

THE FOURTEENTH ANNUAL REPORT OF THE
SANITARY BOARD,

THE FORTY-SIXTH ANNUAL REPORT OF THE
SANITARY COMMISSIONER,

AND THE

TWENTIETH ANNUAL REPORT OF THE
SANITARY ENGINEER,

MADRAS.

1909.

செப்பன்ருவர் முயர்
செப்பன்ருவற்காக எடுத்த
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சுப்பார்க்கும் உபயோகி
மு.பா.எ. உபயோகி
கையொப்பம் கையொப்பம்

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CONTENTS.

	PAGE
FOURTEENTH ANNUAL REPORT OF THE SANITARY BOARD	1
PART I.—GENERAL SANITATION—	
Forty-sixth Annual Report of the Sanitary Commissioner for Madras	5
PART II.—SANITARY ENGINEERING—	
Twentieth Annual Report of the Sanitary Engineer to the Government of Madras ..	51

FOURTEENTH REPORT OF THE SANITARY BOARD.

FOURTEENTH REPORT OF THE SANITARY BOARD, MADRAS, FOR THE YEAR 1909.

The following is a description, in brief, of the work done by the Sanitary Board during the year 1909.

2. The functions performed by the Sanitary Board of this Presidency have continued to be what they were in previous years, viz., to advise Local Fund Boards and Municipal Councils on questions of sanitation and to examine sanitary schemes projected by those bodies.

3. During the year under report type designs for the guidance of local bodies were promulgated by the Board for the marginally-noted classes of sanitary works. The type designs for hospitals have been under consideration by the Chief Engineer in consultation with the Surgeon-General with a view to the rectification of certain defects noticed in connection with the accommodation provided. The Chief Engineer is awaiting a report from the Surgeon-General embodying the views of the medical authorities in this connection. The matter will then be dealt with by the Sanitary Board.

4. The sanitary schemes examined by the Board during the year 1909 numbered 143 in all and their estimated cost in the aggregate was Rs. 26,18,626. Of these, 35 works estimated to cost Rs. 22,99,556 were for Municipalities and 108 estimated at Rs. 3,19,070 were for Local Fund Boards.

5. The more important of the schemes examined, as stated above, were:—

	Estimated cost.
	RS.
(1) Six latrines with wells at Kumbakonam	5,100
(2) Seven wells at Mangalore	5,078
(3) Well and gallery for water-works at Saidapet	21,420
(4) Fresh house sites at Coonoor (Mount Pleasant)	16,100
(5) Dispensary at Vedaranniyam (Tanjore District)	6,600
(6) Do. Kuttanallur (Tanjore District)	5,870
(7) Do. Ulundurpettai (South Arcot)	5,600
(8) Do. Tiruvadamardur (Tanjore District)	5,550
(9) Do. Jayankondasholapuram (Trichinopoly District)	6,900
(10) Do. Ghandarvakottai (Tanjore District)	6,300
(11) Do. Macherla (Guntur District)	6,210
(12) Improvements to the supply channel of the Tirumukkulam tank at Srivilliputtur	5,000
(13) Drainage of the Chalai ward at Tellicherry	16,470
(14) Hospital buildings at Ranipet (North Arcot District)	8,410
(15) Water-supply of Sendamangalam (Salem District)	6,865
(16) Water-supply of Vizianagram	4,87,600
(17) Female ward of 12 beds at Anantapur	6,325
(18) Water-supply of Ellore (Canal scheme)	3,17,000
(19) Water-supply of Palakolla	19,500
(20) Lying-in hospital at Cocanada	8,800
(21) Lying-in and delivery ward at Masulipatam	8,950
(22) Drainage of Srirangam	1,86,600
(23) Reconstruction of the Hospital administrative block at Dharmapuri (Salem District)	5,200
(24) Dispensary at Pernambut (North Arcot)	5,320
(25) Drainage of Trichinopoly	5,84,860
(26) Water-supply of Chingleput	1,35,130
(27) Water-supply of Palamcottah	4,73,198
(28) Drainage diversion and water-supply improvements at Paddapur (Goddavari District)	9,150
(29) Hospital at Yercaud (Salem District)	6,100
(30) Dispensary at Nandikotkur (Kurnool District)	6,100

6. Of the 131 works not exceeding Rs. 10,000 each in cost and approved by the Board, the following fourteen were completely carried out before the close of the year:—

	Estimated cost.
	RS.
(1) Six latrines with wells at Kumbakonam	5,100
(2) A central sheep slaughter-house at Trichinopoly	3,000
(3) Compound wall for the Muhammadan burial-ground at Dindigul	1,200

	Estimated cost. RS.
(4) Women and Children's dispensary at Negapatam	4,200
(5) Extension of the market stalls at Amakápallo	2,040
(6) Improvements to a well at Narasimha Hill (Nellore District) ...	1,950
(7) Improvements to the water-supply of Gudalur (The Nilgiris) ...	4,000
(8) Improvements to the water-supply of Karteri (The Nilgiris) ...	1,220
(9) Well in Cowl Bazaar at Bellary	1,900
(10) Corrugated steel pale fencing round the cart stand at Ootacamund	4,850
(11) Extension of the Trichinopoly water-works to Daranallur ...	2,480
(12) Conversion of the old cattle shed in the market at Coonoor into beef stalls	1,980
(13) Enlarging the beef hanging room in the slaughter-house at Ootacamund	2,040
(14) Renewal of the roof of the dispensary at Sivagiri (Tinnevely District)	1,220

7. The following 38 works were under execution at the close of the year :—

	Estimated cost. RS.
(1) Improvements to the water-supply of the market at Tellicherry.	1,480
(2) Improvements to the drainage of the market and of the road leading to the Railway Station at Tellicherry	2,160
(3) Seven wells at Mangalore	5,078
(4) Improvements to the Ravi tank at Chiluvur (Guntúr District) ...	1,900
(5) A four bed ward in the hospital at Tenáli (Guntúr District) ...	3,630
(6) Cattle slaughter-house at Kollegal (Coimbatore District) ...	2,300
(7) A four bed ward at Atmakúr (Nellore District)	2,950
(8) Hospital Assistant's quarters at Ambur (North Arcot) ...	1,450
(9) Improvements to the fresh water tank at Sankuratripal (Guntúr District)	1,220
(10) A four bed ward at Allúr (Nellore District)	2,950
(11) A four bed ward at Kávali (Nellore District)	2,950
(12) Improvements to the Pandian well at Narikudi (Madura District)	1,350
(13) Dispensary at Védáranniyam (Tanjore District)	6,600
(14) Dispensary at Penukonda (Anantapur District)	4,530
(15) Dispensary at Hindupur (Anantapur District)	4,600
(16) Dispensary at Jayankondasólapuram (Trichinopoly District) ...	6,900
(17) Two four-bed wards with outhouses at Penukonda	4,920
(18) Hospital buildings at Ráripéttai (North Arcot)	8,410
(19) Four market sheds at Draksharama (Gódávari District) ...	3,920
(20) Fresh water tank improvements at Coringa	2,670
(21) Extension of the bazaar street drains at West Kadiri (Cuddapah District)	1,800
(22) Godowns in the market at Salur (Vizagapatam District) ...	2,340
(23) Improvements to the Kamalalayam feeder channel at Námakkal (Salem District)	1,230
(24) Dispensary at Mólúr (Madura District)	4,470
(25) Market sheds at Dhone (Kurnool District)	2,474
(26) Improvements to the market at Pattaivartalai (Trichinopoly District)	3,100
(27) Dispensary (semi-permanent) at Mote (Vizagapatam District) ...	1,400
(28) Hospital Assistant's quarters at Mote (Vizagapatam District) ...	1,300
(29) Weekly market at Neduvattam (The Nilgiris)	1,500
(30) Market sheds at Pontapadu (Kistna District)	1,540
(31) Well at Chidambaram	1,250
(32) Market sheds at Jagapatinagaram (Gódávari District) ...	3,920
(33) Well at Uddanapalli (Salem District)	1,040
(34) Drains at Sivagiri (Tinnevely District)	1,310
(35) Six latrines at Karúr	2,400
(36) Compound wall for the market at Vasudevanallur (Tinnevely District)	2,600
(37) Dispensary at Pernambut (North Arcot)	5,320
(38) Side drains at Nandyal	1,850

8. Seventy-nine works estimated at Rs. 2,01,396 in the aggregate had to be deferred, 31 for execution as famine-relief works and the rest mostly for want of funds.

