

THE FORTY-NINTH ANNUAL REPORT OF THE
SANITARY COMMISSIONER

AND THE

TWENTY-THIRD ANNUAL REPORT OF THE
SANITARY ENGINEER,

MADRAS.

1912.

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THE
FORTY-NINTH ANNUAL REPORT
OF THE
SANITARY COMMISSIONER WITH THE GOVERNMENT
OF MADRAS,
1912.

SECTION V.

GENERAL POPULATION.

RAINFALL.

THE total average district rainfall in the Presidency during 1912 was 45·93 inches and was greater than that of 1911 by 6·93 inches and the average for 40 years ending 1909 * by 2·38 inches. As compared with the previous year there was an increase in 20 districts, the increase being most marked in South Canara (+ 39·08) and Malabar (+ 32·82). Other districts which showed an excess of 10 inches over the figures of 1911 were Ganjām (+13·32), Anantapur (+11·37), Vizagapatam (+11·15), Bellary (+10·69) and Madras (+10·16). The districts which showed a decrease were five in number. They were Tanjore (— 8·57), Godāvāri (— 3·43), South Arcot (— 3·10), Nilgiris (— 1·82) and Guntūr (— 0·03). Compared with the average 15 districts showed an excess, Malabar (+25·47) ranking first, followed by South Canara with an excess of 17·35. The variations in the other districts were but slight and do not call for any special comment.

2. Considered with reference to the monsoons, the south-west monsoon yielded a district average of 25·33 inches and the north-east 17·17 against 21·06 and 14·51, respectively, in the previous year. The south-west monsoon was favourable during the year in as many as 15 districts, South Canara (+ 33·01), Malabar (+ 27·02) and Vizagapatam (+ 10·58) showing an excess of over 10 inches. Of the 10 districts which showed a short fall, South Arcot with a deficiency of 5·21 inches headed the list. This was, however, counterbalanced by an excess rainfall in the eight of these ten districts in the north-east monsoon. The districts in which both the monsoons showed a short fall during the year under report were Nilgiris and Tanjore. Compared with the average, however, Nilgiris was better off. The only district which fared worse in all the monsoons was Tanjore with a total deficiency of 8·57 inches. This district was also deficient by 8·54 inches when compared with the average.

3. Of the districts which depend chiefly upon the north-east monsoon, Chingleput, Chittoor, Coimbatore, Madras, Madura, North Arcot, Rāmnād, South Arcot, Tinnevely and Trichinopoly received a rainfall in excess of the previous year and of the average, Nellore and Tanjore alone showing a shortage. On the whole, therefore, the year could be considered a favourable one so far as rainfall was considered.

* Figures available only up to this year.

PRICES OF FOOD-GRAINS.

4. Although the seasons as a whole during the year were favourable, the prices of the staple food-grains were higher in all the districts of the Presidency than in the previous year and were very much above the average. During 1912 rice was sold at 7.5 imperial seers of 30 tolas per rupee, ragi at 13.5, cholam at 12.5 and gunbu at 12.2 against an average (of 15 years ending 1911) of 10.0, 17.4, 17.0 and 16.3, respectively. These figures represent a rise in prices by 25.0, 22.4, 26.5 and 25.2 per cent. above the average.

5. This continued upward tendency should doubtless be attributed to depletion of the market by wholesale exportation of these food-grains. The grievances of the public in general and of Government servants in particular that the cost of living nowadays in all places, especially in populous towns, has become very dear are therefore real. The question of the present high prices is, I understand, engaging the attention of a special committee and the results of their enquiries are eagerly awaited by all.

GENERAL POPULATION.

6. The population of the Presidency, according to the census of 1911, was 41,829,232, exclusive of Europeans and Eurasians: and the excluded European and Eurasian population amounted to 46,928. The population for which vital statistics were furnished for the year under report was 40,347,357, leaving a total of 1,481,875 souls unaccounted for. These are composed of the hill tribes of the Vizagapatam district (1,029,977) and the inhabitants of the Laccadive Islands (10,600), of the Banganapalle State (39,343) and of the Pudukkottai State (411,855). The estimated population of the year 1912 is 42,437,798 and its natural growth as ascertained by adding to the census figure of 1911 the excess of births over deaths during the succeeding period up to the end of December 1912 is 42,385,367. It is satisfactory to note that the estimated and the actual figures almost coincided.

7. Emigration during the year was for Fiji, the Straits Settlements, Burma and Ceylon, the number of emigrants being 405,000 against 395,437 in the previous year. Immigrants (excluding the indentured emigrants) during the year numbered 324,368, or 31,017 more than the previous year; and this increase is ascribed to the more favourable agricultural conditions obtaining in the Presidency during the year under report. Emigrants during the year exceeded the immigrants by 80,632.

8. The machinery employed for the registration of vital statistics both in urban and rural areas and the procedure followed for the collation and tabulation of the results obtained remained much the same during the year under report. Act III of 1899 was in force in 3,558 towns and villages as in the previous year. Registration in rural areas cannot be considered satisfactory, inasmuch as the staff employed is quite ill adapted for the purpose. The contemplated general introduction of the new combined scheme of compulsory vaccination and compulsory registration of births and deaths that is being tried in selected districts now will, it is hoped, tend to a better registration of vital statistics. In mufassal municipalities 1,235 prosecutions were instituted for failure to report domestic occurrences, the number resulting in convictions being 1,234. The fines inflicted in these cases amounted to Rs. 570.

BIRTHS IN DISTRICTS.

9. The recorded birth-rate for the Presidency during 1912 was 30.9 per mille of population, being 0.5 greater than that of the previous year. Compared with the decennial average, it showed a decrease of 0.4 per mille. The increase occurred in 17 districts, in six of which it exceeded 3 per mille. The increase was noteworthy in Nellore and Cuddapah amounting to 8.6 and 7.5 per mille, respectively. The births fell off by more than two per mille in four districts, the decrease being most

marked in Ganjam (—5.1). Judged by the decennial average there was an increase in 16 districts and a decrease in 9, Guntur showing the largest increase (+10.1) and Ganjam the largest deficit (—13.2).

10. Leaving Madras (with a birth-rate of 39.0 per mille) out of account, the highest rate was recorded in Guntur (38.5), followed by Chingleput (36.9), Salem (35.6) and South Canara (34.7). In 12 others it exceeded 30 per mille. The lowest rate (18.2) was returned by Ganjam, the remaining seven districts showing rates varying from 30.0 in Nellore to 19.8 in Ramanad.

11. Considered with reference to sex, the proportion of male to female births was 104.8 to 100. Classified according to race, the birth-rate among Muhammadans was 33.2, among Hindus 31.0 and among Indian Christians 28.2, corresponding rates for the previous year being 34.2, 30.5 and 27.8, respectively.

12. The total number of births registered in 1912 in the 207 rural towns in the Presidency containing over 5,000 inhabitants was 57,968 against 54,833 in 1911, representing annual ratios of 25.8 and 24.1 per mille, respectively. As compared with the previous year, there was an increase in 109 towns and a decrease in 94, the rates in four other towns being the same. The increase was marked in Valuru (+47.2), Attili (+43.3), Achanta (+34.0) and Nuzvid (+33.8). The towns representing the other side of the picture were Tirutturaippundi (—29.2), Gudivada (—27.3), Tirukkoyilur (—23.4) and Tekkali (—23.1). The birth-rate was highest in Valuru (73.4) in Kistna district and lowest in Gudivada (2.5) in the same district; Nuzvid (71.0), Achanta (61.7), Namakkal (60.4) and Attili (54.0) showed also higher rates. In ten other towns the rates varied from

1. Vaidichalam	8.3
2. Pervatipuram	9.2
3. St. Thomas' Mount	9.2
4. Porto Novo	9.9
5. Gooty	8.9
6. Kattur	8.9
7. Manamadurai	8.9
8. Madanapalle	8.7
9. Pithapuram	8.2
10. Tekkali	7.7
11. Tempallu	6.3
12. Kavripattanam	6.0
13. Palayaram	5.9
14. Razampeta	5.1
15. Tirukkoyilur	4.2
16. Gudivada	2.5

47.0 in Bhavani to 40.0 in Sriperumbudur. In the marginally-noted sixteen towns the registration of vital statistics was obviously neglected as the rates recorded in each were below 10 per mille. Unless the present registration agency is thoroughly re-organized, much improvement in this respect cannot be expected.

13. According to the census of 1911, the total population of the rural areas in which Act III of 1899 was in force during the year was 7,247,399 and that of the areas where it was not 30,545,253. These populations yielded birth-rates of 30.0 and 30.7 per mille, respectively. Of the 21 districts where the Act was in force, only seven returned rates in excess of those registered in the non-compulsory areas, the increase being most marked in Ramanad (+15.0) as in the previous year. Of the 14 districts which showed comparatively lower rates, Godavari (—19.1) headed the list, followed by Kurnool (—16.9), Anantapur (—16.2) and Timnevelly (—12.6). It is therefore clear that the working of Act III of 1899 in the Presidency is not after all satisfactory. As noted already, the general introduction of the "Trial Scheme" in the Presidency will probably effect a much needed improvement in this direction.

DEATHS IN DISTRICTS.

14. The deaths registered during the year amounted to 982,308 or 24.8 per mille of the census population under registration as compared with 933,510 or 23.1 per mille in 1911, the decennial average being 23.4. Compared with the previous year, the increase occurred in 13 districts and was large in Malabar (+6.6), North Arcot (+6.4), Cuddapah (+5.8), Kurnool (+5.6) and Godavari (+5.1). The prevalence of cholera and fevers during the year in Malabar, Kurnool and Godavari accounts for the increased rate of mortality in these districts: while the increased rates in North Arcot and Cuddapah were due to cholera alone. Of the 12 districts in which the death-rate decreased, Madras and Ramanad with a decline of 3.1 headed the list.

15. Excluding Madras which recorded a death-rate of 39.2 per mille, the highest rates were produced by Bellary (35.2), Cuddapah (30.3) and Anantapur (30.2). The lowest rates were returned by Ramanad (16.4), Ganjam (18.0), Nellore (19.5) and Madura (20.0).

16. For every 100 female deaths, there were 104.2 male deaths, as in the previous year. According to race, the death-rate among Indian Christians was 20.1, among Hindus 24.4 and among Muhammadans 27.7, corresponding rates for 1911 being 20.3, 23.2 and 24.3, respectively.

17. The infantile death-rate for the districts during the year under report was 190.4 per mille of registered births against 183.4 in 1911. Distinguished by sex, the rate of mortality of male infants was 199.8 and that of female infants 180.5; that is to say, in every 100 deaths there were 55.7 male and 46.3 female deaths, showing an increase of 0.2 in the case of the former and a like decrease in the case of the latter, as compared with the previous year. The incidence of infant deaths was, as usual, heaviest in Madras (288.4) against 309.1 in 1911. It was also heavy in Tanjore (227.5), Tinnevely (+12.4), Guntūr (205.9), Kistna (205.7), Chingleput (205.2), Ganjām (204.9) and South Arcot (204.5). Compared with the previous year, 14 districts showed an increase and 11 a decrease. The increase was most marked in Ganjām (+40.9), Kurnool (+34.5) and Malabar (+33.1), and the decrease in the Nilgiris (—47.6), North Arcot (—35.2), Madras (—26.7) and Anantapur (—21.3).

18. A total of 49,554 deaths was registered during the year under report in the 207 rural towns in the Presidency containing over 5,000 inhabitants against 46,676 in 1911. Calculated upon the census population of 1911, these figures yielded annual ratios of 22.2 and 20.8 per mille, respectively. Compared with the previous year, increases are noticeable in 42 towns and a decrease in 84. In the remaining one town (Paliyanguḍi) the rates were the same in both years. The increase was marked in Pervampattu (+28.8), Kulittalai (+26.6), Chittoor (+24.2), Ambur (+24.1) and Attili and Valuru (+23.6 each), and the decrease in Kampli (—33.5), Kilakurū (—18.2), Koituru (—27.4), Tirutturaippūndi (—22.1), Tirukkōyilūr (—21.3) and Gudivāda (—21.0). The highest death-rates were recorded in Dharmapuri (48.9), Kalyandrug (44.5), Tiruvottiyūr (43.3), Harpanahalli (42.4), Kulittalai (42.1), Tirutturaippūndi (41.7), Tiruvadamaradur (41.4), Yadiki (41.0) and Nuzvid (40.2). The high rates of mortality in the towns of Dharmapuri, Kalyandrug, Harpanahalli, Kulittalai, Tirutturaippūndi, Tiruvadamaradur and Yadiki were due to "cholera", in Tiruvottiyūr to "fevers" and "dysentery and diarrhoea" and in Nuzvid to "fevers." In the marginally-noted eighteen towns the death-rates were below 10 per mille, the prominent among them being Tirukkōyilūr, Manamadurai and Gudivāda where the rates recorded did not exceed 4 per mille. These low rates are clear indication that the registering officers employed in these towns must have grossly neglected their duties and returned quite unreliable figures.

19. The death-rate in the areas in which Act III of 1899 was in force was 25.2 against 23.9 in the non-compulsory areas, not after all a great difference. In eleven districts the rates were in excess of those returned for the non-compulsory areas, while in ten others they showed a decrease. The increase was marked in the districts of Rāmnād (+12.6), Chittoor (+9.3), Ganjām (+6.9), Salem (+6.8) and Trichinopoly (+6.7), and the decrease in Anantapur (—12.8), Gōdāvari (—10.4) and Kurnool (—9.7).

BIRTHS IN MUNICIPALITIES.

20. The total births registered during the year in the 62 municipal towns of the Presidency amounted to 24,157 against 22,029 in 1911. These represent annual ratios of 36.2 and 35.4 per mille, respectively, against the quinquennial average of 36.8 per mille. Compared with the birth-rate (30.8) obtained in the rural areas, the municipal rate showed an excess of 5.4 per mille, due evidently to better registration in municipal areas. Comparing the year's results with those of 1911, there was an increase in 31 municipal towns and a decrease in 30, the other remaining

town (Ootacamund) returning the same rate of 39.1 per mille. Of the towns which showed an increased rate, Palni (+18.0 per mille) headed the list followed by Salem (+12.0), Ellore (+11.8) and Tiruppattūr (+11.3).

21. Among the towns showing a falling off in contrast with the previous year, Adōni shows a decrease of 14.2, Vāniyambādi 14.1, Kodaikānal 9.2, Chidambaram 7.5 and Palghat 7.0. In the absence of specific causes this decline must be set down to defective registration. Compared, however, with the quinquennial average, 19 towns showed an increase and 43 a decrease. Marked increases were noticeable in Tiruppattūr (+21.9), Palni (+19.1) and Ellore (+16.2) and decreases in Vāniyambādi (—27.8), Kodaikānal (—20.5) and Adōni (—15.0). Tiruppattūr (59.6), Ellore (55.7), Palni (54.0) and Salem (51.4) returned the highest birth-rates. In eight other towns the rates were also large varying from 41.0 in Srivilliputtūr to 48.6 in Dindigul. The birth-rate varied from 40 to 30 in 39 towns and from 30 to 25 in 9 towns. The lowest rates were returned by the remaining two towns, Negapatam (20.6) and Adōni (19.4).

DEATHS IN MUNICIPALITIES.

22. The total number of deaths registered in municipal towns during the year was 88,151 against 89,591 in 1911, representing annual ratios of 33.9 and 34.4 per mille, respectively, on the census population of 1911, the quinquennial average being 34.6. The decrease occurred chiefly under the diseases "cholera," "small-pox" and "plague." The highest death-rate was returned by Tiruppattūr (66.4), the other towns showing comparatively higher rates being Vāniyambādi (60.0), Gudiyāttam (54.4), Bellary (51.5), Palni (49.7), Anantapur (43.7) and Ellore (42.8). The rate varied from 40 to 30 in 38 towns and from 30 to 20 in 16 towns. Kodaikānal (17.5) returned the lowest rate. As compared with the previous year, there was an increase in 34 municipalities and a decrease in 28, the other towns showing large increases being Vāniyambādi (+36.8), Gudiyāttam (+32.3), Parlākimedi (+15.9), Anantapur (+15.0), Cuddapah (+12.4), Kurnool (+12.1) and Nandyal (+10.1). The decrease was marked in Coimbatore (—37.6), Periyakulam (—18.8), Cannanore (—10.6) and Srivilliputtūr (—10.1) showed also noticeable variations. The increased death-rate in Vāniyambādi, Gudiyāttam and Cuddapah was due to the high prevalence of "cholera" and "plague," in Parlākimedi and Anantapur to "cholera," in Kurnool to "fevers" and "dysentery and diarrhoea" and in Nandyal to "fevers." In Coimbatore fewer deaths were recorded under "cholera" and "plague," in Periyakulam and Srivilliputtūr under "cholera" and in Cannanore under "small-pox." In contrast with the quinquennial average the death-rate showed an increase in 26 towns and a decrease in 34, the same rates being returned by the two remaining towns. The increase was marked in Tiruppattūr (+32.5) and the decrease in Cocanada (—0.1).

23. The total infantile death-rate for the municipalities averaged 248.2 per mille of the registered births during the year against 244.6 in 1911. Considered with reference to sex, the mortality among male infants was 263.8 and among female 231.6, or, in every 100 deaths there were 54.7 males and 45.3 females. The rates of mortality were very high in Guntūr (367.3), Ellore (359.4), Chidambaram (343.2), Masulipatam (336.3) and Walajapet (314.0). In 20 towns they varied from 250.0 in Berhampur to 299.2 in Adōni. Compared with the previous year, there was an increase in 42 municipalities and a decrease in 20. The excess amounted to 50 per mille and upwards in Walajapet (+126.8), Chidambaram (+76.1), Kurnool (+69.1), Adōni (+66.6), Vāniyambādi (+61.5), Guntūr (+58.4), Ellore (+52.2), Parlākimedi (+51.1) and Vellore (+50.0), and the diminution amounted to over 40 per mille in Coimbatore (—130.5), Cannanore (—63.6), Tuticorin (—48.9), Palni (—45.8), Chingleput (—44.2) and Chicacole (—42.4).

SECTION VI.

GENERAL HISTORY OF CHIEF DISEASES.

CHOLERA.

24. During the year the mortality from cholera in districts amounted to 92,497, or 2.3 per mille against 58,174, or 1.4 per mille in 1911. The disease was reported from all the districts of the Presidency and was present all the year round in 17 districts. In 18 districts the disease was but a continuation of the epidemic of the previous year. The death-rate was heaviest in Bellary (8.3 per mille), Cuddapah (7.3), Anantapur (5.0), Ganjam (4.6), North Arcot and Tanjore (3.4 each) and Gōdāvari (3.1) showing also higher death-rates from this cause. During the year under report the incidence of cholera mortality was heaviest in the months of January, June to September and December.

25. From 56 district municipalities, 4,723 deaths from cholera were reported, corresponding figures for the previous year being 48 and 4,805, respectively. The towns of Periyakulam and Coonoor returned only one sporadic case each and Guntūr and Calicut three each during the year. The disease was largely prevalent in Vāniyambādi (23.0), Tiruppattūr (20.0), Anantapur (19.0), Parlākimedi (12.7), Tuticorin (8.3), Belhampur (5.9), Palni (5.7), Bimilipatam (5.6) and Bellary (5.0).

26. Out of 44,056 towns and villages in the Presidency, deaths from cholera were reported from 8,562 villages as against 5,654 in 1911.

27. The working of the rules issued by Government with G.O. No. 1536 M., dated 9th September 1896, for combating cholera in the municipal towns in which they were in force was closely watched by this office and owing to the timely measures adopted by the municipalities concerned the disease did not make any headway. In the case of towns where the rules were not in force the Chairmen concerned were advised by this office to employ the extra staff enjoined by the rules. This was acceded to without demur.

28. Permanganate of potash as a means of purifying contaminated sources of water-supply was freely used during the year in cholera-affected localities and the reports received show that it produced beneficial results as usual.

29. A statement (No. XIII) is appended showing the names of municipal towns which have a protected water-supply. The figures in this statement make it clear that the mortality from cholera in towns which have a protected water-supply has been continuously on the decrease since the introduction of a piped water-supply in those areas.

SMALL-POX.

30. Small-pox accounted for 16,094 deaths against 23,817 in 1911, representing annual ratios of 0.4 and 0.6 per mille, respectively. The disease was present in all the districts of the Presidency. The death-rate was above one per mille in only one district, viz., Coimbatore with a rate of 1.2 per mille. In this district, vaccination has been very backward of late years, and the question as to how best to improve it is now engaging my attention. In the remaining districts, the rate was below one per mille. Of the deaths registered under this head, 6,313 were under one year of age and 4,971 from 1 to 10 years, the proportion borne by these figures to the total mortality under this head being 39.2 and 30.9 per cent., respectively. Judged by the results of the previous year, Madras and Malabar show the largest decline of 0.7 per mille in each. The decline in the latter district

is a satisfactory feature and is due to the appreciation by the resident people, especially of Mappillas, of the efficacy of the prophylactic operation of vaccination. The introduction throughout the Presidency of the revised scheme of vaccination, which provides for compulsion in this respect, will doubtless secure much better results in the administration of the vaccination department.

31. Twenty-seven municipal towns enjoyed complete immunity from this disease. The remaining 35 towns returned a total of 709 deaths against 3,790 in 1911. Five towns returned only one case each, two towns two each and six towns three each. The death-rate exceeded two per mille in Masulipatam (2.7) and Tiruvannāmalai (2.3). It varied in 5 other towns from 1.0 in Srīrangam to 1.9 in Walajapet.

32. Small-pox cases were reported from 3,653 towns and villages against 3,921 in the previous year. In urban areas, the death-rate was 0.3 per mille, while in rural tracts it was 0.4 per mille, thus evidencing the value of compulsory vaccination in municipal areas.

PLAGUE.

