	1.5	1.0
7. Ramnad ..	1,854	0.9	1.1	20. Chittoor ..	2,291	1.6	1.8
8. South Arcot ..	1,898	0.9	0.8	21. Anantapur ..	1,104	1.8	1.2
9. Trichinopoly ..	1,694	0.9	0.9	22. Guntur ..	2,149	1.8	1.2
10. Madura ..	2,230	1.0	1.1	23. Godavari ..	2,010	1.9	1.4
11. South Kanara ..	1,613	1.0	1.3	24. Kistna ..	6,352	3.2	3.0
12. Agency Division ..	234	1.1	1.1	25. The Nilgiris ..	533	4.6	4.4
13. Cuddapah ..	1,001	1.2	0.1	26. Madras ..	4,911	10.0	9.5

II. Municipalities.—Incidence of mortality from respiratory diseases.

Municipalities.	Number of deaths in 1922.	Rate for five years ending 1921.	Rate for 1922.	Municipalities.	Number of deaths in 1922.	Rate for five years ending 1921.	Rate for 1922.
1. Ellore ..	10	..	0.2	42. Coimbatore ..	120	1.8	1.8
2. Nellore ..	..	..	..	43. Srivillipattur ..	28	1.8	0.9
3. Mayavaram ..	7	..	1.2	44. Tuticorin ..	104	1.9	2.3
4. Adoni ..	9	0.04	0.3	45. Walajapet ..	17	2.0	1.7
5. Palghat ..	1	0.04	0.02	46. Vellore ..	111	2.1	2.2
6. Chittoor ..	7	0.1	0.4	47. Erode ..	11	2.1	0.6
7. Chingleput ..	9	0.1	0.8	48. Palakollu ..	26	2.3	1.8
8. Hospet ..	..	0.1	..	49. Kumbakonam ..	45	2.3	0.7
9. Villupuram ..	8	0.2	0.2	50. Vizianagaram ..	88	2.4	2.8
10. Udumalpet ..	..	0.2	..	51. Tiruvannamalai ..	29	2.4	1.8
11. Kodaikanal ..	17	0.3	4.9	52. Berhampur ..	20	2.5	0.6
12. Sivakasi ..	2	0.3	0.1	53. Parakkudi ..	61	2.5	3.3
13. Tiruppur ..	15	0.3	1.4	54. Periyakulam ..	62	2.5	3.8
14. Rajahmundry ..	90	0.4	1.7	55. Kurnool ..	120	2.5	4.7
15. Nandyal ..	82	0.4	4.9	56. Mangalore ..	154	2.6	2.9
16. Bodinayakanur ..	7	0.5	0.3	57. Tenali ..	31	2.7	1.3
17. Ongole ..	1	0.6	0.1	58. Trichinopoly ..	624	2.7	2.8
18. Palni ..	6	0.6	0.3	59. Tanjore ..	138	2.7	2.4
19. Hindupur ..	4	0.6	0.3	60. Vizagapatam ..	105	2.1	2.0
20. Virudhunagar ..	..	0.7	..	61. Cuddalore ..	164	2.2	2.0
21. Tadpatri ..	10	0.7	0.9	62. Palamcottah ..	134	2.3	2.3
22. Guntur ..	95	0.8	2.0	63. Cannanore ..	87	2.4	1.6
23. Proddatur ..	..	0.8	..	64. Coimbatore ..	97	2.4	0.2
24. Masulipatam ..	28	0.9	0.6	65. Chirala ..	39	2.9	2.4
25. Tiruvannamalai ..	..	1.0	..	66. Tirupattur ..	27	4.0	0.7
26. Gudiyattam ..	19	1.0	0.9	67. Narasannopet ..	20	4.2	..
27. Porakkudi ..	15	1.0	1.3	68. Sankarpet ..	..	4.2	..
28. Chidambaram ..	33	1.1	1.5	69. Vaniyambadi ..	27	4.5	1.2
29. Dindigul ..	78	1.1	2.5	70. Srirangam ..	42	4.7	3.6
30. Dharmapuri ..	..	1.1	..	71. Chittoor ..	68	5.3	8.9
31. Thiruvethi ..	75	1.2	1.4	72. Cuddalore ..	170	5.4	4.0
32. Calicut ..	28	1.3	0.3	73. Bezwada ..	168	5.4	2.6
33. Negapatam ..	170	1.4	3.2	74. Bellary ..	73	5.7	3.0
34. Anakapalle ..	21	1.5	1.0	75. Tellicherry ..	61	5.9	8.1
35. Ponnampet ..	6	1.5	0.4	76. Cochin ..	142	6.6	5.7
36. Karur ..	35	1.5	1.9	77. Tirupati ..	347	7.0	6.8
37. Mannargudi ..	21	1.5	1.0	78. Coimbatore ..	85	7.8	9.5
38. Madura ..	201	1.5	1.4	79. Coonoor ..	4,911	10.0	9.5
39. Salem ..	87	1.5	1.7	80. Madras ..	177	10.1	9.1
40. Bimlipatam ..	19	1.7	2.8	81. Ootacamund ..	..	..	..
41. Anantapur ..	1	1.7	0.1	..	..	..	..

ANNEXURE M.

Statement showing the total number of deaths from cholera during 1922 in the municipalities protected with water-supply.

Name of municipalities.	Total deaths from cholera during 1922.	Name of municipalities.	Total deaths from cholera during 1922.	Name of municipalities.	Total deaths from cholera during 1922.
1. Adoni ..	139	11. Erode ..	..	21. Nellore ..	2
2. Berhampur ..	13	12. Gudiyattam ..	..	22. Ootacamund ..	..
3. Bezwada ..	81	13. Guntur ..	..	23. Periyakulam ..	..
4. Chidambaram ..	..	14. Kodaikanal ..	..	24. Salem ..	3
5. Coonoor ..	..	15. Kumbakonam ..	..	25. Tanjore ..	20
6. Coimbatore ..	..	16. Kurnool ..	85	26. Tirupati ..	..
7. Coonoor ..	..	17. Madras ..	17	27. Trichinopoly ..	31
8. Cuddalore ..	23	18. Madura ..	9	28. Vellore ..	1
9. Dindigul ..	7	19. Masulipatam ..	10	29. Vizagapatam ..	2
10. Ellore ..	1	20. Negapatam ..	6	30. Visianagaram ..	1

ANNEXURE N.

Midwifery Statement Districts excluding Municipalities.

Name of districts.	Number of midwives.	Number of labour cases conducted.	Percentage of total births attended by midwives.	Name of districts.	Number of midwives.	Number of labour cases conducted.	Percentage of total births attended by midwives.
1. Anantapur ..	9	520	2	16. The Nilgiris ..	4	82	3
2. Bellary ..	12	1,113	5	17. North Arcot ..	24	1,808	3
3. Chingleput ..	18	1,625	4	18. Ramnad ..	25	1,311	4
4. Chittoor ..	17	1,161	3	19. Salem ..	20	1,198	2
5. Coimbatore ..	16	1,125	2	20. South Arcot ..	16	1,211	3
6. Cuddalore ..	9	940	4	21. South Kanara ..	18	1,740	4
7. Ganjam ..	15	1,194	2	22. Tanjore ..	33	1,898	3
8. Godavari ..	14	1,408	3	23. Tinnevely ..	19	1,247	2
9. Guntur ..	14	971	2	24. Trichinopoly ..	16	1,612	4
10. Kistna ..	20	1,292	2	25. Vizagapatam ..	26	2,285	3
11. Kurnool ..	8	495	2	26. Agency Division ..	..	..	..
12. Madras ..	30	3,968	19		10	480	11
13. Madura ..	15	1,186	2		454	35,422	3
14. Malabar ..	24	1,873	1				
15. Nellore ..	23	2,234	6				

Municipalities.

Name of municipalities.	Number of midwives.	Number of labour cases conducted.	Percentage of total births attended by midwives.	Name of municipalities.	Number of midwives.	Number of labour cases conducted.	Percentage of total births attended by midwives.
1. Berhampur ..	2	181	30	42. Srivillipattur ..	1	26	2
2. Parakkudi ..	1	94	16	43. Virudhunagar ..	1	145	19
3. Chittoor ..	1	115	35	44. Sivakasi ..	1	86	23
4. Vizagapatam ..	1	132	9	45. Tinnevely ..	4	451	19
5. Visianagaram ..	1	188	14	46. Palamcottah ..	2	530	32
6. Anakapalle ..	1	177	32	47. Tuticorin ..	2	625	33
7. Bimlipatam ..	1	171	56	48. Kurnool ..	2	156	16
8. Rajahmundry ..	2	554	30	49. Nandyal ..	1	177	38
9. Coonoor ..	11	708	41	50. Cuddalore ..	1	38	4
10. Proddatur ..	1	99	35	51. Proddatur ..	1	140	32
11. Ellore ..	2	213	15	52. Bellary ..	2	118	9
12. Bezwada ..	1	217	15	53. Adoni ..	2	208	25
13. Masulipatam ..	1	156	11	54. Hospet ..	1	165	26
14. Palakollu ..	1	79	19	55. Hindupur ..	1	86	19
15. Guntur ..	2	149	8	56. Anantapur ..	1	66	25
16. Tenali ..	2	268	51	57. Tadpatri ..	1	80	27
17. Chirala ..	1	115	43	58. Vellore ..	7	451	20
18. Ongole ..	1	73	15	59. Gudiyattam ..	1	102	28
19. Narasannopet ..	1	101	36	60. Tiruvannamalai ..	1	132	15
20. Kallur ..	13	426	36	61. Vaniyambadi ..	1	181	31
21. Madras ..	30	3,968	19	62. Tirupattur ..	2	310	32
22. Coimbatore ..	5	685	32	63. Walajapet ..	1	118	25
23. Saidapet ..	1	121	15	64. Chittoor ..	3	287	43
24. Chingleput ..	2	853	68	65. Tirupati ..	1	71	15
25. Cuddalore ..	4	239	11	66. Salem ..	1*	75	8
26. Chidambaram ..	1	133	31	67. Coimbatore ..	5	284	16
27. Villupuram ..	1	67	15	68. Erode ..	3	219	49
28. Trichinopoly ..	8	999	21	69. Dharmapuri ..	1	80	15
29. Srirangam ..	1	108	21	70. Pollachi ..	2	105	27
30. Karur ..	2	216	39	71. Tiruppur ..	1	77	31
31. Kumbakonam ..	3	317	19	72. Udumalpet ..	2	131	33
32. Tanjore ..	1	208	10	73. Ootacamund ..	3	392	38
33. Negapatam ..	2	263	18	74. Coonoor ..	..	..	..
34. Mayavaram ..	1	102	12	75. Mangalore ..	21	921	60
35. Tiruvallur ..	1	84	9	76. Calicut ..	3	148	5
36. Mannargudi ..	1	125	20	77. Palghat ..	2	175	10
37. Madura ..	25	1,162	20	78. Cannanore ..	2	159	15
38. Dindigul ..	2	48	3	79. Tellicherry ..	2	155	14
39. Bodinayakanur ..	1	118	18	80. Cochin ..	2	202	25
40. Palni ..	1	119	21				
41. Periyakulam ..	1	65	7				
42. Kodaikanal ..	1	88	28				
				Total ..	233	21,311	20

* Midwife was entertained in May 1922.

APPENDIX I.

VITAL STATISTICS OF THE GENERAL POPULATION.

No. I.—Statement showing the Births registered in the districts of the Madras Presidency during the year 1922.

Number.	Districts.	Population (exclusive of Europeans and Anglo-Indians as per census of 1921).		Population (exclusive of Europeans and Anglo-Indians for which returns were received).		Number of births registered (exclusive of Europeans and Anglo-Indians and still-births).		Ratio of births per 1,000 of population.		Excess of births over deaths per 1,000 of population.	Excess of births over deaths per 1,000 of population.	Mean ratio of births per 1,000 during the previous five years.
		Males.	Females.	Total.	Males.	Females.	Total.	Males.	Females.			
1	Anantapur	492,122	463,355	955,477	492,122	463,355	955,477	16.2	15.8	32.0	102.9	12.6
2	Bellary	445,337	428,363	873,700	445,337	428,363	873,700	16.3	14.7	30.0	104.3	5.0
3	Chingleput	750,893	739,182	1,490,075	750,893	739,182	1,490,075	16.3	16.4	32.7	108.1	5.0
4	Chittoor	647,527	621,410	1,268,937	647,527	621,410	1,268,937	16.2	15.9	32.1	101.8	11.9
5	Cuddalore	1,105,542	1,112,981	2,218,523	1,105,542	1,112,981	2,218,523	12.3	11.9	24.2	104.3	7.0
6	Cuddalore	452,150	435,727	887,877	452,150	435,727	887,877	14.3	12.9	29.2	103.7	8.9
7	Cuddalore	1,003,834	986,553	1,990,387	1,003,834	986,553	1,990,387	14.3	12.9	29.2	103.7	8.9
8	Ganjam	718,600	751,581	1,470,181	718,600	751,581	1,470,181	15.3	14.4	29.7	105.5	8.4
9	Godavari	896,437	896,437	1,792,874	896,437	896,437	1,792,874	15.3	14.4	29.7	105.5	8.4
10	Kistna	1,070,043	1,070,043	2,140,086	1,070,043	1,070,043	2,140,086	15.3	14.4	29.7	105.5	8.4
11	Kurnool	493,222	451,593	944,815	493,222	451,593	944,815	14.0	13.6	27.6	104.1	7.9
12	Kurnool	245,015	245,015	490,030	245,015	245,015	490,030	14.0	13.6	27.6	104.1	7.9
13	Madras	2,005,897	2,005,897	4,011,794	2,005,897	2,005,897	4,011,794	14.0	13.6	27.6	104.1	7.9
14	Madras	1,580,327	1,580,327	3,160,654	1,580,327	1,580,327	3,160,654	14.0	13.6	27.6	104.1	7.9
15	Madras	687,809	687,809	1,375,618	687,809	687,809	1,375,618	14.0	13.6	27.6	104.1	7.9
16	Nellore	64,714	58,982	123,696	64,714	58,982	123,696	15.5	14.4	29.9	107.7	11.2
17	North Arcot	1,020,094	1,020,094	2,040,188	1,020,094	1,020,094	2,040,188	14.1	13.9	28.0	101.0	2.8
18	North Arcot	818,576	818,576	1,637,152	818,576	818,576	1,637,152	14.1	13.9	28.0	101.0	2.8
19	Ramanad	1,050,928	1,050,928	2,101,856	1,050,928	1,050,928	2,101,856	11.7	11.4	23.1	103.3	6.8
20	Salem	1,167,315	1,167,315	2,334,630	1,167,315	1,167,315	2,334,630	14.4	13.6	28.0	105.3	8.0
21	South Arcot	1,152,010	1,152,010	2,304,020	1,152,010	1,152,010	2,304,020	12.7	12.5	25.2	102.3	8.0
22	South Kanara	606,231	640,988	1,247,219	606,231	640,988	1,247,219	13.7	13.0	26.7	104.4	15.6
23	Tanjore	1,116,217	1,209,202	2,325,419	1,116,217	1,209,202	2,325,419	14.4	13.7	28.1	105.2	2.6
24	Tanjore	974,751	974,751	1,949,502	974,751	974,751	1,949,502	16.4	15.7	32.1	104.4	11.5
25	Tinnevely	1,136,545	1,136,545	2,273,090	1,136,545	1,136,545	2,273,090	14.0	13.4	27.4	103.9	7.4
26	Vizagapatnam	1,079,467	1,079,467	2,158,934	1,079,467	1,079,467	2,158,934	15.8	15.4	31.2	103.0	10.1
27	Vizagapatnam	747,477	747,477	1,494,954	747,477	747,477	1,494,954	10.6	9.6	20.2	111.3	1.4
28	Agency Division	21,082,825	21,082,825	42,165,650	21,082,825	21,082,825	42,165,650	15.3	14.7	30.0	104.4	9.0
29	Grand Total for the Presidency.	2,583,665	2,583,665	5,167,330	2,583,665	2,583,665	5,167,330	15.3	14.7	30.0	104.4	9.0
30	Total of Town circles in the Presidency.	18,409,100	18,409,100	36,818,200	18,409,100	18,409,100	36,818,200	15.3	14.7	30.0	104.4	9.0
31	Total of Rural circles in the Presidency.	1,673,253	1,673,253	3,346,506	1,673,253	1,673,253	3,346,506	15.3	14.7	30.0	104.4	9.0

ANNEXURE

No. II.—Statement of Births and Deaths registered in the districts of the Madras Presidency during the year 1922.

Number.	Districts.	Area in square miles.		Average population per square mile.	Population (exclusive of Europeans and Anglo-Indians for which returns were received).		Births.	Number of deaths registered (exclusive of Europeans and Anglo-Indians and born-dead).		Deaths of females to every 100 males to every 100 males.	Ratio of deaths per 1,000 of population from		Mean ratio of deaths per 1,000 during previous five years.
		Males.	Females.		Males.	Females.		Males.	Females.		All causes.	All causes.	
1	Anantapur	6,722	6,722	1,421	492,122	463,355	30,546	9,439	9,105	103.7	0.01	0.03	12.3
2	Bellary	5,871	5,871	1,488	445,337	428,363	26,224	11,211	10,641	105.4	0.01	0.03	12.3
3	Chingleput	3,071	3,071	2,452	750,893	739,182	50,161	15,494	15,581	105.8	0.01	0.03	12.3
4	Chittoor	5,611	5,611	2,262	647,527	621,410	40,777	13,147	12,511	105.1	0.01	0.03	12.3
5	Cuddalore	7,225	7,225	3,071	1,105,542	1,112,981	53,684	19,409	18,683	105.8	0.01	0.03	12.3
6	Cuddalore	5,918	5,918	1,800	452,150	435,727	25,950	9,274	8,729	105.8	0.01	0.03	12.3
7	Cuddalore	4,798	4,798	3,825	826,533	806,437	54,558	19,797	18,920	105.8	0.01	0.03	12.3
8	Ganjam	2,545	2,545	3,155	718,600	751,581	44,869	15,664	15,572	107.5	0.01	0.03	12.3
9	Godavari	5,777	5,777	3,155	896,437	896,437	59,669	21,554	20,959	107.5	0.01	0.03	12.3
10	Kistna	5,907	5,907	3,611	1,070,043	1,070,043	67,312	26,554	26,069	107.5	0.01	0.03	12.3
11	Kurnool	7,580	7,580	1,207	493,222	451,593	25,234	10,908	10,129	107.5	0.01	0.03	12.3
12	Kurnool	2,237	2,237	1,773	245,015	245,015	11,505	4,042	3,973	107.5	0.01	0.03	12.3
13	Madras	4,907	4,907	4,098	2,005,897	2,005,897	121,381	42,463	42,463	107.5	0.01	0.03	12.3
14	Madras	5,786	5,786	5,343	1,580,327	1,580,327	91,931	36,735	35,732	107.5	0.01	0.03	12.3
15	Nellore	7,073	7,073	1,737	687,809	687,809	41,365	13,508	12,445	108.6	0.01	0.03	12.3
16	Nellore	982	982	1,239	64,714	58,982	3,405	1,608	1,567	110.4	0.01	0.03	12.3
17	North Arcot	4,954	4,954	4,143	1,020,094	1,020,094	63,758	16,141	17,703	102.5	0.01	0.03	12.3
18	North Arcot	4,838	4,838	3,859	818,576	818,576	48,758	13,915	14,065	102.5	0.01	0.03	12.3
19	Ramanad	6,912	6,912	3,055	1,050,928	1,050,928	58,102	20,613	20,205	102.4	0.01	0.03	12.3
20	Salem	4,207	4,207	5,613	1,152,010	1,152,010	65,516	20,153	19,688	102.4	0.01	0.03	12.3
21	South Arcot	4,021	4,021	3,102	606,231	640,988	45,890	13,174	13,257	102.4	0.01	0.03	12.3
22	South Kanara	3,727	3,727	623.9	1,116,217	1,209,202	65,246	26,795	30,565	102.4	0.01	0.03	12.3
23	Tanjore	4,325	4,325	4,396	974,751	974,751	61,079	18,660	19,418	102.4	0.01	0.03	12.3
24	Tinnevely	4,319	4,319	4,404	1,136,545	1,136,545	62,010	24,024	23,147	103.8	0.01	0.03	12.3
25	Vizagapatnam	4,668	4,668	4,683	1,079,467	1,079,467	69,672	24,024	23,147	103.8	0.01	0.03	12.3
26	Vizagapatnam	3,709	3,709	1,647	1,061,173	1,061,173	4,276	2,045	1,937	105.6	0.01	0.03	12.3
27	Agency Division	126,240	126,240	324.8	20,211,876	20,211,876	1,281,722	436,743	422,463	103.4	0.01	0.03	12.3
28	Grand total for the Presidency.	2,583,665	2,583,665	2,583,665	5,167,330	5,167,330	319,978	104,503	104,503	104.5	0.01	0.03	12.3
29	Total of Town circles in the Presidency.	18,409,100	18,409,100	18,409,100	36,818,200	36,818,200	2,583,665	884,912	884,912	104.5	0.01	0.03	12.3
30	Total of Rural circles in the Presidency.	1,673,253	1,673,253	1,673,253	3,346,506	3,346,506	17,632,253	18,197,465	17,632,253	103.2	0.01	0.03	12.3

Note.—Born dead cases are not included in this or any of the other statements.