9. The reports of the Sanitary Commissioner and the Sanitary Engineer for the year are appended hereto.

SANITARY BOARD,
MADRAS, 27th May 1912. }

P. HAWKINS,
Secretary.

PART I.

GENERAL SANITATION.

THE FORTY-SIXTH ANNUAL REPORT

OF THE

SANITARY COMMISSIONER WITH THE GOVERNMENT OF MADRAS, 1909.

SECTION V.

GENERAL POPULATION.

RAINFALL.

1. The mean rainfall for the year under report (46·29 inches), although greater than that of the previous year and the average of the last thirty years, was not evenly distributed over the areas benefited by the two monsoons. The measure of rainfall gauged during the south-west monsoon was fairly good except in the case of two districts, Coimbatore and Vizagapatam, but the decrease in them was not such as to affect the outturn of crops. On the other hand, the north-east monsoon proved a signal failure all over the Presidency, particularly in the districts chiefly dependent on it. The shortage in Madras amounted to no less than 24·21 inches, Chingleput 19·8, Tanjore 19·5, Nellore 18·5, South Arcot 16 and North Arcot 12·7. The burst of the monsoon was earlier than usual and the rains held off at the time when they were most needed. Although during the inter-monsoon period (January to May) there was a copious fall in the districts noted above, it could not be taken advantage of by the agricultural population, as it was unexpected and out of season.

PRICE OF FOOD-GRAINS.

2. Owing to the general failure of the north-east monsoon of 1908, the prices of food-grains showed no appreciable fall. Such variations as are found for the better are not in whole numbers but in fractions. During the year rice was sold at 8 seers of 80 tolas for the rupee, ragi 13·4, cholam 13·5 and cumbu 12·9 against an average of 10·8, 19·4, 18·7 and 18·1, respectively. These figures represent a corresponding rise in the prices by 35·0, 44·8, 38·5 and 40·3 per cent. above the average.* Even in districts largely favoured by the monsoon currents of the year, there was a tendency towards a rise in the prices. This upward tendency is doubtless the result of inordinate mercantile greed and depletion of the market by wholesale exportation as explained in the report for 1905.

GENERAL POPULATION.

3. The 1901 census enumeration showed that the Presidency had a population of 38,212,712, exclusive of Europeans and Eurasians. The inclusion of the Venkata-pur Circle transferred during the year from the Central Provinces raised the figure to 38,232,930. The population for which statistics were furnished for the year under report was 36,691,654, leaving a total of 1,541,276 or 4·0 per cent. unaccounted for. These latter are the Hill tribes of Ganjam and Vizagapatam and the inhabitants of the Laccadives and the Banganapalle State in Kurnool. The estimated population for the year calculated on the average census population under registration is 40,866,850 but that obtained by adding to the census figure of 1901 the

* Of the fifteen years ending 1908-1909.

excess of births over deaths 2,469,450 since then up to the end of December last is 39,206,669. There were 339,372 emigrants and 300,712 immigrants during the year, resulting in a loss of 38,660 souls.

4. The agency employed for the registration of vital statistics both in the urban and rural areas and the procedure followed for the collection and tabulation of the results obtained underwent no change. In 3,558 towns and villages Act III of 1899 was in force as in the previous year. Both in numbers and terminology, registration as conducted in rural areas is far from trustworthy. Many instances of failure to register births have been brought to notice by Deputy Inspectors of Vaccination in their weekly diaries and in the Inspection reports received from the District Medical and Sanitary Officers and Sanitary Assistants. Until compulsory registration is introduced throughout the Presidency as in the case of the areas in which the revised scheme of vaccination is in force, little improvement can be looked for.

5. Information regarding the number of prosecutions instituted for failure to report births and deaths has not been furnished by the Chairmen of the Municipal Councils of Palni, Mayavaram and Srirangam. In 13 Municipalities (Coimbatore, Guntur, Nandiyal, Dindigul, Kodaikanal, Cannanore, Cochin, Coonoor, Gudiyattam, Vaniyambadi, Srivilliputtur, Tuticorin, and Anakapalle) no prosecutions were instituted, and in the remaining towns 1,093 defaulters were reported to the magistracy, but the number of convictions and the amount of fines inflicted and recovered cannot be ascertained, as information on these points has not been supplied by many of the Chairmen.

BIRTHS IN DISTRICTS.

6. The birth-rate for the Presidency was 33.1 against 32.4 of the previous year, showing an increase of 0.7 per mille of population and was the highest on record. Compared with the decennial average, there was an increase of 2.7 per mille. Excluding Kistna in which the recorded birth-rate was the same as in the previous year, there was an increase in 7 districts and a decrease in 15. The increase in the birth-rate was noteworthy in Malabar and South Canara amounting to 6.9 and 5.5 per mille respectively. The rise in the birth-rate is probably due to an improved state of the public health and more accurate registration. Where there was a falling off in the birth-rate, the range of variation was from 2 to 3.8 per mille in the districts of Anantapur, Bellary, Madras, the Nilgiris, Salem, Tinnevely and Vizagapatam. Ignoring the common factors, dearth of food and defective registration, the decline would appear to be due to a larger mortality of late years among adults of reproductive ages.

7. Malabar yielded the highest birth-rate 39.2 per mille. Chingleput and Guntur came next with 38.6 and 38.5, followed by South Canara (37.9), South Arcot (37.5), Madras (37.3), Tanjore (36.0) and Kistna (35.2). In 10 other districts the rate ranged from 30 to 35. Vizagapatam recorded the lowest birth-rate 26 per mille.

8. There are 171 rural towns each having a population of 5,000 and upwards. In these a total of 50,409 births was registered against 51,519 in 1908, representing annual rates of 27.4 and 28.0, respectively. The birth-rate was largest in Tirutturaiipundi situated in the Tanjore district (80.9) and in 26 other towns it varied from 40 to 50. Registration was grossly neglected in as many as 40 towns where the rate recorded was below 20. Of these latter, St. Thomas' Mount, Gobichettipalayam, Rajampet, Madanapalle, Vempalli, Tekkali, Samalkot, Pithapuram, Tuni, Ayyempettai and Parvatipuram returned the lowest rates which in no case exceeded 10.

9. Considered with reference to sex the proportion of male to female births was 104.5 to 100. Classified according to race, the birth-rate among Muhammadans was 36.8, Hindus 32.9 and Native Christians 31.8.

10. Act III of 1899 was in force in parts of rural areas in 19 districts, the excluded districts being Madras, Malabar, the Nilgiris and South Canara. The total population under compulsory registration was 9,583,172 and that of non-compulsory areas was 20,957,440. The total birth-rate for these populations was

the same, namely, 32.1 per mille. Descending, however, into particulars, marked variations are observable. Ten districts gave rates in excess of those recorded in non-compulsory areas, but the measure of increase was in no case significant, varying as it did from 2.8 in North Arcot to 0.4 in Chingleput. On the other hand, there were deficits in the other districts which amounted to 9.5 in Tinnevely, 8.1 in Nellore, 7.6 in Bellary, 7.5 in South Arcot, 6.1 in Ganjam and 5.7 in Kistna. In the remaining three districts the variation was from 0.2 in Coimbatore to 4.7 in Trichinopoly. Judging from these results, much cannot be said in favour of the Act. No definite conclusions can be drawn from the figures, except that registration was greatly neglected in the districts concerned.

DEATHS IN DISTRICTS.

11. The average death-rate fell from 26.2 in 1908 to 21.8, the decrease occurring chiefly under cholera and fevers. With the exception of the Nilgiris, Salem and Trichinopoly in which the death-rates slightly increased, other districts showed a decline as compared with the previous year. Malabar took the lead with a decrease of 16 per mille followed by Ganjam (10.7), Kurnool (10.3), Anantapur (9.1), Vizagapatam (8.5), Guntur (8.4) and South Canara (7.2). In the remaining districts the variation was below 7 per mille. In all the above cases the decrease occurred mainly under cholera, fevers, dysentery and diarrhoea. The increase in the Nilgiris (3.4) occurred under plague, dysentery and diarrhoea, respiratory diseases and other causes. Excluding Madras which recorded a death-rate of 38.3 per mille, the highest rate was returned by the Nilgiris (29.1), followed by Tanjore (25.3) and Trichinopoly (24.3). The lowest rates were returned by Madura (17.2), Nellore (17.9), Ganjam (19.3) and Vizagapatam (19.6).