33. Plague contributed 6,651 deaths in 16 districts, against 15,185 in 1911, yielding annual ratios of 0.2 and 0.4 per mille, respectively. Nine districts showed a clean bill, and in seven others, a total of 33 imported cases was reported. In the remaining nine districts from which indigenous cases of plague were reported, the death-rate was largest in Bellary (1.9) as in the previous year. It was also large in the Nilgiris (1.1). The rates in each of the other affected districts were below one per mille. The disease was present all the year round in the districts of Coimbatore, the Nilgiris, Salem and South Canara. As compared with previous year the disease showed the largest decline of 7.9 per mille in the district of Bellary as also Salem which showed a deficit of (1.1) per mille.

34. Cases of plague were reported from 20 municipal towns. Eight towns reported one imported fatal attack each and one town three fatal attacks. The disease was present in an indigenous form in 11 towns, the deaths reported from them being 1,766. The death-rates were largest in Gudiyāttam (24.3) and Vāniyambādi (17.5). They were also large in Cuddapah (5.6), Adōni (5.4) and Mangalore (5.0).

35. Deaths from plague were reported from 473 towns and villages against 1,018 in the previous year.

36. As usual, the measures adopted for combating the disease were the employment of observation and preventive staffs in and about the affected areas, evacuation of infected areas, isolation of patients, segregation of contacts, disinfection of infected houses and of persons and their effects, passporting persons arriving from infected areas and keeping them under surveillance for a period of seven days, destruction of rats by poisoning or trapping, and inoculation of such persons as were willing to undergo the operation.

37. A total of 71 deaths from plague (Coimbatore 48, Anantapur and South Canara 6 each, Cuddapah 5, Salem 3, the Nilgiris 2 and North Arcot 1) was recorded during the year under report against 95 in 1911 among persons who have been previously inoculated with anti-plague vaccine.

FEVERS.

38. Under this head 306,471 deaths were registered against 298,688 in 1911, representing annual rates of 7.6 and 7.4 per mille, respectively. Fevers were largely prevalent in Vizagapatam (19.4), Cuddapah (15.7) and Kurnool (15.1). The death-rate was also large in five other districts—Gōdāvari (11.5), Guntūr (11.2), Nellore (10.7), Malabar (10.3) and Ganjam (10.0). Compared with the previous year, there was an increase in 9 and a decrease in 13 districts, the rates in the three remaining districts being the same. The deaths were generally larger in the cold weather months, the greatest number (30,555) being recorded in December.

39. Fourteen thousand two hundred and seventy-one deaths were registered in all the municipal towns against 13,424 in 1911, the rates being 5.5 and 5.1 per mille, respectively. The death-rate exceeded 10 per mille in Kurnool (15.4), Nellore (13.5), Ellore (12.7), Tenali (10.2) and Pariākimedi (10.1). In 23 other towns the rates varied from 5.0 in Chingleput to 10.0 in Nandyal. As compared with the previous year, there was an increase in 32 and a decrease in 28 towns, the rates in Calicut and Negapatam being identical. Fever mortality in Cuddapah showed a decline from 5.0 to 4.5 per mille due mostly to the prohibition of wet cultivation in and around the town.

40. Out of 44,056 towns and villages in the Presidency, 24,242 returned deaths from this cause against 27,473 in 1911.

MALARIA.

41. The Malaria Board continued to exercise supervision over the malarial operations in the Presidency during the year under report. The Special Malaria Officer, Madras (Captain J. H. Horne, I.M.S.), took charge of his new appointment on 15th February 1912 and proceeded soon after to Amritsar and Pusa for training in malaria. He returned to the head-quarters at the end of July 1912 and was engaged till the end of the year on a statistical investigation of the Presidency in accordance with G.O. No. 424 L., dated 27th March 1911, for the purpose of ascertaining the malarial conditions in different localities. His report on this investigation has recently been received and will shortly be placed before Government with the remarks of the Malaria Board.

42. The Special Malaria Officer's other work during the year consisted of the following:—

- (1) A class of instruction for Sub-Assistant Surgeons detailed for duty with travelling malaria dispensaries in the Presidency was held by him during November and December 1912.
- (2) In December 1912 he also proceeded to Berhampur in the Ganjam district to confer with the District Medical and Sanitary Officer there about malaria in the district in general. While there he did also some investigation work.

43. During the year 1912 itinerating malaria dispensaries were on tour in the Gōdāvari Agency tracts. Reports on the working of these dispensaries were received from the District Medical and Sanitary Officer, Gōdāvari, and scrutinized by the Special Malaria Officer who made several suggestions for the successful working of these institutions. A scheme was also drawn up by him containing some general lines in which these dispensaries should in future be worked. The scheme met with the approval of the Malaria Board and is now under the consideration of Government.

44. Little or no field work was done by the Special Malaria Officer during the year under report as he was otherwise busily engaged. At the instance of the Malaria Board, he is at present conducting malarial investigation work in Wynaad.

45. Major T. S. Ross, I.M.S., continued to be on special malaria investigation duty in the Presidency during the whole of 1912. He completed his investigations at Ennore and the vicinity and the reports submitted by him show that the results obtained so far from the preventive measures undertaken were gratifying. They also furnish evidence that when the practical measures suggested by him have been completed, malarial fever will completely disappear from the area. The practical measures suggested by Major Ross are estimated to cost Rs. 87,000, and towards this the District Board, Chingleput, received a special grant of Rs. 28,000 from Government. The balance will shortly be placed at the disposal of the Board. There is very little investigation work to be done at Ennore hereafter. A special staff is on duty there continuing the practical anti-malarial operations started by Major Ross. This Special Officer did also investigation work at Cuddapah,

Cumbum and Vizagapatam. His reports on Cuddapah and Vizagapatam investigation work have been received and these were forwarded to Government. His report on the work done at Cumbum is awaited. He is now in Kodaikānal investigating malarial conditions in the Lower Palnis.

DYSENTERY AND DIARRHŒA.

46. Dysentery and diarrhœa caused 71,913 deaths against 64,389 in 1911, representing annual ratios of 1.8 and 1.6 per mille, respectively. The highest rate of 9.6 per mille was, as usual, recorded in Madras. The rates were also large in the Nilgiris (5.4), Malabar (4.2) and South Canara (3.9). As compared with the previous year, there was an increase in 16 districts and a decrease in 5, the rates in four others being identical. The consumption of drinking water polluted by surface drainage which occurs largely in the wet weather accounts chiefly for the large mortality under these heads. January, August and December were the months in which the greatest mortality from these diseases were recorded during the year under report.

47. Municipal towns returned a total of 14,565 deaths against 14,245 in 1911 the rates being 5.6 and 5.5 per mille, respectively. The largest death-rate was returned by Palamcottah (11.8). In 20 towns the rates varied from 5.0 in Chingleput and Cuddalore to 10.9 in Vizianagram. Compared with the previous year, there was an increase in 32 and a decrease in 29 towns, Cuddalore showing the same rate, viz., 5.0. Compared with the rural death-rate (1.5), the urban rate (municipal) shows a large increase of 4.1 per mille. This variation is doubtless the result of the greater accuracy in terminology secured in municipal towns where the agency employed for registering vital statistics is better educated and supervised than in rural areas.

48. Deaths from dysentery and diarrhœa were reported from 11,214 towns and villages against 10,941 in 1911.

RESPIRATORY DISEASES.

49. To respiratory diseases were traced 38,616 deaths against 36,711 in 1911. These deaths represent annual ratios of 0.96 and 0.91 per mille, respectively. The death-rate was largest in Madras (5.3). It was also large in Anantapur (2.6) and the Nilgiris (2.1). The registration under this head cannot be relied on especially in rural areas where the agency employed is completely ignorant of diagnostics.

50. The mortality registered under this head in municipal towns amounted to 6,308 against 6,319 in 1911, or 11 less than the previous year. Tellicherry with a death-rate of 7.8 per mille headed the list followed by Coonoor (6.4), Ootacamund (5.8), Cochin (5.3) and Madras (5.1). In nine other towns the rates varied from 3.0 in Mangalore to 4.6 in Bellary. Fourteen towns reported no deaths from this cause.

51. Out of 44,056 towns and villages, 8,367 returned deaths from this cause against 7,386 in 1911.

INJURIES.

52. The deaths returned under this cause aggregated 10,033 against 10,518 in 1911, the rates being 0.2 and 0.3 per mille, respectively. The mortality rate for the municipalities is 0.3 per mille, or 0.1 more than the rate obtained for the districts as a whole. As usual, the preponderance of casualties was on the side of females, the proportion being 111.6 female to every 100 male deaths.

ALL OTHER CAUSES.

53. Under this convenient head—convenient alike both to the informant and to the informed as affording the least possible trouble for making an entry in the death register—440,033 deaths were recorded against 426,028 in 1911, yielding annual ratios of 10·9 and 10·5 per mille, respectively. Nearly one-half of the total number of deaths registered during the year was classified under this head. The death-rate exceeded 10 per mille in 14 districts and fell below it in 11. Of these 11 districts, comparatively fewer deaths were registered in Vizagapatam (1·5), Ganjām (1·7) and Cuddapah (4·8). As observed in the previous years' reports, the rates registered under fevers in these districts were proportionately large owing to the deaths being freely registered under this head without any attempt at a correct classification, the reason being that these districts have earned a notoriety for fever prevalence.

54. Forty-four thousand seven hundred and thirty-four deaths were registered under this head in all the municipal towns against 45,456 in 1911. These figures corresponded to annual ratios of 17·2 and 16·7 per mille, respectively. The death-rate exceeded 20 per mille in 18 towns and was between 10 and 20 in 40 others. The highest rate was recorded in Palni (33·2) and the lowest in Palameottah (8·5). The rate recorded was also low in Vizianagram (9·1), Anakapalle (9·3) and Kurnool (9·3).

SECTION IX.

SANITARY WORKS—CIVIL.

MUNICIPALITIES.

55. There was no extension of Municipal law to any new town during the year, the number remaining the same as in 1911 with an aggregate population of 2,601,925 including Madras. The City of Madras is governed by an Act of its own, whilst the mufassal municipalities continued to be administered by Act IV of 1884 as amended by Act III of 1897. The carrying out of sanitary measures under the latter has, as experience shows, been attended with some difficulty owing to the existence of legal defects in it. The revision of the Act is, however, now under consideration and it is hoped that the amended Act will remove these defects and afford municipal councils greater facilities than in the past for enforcing sanitary regulations.

56. During the calendar year under report Periyakulam was added to the list of towns provided with a piped water-supply, thus raising the number of such towns to 20. In Kumbakonam a partial supply was made available from the bore-hole or sub-artesian spring at the latter end of the year. Thus, it will be seen that more than two-thirds of the municipal towns are not yet in possession of a satisfactory drinking water-supply and have to rely on such sources as wells, tanks, rivers, and irrigation channels. There is no reason, however, to suppose that our municipal councils have been idle or dilatory in the matter of protected water-supplies, as several of them have shown a commendable enterprise in accepting schemes, which are either under execution or investigation, whilst others still are discussing ways and means for financing them. The quarterly analyses of municipal water-supplies carried out at the King Institute continue to maintain their usefulness and to justify the expenditure incurred upon the work. Proposals for improving the method of collection and transmission of samples of water are under consideration by the Director, the King Institute. In the matter of drainage both as to sullage and storm water, I regret to say there has been no advance upon the previous year so far as schemes actually working go: Ootacamund still being the only mufassal municipal town, where a sewerage scheme is in working order. These works were inspected during the year and the defects brought to notice are receiving attention.

57. The details of the major sanitary work undertaken in municipalities are given in the report of the Sanitary Engineer to Government. The following statement shows the position of Municipal Water-supply and Drainage schemes completed and otherwise in the year 1912-13:—

Water-supply schemes.				Drainage schemes.			
Opened.	Sanctioned.	Under execution.	Under investigation; investigation ordered or plans and estimates submitted or being revised under orders.	Opened.	Sanctioned.	Under execution.	Under investigation; investigation ordered or plans and estimates submitted or being revised under orders.
Adoni. Berwala. Cocanada. Conjeeveram. Coonoor. Cuddapah. Dindigul. Gadiyattam. Guntur.	Kurnool Improvements. Masulipatnam.	Berhampur. Chidambaram. Kegapattam. Kodakkal. Vizianagaram.* Nellore Improvements.	Anantapur. Bellary. Calicut. Chitradurga. Chingleput. Coimbatore. Cuddalore. Ellora.				Adoni. Anakapalle. Bellary. Berhampur. Berwala. Calicut (partial). Chidambaram. Chingleput. Cocanada.

* Opened in April 1913.

Water-supply schemes.				Drainage schemes.			
Opened.	Sanctioned.	Under execution.	Under investigation; investigation ordered or plans and estimates submitted or being revised under orders.	Opened.	Sanctioned.	Under execution.	Under investigation; investigation ordered or plans and estimates submitted or being revised under orders.
Kumbakonam (partial). Kurnool. Madura. Nellore. Ootacamund. Periyakulam. Salem. Tanjore. Tirupati. Trichinopoly. Vellore. Vizagapatam.			Erode. Mangalore. Nandyal. Ongole. Palamcottah. Tinnevely. Tuticorin. Palghat. Palni. Parthikiamedi. Rajahmundry. Srirangam. Vaniyambadi. Tiruvannamalai. Walajpet. Waltair. Adoni. Conjeeveram. Coonoor. Cuddapah. Dindigul. Guntur. Madura. Tanjore. Tirupati. Trichinopoly. Vizagapatam.	Ootacamund.	NW.	Nil.	Cochin. Cuddapah. Ellere. Erode. Guntur. Kumbakonam. Kurnool. Madura. Mangalore. Nandyal. Negapatam. Rajahmundry. Nellore. Periyakulam. Salem. Srirangam. Tenali. Trichinopoly. Vellore. Ootacamund Improvements.

* In abeyance for want of funds.

58. Compared with the previous year, there has been an advance in the conservancy arrangement, as shown by the increased staff and plant employed and this is reflected in the air of cleanliness and tidiness on the whole observed by me during my visits to municipalities, although conditions are not all that could be desired. There has been an increase under all heads of the staff except Sanitary Overseers, whose number remains stationary, and the sweepers who show a diminution from 2,613 to 2,428. The latter need not be viewed with apprehension as likely to affect the efficiency of rubbish conservancy; municipalities generally show a tendency to place greater importance on the employment of sweepers for collection of rubbish than upon scavengers for night-soil collection and employ an unduly larger number of sweepers than circumstances would warrant, very often at the expense, and much to the detriment, of night-soil conservancy. The diminished number shown is the result of attention being drawn to this evil tendency and the rectification of errors so as to secure the employment of sweepers in correct proportion to the requirement of the towns concerned. In several of the municipalities however the staff is still inadequate and in need of strengthening. The deficiencies have been pointed out in reviewing the annual budget estimates and the attention of the municipal councils has been drawn to the matter.

59. The increase in the number of Sanitary Inspectors is a satisfactory feature and it is hoped that efforts will be made to still further increase their number so as to ensure their being employed in the proportion laid down in G.O. No. 901 M., dated 9th June 1911, and to pay them according to the scale therein prescribed. The long deferred employment of Health Officers for the supervision of sanitation in the larger municipalities sanctioned in G.O. No. 457 L., dated 14th March 1913, is an important feature of municipal sanitary administration which, I am convinced, will have a most salutary influence on the progress of sanitation in the towns employing them and the effect of this reform will be watched with interest. To make it a success very great care and discrimination will be necessary in selecting men for the appointments and once selected and appointed clear and definite rules should be drawn up, defining the duties of the Health Officer, and the relationship between himself and the Chairman. Unless he is relieved of all routine duties, which should be attended to by Sanitary Inspectors under his orders and be given

free scope and facilities for carrying on research work and the investigation of disease prevalence and epidemics, etc., the scheme is bound to end in failure. The Health Officer should not be relegated to the position of being a mere post office between the Chairman and the subordinate sanitary staff. Health Officers have been divided into first and second class. First-class Health Officers have been proposed for Calicut, Cocanada, Conjeeveram, Cuddalore, Kumbakonam, Madura, Negapatam, Salem, Tanjore, Trichinopoly, Bellary and Ootacamund, whilst in Adoni, Berhampur, Bezvada, Coimbatore, Ellere, Guntur, Mangalore, Masulipatam, Nellore, Palamcottah, Palghat, Rajahmundry, Tinnevely, Tuticorin, Vellore, Vizianagram, Vizagapatam, Coonoor and Kodaikanal second-class Health Officers will be employed.

60. The following statement shows the staff and plant employed in the year 1912, as compared with that in 1911:—

	1912.	1911.
Sanitary Inspectors	147	139
Sanitary Overseers	37	37
Maistries	238	220
Peons	342	339
Sweepers	2,428	2,613
Public toties	2,024	1,908
Private toties	2,435	2,187
Rubbish carts	1,045	1,028
Night-soil carts	928	912
Sewage carts	259	254

61. The public latrine accommodation rose from 1,529 to 1,547 and I am glad to observe that the preference for type-design latrines is being maintained. In 27 towns, the public latrine accommodation was inadequate, the worst cases being Calicut (42), Madura (36), Masulipatam (22), Palghat (20), Rajahmundry (18), Cocanada (14), Srivilliputtur (13), Conjeeveram (12), Tenali (11) and Berhampur (10). The figures in brackets represent the extent of deficiency. It is observed that with the exception of Conjeeveram and Berhampur the rest are old offenders in this respect and have done little or nothing to make good the deficiency to which attention has been repeatedly drawn.

62. The private scavenging service received increased attention in the year under report. Out of a total of 133,114 private latrines in all municipalities, 110,092 or 82.7 per cent. were brought under municipal service against 80.7 per cent. in the previous year. In Coimbatore and Srivilliputtur, the private scavenging service still continued to be backward. In all other municipalities more than 50 per cent. of the private latrines were cleaned by municipal scavengers, Tuticorin showing exemplary enterprise by bringing every private latrine in the town under its service, although a like activity had not been shown in the matter of providing backyard latrines to more than 49 per cent. of the houses. It is hoped that other towns will follow the example of Tuticorin in the former respect. The number of private latrines also rose from 126,942 to 133,114 in the same period, but this amounts to only 40.2 per cent. of the houses assessed to the tax on buildings which leaves about 60 per cent. of houses of a class which should possess private latrines unprovided with this convenience. A more vigorous use of section 207 of the Municipal Act would therefore seem called for. Laxity in this respect prevailed in 44 towns, of which I would specially mention Nandyal, Tenali, Masulipatam, Ongole, Kurnool, Anakapalle, Srivilliputtur, Anantapur, Cannanore, Adoni and Conjeeveram where effort in this direction may well be said to have been characterised by inexcusable apathy, the proportion of private latrines to assessed houses ranging from 19.9 per cent. in Conjeeveram to as low as 5 per cent. in Nandyal.

63. The system of rubbish and night-soil removal still remains very much the same as in previous years and no material advance has been made to replace the contract by the departmental system. The chief obstacle to this is the initial cost of introducing it, and I think this is a matter in which municipal councils, at any rate the poorer ones, should be aided. As a rule the rubbish is stacked whilst the night-soil is trenched and both are sold annually as manure. The demand for this form of manure and the income from its sale was considerable in some municipalities as, for instance, in Madura, Trichinopoly, Vellore, Cuddalore, Tanjore,

Srirangam, Kurnool, Conjeeveram, Palamcottah, Karūr, Coimbatore, Cuddapah, Nellore, Kumbakonam, Guntūr, Tinnevely, Adōni, and Negapatam; whilst in others for one reason or other it was not worth much. In such towns I think the system of incinerating the rubbish on the method pursued in the Corporation of Madras is the best course to adopt. Not only will this effect a saving in staff and plant but the incombustible portion of the rubbish could be utilized for reclaiming noxious tanks, etc., as has been so successfully accomplished in Madras. The practice of cultivating the night-soil trenching ground either by the municipality itself or by letting it to cultivators is not largely availed of, the chief reason being the difficulty of obtaining water for irrigating the crops raised and in some case to the unsuitability of the soil. In Bellary, Cocanada, Palni and Bezwada, however, where there is not much demand for night-soil this system was pursued and fairly good crops raised.

64. Considerable attention, I am glad to note, is being paid towards remedying the defects noticed in previous years in rubbish and night-soil conservancy not only by the employment of increased staff, the provision of more public latrine accommodation and the extension of the private scavenging system but also by more efficient supervision, the absence of which was the cause of much that was unsatisfactory in the past. There can be no doubt that municipal councils are catching up the spirit of the times and are evincing a greater interest in the matter of sanitation as shown by the ready willingness with which they accept and act up to advice offered as far as funds at disposal permit. Nevertheless the matters that still do not receive the attention they merit are the sanitation of backyards, the licensing of places for the manufacture and sale of articles of food and drink and the inspection of food supplies. These I need hardly mention have an important bearing on the public health of towns and the spread of epidemics, etc., and with the employment of Health Officers in the specified municipalities, I trust these subjects will receive increased attention.

65. Sewage farming was in force in the Municipalities of Berhampur, Chicacole, Vizianagram, Vizagapatam, Anakapalle, Rajahmundry, Bezwada, Guntūr, Nandyal, Conjeeveram, Kumbakonam, Tanjore, Mannārgudi, Negapatam, Dindigul, Periyakulam, Tinnevely, Palamcottah, Salem, Karūr and Ootacamund. Although compared with last year a larger number of municipalities adopted this system of disposing of the town sewage, there was no advance in the method employed which usually consisted of the application of crude sewage to land by broad irrigation. In Ootacamund where elaborate disposal works are in existence and in Berhampur, Salem and Kumbakonam where bacterial filters and septic tank respectively are employed the sewage is treated before applying it to the land. In Conjeeveram the farm was extended and improved. In other municipalities the sewage was disposed of as reported in previous years, that is, it was either carried in carts or led by drains and discharged into fields, private gardens, vacant spaces, etc., or allowed to flow into streets and backyards and there dry up or soak into the ground. The bacterial filter attached to the drain outlet at Cannanore referred to in paragraph 64 of the report for 1911 was put out of use as it proved a failure owing to its size not being sufficiently large to deal with the sewage passing through and the sewage is now disposed of on a neighbouring paddy field. I think the Council should have taken advice in the matter and persevered in their attempt at sewage purification rather than abandon it. The crops grown consists of English and country vegetables of sorts various kinds of grasses, tobacco, plantain, sugarcane, coconut, etc., and reports show that these crops thrive on sewage irrigation. Financially, however, sewage farming is a failure. Thus in Bezwada the income was Rs. 5 against an expenditure of Rs. 178-8-0 and in Vizianagram the expenditure exceeded the income by over Rs. 300. In Vizagapatam and Tanjore the farms were worked at a profit, the income derived amounting to Rs. 1,776 and Rs. 3,405, respectively, which affords evidence of the fact that with care and attention the sewage farms could be worked on much more profitable lines than they are now. I have no information of the results achieved on the farm at Ootacamund.