VITAL STATISTICS OF THE GENERAL POPULATION

No. III.—Deaths registered in the districts of the Madras Presidency during each month of the year 1922.

Number.	Districts.	8												Total deaths registered during the year.
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	
1	Anantapur	1,104	1,110	1,173	1,513	1,323	1,637	1,473	1,456	1,562	1,975	1,932	2,426	18,544
2	Bellary	1,087	1,067	1,277	1,118	1,382	1,177	1,640	1,859	2,293	2,292	2,100	2,540	21,852
3	Chingleput	2,566	2,518	2,877	2,538	2,456	2,461	2,875	2,050	2,170	2,722	3,211	3,684	32,676
4	Chittoor	2,133	2,043	1,992	1,687	1,078	1,687	1,595	2,036	2,141	2,370	2,532	3,469	26,658
5	Coimbatore	3,724	2,611	3,101	2,508	2,049	2,768	3,274	3,175	3,039	3,085	3,810	4,358	38,092
6	Cuddapah	1,573	1,160	1,183	1,505	1,597	1,331	1,162	1,442	1,708	1,631	1,819	1,892	18,053
7	Gandam	2,510	2,127	2,420	3,614	4,238	3,637	3,638	3,172	3,028	3,030	3,273	4,400	39,117
8	Godavari	1,819	1,723	1,750	1,415	1,769	1,907	1,981	2,616	3,004	2,804	3,623	4,732	30,241
9	Guntur	2,323	2,038	2,655	2,432	3,042	3,009	3,428	3,660	4,287	4,309	4,586	5,689	41,589
10	Kistna	3,420	2,716	2,773	2,631	3,246	3,845	4,476	2,960	4,904	5,658	6,095	7,985	50,651
11	Kurnoor	1,071	1,068	2,087	1,879	1,608	1,632	2,207	1,949	1,737	1,610	1,891	2,110	21,037
12	Madras	1,891	2,010	2,294	2,072	1,831	1,826	1,592	1,554	1,615	1,850	1,824	2,083	23,184
13	Madura	3,743	3,522	3,185	3,297	2,891	2,884	2,987	3,027	2,804	2,878	4,104	4,813	39,973
14	Madbar	5,472	4,922	4,538	5,369	6,032	7,361	5,563	7,281	5,925	5,751	5,167	5,756	72,437
15	Nellore	2,085	2,075	2,045	2,033	2,121	2,150	2,143	2,272	2,133	2,252	2,323	2,263	25,924
16	Nilgiris, The	203	197	200	221	261	290	332	250	285	242	270	224	3,065
17	North Arcot	3,852	3,732	3,274	2,632	2,432	2,566	2,728	2,818	2,741	2,774	2,446	3,854	35,844
18	Ramanad	1,885	1,761	1,659	1,788	2,243	2,476	2,877	2,402	2,365	2,937	2,906	3,841	27,980
19	Salem	3,440	3,281	3,277	2,800	3,039	3,390	3,596	3,189	3,225	3,503	3,743	4,305	40,888
20	South Arcot	3,605	3,140	3,200	2,765	2,785	2,150	2,842	3,524	3,456	3,738	3,897	4,738	38,841
21	South Kanara	2,456	2,180	1,668	1,612	1,528	2,136	2,832	2,202	2,418	2,363	2,205	3,080	26,431
22	Tanjore	5,851	5,494	5,213	4,433	4,267	3,953	4,163	4,892	4,393	4,393	5,838	6,445	59,360
23	Tinnevely	3,755	3,064	2,943	2,725	2,473	2,883	2,897	3,109	2,693	3,033	3,749	5,946	39,120
24	Trichinopoly	3,882	3,888	3,245	2,883	3,080	2,812	2,874	2,995	2,481	2,623	3,765	4,005	36,069
25	Vizagapatnam	3,371	3,092	2,966	2,794	3,423	3,579	3,862	4,568	4,735	4,931	4,425	5,102	47,173
26	Agency Division	290	242	231	183	254	234	284	351	381	463	480	519	3,982
Total, Madras Presidency		69,038	62,436	63,460	60,587	63,522	67,021	72,771	70,343	71,563	76,743	81,341	100,361	859,285
Ratio of deaths per 1,000 in each month		1.7	1.5	1.6	1.5	1.6	1.6	1.8	1.7	1.7	1.9	2.0	2.4	21.0

No. IV.—Deaths registered according to Age in the districts of the Madras Presidency during the year 1922.

Number.	Districts.	3																Total.			
		Under one year.																			
		Not exceeding one month.						Over one month and not exceeding six months.						Over six months and not exceeding twelve months.							
		Male.			Female.			Total.		Male.		Female.		Total.		Male.			Female.		Total.
Under one week.	Over one week.	Total.	Under one week.	Over one week.	Total.	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
1	Anantapur	1,071	500	1,571	883	340	1,223	2,689	554	1,039	1,089	554	512	1,066	2,579	9,245	4,824				
2	Bellary	1,517	478	1,995	429	410	839	1,530	583	2,113	1,308	1,308	475	1,034	2,372	1,618	4,190				
3	Chingleput	1,965	877	2,842	1,506	708	2,214	2,586	1,027	2,613	2,682	1,395	1,317	2,699	5,234	4,576	9,900				
4	Chittoor	1,038	414	1,452	753	411	1,164	1,063	624	1,687	1,068	1,130	515	1,645	2,769	2,739	6,007				
5	Coimbatore	3,885	385	4,270	2,005	222	2,227	3,734	1,055	4,789	3,463	3,463	3,102	6,565	4,574	4,314	9,254				
6	Cuddapah	479	294	773	391	238	629	1,402	467	837	837	806	399	1,235	1,546	1,268	2,834				
7	Gandam	753	505	1,258	655	487	1,142	1,209	386	2,195	1,605	1,605	1,435	3,130	2,222	3,563	7,725				
8	Godavari	1,276	402	1,678	1,006	369	1,375	3,053	696	1,350	1,350	1,097	1,011	2,108	3,489	3,022	6,611				
9	Guntur	1,927	866	2,793	1,713	727	2,440	3,653	768	4,418	2,683	2,683	1,847	4,015	5,713	4,885	10,707				
10	Kistna	3,945	1,205	5,150	3,043	1,666	4,709	5,964	1,401	7,365	2,635	2,635	1,982	4,619	7,449	6,280	13,699				
11	Kurnool	344	202	546	314	135	449	1,025	186	369	369	1,313	1,178	2,491	2,038	1,589	3,885				
12	Madras	948	618	1,566	745	1,054	1,799	9,895	1,133	2,213	2,213	795	735	1,528	3,545	3,063	6,606				
13	Madura	1,594	1,320	2,914	1,348	1,080	2,428	3,207	1,832	5,040	2,569	1,843	1,730	3,373	5,309	4,388	9,697				
14	Madbar	3,174	1,355	4,529	2,559	1,363	3,922	5,976	2,469	8,441	3,922	1,843	1,730	3,373	5,309	4,388	9,697				
15	Nilgiris, The	831	438	1,269	698	40	738	1,063	501	1,063	1,063	715	630	1,345	2,397	2,312	4,909				
16	North Arcot	1,845	891	2,736	1,461	413	1,874	5,107	922	6,029	2,954	1,200	1,222	2,422	3,417	3,022	6,449				
17	Ramanad	836	606	1,442	744	498	1,242	2,635	604	3,239	1,749	932	866	1,715	2,806	2,634	5,449				
18	Salem	1,514	1,134	2,648	1,411	1,091	2,502	5,133	927	6,059	1,749	3,130	2,779	5,929	5,618	4,843	10,361				
19	South Arcot	1,035	368	1,403	854	498	1,352	2,635	927	3,562	2,683	1,749	1,749	4,432	3,681	3,267	7,698				
20	South Kanara	1,571	1,308	2,879	1,724	1,091	2,815	3,901	1,431	5,336	2,467	1,749	1,749	4,432	3,681	3,267	7,698				
21	Tanjore	3,510	1,254	4,764	2,005	1,198	3,203	7,099	1,071	8,170	2,092	1,633	824	1,740	5,769	5,101	10,870				
22	Tinnevely	2,326	1,019	3,345	2,005	1,198	3,203	7,099	1,071	8,170	2,092	1,633	824	1,740	5,769	5,101	10,870				
23	Trichinopoly	1,403	757	2,160	1,033	744	1,777	4,076	963	5,039	2,432	1,760	1,613	3,373	5,309	4,388	9,697				
24	Vizagapatnam	1,403	31	1,434	87	16	1,450	4,076	963	5,039	2,432	1,760	1,613	3,373	5,309	4,388	9,697				
25	Agency Division	56	31	87	45	10	97	148	148	148	148	217	192	409	357	251	638				
Total, Madras Presidency		35,906	13,450	49,356	26,000	15,912	41,912	90,368	24,221	114,583	45,853	31,537	28,296	74,153	110,134	94,770	204,904				
Total population according to the census of 1921		...	...	...	...	...	...	Not available.	...	...	...	...	...	...	...	...	513,993	1,074,284			
Ratio per mille of population		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	207.4	171.4			

* Calculated on the total population for the Presidency as per census of 1921 including Europeans and Eurasians though the statistics are exclusive of Europeans and Eurasians and born-dead cases.

No. V.—Deaths registered according to Ukases in the districts of the Madras Presidency during the year 1922—cont.

Number.	Districts.	Number of deaths registered—cont.				Ratio of deaths per 1,000 of population.											
		Hindus.		Other classes.		Total.		Indian Christians.		Muhammadians.		Hindus.		Other classes.		Total.	
		Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.
1	Anantapur	8,654	8,856	95	75	9,439	9,105	18,544	18-2	9-7	15-0	18-4	18-9	102-8	100-3	19-2	19-4
2	Bellary	9,918	9,446	185	140	11,211	10,641	21,852	18-8	17-8	23-2	25-0	24-6	234-2	298-2	25-2	25-0
3	Chingleput	15,932	15,019	93	62	16,494	15,584	32,078	12-2	13-2	18-6	19-2	22-2	70-4	60-7	22-0	21-5
4	Chittoor	12,369	11,798	115	105	13,147	12,611	26,658	8-7	5-9	18-7	19-2	20-4	45-9	43-9	20-3	20-2
5	Coimbatore	18,768	18,079	163	143	19,404	18,683	38,092	11-4	10-2	12-5	13-6	16-8	175-6	160-1	17-6	17-2
6	Cuddapah	7,810	7,464	79	47	9,274	8,779	18,053	21-3	19-0	18-7	18-0	20-4	175-6	160-1	20-5	20-3
7	Ganjam	15,336	14,312	20	13	15,694	14,577	30,241	6-4	4-7	13-6	14-2	16-6	3-2	1-9	23-9	21-3
8	Godavari	18,428	17,133	129	111	21,554	20,035	41,589	14-3	10-2	18-1	18-7	21-9	85-5	72-2	21-8	20-6
9	Guntur	23,749	22,426	181	174	26,555	24,069	50,654	17-2	16-9	21-3	20-4	24-1	20-8	24-4	23-6	23-0
10	Kistna	8,987	8,257	83	117	10,908	10,133	21,037	21-037	21-037	21-037	21-037	21-037	21-037	21-037	21-037	21-037
11	Kurnool	9,655	8,972	3	2	11,505	10,879	22,184	30-6	27-9	42-2	51-4	43-1	2-4	8-3	42-6	43-1
12	Madras	18,950	18,028	21	21	20,471	19,502	39,973	18-8	18-9	23-0	23-3	20-7	70-9	73-4	20-7	19-9
13	Madurai	24,290	23,043	21	400	36,755	35,762	72,497	22-6	19-5	24-0	23-0	22-4	75-9	73-4	23-3	23-4
14	Malabar	11,971	11,040	420	400	13,509	12,415	25,924	16-4	16-1	15-3	12-7	20-0	15-1	15-1	18-4	18-7
15	Nellore	1,169	1,107	107	88	1,608	1,457	3,065	21-6	19-2	39-7	44-0	22-2	38-8	41-4	25-6	25-2
16	Nilgiris, The	16,625	16,149	263	250	18,141	17,703	35,844	9-2	9-5	18-7	19-0	17-7	60-8	59-0	17-1	17-4
17	North Arcot	12,530	12,542	...	...	18,915	14,085	27,880	12-1	12-4	18-8	14-2	17-2	15-9	...	18-9	15-6
18	Ramanad	20,060	19,627	...	...	20,683	20,205	40,888	13-7	13-1	21-2	21-1	19-7	...	...	19-7	19-4
19	Salem	19,223	18,877	65	87	20,153	19,698	39,841	12-3	10-1	14-0	11-9	17-7	28-4	37-7	17-5	16-9
20	South Arcot	10,845	10,878	114	120	13,174	13,257	26,431	17-2	16-5	17-5	17-8	22-8	21-7	20-7	21-2	21-2
21	South Kanara	28,058	27,594	71	87	28,795	30,565	59,360	28-6	23-1	25-0	21-2	25-7	25-3	334-6	25-8	25-5
22	Tanjore	16,853	16,815	...	...	19,660	19,460	39,120	18-7	15-9	22-0	17-5	21-5	...	...	21-2	20-6
23	Tinnevely	17,097	17,466	40	45	18,841	19,218	38,059	22-7	22-5	23-8	21-4	20-0	...	...	20-2	19-8
24	Trichinopoly	23,845	22,981	6	8	24,026	23,147	47,173	8-9	6-8	13-1	10-5	22-4	27-5	27-5	22-2	21-1
25	Visagapatnam	2,000	1,891	...	...	2,045	1,837	3,932	9-1	11-4	21-7	18-3	20-5	0-9	1-2	19-3	18-8
26	Agency Division	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Total Madras Presidency		391,808	379,165	2,353	2,104	436,743	422,493	859,236	18-3	17-4	22-0	20-7	21-7	20-4	25-8	21-6	21-0

ANNEXURE

No. VI.—Births and Deaths registered from Different Causes in the districts and towns of the Madras Presidency during the year 1922.

Number.	Districts and towns.	Population for which returns were received.	Births.		Total.	Males.	Females.	Cholera.	Smallpox.	Plague.	Dysentery and diarrhoea.	Typhoid.	Respiratory diseases.	Injuries.		Total.	Death from child birth.	All other causes.	Total deaths from all causes.	Ratio of deaths per 1,000 of population.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
			Males.	Females.										Suicides.	Females.					Wounds and accidents.	Snake-bite and killed by wild beasts.	Infants.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Revers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child birth.	All other causes.	Total deaths from all causes.	Cholera.

[illegible]

No. VI.—Births and Deaths registered from Different Causes in the districts and towns of the Madras Presidency during the year 1922.—cont.

[illegible]

No. VI.—Births and Deaths registered from Different Causes in the Districts and towns of the Madras Presidency during the year 1922.—cont.