12. In the rural towns mentioned in paragraph 8, 35,596 deaths were registered against 44,770 in the previous year, being equal to 19.3 and 24.3 per mille respectively. Tirutturaiipundi recorded the highest death-rate (55.2). The deaths recorded in 79 towns were below 20 per mille. The death-rate was suspiciously small in the 11 towns referred to in paragraph 8 and in Ichchapuram, Karaikudi, Kaval, Polur, Tiruchendur and Sivagiri, in none of which did it exceed 10 per mille.

13. For every 100 female deaths there were 105.0 male deaths. According to race, the death-rates were as follows:—

Muhammadans	23.1
Hindus	21.9
Native Christians	18.0

14. The death-rate recorded for the areas in which Act III of 1899 was in force was 20.4 against 21.1 obtained for the non-compulsory areas. Here also, as in the case of birth registration, seven districts yielded rates in excess of those for the non-compulsory areas, while in the others there was a decrease. Of the districts which showed an increase, Coimbatore recorded an excess of 8.6, Guntur 5.0, Madura 4.9 and Kurnool 3.3. The deficit was marked in Kistna (11.4), Nellore (8.5), Gódvári (5.9), Tinnevely (5.3) and Trichinopoly (3.9). As stated in paragraph 10 *supra* it is difficult to account for these variations otherwise than by attributing them to defective registration.

15. The mortality among children under one year of age averaged 173.6 per 1,000 births against 183.7 in 1908. Distinguished by sex, the rate of mortality of male infants was 184.0 and of female 162.8. Proportionally put, these figures would represent 54.2 male and 45.8 female deaths for every 100 deaths, showing an increase of 0.2 in the case of the former and a corresponding decrease in the case of the latter as compared with the previous year. Excluding Madras, infantile mortality was heaviest in the Nilgiris (236.4 per mille) showing an excess of 22.3 over the rate for 1908. This is due to the unfavourable conditions (see paragraph 18) affecting infant life as evidenced by the high mortality under the different heads of death causation. Infantile mortality was also heavy in Chingleput (209.6), Tanjore (201.0) and Salem (190.9). Compared with the previous year there was an increase in 7 and a decrease in 16 districts. Of the latter Guntur, Vizagapatam, Ganjam, South Canara, Malabar, Kistna and Kurnool report a decrease of 43.4, 33.9, 25.1, 24.8, 24.5, 22.6 and 22.5 respectively.

BIRTHS IN MUNICIPALITIES.

16. The births registered in the municipal towns amounted to 90,560, representing an annual ratio of 37.4 per mille against 37.7 of the previous year and 37.1 the quinquennial average. The highest rates were registered in Kodaikānal (53.9), Dindigul (51.6) and Vāniyambādi (50.4). The rate was also large in Periyakulam (45.7), Chingleput (45.5), Srivilliputtūr (45.4) and Tiruvannāmalai (45.2). It varied from 40 to 45 in 10 towns and in 38 others it was between 40 and 30. In the remaining 6 towns it was less than 30 per mille, the lowest 24.8 being returned by Coimbatore. Comparing with the previous year's results, there was an increase in 28 and a decrease in 32 towns, while in the remaining town of Palni the rate was unchanged. The increase was most marked in Conjeeveram (3.5), Cuddapah (5.9), Bellary (5.8), Calicut (5.7), Tellicherry and Tirupati (5.6 each) and Mangalore (5.0). The improvement can only be ascribed to a better state of public health and the greater attention paid to registration. Among the towns showing a decrease Coimbatore showed a decrease of (17.9), Vāniyambādi (11.8), Rajahmundry (9.6), Anantapur (9.4), Kodaikānal (8.3), Nellore (8.0) and Tirupattūr (6.9). The dispersion of the population of Coimbatore town in consequence of the outbreak of plague accounts for the large decrease, whilst in the case of the other towns specified the cause cannot be specifically stated with certitude.

DEATHS IN MUNICIPALITIES.

17. The total number of deaths registered in municipal towns during the year was 77,115, being 15,406 less than in the previous year. The death-rate stood at 31.8 against 38.2 in 1908 and 35.8 the quinquennial average, the decrease occurring chiefly under cholera, fevers and dysentery and diarrhoea. The highest death-rates were returned by Coimbatore (41.5) and Palni (41.4). Excluding Madras it was also large in Tirupati (39.3), Bezwada (38.7), Guntūr (37.4), Ootacamund (35.8) and Cocanada (35.4). The heavy incidence in Coimbatore was due to the prevalence of cholera and plague, in Palni to cholera, in Bezwada, Guntūr and Cocanada to small-pox, in Tirupati to fevers and dysentery and diarrhoea and in Ootacamund to plague and respiratory diseases. In contrast with the quinquennial average the death-rate showed an increase in 14 and a decrease in 47 towns. Compared however with the results of 1908, there was an increase in 8 and a falling off in 52 towns, the rate for the remaining town of Trichinopoly being equal to that of the previous year. The excess was most marked in Palni (14.1) and Coimbatore (8.3). The diminution was large in Calicut (39.9), Tellicherry (32.4), Cannanore (29.8), Nandyal (26.9), Cuddapah (20.2), Rajahmundry (18.8), Vāniyambādi (18.2), Bezwada (17.6) and Bimlipatam (15.1). The decrease in the towns of Calicut, Tellicherry and Cannanore occurred chiefly under cholera and plague and in the towns of Nandyal, Cuddapah, Rajahmundry, Vāniyambādi, Bezwada and Bimlipatam under cholera.

18. The total infantile death-rate for the municipalities averaged 229.3 per mille against 234.7 in 1908. With reference to sex, the mortality among male infants was 245.9 and among females 211.5 or in the ratio of 55.4 male and 44.6 female deaths for every 100 deaths. The mortality was very heavy in Madras (298.2), Ellore (293.5), Bezwada (291.0), Guntūr (284.6), Dindigul (277.9), Kurnool (260.1), Bellary (259.1), Negapatam (258.6) and Chidambaram (254.5). It varied in 25 towns from 200.6 in Vizianagram to 248.7 in Coimbatore. Compared with the previous year there was an increase in 29 and a decrease in 32 towns. There was a large excess amounting to over 30 per mille in Adoni and Nellore (56.7) each, Kurnool (40.4) and Chidambaram (32.5) and a diminution amounting to over 50 in Tirupati (105.9), Bimlipatam (80.0), Parlākimedi (69.1), Bellary (65.5), Cuddapah (61.0), Cochin (59.2), Bezwada (54.4) and Tiruvannāmalai (53.0). The heavy mortality among infants was not the result of the prevalence of the chief diseases in any intensified form, but was the natural sequence of (1) want of nutrition owing to the high prices of food-grains, (2) the ignorance of mothers in rearing their children, and (3) the insanitary environments amidst which they are born and brought up.

SECTION VI.

GENERAL HISTORY OF CHIEF DISEASES.

CHOLERA.

19. The total number of deaths from cholera in districts was 39,424, or 1.1 per mille against 141,970 or 3.9 in the previous year. In nine districts it was a continuation of the epidemic that raged in the previous year. It was reported from all the districts of the Presidency except Guntūr and was present all the year round in no less than twelve districts. Trichinopoly and Salem suffered most with a death-rate of 2.6 and 2.5 respectively. The mortality was also severe in Coimbatore (1.9) and Madura and Tanjore (1.7) each. Owing to the unusual rainfall during the year the incidence of cholera mortality did not follow the usual course. Usually cholera mortality is heaviest during the monsoons June to December, but this year the mortality was heaviest during the intermonsoon period January to May.

20. From 45 mufassal municipalities 2,323 deaths from cholera were reported against 11,194 in the previous year. The towns of Kurnool, Ootacamund, Vizagapatam, Bimlipatam and Vizianagram returned only one sporadic case, Coonoor, Tirupati and Srivilliputtūr 2, and Cuddapah and Chicacole 3 during the year. Among the towns in which the disease largely prevailed, Palni suffered most with a death-rate of 17.2 per mille. The mortality was also severe in Salem (6.5) and Palghat (4.1).

21. Out of 43,372 towns and villages in the Presidency deaths from cholera were reported from 5,312 as against 11,286 in 1908.

22. The rules for combating cholera in certain urban areas as laid down in G.O., No. 1536 M., dated 9th September 1896, continued in operation throughout the year, and their working was closely watched by this office. The Chairmen concerned adopted effective measures for the repression of the disease and readily acted upon the timely warnings and advice given. In the case of towns to which the rules have not been extended, the Chairmen concerned were also advised in the interests of public health to employ the additional staff enjoined by the rules.