66. The expenditure on sanitation amounted to Rs. 16,33,189 or 67·7 per cent. of the total assignment against 62·2 in the year previous and was distributed upon the improvement of town-sites and water-supply, conservancy sanitary arrangements during fairs and festivals and the construction and repair of markets,

slaughter-houses, latrines, drains, etc. Eight towns, viz., Tinnevely, Periyakulam, Nellore, Masulipatam, Palamcottah, Cannanore, Bimlipatam and Srivillipattūr failed to utilize a fair share of the allotment.

67. During the past year municipalities as a whole have shown considerable energy in submitting proposals for relieving congestion and for improving sanitation with the aid of Provincial funds, but it has not always been possible to sanction these or carry out the execution of sanctioned schemes as expeditiously as could be desired. This is due to municipal councils not being in possession of a competent public works officer to draw up intelligently plans and estimates and supervise the execution of works. The staff now employed in most places consists of low-paid men with no special engineering qualification and it is in my opinion undesirable to entrust men with work of so much responsibility involving the expenditure of large sums of money. Now that sanitary schemes are being taken upon a large scale, I think it is very important every municipality should employ a duly qualified officer capable of undertaking such work. It will then be possible to fix responsibility for delay and defective execution. Proposals with this end in view, I am glad to say, are under consideration.

68. The following statement furnishes the information required in G.O. No. 1634 M., dated 6th September 1912:—

Particulars as to the distribution of the balance of 2·25 lakhs granted in 1911-12.

Municipality.	Amount of grant.	Purpose for which grant was made.	Amount expended.	Object on which expenditure was incurred.	Remarks.
1	2	3	4	5	6
	Rs.		Rs. A. P.		
	55,000	Acquisition of houses and lands for the removal of congestion in Thorayar quarters.			
	4,100	Acquisition of new site for the people evicted from Thorayar quarters.			
	12,000	Further acquisition for the proper formation and alignment of roads and provision of house-sites.	.....	.....	The amounts have been placed at the disposal of land acquisition officer and acquisition proceedings are pending.
	30,000	Acquisition of Othachakkar's houses for opening out congestion.			
	3,000	Acquisition of site for the people evicted from Othachakkar's houses.	3,172 15 11	.....	House-sites have been formed and arrangements are being made to sell the sites to evicted Othachakkars. Acquisition proceedings were completed recently and the lands are awaiting transfer. The amount Rs. 47,535 has been paid to the Revenue authorities for the acquisition of the site required.
	50,000	General town extension scheme.	.....	.....	A sum of Rs. 861-0-11 has been transferred to "acquisition of land for combined rubbish and night-soil depot for the Kurnool division of this municipality" in G.O. No. M.S., 1722 M., dated 20th September 1912. Acquisition proceedings pending.
Madura	50,000	Extension of the town near Madichiyam road.	47,535 0 0	.....	
Māyavarāṣam	17,000	Opening of conservancy lanes.	.....	.....	
Srirangam	5,000	Acquisition of land for house-sites.	.....	.....	

Statement showing the particulars of the amount of 8 lakhs granted in 1912-13.

Municipality.	Amount of grant.	Purpose for which grant was made.	Amount expended.	Object on which expenditure was incurred.	Remarks.
1	2	3	4	5	6
Arantapur ...	RS. 33,534	Opening of congested areas.	RS. A. P. 1,440 0 0	Constructing culverts in the extension work completed.	As reported by the chairman the amount shown in column 2 has been apportioned as follows:— (a) Opening of ss. three streets ... 18,134 (b) Improving scavengers' lanes ... 8,900 (c) Construction of culverts in the extension ... 1,800 (d) Pumping machinery ... 4,000 (e) Acquisition of sites for location of latrines ... 600 (a) and (b) Valuation statement completed and draft declaration furnished. (d) Director of Industries requested to supply machine. (e) Acquisition arranged for.
Thiruvannimalai.	19,730	Acquisition of land for opening 11 private scavenging lanes.	.....	.....	.....
Walajapet ...	4,190	Opening two ns. conservancy lanes ... 1,920 Construction of masonry drains ... 1,969 Deepening of existing tanks ... 310 4,190	1,311 10 0	Construction of masonry drains.	The balance will be spent in 1912-13.
Adoni ...	2,393 4,859 2,708 977 1,129	(i) Acquisition of houses and lands to open a new road No. 10 through Underpet and Barapet from Kanchagor Bazaar road to Dandu Madigakeri. (ii) Acquisition of land for widening No. 12 road the northern half of the Bazaar street. (iii) Making the road No. 10 as above. (iv) Making the road No. 12 as above. Widening a portion of Kambardiddi road.	13,840 9 11 1,068 0 0	Acquisition of houses and lands.	This amount was paid to the land acquisition officer for disbursement according to his estimate, and, if more funds are not required, it is proposed to utilize the balance Rs. 3,411-6-1 for widening the southern half of the Bazaar road No. 12. This amount has been spent for making a portion of Kambardiddi road No. 3 (acquired in 1910-11) for which the grant was applied for. It is not for widening a portion of Kambardiddi road as mentioned in the Government Order making the grant.
Mangalore ...	22,068 35,043	Opening of seven roads in congested areas.	.....	.....	Acquisition pending.

Municipality.	Amount of grant.	Purpose for which grant was made.	Amount expended.	Object on which expenditure was incurred.	Remarks.
1	2	3	4	5	6
Chingleput...	RS. 1,790	Filling up of the pond in front of the municipal choultry.	RS. A. P. 1,000 0 0	.....	All the works with the exception of two latrines will be completed before the end of April 1913. As regards the sites for the two latrines reference has been made to the Collector for the acquisition of lands as early as possible.
	2,000	Purchase of four corrugated iron latrines.	1,000 0 0	.....	
	480	Purchase of four corrugated iron urinals.	.....	.....	
Total ...	4,270		2,000 0 0		
Coimbatore ...	20,775	Constructing 75 huts for scavengers.	.....	.....	The new site has been taken possession of and estimates amounting to Rs. 24,300 have been prepared.
	3,000	Acquisition of houses and pials in Soctaramiah Chetti's lane.	.....	.....	A sum of Rs. 10,235 2-7 has been placed at the disposal of the Collector for the acquisition of the sites in Degumurtikari, Kalasai, Guada and Pedipeddivadi streets as shown in column 4. The acquisition of houses in Soctaramiah Chetti's lane, which had not been sanctioned before the close of the year, has been valued at Rs. 8,007-8-4 by the Revenue authorities, and it is not therefore possible to meet this cost from the sanctioned allotment.
Berhampur.	3,600	Acquisition of houses and pials in Guada and Pedipeddivadi street.	4,544 12 10	.....	
	3,000	Acquisition of houses in Degumurtikari streets.	3,105 0 0	.....	
	2,000	Acquisition of congested areas in Kalasai street.	2,615 5 9	.....	
Total ...	11,600				
Occanada ...	41,345	Opening of congested areas.	6,564 1 0	Stone for roads ss. A. P. in new peta ... 4,200 2 5 Construction of culverts in new peta ... 870 0 0 Earthwork in new peta ... 172 10 0 Removing prickly pear in new peta. 452 5 5 Demarcation stone ... 280 10 0 Temporary establishment and contingencies for surveying ... 579 5 2	
	26,000	Construction of 20 latrines.	5,809 10 0	.....	
Total ...	67,345		12,373 11 0		

Municipality.	Amount of grant.	Purpose for which grant was made.	Amount expended.	Object on which expenditure was incurred.	Remarks.
1	2	3	4	5	6
	RS.		RS. A. P.		
Elore	4,001	Raising the Chintagudem ground and hospital compound.	.....	.....	
	23,881	Opening up of congested areas in Mederagudem.	24,616 11 8	.....	
	21,230	Opening up of congested areas in Gollagudem near Gangamma temple.	14,066 12 4	.....	
	44,325	Opening up of congested areas in Gollagudem.	25,444 1 4	.....	
	14,183	Opening up of congested areas in Chakulagudem near Municipal office.	10,010 9 0	.....	
	64,494	Opening up of congested areas in Gajavallivaripeeta.	29,342 9 9	.....	
	4,210	Opening up of congested areas in Andrewpettah. Miscellaneous charges.*	5,456 15 3 141 5 7	.....	* Amount spent by the Special Deputy Collector on account of contingent charges and pay of mental servants.
Total ...	1,81,967		1,07,079 0 11		
Masulipatam.	13,207	Filling up of insanitary pits.	11,149 8 2	.....	A further payment of Rs. 300 for work executed before 31st March is pending settlement of certain rates.
	1,025	Acquisition of low-lying places near the proposed site for fish market.	.....	.....	Revenue authorities addressed to acquire the site.
	8,800	Improving and raising the level of two lanes.	8,578 7 1	.....	The work is complete, except the metalling of a portion of the Valu lane which could not be finished before 31st March 1913.
Total ...	22,832		19,727 15 3		
Dindigul ...	7,733	Opening up of congested parts of the town.	.....	.....	Acquisition proceedings are pending with the Revenue department.
Madura ...	38,600	Extension of the town to the east.	.....	.....	The allotment remains unspent. The cost of the extension towards the east was however met from the grant of Rs. 68,600 made in 1911-12. The unspent amount will be utilized for opening up a number of blind lanes and opening roads in congested parts of the town.

Municipality.	Amount of grant.	Purpose for which grant was made.	Amount expended.	Object on which expenditure was incurred.	Remarks.
1	2	3	4	5	6
	RS.		RS. A. P.		
Palni ...	628	Acquisition of land for widening lanes and streets.	628 0 0	.....	The amount was utilized for meeting the cost of widening certain narrow lanes and streets executed in 1911-1912.
Calicut ...	17,864	Opening up of congested quarters in Vellovil.	5,515 12 4	.....	
Cannanore ...	14,529	Acquisition of land and buildings for opening up old Town.	NIL.	.....	Proposals for acquisition pending.
Nellore ...	15,813	Opening up of congested areas, viz.	4,250 10 8	Widening Chakula- quarters.	
			3,413 1 0	Do. Janda street.	
			304 0 2	Do. Karoda lane.	
		Total ...	7,943 11 10		
Coonoor ...	13,000	Acquisition of insanitary buildings in the native quarters of the town.	12,051 0 0	Compensation for buildings.	The balance of Rs. 949 may be spent in legal expenses connected with the acquisition in 1913-1914.
Ootacamund ...	27,000	Acquisition of insanitary houses in the bazaar area.	23,938 14 11	Acquisition of 27 insanitary houses in the bazaar area.	Arrangements will be made for expending as soon as possible the unspent balance in the current year.
			112 10 6	Repairs to compound walls of the houses adjoining the acquired houses.	
		Total ...	24,051 9 5		
Salem ...	14,642	(i) Scavengers' Colony.	2,588 11 3		These works are in progress.
	14,714	(ii) Public latrines.	9,917 8 5		
	29,356	Total ...	12,506 3 8		
Kumbakonam.	23,800	Construction of sweepers' lines.	NIL.	.....	No expenditure was incurred owing to delay in the acquisition of the site.
Negapatam ...	7,000	Acquisition of land in congested areas.	4,185 2 2	.....	The balance will be spent on the current year in completing the necessary acquisitions.
Tanjore ...	10,060	Acquisition of land for town extension in the Nanjikottai road.	NIL.	.....	The council has been requested to further revise the estimate.
Palamcottah ...	12,290	Opening up of the Milkmen's quarters in the Cantonment ward.	NIL.	.....	Acquisition proceedings pending.
Tinnevely ...	12,850	Opening new roads and widening lanes in congested quarters.	8,912 3 3	Portion of cost of acquisition of lands and buildings for forming road from Salier street to Akasalai street.	
	8,400	Acquisition of insanitary buildings in the 6th ward.	NIL.	.....	Not yet acquired.

Municipality.	Amount of grant.	Purpose for which grant was made.	Amount expended.	Object on which expenditure was incurred.	Remarks.
1	2	3	4	5	6
Tinnevely— cont.	Rs. 57,200	Acquisition and preparation of a new site in Kandiyaperi to provide for the evicted people and for future extension.	Nil.	.....	Not yet acquired. Acquisition gazetted.
	79,450				
Trichinopoly	9,713	Additional amount required for the acquisition of the habitations of vedars, etc., in the 7th ward.	.....	Particulars not available.	.....
	1,978	(i) Acquisition of land for accommodation of people evicted from Boat village.	1,978 0 0	.....	.....
	1,180	(ii) Sinking two new wells.	.....	.....	Under execution. Will be completed shortly. One well has been filled up. The other is awaiting receipt of a suitable pump.
	300	(iii) Fitting up of two wells with pipes, etc.	182 0 0	.....	As the corrugated iron latrines were delivered late the masonry work could not be completed before the close of the year. Will be completed within a month.
	2,400	(iv) Construction of three latrines.	1,987 0 0	.....	
	205	(v) Clearing of prickly-pear.	273 0 0	.....	
Bimlipatam.	2,500	(vi) Acquisition of land for accommodation of people evicted from Boyi village.	2,500 0 0	.....	
	990	(vii) Laying of roads in the new portion.	.....	.....	
	3,525	(viii) Construction of drains in the new portion.	.....	.....	
	4,515	(ix) Laying out roads, construction of drains, etc., in the new site acquired for the people evicted from the Boat village.	.....	.....	The sites were handed over to the council in the latter end of March and the work will be put in hand soon.
	1,676	(x) Extension of certain drains.	1,263 0 0	.....	The balance will be spent during the current year.
	18,899				
		(i) Widening existing street and opening new ones in Burnzpet for relieving congestion.	139 13 9	This amount represents cost of temporary establishment entertained for the preparation of survey plans, etc., relating to the above scheme.	Acquisition could not be completed before the close of the year.
Vizagapatam	50,000	(ii) Similar improvements in the Bukkavidhi colony and the acquisition thereof.	.....	.....	

DISTRICT BOARDS.

69. I can only reiterate the remarks contained in the reports of the previous years as to the condition of water-supply, drainage and conservancy in rural areas. No appreciable advance is noticeable in these respects which remain very much the same as were already reported; sanitary projects are however under consideration or investigation and these in conjunction with recent developments in regard to the sanitary service would perhaps justify an optimistic view of the future. What is wanted in rural areas is a fairly pure water-supply and attention to conservancy. I am glad to report that as a result of repeated advice endeavours are being made to supply the former defect by the provision of type-design protected wells in place of the ordinary village wells which are subject to pollution in various ways and are the cause of the spread of cholera and bowel disorders. This is the only way for a long time to come of providing a fairly safe drinking water-supply to the village people. With the annual subsidy from Government and the promise contained in G.O. No. 247 L., dated 12th February 1913, it should be possible in a few years to supply this long-felt sanitary want in many of the larger villages especially those that are pilgrim centres or are on the pilgrim and trade caravan routes. In the matter of conservancy retrogression is again observed when compared with the previous years, for out of 43,994 villages in only 515 were conservancy establishments employed. This shows a steady falling off since 1908, which is much to be regretted. Of the villages conserved 389 were union and 126 other villages.

70. Sanitary Assistants to District Medical and Sanitary Officers were employed in the districts of North Arcot, South Arcot, Tanjore, Guntūr and Gōdāvari; in Chingleput and Madura the appointments were abolished for financial reasons. In other districts sanitary work is absolutely without supervision except in some of the unions where Sanitary Inspectors are employed. The employment of sanitary assistants is sound in principle and in practice, judging by reports received from them, they have been of considerable service in districts employing them in checking vaccination work and correcting sanitary errors in towns and villages inspected by them although funds have not always been forthcoming to give effect to the more important of their recommendations. Their extended employment must follow as the logical sequence of the reforms recently inaugurated; for without an intermediate subordinate staff of Sanitary Assistants or District Health Officers as they should be rightly designated, and their further sub-division into Sanitary Inspectors, the employment of officers alone will be of little practical value. Under present conditions, however, the service is unpopular with Assistant Surgeons; they are practically thrust into the post for a certain term, usually two years, and they seek to leave it at the earliest opportunity for the regular line—an unsatisfactory system which is a hindrance to securing the services of men who have a real liking and aptitude for sanitary work. This is, however, a matter of detail which I trust will be set right sooner or later when their extended employment comes to be considered.

71. As usual the works of sanitary nature carried out by District Boards consisted of the construction and repair of wells, tanks, latrines, markets and slaughter-houses and the like. Details of the major sanitary works which are either awaiting sanction or are under consideration and investigation are furnished in the report of the Sanitary Engineer to Government. What is disappointing is that none of the latter have yet been completed so that nowhere in the rural areas is there a piped water-supply or comprehensive sewerage system.

72. The assignment for sanitation amounted to 8.2 per cent. of the estimated income of all District Boards against 9 per cent. in the previous year. The inadequacy of this provision needs no remark. The allotment ranged from 17.8 per cent. in Ganjām to 1.2 in Malabar; the smallness of the provision being most noticeable, besides Malabar, in the districts of Tanjore (2.3), North Arcot (5.6), Vizagapatam (5.9), Guntūr (6.2), South Canara (6.3), Nilgiris (6.9), Trichinopoly (7.4), Kurnool and Chittoor (7.5 each), Coimbatore (8.1), South Arcot (8.4), Kistna (8.5) and Salem (9.4) per cent. The expenditure on sanitation amounted to 45.2 per cent. of the allotment against 42.6 per cent. in the previous year. Thus a large proportion of

the assignment must have lapsed before the close of the official year. Of the total sanitary allotment, viz., Rs. 12,89,652, the improvement of water-supply absorbed Rs. 4,20,616 and conservancy Rs. 4,58,104, the expenditure under these heads being Rs. 1,10,679 and Rs. 3,52,025, respectively. The remainder was devoted to the improvement of village-sites, construction and repair of markets, slaughter-houses, sanitary arrangements during fairs and festivals, etc. In ten of the districts the expenditure exceeded 50 per cent. of the allotment, whilst in others it fell below this figure, the worst districts being Kurnool (18 per cent.), Ganjām (21·8), South Canara (23·0) and Kistna (26·0).

Maintenance of Village Sanitary Inspection Books.

73. Except in the Nilgiris where there are no unions the Village Sanitary Inspection books have been generally maintained in all the districts of the Presidency. In Coimbatore district they were not maintained in the unions of Pollachi, Palladam, Mēttupālaiyam, Kottur, and Vettaikarampudur, no reason being assigned for the omission: and in Vizagapatam also they were not maintained in Gunapur. In Gōdāvari they are reported to be more largely used than formerly, and their adoption is being encouraged. The District Medical and Sanitary Officer, Salem, states that the remarks are rarely reported by the Inspecting Officers. Similarly the District Medical and Sanitary Officer, Nellore, brings to notice that "not a single extract from the village inspecting officer's report containing the remarks of the Inspecting Officers was received in this office during the year, from which it has to be inferred that Inspecting Officers do not care to make remarks in the books intended for the purpose." It seems to me that indifferent attention is paid to this matter in some districts which calls for some notice.

Mecca Pilgrimage.

74. No pilgrims embarked from any of the maritime ports in this Presidency to attend the last Haj at Mecca.

SECTION X.

GENERAL REMARKS AND PERSONAL PROCEEDINGS.

75. I held the post of Acting Sanitary Commissioner from 1st to 15th January 1912, on which latter date Colonel Thomson resumed charge on return from Military duty as Principal Medical Officer, Bangalore, and continued in office up to the end of the month when he retired from the service. During his brief incumbency he inspected and reported on the water-supply project of Gudur. I was appointed Sanitary Commissioner on the 1st of February 1912 and continued in office for the rest of the year. The following statement exhibits the inspection work accomplished by me in addition to my office duties and inspections carried out at head-quarters in connection with the King Institute of Preventive Medicine and the selection of sites, etc., for public buildings with reference to G.O. No. 851 W., dated 8th July 1911:—

Month.	Name of place visited.	Purpose.
February 1912.	Bāmnād } Mandapam }	For selection of site for the head-quarters of the newly-formed Bāmnād district.
	Rajahmundry	Inspection of water-supply and drainage schemes.
	Vizianagram	Inspection of scheme for relieving congestion.
March 1912.	Parlakimedi } Bimlipatam }	Inspection of sanitary schemes.
	Coimbatore	Extension of municipal limits and programme of sanitary schemes.
	Chingleput	Inspection of site proposed for leper asylum.
April 1912 .	Ootacamund	Inspection of plague measures.
	Coonoor	Inspection of sanitary schemes.
	Ootacamund	Inspection of water-supply.
	Guntūr	Inspection of proposals for relieving congestion and the drainage of a certain locality.
	Anantapur	To report on the municipal proposals for opening roads and the prohibition of wet cultivation.
	Palghāt	Inspection of sanitary schemes.
	Ootacamund	Inspection of drainage works.
	Salem	To advise as to the plan of relieving congestion in certain quarters and the leasing out of the catchment area of the Panamarathupatti tank for fruit gathering.
May 1912 ..	Vellore	Inspection of proposals for relieving congestion. The head water-works were also inspected.
	Coimbatore	Inspection of site proposed for night-soil depots in the Pērur and Mēttupālaiyam Roads.
June 1912 ..	Kottur } Hospet }	Inspection with reference to an epidemic of cholera.
	Chitwadigi } Daroji }	Inspection with reference to an epidemic of cholera and proposals for the improvement of water-supply.
	Adōni	Inspection of opening up schemes.
July 1912 ..	Bollary	
	Berhampur } Kompalli }	To investigate and report upon an epidemic of cholera.
	Lanjapalli } Chicacole }	
	Sangapuram } Korrlakotta }	
	Amdalavalsu } Tuticorin }	Town inspection with reference to the unhealthiness prevailing in Tuticorin. Also water-supply and site of night-soil depot.