Number.	Districts and towns.	3	4		5	6	7	8	9	10	11				12	13	14	Ratio of deaths per 1,000 of population.																
			Births.								Cholera.	Smallpox.	Plague.	Dysentery and diarrhoea.				Injuries.				Deaths from child births.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	Deaths from child births.	All other causes.	Total deaths from all causes.	Ratio of deaths per 1,000 of population.
			Males.	Females.														Males.	Females.	Suicides.	Wounds and accidents.													
B.—Towns—cont.																																		
103	Krishna—	45,882	777	655	1,432	31.2	1	32	...	216	10	1	1	1	20	222	0.7	...	47	17	0.2	0.4	0.8	11.4	10.9	30.5								
104	M.T.C. Ellore	41,120	758	734	1,492	33.8	81	4	...	154	170	1	1	1	20	1,050	0.7	...	35	20	0.3	0.6	0.6	23.3	34.7	55.5								
105	M.T.C. Bezwada	43,940	760	716	1,476	33.0	10	27	...	217	89	1	1	1	20	1,065	0.7	...	49	13	0.3	0.6	0.6	23.3	34.7	55.5								
106	M.T.C. Palakurthi	14,535	233	196	429	29.5	1	...	...	81	5	1	1	1	7	121	0.1	...	93	13	0.3	0.6	0.6	14.7	23.7	55.1								
107	M.T.C. Penakonda	13,176	183	169	352	26.7	1	...	...	81	5	1	1	1	6	120	0.1	...	69	9	0.3	0.6	0.6	8.3	18.0	17.6								
108	M.T.C. Narasapur	11,370	138	119	257	22.6	1	...	...	124	3	1	1	1	6	120	0.1	...	69	9	0.3	0.6	0.6	8.3	18.0	17.6								
109	M.T.C. Althi	11,370	138	119	257	22.6	1	...	...	124	3	1	1	1	6	120	0.1	...	69	9	0.3	0.6	0.6	8.3	18.0	17.6								
110	M.T.C. Nandyal	11,370	138	119	257	22.6	1	...	...	124	3	1	1	1	6	120	0.1	...	69	9	0.3	0.6	0.6	8.3	18.0	17.6								
111	M.T.C. Nandyal	11,370	138	119	257	22.6	1	...	...	124	3	1	1	1	6	120	0.1	...	69	9	0.3	0.6	0.6	8.3	18.0	17.6								
112	M.T.C. Nandyal	11,370	138	119	257	22.6	1	...	...	124	3	1	1	1	6	120	0.1	...	69	9	0.3	0.6	0.6	8.3	18.0	17.6								
113	M.T.C. Nandyal	11,370	138	119	257	22.6	1	...	...	124	3	1	1	1	6	120	0.1	...	69	9	0.3	0.6	0.6	8.3	18.0	17.6								
114	M.T.C. Nandyal	11,370	138	119	257	22.6	1	...	...	124	3	1	1	1	6	120	0.1	...	69	9	0.3	0.6	0.6	8.3	18.0	17.6								
115	M.T.C. Nandyal	11,370	138	119	257	22.6	1	...	...	124	3	1	1	1	6	120	0.1	...	69	9	0.3	0.6	0.6	8.3	18.0	17.6								
116	M.T.C. Nandyal	11,370	138	119	257	22.6	1	...	...	124	3	1	1	1	6	120	0.1	...	69	9	0.3	0.6	0.6	8.3	18.0	17.6								
117	M.T.C. Nandyal	11,370	138	119	257	22.6	1	...	...	124	3	1	1	1	6	120	0.1	...	69	9	0.3	0.6	0.6	8.3	18.0	17.6								
118	M.T.C. Nandyal	11,370	138	119	257	22.6	1	...	...	124	3	1	1	1	6	120	0.1	...	69	9	0.3	0.6	0.6	8.3	18.0	17.6								
119	M.T.C. Nandyal	11,370	138	119	257	22.6	1	...	...	124	3	1	1	1	6	120	0.1	...	69	9	0.3	0.6	0.6	8.3	18.0	17.6								
120	M.T.C. Madras	514,961	10,938	10,938	21,876	41.2	17	1,115	1	2,135	4,106	5	3	77	3	88	283	2,154	22,154	0.63	2.2	0.02	4.2	5.0	9.5	0.1	0.6	15.8	48.7					
121	Madras—	138,891	2,750	2,750	5,500	41.4	3	1,070	82	438	376	201	1	1	1	1	1	46	2,770	0.2	...	32	27	1.4	0.3	0.4	20.9	36.1	39.5					
122	M.T.C. Madras	138,891	2,750	2,750	5,500	41.4	3	1,070	82	438	376	201	1	1	1	1	1	46	2,770	0.2	...	32	27	1.4	0.3	0.4	20.9	36.1	39.5					
123	M.T.C. Madras	138,891	2,750	2,750	5,500	41.4	3	1,070	82	438	376	201	1	1	1	1	1	46	2,770	0.2	...	32	27	1.4	0.3	0.4	20.9	36.1	39.5					
124	M.T.C. Madras	138,891	2,750	2,750	5,500	41.4	3	1,070	82	438	376	201	1	1	1	1	1	46	2,770	0.2	...	32	27	1.4	0.3	0.4	20.9	36.1	39.5					
125	M.T.C. Madras	138,891	2,750	2,750	5,500	41.4	3	1,070	82	438	376	201	1	1	1	1	1	46	2,770	0.2	...	32	27	1.4	0.3	0.4	20.9	36.1	39.5					
126	M.T.C. Madras	138,891	2,750	2,750	5,500	41.4	3	1,070	82	438	376	201	1	1	1	1	1	46	2,770	0.2	...	32	27	1.4	0.3	0.4	20.9	36.1	39.5					
127	M.T.C. Madras	138,891	2,750	2,750	5,500	41.4	3	1,070	82	438	376	201	1	1	1	1	1	46	2,770	0.2	...	32	27	1.4	0.3	0.4	20.9	36.1	39.5					
128	M.T.C. Madras	138,891	2,750	2,750	5,500	41.4	3	1,070	82	438	376	201	1	1	1	1	1	46	2,770	0.2	...	32	27	1.4	0.3	0.4	20.9	36.1	39.5					
129	M.T.C. Madras	138,891	2,750	2,750	5,500	41.4	3	1,070	82	438	376	201	1	1	1	1	1	46	2,770	0.2	...	32	27	1.4	0.3	0.4	20.9	36.1	39.5					
130	M.T.C. Madras	138,891	2,750	2,750	5,500	41.4	3	1,070	82	438	376	201	1	1	1	1	1	46	2,770	0.2	...	32	27	1.4	0.3	0.4	20.9	36.1	39.5					
131	M.T.C. Madras	138,891	2,750	2,750	5,500	41.4	3	1,070	82	438	376	201	1	1	1	1	1	46	2,770	0.2	...	32	27	1.4	0.3	0.4	20.9	36.1	39.5					
132	M.T.C. Madras	138,891	2,750	2,750	5,500	41.4	3	1,070	82	438	376	201	1	1	1	1	1	46	2,770	0.2	...	32	27	1.4	0.3	0.4	20.9	36.1	39.5					
133	M.T.C. Madras	138,891	2,750	2,750	5,500	41.4	3	1,070	82	438	376	201	1	1	1	1	1	46	2,770	0.2	...	32	27	1.4	0.3	0.4	20.9	36.1	39.5					
134	M.T.C. Madras	138,891	2,750	2,750	5,500	41.4	3	1,070	82	438	376	201	1	1	1	1	1	46	2,770	0.2	...	32	27	1.4	0.3	0.4	20.9	36.1	39.5					
135	M.T.C. Madras	138,891	2,750	2,750	5,500	41.4	3	1,070	82	438	376	201	1	1	1	1	1	46	2,770	0.2	...	32	27	1.4	0.3	0.4	20.9	36.1	39.5					
136	M.T.C. Madras	138,891	2,750	2,750	5,500	41.4	3	1,070	82	438	376	201	1	1	1	1	1	46	2,770	0.2	...	32	27	1.4	0.3	0.4	20.9	36.1	39.5					
137	M.T.C. Madras	138,891	2,750	2,750	5,500	41.4	3	1,070	82	438	376	201	1	1	1	1	1	46	2,770	0.2	...	32	27	1.4	0.3	0.4	20.9	36.1	39.5					
138	M.T.C. Madras	138,891	2,750	2,750	5,500	41.4	3	1,070	82	438	376	201	1	1	1	1	1	46	2,770	0.2	...	32	27	1.4	0.3	0.4	20.9	36.1	39.5					
139	M.T.C. Madras	138,891	2,750	2,750	5,500	41.4	3	1,070	82	438	376	201	1	1	1	1	1	46	2,770	0.2	...	32	27	1.4	0.3	0.4	20.9	36.1	39.5					
140	M.T.C. Madras	138,891	2,750	2,750	5,500	41.4	3	1,070	82	438	376	201	1	1	1	1	1	46	2,770	0.2	...	32	27	1.4	0.3	0.4	20.9	36.1	39.5					
141	M.T.C. Madras	138,891	2,750	2,750	5,500	41.4	3	1,070	82	438	376	201	1	1	1	1	1	46	2,770	0.2	...	32	27	1.4	0.3	0.4	20.9	36.1	39.5					
142	M.T.C. Madras	138,891	2,750	2,750	5,500	41.4	3	1,070	82	438	376	201	1	1	1	1	1	46	2,770	0.2	...	32	27	1.4	0.3	0.4	20.9	36.1	39.5					
143	M.T.C. Madras	138,891	2,750	2,750	5,500	41.4	3	1,070	82	438	376	201	1	1	1	1	1	46	2,770	0.2	...	32	27	1.4	0.3	0.4	20.9	36.1	39.5					
144	M.T.C. Madras	138,891	2,750	2,750	5,500	41.4	3	1,070	82	438	376	201	1	1	1	1	1	46	2,770	0.2	...	32	27	1.4	0.3	0.4	20.9	36.1	39.5					
145	M.T.C. Madras	138,891	2,750	2,750	5,500	41.4	3	1,070	82	438	376	201	1	1	1	1	1	46	2,770	0.2	...	32	27	1.4	0.3	0.4	20.9	36.1	39.5					
146	M.T.C. Madras	138,891	2,750	2,750	5,500	41.4	3	1,070	82	438	376	201	1	1	1	1	1	46	2,770	0.2	...	32	27	1.4	0.3	0.4	20.9	36.1	39.5					
147	M.T.C. Madras	138,891	2,750	2,750	5,500	41.4	3	1,070	82	438	376	201	1	1	1	1	1	46	2,770	0.2	...	32	27	1.4	0.3	0.4	20.9	36.1	39.5					
148	M.T.C. Madras	138,891	2,750	2,750	5,500	41.4	3	1,070	82	438	376	201	1	1	1	1	1	46	2,770	0.2	...	32	27	1.4	0.3	0.4	20.9	36.1						

No. VI.—Births and Deaths registered from Different Causes in the districts and towns of the Madras Presidency during the year 1922—cont.

Number.	Districts and towns.	Population for which returns received.	4		5	6-10										11					12	13	14	15																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
			Births.			Total number.	Birth-rate per mille of population.	Cholera.	Smallpox.	Plague.	Fever.	Dysentery and diarrhoea.	Injuries.			Deaths from child birth.	All other causes.	Total deaths from all causes.	Ratio of deaths per 1,000 of population.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
			Males.	Females.									Wounds and accidents.	Snake-bite and killed by wild beasts.	Rabies.				Cholera.	Smallpox.				Plague.	Fever.	Dysentery and diarrhoea.	Injuries.	Deaths from child birth.	All other causes.	From all causes.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
B. — Towns—cont.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
Salem—cont.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
201	T.C. Salem	12,972	163	159	322	345	667	2	18	13	26	19	17	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

No. VII.—Deaths registered from Cholera in the districts of the Madras Presidency during each month of the year 1922.

Number.	Districts.	3		4		5												6		7		8
		Circles of registration.		Villages.		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.		Ratio of deaths per 1,000 of population.		
		Number in each district.	Number from which deaths were reported.	Number in each district.	Number from which deaths were reported.													Males.	Females.		Total.	
1	Anantapur	21	12	850	40	...	1	3	16	16	153	93	90	* 69	39	8	43	271	260	531	0.6	
2	Bellary	20	20	939	166	...	...	23	42	142	860	1,200	427	421	245	90	96	1,867	1,859	3,546	4.2	
3	Chingleput	21	5	2,145	17	...	...	12	48	...	...	1	...	14	2	...	...	28	35	63	0.04	
4	Chittoor	15	7	1,986	22	...	...	...	10	...	...	6	...	15	...	...	...	48	48	100	0.1	
5	Coimbatore	23	17	1,109	109	384	59	65	87	76	65	35	23	15	...	...	2	418	393	811	0.4	
6	Cuddapah	17	13	894	167	...	...	...	...	...	...	15	268	341	79	188	344	659	531	1,199	1.4	
7	Gadavari	19	16	4,074	425	5	5	9	668	763	756	414	155	119	29	51	25	1,541	1,455	2,997	1.9	
8	Guntur	19	1	829	2	...	...	...	...	...	...	1	...	...	...	...	...	1	...	1	...	
9	Kistna	29	11	944	37	3	6	31	7	19	16	21	62	8	...	...	...	81	93	174	0.1	
10	Kurnool	29	14	1,736	34	38	59	93	7	4	3	...	...	...	...	...	...	89	105	204	0.1	
11	Madras	11	11	781	129	2	1	867	542	305	489	740	582	196	66	13	...	2,082	1,711	3,793	4.5	
12	Madras	1	1	1	1	6	...	1	2	...	2	2	...	1	1	1	1	8	9	17	0.03	
13	Madura	21	9	1,071	100	330	315	72	91	21	2	1	4	2	1	...	...	434	405	839	0.4	
14	Malabar	18	7	2,208	15	12	11	7	43	15	9	1	4	3	...	...	...	60	55	105	0.03	
15	Nellore	21	15	1,624	40	...	...	13	31	30	28	19	2	9	3	8	...	74	69	143	0.1	
16	Nilgiris, The	6	...	57	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
17	North Arcot	32	8	2,268	21	1	5	4	59	8	8	4	...	...	...	...	...	39	53	92	0.04	
18	Ramanad	34	3	3,530	4	...	1	...	1	5	1	...	...	...	...	...	2	8	3	11	0.01	
19	Salem	19	11	2,303	49	69	68	24	51	35	25	2	1	...	3	5	2	153	135	288	0.1	
20	South Arcot	20	9	2,347	20	3	4	2	4	...	...	8	1	37	4	11	...	39	24	63	0.04	
21	South Kanara	13	6	805	24	1	3	...	...	...	...	...	...	...	3	4	6	20	15	35	0.03	
22	Tanjore	30	20	2,631	169	241	268	50	32	3	24	3	2	...	...	10	14	389	231	650	0.3	
23	Tinnevely	36	6	984	8	2	3	2	6	...	...	4	...	...	...	1	1	13	6	19	0.01	
24	Trichinopoly	17	13	1,055	181	168	249	129	20	19	47	7	...	...	2	3	10	347	307	654	0.4	
25	Vizagapatnam	29	12	2,590	27	6	...	2	...	...	...	...	...	...	...	1	9	90	77	167	0.1	
26	Agency Division	6	1	1,170	2	...	...	...	...	...	5	2	...	...	2	...	...	4	5	9	0.04	
Total, Madras Presidency		527	243	40,850	1,799	1,270	1,056	1,399	1,768	1,466	2,512	2,641	1,752	1,247	487	342	562	8,767	7,735	16,502	0.4	
																					0.4	
																					1.7	

ANNEXURE

VITAL STATISTICS OF THE GENERAL POPULATION

No. VIII.—Deaths registered from Smallpox in the districts of the Madras Presidency during each month of the year 1922.

Number.	Districts.	3		4		5												6		7		Ratio of deaths per 1,000 of population.	9																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
		Circles of registration.		Villages.														Total.		Number of deaths among children.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
		Number in each district.	Number from which deaths were reported.	Number in each district.	Number from which deaths were reported.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Males.	Females.		Total.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
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No. IX.—Deaths registered from Fevers in the districts of the Madras Presidency during each month of the year 1922.

Number.	Districts.	3		4		5												6		7		8				
		Circles of registra- tion.		Villages.		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.		Ratio of deaths per 1,000 of population.						
		Number in each district.	Number from which deaths were reported.	Number in each district.	Number from which deaths were reported.													Males.	Females.		Total.					
1	Anantapur	21	21	850	170	145	203	285	404	281	251	229	264	269	425	424	541	1,819	1,852	3,671	3,671	3.7	4.0	3.8	12.2	
2	Bellary	20	20	939	229	171	163	220	253	248	286	289	258	346	328	428	338	653	1,880	1,773	3,653	3,653	4.2	4.1	4.2	16.3
3	Chingleput	21	21	1,145	1,007	405	477	498	401	434	480	529	330	498	578	659	498	659	2,861	2,849	5,710	5,710	3.8	3.8	3.8	6.9
4	Chittoor	15	15	1,086	1,069	591	556	582	463	439	428	426	631	572	664	653	664	946	3,570	3,331	6,901	6,901	5.5	5.3	5.4	9.0
5	Coimbatore	23	23	1,109	625	548	721	712	988	805	418	478	489	552	651	651	607	3,518	3,223	6,741	6,741	3.2	2.9	3.0	6.7	
6	Cuddapah	17	17	894	845	1,048	721	712	988	1,071	844	656	751	895	987	1,031	958	5,401	5,200	10,601	10,601	11.9	11.3	11.9	18.0	
7	Ganjam	19	19	4,074	1,894	2,023	1,763	2,000	2,317	2,716	2,133	2,502	2,375	2,338	2,410	2,604	3,463	14,421	14,421	28,842	28,842	17.4	14.3	15.7	19.6	
8	Gedavari	19	19	829	794	938	870	877	640	940	1,045	896	1,234	1,507	2,176	2,243	3,023	8,556	7,833	16,389	16,389	11.9	10.4	11.1	14.0	
9	Guntur	29	29	944	987	1,280	1,108	1,516	1,381	1,582	1,535	1,555	1,752	2,193	2,311	2,331	3,209	11,439	10,379	21,818	21,818	12.5	11.5	12.0	14.9	
10	Kistna	29	29	1,786	1,499	1,676	1,199	1,775	1,071	1,330	1,523	1,675	1,101	1,843	2,513	3,109	4,708	11,908	10,915	22,823	22,823	11.2	10.2	10.7	11.8	
11	Kurnool	11	11	781	697	771	870	719	879	880	768	935	980	1,206	1,420	1,547	1,771	1,439	1,064	2,135	2,135	4.0	4.3	4.1	5.9	
12	Madras	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	7.0
13	Madras	21	21	1,071	854	614	579	591	575	607	584	560	556	536	421	557	844	3,698	3,425	7,124	7,124	3.7	3.3	3.5	7.0	
14	Malabar	18	18	2,208	766	1,985	1,908	2,015	2,148	2,315	2,908	3,287	2,704	2,253	2,032	1,855	2,005	13,679	13,766	27,445	27,445	8.1	8.7	8.9	11.0	
15	Nellore	21	21	1,624	1,727	1,272	1,190	1,163	1,207	1,120	1,190	1,211	1,326	1,171	1,394	1,352	1,831	7,728	7,089	14,827	14,827	11.1	10.3	10.7	9.2	
16	Nilgiris, The	6	6	57	41	142	70	76	76	97	98	95	82	93	79	83	55	532	524	1,046	1,046	8.1	9.2	8.6	13.8	
17	North Arcot	32	32	2,268	967	722	711	728	550	419	460	423	470	422	373	435	744	3,295	3,165	6,460	6,460	3.2	3.0	3.1	8.0	
18	Ramanad	34	30	3,630	1,299	630	610	604	626	854	967	892	848	816	790	790	1,421	4,955	5,185	10,170	10,170	6.1	5.7	5.9	7.9	
19	Salem	19	20	2,303	1,243	1,475	1,338	1,902	1,352	1,317	1,453	1,476	1,164	1,188	1,256	1,395	1,539	2,599	2,599	5,191	5,191	8.2	7.8	8.0	13.0	
20	South Arcot	20	20	2,347	5,720	808	681	711	627	744	502	586	838	860	827	939	1,236	4,808	4,673	9,479	9,479	4.2	4.0	4.1	6.6	
21	South Kanara	13	12	805	667	752	671	551	379	499	775	1,072	842	851	872	750	1,004	4,395	4,659	9,054	9,054	7.2	7.3	7.3	10.0	
22	Tanjore	30	30	2,531	1,557	1,720	1,406	1,916	1,365	1,181	984	831	720	821	824	1,030	1,104	6,670	7,532	14,202	14,202	6.0	6.2	6.1	6.0	
23	Tinnevely	36	36	984	688	788	611	657	557	518	517	553	613	566	608	693	1,321	4,051	3,919	8,000	8,000	4.4	4.0	4.2	5.6	
24	Trichinopoly	17	17	1,055	4,566	1,122	927	1,045	954	911	746	694	812	711	886	893	1,048	5,397	5,357	10,754	10,754	5.8	5.5	5.6	8.0	
25	Vizagapatnam	29	29	2,539	2,456	3,000	2,386	2,767	2,532	3,073	3,507	3,318	3,895	4,075	4,233	3,768	4,368	20,989	20,268	41,257	41,257	19.4	17.6	18.5	24.9	
26	Agency Division	6	6	1,170	1,058	212	177	220	142	186	156	187	232	252	345	350	416	1,474	1,444	2,918	2,918	13.9	13.6	13.8	21.2	
Total, Madras Presidency		527	522	40,850	34,406	24,804	22,657	24,534	22,663	24,279	24,866	25,405	25,392	26,583	26,039	30,382	30,084	162,250	157,438	319,688	319,688	8.0	7.6	7.8	11.3	

ANNEXURE

VITAL STATISTICS OF THE GENERAL POPULATION

No. X.—Deaths registered from Dysentery and Diarrhoea in the districts of the Madras Presidency during each month of the year 1922.