23. Permanganate of potash was largely used in hankinizing sources of water-supply, chiefly in places affected with cholera, and has been found to be very efficacious in combating cholera. In Madura, however, the District Medical and Sanitary Officer reports that its usefulness as a disinfectant is not very satisfactory owing to the fact that in several places the water for drinking purposes is obtained from running streams.

24. Statement No. XIII in the appendix giving the names of municipal towns having a protected water-supply shows that the mortality from cholera has generally decreased since the introduction of a piped water-supply.

SMALL-POX.

25. The disease which prevailed in 18 districts towards the close of 1908 continued during the year under report. The mortality from this cause reported from all the districts in the Presidency amounted to 18,862 against 22,204 in 1908. In Vizagapatam the death-rate was 2.0 per mille, and in all other districts the rate was below 1 per mille. Of the deaths registered 6,362 were under 1 year, and

4,244 from 1 to 10 years, of age, representing 33.7 and 22.5 per cent., respectively, of the total deaths. The only way to reduce the large mortality from this preventable disease is by making registration of births and deaths, vaccination and re-vaccination under 10 years of age compulsory throughout the Presidency.

26. Seventeen municipal towns were free of small-pox and in 23 towns the number of deaths reported did not exceed 5 in each. The mortality was heavy in Cocanada (6.1), Cochin (5.4), and Ongole and Anakapalle (3.1 each).

27. Cases of small-pox were reported from 4,267 towns and villages during the year against 4,430 in 1908. In urban areas the death-rate was 0.3, being less than the rate for rural tracts by 0.2 as a result of compulsory vaccination in municipal areas.

PLAGUE.

28. Plague accounted for 3,844 deaths against 3,358 in the previous year, yielding a ratio of 0.1 per mille. Eleven districts showed a clean bill and in five others a total of 20 imported cases was reported. In the remaining 7 districts from which indigenous cases of plague were reported, the death-rate was large in the Nilgiris (2.0) and Coimbatore (1.4). In all the other affected districts the rate was below 1 per mille. The disease was present in every month of the year in the district of Coimbatore and increased in virulence in the second half of the year.

29. Of the 60 mufassal municipalities, 44 were immune, 7 (Bellary, Conjeevaram, Chingleput, Gudiyattam, Salem, Vaniyambadi and Tirupattur recorded one imported death each), 2 (Erode and Kurur 3), 1 (Trichinopoly 6) and the remaining 6 produced a total of 1,497 deaths, of which 1,101 occurred in Coimbatore, giving a ratio of 20.8 per mille. The death-rate was also large in Ootacamund (4.9) and Coonoor (4.6). Deaths from plague were reported from 179 towns and villages against 259 in the previous year.

30. As usual the precautionary and preventive measures adopted to combat the disease consisted in the employment of observation and preventive staffs, segregation of patients and contacts, disinfection of infected houses and of persons and their effects, evacuation of infected areas, passporting persons arriving from infected places and keeping them under surveillance for a period of 7 days and destroying rats by poison and trapping.

31. During the year under review 9 deaths from plague (4 in Coimbatore and 5 in Malabar) were recorded among persons who had been previously inoculated with anti-plague vaccine.

FEVERS.

32. Fevers caused 268,408 deaths against 295,834 in 1908, representing ratios of 7.3 and 8.0 per mille respectively. The death-rate was largest in Vizagapatam (15.1), Ganjam (14.4), Cuddapah (13.5), Kurnool (12.1), Godavari and Madras (11.5 each) and Guntur (11.0). In 9 other districts the rate varied from 5.0 in Trichinopoly to 9.8 in Nellore. Compared with the previous year there was an increase in 8 and a decrease in 15 districts, the diminution being marked in Ganjam (5.4), Vizagapatam (4.8) and South Canara (2.6). Compared with the five-year average, there was an increase in the death-rate in 6 districts. The deaths were larger in the cold weather months, the greatest number being recorded in December. The reason for this is probably a rise in the sub-soil water level.

33. A total of 15,356 deaths was registered in the municipal towns against 16,298 in the previous year. These figures represent annual ratios of 6.3 and 6.7 per mille respectively. Omitting Madras, the registered rate exceeded 10 per mille in Kurnool (16.1), Nellore (11.8), Tirupati (11.0), Anakapalle (10.7) and Ellore (10.3). In 22 others the rate varied from 10.0 in Rajahmundry and Tuticorin to 5.2 in Mannargudi. There was a decrease in 41 towns as compared with the previous year. It is noteworthy that all the towns in Coimbatore and Malabar have shown a fall

under this head and it is more than probable that many deaths falling under this head have been registered under unspecified causes on account of the presence of plague in these districts. It is also observed that fever mortality in Cuddapah fell from 11.0 in the previous year to 7.5. The prohibition of wet cultivation in and around this town since July 1904 appears to have had its desired effect in the year under report.

34. In accordance with paragraph 12 of G.O., No. 796 L., dated 29th June 1909, detailed information was called for from the district and municipal authorities regarding the anti-malarial operations carried on in their respective areas. The result of my enquiry is as follows:—

(a) In the city of Madras the work of filling up of tanks and unused wells, initiated several years ago, was steadily proceeded with during 1909; beyond this nothing was done.

(b) Elsewhere the measures adopted consisted in (1) filling up of useless ponds, (2) treatment of cess-pools with tar and kerosine-oil, (3) removal of rank vegetation, (4) free distribution of quinine and cinchona in malarial tracts and (5) draining low-lying lands.

Some of the above precautions were adopted in almost all the malarial centres and places where the danger of this disease was apprehended.

(c) Among the District Municipalities, Cocanada, Masulipatam, Bezwada and Negapatam were very prominent in their crusade against malaria. The expenditure for this special purpose was very liberal and compared favourably with that of previous years.

(d) As regards districts, with the exception of those where special features with reference to malaria were absent, the advice given by the local medical officers was readily acted upon and all possible precautions appear to have been taken. In Chingleput and Salem nothing was done on the usual plea of want of funds. The District Medical and Sanitary Officer of Coimbatore reports that nothing could possibly be attempted in this direction until a Sanitary Assistant was posted to that district. The District Boards of Cuddapah, Tanjore and Godavari made liberal allotments for carrying out anti-malarial operations.

DYSENTERY AND DIARRHOEA.

35. Dysentery and diarrhoea contributed 48,176 deaths against 60,874 in 1908, the rates being 1.3 and 1.7 per mille respectively. The highest rate, namely, 5.2, was recorded both in Madras and the Nilgiris. The rate was also large in Chingleput (2.7), Malabar (2.6) and South Canara (2.5). As compared with 1908, there was an increase in 4 districts, the Nilgiris showing an excess of 1.0 per mille. The rate was above the five-year average in 5 districts. It is significant to note that the mortality from these diseases increases during the cold months of the year. This is due to pollution of the drinking-water by surface drainage and rise in the sub-soil water level. The wells used are shallow and badly built and the nature of the ground is porous and dirty no precaution to speak of being taken to guard the wells. This is very marked in the Malabar and South Canara districts where the ground is sandy and the sub-soil water level high and the well usually a hole scooped in the ground. In these districts diseases of the alimentary system, cholera and fevers, are largely prevalent owing to this cause. Many cases of cholera are generally returned under this head to avoid disinfection of the infected houses and its attendant inconvenience.

36. A total of 10,322 deaths was registered in the municipal towns, being 1,444 less than in the previous year. The death-rate was largest in Palamcottah (11.3), followed by Vizianagram (8.2), Bimlipatam (7.1), Kurnool (6.8), Tirupati (6.1) and Chingleput (6.0). In 17 towns there was an increase and in 43 towns a decrease as compared with the previous year. In contrast with the rate obtained for rural areas, the urban rate shows an increase of 3.0 per mille. This can be accounted for in part by the inaccurate classification of diseases and in part by the overcrowded state of dwellings in municipalities and the insanitary conditions surrounding them.

RESPIRATORY DISEASES.

37. The casualties under this head amounted to 28,299 against 27,779 in 1908, representing an annual ratio of 0.8 per mille. The rate of mortality was large in the Nilgiris (3.1) and Madras (2.2) as in previous years. Registration under this head is not reliable on account of the agency employed being untrained and ignorant.

38. In municipalities a total of 4,441 deaths was registered under this head or a decrease of 4.5 as compared with the previous year. The death-rate was large in Coonoor (7.7), Ootacamund (6.5), Cochin (6.2) and Tellicherry (5.1). In 9 other towns the rate varied from 3.1 in Kodaikānal to 4.5 in Palamecottah. In 9 towns no deaths from this cause were reported.