Month.	Name of place visited.	Purpose.
July 1912 —cont.	Tanjore	Inspection of opening up schemes and sites for town extension.
	Kumbakonam	Do. do.
	Ootacamund	Inspection of drainage works.
	Tellicherry	To report on proposals for extension of municipal limits and for acquisition of site for storing rubbish near the incinerator. The site for a market at Tiruvengad was also inspected.
August 1912.	Mangalore	Inspection of opening up schemes.
	Cuddalore	To report on the jail water-supply.
	Ootacamund	To inspect drainage works with the Honourable Member.
	Coonoor	Inspection of the drainage works and the Pasteur Institute.
	Trichinopoly	To report on the question of the renewal or otherwise of the lease of the timber depots on the western boulevard.
September 1912.	Ootacamund	Inspection of certain proposals with reference to water-supply.
	Coonoor	Two visits to inspect the water-supply and drainage in company with the Sanitary Engineer.
	Coimbatore	Inspection of certain sanitary schemes and site of convalescent hospital.
	Cochin	Inspection of site for head water-works, dhobikhana and opening up schemes.
October 1912.	Vandalur	Inspection of site of depot for "done" calves of the King Institute.
November 1912.	Conjeevaram	In company with the members of the All-India Sanitary Conference for the inspection of the water-works.
December 1912.	Rajahmundry } Vizianagram } Berhampur } Adoni } Bellary	Inspection of sanitary schemes. Inspection of sanitary schemes with reference to U.O. No. D 2855/S., dated 22nd November 1912

76. In October and November I was tied down to head-quarters in arranging for and attending the Sessions of the All-India Sanitary and Malaria Conferences which were held in this Presidency and which took up much time and attention. I resumed touring in December and with the many sanitary schemes on hand there was not much time left to carry out detailed routine sanitary inspection of any of the municipalities. With the appointment of the additional Deputy Sanitary Commissioners and the division of the Presidency into ranges it is hoped that it may be possible to overtake all the inspection work before the close of the current year.

77. During the year a steady advance has been made in sanitary progress. While we have reason to be thankful for the advance that is being made there can be no doubt that advantage should be taken of the improved financial condition of the country to redouble our efforts to improve the sanitation of both rural and urban areas and thereby retain the position that Madras has held in the past, in matters sanitary, *fælle princeps* in India.

78. In addition to scrutinizing the plans and estimates of sanitary schemes submitted by the local bodies in connection with the recurring sanitation grant and of structural works on behalf of the Sanitary Board and organizing the work of the Malaria Board, the special medical officer of which commenced operations in the latter half of the year, I drew the attention of local bodies to sanitary defects brought to notice in the inspection reports of District Medical and Sanitary Officers on towns and villages and in reports on fairs and festivals. Plague and cholera epidemics, the latter especially in pilgrims centres, engaged my special attention and local bodies were freely advised as to the remedial measures to be applied. Considerable difficulty had however been experienced in securing the services of qualified Sanitary Inspectors as promptly as could be desired for epidemic work due, not to paucity of qualified men, but to the little attraction which sanitary work under present conditions presents to the Sanitary Inspector. It is hoped

that the scheme inaugurated in G.O. No. 22 L., dated 3rd January 1912, will greatly minimize our present difficulties in this respect. The utility of employing these men, although viewed with considerable suspicion for a long time, is at last beginning to be recognised as evidenced by the numerous applications I receive from local bodies for the services of Sanitary Inspectors for epidemic and festival duties.

79. The reorganization of the sanitary service which was an important feature in the sanitary history of the past year could not be given effect to as final orders on the subject had not been received before the close of the year. These have just been received and I have no doubt that the scheme for this Presidency, such as it is, will aid materially in advancing sanitary work by reason of the closer supervision and the division of labour resulting from the appointment of additional officers as also by the more skilled supervision of sanitary work in municipalities employing Health Officers. If this involves additional expenditure on sanitary schemes that expenditure will be to very good purpose owing to the impetus given to sanitary progress under the altered conditions.

80. At the end of the year the second All-India Sanitary Conference was held in Madras and was attended by numerous distinguished delegates from all parts of India. Much instructive work was done in the reading of papers and the interchange of opinions. The delegates were shown points of sanitary interest in the city of Madras and also at Conjeevaram and the King Institute. The consensus of opinion of the delegates appeared to be that Madras was in some ways ahead of the rest of India in the matter of general sanitation and that while in their provinces matters were under consideration, in this Presidency works of public utility had actually been executed owing to the financial assistance given by the local Government.

81. Twenty-three Assistant Surgeons qualified as Sanitary Assistants to District Medical and Sanitary Officers and 12 Sanitary Inspectors in the employ of local bodies took the quinquennial course and passed the examination. From the Assistant Sanitary Inspector class in the Medical College 33 qualified and 7 passed the Examination in Minor Sanitary Engineering from the class held by the Sanitary Engineer. Twenty-eight men qualified as vaccinators from the King Institute of Preventive Medicine.

82. The checking of stores and the maintenance of the service registers of my office establishment have been duly maintained. The work of this office has almost doubled itself during the year and I take this opportunity of recording my thanks to the whole staff who have so loyally devoted themselves to their work.

W. A. JUSTICE, Captain, I.M.S.,
Sanitary Commissioner for Madras.
OFFICE OF SANITARY COMMISSIONER.
MADRAS, 25th June 1913.

No. III.—Deaths registered in the districts of the Madras Presidency during each month of the year 1912.

Number.	Districts.	3												Total, Madras Presidency.	Ratio of deaths per 1,000 in each month.	2
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.			
1	Arantapur	2,550	1,903	2,013	1,823	1,842	2,128	2,551	3,508	2,843	2,902	2,652	2,187	29,600		1
2	Bellary	3,358	2,216	2,434	2,051	4,279	3,979	3,111	4,313	3,215	2,745	1,949	1,626	34,739		2
3	Chingleput	4,046	2,657	2,619	2,153	2,663	2,876	3,106	3,337	3,011	2,989	2,907	3,145	35,449		3
4	Chittoor	2,952	1,877	1,789	1,172	1,881	1,656	1,936	1,851	2,236	2,577	2,733	3,170	26,490		4
5	Coimbatore	5,953	3,751	3,979	2,876	3,306	3,506	3,653	3,529	3,503	4,038	4,161	4,589	46,945		5
6	Cuddapah	3,153	1,409	1,326	1,772	2,001	1,830	2,300	4,113	2,969	2,271	2,187	2,262	27,123		6
7	Gadagur	3,038	2,469	2,613	2,178	2,075	2,633	2,551	2,796	2,409	1,767	1,186	2,013	39,987		7
8	Gadavari	2,819	2,150	2,230	2,673	3,610	3,225	3,359	4,341	4,687	4,365	3,356	1,368	43,269		8
9	Guntur	3,276	2,414	2,783	2,554	3,635	3,229	4,031	6,889	5,593	4,224	3,205	4,056	39,547		9
10	Kistna	2,691	1,640	1,709	1,471	1,893	1,737	1,879	2,905	3,054	2,111	1,471	1,841	45,910		10
11	Kurnool	2,268	1,656	1,483	1,333	1,418	1,289	1,413	1,965	1,625	1,552	1,494	1,073	24,387		11
12	Madras	5,386	2,831	2,577	2,369	2,376	2,771	2,740	2,571	2,533	3,177	4,241	5,698	19,749		12
13	Madura	6,431	5,746	5,796	6,515	7,769	9,026	11,423	10,340	7,314	6,061	5,597	6,987	38,726		13
14	Mahabur	2,898	1,789	1,894	1,435	2,270	1,673	1,850	2,449	2,520	2,408	2,543	2,461	84,692		14
15	Nellore	225	167	226	226	282	333	316	269	244	203	222	231	25,935		15
16	Nilgiris, The	4,633	3,752	3,154	2,175	2,647	3,145	3,690	2,892	3,084	3,970	6,214	6,600	23,444		16
17	North Arcot	3,916	2,685	1,556	1,827	1,821	1,870	2,025	1,955	1,937	1,969	1,989	4,423	45,656		17
18	Ramanad	4,235	2,578	2,733	2,325	2,504	2,860	2,965	2,766	2,891	4,416	4,368	4,603	27,144		18
19	Salem	7,864	5,367	4,476	3,569	3,892	3,364	4,438	3,399	4,171	4,416	4,368	4,595	58,079		19
20	South Arcot	4,318	2,911	2,401	1,963	2,132	2,833	3,505	3,217	2,636	2,352	2,516	3,412	51,110		20
21	South Canara	10,981	5,241	4,109	3,619	4,072	4,269	5,157	5,169	5,243	5,613	6,122	8,503	31,153		21
22	Tanjore	7,007	4,125	3,211	2,659	2,435	2,839	2,652	2,578	2,763	3,480	5,029	7,942	68,068		22
23	Tinnevely	5,892	3,917	2,946	2,750	3,006	3,723	3,635	3,632	3,417	3,762	4,254	5,876	46,876		23
24	Tichinopoly	4,152	2,945	4,010	3,148	3,555	3,600	4,287	6,538	5,823	4,825	4,122	4,722	45,969		24
25	Vizagapatnam	105,093	63,745	67,006	61,234	72,997	76,723	83,861	94,206	86,708	80,621	83,407	101,421	51,637		25
Total, Madras Presidency															982,308	
Ratio of deaths per 1,000 in each month															24.2	

No. IV.—Deaths registered according to Age in the districts of the Madras Presidency during the year 1912.

Number.	Districts.	6												Total, Madras Presidency.	Ratio of deaths per 1,000 in each month.	2
		Under 1 year.	1 to 4.	5 to 9.	10 to 14.	15 to 19.	20 to 24.	25 to 29.	30 to 34.	35 to 39.	40 to 49.	50 to 59.	60 and upwards.			
1	Arantapur	3,078	2,647	1,325	713	423	1,265	1,721	1,927	1,946	1,549	1,382	1,297	29,600		1
2	Bellary	2,559	2,597	1,210	1,150	678	1,892	1,721	1,721	1,721	1,420	1,382	1,297	34,739		2
3	Chingleput	5,455	5,076	2,463	829	416	1,532	1,721	1,721	1,721	1,420	1,382	1,297	35,449		3
4	Chittoor	2,816	2,636	1,279	629	386	1,098	1,229	1,229	1,229	1,111	1,073	1,073	26,490		4
5	Coimbatore	7,191	6,096	3,346	1,155	521	1,619	1,721	1,721	1,721	1,420	1,382	1,297	46,945		5
6	Cuddapah	2,976	1,707	1,292	822	427	1,265	1,721	1,721	1,721	1,420	1,382	1,297	27,123		6
7	Gadagur	4,161	3,729	1,401	1,285	667	1,721	1,721	1,721	1,721	1,420	1,382	1,297	39,987		7
8	Gadavari	5,953	4,823	2,661	1,158	521	1,619	1,721	1,721	1,721	1,420	1,382	1,297	43,269		8
9	Guntur	7,324	6,135	3,346	1,155	521	1,619	1,721	1,721	1,721	1,420	1,382	1,297	39,547		9
10	Kistna	7,731	6,447	3,346	1,155	521	1,619	1,721	1,721	1,721	1,420	1,382	1,297	45,910		10
11	Kurnool	2,787	2,397	1,210	713	423	1,265	1,721	1,721	1,721	1,420	1,382	1,297	24,387		11
12	Madras	2,938	2,581	1,311	822	427	1,265	1,721	1,721	1,721	1,420	1,382	1,297	45,656		12
13	Madura	5,120	4,496	2,463	1,158	521	1,619	1,721	1,721	1,721	1,420	1,382	1,297	19,749		13
14	Mahabur	16,711	10,923	5,872	2,463	1,158	1,619	1,721	1,721	1,721	1,420	1,382	1,297	38,726		14
15	Nellore	3,462	3,162	1,527	822	427	1,265	1,721	1,721	1,721	1,420	1,382	1,297	84,692		15
16	Nilgiris, The	321	311	325	325	325	325	325	325	325	325	325	325	25,935		16
17	North Arcot	4,992	4,275	2,463	1,158	521	1,619	1,721	1,721	1,721	1,420	1,382	1,297	45,656		17
18	Ramanad	3,462	3,162	1,527	822	427	1,265	1,721	1,721	1,721	1,420	1,382	1,297	27,144		18
19	Salem	6,473	5,501	2,995	1,158	521	1,619	1,721	1,721	1,721	1,420	1,382	1,297	58,079		19
20	South Arcot	7,153	5,669	3,162	1,158	521	1,619	1,721	1,721	1,721	1,420	1,382	1,297	31,153		20
21	South Canara	4,319	3,699	2,162	777	423	1,265	1,721	1,721	1,721	1,420	1,382	1,297	68,068		21
22	Tanjore	5,455	7,169	4,169	1,694	822	1,619	1,721	1,721	1,721	1,420	1,382	1,297	46,876		22
23	Tinnevely	6,154	5,589	4,114	1,694	822	1,619	1,721	1,721	1,721	1,420	1,382	1,297	45,969		23
24	Tichinopoly	6,339	5,764	3,289	1,694	822	1,619	1,721	1,721	1,721	1,420	1,382	1,297	51,637		24
25	Vizagapatnam	5,911	5,375	3,051	1,158	521	1,619	1,721	1,721	1,721	1,420	1,382	1,297	982,308		25
Total, Madras Presidency															24.2	
Ratio of deaths per 1,000 in each month															24.2	

* Calculated on the total population for the Presidency as per census of 1911 including Europeans and Eurasians though the statistics are exclusive of Europeans and Eurasians and born-dead.

No. VI.—Births and Deaths registered from Different Causes in the districts and towns of the Madras Presidency during the year 1912—cont.

Number.	Districts and towns.	Population for which returns were received.	Births.		Deaths.		Injuries.		Total deaths from all causes.		Ratio of deaths per 1,000 of population.						
			Total number.	Birth rate per 1,000 of population.	Total number.	Death rate per 1,000 of population.	Males.	Females.	Total.	Cholera.	Small-pox.	Plague.	Fever.	Dysentery and diarrhoea.	Respiratory diseases.	Other causes.	From all causes.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
B.—Towns.																	
1	Madras—M.T.C. Ammalapur	8,457	256	30.2	161	19.0											
2	T.C. Adyar	12,338	322	26.1	101	8.2											
3	T.C. Alwarpet	11,635	311	26.7	111	9.5											
4	T.C. Brindavan	10,436	274	26.2	106	10.2											
5	T.C. Chokkikulam	10,436	274	26.2	106	10.2											
6	T.C. Chokkikulam	10,436	274	26.2	106	10.2											
7	T.C. Chokkikulam	10,436	274	26.2	106	10.2											
8	T.C. Chokkikulam	10,436	274	26.2	106	10.2											
9	T.C. Chokkikulam	10,436	274	26.2	106	10.2											
10	T.C. Chokkikulam	10,436	274	26.2	106	10.2											
11	T.C. Chokkikulam	10,436	274	26.2	106	10.2											
12	T.C. Chokkikulam	10,436	274	26.2	106	10.2											
13	T.C. Chokkikulam	10,436	274	26.2	106	10.2											
14	Belur—M.T.C. Bellary	31,656	1,408	44.2	174	5.5											
15	M.T.C. Bellary	31,656	1,408	44.2	174	5.5											
16	M.T.C. Bellary	31,656	1,408	44.2	174	5.5											
17	T.C. Hosur	10,436	274	26.2	106	10.2											
18	T.C. Hosur	10,436	274	26.2	106	10.2											
19	T.C. Hosur	10,436	274	26.2	106	10.2											
20	T.C. Hosur	10,436	274	26.2	106	10.2											
21	T.C. Hosur	10,436	274	26.2	106	10.2											
22	T.C. Hosur	10,436	274	26.2	106	10.2											
23	T.C. Hosur	10,436	274	26.2	106	10.2											
24	Chittoor—M.T.C. Chittoor	53,864	2,124	39.4	74	1.4											
25	M.T.C. Chittoor	53,864	2,124	39.4	74	1.4											
26	T.C. Chittoor	53,864	2,124	39.4	74	1.4											
27	T.C. Chittoor	53,864	2,124	39.4	74	1.4											
28	T.C. Chittoor	53,864	2,124	39.4	74	1.4											
29	T.C. Chittoor	53,864	2,124	39.4	74	1.4											
30	T.C. Chittoor	53,864	2,124	39.4	74	1.4											
31	T.C. Chittoor	53,864	2,124	39.4	74	1.4											
32	T.C. Chittoor	53,864	2,124	39.4	74	1.4											
33	T.C. Chittoor	53,864	2,124	39.4	74	1.4											
34	T.C. Chittoor	53,864	2,124	39.4	74	1.4											
35	T.C. Chittoor	53,864	2,124	39.4	74	1.4											
36	T.C. Chittoor	53,864	2,124	39.4	74	1.4											
37	T.C. Chittoor	53,864	2,124	39.4	74	1.4											
38	Chittoor—M.T.C. Chittoor	53,864	2,124	39.4	74	1.4											
39	T.C. Chittoor	53,864	2,124	39.4	74	1.4											
40	T.C. Chittoor	53,864	2,124	39.4	74	1.4											
41	T.C. Chittoor	53,864	2,124	39.4	74	1.4											
42	T.C. Chittoor	53,864	2,124	39.4	74	1.4											
43	Coimbatore—M.T.C. Coimbatore	47,907	1,746	36.4	63	1.3											

No. VI.—Births and Deaths registered from Different Causes in the districts and towns of the Madras Presidency during the year 1912—cont.

Number.	Districts and towns.	Population for which returns were received.	Births.		Cholera.	Small-pox.	Plague.	Typhoid.	Dysentery and diarrhoea.	Injuries.		All other causes.	Total deaths from all causes.	Ratio of deaths per 1,000 of population.									
			Total number.	Birth rate per 1,000 of population.						Wounds and accidents.				Snake-bite and poisons.	Total.	Cholera.	Small-pox.	Plague.	Typhoid.	Dysentery and diarrhoea.	Injuries.	All other causes.	From all causes.
										Males.	Females.												
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18						
B.—Towns—cont.																							
44	Coimbatore—cont.	16,701	629	37.7	45	1	3	161	27	10	10	206	552	27	62	20	319						
45	M.T.C. Erode	18,831	107	5.7	13	6	120	37	1	1	1	138	63	0.5	0.5	0.5	70						
46	T.C. Karur	17,256	334	19.3	13	55	115	37	1	1	1	183	297	21	62	62	463						
47	T.C. Krishnagiri	17,256	334	19.3	13	55	115	37	1	1	1	183	297	21	62	62	463						
48	T.C. Kottur	10,969	263	24.0	16	23	52	27	1	1	1	174	233	13	43	13	308						
49	T.C. Udumalpet	10,445	276	26.4	16	23	52	27	1	1	1	174	233	13	43	13	308						
50	T.C. Coimbatore	16,701	629	37.7	45	1	120	37	1	1	1	183	297	21	62	62	463						
51	T.C. Coimbatore	16,701	629	37.7	45	1	120	37	1	1	1	183	297	21	62	62	463						
52	T.C. Coimbatore	16,701	629	37.7	45	1	120	37	1	1	1	183	297	21	62	62	463						
53	T.C. Coimbatore	16,701	629	37.7	45	1	120	37	1	1	1	183	297	21	62	62	463						
54	T.C. Coimbatore	16,701	629	37.7	45	1	120	37	1	1	1	183	297	21	62	62	463						
55	Coimbatore—A	17,867	525	29.5	38	39	71	62	62	6	6	636	41	37	37	61	554						
56	M.T.C. Coimbatore	16,999	298	17.5	104	37	27	17	1	1	1	236	236	34	34	34	48						
57	T.C. Proddatur	17,256	297	17.2	131	3	33	1	1	1	1	236	236	34	34	34	48						
58	T.C. Rayachoti	11,569	72	6.2	24	3	33	1	1	1	1	71	137	63	63	63	113						
59	T.C. Rayachoti	11,569	72	6.2	24	3	33	1	1	1	1	71	137	63	63	63	113						
60	T.C. Rayachoti	11,569	72	6.2	24	3	33	1	1	1	1	71	137	63	63	63	113						
61	T.C. Rayachoti	11,569	72	6.2	24	3	33	1	1	1	1	71	137	63	63	63	113						
62	T.C. Rayachoti	11,569	72	6.2	24	3	33	1	1	1	1	71	137	63	63	63	113						
63	T.C. Rayachoti	11,569	72	6.2	24	3	33	1	1	1	1	71	137	63	63	63	113						
64	T.C. Rayachoti	11,569	72	6.2	24	3	33	1	1	1	1	71	137	63	63	63	113						
65	T.C. Rayachoti	11,569	72	6.2	24	3	33	1	1	1	1	71	137	63	63	63	113						
66	T.C. Rayachoti	11,569	72	6.2	24	3	33	1	1	1	1	71	137	63	63	63	113						
67	T.C. Rayachoti	11,569	72	6.2	24	3	33	1	1	1	1	71	137	63	63	63	113						
68	T.C. Rayachoti	11,569	72	6.2	24	3	33	1	1	1	1	71	137	63	63	63	113						
69	T.C. Rayachoti	11,569	72	6.2	24	3	33	1	1	1	1	71	137	63	63	63	113						
70	T.C. Rayachoti	11,569	72	6.2	24	3	33	1	1	1	1	71	137	63	63	63	113						
71	T.C. Rayachoti	11,569	72	6.2	24	3	33	1	1	1	1	71	137	63	63	63	113						
72	T.C. Rayachoti	11,569	72	6.2	24	3	33	1	1	1	1	71	137	63	63	63	113						
73	T.C. Rayachoti	11,569	72	6.2	24	3	33	1	1	1	1	71	137	63	63	63	113						
74	T.C. Rayachoti	11,569	72	6.2	24	3	33	1	1	1	1	71	137	63	63	63	113						
75	T.C. Rayachoti	11,569	72	6.2	24	3	33	1	1	1	1	71	137	63	63	63	113						
76	T.C. Rayachoti	11,569	72	6.2	24	3	33	1	1	1	1	71	137	63	63	63	113						
77	T.C. Rayachoti	11,569	72	6.2	24	3	33	1	1	1	1	71	137	63	63	63	113						
78	T.C. Rayachoti	11,569	72	6.2	24	3	33	1	1	1	1	71	137	63	63	63	113						
79	T.C. Rayachoti	11,569	72	6.2	24	3	33	1	1	1	1	71	137	63	63	63	113						
80	T.C. Rayachoti	11,569	72	6.2	24	3	33	1	1	1	1	71	137	63	63	63	113						
81	T.C. Rayachoti	11,569	72	6.2	24	3	33	1	1	1	1	71	137	63	63	63	113						
82	T.C. Rayachoti	11,569	72	6.2	24	3	33	1	1	1	1	71	137	63	63	63	113						
83	T.C. Rayachoti	11,569	72	6.2	24	3	33	1	1	1	1	71	137	63	63	63	113						
84	T.C. Rayachoti	11,569	72	6.2	24	3	33	1	1	1	1	71	137	63	63	63	113						
85	T.C. Rayachoti	11,569	72	6.2	24	3	33	1	1	1	1	71	137	63	63	63	113						
86	T.C. Rayachoti	11,569	72	6.2	24	3	33	1	1	1	1	71	137	63	63	63	113						
87	T.C. Rayachoti	11,569	72	6.2	24	3	33	1	1	1	1	71	137	63	63	63	113						
88	T.C. Rayachoti	11,569	72	6.2	24	3	33	1	1	1	1	71	137	63	63	63	113						
89	T.C. Rayachoti	11,569	72	6.2	24	3	33	1	1	1	1	71	137	63	63	63	113						
90	T.C. Rayachoti	11,569	72	6.2	24	3	33	1	1	1	1	71	137	63	63	63	113						
91	T.C. Rayachoti	11,569	72	6.2	24	3	33	1	1	1	1	71	137	63	63	63	113						
92	T.C. Rayachoti	11,569	72	6.2	24	3	33	1	1	1	1	71	137	63	63	63	113						
93	T.C. Rayachoti	11,569	72	6.2	24	3	33	1	1	1	1	71	137	63	63	63	113						
94	T.C. Rayachoti	11,569	72	6.2	24	3	33	1	1	1	1	71	137	63	63	63	113						
95	T.C. Rayachoti	11,569	72	6.2	24	3	33	1	1	1	1	71	137	63	63	63	113						
96	T.C. Rayachoti	11,569	72	6.2	24	3	33	1	1	1	1	71	137	63	63	63	113						
97	T.C. Rayachoti	11,569	72	6.2	24	3	33	1	1	1	1	71	137	63	63	63	113						
98	T.C. Rayachoti	11,569	72	6.2	24	3	33	1	1	1	1	71	137	63	63	63	113						
99	T.C. Rayachoti	11,569	72	6.2	24	3	33	1	1	1	1	71	137	63	63	63	113						
100	T.C. Rayachoti	11,569	72	6.2	24	3	33	1	1	1	1	71	137	63	63	63	113						