Number.	Districts.	Circles of registration.	5												Total.	6		Ratio of deaths per 1,000 of population.	8							
			4		5											Males.	Females.									
			Number in each district.	Number from which deaths from dysentery and diarrhoea were reported.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.						November.	December.					
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	
1	Anantapur	21	20	850	62	51	37	37	50	40	51	51	34	51	73	74	124	364	309	678	0.7	0.7	0.7	0.7	0.7	0.9
2	Bellary	20	20	939	122	62	64	64	55	53	65	65	73	115	135	127	131	543	498	1,036	1.2	1.2	1.2	1.2	1.2	1.6
3	Chingleput	21	20	2,145	879	237	105	251	233	210	288	280	172	216	257	312	369	1,551	1,413	2,970	2.1	2.1	2.1	2.1	2.1	2.8
4	Chittoor	15	15	1,936	1,969	1,26	109	116	119	97	122	152	129	97	129	185	263	832	733	1,644	1.3	1.3	1.3	1.3	1.3	2.8
5	Coimbatore	23	23	1,109	593	433	229	266	290	375	413	441	358	396	404	476	566	2,906	2,341	4,647	2.1	2.1	2.1	2.1	2.1	2.6
6	Cuddapah	17	17	894	119	45	47	26	38	33	29	43	35	51	69	53	53	270	258	638	0.6	0.6	0.6	0.6	0.6	0.7
7	Gadavari	19	19	4,074	725	100	68	89	192	239	308	187	172	138	145	134	134	1,022	136	1,923	1.2	1.2	1.2	1.2	1.2	1.1
8	Guntur	19	15	829	212	43	58	58	43	44	50	68	96	96	88	60	63	444	321	765	0.6	0.6	0.6	0.6	0.6	1.1
9	Krishna	29	28	944	448	98	123	162	143	109	140	154	160	162	120	117	75	800	763	1,563	0.7	0.7	0.7	0.7	0.7	1.6
10	Kurnool	29	28	1,781	322	93	95	83	75	67	57	71	62	55	62	46	46	727	586	1,313	0.9	0.9	0.9	0.9	0.9	1.2
11	Madras	11	11	781	241	41	384	434	417	363	324	292	309	293	318	317	361	341	301	642	0.7	0.7	0.7	0.7	0.7	0.7
12	Madras	1	1	1	1	324	384	434	417	363	324	292	309	293	318	317	361	2,129	1,977	4,106	8.0	8.0	8.0	8.0	8.0	9.5
13	Madras	21	20	1,071	325	169	148	132	147	118	176	153	171	149	193	352	474	1,283	1,134	2,387	1.3	1.3	1.3	1.3	1.3	3.2
14	Madras	18	18	2,208	578	691	535	445	618	838	1,205	1,293	993	575	471	425	595	4,898	4,296	8,684	2.9	2.7	2.8	2.7	2.8	3.2
15	Nellore	21	19	1,024	131	31	48	38	31	31	46	54	41	36	45	39	23	232	237	469	0.3	0.3	0.3	0.3	0.3	0.5
16	The Nignia	6	6	57	31	23	28	24	29	46	55	74	41	36	29	39	37	245	231	476	3.8	4.1	3.9	4.1	3.9	5.1
17	North Arcot	32	31	2,268	658	591	299	241	197	185	193	225	217	215	246	227	400	1,495	1,441	2,936	1.5	1.4	1.4	1.4	1.4	2.7
18	Ramanad	34	29	3,530	643	95	81	58	60	114	76	113	107	85	117	166	300	698	674	1,872	0.9	0.7	0.7	0.8	0.9	0.9
19	Salem	19	19	2,303	322	127	147	75	118	116	153	137	101	104	135	168	174	765	790	1,555	0.7	0.7	0.7	0.7	0.7	1.3
20	South Arcot	20	20	2,347	1,420	199	211	152	222	192	112	195	197	202	200	268	317	1,146	1,067	2,487	1.1	1.0	1.1	1.0	1.1	1.5
21	South Kanara	13	13	805	500	294	188	108	379	93	175	213	171	153	192	212	407	1,388	1,287	2,625	2.2	2.0	2.1	2.0	2.1	3.3
22	Tanjore	30	28	2,531	623	243	221	145	160	145	150	170	169	175	238	297	499	1,339	1,233	2,462	1.1	1.0	1.0	1.0	1.1	1.1
23	Tinnevely	36	32	934	202	174	149	94	109	70	98	138	124	104	144	163	209	850	906	1,786	0.9	0.9	0.9	0.9	0.9	1.2
24	Trichinopoly	17	17	1,055	780	174	129	124	92	109	139	140	128	54	84	214	257	880	814	1,644	0.8	0.8	0.8	0.8	0.8	1.2
25	Vizagapatam	24	24	2,599	281	67	52	51	29	50	55	66	125	135	148	66	61	471	432	905	0.4	0.4	0.4	0.4	0.4	0.7
26	Agency Division	6	6	1,170	150	16	15	6	11	7	18	10	44	37	37	37	18	115	112	227	1.1	1.1	1.1	1.1	1.1	1.3
Total, Madras Presidency			527	495	40,850	12,337	3,661	3,398	3,882	3,767	4,498	4,986	4,363	3,942	4,225	4,711	6,078	26,619	25,186	51,805	1.3	1.2	1.3	1.3	1.3	1.7

No. XI.—Deaths registered from Respiratory Diseases in the districts of the Madras Presidency during each month of the year 1922.

Number.	Districts.	3		4		5												6		7		Mean ratio per 1,000 for previous 5 years.			
		Circles of registration.		Villages.		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.	Males.	Females.	Total.		Males.	Females.	Total.
		Number in each district.	Number from which deaths were reported.	Number in each district.	Number from which deaths were reported.																				
1	Anantapur	21	21	106	850	77	86	73	73	91	74	90	72	89	112	124	144	622	482	1,104	1-3	1-0	1-2	1-8	
2	Bellary	20	17	127	939	88	46	106	74	89	79	79	67	123	103	128	138	614	511	1,125	1-3	1-0	1-2	1-5	
3	Chingleput	21	21	144	2,145	144	139	188	163	137	108	139	88	93	139	289	369	1,105	890	1,995	1-5	1-2	1-3	1-4	
4	Chittoor	15	15	15	1,996	221	202	174	147	165	150	160	161	193	184	230	294	1,245	1,045	2,291	1-9	1-7	1-8	1-6	
5	Coimbatore	23	19	460	1,109	105	145	112	110	170	203	212	182	227	208	243	292	1,255	1,044	2,299	1-1	0-9	1-0	1-5	
6	Cuddapah	17	15	166	894	75	68	73	86	68	73	66	74	86	102	116	94	560	441	1,001	1-2	1-0	1-1	1-2	
7	Ganjam	19	19	249	4,074	42	41	39	27	59	40	59	48	70	61	61	74	365	253	621	0-4	0-2	0-3	0-3	
8	Godavari	19	16	313	829	140	129	143	100	90	115	129	133	232	229	209	311	1,160	910	2,070	1-5	1-2	1-4	1-9	
9	Guntur	29	28	575	944	72	42	34	47	158	232	248	259	301	289	307	358	1,285	924	2,209	1-3	1-0	1-2	1-8	
10	Kistna	29	26	831	1,730	373	382	292	863	421	482	622	360	746	792	707	810	3,560	2,792	6,352	3-4	2-6	3-0	3-2	
11	Kurnool	11	11	421	781	67	67	53	53	80	87	95	97	100	90	135	133	562	485	1,047	1-2	1-1	1-1	1-2	
12	Madras	21	1	1	1,071	368	443	500	455	400	360	363	318	336	427	421	520	2,631	2,260	4,891	0-8	0-2	0-5	1-0	
13	Madras	18	18	338	2,208	316	192	148	184	137	191	187	172	189	169	224	246	1,210	1,020	2,230	1-2	1-0	1-1	1-0	
14	Malabar	21	19	224	1,624	48	62	58	46	51	51	52	47	53	45	44	61	254	1,940	4,461	0-6	0-5	0-4	0-4	
15	Nellore	21	19	224	1,624	48	62	58	46	51	51	52	47	53	45	44	61	254	1,940	4,461	0-6	0-5	0-4	0-4	
16	Nilgiris, The	6	6	24	57	63	39	28	28	41	36	47	37	52	51	54	49	295	238	533	4-8	4-2	4-4	4-6	
17	North Arcot	32	29	417	2,288	174	206	178	161	144	151	165	153	153	172	162	241	1,123	987	2,060	1-1	0-9	1-0	1-5	
18	Ramnad	34	26	424	3,530	135	115	111	103	125	198	154	171	157	201	163	221	983	866	1,854	1-2	0-9	1-1	0-9	
19	Salem	19	19	289	2,303	21	189	122	56	65	84	78	69	73	112	102	127	451	380	831	0-4	0-4	0-4	0-7	
20	South Arcot	20	20	2,347	1,011	182	189	122	143	168	119	112	145	174	191	163	200	998	900	1,898	0-9	0-8	0-8	0-9	
21	South Kanara,	13	12	353	805	116	111	73	355	87	85	127	108	141	133	118	159	865	748	1,613	1-4	1-2	1-3	1-0	
22	Tanjore	30	26	370	2,531	105	114	93	80	100	94	101	96	114	126	154	176	763	599	1,358	0-7	0-5	0-6	0-6	
23	Tinnevely	36	25	984	984	161	85	113	97	94	84	79	74	83	92	107	151	672	488	1,160	0-7	0-5	0-6	0-6	
24	Trichinopoly	17	17	678	1,055	186	163	158	138	135	121	139	117	117	68	70	211	188	896	806	1,694	0-9	0-8	0-9	0-9
25	Vizagapatnam	29	24	266	2,599	51	42	39	35	40	46	62	52	106	73	93	92	385	326	731	0-4	0-3	0-3	0-4	
26	Agency Division	6	6	152	1,170	16	12	13	5	22	18	13	24	28	31	27	25	139	95	234	1-3	0-9	1-1	1-1	
Total, Madras Presidency		527	479	40,850	10,726	3,574	3,436	3,257	3,455	3,517	3,610	4,012	3,550	4,309	4,006	4,974	5,898	26,538	21,840	48,166	1-3	1-0	1-2	1-3	

ANNEXURE

VITAL STATISTICS OF THE GENERAL POPULATION

No. XII.—Deaths registered from Plague in the districts of the Madras Presidency during each month of the year 1922.

1	2	3	4		5												6		7		8			
			Villages.		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.		Ratio of deaths per 1,000 of population.					
			Number in each district.	Number from which deaths were reported.													Males.	Females.	Males.	Females.		Total.	Total.	
Number.	Districts.	Number in each district.	Number from which deaths were reported.	Number in each district.	Number from which deaths were reported.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Males.	Females.	Total.	Males.	Females.	Total.	Mean ratio per 1,000 for previous 5 years.
1	Anantapur	21	4	850	39	36	91	44	5	2	3	58	108	78	156	137	213	468	483	951	0-002	0-01	0-01	1-0
2	Bellary	20	12	939	39	271	223	90	5	4	45	74	223	209	359	543	932	1,458	1,545	3,003	1-1	1-1	1-1	4-4
3	Chingleput	21	...	2,145	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0-003
4	Chittoor	15	...	1,996	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0-008
5	Coimbatore	23	10	1,109	87	271	223	90	...	4	...	...	...	209	359	543	932	1,458	1,545	3,003	1-3	1-4	1-4	1-4
6	Cuddapah	17	...	894	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0-003
7	Ganjam	19	...	4,074	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0-004
8	Godavari	19	...	829	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0-01
9	Guntur	29	...	944	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0-01
10	Kistna	29	...	1,736	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0-004
11	Kurnool	11	...	781	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0-01
12	Madras	1	1	1	...	...	373	113	1	...	...	...	...	...	...	...	...	1	...	...	1	...	...	0-01
13	Madras	21	12	1,071	22	291	373	113	1	14	33	61	113	88	...	1	312	705	309	1,614	0-7	0-9	0-9	0-5
14	Malabar	18	7	2,208	15	9	7	6	7	3	...	86	63	51	13	5	2	126	126	252	0-1	0-1	0-1	0-04
15	Nellore	21	...	1,624	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0-006
16	Nilgiris, The	6	5	57	6	...	1	1	...	2	12	...	3	5	11	8	5	27	11	38	0-4	0-2	0-3	0-3
17	North Arcot	32	16	2,268	61	476	364	165	19	...	...	...	...	4	...	2	11	489	564	1,053	0-5	0-6	0-5	0-4
18	Ramnad	34	4	3,530	10	447	48	1	...	1	...	...	...	...	...	...	...	43	52	94	0-1	0-1	0-1	0-1
19	Salem	19	14	2,303	106	447	449	108	14	6	11	98	228	230	108	134	183	1,096	815	2,011	0-9	0-9	1-0	0-9
20	South Arcot	10	3	2,347	18	446	449	108	5	...	...	...	...	...	...	...	...	29	33	62	0-03	0-03	0-03	0-1
21	South Kanara	13	3	805	1	1	1	...	2	...	...	...	...	2	...	...	2	5	...	...	7	0-01	0-003	0-1
22	Tanjore	30	...	2,531	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0-003
23	Tinnevely	36	...	984	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0-002
24	Trichinopoly	17	6	1,055	40	1	3	2	...	...	...	...	...	...	...	26	65	45	56	101	0-1	0-1	0-1	0-007
25	Vizagapatnam	29	...	2,539	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0-05
26	Agency Division	6	...	1,170	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Total, Madras Presidency		527	108	40,850	598	1,578	1,561	579	53	32	104	394	746	669	737	985	1,765	4,483	4,700	9,183	0-2	0-2	0-2	0-3

45

(Comparative table showing percentage of mortality to total mortality from year to year under each head of death causation.)

1	2	3		4			5		6			
		Average annual death-rate since the introduction of drainage system or water-supply.		Percentage of deaths to total mortality under each head of death causation.			Average annual death-rate for the five-year period preceding the introduction of drainage system or water-supply.		Percentage of deaths to total mortality under each head of death causation.			
		Years.	Death-rate.	Cholera.	Smallpox.	Others.	Years.	Death-rate.	Cholera.	Smallpox.	Fever.	Others.
Conjeevaram—cont.	...	1897 ...	1812	34.4	4.0	0.1	1881	78.1	...	...	...	...
			1913	38.4	0.2	1.3	1882	13.7	...	...	...	...
			1914	37.7	7.1	...	1883	4.1	...	...	...	...
			1915	31.4	...	...	1884	3.6	...	...	...	...
			1916	32.7	...	...	1885	8.3	...	...	...	...
			1917	39.6	0.7	...	1886	14.6	...	...	...	...
			1918	59.2	8.2	1.6	1887	75.0	...	...	...	...
			1919	37.4	7.8	1.4	1888	17.2	...	...	...	...
			1920	34.2	1.2	1.2	1889	78.2	...	...	...	...
			1921	25.8	1.2	1.2	1890	74.3	...	...	...	...
			1922	27.4	...	...	1891	64.9	...	...	...	...
			1893	31.9	1.0	...	1892	75.3	...	...	...	...
Oonoor	...	1893 ...	1894	31.9	2.6	...	1893	50.2	...	...	...	...
			1895	27.9	...	...	1894	17.6	...	...	...	...
			1896	41.3	...	...	1895	13.6	...	...	...	...
			1897	43.8	5.6	0.4	1896	15.5	...	...	...	...
			1898	34.6	...	...	1897	17.2	...	...	...	...
			1899	28.6	...	...	1898	68.0	...	...	...	...
			1900	36.5	...	...	1899	67.7	...	...	...	...
			1901	24.4	1.0	...	1900	58.8	...	...	...	...
			1902	29.0	...	...	1901	14.9	...	...	...	...
			1903	46.0	...	...	1902	55.9	...	...	...	...
			1904	27.6	...	...	1903	73.6	...	...	...	...
			1905	27.0	...	...	1904	23.4	...	...	...	...
			1906	44.4	1.1	...	1905	78.7	...	...	...	...
Ouddapah	...	1893 ...	1907	31.4	...	...	1906	81.7	...	...	...	...
			1908	26.6	0.4	...	1907	16.6	...	...	...	...
			1909	32.5	0.7	...	1908	59.1	...	...	...	...
			1910	29.0	...	...	1909	81.7	...	...	...	...
			1911	31.4	1.6	0.3	1910	74.5	...	...	...	...
			1912	26.0	0.4	1.9	1911	79.4	...	...	...	...
			1913	30.4	0.3	...	1912	83.0	...	...	...	...
			1914	29.7	...	...	1913	81.5	...	...	...	...
			1915	31.6	...	...	1914	80.7	...	...	...	...
			1916	28.7	...	...	1915	77.2	...	...	...	...
			1917	32.4	...	...	1916	81.0	...	...	...	...
			1918	63.2	1.7	...	1917	73.3	...	...	...	...
			1919	40.0	...	...	1918	83.1	...	...	...	...
Dindigul	...	1896 ...	1920	29.2	0.3	0.7	1919	70.3	...	...	...	...
			1896	23.1	...	...	1920	80.3	...	...	...	...
			1897	22.1	...	...	1921	...	...	...	...	...
			1898	18.9	...	...	1922	...	...	...	...	...
			1899	25.6	...	...	1923	...	...	...	...	...
			1900	16.6	...	...	1924	...	...	...	...	...
			1901	17.5	...	...	1925	...	...	...	...	...
			1902	17.5	...	...	1926	...	...	...	...	...
			1903	25.5	...	...	1927	...	...	...	...	...
			1904	33.1	...	...	1928	...	...	...	...	...
			1905	30.9	...	...	1929	...	...	...	...	...
			1906	36.6	...	...	1930	...	...	...	...	...
			1907	37.1	...	...	1931	...	...	...	...	...

VITAL STATISTICS OF THE GENERAL POPULATION													77
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(Comparative table showing percentage of mortality to total mortality from year to year under each head of death causation.)