INJURIES.

39. The fatalities under this head amounted to 11,650 against 11,192, or 458 more than in the previous year. In the case of districts and municipalities only very slight variations in the mortality rate are noticeable. As usual, suicides among females occurred more frequently than among males, the proportion being 124.7 female to every 100 male deaths.

ALL OTHER CAUSES.

40. Under this head 382,903 deaths were registered against 397,708 in 1908, the corresponding rates being 10.4 and 10.8 per mille. As compared with the previous year there was an increase in 4 and a decrease in 17 districts, the rates for Chingleput and Trichinopoly being the same as for the previous year. The rate exceeded 10 in 14 districts and fell below it in 9. Comparatively fewer deaths were recorded in Vizagapatam (1.6), Ganjam (2.3), Cuddapah (4.5) and Kurnool (6.0). In these districts the rate registered under fevers was proportionately large, the inference being that deaths have been freely registered under fevers with little enquiry or attempt at a correct classification, as the districts are known to be malarious.

41. The death-rate in municipal towns exceeded 20 in 13 towns and was between 10 and 20 in 43 others. The highest rate (24.6) was recorded both in Guntūr and Vaniyambādi. The rate was below 10 in 5 others, the diminution being most marked in Bimlipatam (7.5).

SECTION IX.

SANITARY WORKS—CIVIL.

MUNICIPALITIES.

42. The number of municipalities administered under Act IV of 1884 was raised by one during the year by extending the Act to the union of Tenali, thus making a total of 61 mufassal municipalities.

43. The District Municipalities Act has several defects which prevent the enforcement of some of its sections thereby hindering the advance of the sanitary measures to which they refer. It is hoped that the amended Act will confer greater powers in relation to (1) construction of houses, (2) disposal of household sullage, (3) protection of water-supplies, (4) inspection of food-supplies, (5) control of eating-houses.

44. With the powers already conferred by the Act, sanitation might be greatly improved if its provisions were carried out by Municipal authorities. Although some municipalities have shown praiseworthy energy and enterprise in carrying out the recommendations of reporting officers, the attitude in regard to sanitation, in most cases, I am sorry to remark, is one of apathy. Failure to execute schemes or the improvement of sanitation is usually put down to "want of funds" and the recommendations of the inspecting officer are put aside endorsed "to be attended to as funds permit". In my opinion "lack of funds" might be read more accurately as lack of interest, while in some councils the advance of sanitation is hindered by a want of co-operation. Little or no effort is made by a careful distribution of funds to carry out such recommendations as are well within the resources of the Municipality. The practice of employing paid secretaries in municipalities to aid the Chairman which was a compromise for the original proposal of having a paid Chairman has in my opinion proved a failure. Paid Chairmen should be employed and should be held responsible for the administration of municipalities and they, in their own interest, if not for the good of the public, would look after municipal affairs with zeal. To aid them in their work each Chairman should be provided with a well organized and fully equipped sanitary staff. The policy of employing honorary Chairmen is a mistake as they have too many interests to look after and speaking plainly, it would be more than human to expect them to sacrifice their time and energy in looking after municipal affairs which is generally regarded as a thankless work or to safeguard its interest when these clash with their own.

45. The sanitary improvements made during the year were of a very petty nature, such as, the construction and repair of wells, small length of drains, markets, slaughter-houses, latrines and the like. Large schemes of water-supply and drainage are beyond the means of any but a few of the larger and wealthier municipalities and when these are undertaken a period of quiescence usually follows which throws back the execution of other much-needed sanitary improvements.

46. There are many smaller towns which have not the funds to provide themselves with a protected water-supply or a drainage system, but which are of importance as pilgrim centres from which epidemic disease is frequently spread. If these towns are not provided with a protected water-supply and drainage they must continue to be a source of danger to the Presidency. Excluding Madras City, the number of municipalities provided with a protected water-supply is 18 against 17 in 1908, Bezwada having been newly supplied with a piped system during the year under report. Several municipalities, however, have undertaken a protected water-supply.

but the schemes are either in the initial stages of investigation or await sanction of plans and estimates. It is regrettable that the water-supplies in most cases are intermittent as this causes considerable inconvenience and leads to the use of questionable sources of water-supply. This defect should be corrected wherever possible so that the full sanitary benefit of a protected water-supply might be realised. The periodical analysis of waters at the King Institute has been of considerable value in connection with the protected supplies, making it possible to point out errors in management and advise remedies for defects which otherwise would not have been apparent. The great difficulty in municipal towns provided with a piped water-supply and filter-beds was the obtaining of sand of the proper quality for use on the filters when they required cleaning and recharging, chiefly because the screens used were not of the proper size of mesh; this resulted in the unsatisfactory working of the filters. Government have directed such Municipal Councils to apply to the Sanitary Engineer for advice as to the necessary screens which will ensure that the sand used on filter beds is of the requisite fineness, and it is hoped that this will tend to overcome the difficulty now experienced. It is much to be regretted that Municipal Councils do not pay sufficient attention to the instructions issued by the Sanitary Engineer for the care and management of filter beds and water-works generally.

47. With the exception of Madras and Ootacamund none of the mufassal municipalities are in possession of a drainage system. Such towns as have a piped water-supply should be provided with a drainage system. The want of such a system not only seriously interferes with the health of the people, but gives the town an untidy appearance and minimises the usefulness of all other sanitary efforts. An account of the major sanitary works carried out or investigated during the year will be found in the report of the Sanitary Engineer which forms Part II of this report.

48. Despite the fact that all municipalities now employ trained Sanitary Inspectors, very little advance was made in the important matter of rubbish and night-soil conservancy during the year. Inspection shows that except in a very few municipalities this work lacks supervision and organization. Sweepers and totties for public and private scavenging service are either not employed in correct proportions or where they are sufficient the duties are very much mixed. Sanitary Inspectors, sweepers and totties are for reasons of economy assigned duties that do not pertain to them. Instances are not wanting where sweepers and totties are taken away from their work in the town and made to drag the rubbish and night-soil carts to the depot, to stack rubbish and make night-soil trenches, whilst Sanitary Inspectors in almost every case are required to collect taxes in direct contravention of the orders conveyed in G.O., No. 328 M., dated 21st February 1904. The result is that the removal of rubbish and night-soil is very imperfectly carried out and much of it does not find its way to the depot but remains in the town polluting the air, soil and water. The depots are very much mismanaged. No system is observed in the stacking of rubbish or the trenching of night-soil and no staff is employed to look after the depots and keep them in order. The common practice is to take the rubbish and night-soil to the depot and dump them wherever the cartmen choose. I doubt very much whether any Chairman or Secretary, ever inspects a depot. It is enough if they see from the Sanitary Inspectors' diary that so many carts were at work and made so many trips to the depot. There was an increase in the number of Sanitary Inspectors, maistries, peons, scavengers and sweepers as compared with the previous year but it is unsatisfactory to note that there was a diminution in the number of rubbish and night-soil carts.

	1908.	1909.
Sanitary Inspectors	125	135
Sanitary maistries and peons	586	601
Sweepers... ..	2,539	2,667
Totties	1,677	1,753
Rubbish carts	981	979
Night-soil carts	857	841

49. Deficiencies in the staff and plant in individual municipalities were brought to notice in inspection reports on the towns concerned and in the budget review.

Municipal councils still continue the contract system of rubbish and night-soil removal and disposal which is a very imperfect one calculated to add to the profit of the contractor rather than to the cleanliness of the town. The departmental system of conservancy as adopted by a few municipalities with financial success should be more generally followed.

50. The night-soil derived from towns is usually trenched and the contents of the trenches after nitrification are subsequently sold by public auction but this is so badly managed that the income derived from this source is inconsiderable when compared with what it might be, especially where extensive agricultural operations are carried on in the neighbourhood, as shown by the example of towns where greater interest is taken in the matter. The contract system is responsible for much that is unsatisfactory in this respect. The whole arrangements should be in the hands of the municipal council. The rubbish and night-soil should be systematically stacked and trenched and the night-soil trenches should be sold by auction not as a whole but in convenient lots so as to give the poorer as well as the more well-to-do ryots an opportunity of bidding. Ryots are now beginning to recognize the value of night-soil as manure and if it is managed in this way, I have no doubt that much better results could be obtained. In a few instances crops are grown on the land used as a trenching ground. The Municipalities of Chicacole, Berhampur, Binilipatam, Anakapalle, Bezwada, Chingleput, Cuddalore, Trichinopoly, Mayaveram, Negapatam, Mannargudi, Periyakulam, Kodaikanal, Tuticorin, Cuddapah, Vaniyambadi, Ootacamund, Coonoor, Mangalore, Calicut and Cochin did not benefit financially to any appreciable extent by the sale of night-soil; whilst in Guntur, Adoni and Karur where its value as a manure is understood the competition at the auction sales was very keen. The crops raised on the fields treated with night-soil in Palghat and Anantapur are said to compare favourably with those raised by means of other kinds of manure. Of the municipalities that took advantage of the disposal of night-soil to add to their income, Adoni, Conjeeveram, Madura, Cuddalore, Tanjore, Srirangam and Trichinopoly deserve to be specially mentioned.