[illegible][illegible]

No. VI.—Births and Deaths registered from Different Causes in the districts and towns of the Madras Presidency during the year 1912—cont.

[illegible]

NOTE.—As the nomenclature for Mongolians and Eurasians are not separately available for all the town circles the statistics shown against each of the town circles are inclusive of Europeans and Eurasians.

No. VII.—Deaths registered from Cholera in the districts of the Madras Presidency during each month of the year 1912.

[illegible]

No. VIII.—Deaths registered from Small-pox in the district of the Madras Presidency during each month of the year 1912.

Number.	2		3	4		5												6		7	8	9				
	Districts.			Circles of registration.	Villages.		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.								
	Number in each district.	Number from small-totals which were reported.			Number in each district.	Number from small-totals which were reported.																				
1	22	10	846	63	...	7	23	13	24	6	3	3	56	3	23	30	100	79	188	47	34	102	0.2	0.2	0.2	
2	20	13	949	341	58	48	38	44	55	51	07	07	48	27	22	34	282	261	543	247	260	0.6	0.5	0.5	0.8	
3	...	14	2,157	112	45	60	62	44	67	17	10	30	45	30	26	32	213	222	435	214	119	0.3	0.3	0.3	0.3	
4	...	...	2,417	136	80	40	37	34	12	33	34	63	22	42	18	34	273	216	489	268	175	0.4	0.4	0.4	0.4	
5	...	22	1,350	364	252	258	226	244	209	209	202	232	174	170	138	137	191	1,247	1,239	2,476	1,113	738	1.2	1.1	1.2	
6	...	17	882	91	53	18	7	16	28	21	37	88	37	138	147	191	201	177	378	170	98	0.4	0.4	0.4	0.5	
7	...	24	6,210	280	38	33	72	60	89	121	47	46	31	45	21	50	336	323	662	181	145	0.3	0.3	0.3	0.3	
8	...	22	1,035	74	14	15	29	16	39	24	19	34	33	12	...	24	164	155	319	101	87	0.2	0.2	0.2	0.5	
9	...	21	1,045	64	43	28	30	41	21	19	20	33	22	39	14	30	179	161	340	165	113	0.2	0.2	0.2	0.6	
10	...	26	1,715	106	64	72	77	87	69	37	48	59	40	57	28	141	400	363	763	378	244	0.4	0.4	0.4	0.6	
11	...	12	1,809	80	16	20	18	27	17	8	14	26	7	18	3	10	69	85	181	164	12	0.2	0.2	0.2	0.4	
12	...	1	1	1	24	18	20	11	12	2	3	3	3	3	...	3	43	58	101	17	33	0.2	0.2	0.2	0.3	
13	...	19	1,108	195	117	63	128	98	74	61	67	59	15	43	59	82	471	409	871	289	274	0.5	0.4	0.4	0.5	
14	...	18	2,213	155	116	199	136	87	61	24	29	21	30	14	8	33	372	386	758	54	86	0.3	0.3	0.3	0.7	
15	...	21	1,032	179	72	49	36	57	72	37	27	45	70	48	78	64	339	326	655	361	204	0.5	0.5	0.5	0.7	
16	...	6	57	16	1	...	...	6	8	...	3	4	4	2	1	2	12	15	27	2	11	0.2	0.2	0.2	0.7	
17	...	29	2,326	81	153	166	171	63	55	117	69	50	55	107	117	147	639	585	1,254	521	513	0.7	0.6	0.7	0.2	
18	...	31	3,408	75	176	128	95	84	69	68	83	28	53	37	46	36	434	413	557	279	322	0.6	0.5	0.5	0.7	
19	...	15	2,255	124	23	48	16	26	24	39	52	40	34	41	74	64	246	238	494	230	144	0.3	0.3	0.3	0.2	
20	...	19	2,351	398	224	210	238	156	141	160	166	88	93	91	57	114	95	915	768	1,683	594	586	0.8	0.6	0.7	1.1
21	...	11	7	305	59	33	16	22	14	10	16	7	17	15	8	0	29	108	91	189	76	62	0.1	0.2	0.2	0.7
22	...	30	2,827	334	194	195	171	155	123	58	62	67	61	87	69	62	670	651	1,321	352	360	0.6	0.5	0.5	0.6	
23	...	35	1,168	88	22	65	55	42	12	4	4	4	3	...	5	12	5	117	113	230	88	59	0.1	0.1	0.1	0.4
24	...	17	1,381	177	133	66	78	70	87	69	39	39	48	55	22	34	74	419	317	703	272	259	0.4	0.3	0.4	0.3
25	...	28	11	58	...	4	13	19	17	9	5	5	3	22	7	1	6	56	55	111	20	28	0.05	0.05	0.1	0.9
Total, Madras Presidency				3,853	1,959	1,832	1,786	1,545	1,420	1,140	1,069	1,032	1,074	931	352	1,312	8,394	7,730	16,604	6,313	4,971	0.4	0.4	0.4	0.6	

No. IX.—Deaths registered from Fevers in the districts of the Madras Presidency during each month of the year 1912.

1	2	3	4		5												6	7	8				
			Villages.		Number in each district.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.				December.			
			Number from which deaths from fevers were reported.	Number from which deaths from fevers were reported.																			
Number.	Districts.	Number in each district.	Number from which deaths from fevers were reported.	Number from which deaths from fevers were reported.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Males.	Females.	Total.	Males.	Females.	Total.	Ratio of deaths per 1,000 of population.
1	Anantapur	...	22	840	248	418	277	313	288	291	202	269	243	212	231	317	207	1,781	1,514	3,298	3,934	285	
2	Bahary	...	20	949	370	278	125	176	155	166	180	216	247	239	211	177	136	1,187	1,118	2,305	2,423	211	
3	Chingapat	...	20	1,157	779	518	350	336	301	391	337	418	421	427	397	347	411	2,597	2,487	4,084	3,133	335	
4	Chittoor	...	14	1,447	2,447	1,040	636	508	489	603	603	569	554	639	598	667	771	3,492	3,801	7,793	6,632	633	
5	Coimbatore	...	22	1,350	612	751	538	421	408	409	481	529	472	518	633	531	818	3,269	3,330	6,599	3,131	37	
6	Cuddapah	...	17	882	895	1,572	1,154	594	1,195	1,200	1,086	995	1,435	1,094	1,041	1,113	1,174	7,129	6,921	14,053	15,745	154	
7	Gadagur	...	24	1,210	3,318	2,328	1,861	2,265	1,989	2,477	2,074	2,204	1,245	1,540	1,367	1,153	1,576	11,155	10,974	22,129	22,100	161	
8	Gadavari	...	22	1,335	1,339	1,498	951	1,293	1,132	1,264	1,310	1,489	1,806	1,666	1,892	1,836	2,502	9,785	9,264	19,049	19,115	112	
9	Guntur	...	21	945	951	1,368	693	1,137	1,144	1,836	1,557	1,510	2,008	2,166	1,871	1,541	1,093	9,426	9,308	18,994	11,611	107	
10	Kistna	...	20	1,715	851	1,379	911	1,159	1,084	1,539	1,362	1,493	2,117	2,114	1,579	1,367	2,162	8,127	8,160	18,227	9,131	181	
11	Kurnool	...	12	860	683	1,299	1,045	1,039	1,090	1,102	1,073	1,075	1,368	1,479	1,252	1,166	1,167	7,399	6,836	14,145	15,745	136	
12	Madras	...	1	1	1	486	343	315	280	252	229	231	371	339	286	317	363	1,871	2,020	3,891	7,233	105	
13	Madura	...	19	1,108	705	801	576	510	570	537	633	610	575	555	762	825	988	4,127	3,854	7,981	4,430	53	
14	Malabar	...	18	2,213	793	2,162	1,951	2,017	2,224	2,519	2,985	4,278	3,865	2,329	2,291	1,904	2,274	10,277	14,704	31,091	11,611	81	
15	Nellore	...	21	1,602	1,190	1,588	990	941	798	1,278	912	869	1,315	1,272	1,456	1,375	1,460	7,399	6,859	14,149	11,611	105	
16	Pilgrims, The	...	6	57	57	58	40	66	64	80	126	82	92	79	60	61	71	489	385	874	80	73	
17	North Arcot	...	29	2,223	411	511	350	368	266	314	395	327	331	291	371	466	450	2,293	2,295	4,528	2,333	39	
18	Ramanad	...	31	3,408	688	956	563	494	491	524	589	690	629	624	603	530	1,841	3,956	4,101	8,657	5,047	59	
19	Salem	...	15	1,255	1,268	1,052	688	659	659	614	737	809	766	681	762	929	1,106	4,722	4,640	9,362	5,432	67	
20	South Arcot	...	19	2,351	955	1,335	1,036	1,029	772	983	728	743	601	560	1,070	1,086	1,118	5,814	5,717	11,531	5,648	63	
21	South Canara	...	11	365	666	1,175	915	830	674	774	1,053	1,300	1,160	940	720	825	986	5,869	5,573	11,442	10,299	401	
22	Tanjore	...	30	2,637	1,312	1,631	691	633	690	710	809	846	899	877	592	892	892	4,642	4,527	9,539	4,141	37	
23	Tinnevely	...	36	1,108	922	1,508	989	717	699	863	614	621	597	735	735	882	1,353	5,195	5,114	10,309	6,045	47	
24	Trichinopoly	...	17	1,381	627	1,225	762	779	700	727	551	632	830	789	818	935	1,169	5,138	5,279	10,412	5,049	52	
25	Vizagapatam	...	28	2,009	2,634	3,636	2,595	2,863	2,527	2,955	2,885	3,321	4,495	4,631	4,156	3,612	4,827	21,312	20,767	42,079	20,316	176	
Total, Madras Presidency			500	471	41,056	21,342	29,968	21,361	22,065	20,482	24,323	24,047	24,280	28,583	27,773	26,017	30,555	165,493	160,478	326,471	78	73	

No. X.—Deaths registered from Dysentery and Diarrhoea in the Districts of the Madras Presidency during each month of the year 1912.

Number.	Districts.	3	4		5												6			7		8			
			Number in each district.	Number from which reported.	Number in each district.	Number from which reported.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.	Ratio of deaths per 1,000 population.	Mean ratio per 1,000 for previous 5 years.				
		Circles of registration.		Villages.														Total.			Males.		Females.		Total.
		Number in each district.	Number from which reported.	Number in each district.	Number from which reported.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Males.	Females.	Total.					
1	Amravati	22	19	816	170	125	81	87	57	59	61	105	113	130	106	117	102	518	1,143	1.2					
2	Bellary	20	20	949	397	156	130	134	143	229	175	221	264	225	154	122	104	994	2,057	2.1					
3	Chingleput	20	20	2,147	627	458	352	275	208	200	248	239	326	311	237	293	321	1,709	3,346	2.5					
4	Chittoor	14	14	2,447	2,447	208	124	140	90	93	118	129	118	137	108	197	209	892	1,738	1.4					
5	Coimbatore	22	21	1,350	554	544	339	321	333	430	463	469	472	493	553	488	401	2,686	5,443	2.6					
6	Cuddapah	17	14	862	193	28	69	19	36	14	21	48	89	116	81	125	102	341	711	0.8					
7	Ganjam	24	10	6,210	718	156	111	243	204	309	261	277	254	217	80	83	137	1,289	2,332	1.2					
8	Godavari.	22	21	1,365	335	192	54	77	89	68	98	154	263	429	319	121	72	1,021	1,960	1.3					
9	Guntur	21	20	945	347	57	78	82	76	66	66	108	303	279	149	107	67	761	1,436	0.9					
10	Kistna ..	25	25	1,715	272	82	71	81	70	83	106	153	309	243	151	54	42	729	1,436	0.7					
11	Kurnool	12	12	809	200	58	39	38	28	39	38	55	141	152	79	60	58	455	825	1.0					
12	Madras	1	1	1	1	564	336	355	315	370	326	421	558	380	370	326	473	2,391	4,834	9.2					
13	Madura	19	19	1,108	516	417	300	241	197	202	262	203	214	214	256	440	257	1,991	3,015	2.0					
14	Madhar	18	16	2,213	747	698	633	601	840	1,148	1,637	1,943	1,557	974	583	607	989	6,527	12,521	4.4					
15	Nellore ..	21	19	1,602	110	71	54	41	45	41	41	47	171	126	71	66	46	450	820	0.7					
16	North Arcot	6	6	57	43	49	22	42	62	63	90	80	84	95	108	122	555	327	613	5.4					
17	North Arcot	29	28	2,328	402	519	373	326	269	222	285	291	326	307	556	786	705	2,577	4,978	2.4					
18	Ramanad	31	24	3,408	126	179	150	134	104	81	79	106	84	95	108	122	555	812	1,591	1.3					
19	Salem ..	15	15	2,255	468	263	163	137	105	146	186	137	139	174	252	346	204	1,298	2,371	1.4					
20	South Arcot	19	19	2,351	404	539	376	304	266	205	217	253	232	279	352	337	271	1,911	3,671	1.6					
21	South Canara ..	11	10	805	524	675	482	235	216	228	333	481	415	313	291	325	568	2,554	4,616	4.4					
22	Tanjore	30	29	2,527	720	550	317	212	140	199	187	240	293	295	334	377	477	1,824	3,650	3.6					
23	Tinnevely	35	31	1,168	366	501	281	215	148	134	132	139	104	138	184	246	394	1,289	2,556	1.5					
24	Tichinopoly	17	17	1,381	382	177	138	105	108	137	167	153	187	138	202	230	284	1,020	2,026	1.0					
25	Vizagapatam ..	23	20	2,600	108	77	60	90	57	99	87	126	204	223	136	89	61	472	1,451	0.7					
Total, Madras Presidency		500	452	44,050	11,214	7,279	5,138	4,301	4,220	4,945	5,683	6,727	7,620	6,480	5,854	6,159	7,257	37,169	71,913	1.9					
																					1.8				

No. XI.—Deaths registered from Respiratory Diseases in the Districts of the Madras Presidency during each month of the year 1912.

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.			Mean ratio per 1,000 for previous 5 years.		
Number.	Districts.	Circles of registration.		Number in each district.															Number from which deaths from respiratory diseases were reported.	Total.		Males.	Females.	Total.	Males.	Females.	Total.	Ratio of deaths per 1,000 of population.	Mean ratio per 1,000 for previous 5 years.
		Number in each district.	Number from which deaths from respiratory diseases were reported.																				
1	Amravati	22	21	649	261	255	211	215	222	189	174	209	195	204	181	210	203	1,358	1,160	2,508	2.7	2.6	2.6
2	Bellary	20	18	949	311	182	131	141	103	135	97	140	108	105	80	83	82	702	638	1,340	1.4	1.2	1.2
3	Chingleput	20	18	2,157	172	113	103	87	98	113	66	76	86	87	79	94	106	532	646	1,108	0.8	0.8	0.8
4	Chittoor	14	13	2,447	2,447	181	107	99	167	112	127	116	122	127	155	177	114	863	761	1,624	1.4	1.2	1.2
5	Coimbatore	22	20	1,350	427	320	249	223	179	245	257	235	237	232	267	287	300	1,680	1,452	3,132	1.6	1.4	1.5
6	Cuddapah	17	15	882	180	58	69	42	52	61	65	41	63	76	83	80	166	411	347	788	1.0	0.8	0.9
7	Ganjam	24	9	6,210	146	33	59	51	23	53	64	84	27	23	17	19	22	230	185	415	0.2	0.2	0.2
8	Godavari	22	21	1,365	262	113	136	125	76	115	113	120	181	159	104	57	161	865	652	1,457	1.6	0.8	0.9
9	Guntur	21	20	945	341	127	108	108	108	118	152	142	170	170	173	153	148	973	731	1,707	1.1	0.9	1.0
10	Kistna	25	24	1,716	761	368	235	262	210	253	212	332	369	396	401	326	316	2,653	1,977	3,770	2.1	1.7	1.9
11	Kurnool	12	12	809	219	96	65	65	69	79	62	68	91	88	51	71	54	470	389	859	1.0	0.8	0.9
12	Madras	1	1	1	1	332	236	216	143	201	193	220	259	265	184	230	258	1,366	1,365	2,671	5.3	5.3	5.3
13	Madura	19	15	1,108	289	195	119	110	161	107	142	131	133	116	147	267	177	905	779	1,685	1.0	0.8	0.9
14	Malabar	18	16	2,213	477	351	291	261	339	343	418	455	461	492	333	326	343	1,937	1,937	4,364	1.6	1.3	1.5
15	Nellore	21	17	1,692	88	48	28	27	25	49	23	4	3	63	61	38	47	215	169	411	0.4	0.3	0.3
16	Nilgiris, The	6	5	57	12	29	17	13	8	26	22	24	20	18	20	17	31	128	117	245	2.1	2.2	2.1
17	North Arcot	23	25	2,326	167	169	157	168	169	126	112	117	89	83	165	226	229	939	811	1,750	1.6	0.8	0.9
18	Ramanul	31	21	3,468	81	92	76	67	67	72	64	82	71	70	75	61	170	512	455	987	0.7	0.5	0.6
19	Salem	15	15	2,255	275	145	97	106	77	88	169	89	66	68	165	131	116	659	573	1,226	0.7	0.6	0.7
20	South Arcot	19	17	2,351	313	212	189	133	138	175	156	125	98	136	142	260	127	967	864	1,831	0.8	0.7	0.8
21	South Canara	11	9	805	258	168	119	99	99	160	121	113	117	111	113	128	132	739	684	1,423	1.3	1.1	1.2
22	Tanjore	30	29	2,527	394	142	91	81	62	71	78	91	79	63	87	92	134	619	482	1,101	0.6	0.4	0.5
23	Tinnevely	35	21	1,108	131	67	52	46	15	30	39	50	46	59	74	78	101	411	270	681	0.5	0.3	0.4
24	Tichinopoly	17	13	1,381	243	87	45	42	72	58	92	78	61	76	86	113	126	533	469	933	0.6	0.4	0.4
25	Vizagapatam	20	20	2,600	112	65	26	41	29	43	46	52	49	55	33	41	34	399	218	527	0.3	0.2	0.2
Total, Madras Presidency		500	418	44,056	8,337	3,505	3,493	2,627	2,516	2,093	3,097	3,171	3,358	3,213	3,210	3,458	3,813	21,021	17,555	38,616	1.1	0.9	0.9

No. XII.—Deaths registered from Plague in the districts of the Madras Presidency during each month of the year 1912.