78

ANNEXURE

1	2		3	4				5	6							
	Date of completion of works of		Average annual death-rate since the introduction of drainage system or water-supply.	Percentage of deaths to total mortality under each head of death causation.				Average annual death-rate for the five-year period preceding the introduction of drainage system or water-supply.	Percentage of deaths to total mortality under each head of death causation.							
	Drainage.	Water-supply.		Cholera.	Smallpox.	Typhoid.	Dysentery and diarrhoea.		All other causes.	Years.	Death-rate.	Cholera.	Smallpox.	Typhoid.	Dysentery and diarrhoea.	All other causes.
Ellore	..	1919 ..	1919	27.5	..	1.4	25.2	68	1914	43.5	4.8	5.1	38.1	9.9	53.1	..
	..	..	1920	25.9	2.1	2.4	21.4	60	1915	40.7	1.3	5.4	18.7	11.4	62.2	..
	..	..	1921	21.0	1.5	3.8	29.9	63	1916	36.1	14.9	1.4	22.0	6.6	54.8	..
	..	..	1922	19.9	0.1	8.5	28.6	83	1917	34.7	14.0	2.4	21.9	5.6	58.1	..
Erode	..	1919 ..	1919	32.6	3.9	3.5	21.3	19.3	1918	43.4	13.1	6.1	26.0	5.7	49.1	..
	..	..	1920	28.7	0.2	0.4	11.3	18.0	1914	33.7	6.0	1.8	6.2	29.5	56.5	..
	..	..	1921	22.0	1.4	0.8	20.0	16.9	1915	29.2	10.1	0.2	8.8	24.6	56.3	..
	..	..	1922	22.5	..	3.5	13.3	8.3	1916	33.8	6.0	0.2	9.2	20.7	49.4	..
Gudiyattam	..	1908 ..	1908	31.6	21.8	..	25.2	13.4	1917	53.8	10.0	4.7	32.4	12.7	40.2	..
	..	..	1909	25.8	7.5	..	25.3	12.9	1903	29.6	..	4.8	7.9	24.2	63.3	..
	..	..	1910	26.6	..	..	27.1	19.5	1904	27.8	16.5	0.2	7.4	17.2	63.7	..
	..	..	1911	22.1	..	..	30.2	19.3	1905	28.0	6.1	2.0	6.1	25.3	66.6	..
	..	..	1912	54.4	8.5	..	10.0	13.5	1906	37.1	16.2	13.6	11.8	16.2	42.2	..
	..	..	1913	19.4	0.2	..	5.7	22.9	1907	23.9	10.4	..	15.9	17.6	56.2	..
	..	..	1914	25.1	2.9	4.6	12.7	23.6	..	..	..	..	..	..	..	..
	..	..	1915	22.7	3.9	6.8	17.5	21.8	..	..	..	..	..	..	..	..
	..	..	1916	30.6	..	12.0	2.8	18.2	..	..	..	..	..	..	..	..
	..	..	1917	34.8	..	0.7	3.6	17.7	..	..	..	..	..	..	..	..
	..	..	1918	43.1	14.2	3.6	34.8	14.3	..	..	..	..	..	..	..	..
	..	..	1919	31.2	12.1	18.2	22.2	16.2	..	..	..	..	..	..	..	..
Kodalkanal	..	..	1920	21.5	4.0	3.4	24.6	20.3	1907	..	..	..	..	..	..	..
	..	..	1921	41.9	..	0.3	8.6	6.6	..	..	..	..	..	..	..	..
	..	..	1922	22.2	..	0.6	12.5	12.8	..	..	..	..	..	..	..	..
	..	..	1908	50.7	11.5	4.4	16.8	8.2	1903	33.3	..	..	15.0	9.6	75.4	..
Kumbakonam	..	..	1909	37.4	..	3.2	19.0	4.2	1904	31.8	..	..	15.3	10.4	74.3	..
	..	..	1910	47.1	..	1.0	23.8	9.1	1905	34.2	0.7	..	16.4	9.6	74.3	..
	..	..	1911	30.5	1.3	0.7	23.2	5.4	1906	34.2	..	..	17.2	11.1	60.5	..
	..	..	1912	34.7	0.2	0.1	20.6	5.8	1907	38.6	0.6	0.3	15.3	7.6	76.2	..
..	..	1913	34.4	..	7.5	18.0	3.2	71.3	1907	36.6	..	..	..	..	..	..

VITAL STATISTICS OF THE GENERAL POPULATION

79

Name of municipality.	Drainage.	Water-supply.	Years.	Death-rate.	Cholera.	Smallpox.	Typhoid.	Dysentery and diarrhoea.	Years.	Death-rate.	Cholera.	Smallpox.	Typhoid.	Dysentery and diarrhoea.	All other causes.
Guntur	...	...	1914	46.1	3.9	17.2	15.5	3.4	1909	26.7	...	...	...	...	...
			1915	34.8	0.5	0.5	19.5	3.2	1910	32.4	...	...	...	...	...
			1916	36.9	0.1	...	23.1	5.7	1911	28.7	...	...	...	...	...
			1917	44.7	2.3	...	22.4	4.8	1912	17.5	...	...	...	...	...
Kodalkanal	...	...	1918	53.9	2.3	0.6	33.7	3.2	1913	23.4	...	...	...	...	...
			1919	45.8	0.3	0.9	24.4	3.1	1914	22.5	...	...	...	...	...
			1920	47.0	4.4	0.8	18.7	5.6	1915	22.5	...	...	...	...	...
			1921	37.7	4.1	1.6	24.8	8.5	1916	...	...	...	...	...	...
			1922	30.2	...	0.7	20.0	4.8	1917	...	...	...	...	...	...
			1914	19.3	...	...	16.1	14.3	1909	...	...	...	...	...	...
			1915	20.3	...	...	13.5	13.6	1910	...	...	...	...	...	...
			1916	21.0	...	...	19.7	9.8	1911	...	...	...	...	...	...
			1917	22.7	...	...	7.6	10.6	1912	...	...	...	...	...	...
			1918	35.4	...	...	29.1	2.9	1913	...	...	...	...	...	...
			1919	33.0	...	...	28.0	8.3	1914	...	...	...	...	...	...
			1920	38.2	...	...	35.1	9.0	1915	...	...	...	...	...	...
Kumbakonam	...	...	1921	15.2	...	...	13.8	8.1	1916	...	...	...	...	...	...
			1922	19.1	...	...	6.1	7.3	1917	...	...	...	...	...	...
			1904	37.5	17.3	0.5	18.9	10.0	1909	...	...	...	...	...	...
			1905	31.2	3.2	0.7	21.9	11.4	1910	...	...	...	...	...	...
			1906	34.2	9.3	...	20.0	11.6	1911	...	...	...	...	...	...
			1907	39.9	26.2	...	16.2	11.5	1912	...	...	...	...	...	...
			1908	30.0	11.8	...	15.1	10.3	1913	...	...	...	...	...	...
			1909	26.4	13.0	...	14.7	9.3	1914	...	...	...	...	...	...
			1910	30.3	3.4	...	14.6	6.9	1915	...	...	...	...	...	...
			1911	31.9	10.2	0.1	15.9	7.4	1916	...	...	...	...	...	...
			1912	29.1	6.5	0.1	10.0	6.8	1917	...	...	...	...	...	...
			1913	31.2	6.7	...	8.5	9.0	1918	...	...	...	...	...	...
Kurnool	...	...	1904	31.6	...	...	8.5	9.0	1909	...	...	...	...	...	...
			1905	27.3	...	...	11.0	9.5	1910	...	...	...	...	...	...
			1906	38.8	18.4	7.2	9.6	8.0	1911	...	...	...	...	...	...
			1907	31.9	9.8	0.1	14.4	8.0	1912	...	...	...	...	...	...
			1908	29.9	9.8	0.1	14.5	7.3	1913	...	...	...	...	...	...
			1909	29.7	2.7	0.3	15.5	9.7	1914	...	...	...	...	...	...
			1910	31.0	8.3	0.9	12.0	10.0	1915	...	...	...	...	...	...
			1911	28.2	4.7	1.9	14.3	9.7	1916	...	...	...	...	...	...
			1912	31.1	4.3	1.5	15.7	9.7	1917	...	...	...	...	...	...
			1913	23.4	8.6	0.7	13.3	9.9	1918	...	...	...	...	...	...
			1914	34.3	7.3	0.9	7.8	12.7	1919	...	...	...	...	...	...
			1915	27.9	1.2	1.9	11.0	10.8	1920	...	...	...	...	...	...

No. XIII.—Statement prescribed by the Government of India, Home Department (Sanitary), in Letter No. 10—326, dated 24th December 1894, communicated with G.O. No. 2664 L., dated 20th December 1894—cont.

(Comparative table showing percentage of mortality to total mortality from year to year under each head of death causation.)

1	2		3		4				5		6									
	Name of municipality.	Date of completion of works of Drainage.	Water-supply.	Average annual death-rate since the introduction of drainage system or water-supply.	Cholera.	Smallpox.	Fevers.	Dysentery and diar- rhoea.	All other causes.	Years.	Death-rate.	Cholera.	Smallpox.	Fevers.	Dysentery and diar- rhoea.	All other causes.	Percentage of deaths to total mortality under each head of death causation.	Average annual death-rate for the five-year period preceding the intro- duction of drainage system or water- supply.	Percentage of deaths to total mortality under each head of death causation.	
Karnool—cont. ...	1897 ...	1899	34.4	0.1	0.1	48.9	19.8	33.1	...	...	...	...	...	...	...	...	...	...	...	...
		1910	37.6	...	...	46.0	19.1	34.9	...	...	...	...	...	...	...	...	...	...	...	...
		1911	27.6	0.1	...	42.0	19.9	38.0	...	...	...	...	...	...	...	...	...	...	...	...
		1912	39.6	4.1	0.2	38.9	20.1	36.7	...	...	...	...	...	...	...	...	...	...	...	...
		1913	34.6	1.6	0.7	44.9	18.6	34.2	...	...	...	...	...	...	...	...	...	...	...	...
		1914	45.8	4.2	4.2	37.4	12.4	41.8	...	...	...	...	...	...	...	...	...	...	...	...
		1915	33.0	0.1	...	32.5	7.6	59.8	...	...	...	...	...	...	...	...	...	...	...	...
		1916	28.7	...	...	38.6	11.1	50.3	...	...	...	...	...	...	...	...	...	...	...	...
		1917	38.2	2.6	3.2	40.8	6.9	49.5	...	...	...	...	...	...	...	...	...	...	...	...
		1918	63.0	0.8	3.7	51.9	8.9	39.7	...	...	...	...	...	...	...	...	...	...	...	...
		1919	29.3	0.3	...	39.1	5.3	55.4	...	...	...	...	...	...	...	...	...	...	...	...
		1920	31.7	0.1	0.2	51.9	7.5	40.8	...	...	...	...	...	...	...	...	...	...	...	...
		1921	28.6	...	0.1	47.1	7.7	45.1	...	...	...	...	...	...	...	...	...	...	...	...
		1922	30.3	7.7	1.1	41.8	6.5	42.9	...	...	...	...	...	...	...	...	...	...	...	...
Madras " " "	1874 ...	1872	35.2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		1873	36.7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		1874	36.6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		1875	65.6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		1876	33.6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		1877	(Famine year.)	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		1878	47.1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		1879	34.7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		1880	37.4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		1881	38.9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		1882	35.6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		1883	39.1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		1884	43.5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		1885	30.8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1886	36.2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...		
1887	39.3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...		
1888	37.4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...		
1889	42.0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...		
1890	42.4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...		
1891	52.6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...		
1892	46.0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...		
1893	41.1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...		
1894	36.6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...		
1895	37.7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...		
1896	37.8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...		

[illegible]

1914	324	03	02	44	147	807	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
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(Comparative table showing percentage of mortality to total mortality from year to year under each head of death causation.)

84

ANNEXURE

1	2		3		4			5		6		
	Date of completion of works of		Average annual		Percentage of deaths to total mortality			Average annual		Percentage of deaths to total mortality		
	Drainage.	Water-supply.	death-rate since the		Cholera.	Smallpox.	Dysentery and diar.	All other causes.	Death-rate.	Cholera.	Smallpox.	Dysentery and diar.
			introduction of	drainage system or								
Name of municipality.			Years.	water-supply.					Years.			All other causes.
Tirupat	...	1899 ...	1899	31.5	9.4	...	23.4	7.1	50.1	31.3	1.8	31.8
			1900	33.9	6.0	...	18.6	6.3	34.6	23.0	...	39.7
			1901	30.8	3.1	...	22.7	11.1	63.1	18.6	...	10.8
			1902	35.3	...	4.2	27.4	13.7	54.7	34.2	...	5.8
			1903	30.5	...	...	20.9	20.1	58.8	3.2	...	10.0
			1904	28.6	...	...	17.6	12.6	69.6	2.7	...	5.0
			1905	25.3	...	...	14.3	22.7	58.8	2.6	...	...
			1906	41.7	4.8	...	21.9	20.1	52.4	...	...	...
			1907	36.8	...	...	18.1	21.8	60.0	...	...	...
			1908	46.0	...	...	20.4	19.7	56.4	...	...	...
			1909	39.3	...	...	26.1	15.4	55.5	...	...	...
			1910	34.6	...	...	33.6	8.0	56.9	...	...	...
			1911	32.2	...	...	38.5	9.1	53.8	...	...	...
			1912	37.2	...	...	28.4	10.0	51.4	...	...	...
			1913	27.3	...	...	33.3	10.8	53.3	...	...	...
			1914	34.1	...	...	23.3	8.4	50.0	...	...	...
			1915	28.5	...	...	28.8	25.0	43.5	...	...	...
			1916	31.7	...	...	33.5	15.7	49.5	...	...	...
			1917	32.2	...	...	30.0	11.9	56.8	...	...	...
			1918	40.5	...	...	18.4	8.7	45.3	...	...	...
			1919	38.5	...	...	16.5	18.8	53.5	...	...	...
			1920	27.4	...	...	16.2	12.5	70.2	...	...	...
			1921	26.4	...	...	25.0	9.6	64.5	...	...	...
			1922	24.8	...	...	22.2	11.8	63.0	...	...	...
Vellore	1896 ...	...	1896	30.4	19.2	0.8	22.4	11.9	45.7	...	...	...
			1897	23.1	10.6	...	19.6	9.2	59.2	...	...	...
			1898	30.4	24.1	...	14.1	6.7	53.7	...	...	...
			1899	26.6	15.3	...	5.9	9.0	69.2	...	...	...
			1900	30.3	7.7	...	10.5	7.9	73.3	...	...	...
			1901	24.8	11.9	...	12.8	10.6	64.2	...	...	...
			1902	21.2	2.8	...	18.3	10.0	68.3	...	...	...
			1903	23.7	12.9	...	12.2	10.8	63.4	...	...	...
			1904	25.9	3.9	...	4.7	9.7	64.9	...	...	...
			1905	23.5	...	...	20.7	4.7	70.1	...	...	...
			1906	21.8	...	...	10.5	15.4	68.2	...	...	...
			1907	23.1	1.7	...	15.6	14.4	67.4	...	...	...
Vizianagram	...	1914 ...	1908	23.7	7.7	...	10.7	13.9	67.4	...	...	...
			1909	29.7	4.2	...	13.7	13.4	67.5	...	...	...
			1910	30.2	0.8	...	10.9	15.7	70.2	...	...	...
			1911	...	...	...	...	...	...	...	...	...
			1912	...	...	...	...	...	...	...	...	...
			1913	...	...	...	...	...	...	...	...	...
			1914	...	...	...	...	...	...	...	...	...
			1915	...	...	...	...	...	...	...	...	...
			1916	...	...	...	...	...	...	...	...	...
			1917	...	...	...	...	...	...	...	...	...
			1918	...	...	...	...	...	...	...	...	...
			1919	...	...	...	...	...	...	...	...	...
			1920	...	...	...	...	...	...	...	...	...

VITAL STATISTICS OF THE GENERAL POPULATION

85

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51

THE
THIRTY-THIRD ANNUAL REPORT
OF THE
SANITARY ENGINEER TO THE GOVERNMENT OF MADRAS,
1922.

The principal activity of the Sanitary Engineer's Department from the popular point of view lies in the provision of water-supply and drainage schemes for municipalities. Work in this direction has been curtailed for several years on account of the difficulty of procuring materials during the war and the high price of pipes and pumping plant after the war. During the year under review there was a considerable fall in prices and though still high compared with 1914 a period of comparative stability appears to have been reached and any further fall may be expected to be very gradual.

Despite the fall in prices, estimates for water-supply schemes based on current prices, and including the 30 per cent centage charges now required by Government to be added to water-supply estimates are generally beyond the means of most of the municipalities and thus together with the straitened financial circumstances of the Government, who generally contribute half the cost, has prevented any large expenditure on such schemes since the fall in prices.

2. Consequently it has again to be recorded that no new water-supply scheme was brought into operation during the year. With reference to new schemes in progress, work is proceeding rapidly on the new headworks, at Kochadai, for the *Madura water-supply*. These works are designed to take the place of the existing headworks and water therefrom, to the extent of not less than half of the total supply to the town, has been supplied by temporary pumping plant during the progress of the work for several years. The permanent pumping plant has been erected during the year and it is expected that the new headworks will be in full commission before the end of 1923.

At *Chingleput* the new water-supply scheme has been completely held up for many months owing to the high price of pipes. An order has since been placed with the Director-General of Stores for the pipes required for the pumping main and it is hoped that the work will be in full progress again before the end of 1923.

Anantapur.—Rapid progress was made in this water-supply scheme during the year and it is expected to be put in commission in 1923.

Rāmēswaram.—The first portion of this water-supply scheme which includes the headworks and half the distribution system was completed during the year, though water has been supplied to the town by temporary plant, as at *Madura*, for nearly three years.

The scheme has proved a great success and sanction has been accorded to the execution of the second half of the scheme.

Tuticorin.—The work of harnessing the source and leading the water to the river bank at *Morapannad* was completed during the year. The suction well on the river bank was completed and the water is now ready to be pumped the 20 odd miles into *Tuticorin*. The scheme has been completely held up for months pending the decision of Government and the Municipal Council as to how the scheme is to be financed.

The five works mentioned above are being carried out by the Public Works Department.

At Kodaikānal an extension to the water-supply distribution system estimated to cost Rs. 36,923 is being carried out by the municipality under the supervision of the Sanitary Engineer and should be completed in 1923.

3. The work of improvements to the Tanjore water-supply system was handed over to the Executive Engineer, Madura Drainage Division, during the year and an alternative means of obtaining the additional water required is being investigated by him with a view to economy in first cost and to effecting the improvements at an earlier date.

In 1916 the Executive Engineer, Madura Drainage Division, had charge of the Madura drainage works and the extensions to the Madura water-works only. At the request of the present Sanitary Engineer, who was then in charge of the Division, the Tuticorin water-supply scheme, and afterwards the Rāmēswaram work, were added to the division. The division is now a great Sanitary Division carrying out the following works:—

Name of work.	Estimated cost.
Madura drainage works	Rs. 38,21,000
Madura water-supply improvements	6,96,200
Tuticorin water-supply	18,46,706
Rāmēswaram water-supply	2,83,700
Tanjore water-supply improvements	1,16,900

The organization has been a conspicuous success and is an example of the advantage gained by utilizing the specialized experience of certain officers in a division devoted to one class of work. The only flaw in the arrangement is that the division is under the administrative control of the regular Public Works Department circle in which it is situated instead of being under the Sanitary Engineer.

4. It is an example of the lines on which the Sanitary Engineer's Department should be organized. If this division was attached to the Sanitary Engineer's Department and two similar divisions created in place of the two existing appointments of Deputy Sanitary Engineers all the official sanitary engineering work of the Presidency, both execution and investigation, could be carried out under the administrative control of the Sanitary Engineer.

If this arrangement was introduced the existing difficulty regarding centage charges would, to a great extent, disappear as it would be an easier matter to distribute the cost of the Sanitary Engineer's Department "pro rata" to the works and investigations in hand.

5. *Protected water-supply systems.*—The following is a statement of particulars in connexion with the 29 existing water-supply systems, with a comparison, among other things, of the house-service connexions, metered and unmetered, as they existed by the close of the year under report, with those of the previous year:—

Statement of protected water-supply systems in operation.

Serial number.	Name of town or municipality.	Population as per last census.	Rate of supply (gallons per head per diem).	Numbers of house-service connexions.		Numbers of metered connexions.		Numbers of unmetered connexions.	
				1922.	1921.	1922.	1921.	1922.	1921.
	(Supplied by gravitation.)								
1	Adoni	30,232	6	148	148	122	122	26	26
2	Berhampur	32,731	4	41	31	31	21	10	10
3	Coonoor	12,215	...	414	370	56	56	358	314
4	Guntur	48,184	4	...	...	...	...	...	...
5	Kodaikānal	4,283	...	53	53	41	41	12	12
6	Ootacamund	19,467	15	710	694	196	177	514	517
7	Periyakulam	16,478	2	...	2	2	2	...	...
8	Salem	52,244	...	...	...	...	...	...	...
	(no meter).								
	(no meter).								