51. The sanitation of backyards, I am afraid, receives absolutely no attention. This is an important matter that should receive the earnest consideration of all municipal councils, for any amount of sanitary efforts outside will be of little value if the compounds of houses remain in an insanitary condition. The Municipal Act gives ample powers in this respect, but its provisions are seldom or never enforced, and I have good reason to believe that the Sanitary staff never trouble themselves about visiting the backyards of houses within their respective divisions.

52. Thirty additional public latrines were erected during the year. There are, however, very few latrines of approved pattern and most of them are very badly attended to and in a very insanitary condition, their faulty construction making it impossible to keep them clean; consequently public latrines are not so largely used as they might be. Calculated on the total population of all municipalities the latrine accommodation was adequate, but it was very deficient in the towns of Bellary, Rajahmundry, Masulipatam, Madura, Calicut, Palghat, Tellicherry, Mangalore, Srivilliputtur, Tiruvannamalai, Mannargudi and Negapatam. Deficiencies in this respect were noticed in the first nine of the above towns in previous reports, but little apparently has been done to bring the number of latrines up to the requirements of the town population. It is hoped that the municipalities mentioned will construct more latrines on standard designs. This is an important matter as where latrine accommodation is inadequate nuisance will be committed.

53. There were 128,812 private latrines in 1909 against 112,754 in 1908, of which 97,826 were cleaned by Municipal agency as compared with 95,933 in the previous year. It may be taken for a certainty that the number of private latrines referred to above does not represent the total number of houses of a class that should possess latrine accommodation and there is good reason to believe that municipal councils have not been particularly active in enforcing sections 180 and 207 of the Act. A census of all houses of a class that should but do not possess latrine accommodation should be made and the provisions of the Act in

this respect rigidly enforced. The private scavenging service is capable of considerable improvement and extension. It is not popular on account of its inefficiency for want of an adequate staff. The percentage of houses served by the Municipality rose from 85.1 to 92.4, a satisfactory record. In Madura and Tellicherry the number of private latrines is not known.

54. Little attention is paid to the inspection of articles of food and the licensing of places where they are prepared and sold. Bakeries, aerated-water factories, sweet-meat and coffee shops exist under the most insanitary conditions and in buildings absolutely unfit for the purpose. This important part of municipal sanitation requires constant vigilance on the part of the Municipal Council as food supply affords an easy means of spreading disease. The control of eating and pilgrim-lodging houses, especially in places of pilgrimage, is another matter that should receive attention with reference to the spread of epidemics. It may not perhaps be possible to license them under the Act, but they should be brought under some sort of sanitary control. If an enactment is necessary, I would strongly urge that it be undertaken on lines similar to the Puri Lodging House Act.

SEWERAGE.

55. Excluding the City of Madras and Ootacamund there is no complete system of sewage disposal anywhere, but plans and estimates for drainage schemes have been drawn up for several of the larger municipalities. The method of sewage disposal adopted is very primitive. Sewage either flows into and stagnates in back-yard or is let into street drains and cesspools, or into the open street. The drains, for the most part, are badly designed and do not permit of a free flow of sullage, whilst the cesspools which are seldom impervious are mere holes in the ground and very indifferently attended to. The sewage nuisance in consequence is very considerable and results in contamination of the air, soil and drinking-water wells. In Madras extensive improvements to the existing system are being executed. In Ootacamund the drainage works are in the hands of the Public Works Department with a view to watching their working and rectifying errors as they become apparent. This work should be supervised by the Sanitary Engineer to Government until it is perfected and handed over to the municipality.

56. Pending the introduction of a complete system of sewerage in municipal towns, much advance cannot be expected in the matter of sewage farming. Nevertheless much can be effected by extending existing systems sufficiently to serve suitable plots of land by broad irrigation.

57. In 32 towns no attempt was made to turn sewage to profitable account. It was let into the sea in Bimlipatam, Mangalore and Cuddalore; into irrigation channels in Nellore, Ongole and Srivilliputtur and into private gardens or vacant sites in Conjeevaram, Chingleput, Kurnool, Mayavaram and Palamcottah. In Chidambaram and Cochin no sewage farm was opened for want of suitable sites, while in Gudiyattam the land acquired for treating sewage was condemned and another site has not yet been selected. The system worked at a loss in Karur, Salem, Nandyal, Kumbakonam, Bezwada, Guntur and Anakapalle, while in Ootacamund, Negapatam, Vizagapatam, Vizianagaram, Rajahmundry and Tuticorin there was a gain. In Ootacamund where the sewage farm has not yet been made over to the municipality the result is very satisfactory, the income derived being Rs. 442-15-0 without any initial outlay. The farm is a very extensive one on which oats, rye grass, lucerne, guinea grass, English vegetables, etc., are grown. It is, however, capable of considerable improvements in working, etc., which if carried out will yield very much better results. The analysis of septic tank effluent continues to give fairly satisfactory results. The analysis of the farm effluent however reveals errors in treating the sewage on the farm and I have, from time to time, drawn the attention of the Divisional Officer to these and pointed out how they may be rectified. Bacteriological filters were in use in Vizagapatam and Salem. Septic tanks were used in Kumbakonam and Ootacamund. The sewage generally consisted of the contents of cesspools, washings of kitchens, cowsheds,

urine of men and animals. Human faecal matter was present, but it is not possible to determine the quantity as it varied in proportion in different places. The sewage is collected by both "open" and underground drains. Paddy crops, various kinds of grass, plantains, country vegetables, such as brinjals, etc., cabbages, knolkhol, etc., were grown on the lands treated with sewage. The popular feeling against using vegetables grown by sewage irrigation has to be gradually combated. In Vizagapatam the produce of sewage farms finds a ready market.

58. On the whole the sanitation of municipalities has improved during the year. Within the last two years Municipal Councils have shown considerable activity, with the aid afforded by Government from the recurring sanitary grant, in providing sanitary schemes for the opening up of congested areas, town extension, forming conservancy lanes, etc. Many of the schemes have not yet been carried out, but I have no doubt that when they are they will greatly improve the sanitary condition of the towns.

DISTRICT BOARDS.

59. As in the previous year there were 23 districts administered under the Madras Local Boards Act. This Act confers very little powers for the enforcement of sanitary measures in rural areas and consequently sanitary advance in these areas must necessarily be slow. One great defect is the absence of a sanitary staff for employment during epidemics. Huge areas of the rural tracts are still unprovided with any one capable of directing measures during epidemics or even the small menial staffs that exist. The employment of Sanitary Assistants in some of the districts is an important step towards meeting this deficiency and advancing sanitation, but although they have done very useful work their value is very much diminished by the absence of a trained staff for the supervision of sanitary measures and the carrying out of the recommendations of the Sanitary Assistants. The appointment of qualified Sanitary Inspectors under them is therefore a matter that should receive the attention of District Boards.

60. Several works of sanitary importance especially the opening up of congested areas and extension of town and village-sites have been undertaken by District Boards under the special sanitary grant which will greatly improve the sanitary condition of the areas concerned, but as a rule District Boards have done little to improve sanitation from their own resources.

61. The sanitary works carried out during the year consisted in the sinking and repair of wells, construction and repair of tanks, latrines, dust-bins, drains, markets, slaughter-houses, etc., and the improvement of village-sites and water-supply. Drinking-water for the rural population was as usual obtained from tanks, wells, ponds, rivers, springs or canals. Masonry drains for the removal of sullage and storm water are non-existent in the large majority of rural towns and villages, their place being supplied by side cuttings which are pervious and incapable of allowing a free flow of their contents. Out of a total of 42,852 villages, 598 were conserved against 596 in the previous year. Of these, 389 were unions and 209 other villages. This means that about 99 per cent. of the rural areas are absolutely without sanitary care!