1	2	3	4		5												6		7		8	
			Villages.		January	February	March	April	May	June	July	August	September	October	November	December	Males.	Females.	Total.	Ratio of deaths per 1,000 of population.		Total.	Mean ratio per 1,000 for previous years.
Number in each district.	Number from which deaths were reported.	Number in each district.	Number from which deaths were reported.	March																	April			May	June	July	August	September	October	November	December	Males.	Females.	Total.	Ratio of deaths per 1,000 of population.	Mean ratio per 1,000 for previous years.
1	Amavapur	22	14	816	15	216	149	32	2	2	28	21	11	25	289	236	525	0.6	0.1			
2	Bollary	20	20	919	143	1,033	506	149	30	28	16	...	...	76	988	517	1,505	2.0	1.9			
3	Chingleput	20	...	2,157	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0.003
4	Chittoor	14	11	2,447	30	28	30	10	2	...	2	1	48	23	103	76	179	0.2	0.1			
5	Coimbatore	22	11	1,350	109	611	329	94	12	5	85	95	146	249	859	807	1,726	0.8	0.8			
6	Cuddalore	17	8	882	11	...	...	...	...	...	22	33	32	41	66	62	128	0.1	0.1			
7	Ganjām	24	...	6,210	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0.002
8	Godāvari	22	7	1,935	6	...	...	...	...	8	...	...	...	...	...	5	13	0.01	0.01			
9	Guntūr	21	...	945	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0.001
10	Kistna	26	3	1,715	5	6	...	...	...	...	...	...	...	...	4	1	5	0.001	0.001			
11	Kurnool	12	2	809	1	1	1	...	...	...	...	...	...	...	2	...	2	0.001	0.001			
12	Madras	1	1	1	1	...	...	...	...	...	...	...	1	...	1	...	1	0.001	0.001			
13	Madura	19	...	1,108	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0.001
14	Malabar	18	1	2,213	...	2	1	...	...	...	...	...	...	...	2	...	2	0.001	0.001			
15	Nellore	21	...	1,602	...	2	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0.1
16	Nilgiris, The	6	6	57	17	21	12	10	7	6	4	8	2	...	...	1	3	0.001	0.001			
17	North Arcot	20	21	2,320	52	153	346	175	19	26	...	63	214	161	576	580	1,156	0.6	0.6			
18	Rāmād	31	...	3,408	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0.005
19	Salem	15	7	2,255	59	126	118	47	15	4	38	26	23	48	237	259	496	0.3	0.3			
20	South Arcot	19	1	2,351	1	1	5	...	...	...	...	...	...	...	4	2	6	0.003	0.003			
21	South Canara	11	7	805	17	23	34	69	44	9	61	0	8	6	159	179	332	0.3	0.3			
22	Tanjore	30	...	2,527	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0.001
23	Tinnevely	35	...	1,163	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0.0006
24	Trichinopoly	17	4	1,381	3	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
25	Vizagapatam	28	...	2,609	...	...	...	...	...	...	...	...	...	1	...	...	3	0.003	0.003			
Total, Madras Presidency		500	124	44,056	473	2,281	1,536	568	131	55	23	108	208	259	3,368	3,282	6,651	0.2	0.2			

APPENDIX.

No. XIII.—Statement prescribed by the Government of India, Home Department (Sanitary), in Letter No. 10—325, dated 8th December 1894, communicated with G.O. No. 2654 L., Mys., dated 20th December 1894.

(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		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.	Years.	Death-rate.	Cholera.	Small-pox.	Fever.	Dysentery and diarrhoea.	All other causes.	Years.	Death-rate.	Cholera.	Small-pox.	Fever.	Dysentery and diarrhoea.	All other causes.	
Adoni	...	...	1895	23.6	0.3	...	38.1	0.3	61.9	1890	16.2	...	...	...	...	...	...
			1896	25.4	1.0	0.1	31.2	0.0	66.8	1891	38.1	...	...	...	...	...	...
			1897	37.9	9.3	...	31.7	3.9	55.1	1892	34.7	...	...	...	...	...	...
			1898	26.5	...	0.3	29.7	5.3	64.7	1893	22.2	...	...	...	...	...	...
			1899	24.1	0.1	...	22.1	2.4	75.4	1894	21.3	...	...	...	...	...	...
			1900	24.4	...	...	34.2	5.3	59.8	...	...	...	...	...	...	...	...
			1901	20.1	0.3	...	30.0	2.9	63.8	...	...	...	...	...	...	...	...
			1902	56.5	11.2	...	2.4	0.9	85.5	...	...	...	...	...	...	...	...
			1903	23.1	...	...	2.6	10.9	94.6	...	...	...	...	...	...	...	...
			1904	71.3	...	...	5.7	11.3	65.5	...	...	...	...	...	...	...	...
Bezwada	...	...	1905	31.1	0.3	...	2.8	5.7	94.6	...	...	...	...	...	...	...	...
			1906	39.8	13.4	0.4	5.1	16.8	64.3	...	...	...	...	...	...	...	...
			1907	24.2	0.3	1.2	3.8	13.2	81.6	...	...	...	...	...	...	...	...
			1908	20.3	6.6	...	10.9	10.4	72.1	...	...	...	...	...	...	...	...
			1909	25.5	1.2	...	13.5	11.9	71.5	...	...	...	...	...	...	...	...
			1910	30.1	...	0.3	9.5	6.6	89.6	...	...	...	...	...	...	...	...
Cocanada	...	...	1911	33.6	...	0.4	8.9	6.5	81.2	...	...	...	...	...	...	...	...
			1912	33.3	6.9	...	12.7	10.6	69.8	...	...	...	...	...	...	...	...
			1909	38.7	...	1.7	11.9	9.9	76.5	1904	38.4	...	...	...	...	...	...
			1910	42.6	...	0.1	13.4	15.0	69.6	1905	45.8	...	...	...	...	...	...
			1911	30.5	12.2	0.6	13.7	10.8	62.7	1906	46.8	...	...	...	...	...	...
			1912	30.4	1.0	...	11.3	10.3	77.4	1907	38.2	...	...	...	...	...	...
Cocanada	...	...	1903	29.4	1.0	...	19.9	12.2	66.9	1898	30.5	...	...	...	...	...	...
			1904	25.8	...	...	23.9	13.3	62.8	1899	23.1	...	...	...	...	...	...
			1905	28.8	2.6	...	18.8	11.3	67.6	1900	26.1	...	...	...	...	...	...
			1906	37.5	11.0	1.1	12.6	12.5	62.8	1901	23.8	...	...	...	...	...	...
			1907	39.9	1.3	0.1	10.5	16.3	71.3	1902	21.3	...	...	...	...	...	...
			1908	30.6	2.2	1.8	12.9	13.7	69.4	...	...	...	...	...	...	...	...

VITAL STATISTICS OF THE GENERAL POPULATION.

(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					
			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.				
			Cholera.	Small-pox.	Fever.	Dysentery and diarrhoea.			Cholera.	Small-pox.	Fever.	Dysentery and diarrhoea.	
Name of municipality.	Drainage.	Water-supply.	Average annual death-rate since the introduction of drainage system or water-supply.		All other causes.				All other causes.				
			Years.	Death-rate.	Cholera.	Small-pox.	Fever.	Dysentery and diarrhoea.	Cholera.	Small-pox.	Fever.	Dysentery and diarrhoea.	
			1869	35.4	..	17.1	13.2	10.7	59.0	..	..	..	..
			1870	30.8	0.5	0.2	14.5	14.3	71.0	..	..	..	..
			1871	23.1	0.6	0.2	21.6	11.6	66.0	..	..	..	..
			1872	27.9	2.6	..	26.4	15.1	56.5	..	..	..	..
			1877	22.3	6.6	0.4	21.3	10.7	61.0	..	..	..	..
			1878	22.4	1.1	0.6	23.5	13.0	63.0	..	..	..	..
			1879	29.8	1.9	0.7	21.1	10.5	78.8	..	..	..	..
			1880	31.2	2.6	1.6	4.5	14.2	77.7	..	..	..	..
			1881	35.5	2.8	1.0	10.8	17.7	67.7	..	..	..	..
			1882	32.8	0.1	1.0	11.6	25.9	61.4	..	..	..	..
1883	32.4	..	0.7	11.0	19.7	68.0	..	..	..	..			
1884	32.0	1.2	0.4	6.0	19.7	72.1	..	..	..	..			
1885	28.8	0.3	0.0	5.8	18.3	69.6	..	..	..	..			
1886	34.3	0.6	5.3	5.1	18.2	64.8	..	..	..	..			
1887	26.8	1.1	..	8.8	17.5	72.6	..	..	..	..			
1888	28.5	0.3	0.1	2.6	13.3	72.8	..	..	..	..			
1889	30.4	..	0.3	8.5	18.4	72.8	..	..	..	..			
1890	37.2	..	..	0.8	20.5	72.7	..	..	..	..			
1891	30.0	0.2	1.1	0.8	20.5	72.7	..	..	..	..			
1892	31.4	4.0	0.1	8.6	20.8	69.8	..	..	..	..			
1893	31.0	1.5	0.1	3.0	17.6	73.1	..	..	..	..			
1894	31.0	2.6	..	3.0	17.6	60.2	..	..	..	..			
1895	27.9	2.6	..	28.0	19.7	49.7	..	..	..	..			
1896	11.3	2.8	..	21.9	13.6	64.5	..	..	..	..			
1897	47.8	5.6	0.4	22.3	17.6	60.8	..	..	..	..			
1898	31.6	0.4	0.4	20.8	15.5	57.7	..	..	..	..			
1899	28.6	..	..	14.8	17.2	68.9	..	..	..	..			
1900	36.5	..	..	0.4	22.4	67.7	..	..	..	..			
1901	24.1	1.0	1.4	20.4	19.4	58.8	..	..	..	..			
1902	23.0	..	..	20.7	14.9	63.9	..	..	..	..			
1903	46.0	..	..	25.1	19.0	55.9	..	..	..	..			
1904	27.6	..	..	8.2	16.3	76.5	..	..	..	..			
1904	..	..	..	3.0	23.6	73.6	..	..	..	..			
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1904	..												

Coimbatore	1893	1893	1.0	3.0	23.4	73.6	1893	38.3	10.5	26.8
		1894	1.0	3.0	23.4	73.6	1894	38.3	10.5	26.8
		1895	1.0	3.0	23.4	73.6	1895	38.3	10.5	26.8
		1896	1.0	3.0	23.4	73.6	1896	38.3	10.5	26.8
		1897	1.0	3.0	23.4	73.6	1897	38.3	10.5	26.8
		1898	1.0	3.0	23.4	73.6	1898	38.3	10.5	26.8
		1899	1.0	3.0	23.4	73.6	1899	38.3	10.5	26.8
		1900	1.0	3.0	23.4	73.6	1900	38.3	10.5	26.8
		1901	1.0	3.0	23.4	73.6	1901	38.3	10.5	26.8
		1902	1.0	3.0	23.4	73.6	1902	38.3	10.5	26.8
		1903	1.0	3.0	23.4	73.6	1903	38.3	10.5	26.8
		1904	1.0	3.0	23.4	73.6	1904	38.3	10.5	26.8
Coimbatore	1892	1892	1.0	3.0	23.4	73.6	1892	38.3	10.5	26.8
		1893	1.0	3.0	23.4	73.6	1893	38.3	10.5	26.8
		1894	1.0	3.0	23.4	73.6	1894	38.3	10.5	26.8
		1895	1.0	3.0	23.4	73.6	1895	38.3	10.5	26.8
		1896	1.0	3.0	23.4	73.6	1896	38.3	10.5	26.8
		1897	1.0	3.0	23.4	73.6	1897	38.3	10.5	26.8
		1898	1.0	3.0	23.4	73.6	1898	38.3	10.5	26.8
		1899	1.0	3.0	23.4	73.6	1899	38.3	10.5	26.8
		1900	1.0	3.0	23.4	73.6	1900	38.3	10.5	26.8
		1901	1.0	3.0	23.4	73.6	1901	38.3	10.5	26.8
		1902	1.0	3.0	23.4	73.6	1902	38.3	10.5	26.8
		1903	1.0	3.0	23.4	73.6	1903	38.3	10.5	26.8
Coimbatore	1892	1892	1.0	3.0	23.4	73.6	1892	38.3	10.5	26.8
		1893	1.0	3.0	23.4	73.6	1893	38.3	10.5	26.8
		1894	1.0	3.0	23.4	73.6	1894	38.3	10.5	26.8
		1895	1.0	3.0	23.4	73.6	1895	38.3	10.5	26.8
		1896	1.0	3.0	23.4	73.6	1896	38.3	10.5	26.8
		1897	1.0	3.0	23.4	73.6	1897	38.3	10.5	26.8
		1898	1.0	3.0	23.4	73.6	1898	38.3	10.5	26.8
		1899	1.0	3.0	23.4	73.6	1899	38.3	10.5	26.8
		1900	1.0	3.0	23.4	73.6	1900	38.3	10.5	26.8
		1901	1.0	3.0	23.4	73.6	1901	38.3	10.5	26.8
		1902	1.0	3.0	23.4	73.6	1902	38.3	10.5	26.8
		1903	1.0	3.0	23.4	73.6	1903	38.3	10.5	26.8

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

Name of municipality.	Date of completion of works of	Drainage.	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.	Small-pox.	Fever.	Dysentery and Diarr.	All other causes.	Years.	Death-rate.	Cholera.	Small-pox.	Fever.	Dysentery and Diarr.	All other causes.
Guntur	1908 ..	..	1908	50.7	11.5	4.1	15.8	3.2	60.1	1903	33.3	..	..	15.0	9.6	75.4
			1909	37.4	..	3.2	19.0	4.2	73.6	1904	51.8	..	..	15.3	10.4	74.3
			1910	47.1	..	1.0	23.8	5.1	65.1	1905	34.2	0.7	..	15.4	9.6	74.3
			1911	30.5	1.3	0.7	23.3	5.4	69.1	1906	17.2	11.2	..	15.1	11.1	69.5
			1912	34.7	0.2	0.1	20.6	5.8	73.3	1907	38.6	0.6	0.3	15.3	7.6	76.2
			1891	37.5	17.6	0.5	18.0	10.0	53.3	1889	34.8	0.9	..	14.8	10.2	52.4
			1895	31.2	3.2	0.7	21.3	11.4	62.8	1890	31.6	8.1	..	17.2	13.4	51.1
			1896	34.2	9.3	..	20.9	11.6	59.1	1891	20.5	11.3	1.6	20.2	13.0	53.9
			1897	39.5	25.2	..	16.2	11.5	49.1	1892	29.1	9.2	1.3	21.4	13.4	56.0
			1898	30.0	11.8	..	15.1	10.3	62.8	1893	30.2	19.8	1.3	14.5	11.6	52.8
Kumbakonam	1894 ..	..	1890	36.4	13.0	..	14.7	9.3	63.0	..	..	..	..	..	..	..
			1900	30.3	3.4	..	14.6	6.9	76.1	..	..	..	..	..	..	..
			1901	31.9	10.2	0.1	13.6	7.4	65.4	..	..	..	..	..	..	..
			1902	29.1	5.5	0.1	9.6	6.5	78.0	..	..	..	..	..	..	..
			1903	31.2	6.7	..	10.0	5.3	77.4	..	..	..	..	..	..	..
			1904	31.6	11.2	..	8.5	9.0	71.3	..	..	..	..	..	..	..
			1905	27.3	11.0	..	11.9	9.5	79.5	..	..	..	..	..	..	..
			1906	38.8	13.4	..	9.6	9.0	60.6	..	..	..	..	..	..	..
			1907	31.9	7.1	7.2	14.1	9.0	63.8	..	..	..	..	..	..	..
			1908	23.9	9.8	0.1	14.5	7.3	68.3	..	..	..	..	..	..	..
Kumbakonam	1894 ..	..	1909	26.7	2.7	0.3	15.5	9.7	71.8	..	..	..	..	..	..	..
			1910	31.9	3.3	0.9	12.0	10.0	73.8	..	..	..	..	..	..	..
			1911	23.2	4.7	1.9	14.3	9.7	69.4	..	..	..	..	..	..	..
			1912	31.1	4.3	1.5	15.7	9.7	68.8	..	..	..	..	..	..	..
			1897	53.2	11.3	3.2	40.6	12.7	32.2	..	..	..	..	..	..	..
			1898	24.6	..	..	50.8	6.0	38.2	1892	55.3	10.0	..	56.7	3.3	30.0
			1899	27.0	..	..	48.2	15.7	36.1	1893	30.2	..	..	57.9	4.2	37.9
			1900	23.3	..	0.3	45.6	16.8	37.3	1894	31.3	3.1	0.1	47.0	4.6	45.2
			1901	32.0	..	..	49.9	15.8	34.3	1895	30.5	6.2	0.4	44.0	3.4	46.0
			1902	32.0	..	..	49.9	15.8	34.3	1896	30.4	4.0	1.9	44.1	3.6	46.4

[illegible]

APPENDIX.

1	2	3	4				5	6							
Name of municipality.	Date of completion of works of drainage.	Average annual discharge since the introduction of drainage system or water supply.	Percentage of deaths to total mortality under each head of death causation.				Average annual deaths 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.							
			Cholera.	Small-pox.	Fever.	Dysentery and diarrhoea.		All other causes.	Cholera.	Small-pox.	Fever.	Dysentery and diarrhoea.	All other causes.		
														Years.	Death-rate.
Trichinopoly—cont.	...	1901	30.8	3.9	0.0	2.0	11.7	82.2	...	...	...	...	...	...	...
	...	1905	23.6	...	30.7	3.7	9.7	61.9	...	...	...	...	...	...	...
	...	1906	21.8	...	1.1	10.3	13.4	70.1	...	...	...	...	...	...	...
	1896 ...	1907	23.1	1.7	0.1	15.6	14.1	68.2	...	...	...	...	...	...	...
	...	1908	29.7	7.7	0.3	13.9	13.9	67.4	...	...	...	...	...	...	...
	...	1909	29.7	6.2	0.2	13.7	14.4	67.5	...	...	...	...	...	...	...
	...	1910	30.2	9.8	2.4	10.9	15.7	70.2	...	...	...	...	...	...	...
	...	1911	31.1	6.2	0.2	11.9	13.1	59.6	...	...	...	...	...	...	...
	...	1912	28.9	4.5	3.1	11.4	14.4	60.6	...	...	...	...	...	...	...
	...	1908	31.3	9.6	1.1	4.3	26.1	61.3	1903	23.3	1.9	1.1	3.1	19.6	74.3
	...	1909	23.7	6.5	2.8	6.2	21.9	68.6	1904	21.6	1.3	0.8	1.3	18.7	63.2
	...	1910	25.6	...	2.9	9.8	19.2	63.6	1905	14.5	0.3	0.7	1.4	31.0	66.6
Vellora	...	1911	23.0	0.1	...	10.0	20.9	69.0	1906	41.2	2.5	0.9	24.5	42.1	
...	...	1912	22.3	2.6	...	6.1	16.0	72.0	1907	25.8	3.3	3.2	23.2	61.4	
Vizagapatam	...	1903	29.5	...	...	19.7	24.7	55.6	1898	23.6	...	0.2	25.2	20.0	54.6
	...	1904	32.1	0.4	...	22.9	20.5	56.3	1899	21.6	...	0.1	26.8	21.0	49.1
	...	1905	29.8	...	...	20.1	18.9	60.6	1900	33.1	...	21.3	29.8	27.1	57.1
	...	1906	33.8	1.8	0.1	25.3	17.3	55.5	1901	25.8	...	20.8	18.9	59.9	...
	...	1907	25.5	1.4	0.4	32.6	13.1	52.5	1902	26.6	...	19.8	20.1	60.1	...
	...	1908	36.2	7.1	3.6	27.0	12.6	49.7	...	...	...	...	...	...	...
	...	1909	27.8	0.1	3.5	27.3	10.8	58.3	...	...	...	...	...	...	...
	...	1910	32.9	0.2	1.0	25.5	16.7	57.6	...	...	...	...	...	...	...
	...	1911	27.0	0.3	0.1	20.7	17.6	52.3	...	...	...	...	...	...	...
	...	1912	32.6	8.0	0.1	23.8	13.8	51.3	...	...	...	...	...	...	...

THE
TWENTY-THIRD ANNUAL REPORT

OF THE

SANITARY ENGINEER TO THE GOVERNMENT OF
MADRAS.

1912-13.

Period covered by this report.—In 1912 Government decided that the investigation of sanitary schemes should in future be included in the financial year from 1st April to 31st March and not from 1st January to 31st December as has been the case for the previous twenty-two years.

In accordance with this decision the present report will deal with the period from 1st April 1912 to 31st March 1913.

The work done by the Sanitary Engineer in the intervening period from 1st January 1912 to 31st March 1912 principally consisted of the completion and despatch of the schemes drawn up in 1911, which schemes were described in the annual report for 1911 and consequently they need not again be referred to, for that reason, in this report. The present report will, therefore, only deal with the work done in the period from 1st April 1912 to 31st March 1913.

Programme of work.—The following list gives the programme of work to be done by the Sanitary Engineer during the year as ordered by Government:—

Name of town.	Local.	Nature of scheme.
1. Chittoor		Water-supply.
2. Gudur		Do.
3. Narasaraopet... ..		Do.
4. Rāmēsvaram		Do.
5. Rāmnād		Do.
6. Saidapet		Drainage.
7. Sembiam		Do.
<i>Municipal.</i>		
1. Adōni		Water-supply.
2. Anantapur		Do.
3. Bezvada		Drainage.
4. Chicaole		Water-supply.
5. Chingleput		Do.
6. Do.		Drainage.
7. Cocanada		Do.
8. Conjeeveram		Water-supply.
9. Coonoor		Do.
10. Cuddapah		Improvement of water-supply.
11. Dindigul		Water-supply.
12. Ellore		Do.
13. Erode		Do.
14. Kumbakōnam		Do.
15. Madura		Do.
16. Masulipatam		Do.
17. Negapatam		Drainage.
18. Ootacamund		Do.
19. Palni		Water-supply.