Serial number.	Name of town or municipality.	Population as per last census.	Rate of supply (gallons per head per diem).	Numbers of house-service connexions.		Numbers of metered connexions.		Numbers of unmetered connexions.	
				1922.	1921.	1922.	1921.	1922.	1921.
9	Tirupati	17,434	...	417	380	53	20	364	360
10	Yellore	50,210	5.2	...	...	...	...	...	...
11	Dindigul	30,922	...	...	...	...	...	...	...
	(Supplied by pumping.)								
12	Bezwada	44,159	12.0	722	651	478	402	249	249
13	Chidambaram	22,501	5.0	79	47	79	20	456	456
14	Cocanada	53,348	...	799	763	343	307	456	456
15	Conjeevaram	61,376	10.2	680	679	86	86	592	592
16	Ouddapah	19,317	...	364	357	44	35	320	322
17	Ellore	45,882	3.2	...	...	...	...	...	...
18	Erode	22,911	...	58	...	58	...	5	...
19	Gudiyāttam	22,808	5.48	9	8	...	...	9	8
20	Kumbakonam	60,700	...	Partial supply from sub-artesian boring.					
21	Kurnool	27,908	...	598	608	87	48	541	555
22	Madura	188,894	...	1,706	1,668	535	482	1,171	1,186
23	Masulipatam	43,940	...	81	81	81	31	...	...
24	Nagapatam	54,016	8.25	2	2	2	2	...	...
25	Nellore	35,863	12.0	413	410	348	27	70	348
26	Tanjore	59,918	12.9	798	798	157	156	641	642
27	Trichinopoly	120,422	14.0	1,605	1,404	775	486	840	918
28	Vizianagram	39,399	12.0	150	150	150	150	...	...
	(Supplied both by gravitation and pumping.)								
29	Visagapatam and Waltair.	44,711	5.2	41	10	7	7	4	3

Inspection of water-works.—Of these 29 municipalities, four, viz., 26, 27, 28 and 29 in the statement were inspected by my predecessor, and, 18, viz., items 1, 2, 5, 6, 9, 10, 11, 12, 15, 16, 17, 18, 22, 23, 25, 26, 28 and 29 inspected by me during the year under report.

6. *Meters on house-service connexions.*—The above statement shows that the importance of metering house-service connexions has not been sufficiently appreciated despite the manner in which it has been emphasized repeatedly by the Sanitary Engineer in his inspection notes and by the Government. Attempts have been made to justify laxity in metering house connexions on the ground that meters are unreliable and soon get out of order. Such a contention is *prima facie* untenable in view of the universal use of water meters throughout the civilized world. A careful investigation of this matter made during my inspections, showed, as anticipated, that the fault was not inherent in the meters themselves, but was due to neglect or misuse. If the meters are properly maintained and suitably housed they will give as efficient service in India as in other countries and last for many years.

7. The re-examination and revision during the year of the first set of model by-laws under the new Act for water-works which had been circulated with G.O. No. 1869 M., dated 11th December 1920, to Municipal Councils for adoption, has resulted in the issue of a revised set of by-laws (G.O. No. 203, P.H., dated 3rd February 1923), promulgating a hire system of meter supply for house-service connexions, by which the old difficulty for the owner or occupier of a house in finding a large sum all at once for the initial cost of the meter will be removed, and the Municipal Council itself will be responsible for the proper upkeep of the meter. Under the 1920 Act house-service connexions can only be granted in accordance with by-laws issued under the Act. Despite the fact that the first set of model by-laws were issued by Government for the guidance of the Municipal Councils in December 1920 only the following municipalities have so far sanctioned by-laws:—

Bezwada.
Kodaikānal.
Masulipatam.

Periyakulam.
Tirupati.

In other municipalities house-service connexions are being given in accordance with the old by-laws or without any by-laws. There is no reason why new by-laws should not have been sanctioned by all the Councils (where service connexions are permitted) within a period of 2½ years from the date of issue of the model by-laws and the time has not come when a time limit of six months should be fixed by Government after which the granting of house-service connexions should be prohibited unless by-laws approved by Government have been introduced.

8. Another matter which has engaged the particular attention of the Sanitary Engineer during the year under review has been the unsatisfactory results which are reported from most of the municipalities where water purification plant is installed.

Soon after taking charge of this office, the present Sanitary Engineer discovered, from a study of the six months' reports of the King Institute on the various municipal water supplies, that there was something seriously wrong with the control or design of the filtering plant. The subject was closely followed up during the routine inspections of the municipalities.

It was found in almost every case that the unsatisfactory results were, to a large extent, due to inefficient control and maintenance.

In a few cases economies effected in the design of the plant made it more difficult to maintain satisfactory results, but, on the whole, it was undoubtedly due to inefficient or parsimonious management.

In many municipalities once a water-supply scheme has been carried out and water purification plant installed it appears to be expected that the plant will work efficiently for ever with little or no attention and in the charge of untrained low-paid servants. No attempt is generally made to run the plant in accordance with the system for which it was designed and which is generally described in the Government Order sanctioning the scheme. A few brief examples will illustrate common faults:—

Case I.—Mechanical filter requiring alum as a coagulant. *Faults.*—Alum only purchased intermittently, filter often used without alum and no systematic and daily tests made to ascertain dose required.

Case II.—Mechanical filters as above. Alum pump designed to administer the correct dose of alum proportionately throughout the day, out of order. To overcome the difficulty the concentrated day's dose of alum pumped by hand into the filter once a day.

Case III.—Slow sand filter. Run dry for examination. Sand layer so thin that large areas of the under-drainage "metal" exposed to the eye. Filter bed muddy and slimy. Water passing straight through filter bed without any purification.

Case IV.—Slow sand filters and pumps from filtered water reservoir. Capacity of latter meagre, but a large service reservoir provided. Scheme designed for 24 hours' pumping daily. In actual practice only 6 hours' pumping a day in two shifts, consequently capacity of filtered water reservoir totally inadequate for water discharging from filter and filter works intermittently and is frequently surcharged and stagnant; all these conditions being opposed to the elementary principles of slow sand filtration.

Case V.—Mechanical filter. Insufficiently washed due to reluctance to use filtered water owing to the cost involved in pumping the water, thereby ignoring the main principle of mechanical filtration.

Several cases.—Where proper procedure for starting slow sand filters was not observed filters used at various speeds of filtration and filter sand allowed to become very filthy before being renewed.

The remedies are—

(a) Provision of sufficient staff, properly trained and suitably paid, together with allotment of sufficient funds to maintain the plant in proper order.

(b) Suitable facilities for training water works superintendents both at the Experimental Plant at Guindy and on their own works.

(c) Closer examination on the spot into the defects and their causes of water purification systems.

(d) More detail inspection and advice by the Deputy Sanitary Engineers.

(e) Appointment of a "Government Mechanical Engineer."

With regard to these remedies—

(a) is a matter for the Councils to attend to.

(b) Facilities are already offered by Government for the training of water works overseers in the maintenance of water filtration plant at the Experimental Filter Beds, Guindy.

In the year under review only two municipal overseers, one from Erode and the other from Salem, were deputed by the Municipal Councils for, and underwent, training at the Guindy Filters. The Municipal Councils of Masulipatam and Ellore, who were requested to send their overseers for the training, professed to be unable to spare their services. Subordinates of some other municipalities who had undergone the training at Guindy seem to have left municipal service and bettered their prospects elsewhere, where the value of the above training obtained in addition to their engineering skill was better recognized. New men entertained by some municipalities have not yet been deputed to Guindy for the training. A general order, therefore, prohibiting Municipal Councils, in possession of water works from confirming as municipal overseer or supervisor or water works superintendent, any one who has not had this training would seem to be necessary.

(c) For this purpose a travelling inspectorate was recommended by the Sanitary Engineer in 1920. This proposal in conjunction with proposals put up by the Committee on Water Filtration is at present under the consideration of Government and it is hoped that early orders will be issued.

(d) The purpose should be effected by the decentralization of the Deputy Sanitary Engineers' headquarters which has just been approved by Government and which will keep the Deputy Sanitary Engineers in closer personal touch with the local bodies.

(e) The necessity for a Government Mechanical Engineer has been long established, and its creation advocated by the Sanitary Engineer. The duties of this officer would be to visit municipal pumping stations regularly and systematically with the object of keeping the machinery in good repair and seeing that the stations were run on economical lines. This work is done as far as possible by the Boiler Inspectorate at present but not only is it outside the scope of their duties but owing to the extent of their work in their regular line their work in this direction is generally limited to inspection and advice. The Government Mechanical Engineer, however, would be expected to camp for long periods if necessary at individual stations and personally carry out tests and superintend repair work. Government has not approved such an appointment up-to-date.

9. The major schemes drawn up and submitted to Government during the year may be described as follows:—

(1) *Ellore drainage.*—Detailed plans and estimates amounting to Rs. 8,97,300 and Rs. 16,23,200, respectively, were forwarded for two alternative schemes, to be carried out piece-meal as funds permit, (1) providing for open masonry drains on both sides of the streets of the town, discharging their sillage into the existing natural storm water courses; and (2) the other providing for the same open drains discharging their contents into intercepting sewers, hence the sewage will be conveyed into pump wells, to be pumped thence through rising mains to a sewage farm to the south of the town beyond the Tammil river aqueduct and to the east of the Kistna canal.

(2) *Alagarkovil water-supply.*—In pursuance of G.O. No. 962 L., Mis., dated 23rd July 1918, ordering an investigation of the possibilities of improving

the existing source of water-supply to an important Vishnu temple called Alagar-kovil, 13 miles north of Madura, where the congregation of pilgrims varies from 100 on ordinary occasions to 3,500 and more during festivals, an estimate of Rs. 4,040, including Rs. 932 for centage charges, was forwarded to Government with the Sanitary Engineer's letter No. 193-G., dated 22nd March 1922.

The existing arrangements consist of supply, gauged at 25 gallons per minute in summer, from a perennial spring beneath a mantapam, 2 miles to the north of the temple, and on the south slope of the Alagar Hill called the Talagani ridge. The supply is conveyed through a masonry conduit into an underground chamber or stone-trough called Theertha Thotti, whence a portion of the supply is taken through a cut stone spout on to a paved court-yard used by pilgrims for bathing purposes. The rest of the supply is passed through a 2-inch galvanized iron pipe, provided with stopcock into a cistern. From this cistern the water is led for a length of 72 feet by 3-inch underground pipes, beneath paved floor, and then for a length of 2 miles along the footpath in the gallery, by 3-inch, 2½-inch and 2-inch cast iron and galvanized iron pipes laid almost at ground level, into a circular structure within the temple enclosure, utilized as a service reservoir, whence the supply is distributed in ten places in the temple premises.

The proposed improvements consist (1) in drawing the water from the masonry conduit into a 4-inch pipe instead of allowing it to pass in full through the Theertha Thotti, (2) taking from the 4-inch main a portion of the supply through a 2-inch branch pipe, to feed the Thotti for bathing purposes, (3) continuing from the 4-inch pipe, a 3-inch pipe with a sluice valve at the head of the latter, and joining it to the existing 3-inch main which leads to the temple, (4) repairing the existing pipe line, (5) improving the already cement plastered and almost water-tight service reservoir and (6) improving the distribution system.

(3) *Calicut drainage*.—With this office No. 253-G., dated 22nd April 1922, was submitted a scheme estimated to cost Rs. 12,67,000 for draining the more thickly populated portion of the town of Calicut (3½ out of 7¼ square miles) with a present population of 36,225 out of 81,995 for the whole town, and with an ultimate population gauged at 48,300. The scheme is for a system of:—

(i) cement plastered masonry semi-oval open drains of sizes varying from 6 inches to 36 inches, and designed to carry 1 inch rainfall per hour, in consideration of the heavy rainfall of the locality;

(ii) three intercepting sewers of glazed stoneware, of sizes ranging from 12 inches to 18 inches, and covering lengths of 9,216, 4,200 and 5,293 feet, respectively, for three different areas of the drainage system, with flushing man-holes on the sewers at suitable intervals;

(iii) storm water escapes at the drain and sewer junctions for limiting the sewer flow to 6 times the dry weather flow;

(iv) screening chamber;

(v) pump wells;

(vi) two pumping stations, one for dealing with the discharge from one intercepting sewer and the other for discharging the contents of the remaining two sewers;

(vii) septic tanks; and

(viii) bacterial filters, which will not to be constructed until the necessity arises.

(4) *Narasaraopet water-supply*.—Government in their order No. 1316 W., dated 1st July 1914, sanctioned a pumping scheme of water-supply for Narasaraopet, which was estimated to cost Rs. 1.31 lakhs for outlay and Rs. 5,000 for annual maintenance. It was designed to supply an ultimate population of 15,000 at a 7-gallon rate, and provided for a 300 feet gallery, a collecting well of 12 feet diameter, a service reservoir and cast iron pumping and distribution mains. When starting work the Sanitary Engineer was to fix the position and direction of the gallery by putting down borings, and a full power test of the yield

was to be made before installing the pipes and the pumping plant. A gallery of 150 feet length in a northerly direction instead of the westerly one as originally designed by Mr. Hutton, was at the then acting Sanitary Engineer Mr. Nowrojee's suggestion, and approval of Government excavated in July 1916. The yield from this, however, was not found encouraging, and further trials showed the originally designed westerly direction more promising, and a westerly gallery of 300 feet length was excavated in 1919. Pumping tests conducted in the hot weather of 1919 revealed that the supply even from this 300 feet gallery was not sufficient to meet the ultimate requirements of the town. The Superintending Engineer, II Circle, was ordered to lengthen the gallery by another 200 feet. He submitted a revised estimate amounting to Rs. 1,49,100 against the original one of Rs. 1.31 lakhs, the excess being accounted for by the abandonment of the first excavated northerly gallery of 150 feet, and by the 200 feet further extension of the westerly gallery. The Sanitary Engineer, to whom the revised estimate was referred, submitted with this office No. 971-G., dated 23rd December 1921, a second revised estimate amounting to Rs. 3,89,400 for installation and Rs. 6,400 for annual maintenance, the excess being mostly due to the rapid rise in the cost of materials and centage charges. In the Chief Engineer's scrutiny that followed, this revised estimate was cut down to Rs. 3.65 lakhs, but this was itself nearly thrice the originally sanctioned estimate. The repayment of the 6½ per cent loan to be raised by the Municipal Council, for bearing its portion of the outlay, was calculated at Rs. 10,146 per annum for 30 years. For meeting this and the charge for the annual maintenance of the scheme, i.e., Rs. 16,546 in all per annum, it was found that the Council should levy a water and drainage tax at 18 per cent of the annual rental value of buildings and lands in the municipality, against the existing rate of 5 per cent. As a result of His Excellency's visit to the town during the summer of 1922, and the Municipal Council's address thereat, a suggestion made for reducing the expense by providing one or two cisterns instead of a piped distribution system, so as to bring the proposals within the possibilities of the Council, was referred by the Government to the present Sanitary Engineer in July 1922.

Proposals for a partial scheme were thereupon worked out for providing 4 gallons per head per diem (against the originally designed rate of 7 gallons) for an ultimate population of 15,000.

This scheme including 30 per cent centage charges amounts to Rs. 1,74,300, i.e., less than half the cost of the original scheme of 1921.

This partial scheme was so designed as to admit of its being converted into one with piped distribution system in the future. In the alternative of such conversion not being intended, an abstract estimate of Rs. 10,700 less, was also drawn up and submitted for an alternative partial scheme which differed from the "convertible" scheme only in its providing for a 6-inch pumping main for a full length of 11,075 feet covered by the 7-inch and 6-inch mains in the "convertible" scheme. These proposals were submitted to Government in Local Self-Government Department with this office No. 447-G., dated 13th July 1922, with the remark, among others, that in case the Municipal Council could manage to carry out the partial scheme themselves, a further reduction of this cost would result by the disappearance of the centage charges.

(5) *Coonoor water-works improvements*.—A revised scheme of improvements for the Coonoor water-supply estimated to cost Rs. 1,41,570, and submitted to Government in 1920, with provision made for a 6-inch cast iron main from Bandami dam to Gray's Hill, and for an enlargement of the Gray's Hill reservoir, underwent further revision more than once in 1921, on account of (1) the inability expressed by a Calcutta firm consulted in the matter to manufacture pipes with the necessary extra thickness suited to withstand the extra pressure required in the improved scheme of water-supply, and (ii) changes in the Chief Engineer's decisions in regard to the provision of break-pressure tanks for reducing the extra pressure in the pipe joints. Under the Public Works Department Memorandum No. 86 Wks. B/21-6, dated 20th February 1922, the improvement scheme was to be revised, with provision for a break-pressure tank at a suitable place for

limiting the head of water at Gray's Hill to 30 feet, and for reducing the undue pressure in the pipe-joints, current schedule of rates being adopted for the masonry works. A revised estimate amounting to Rs. 1,42,360 on the basis of the most recent quotations obtained from the Director-General of Stores by cable, was drawn up and submitted to Government with this office No. 668-G., dated 17th October 1922, together with an alternative and cheaper estimate amounting to Rs. 1,02,820 and providing for double the quantity of the existing supply so as to benefit also the higher parts of Coonoor town which could not be benefited by the low level reservoir at Gray's Hill. This alternative proposal differs from the preceding costlier one in providing for a 6-inch main in replacement of the existing 4-inch main to a length of 4,715 feet only, instead of a 6-inch main throughout the length. The remaining length of the existing 4-inch main leading to Gray's Hill reservoir will be left as it is, while the excess discharge from the new 6-inch main will be carried by a new 4-inch main into a new high level service reservoir to be located in the vicinity of Glenoee so as to command the higher parts of the town. The supply from this reservoir, while benefiting the residence of the higher areas, will also relieve the Gray's Hill reservoir of the extra duty of supplying areas other than those benefited at present.

(6) *Salem Central Jail water-supply.*—In compliance with Local Self-Government Memorandum No. 1557-1 P.H., dated 3rd August 1921, calling for proposals for the extension of Salem water-supply from the municipal main to the Central Jail, detailed plans and estimates amounting to Rs. 24,230 were forwarded with this office No. 699-G., dated 31st October 1922. The extension proposals provide for 4-inch and 3-inch cast iron pipes for a distance of 2,810 feet from the Kumaraswamipetta terminus of the existing distribution system, where the pressure in the 6-inch main is at 17.31 feet above ground level, to a well within the jail compound. From this well, the requisite supply of 1,650 gallons will be pumped in 5 hours by a kite motion pump capable of pumping 550 gallons per hour, to 4 iron tanks of 400 gallons capacity each, which will be constructed on the top of the northern block of the quarantine cells, and the supply distributed thence by distribution pipes to the jail premises.

(7) *Chepauk Conservancy arrangements.*—Government in their Memorandum No. 107-G., dated 5th January 1922, returned the plans and estimates for the Chepauk Conservancy scheme submitted by the Sanitary Engineer in February 1921, on the ground that they were not prepared to spend the large amount of Rs. 70,850 therein estimated for, and requested the Sanitary Engineer to devise a cheaper method of meeting the sanitary requirements of Chepauk. On a personal inspection made in July 1922 by the Sanitary Engineer, it was found that nothing short of the original scheme, slightly revised by effecting possible small economies, could be of any use in improving the exceedingly insanitary condition of the existing conservancy arrangements. A revised scheme was therefore drawn up and submitted with this office No. 761-G., dated 29th November 1922. It was estimated to cost Rs. 64,500 against Rs. 70,850 of the original scheme.