62. The improvements of water-supply and village-sites have the first claim on the resources of District Boards. Unfortunately, however, they are ignored by the majority of these bodies and are given but a very insignificant proportion of their revenue. Schemes of water-supply and drainage have been undertaken by the District Boards of Chingleput (water-supply and drainage), North Arcot and Nellore (water-supply) and Cuddapah (drainage). Elsewhere the sanitary works carried out were of a minor nature. The District Boards of Guntur, Kistna, Malabar, the Nilgiris, South Arcot, South Canara, Tanjore and Vizagapatam made very inadequate provisions from their revenues towards objects pertaining to sanitation. In offering remarks on their annual budgets this office has year after year impressed on them the inadequacy of the share of income set apart for sanitation. It is a matter for regret that in spite of the advice offered no improvement is observable.

63. In the districts of Madura, Tanjore, South Arcot, Chingleput, North Arcot, Guntur and Gódvári Sanitary Assistants to District Medical and Sanitary Officers have been employed. There can be no doubt that they have done much useful work which justifies their employment. Their usefulness however could be very much improved by reorganizing the system under which they are now working. I have already advised Government in regard to this and it is hoped that other District Boards will consider the advisability of employing Sanitary Assistants with Sanitary Inspectors under them.

64. An allotment of Rs. 10,36,106 was made for sanitation and of this amount only Rs. 5,13,610 or 49.6 per cent. were spent during the first nine months of the year.

65. The District Boards of Guntur, Kistna, Kurnool, Nellore, the Nilgiris, North Arcot, Salem, Tinnevely, Trichinopoly, Chingleput, Coimbatore and Ganjam failed to utilize a fair proportion of the provision during the year.

66. *Maintenance of Village Sanitary Inspection books.*—This record is reported to be duly maintained in all the districts except the Nilgiris and South Canara owing to the absence of unions in them. In Vizagapatam the books were not maintained in Gunupur and the newly-formed village of Meerangi and in Gódvári they existed only in a few unions. The object with which these records are maintained is defeated in the district of Nellore, as the District Medical and Sanitary Officer continues to report that the Inspecting Officers make no entries. Increased attention seems to have been paid to the maintenance of these records in the districts where Sanitary Assistants are employed.

MECCA PILGRIMAGE.

67. During the year under report no pilgrims embarked for Mecca from any of the ports in this Presidency to witness the last Haj (Baqr-id) held in June.

SECTION X.

GENERAL REMARKS AND PERSONAL PROCEEDINGS.

68. Major W. W. Clemesha, I.M.S., held charge of the Office of Sanitary Commissioner from 1st January to 24th July 1909. The following statement gives the inspection work performed by him:—

Date.	Place visited.	Purpose of visit.
January 1909.	Kumbakonam	To attend conference re Mahamakam festival arrangement and inspection of land proposed to be taken up for extension of vegetable market
	Srirangam	Inspection of proposals for a water-supply.
	Conjeeveram	Inspection of sanitary schemes proposed.
	Cconoor	Inspection of proposals for laying out of Mount Pleasant into house plots.
	Cocanada	Inspection of filter-beds and certain sanitary schemes.
	Calicut	Inspection of congested areas to be opened up.
	Tirupati, Vellore, Gudiyattam.	Inspection of water-works.
	Anakapalle	Inspection of proposals for drainage and town inspection.
	Vizianagram	Inspection of congested areas to be opened up and extension of sewage farm.
	Rajahmundry	Inspection with reference to the opening up of Vadi block.
	Ádóni	Inspection of the alignment of a new road proposed to be opened.
February 1909.	Kurnool	Town inspection and inspection of water-works.
	Guntur	Inspection of water-works.
	Ootacamund	Inspection of drainage works.
	Bombay	To attend the Indian Medical Congress.
	Kumbakonam	Inspection of sanitary arrangements for the Mahamakam and inspection of site proposed for an infectious disease shed in the Municipal hospital.
March 1909.	Trichinopoly	Inspection of head water-works and proposals for drainage and town extension.
	Coimbatore	Inspection of sanitary schemes and plague measures.
	Hindupur	Inspection of proposed site for hospital; the question of water-supply scheme was also investigated.
	Bombay	To meet Dr. Fowler re drainage schemes for Madura and Trichinopoly.
	Ádóni	Inspection of water-works.
	Srirangam	Inspection of proposals for drainage.
	Vizianagram	Inspection of site proposed for head water-works.
	Vizagapatam	Inspection of water-works, extension of pipe lines and certain insanitary localities.
	Ellore	Inspection of sanitary schemes proposed and town inspection
	Ongole	Inspection of proposals for a water-supply scheme.
	Rajahmundry	Inspection of site for filter-beds.
April 1909..	Ootacamund	Inspection of drainage works.
	Vizianagram	Inspection of sanitary schemes proposed.
	Cocanada	Inspection of head water-works with reference to results disclosed by analysis.
	Vániyambádi	Inspection of proposal for water-supply.
May 1909 ..	Peddápuram	Inspection of proposals for improvement of drainage and water-supply.
	Cocanada	Inspection of filter-beds.
	Tuticorin	Town inspection and inspection of water-supply.
	Mangalore	Inspection of drainage of the western portion of the town.

Date.	Place visited.	Purpose of visit.
May 1909— cont.	Kotagiri	Inspection of water-supply and proposals for the removal of the Kota village and selection of site for accommodating the evicted Kotas.
	Erode	Inspection of site proposed for extension and the scheme for widening the conservancy lane in Agraharam street.
	Vizianagram	Inspection of a new site selected for the head water-works.
June 1909 ..	Coimbatore	Inspection of plague measures and sanitary schemes.
	Gudivada	Inspection of the site proposed for acquisition near Munsif's Court for town extension.
	Vellore	Inspection of water-works.
	Calicut	Inspection of sanitary schemes proposed.
	Madura	Inspection of Ponnagaram extension and Meengara block.
July 1909 ..	Simhachalam	Inspection of sanitary arrangements for the Simhachalam festival.
	Rajahmundry	Inspection of opening up congestion and town extension.
	Chidambaram	Inspection of proposed water-supply.
	Cuddalore	Inspection of sanitary scheme proposals.
	Tinnevely	Inspection of site proposed for water-works.

69. Besides attending to routine office work he on the 15th January inspected the Hindu Girls' school at Mylapore at the instance of Government (*vide* No. 2264-2, dated 17th December 1909) with reference to certain alterations proposed in the plan of the school and on the 23rd January inspected the Hindu burial and burning ground at Mylapore with reference to proposals for closing the burning ground.

70. The King Institute of Preventive Medicine, Guindy, engaged his constant and unremitting attention especially in relation to the research work connected with the analysis of water and sewage carried on there under his personal direction.

71. I returned from 16 months' furlough and relieved Major Clemesha on the 24th July 1909. The following is a statement of inspection work performed since. Written reports on the inspections were duly forwarded to Government, the Sanitary Board or the local bodies concerned :—

Date.	Place visited.	Purpose of visit.
August 1909.	Vizianagram	Inspection of the proposed site for the head works and service reservoir of the water-supply scheme.
	Masulipatam	Inspection of the proposed town extension sites.
	Ootacamund	To attend Conference in reference to revision of jail diets.
	Salem	Advising as to opening conservancy lanes. Inspection of dye houses at Gogai and town inspection.
	Ootacamund	To attend Conference in reference to revision of Plague Passport rules.
September 1909.	Bezwada	Inspection of Pushkaram festival arrangements.
	Ellore	Inspection of water-supply, drainage and opening of congested areas.
	Cocanada	Inspection of head water-works.
September and October 1909.	Ootacamund	Inspection of drainage works.

Date.	Place visited.	Purpose of visit.
October 1909.	Tiruppur	Inspection of sites for town extension.
	Dindigul	Inspection of (1) sites proposed for additional rubbish depots and extension of sewage farm, (2) proposals for relieving congestion, (3) defects in water-supply, (4) proposed site for Rangan parcherry.
November 1909.	Negapatam	Inspection of the proposed water-supply scheme.
	Berhampur	Inspection of proposals for diverting the drainage from certain villages from entering the Itchapur channel with reference to the water supply scheme for Berhampur.
December 1909.	Vizagapatam	Inspection of head water-works.
	Cuddalore	Inspection of certain dye-houses with reference to a proposal by the Municipal Council to remove them to another site.

72. In addition to the above I paid several visits to the King Institute at Guindy and undertook an inspection of the experimental drainage works at Napier's Park with reference to Endorsement No. 387/S, dated 4th November 1909, from the Sanitary Board.