Name of town.	Municipal—cont.			Nature of scheme.
20. { Tinnevely Palamecottah Tuticorin }	...	...	...	Joint water-supply.
21. Tirupati	...	...	...	Water-supply.
22. Trichinopoly	...	...	...	Improvement of water-supply.
23. Do.	...	...	...	Drainage.
24. Vizagapatam	...	...	...	Improvement of water-supply.

Description of work done on the Programme schemes—Chittoor water-supply.—The investigation of this scheme was completed. Surveys and levels were made and a test of the quantity of water available was carried out by the Assistant Sanitary Engineer, Central Circle, who also prepared a descriptive report on the proposed scheme. This report is under consideration and will be submitted to Government in due course with the recommendation that the scheme should be drawn up in detail if administrative approval is accorded.

Gudur water-supply.—A scheme of water-supply for Gudur was drawn up in 1911 and during the year received the approval of the Sanitary Board and Government in G.O. No/1822 L., dated 2nd December 1912. The recommendation of the Sanitary Engineer that the headworks should be executed and tested before the remainder of the scheme was carried out was approved and arrangements were made at the end of the year under report to carry out the work.

Narasaraopet water-supply.—This scheme was investigated and plans and estimates amounting to Rs. 1,22,000, with an annual working charge for maintenance of Rs. 4,914, were drawn up and forwarded to the Sanitary Board during the year.

The scheme as drawn up consists of a well 25 feet in diameter to be built in the decomposed felspar formation near a stream on the Guntakal railway at a distance of $1\frac{1}{2}$ miles from the Narasaraopet railway station. The water from this well is intended to be pumped by oil-engines and pumps through a 5-inch cast-iron main to a masonry service reservoir adjoining the railway station to the east. The total lift of the pump will be 57.32 feet. The capacity of the reservoir will be 8 hours' supply in two compartments. The water will be distributed through cast-iron pipes and 32 fountains, and 5 hydrants, 33 sluice valves and 8 scour valves will be provided.

The scheme is intended to supply 7 gallons per head to a population of 15,000, the present population being 8,743.

Rameswaram water-supply.—The scheme drawn up by the Assistant Sanitary Engineer, Southern Circle, in 1911 was described in that year's report. An alternative scheme drawn up by the Acting Sanitary Engineer in the year under review was also submitted. This alternative, which included a 25-foot well, oil-engines and pumps and a service reservoir and the usual distribution arrangements was estimated to cost Rs. 1,25,000, for the same population 15,000, and at the same rate of supply 10 gallons per head as in the 1911 scheme. The Acting Sanitary Engineer's scheme received the approval of the Sanitary Board during the year.

Ramnād water-supply.—This scheme was under investigation during the year. The first part of the investigation showed that the sub-soil water of the nearest river, the Vaigai, was brackish and the scheme is still under investigation, all fresh areas being mapped out and explored at depth.

Saidapet drainage.—The conservancy lanes referred to in the 1911 report were not opened up during the year so that levels could not be taken and the scheme drawn up. As the original site for a sewage farm was objected to as being too near the Adyar, several other sites were examined during the year and a site south of Elliot's Beach was selected.

Adoni water-works improvements.—This scheme was under preparation during the year and plans and estimates prepared by the Assistant Sanitary Engineer, Central Circle, were under scrutiny by the Sanitary Engineer.

Anantapur water-supply.—Further investigation on this scheme was undertaken and completed during the year. The scheme has been included in the Sanitary Engineer's programme for 1913-14.

Chingleput water-supply.—Plans and estimates were prepared for this scheme and submitted to the Sanitary Board during the year.

The scheme included an infiltration gallery and collecting well in the bed of the river Palār from which the water will be pumped through a 7-inch cast iron pumping main to a masonry service reservoir of 8 hours' capacity in two compartments located on the Pimalai hill in the town whence the distribution will be as usual. The scheme has been designed for a population of 15,000 at 15 gallons and an alternative scheme at the rate of only 10 gallons per head was also drawn up. The estimated cost of the 15-gallon scheme was Rs. 2,00,000 with annual working expenses of Rs. 9,964.

Cuddapah water-works improvements.—An advance was made with a scheme of improvement to the headworks of this town by the drawing up of plans and estimates for new headworks. The scheme includes the provision of a second deep well to the one lately constructed and the fitting of both wells with pumping plant located in suitable engine-houses. The cost of the works now proposed was Rs. 39,600 and the scheme was forwarded to the Chief Engineer in March 1913.

Ellore water-supply.—A scheme for the supply of the town of Ellore from the Ellore canal was prepared and submitted by the Acting Sanitary Engineer during the year. The scheme was returned by the Chief Engineer in November 1912 for revision, and revised plans and estimates were drawn up and will be forwarded at an early date.

The scheme, as finally revised, consists of the provision of two storage tanks of three months' capacity, of which only one tank will be first constructed. Provision has, however, been made for reserving the space required for the second tank when this tank is actually required by the growth of the population. The water from the storage tank after settlement will be filtered through sand filters and pumped by steam plant to reinforced concrete reservoirs located in the old fort, the only high part of the town. Only one of the reinforced reservoirs will be constructed at first and the water from this reservoir will be distributed by a complete system of cast-iron distribution pipes. Prior to the closing of the canal, water from it will be pumped by a direct acting centrifugal pump into the storage tank in order to raise the level of the water in this tank sufficiently so as to tide over the period of closure.

The revised scheme provides 15 gallons a head for 58,000 people and is estimated to cost Rs. 4,96,700.

Erode water-supply.—This scheme consists of a pumping station on the right bank of the river Cauvery, the source of supply being the deep bed of the river on the left bank, mechanical filters, an 8-inch cast-iron pumping main to a masonry reservoir located on a rock east of the town and the usual distribution arrangements.

Two schemes were prepared, one giving a supply at the rate of 15 gallons per head and the other at 10 gallons per head both for a population of 25,000, the present population being 16,705. The cost of the 15-gallon scheme was estimated at Rs. 3,99,000 with annual working expenses Rs. 17,561 and the cost of the 10-gallon scheme Rs. 3,34,000 with annual working charges Rs. 14,490. These schemes were submitted to the Sanitary Board in October 1912 by the Acting Sanitary Engineer.

Tirupati water-supply improvement scheme.—The investigation of this improvement scheme was completed and plans and estimates prepared by the Assistant Sanitary Engineer, Northern Circle, were submitted to the Sanitary Board in March 1913.

The proposals include the supply and laying of a new 10-inch cast-iron main 5 miles long, and the extension of the existing galleries, both works being proposed with the object of increasing the supply to the town and also with the object of improving the quality of the water to be supplied. The estimated cost of this scheme was Rs. 2,55,000.

Investigation of schemes.—Investigations were completed during the year for the following schemes :—

Hindupur water-supply.
 Nandyal do.
 Nandyal drainage.
 Cuddalore water-supply.
 Chidambaram drainage.
 Devakottah and Sivaganga water-supply.
 Bellary water-supply.
 Calicut drainage.
 Salem do.
 Tenali do.
 Ellore do.
 Adoni do.
 Kumbakonam drainage.
 Vizagapatam water-works improvements.
 Guntur do.

Investigations on hand.—The following investigation work was not completed at the end of the year :—

Periyakulam drainage.
 Coimbatore water-supply.
 Ramanad do.

Additional schemes.—Plans and estimates for the following additional schemes were forwarded during the year :—

	RS.
Service reservoir for Negapatam water-works	1,18,340
Combined hospital for Tinnevely and Palamcottah	1,39,206
Rameswaram hospital	59,910
Salem hospital	1,36,820
Conservancy of Chempauk buildings	54,500

Intermediate references.—The following schemes were referred to the Sanitary Engineer during the year and disposals were forwarded :—

Tinnevely, Palamcottah and Tuticorin joint water-supply.
 Madura water-works improvements.
 Coonoor do.
 Conjeevaram do.
 Trichinopoly do.
 Negapatam drainage.
 Trichinopoly do.

Indents.—The following indents were prepared and forwarded to the Director-General of Stores during the year :—

Vizianagram water-works cast-iron pipes and fittings for the service reservoir.
 Madura municipality (1) steam fire-engine and (2) road-roller.
 Conjeevaram water-works—anthracite for suction gas engine.
 Kurnool water-works improvements—cast-iron pipes and extra pumping plants.
 Village sanitation improvements—indent for pumps.

Works under execution by the Public Works Department—

	RS.
Berhampur water-supply	3,11,000
Vizianagram do.	5,06,700
Nellore water-supply improvements	68,910
Chidambaram water-supply	3,96,650
Negapatam do.	8,39,390
Kodakinal do.	93,770

Works opened during the year—

Periyakulam water-supply.
 Vizianagram do.

Works under execution by the Sanitary Engineer—

	RS.
Kurnool water-works improvements	35,705
Tanjore do	34,000
Gudur water-works	4,000
Experimental filters at Guindy	30,100

Maintenance of water-works.—The following water-works and drainage schemes were in operation at the end of the year :—

Water-works.

Adoni.	Nellore.
Bezwada.	Ootacamund.
Cocanada.	Periyakulam.
Conjeevaram.	Salem.
Coonoor.	Tanjore.
Cuddapah.	Tirupati.
Dindigul.	Trichinopoly.
Gudiyattam.	Vellore.
Guntur.	Vizagapatam.
Kurnool.	Vizianagram.
Madura.	Total 21.

Drainage work.

Ootacamund—Total 1.

These works were inspected by the Sanitary Engineer or his assistants and also by the Boiler Inspection staff in the case of pumping schemes, and Municipal Councils were assisted with advice on upkeep and repairs. The progress of installing meters in water-works with the object of preventing waste of water or alternately of obtaining an income from householders for the use of excess water consumed is still practically nil. The bad feeling engendered by the above policy is one which councils apparently hesitate to incur and the plea that no restriction should be placed on the use of water is interpreted by such councils to mean that waste should not be regulated but only dealt with by mild reproof.

Cost of pumping at water-works.—The following statement shows the amount of water pumped and the cost involved in all pumping stations for the financial year 1911-12. In the next annual report the returns will be given for the two years 1912-13 and 1913-14.

A.—Statement showing the quantity of water pumped and cost of maintenance in all towns having a water-supply by means of pumping during 1911-12.

Number.	Towns.	Population.	Quantity of water pumped.	Consumption per head per annum.	Average working head.	Head for which the scheme was designed.	Cost of maintenance.				Cost of 1,000,000 gallons raised 1 foot high.	Type of engine.	Type of boiler.	
							Fuel.	Oil and sundries.	Establishment.	Repairs.				Total.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	Bazwada	31,213	82,824,091	95	71.55	87	3,091	743	1,059	76	Rs. 5,569	Rs.	Diesel Oil Engine	No boiler.
2	Cocanada	53,704	140,861,583	7.6	48.14	60	2,887	271	2,157	152	5,477	976	Compound Surface Condensing Worthington.	Semi-portable multi-tubular.
3	Conjeevaram	52,870	101,310,511	10.5	44.33	55	3,032	749	1,925	1,765	8,022	1,407	Crosley's Gas Plant Compound Non-condensing Worthington.	No boiler. Semi-portable multi-tubular.
4	Gudiyattam	23,437	21,804,744	2.6	38.29	49	313	169	564	203	1,219	1,446	Hornsbly-Alroyd Oil Engines.	No boiler.
5	Kannool	26,056	116,450,030	12.2	45.50	45	5,069	768	2,718	846	9,401	1,777	Diesel Oil Engine and Compound Steam Engine.	Semi-portable multi-tubular.
6	Madura	132,669	543,929,137	11.2	41.96	51	9,044	1,256	3,789	10,036	21,175	1,406	Triple Expansion Surface Condensing Worthington.	Water-tube.
7	Nellore	33,264	93,691,186	7.7	73.68	54	...	2,991	1,459	1,194	5,835	955	Hornsbly Alroyd Oil Engine.	No boiler.
8	Tanjore	60,050	321,914,986	14.8	74.27	106	23,419	1,269	3,192	5,567	33,428	1,439	Triple Expansion Surface Condensing Worthington.	Water-tube.
9	Trichinopoly (main)	120,573	600,938,377	15.2	122.89	103 to 118	27,472	3,032	6,717	19,425	57,576	978	Do.	Do.
10	Trichinopoly (sub)	...	63,683,490	...	69.81	50	5,555	600	1,092	264	7,411	1,469	Do.	Semi-portable multi-tubular.

Venturi meters are being installed in all pumping schemes and it is hoped in next year's report to give interesting data and comparison of the cost of pumping in the Presidency as compared with the cost in other places.

Type-designs.—The following type-designs were drawn up and submitted during the year:—

- (1) Type-design for scour pipe.
- (2) Do. for a ward of 12 beds (6 males and 6 females).
- (3) Do. for a flush latrine of 12 seats.
- (4) Do. for draw well (revision).
- (5) Design for automatic filter outlet regulator.
- (6) Type-design for a combined corrugated iron latrine.
- (7) Do. for scavengers' huts.
- (8) Do. for an operation room.

(Original design altered as per suggestions of Sanitary Board.)

Minor sanitary works.—The following table shows the minor sanitary works submitted by local bodies and scrutinized by the Sanitary Engineer during the year:—

B.—Statement showing the minor sanitary works dealt with by the Sanitary Engineer during the year.

	Medical institutions.		Latrines.		Slaughter-houses.		Markets.		Wells.		Water-supply.		Drainage.		Miscellaneous.	
	Number.	Amount.	Number.	Amount.	Number.	Amount.	Number.	Amount.	Number.	Amount.	Number.	Amount.	Number.	Amount.	Number.	Amount.
Estimates below Rs. 2,500 sanctioned by the Sanitary Engineer to Government.	33	Rs. 43,740	53	Rs. 53,177	5	Rs. 4,925	13	Rs. 13,237	112	Rs. 1,38,514	72	Rs. 79,063	15	Rs. 20,180	44	Rs. 50,942
Estimates above Rs. 2,500 and below Rs. 10,000.	34	2,07,743	1	4,950	6	17,100	4	33,500	9	28,409	21	92,894	4	19,480	22	1,31,850
Estimates above Rs. 10,000.	18	3,97,634	...	...	...	...	1	27,276	...	...	9	2,76,885	...	...	3	1,00,175
Total	85	6,49,117	54	58,127	11	22,025	23	74,073	131	1,66,953	102	1,48,842	19	39,660	69	2,81,957
Grand total—514 works amounting to Rs. 17,50,754.																

The number of proposals scrutinized by the Sanitary Engineer as shown in the above statement was 514. The continual increase in the number of these proposals received annually by the Sanitary Engineer is a serious matter. It is often necessary to call for further information on the proposals submitted and this procedure largely increases the work of the Sanitary Engineer.

The increase in the number of these proposals is apparently due to two causes, the first being the financial assistance given to local bodies by Government and the second being the increased interest shown by local bodies in the improvement of sanitation within their jurisdiction. The number of proposals to be dealt with by the Sanitary Engineer is now so large that it is evidently necessary to decentralise the work and leave all the proposals up to a certain limit such as Rs. 2,500 to be scrutinized and sanctioned professionally by the Deputy Sanitary Engineers.

All other proposals above the limit finally fixed should be scrutinized and forwarded to the Sanitary Engineer for professional sanction who would dispose of them himself or forward them to the Sanitary Board for the sanction of Government.

Concluding remarks.—The boiler inspection work will be dealt with by the undersigned in forwarding the Senior Boiler Inspector's annual report.

During the year the undersigned availed himself of eight months' leave from the 28th February 1912, and Mr. J. M. Lacey of the Public Works Department acted until the return of the undersigned on the 30th October 1912 except for a short period of three weeks when Mr. Ireland, Assistant Sanitary Engineer, officiated as Sanitary Engineer owing to Mr. Lacey's absence on leave.

In December 1912 the staff was increased by the return of Mr. Nowroji, Assistant Sanitary Engineer, from deputation on the Madras Water-works, when he was appointed the first Deputy Sanitary Engineer.

At the end of 1912 the undersigned made proposals for increasing the staff and re-organizing the establishment in order to cope with the increasing work of investigation and the drawing up of major schemes of water-supply and drainage and the scrutiny of minor sanitary works.

These proposals were under the consideration of Government at the end of the year under review.

In February Mr. T. Harvey, Assistant Sanitary Engineer, was lent on deputation to the Government of India for employment on Delhi Imperial Works.

The staff continued to work satisfactorily, but the increasing work urgently calls for an increase of establishment.

OFFICE OF SANITARY ENGINEER
TO GOVERNMENT, CHIEFPAK,
MADRAS, 19th April 1913.

W. HUTTON,
*Superintending Engineer,
Sanitary Engineer to Government.*

Nos. 1936-37 L., 11th November 1913.

GOVERNMENT OF MADRAS.

LOCAL AND MUNICIPAL DEPARTMENT.

Read—the following paper:—

Proceedings of the Sanitary Board (The 17th Annual Report of the Sanitary Board—1912) No. 684-S., dated 24th October 1913.

Read—the following papers:—

(i)

Letter—from the Hon'ble Mr. C. A. SMITH, C.I.E., Chief Engineer, Public Works Department.

To—the Secretary, Sanitary Board.

Dated—Madras, the 17th June 1913.

No.—4781-C.

I have the honour to forward herewith two copies of the twenty-third annual report of the Sanitary Engineer to the Government of Madras for 1912-13.

(ii)

Letter—from Captain W. A. JUSTICE, I.M.S., Sanitary Commissioner for Madras.

To—the Secretary to Government, Local and Municipal Department (through the Secretary, Sanitary Board, Madras).

Dated—the 25th June 1913.

No.—D. 1600-S.

I have the honour to forward herewith my annual sanitary report for the year 1912. I regret the delay in the submission of this report. Many of the local bodies did not send in their annual reports to this office by the due date though requisitions for them were sent so early as December 1912. This caused great delay in the preparation of the several statements required to be appended to the report. Please see my letter D.No. 938/S., dated 9th April 1913. A list of officers who failed to submit their reports by the due date and from whom further particulars had to be obtained is appended.

2. Two statements are also enclosed showing the amount received from private persons for specimens examined at the King Institute, Guindy, and the amount realised by sale of bacterial vaccines to private persons from the Institute during the year 1912-13, in accordance with the G.Os. Nos. 549 L., dated 30th April 1909 and 1024 L., dated 4th August 1911.

ENCLOSURES.

(i)

STATEMENT showing the amount received from private persons for specimens examined at the King Institute of Preventive Medicine, Guindy, during the official year 1912-13.

Kind of specimen.	A single complete bacteriological and chemical examination of water.	Bacteriological and chemical examination of water at fixed intervals.	Chemical and bacteriological examination of milk.	Chemical examination for adulteration with water or chemicals only.	Chemical examination of butter and other food drugs.	Examination of blood, sputum, plague specimens and the like.	Examination necessitating the cutting of sections or making cultivations.	Examinations necessitating the inoculation of a small animal such as guinea pig, rabbit, etc.	Total amount collected.	Total amount credited to Government (50 per cent. up to 31st October 1912 and 4 per cent. from 1st November 1912).	Total amount apportioned by the Director amongst the workers concerned.
Total number of specimens examined.	16	20	3	1	..	118	41	2	..	..	..
Fee charged for each specimen.	RS. 32	RS. 20	RS. 16	RS. 16	RS. 16	RS. 5	RS. 10	RS. 0	RS. 0	RS. 16	..
Total fee under each column.	512	400	48	16	..	590	430	12	0	32	2,007 12 0
											481 14 2
											1,526 13 10

* Annas four commission deducted by the Bank in the encashment of a cheque is claimed from the party and is still due.

Dis. No. 1761/B.

Forwarded to the Sanitary Commissioner for Madras with reference to G.O. No. 549 L., dated 30th April 1909.

THE KING INSTITUTE, GUINDY,
15th April 1913.

F. M. GIBSON, M.B., B.Sc.,
Director.

(ii)

STATEMENT showing the amount realized by sale of bacterial vaccines to private persons from the King Institute of Preventive Medicine, Guindy (under G.O. No. 1024 L., dated 4th August 1911) from 1st April 1912 to 31st March 1913.

Kind of vaccine supplied.	Preparation of an auto-genous vaccine necessitating the use of simple culture media.	Preparation of an auto-genous vaccine requiring the use of complicated media.	Preparation of an auto-genous vaccine necessitating the carrying out of a series of tests or complicated media together with animal experiments.	Stock (anti-staphylococcus vaccine).	Stock (anti-streptococcus and anti-typhoid vaccines).	Stock (anti-gonorrhoea and anti-pneumococcus and anti-diphtheria vaccines).	Other stock vaccines.	Total amount collected.	Total amount credited to Government (50 per cent. up to 31st October 1912 and 4 per cent. from 1st November 1912) (G.O. No. 1603 L., dated 30th October 1912).	Total amount apportioned by the Director amongst the workers concerned.
Total number of doses supplied.	27	9	..	155	223	117	122	..	..	..
Cost levied per dose.	RS. 16	RS. 32	RS. 48	RS. 0 12 0	RS. 1	RS. 1 8 0	RS. 1	..	..	..
Amount realized under each head.	432	288	..	115 4 0	223	175 8 0	122	1,356 12 0	387 10 0	902 1 6

No. 1760/B.

Forwarded to the Sanitary Commissioner, Madras, with reference to G.O. No. 1024 L., dated 4th August 1911.

THE KING INSTITUTE, GUINDY,
15th April 1913.

F. M. GIBSON, M.B., B.Sc.,
Director.

Resolution—No. 664-S., dated 24th October 1913.