(8) *Council Chamber.*—In pursuance of the Chief Engineer's Memorandum No. 1371-G., dated 19th February 1921, requesting the Sanitary Engineer to draw up such a system of drainage for the new Council Chamber buildings in the Fort, as would connect the branch sewers already constructed to a main sewer, for a more satisfactory disposal of the sewage on the foreshore of the sea by means of a septic tank and connected works, plans and estimates aggregating Rs. 16,500 were submitted with the Sanitary Engineer's No. 86-G., dated 7th February 1922. Proposals afterwards arose for a rearrangement of the Chief Secretariat buildings, and these required an extension of the branch sewers designed for the Council Chamber drainage. Plans and estimates were accordingly returned to the Sanitary Engineer for revision. Revised plans and estimates amounting to Rs. 21,000 were accordingly drawn up and submitted with this office letter No. 769-G., dated 30th November 1922.

(9) *Ootacamund septic tank improvements.*—On an approximate estimate of Rs. 50,000 (including centage charges) framed in July last for constructing a septic tank in connexion with the Ootacamund drainage system, Government have

since asked the Municipal Council, Ootacamund, if they are prepared to finance the scheme at present.

(10) In addition to these schemes several revisions of existing estimates and proposals for partial schemes within the means of Municipal Councils were prepared in connexion with references from the Local Self-Government Secretariat.

(11) *Other schemes under preparation or revision (but not submitted) during the year under review—*

- (1) Ootacamund drainage (improvements to main sewer).
- (2) Mannargudi drainage.
- (3) Erode drainage.
- (4) Gobichettipalayam water-supply.
- (5) Pollachi water-supply.
- (6) Rajahmundry drainage.
- (7) Rajahmundry water-supply.

(12) *Schemes under investigation during the year—*

- (1) Sivakasi water-supply.
- (2) Virudupatti water-supply.
- (3) Cochin water-supply.
- (4) Kumbakonam water-supply (2nd bore-hole).
- (5) Tiruchanur water-supply.
- (6) Mangalore water-supply.
- (7) Madura water-supply (extension and redistribution).
- (8) Prodatthir water-supply.
- (9) Poddapuram water-supply.
- (10) Rāmnād drainage.

Progress on these investigations was greatly hampered by the great reduction in establishment which was effected in April 1922.

(13) *Minor sanitary works.*—The number and aggregate estimated cost of minor sanitary works under different heads, sanctioned or recommended for sanction, by the Sanitary Engineer to Government, during the year are shown in a statement appended hereto as Annexure A.

Another statement called for in paragraph 25 of the Government review of the previous annual report showing sanitary type design works constructed by municipalities and district boards to the end of December 1922 is appended as Annexure B to this report. The statement, however, is not complete, as information has thus far been furnished only by 32 municipalities and 7 district boards of whom 18 and 3, respectively, have given only "nil" statements. An attempt will be made to have more complete information for the next annual report from local bodies under this head, and about the gross cost of "local and municipal" and "miscellaneous" works executed up-to-date from the Sanitary Engineer's designs, as required in P.W.D. Memo. No. 3501-Ad./22-1, dated 3rd March 1923.

(14) *Type-designs.*—(1) The design for a flush out latrine drawn up and submitted to Government in 1921 underwent revision as well as (2) the design for Rat Proof godowns. (3) A dry latrine type design was also drawn up and submitted.

(15) *Home indents.*—Pipes required for the pumping main of the Chingleput water-supply scheme, estimated to cost about Rs. 60,000 were indented for. An indent for Stoneware pipes, etc., for Madura Drainage works—cost Rs. 2,00,000—was submitted in June 1922.

(16) *Experimental filters at Guindy.*—Experimental work on various methods of water purification at Guindy and Kilpauk was continued during the year under the guidance of the Committee on water filtration and valuable data and information was collected.

(17) *Testing of pumps, meters, etc.*—Under G.O. Mis. No. 312, L. & M., dated 19th February 1921, and P.W.D. Memo. No. 4909-C, dated 5th August 1920, tests were made at Guindy, of two types of pump, viz., Feuerheerd's Rotary hand pump and Langley Patent Semi-Rotary pump. A final report on the Feuerheerd type and an interim report that the Langley Patent semi-rotary type was an improvement on the ordinary semi-rotary pump, being less likely to get out of

order and more easily-repairable when out of order, were submitted with this office Nos. 506-G and 507-G., dated 15th August 1922, to Government in the Public Works and Local Self-Government Departments.

Another type of pump, viz., the Kitson Utley Patent, has since been received and is being tested.

A detailed study of these and other types of pumps, in respect of their utility under varying conditions of usage in this country, their adaptability for public wells, is being made with a view to ascertaining the best type of pump for rural water-supplies.

(18) *Inspection of the pumping plant of the Municipal water-works.*—The pumping plant of Municipal water-works underwent periodical examination as usual by the Inspectors of the Boiler Inspection Department.

A statement of the results of the year's working at these pumping stations will appear in the Administration Report of the Boiler Inspection Department, which will be issued for the official year 1922-23.

(19) *Engine Drivers' examination*.—This examination for certificates of "Competency" and "Service" as Engine Drivers was held once during the year—on the 24th and 25th July 1922 by the Board of Examiners consisting as usual of the Sanitary Engineer as President, the General Superintendent, Public Works Workshops and the Chief Inspector of Boilers and Prime Movers as members. The results were as follows:—

Date of the examination.	Competency or service.	Number of candidates who appeared.	Total number of successful candidates.	Number of those who passed in first-class.	Remarks.
24th and 25th July 1922	Competency	4*	38	9	* Out of 50 who applied, one was absent.
Do.	Service	14	13	...	

(20) *Water-works Fitters' examination.*—Two different examinations, one for competency for Fitter's posts at the water-works pumping stations, and the other for Fitter's posts on the water-works distribution system, were held once during the year under report on the 17th and 18th July 1922. The results of the examinations were as follows:—

Date of the examination.	Head water works fitters or pipe line fitters.	Number of candidates who appeared.	Total number of successful candidates.	Number of those who passed in the first-class.	Remarks.
17th and 18th July 1922	Head works Fitters' examination.	3	2	1	...
Do.	Pipe line fitters' examination.	3	3	2	...

(21) *Minor Sanitary Engineering class.*—Out of 59 candidates who appeared for the examination held about the close of the year, after attending the usual five months class held in the Sanitary Engineer's office under his supervision, 50 passed, and of these 31 were placed in the first class.

(22) *Boring class.*—Instructions for carrying out boring operations for water were given from 17th to 30th April 1922 to Local Fund overseers and sub-overseers from the district boards of Rāmṇād, South Arcot, Chittoor, Kurnool, Kistna and Ganjām.

(23) *Establishment.*—Mr. R. F. Stoney continued to act as Sanitary Engineer to Government until April 12th, when he went on long leave and was relieved by Mr. J. S. Westerdale, then Deputy Chief Engineer and Under Secretary to Government, Public Works Department, who was selected to officiate in the post in

connexion with the proposals for filling the specialist appointments in the sanitary branch in accordance with the decisions of the Secretary of State detailed in G.O. No. 1066 W., dated 28th July 1921.

Mr. Thuraisingham and Mr. A. V. Raman, who continued as Deputy Sanitary Engineer and Assistant Sanitary Engineer, respectively, were subsequently confirmed in their appointments as Specialists against two of the specialist appointments in the Sanitary branch approved by the Secretary of State and communicated in G.O. No. 904 W., dated 19th September 1922.

As a result of the voting of the Legislative Council and in accordance with the P.W.D. retrenchment policy very considerable reductions were made in the remainder of the Sanitary Engineer's establishment including the abolition or suspension of the following gazetted appointments and the reduction of two Upper Subordinate appointments and the dismissal of a large number of draftsmen and clerks :—

Gazetted appointments abolished—

One Personal Assistant to Sanitary Engineer.

One Deputy Sanitary Engineer.

Three Assistant Sanitary Engineers.

The Deputy Sanitary Engineer's appointment has since been restored. These enormous reductions disorganized the work of the Department for some months and resulted in a smaller output of work as regards new schemes and investigation of new proposals and in an insufficient amount of inspection and advice regarding existing water-supply schemes. The Department is now being reorganized and if the subordinate establishment which has been asked for 1923-24 is approved it is hoped to restore the department to even greater usefulness than before the 1922 reduction despite the considerable net reduction of staff.

(24) *Boiler inspecting staff.*—Mr. G. L. W. O'Brian, Chief Inspector of Steam Boilers, was on leave on average salary from 2nd April to 29th October 1922, when Mr. W. H. Turner, B.Sc., an Assistant Executive Engineer of the Public Works Department, acted for him. Mr. J. L. Thompson, Inspector, was on leave for 1 month and 24 days from 24th July 1922, and Mr. S. A. Davis for 1 month from 13th March 1922. Mr. J. G. Baskett retired from the service on the afternoon of 25th April 1922. Mr. O. W. Baskett newly joined as Inspector on 1st April 1922. Mr. D. A. McCready continued as Inspector during the year.

OFFICE OF THE SANITARY ENGINEER
TO GOVERNMENT, CHENNAI,
MADRAS, 11th May 1923.

J. S. WESTERDALE,
Offg. Sanitary Engineer to Government.

APPENDIX A.

Statement showing the number and aggregate estimated cost of the minor sanitary works sanctioned or recommended for sanction by the Sanitary Engineer to Government, Madras, during the year 1922.

Particulars.	Medical institutions		Slaughter-houses.		Markets.		Wells.		Water-supply.		Drainage.		Lutcheras.		Miscellaneous.	
	Number.	Amount.	Number.	Amount.	Number.	Amount.	Number.	Amount.	Number.	Amount.	Number.	Amount.	Number.	Amount.	Number.	Amount.
Estimates of Rs. 2,500 and under.	11	7,286	1	448	2	9,233	...	...	10	10,055	3	2,700	2	2,310	1	1,550
Estimates of above Rs. 2,500 and up to Rs. 50,000.	21	2,10,910	2	9,163	19	1,48,363	1	3,150	14	1,28,546	6	40,230	...	...	3	30,300
Estimates of above Rs. 50,000.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Total	32	2,18,196	3	9,611	21	1,57,496	1	3,150	24	1,48,601	9	42,930	2	2,310	4	40,850

Grand total 110. Works estimated to Rs. 6,19,204.

APPENDIX B.

Works constructed on sanitary type-designs by Municipalities and District Boards to the end of the year 1922.

Serial number.	Name or description of work.	Locality, town or village.	Number of type design on which based.	Number and date of Sanitary Engineer's professional sanction.	Date of completion of work.	Remarks by local body as to success or failure as a type-design construction.
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1	Improvements to Anayi- daku well.	Cannanore Municipality.	No. 145 of 1913.	505 M., 5 May 1922.	7 June 1920.	Success.
2	Fitting kite motion pump to Ponni Am- ma Kail well.	Chittoor Muni- cipality.	Do.	1711 M., 24 Oct. 1919.	31 Mar. 1921.	Satisfactorily work- ing.
3	Fitting kite motion pump to Sri Varada- rajaswami temple well.	Do.	Do.	1488 M., 24 Oct. 1921.	Do.	Do.
4	Constructing thirty-two kitchens for weaver- gers' lines.	Gudiyattam Municipality.	...	1215 M., 13 July 1920.	3 June 1922.	Do.
5	Latrine in North Avani Street.	Madura Muni- cipality.	No. 112-C	159 and 160 of 1919.	31 Mar. 1922.	Privacy for women not secure, 2 parti- tion walls with door- way for scavengers necessary.
6	Latrine in Sellar Para- cheri.	Do.	...	...	4 Aug. 1922.	Do.
7	Latrine in Karimias Pattiyasal.	Do.	...	...	29 Aug. 1922.	Do.
8	Latrine in Anuppanadi.	Do.	...	...	7 Oct. 1922.	Do.
9	Branch dispensary at Tallakulam.	Do.	C.A. No. 174 of (1918).	143 of 1919.	14 Feb. 1922.	Satisfactorily work- ing.
10	Sub-Assistant Surgeon's quarters at Talla- kulam.	Do.	No. 141-A.	201 of 1920.	16 Jan. 1922.	Roof difficult to be maintained owing to many valleys and potholes.
11	Single thoti huts for North Avani Street.	Do.	Revised T.D. No. 163.	5 S.W. of 1920.	31 Mar. 1922.	Satisfactory.
12	Lethal chamber	Do.	San. No. 120 of 1916.	...	...	Not satisfactorily working.
13	Latrine for Yennugula Bazaar.	Narasaraopet Municipality.	No. 112-C.	...	12 June 1919.	Useful only when water is available for cleaning daily.
14	Latrine on Guntur Road.	Do.	...	...	19 Jan. 1920.	Working well.
15	Latrine on Venukonda Road.	Do.	No. 112-C.	1568 M., 7 Nov. 1921.	23 June 1917.	Do.
16	Latrine for Kammara Bazaar.	Do.	with slight altera- tion of seats.	...	19 Jan. 1920.	Do.
17	Latrine on Sriram- puram.	Do.	...	...	23 June 1917.	Do.
18	Latrine on Municipal Choultry compound.	Do.	...	...	30 Mar. 1917.	Do.
19	Two 3-seated flush out latrines.	Near slaughter house at Kan- dal, Oota- camund Municipality.	No. 173	12 June 1919.	17 Feb. 1920.	Working satisfac- torily.
20	Twenty-one dumping pits (Simla pattern).	Bazaar area Kandal, Nella- cherry, Vannar- pet, Bendishola, etc., Ootaca- mund Muni- cipality.	No. 189	5 Oct. 1917.	13 Mar. 1920.	Do.
21	One dumping pit (Hutton design).	Near Barber's Street, Oota- camund Municipality.	No. 67	8 Feb. 1916.	2 Jan. 1919.	Do.
22	Do.	Near Union Church, Oota- camund Muni- cipality.	No. 3	22 Jan. 1917.	26 Dec. 1919.	In working order but not so efficient as the Simla pattern.
23	Latrine in Syamalamba Punta, Jampeta.	Rajahmundry ...	...	...	1922	... whole floor sanded 6" thick water for cleaning not available within reasonable distance. Hence seats omit- ted.

Works constructed on sanitary type-designs by Municipalities and District Boards to the end of the year 1922—cont.

Serial number.	Name or description of work.	Locality, town or village.	Number of type design on which based.	Number and date of Sanitary Engineer's professional sanction.	Date of completion of work.	Remarks by local body as to success or failure as a type-design construction.
(1)	(2)	(3)	(4)	(5)	(6)	(7)
24	New built well in Brodi- pet.	Rajahmundry ...	...	...	1922	Wooden curb adopted according to local practice. Platform postponed to be done after proper settlement of earth- filling in other res- pects as per type- design.
25	Conservancy public latrines.	Srirangam Municipality.	No. 112-4., No. 112-B., No. 112-C.	355 S., 9 June 1917.	...	No. 112-C., type- design is a complete success. Others not so satisfactory.
26	Women and Children dispensary.	Tirupur Muni- cipality.	No. 140 of 1913.	...	Under con- struction expected to be completed by 31 Mar. 1923.	Success as a type- design building.
27	Holme's cotton market.	Do.	Sanitary Board Proceed- ings No. 85-S., 19 Feb. 1920.	...	...	Brought to a shape at a cost of Rs. 60,000 against Rs. 1 lakh of the original esti- mate.
28	Latrine of 8 seats on each side, Kuppan- kulam.	Trichinopoly Municipality.	No. 112-C ...	...	1920 to 1922.	Satisfactory.
29	Latrine of 8 seats on each side, Jailpeta.	Do.	Do. ...	...	Do.	Do.
30	Latrine of 8 seats on each side, Soraupara- cheri.	Do.	Do. ...	...	Do.	Do.
31	Latrine of 8 seats on each side, Singulam.	Do.	Do. ...	...	Do.	Do.
32	Latrine of 8 seats on each side, Jasinna garden.	Do.	Do. ...	...	Do.	Do.
33	Lethal chamber, Jail- peta compound.	Do.	San No. 120 of 1916.	...	1920	Original type altered into another still in an experimental stage.
34	'Meter pits for house service connexions.	Do.	No. 152 ...	San. Board Prods. No. 174 of 4 Mar. 1914.	1916 to 1922.	Satisfactory.
35	3 masonry public latrines.	Virudupatti Municipality.	No. 112 C of 1917.	...	2 July 1918.	Do.
36	3 do.	Do.	Do.	...	31 Mar. 1920.	Do.
37	3 do.	Do.	Do.	...	31 July 1920.	Do.
38	Sheep slaughter house.	Do.	No. 155 of 25 Apr. 1918.	...	31 Mar. 1921.	Do.
39	Dispensary, Saidapet.	Chingleput Dis- trict Board.	No. 81 S. Bd.	San. Engr.'s 1385 M., 26 Apr. 1922.	Mar. 1912.	
40	Do. Tirapporur.	Do.	C.A. No. 22 of 1912.	1862 M., 26 Sep. 1914.	Mar. 1916.	
41	Do. Sembiam.	Do.	C.A. No. 190 of 1913.	2602 M., 18 Dec. 1914.	Mar. 1918.	
42	Do. Tiruvotti- yur.	Do.	Do.	2633 M., 21 Dec. 1914.	Jan. 1918.	
43	Do. Uttirame- rur.	Do.	Do.	53 M., 15 Jan. 1915.	Feb. 1917.	
44	Do. Cheyyur ...	Do.	C.A. No. 197 of 1913.	124 M., 23 Jan. 1915.	Mar. 1917.	
45	Casualty ward, Madu- rantakam.	Do.	S.B.T.D. No. 171 of 1917.	935 M., 12 June 1917 and 883 M., 7 Mar. 1919.	Jan. 1921.	

Works constructed on sanitary type-designs by Municipalities and District Boards to the end of the year 1922—cont.

Serial number.	Name or description of work.	Locality, town or village.	Number of type-design on which based.	Number and date of Sanitary Engineer's professional sanction.	Date of completion of work.	Remarks by local body as to success or failure as a type-design construction.
(1)	(2)	(3)	(4)	(5)	(6)	(7)
46	Dispensary, Tirukkalikunram.	Chingleput District Board.	S.B.T.D. No. 169 and C.A. No. 204 of 1915.	1142 M., 16 July 1917.	Mar. 1921.	
47	Sub-Assistant Surgeon's quarters, Madurantakam.	Do.	S.B.T.D. No. 141 and C.A. No. 190 of 1912.	1468 S., 14 Aug. 1917.	Nov. 1919.	
48	Sub-Assistant Surgeon's quarters, Uttiramerur.	Do.	Do.	1467 M., 19 Sep. 1917.	Mar. 1919.	These buildings serve the purpose they are intended for.
49	Dispensary, Ponneri.	Do.	C.A. No. 204 of 1915.	2005 M., 17 Dec. 1917.	Aug. 1920.	
50	Do. Nagalapuram.	Do.	C.A. No. 190 of 1913.	29 M., 9 Jan. 1919.	July 1917.	
51	Emergency ward of 2 beds for Local Fund Dispensary at Avana-shi.	Coimbatore District Board.	S. Bd. No. 171 of 1917.	1360 M., 4 Aug. 1920.	29 Mar. 1922.	Satisfactory.
52	Single bed caste ward, Dharmapuri Hospital.	Salem District Board.	No. 118	Sanctioned by Local Fund Board.	Nov. 1917	Satisfactory (slightly differing from type-design in the arrangements of doors and windows).
53	2 beds, surgical ward for males. 2 beds, surgical ward for females. 44 beds, medical ward for males. 4 beds, medical ward for females, Yercaud.	Do.	No. 134	G.O. No. 1047 L., 21 June 1913.	Sep. 1915	Satisfactory.
54	Two 4 beds wards, Dharmapuri Hospital.	Do.	Do.	San. Engr's 1347 M., 23 July 1915.	Mar. 1920	Satisfactory (one completed and other not yet).
55	A 4 bed ward in Rasipur dispensary compound.	Do.	Do.	San. Engr's 2836 M., 12 Apr. 1916.	Nearing completion.	Satisfactory.
56	4 bed ward in Palakod.	Do.	Do.	San. Engr's 2225 M., 15 Nov. 1915.	Mar. 1920	Do.
57	Stables and kitchen for Kaveripatnam dispensary.	Do.	No. 148-B	San. Engr's 650 M. of 14 Apr. 1915.	Do.	Do.
58	Two 4 seat corrugated iron latrines, Rasipur.	Do.	No. 112-B	Sanctioned by Local Fund Board.	1917	Do.
59	A latrine for Kaveripatnam Dispensary.	Do.	No. 148 A.	San. Engineer's 650 M. of 14 Apr. 1915.	Mar. 1920.	Do.
60	Col. Smith's Indian Commode.	(For the Hospital wards).	Dharmapuri, Rasipur, etc. Salem District Board.	No. 154.	Provided for the sanctioned estimates for the wards at Dharmapuri and Rasipur, etc.	Do
61	Improvements to the drinking water tank at Yercaud.	Yercaud (Salem District Board).	No. 114	San. Engineer's 968 M. of 15 May 1914.	...	Barbed wire fencing (provided instead of wooden posts for fear of destruction by white ants) tampered with by people and hence found unsuitable for fencing.