With reference to rule 23 of the rules relating to the constitution and functions of the Sanitary Board issued with G.O. No. 1081 L., dated 2nd September 1903, the reports read above will be submitted to Government with the report of the Board itself as hereunder:—

2. The question was raised by the Sanitary Engineer in February last whether the submission of annual sanitation reports for the official year, instead of the calendar year as heretofore, would not be in consonance with the order of Government, No. 2255 M., dated 2nd December 1912, accepting the Sanitary Board's suggestion that the Sanitary Engineer's annual programmes of the investigation and designing of major sanitary schemes should relate to the official year and not to the calendar year as in the past. This question was, after some consideration, referred by the Sanitary Board in its Proceedings No. 306-S., dated 8th May 1913, for the orders of Government who, in G.O. Mis. No. 944 L., dated 4th June 1913, decided that the sanitation reports should continue to be drawn up only for the calendar year. The uncertainty of the Board during the interim and the late receipt of the reports of the Sanitary Engineer * and Sanitary Commissioner † and of the annual progress reports of works from the mufassal bodies, some of whom had to be reminded even in June, ‡ have, it is very much regretted, resulted in unusual delay in submitting this report. It has also to be mentioned in this connection that in expectation of a decision in favour of the official year, the Sanitary Engineer had drawn up his report read above, not for the calendar year 1912, but for the official year 1912-13.

* Received by the Sanitary Board on 19th June 1913.
† Received by the Sanitary Board on 3rd July 1913.
due date 1st April 1913.

3. The constitution and functions of the Sanitary Board underwent no change during the year under report. The personnel of the Board continued to be the same as at the close of the previous year (1911) except that —
(i) during the absence on leave for six months (May—October 1912), of the Hon'ble Mr. C. A. Smith, C.I.E., M.I.C.E., the Hon'ble Mr. S. D. Pears officiated as President and
(ii) for four months (July—October 1912) Colonel J. Smyth, M.D., V.H.S., I.M.S., acted as Medical Member in the place of the Hon'ble Surgeon-General W. B. Bannerman, M.D., C.S.I., D.Sc., F.R.S.E., I.M.S.

4. The work of revision, referred to in the report for 1910, of type § designs for the component buildings of a mufassal general hospital, admitting of easy adaptation by way of necessary expansion or curtailment suitably to the number of patients intended to be accommodated in a given locality was after a prolonged consideration completed by the close of the year. Standard designs were issued, besides, for (1) simple sanitary measures for conserving village tank water-supply, (2) a 12 bed main ward for a smaller hospital, (3) scour pipes for water-works and (4) well water-supply arrangements.

5. The more important of the sanitary schemes which were approved by the Board during the year were the following:—

§ 18 in all.

	Estimated cost.
Drainage scheme for Vellore	RS. 4,07,970
Water-supply for Saidapet	1,89,100
Dispensary at Enangudi (Tanjore)	7,900

	Estimated cost. RS.
Nellore water-supply extensions	41,310
Madura Drainage scheme	22,00,000
Kurnool waterworks improvements	33,100
Scavengers' huts at Chidambaram	7,520
Relieving congestion in parts of Nellore	23,585
Dispensary at Kampli	7,000
Removal of the insanitary Rolly huts on the Palkonda Road, Chitacola and laying out fresh sites for the evicted people.	23,218
Scavengers' huts, Coimbatore	20,775
Relieving congestion in Mettupalayam	9,950
Scavengers' huts in Tanjore	9,750
Pumping, etc., tests connected with the investigation of likely sources of water-supply for Rajahmundry.	7,500
Acquisition of sites for opening conservancy lanes in portions of Kumbakonam.	6,400
Fish market stalls, Masulipatam	6,800
Dispensary at Butlagunda (Madura)	7,500
Dindigul water-supply extensions and improvements	63,650
Maternity ward for the hospital at Cuddapah	8,800
Isolation ward for	6,320
Gudur water-supply scheme (scheme in general approved but only a suction well estimated to cost Rs. 4,000 for testing the yield was recommended for execution at the outset)	1,12,800
A hospital at Punachi (Coimbatore) for the Anamalai planters ..	9,500
Scavengers' huts at Tirupattūr	15,000
Water-supply scheme for Rāmēswaram	1,25,500
Lawley Hospital, Coonoor (portions)	47,300
Relaying the filter beds of the Vellore waterworks	20,256

5. The total number of schemes approved by the Board during the year were 54 and were estimated to cost Rs. 35,19,576 in the aggregate. Of these, 32 schemes, estimated to cost Rs. 30,05,372, related to Municipalities and 22 schemes estimated to cost Rs. 5,14,204 related to local fund boards.

7. Thirty-nine of the above mentioned schemes, relating to municipalities and local fund boards and estimated to cost Rs. 1,84,113 in the aggregate, were within the Board's powers of final approval and of these—

(a) five works aggregating Rs. 26,035 are reported to have been completely executed before the close of the year 1912—

	Estimated cost. RS.
(1) Water-supply of part of Kumbakonam town from an existing artesian borehole	5,110
(2) Four market sheds at Robertsonpet in Cocanada	3,920
(3) Two fish market stalls at Masulipatam	6,800
(4) Dispensary at Butlagunda (Madura)	7,500
(5) Repairs to the drinking-water tank at Siddhapuram (Kistna)	2,705

(b) fifteen works estimated to cost Rs. 79,289 were under execution at the close of the year—

	Estimated cost. RS.
(1) Bullock slaughter-house at Tanjore	2,600
(2) Dispensary at Erangudi	7,900
(3) Filling up of Montgomery tank in Mayavaram	3,150
(4) Filling up of an insanitary pond near the Police office, Kurnool	2,625
(5) Cattle shed at Tinnevely	4,800
(6) Dispensary at Kampli (Bellary district)	7,000
(7) Well at Chodavaram	2,760
(8) Enclosing and raising a portion of the Muhammadan burial-ground at Pazhaiyapettai in Tinnevely	2,750
(9) Bullock slaughter-house at Madura	3,500

	Estimated cost. RS.
(10) Two blocks of scavengers' huts, 18 and 25, in the Tanjore municipality	9,780
(11) Sinking a square well near the infiltration gallery of the Guntūr water-works	3,864
(12) Maternity ward at Cuddapah	8,300
(13) Isolation ward at Cuddapah	6,220
(14) Fish market at Madura	4,040
(15) A hospital at Punachi for the Anamalai planters (Coimbatore district)	9,500

(c) seven works estimated to cost Rs. 33,600 were awaiting settlement of questions under correspondence (land acquisition, settlement of site, etc.)—

	Estimated cost. RS.
(1) Improvements to the Lawley vegetable market	4,800
(2) Relieving congestion in Mettupalayam	9,950
(3) Vegetable market at Chidambaram	3,750
(4) Extensions and improvements to the local fund hospital at Tiruvālūr, Tanjore district	2,700
(5) Acquisition of sites for opening conservancy lanes in portions of Kumbakonam	6,400
(6) Bullock slaughter-house at Gidungal (South Arcot)	2,700
(7) Epidemic diseases shed at Cochin	3,800

(d) five works estimated to cost Rs. 18,690 were deferred pending allotment of funds, which could not be arranged for in 1912-13—

	Estimated cost. RS.
(1) Bullock slaughter-house at Atmakur	4,000
(2) Four market sheds at Kottapeta (Rajahmundry)	4,640
(3) Maternity ward at Chidambaram	4,500
(4) Draw well at Tadimalla (Kistna district)	2,550
(5) Women and children dispensary at Calicut	3,000

(e) two have since been abandoned in favour of revised proposals—

	Estimated cost. RS.
(1) Scavengers' huts at Chidambaram	7,520
(2) Draw well for the dispensary at Devashola (the Nilgiris)	3,800

(f) five were reserved for execution as famine-relief works—

	Estimated cost. RS.
(1) Removal and destruction of prickly-pear at Mekanur (Nellore district),	2,695
(2) Removal and destruction of prickly-pear at Ayyavaripalam (Nellore district).	2,704
(3) Removal and destruction of prickly-pear at Maddikera (Kurnool district).	4,050
(4) Removal and destruction of prickly-pear at Pattikonda (Kurnool district).	2,880
(5) Removal and destruction of prickly-pear at Iskapalli (Nellore district).	2,850

(True Extract.)

S. D. PEARNS,
President.

To the Secretary to Government, Local and Municipal Department
(with the reports of the Sanitary Engineer
and the Sanitary Commissioner).
Sanitary Commissioner for Madras.
Engineer to Government.
Copy to the Chief Engineer, Public Works Department.

Order—No. 1936 L., dated 11th November 1913.

The report of the Sanitary Engineer, which deals with the financial year 1912-13, was received by the Sanitary Board only on the 19th June and that of the Sanitary Commissioner, which refers to the calendar year 1912, only on the 3rd July, and these reports were submitted to the Government by the Sanitary Board with its own resolution thereon so late as the 25th October. The Sanitary Commissioner says the inordinate delay was due to the late receipt of the district reports, while the Sanitary Board attributes the delay in that office to the non-receipt until June 1913 of the decision of Government that the reports should continue to be for the official year and to the late receipt of the annual progress reports of works from the local bodies. Collectors and Presidents of District Boards will be requested to see that the reports due to the Sanitary Commissioner and the Sanitary Board are promptly submitted in future.

2. *Rainfall and prices of food-grains.*—Though the total average rainfall exceeded that of the preceding year, the prices of the staple food-grains in all districts were higher and much above the average.

3. *Birth-rate in rural areas.*—Vital statistics were returned from the same areas as in the previous year. The birth-rate as a whole was 30.9 per mille, or 0.5 more than in the year preceding, and (excluding Madras City) ranged between 38.5 in Guntūr district and 18.2 in Ganjām. The most striking variation was in Nellore, where a rise of 8.6 per mille occurred.

The areas wherein the registration of vital statistics was compulsory underwent no change; the birth-rate there was 30.0 per mille, or 0.7 less than in the non-compulsory areas. In only seven of the 21 districts where registration was compulsory were the rates in compulsory areas above those in non-compulsory tracts; the excess was most marked in Rāmpād (+ 15.0), while the decreases were noteworthy in four districts. The attention of the Collectors concerned will be drawn to the remarks of the Sanitary Commissioner regarding the inefficiency of the registering agency in the towns referred to in paragraphs 12 and 18 of the report.

4. *Death-rate in rural areas.*—The general death-rate rose from 23.1 to 24.3 per mille, cholera and fevers being responsible. Malabar (+ 6.6) and North Arcot (+ 6.4) showed the largest increases. The district figures varied between 35.2 per mille (Bellary) and 10.4 per mille (Rāmpād) and again the rate in compulsory areas (23.2 per mille) was lower (by 0.7 per mille) than in tracts where registration was voluntary.

5. *Birth and death rates in municipal areas.*—The recorded birth-rate rose in 31 municipal towns—particularly in Palni (+ 13.0), Salem (+ 12.0), Ellore (+ 11.8) and Tirupattūr (+ 11.3)—and declined in 30, noticeably in Adōni (— 14.2) and Vāniyambādi (— 14.1). Decreases were apparently due to defective registration and the attention of the Councils concerned will be drawn to the subject.

The death-rate in municipalities fell from 34.4 to 33.9, cholera and plague being less severe. An increase occurred in 34 towns—most marked in Vāniyambādi (+ 36.8) and Gudiyāttam (+ 32.3)—while the chief declines were in Coimbatore (— 37.6) and Periyakulam (— 18.8).

6. *Infantile mortality.*—In municipal towns this averaged 248.2 per mille of the registered births against 190.4 in the districts. The municipal rate was highest in Guntūr (367.3) and exceeded 300 per mille in four other towns. Among rural areas Tanjore (227.5) had the worst record and was followed by Tinnevely, Guntūr, Kistna, Chingleput, Ganjām and South Arcot, in all of which the rate exceeded 200 per mille. As compared with the previous year the most noticeable variations in towns occurred in Walajapet (+ 126.8) and Coimbatore (— 130.5) and, among the districts, in the Nilgiris (— 47.6).

7. *Fevers.*—“Fevers” continued to be the chief classified cause of death, and accounted for 7.6 per mille (or about a third of the total) of the deaths from all causes. In rural tracts the figure was 7.9 and in town circles 5.3. The rate was particularly high in the districts of Vizagapatam (19.4), Cuddapah (15.7) and Kurnool (15.1) and in the municipal towns of Kurnool (15.4), Nellore (13.5) and Ellore (12.7).

The Malaria Board continued its work. The Special Malaria Officer made a critical examination of the vital statistics of the province to ascertain local variations in the prevalence of malaria and the areas which might be regarded as typically requiring further test and investigation; he also held a class of instruction for sub-assistant surgeons to be detailed for duty with itinerating malaria dispensaries and carried out certain investigations in Ganjām. Major T. S. Ross, I.M.S., continued on special malaria duty during the whole year. His investigations in Ennore and its neighbourhood were completed and his reports show that the results so far obtained from the preventive measures instituted were gratifying. Towards the operations at Ennore a grant of Rs. 28,000 was made by the Indian Research Fund Association to the Chingleput District Board and this has since been supplemented by a further grant of Rs. 58,700. Major Ross also made investigations at Cuddapah, Cumbum and Vizagapatam and, after the close of the year, in the Lower Palnis.

8. *Cholera.*—The mortality from cholera was 2.3 per mille against 1.4 in the previous year. The disease occurred in all districts, being severe in Bellary (8.3), Cuddapah (1.3) and Anantapur (5.0), and in 56 municipalities, the total mortality in the latter being 1.8 per mille against 2.1 in 1911. The towns worst affected were Vāniyambādi (23.0), Tirupattūr (20.0), Anantapur (19.0) and Parlakimedi (12.7).

From statement XIII appended to the Sanitary Commissioner's report it appears that in twelve municipal towns in which a protected water-supply has been in existence for more than five years, the number of deaths from fever during the last five years was on an average 15.6 per cent. of the total mortality against 25.0 during the five years previous to the date of the introduction of the water-supply, while the number of deaths from cholera was 5.7 per cent. in the later, as against 9.8 in the earlier, period.

9. *Small-pox.*—Small-pox occurred in all districts, but the mortality from it fell from 0.6 per mille to 0.4 and was above one per mille in only one district, viz., Coimbatore (1.2). Twenty-seven municipal towns escaped the disease and in seventeen towns the number of reported deaths did not exceed five apiece. The death-rate exceeded two per mille in Masulipatam (2.7) and Tiruvannāmalai (2.3). In urban areas, where vaccination was generally compulsory, the death-rate was 0.3 against 0.4 in rural tracts. More than one-third of the number of deaths from small-pox occurred among children under one year of age and about three-tenths among children aged from one to ten years. The improvement of vaccination is engaging the attention of Government.

10. *Plague.*—The number of deaths from plague fell from 15,185 to 6,651. The rate was highest in Bellary (1.9 per mille) and the Nilgiris (1.1); in the other fourteen districts visited by the disease it was below one per mille. Among municipal towns Gudiyāttam (24.3) and Vāniyambādi (17.5) were the worst sufferers. The preventive and remedial measures adopted were substantially the same as in previous years.

11. *Dysentery and diarrhoea.*—The mortality from these was 1.8 and 5.6 per mille in rural and urban areas respectively as against 1.6 and 5.5 in 1911. In rural areas the Nilgiris (5.4) and Malabar (4.2) recorded the highest death-rates, and among municipal towns Palameottah (11.8) and Vizianagram (10.0).

12. *Sanitary works, Civil—1. Municipal areas.*—During the year a piped water-supply was completed in Periyakulam town, raising the number of towns possessing such supplies to 20. A partial supply was provided in Kumbakonam from a sub-artesian source.

Draft rules regulating schemes for town extensions and the provision of house accommodation undertaken by municipal councils were confirmed after the close of the year in G.O. No. 1457 M., dated 30th July 1913. The Government have also since published for criticism draft rules for the guidance of councils in granting licenses for the construction of buildings and huts.

To improve the sanitary services, the Government of India have sanctioned the appointment of two additional Deputy Sanitary Commissioners and the employment of Health Officers of the first class in twelve municipal towns and of the second class in nineteen others. These arrangements will be brought into force in the current year.

II. Rural areas.—Each of the districts of Chingleput, Nellore, Chittoor, North Arcot, South Arcot and Salem was given a grant of Rs. 15,000 from Provincial funds for the conduct of experiments with closed-in wells fitted with pumps, the object being to ascertain, among other things, how far the ordinary village agencies, with the assistance of travelling mechanics, to be appointed in each district, would be able to keep in working order the semi-rotary pumps fitted to these wells. If the experiment is a success, it will be extended.

13. Imperial and Provincial grants in aid of sanitation.—During the year a Provincial grant of 30.68 lakhs was distributed among local bodies for expenditure on sanitary works. This amount included the customary allotment of 3.50 lakhs from Imperial funds, the balance of 2.25 lakhs out of the special non-recurring grant made by the Government of India in 1911 and a further non-recurring grant of eight lakhs made from the same source in 1912 for expenditure on urban sanitary schemes. The manner in which the special supplementary grant of 10.25 lakhs from Imperial funds was utilized is detailed in paragraph 63 of the Sanitary Commissioner's report, as required in G.O. No. 1634 M., dated 6th September 1912. The principal objects for which the remaining subsidy was given were as usual schemes for the opening up of congested areas, the acquisition and laying out of town extensions and the improvement of rural water-supplies.

14. The King Institute.—The King Institute of Preventive Medicine at Guindy continued to do useful work during the period under report, particularly in connection with the analyses of municipal water-supplies.

15. Execution of sanitary projects.—The water-works at Berhampur, Vizianagram, Chidambaram, Negapatam and Kodalkōnal were under execution by the Public Works Department, which was also engaged in carrying out improvements in the existing works at Nellore. The Sanitary Engineer was in charge of the execution of the water-works at Guindy, of the experimental filters at Guindy and of the improvements in the existing water-supply systems at Kurnool and Tanjore.

16. Investigation of sanitary projects.—Among the chief schemes worked out in detail were those for the drainage of Nandyal, Chidambaram, Calicut, Salem, Tenali, Ellore, Adōni and Kumbakōnam and for the supply of water to Hindupur, Nandyal, Cuddalore, Devakōttai, Sivaganga and Bellary, and for improving the existing arrangements at Vizagapatam and Guindy. Besides inspecting existing water-works and advising as to their maintenance, the Sanitary Engineer prepared eight type-designs and checked and scrutinized plans and estimates for 514 works, of which 377 (being for amounts of less than Rs. 2,000 each) came within his powers of sanction, while 31 were for amounts exceeding Rs. 10,000 each. The power of according professional sanction to estimates for sanitary and other works undertaken by local bodies has since the close of the year been raised to Rs. 10,000 in the case of the Sanitary Engineer and Rs. 20,000 in that of the Sanitary Board.

To afford some relief to the Sanitary Engineer, a second Deputy Sanitary Engineer and two Assistant Sanitary Engineers have been sanctioned for a period of two years in the first instance; and his drawing and clerical establishments have also been strengthened. The Government hope that the rate of progress in the preparation of schemes for water-supply and drainage and of the necessary plans and estimates will now be more rapid than it has been.

17. Presidency town.—In the city of Madras the conduit for conveying water from the Red Hills lake to the town was practically completed and good progress was made with the filter beds and pure water tanks. A considerable amount of work was also done in connexion with the pumping-station and the elevated tank. The scheme for the distribution of water within the city, estimated to cost 41 lakhs, was sanctioned during the year and before its close a contract for the supply of cast-iron pipes, valves and other specials required for the scheme had been made. The elaboration of the plans and estimates preliminary to the work being taken up for execution was also carried out by the Special Engineer. On the drainage section, the foundations of the three pumping stations in the Tondiyarpur area were completely laid and the erection of the engines in two of them was in hand. Progress was also made in the drawing up of the main drainage scheme for the city, which has since reached Government and is under the scrutiny of the Public Works Department.

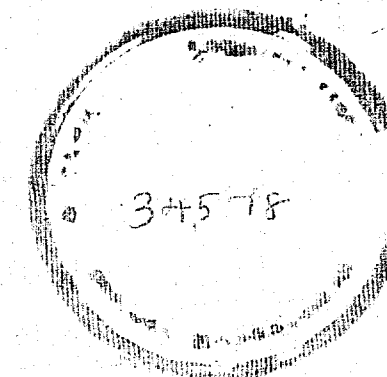
18. The Sanitary Board.—The constitution and functions of the Sanitary Board underwent no alteration. The Board approved plans and estimates relating to 54 sanitary works estimated to cost over 35 lakhs in the aggregate; 39 of these, costing 1.84 lakhs, were within the sanctioning powers of this body and of these five were completed during the year and fifteen others were under execution at its close. Type designs for the component buildings of a mufassal general hospital, admitting of easy adaptation by way of necessary expansion or curtailment suitably to the number of patients intended to be accommodated in a given locality, were completed during the year. Standard designs were also issued, besides, for (1) simple sanitary measures for conserving village tank water-supplies, (2) a twelve-bed main ward for smaller hospitals, (3) scour pipes for water-works, and (4) well water supply arrangements.

19. Sanitary service.—Since the close of the year, the Government have sanctioned the creation of a small reserve of sanitary inspectors to check the spread of outbreaks of cholera. This will consist of two parties of ten each, under the direct charge of an assistant surgeon, and, when not actually employed on cholera duty, the parties will be utilized as peripatetic sanitary agencies visiting large unions or groups of small neighbouring unions in succession in order to remove the more crying sanitary defects in them and both by example and instruction to familiarize the residents with the principles of sanitation.

(True Extract.)

W. FRANCIS,
Ag. Secretary to Government.

To the Sanitary Board.
" " Engineer.
" " Commissioner.
" Surgeon-General.
" Public Works Department.
" Public Department.
" Revenue Department.
" Assistant Quartermaster-General (with C.L.).
" Inspector-General of Police.
" Inspector-General of Prisons.
" Accountant-General.
" Director of Public Instruction.
To all Collectors.
" Presidents of District Boards.
" Chairmen of Municipal Councils.
To the President, Corporation of Madras.
Editors' Table.



Endorsement No. 1937 L., dated 11th November 1913.

Copy to the Government of India, Department of Education.

W. FRANCIS,
Ag. Secretary to Government.

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