Works constructed on sanitary type-designs by Municipalities and District Boards to the end of the year 1922—cont.

Serial number.	Name or description of work.	Locality, town or village.	Number of type-design on which based.	Number and date of Sanitary Engineer's professional sanction.	Date of completion of work.	Remarks by local body as to success or failure as a type-design construction.
(1)	(2)	(3)	(4)	(5)	(6)	(7)
62	Draw wells (open) ...	All over the District (Salem District Board).	No. 100	...	...	Quite satisfactory. The District Board Engineer says that these draw wells based on type-designs have been sunk all over the district too numerous to detail.
63	Closed well at Koil-medu.	Yercaud (Salem District Board).	No. 137	...	Mar. 1915	Semi-rotary pumps wantonly damaged by people. A safety water elevator with chain and bucket arrangements fitted to the well is working satisfactorily.
64	Well at Pallapatti (deep well).	Pallapatti (Salem District Board).	No. 145	...	Mar. 1918.	All these installations are working well.
65	Well at Taramangalam.	Taramangalam (Salem District Board).	No. 145	...	Mar. 1917.	
66	Lal Singh's well, Krishnagiri.	Krishnagiri (Salem District Board).	No. 145	San. Engineer's No. 4098 M., 16 Dec. 1908.	Mar. 1916.	
67	Weekly market stalls.	Pochampalli (Salem District Board).	No. 70	Do.	...	Satisfactory.
68	Veterinary Hospital, Salem.	Salem District Board.	No. 100	1906.	1654 M., 5 Sep. 1914.	Since transferred to Government.
69	Compound walls all over the district (too numerous to detail).	Do.	No. 89	...	...	Satisfactory.
70	Hospital, Vizagapatnam.	Vizagapatnam District Board.	No. 100 of 1906.	464 M., 18 Feb. 1907.	Aug. 1907.	
71	Hospital, Palcoonda.	Do.	C.A. No. 22 and 110 of 1911.	G.O. 1301 L. Mis., 6 Sep. 1922.	Mar. 1912.	Building connected by covered passages.
72	Lady Medical Officer's quarters in Gosha Hospital, Vizagapatnam.	Do.	C.A. No. 219 of 1908.	San. Engineer's No. 649 of 8 Apr. 1916.	Mar. 1915.	With slight deviations from the type-design.
73	Asst. Surgeon's quarters, Narsipatnam.	Do.	C.A. No. 222 of 1912, based on C.A. No. 204 of 1911 (G.O. No. 300-M. of 2 May 1912).	San. Engineer's No. 1472 M. of 12 Aug. 1915.	July 1915.	
74	Sub-Asst. Surgeon's quarters, Pondoor.	Do.	C.A. No. 190 of 1912, based on C.A. No. 133 of 1911.	Do.	Mar. 1912.	
75	Sub-Asst. Surgeon's quarters, Rāzām.	Do.	Do.	...	Oct. 1915.	
76	Do. Sainr.	Do.	Do.	...	Nov. 1916.	
77	Do. Veeraghat-tam.	Do.	Do.	...	July 1918.	
78	Do. Cheruva-palli.	Do.	Do.	...	Mar. 1919.	
79	Lady Sub-Asst. Surgeon's quarters in Gosha Hospital, Vizagapatnam.	Do.	T.D. No. 141 B.	San. Engineer's No. 1803 M., 14 Dec. 1922.	Mar. 1922.	

Government of Madras

LOCAL SELF-GOVERNMENT DEPARTMENT.

G.O. No. 1302-P.H., 4th August 1923

Report—Public Health—1922—reviewed.

Order—No. 1302-P.H., dated 4th August 1923.

Recorded.

2. The outstanding feature of the administration of public health in the Presidency during the year is the complete reorganization of the preventive staff employed by the Government and the local bodies. For preventive purposes the Government had hitherto employed eight cholera parties for dealing with epidemics of cholera in rural areas and 103 deputy inspectors of vaccination to supervise the work of vaccinators. In districts exposed to plague infection, Collectors employed a staff of plague inspectors at the expense partly of provincial and partly of local funds. All local boards maintained a staff of vaccinators and several of them employed a few sanitary inspectors for general sanitation work.

3. The cholera parties, each of which consisted of an assistant surgeon and 10 sanitary inspectors, were all stationed in Madras and were sent out to the districts on the requisition of Presidents of district boards; but owing to delay on the part of the officers responsible for the registration of vital statistics in reporting epidemics of cholera and the time required for the transfer of a party from one district to another, the parties almost invariably arrived at the seat of the epidemic too late. Little preventive work was possible in the circumstances, and the amount spent on travelling allowances was very large. There was also very little effective control over the work of the deputy inspectors of vaccination. The ranges of Assistant Directors of Public Health were unwieldy and a very considerable portion of their time was spent in the routine inspection of municipalities. The wastage involved in the maintenance of a separate trained staff for dealing with each epidemic disease was enormous, and this wastage was to a large extent avoidable for the periods of maximum incidence of the chief epidemic diseases are not often simultaneous. There was besides no authority in the district to co-ordinate the work of the various sanitary staffs employed. The Collector was responsible for plague, the cholera parties were directed by the Director of Public Health, while vaccination was under the control of local bodies. The District Medical and Sanitary Officer was the recognized sanitary adviser for local bodies, but his time was so fully occupied with headquarter hospital work that it was impossible for him adequately to supervise or co-ordinate sanitary work in the district. Nor could he in the absence of any statutory powers exercise any effective control over the staff maintained by the local bodies.

4. The position was thus very unsatisfactory. The Government in their Order No. 817-P.H., dated 13th June 1922, directed the amalgamation of the services of deputy inspectors of vaccination and sanitary inspectors belonging to cholera parties. Subsequently they disbanded three of the cholera parties as a tentative measure and distributed the staff among five selected districts (Trichinopoly, Tanjore, Kurnool, Kistna and Vizagapatam), each of which was provided with a trained health officer and a staff consisting partly of deputy inspectors of vaccination and partly of sanitary inspectors attached to the cholera parties. The results of the experiment were most encouraging. In a comparatively short time the district health officers of Kurnool, Trichinopoly and Tanjore were able to trace the "foci" of infection of cholera in their districts. By controlling these "foci" just before the period when an outbreak is expected, it is anticipated that the spread of the disease which breaks out in an epidemic form periodically in these districts will be arrested in future. Excellent work was also done by the district

health staff in connexion with the outbreak of a relapsing fever in the Tanjore and Trichinopoly districts. The adoption of prompt preventive measures resulted in an enormous decrease in the mortality as compared with the previous year. In Trichinopoly the number of successful vaccinations was doubled in the course of a few months. In view of the success of the experiment, the Government decided to abolish all the cholera parties and employ a health staff in each district to deal with all epidemic diseases and to be responsible for public health work in general. Each district now has a trained district health officer and 8 to 13 inspectors, who can be concentrated at any portion of the district in case of necessity.

5. The work of the district health officer and the staff has now been clearly defined. Their principal duties are as follows:—

(a) Investigation and control of all outbreaks of communicable diseases in rural areas,

(b) the supervision of all vaccination and other protective inoculations at present carried out by a special staff,

(c) the supervision of registration of vital statistics so as to make them more detailed and more accurate than at present,

(d) the drafting of plans and estimates for simple sanitary projects and taking steps to remedy the defects in village drainage, water-supply, etc.,

(e) propaganda work by means of lantern lectures, cinema lectures, demonstrations, etc.,

(f) carrying out of measures to deal with hookworm infestation and such other parasitic infections.

6. Detailed instructions in the form of memoranda prepared by the Public Health Department have also been issued on selected branches of the public health administration for the guidance of local bodies and the district health staffs. The following orders were issued during the year:—

(1) Cholera—G.O. No. 764-P.H., dated 1st June 1922.

(2) Smallpox—G.O. No. 765-A, P.H., dated 1st June 1922.

(3) Plague—G.O. No. 897-A, P.H., dated 24th June 1922.

(4) Hookworm—G.O. No. 765-P.H., dated 1st June 1922.

(5) Vital Statistics—G.O. No. 1395-P.H., dated 12th October 1922.

(6) Fairs and festivals—G.O. No. 1723-P.H., dated 13th December 1922.

Similar memoranda on propaganda work, the employment of voluntary agencies, malaria and maternity and child welfare work have since been issued.

7. The Government have thus definitely laid down the lines on which preventive work should be organized in the districts and have also provided each district board with a trained health staff to carry out the necessary measures. The question of co-ordination however is a very difficult one. Statutory district health committees have been constituted in five districts, but these do not contain representatives of municipal councils; nor do they deal with plague, for which the Collector continues to be responsible. It is not practicable to relieve the Collectors of their responsibility for plague administration, for epidemics require very prompt action and the assistance of the revenue authorities and the police is often essential for enforcing preventive measures. Nor is it possible for the local bodies to be independent of the revenue authorities in public health matters, for they have to rely very largely on the reports and the co-operation of the revenue officers, and delay on the part of the village officers in reporting epidemics very often renders the adoption of effective preventive measures impossible. Moreover, vital statistics on which the whole policy of the public health administration has to be based, are recorded by village officers who are under the control of the Collector. The question to be decided by the Government is how they should associate the Collector and his revenue subordinates with the public health administration of the district without restricting in any way the powers and privileges conferred by the statute on local bodies. The matter has been considered by the Public Health Retrenchment Committee, who have made certain proposals in the interests of efficiency as well as economy. The Government have also consulted selected Collectors and the Standing Advisory Committees of the Local and Municipal, and Public Health Administrations, and they hope to issue orders at an early date.

8. It may be of interest to note that except for the health officers who are paid by local bodies out of a provincial grant, the scheme of reorganization

referred to above has been carried out without any additional expense either to the Government or to the Local Boards.

9. *Vital statistics.*—In their review of the last annual report, the Government commented at some length on the inefficiency of registration work in this Presidency and emphasized the importance of raising the standard of this branch of administration. The present report furnishes further illustrations of the difficulty of basing any definite policy on such imperfect vital statistics. The annual death rate during the year was 21.0 as compared with 20.2 for the previous year, but the Director of Public Health is not in a position definitely to say whether the higher rate registered was due to better registration or to other causes. All that can be said is that the year was comparatively healthy and that most of the other Provinces have registered a lower death rate than in the previous year.

10. Madras still maintains its reputation for defective registration of vital statistics. The recorded death rate was again the lowest in India, though there was nothing to indicate that it was healthier than other Provinces. In his census report the Superintendent of the Census Operations has made an attempt to explain the low birth and death rates in this Presidency as due to causes other than faulty registration and has definitely expressed the opinion that "it does not appear that the registration of births and deaths in the various districts is badly defective." The Director of Public Health has subjected this statement to a very detailed criticism and is of opinion that the inference drawn by the Superintendent of Census Operations is based on incorrect data and hypothetical assumptions. Moreover the test adopted by the Superintendent to verify the statement that registration is not very defective is fallacious. He has taken the number of births in the year 1920 and deducted therefrom the reported deaths of infants below one year of age. He finds that the remainder does not differ very materially from the population returned at the census as less than one year old and therefore concludes that registration is fairly accurate. The obvious flaw in the argument is that registration of births as well as of deaths is defective, and if the error in one case more or less neutralises the error in the other it does not follow that registration is accurate. The Government agree generally with the remarks of the Director of Public Health, and they are convinced that the negligence of the registering officers and the failure of the superior revenue officers adequately to realize the importance of accurate vital statistics are largely responsible for the present state of affairs. Local bodies have already been directed to utilise for the purpose of scrutinizing birth and death registers the services of vaccinators during the hot months when vaccination is suspended, and nearly 32,000 unregistered births were detected during the summer of 1922. The Government trust that Collectors, Divisional Officers and Tahsildars will impress on village officers during Jamabandi and also during their ordinary tours the importance of accurate registration of vital statistics. Unless they actively co-operate in this work, public health preventive work on a scientific basis will be impossible. Collectors are requested to report before the 31st of October 1923 what action they have taken to improve the registration of births and deaths in rural areas.

11. *Cholera.*—The number of deaths from cholera registered in the year was 16,502 (0.4 per mille) against 27,064 (0.7 per mille) in 1921. The figure is the lowest on record. The most interesting fact in connexion with this disease is that in several of the districts in which the district health scheme has been introduced as an experimental measure, the 'foci' of infection have been definitely determined and it should hereafter be possible by timely preventive measures taken at the 'foci' of infection to prevent the spread of this disease.

Small-pox.—A very severe epidemic of small-pox during the year was for the large number of deaths recorded from this disease, the number against 9,792 last year. Out of these no less than 16,166 occurred in one year of age. The actual number of deaths from this disease is very much larger, for as the Director of Public Health has stated, many were registered under "other causes" or under

has been that by efficient and universal prevented. By enforcing vaccination with

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4 No. 1302-P.H., 4TH AUGUST 1923

characteristic thoroughness, Germany has practically eradicated the disease from the country. The Director of Public Health has in his memorandum published with G.O. No. 765-A, P.H., dated 1st June 1922, and also in the present report clearly demonstrated the close relation existing between the incidence of small-pox and the state of vaccination. The Government have already in their order referred to above indicated the lines on which vaccination work should be organized, and they hope that the increased supervision of vaccination work which has been rendered possible by the introduction of the district health scheme will result in an appreciable reduction in the appalling mortality from this disease.

13. *Plague*.—Plague was prevalent in 14 districts in the Presidency during the year and was responsible for 9,193 deaths against 11,875 in the previous year. The salient feature of the plague preventive measures adopted in the different districts was a demonstration of the fact that if preventive measures are carried out promptly along proper lines, which have already been indicated in the Memorandum published with G.O. No. 897-A, P.H., dated 24th June 1922, the spread of the disease can be successfully arrested. In the Madura district owing to the energy and enthusiasm of Mr. Fairburn, the Special Plague Officer, and the public health staff under him over 200,000 people (or 93 per cent of the population of the infected villages) were inoculated with the result that there was an almost immediate and noticeable decrease in the death-rate from plague in the district. In Wellington inoculation and an intensive rat-catching campaign stamped out the disease permanently within a very short time. Prompt measures similarly arrested the spread of an epidemic of a particularly virulent type in Ootacamund.

The Government regret to observe that except in the Nilgiris and Madura districts, local authorities conspicuously failed to realize their responsibilities in connexion with plague administration. The Director of Public Health mentions the Municipal Councils of Periyakulam, Palni, Coimbatore and Hospet as the worst defaulters in this respect. The attention of all Collectors is drawn to section 37 of the District Municipalities Act, which they should not hesitate to use when they find that municipal councils fail to discharge their duties in the face of an impending epidemic of plague.

14. *Relapsing Fever*.—The most disquieting feature of the state of public health in the Presidency is the reappearance of relapsing fever in an epidemic form in several districts after a long period of immunity. The disease, which is conveyed through lice, is rapidly spreading all over the Presidency and unless its progress is arrested, it is likely that agricultural operations will be seriously interfered with, for it is practically confined to the labouring classes, particularly the depressed classes. The mortality from fevers in Tanjore and Trichinopoly districts, where this disease was prevalent during the first three months of 1922, was 8 to 16 times the normal rate. The death-rate was 37.3 per cent of the attacks and in some villages as high as 66.3. Outbreaks have since been reported in South Arcot, Nellore, Bellary, Guntur and the Nilgiris. Madras City has registered 64 cases and 4 deaths mostly among scavengers. The Epidemic Diseases Act has now been extended to relapsing fever and every endeavour is being made to stamp out the disease.

15. *Hookworm*.—Dr. Kendrick of the Rockefeller Foundation continued in charge of the Hookworm Campaign. The extent of hookworm infection in each district has now been roughly ascertained and the energies of this section of the department have been devoted to educational and propaganda work in the Presidency.

16. *Maternity and Child Welfare*.—Infant mortality continues high, particularly in municipalities. In 41 out of 81 municipalities was over 200 per mille, 4 of these (Madras, Bezwada, Coimbatore, and Nagar) recording a death-rate of over 300. Investigation of the appalling mortality is due largely to inadequacy of maternal and proper care during the first two or three weeks. Voluntary organizations have taken up maternity work, but unless municipalities actively associate themselves with the work, whenever necessary, no real improvement can be expected.

17. *Sanitary works*.—Financial stringency has made any rapid advancement in the provision of protected water-supply impossible. High prices of materials and the centage charges now levied at 30 per cent by the Public Works Department have made it difficult for the local bodies to finance water-supply and drainage schemes on the "half grant half loan" principle. No new schemes have been brought into operation during the year.

Twenty-nine municipalities had protected water-supply systems, but the water-works have been badly neglected in most places. The Sanitary Engineer has suggested the appointment of a travelling inspectorate to look after these works. The proposal has been under the consideration of the Government for a considerable time, but no decision has yet been arrived at owing to the difficulty of finding money to finance the scheme.

18. *General*.—The year has been one of great activity in every branch of the public health administration. The policy as regards the principal diseases and public health matters in general has been clearly formulated, and the introduction of the district health scheme has made it possible for the local authorities to adopt preventive measures to combat diseases instead of confining themselves to the remedial measures adopted hitherto. The foundations of epidemiological work on a scientific basis have been laid. The Government have been fortunate in having at this period as the head of the department Major Russell, whose great experience of public health work in this country has been invaluable to them. To his ability and tact the successful working of the district health scheme is largely due, and the Government have no doubt that if the work is carried on on the lines laid down by him, his optimism as regards the future of public health in this Presidency will be fully justified.

(By order of Government, Ministry of Local Self-Government)

P. L. MOORE,

Acting Secretary to Government.

To the Surgeon-General.
" the Director of Public Health.
" the Sanitary Engineer.
" the Assistant Quartermaster-General (with C.L.).
" the Inspector-General of Police.
" the Inspector-General of Prisons.
" the Examiner of Local Fund Accounts.
" the Director of Public Instruction.
" all Collectors.
" all Chairmen of Municipal Councils.
" all Presidents of District Boards.
" the President, Corporation of Madras.
" the Revenue Department.
" the Public Works Department.
" the Publicity Officer.
" the Inspector of Municipal Councils and Local Boards.
Editors' Table.



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