73. The King Institute continues to do excellent work, but accommodation and staff for research work are found to be very inadequate. Proposals for meeting this difficulty and various other matters are under consideration and will form the subject of a separate communication. The question of the refrigerating apparatus is still undecided.

74. One hundred and fifty-nine reports each demanding separate attention were received from District Medical and Sanitary Officers and the attention of the local bodies concerned was invited to the defects brought to notice. The great drawback in most cases is that the recommendations made from time to time are not kept steadily in view but are lost sight of and not duly provided for as far as funds will permit. The result is that several sanitary defects which could be easily remedied at little cost are left unattended to, and the District Medical and Sanitary Officer finds that he has to repeat his recommendations year after year. It is impossible that sanitation in rural areas can advance under these conditions. To overcome this to some extent and secure suitable provision in the budget, I have asked District Medical and Sanitary Officers with reference to G.O., No. 1177 L., dated 26th June 1894, to maintain a register of their proposals and to remind local bodies at the time of the preparation of the budget of the promises made on individual reports. Local bodies were advised in regard to sanitary arrangements during fairs and festivals in 116 instances and the sanitary aspect of 146 plans and estimates received from the Sanitary Board and local bodies was scrutinized on behalf of the Sanitary Board.

75. The working of the trial scheme of vaccination was carefully watched. The scheme so far may be considered a success and its extension is desirable. The difficulty at present is to get the proper class of trained vaccinators. The pay offered is not sufficiently attractive and qualified vaccinators who could obtain better salaries in other appointments without the hardships incidental to the life of a vaccinator, decline to accept office under the trial scheme. It is necessary therefore that better terms should be offered to trained vaccinators. Thirty-eight men qualified as Assistant Sanitary Inspectors and 9 took the higher qualification in Minor Sanitary Engineering. Two men obtained certificates in riding and cycling. The quinquennial training and examination of Sanitary Inspectors approved in G.O., No. 914 L., dated 22nd July 1909, still awaits the final sanction of Government. Twenty-seven candidates were trained as vaccinators at the King Institute, Guindy.

76. During the year 14 Assistant Surgeons were trained in Hygiene and Minor Sanitary Engineering at the Medical College, Madras, under the scheme sanctioned in G.O., No. 444 L., dated 8th April 1909.

77. The checking of stores and the maintenance of the service registers of my office establishment have received attention as required by Government.

78. Captain Justice, I.M.S., held the office of the Deputy Sanitary Commissioner and Inspector of Vaccination for the first two months of the year when he availed himself of nineteen months' furlough from 1st March 1909. During this period he visited the districts of Madura and Tanjore and submitted reports on the condition of vaccination and registration in 30 villages. He was relieved by Captain Dougan, I.M.S., who held charge for the rest of the year. Captain Dougan visited the districts of Nellore, Salem, Vizagapatam, Malabar and Tinnevely and reported upon 96 villages and one union. He also visited Ambur and Chidambaram at the request of Major Clemesha, the former with reference to a scheme for relieving congestion and the latter with reference to a water-supply scheme. He trained a class of six men as Special Inspectors for plague duty at the King Institute and took the class to Coimbatore where plague was prevailing to give them practical demonstration in plague work. Two additional Deputy Sanitary Commissioners were sanctioned during the year and it is hoped that the appointments will be made at an early date as the one officer now employed cannot overtake the inspection work required of him.

H. THOMSON, M.D., D.P.H., Lt.-Col., I.M.S.,
Sanitary Commissioner for Madras.

OFFICE OF SANITARY COMMISSIONER,
MADRAS, 15th April 1910.

VITAL STATISTICS OF THE GENERAL POPULATION.

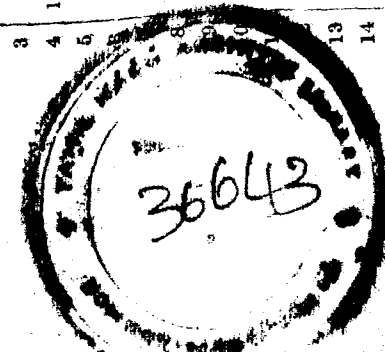
VITAL STATISTICS OF THE GENERAL POPULATION.
No. 1.—Statement showing the Births registered in the districts of the Madras Presidency during the year 1909.

APPENDIX.

Number.	Population (exclusive of Europeans and Eurasians) as per census of 1901.		Districts.	Population (exclusive of Europeans and Eurasians) for which returns were received.		Number of births registered (exclusive of Europeans and Eurasians and still-births).		Ratio of births per 1,000 of population.		Number of males born to every 100 females born.	Excess of births per 1,000 of population.	Excess of deaths per 1,000 of population.	Mean ratio of births per 1,000 during previous five years.	Total.	
	Males.	Females.		Males.	Females.	Males.	Females.	Males.	Females.					Males.	Females.
1	403,090	384,062	787,752	403,090	384,062	787,752	787,752	18.8	15.8	103.2	11.5	15.2	30.9	15.7	15.2
2	485,642	471,425	957,067	485,642	471,425	957,067	957,067	15.4	15.0	102.3	7.8	15.1	30.7	15.6	15.1
3	659,902	649,468	1,309,370	659,902	649,468	1,309,370	1,309,370	18.7	18.9	104.1	15.3	14.2	34.6	17.7	16.9
4	1,082,528	1,118,145	2,200,673	1,082,528	1,118,145	2,200,673	2,200,673	16.2	15.6	104.3	10.7	14.2	28.9	14.7	14.2
5	655,730	635,395	1,291,125	655,730	635,395	1,291,125	1,291,125	13.2	12.9	101.9	4.1	13.7	27.1	13.7	13.4
6	961,706	1,048,243	2,009,949	961,706	1,048,243	2,009,949	2,009,949	14.6	14.6	107.1	10.9	18.1	35.0	18.1	16.9
7	720,952	744,268	1,465,220	720,952	744,268	1,465,220	1,465,220	17.4	16.8	103.6	11.2	16.0	31.4	16.0	15.4
8	752,727	737,908	1,490,635	752,727	737,908	1,490,635	1,490,635	19.6	18.9	103.7	16.2	17.1	38.6	17.1	16.5
9	869,811	873,754	1,743,565	869,811	873,754	1,743,565	1,743,565	18.2	17.0	106.7	14.4	17.1	33.3	17.1	16.2
10	440,553	431,395	871,948	440,553	431,395	871,948	871,948	15.9	15.4	103.5	11.2	15.5	30.5	15.5	15.0
11	248,742	244,938	493,680	248,742	244,938	493,680	493,680	19.3	18.0	107.7	...	20.7	40.2	20.7	19.5
12	1,356,693	1,473,951	2,830,644	1,356,693	1,473,951	2,830,644	2,830,644	14.0	13.2	106.5	10.0	12.6	24.6	12.6	11.9
13	1,381,300	1,414,281	2,795,581	1,381,300	1,414,281	2,795,581	2,795,581	20.1	19.1	105.3	16.2	17.1	33.4	17.1	16.3
14	640,023	632,315	1,272,338	640,023	632,315	1,272,338	1,272,338	13.4	12.9	104.2	8.4	13.1	25.7	13.1	12.6
15	58,350	49,323	107,673	58,350	49,323	107,673	107,673	15.5	14.3	107.3	0.7	15.4	30.0	15.4	14.6
16	1,100,351	1,106,463	2,206,814	1,100,351	1,106,463	2,206,814	2,206,814	16.2	15.5	104.7	11.6	15.0	29.3	15.0	14.3
17	1,085,090	1,118,943	2,204,033	1,085,090	1,118,943	2,204,033	2,204,033	16.5	16.0	102.7	9.1	15.9	31.2	15.9	15.3
18	1,167,748	1,181,429	2,349,177	1,167,748	1,181,429	2,349,177	2,349,177	15.2	14.3	104.7	15.0	17.5	34.2	17.5	16.7
19	548,345	586,044	1,134,389	548,345	586,044	1,134,389	1,134,389	19.4	18.5	107.7	14.3	17.1	33.4	17.1	16.3
20	1,065,791	1,178,158	2,243,949	1,065,791	1,178,158	2,243,949	2,243,949	18.3	17.7	108.0	10.7	17.3	33.8	17.3	16.5
21	1,001,578	1,057,625	2,059,203	1,001,578	1,057,625	2,059,203	2,059,203	17.9	16.9	105.9	12.7	17.8	34.9	17.8	17.1
22	699,274	744,421	1,443,695	699,274	744,421	1,443,695	1,443,695	17.5	16.6	105.2	9.8	16.6	32.7	16.6	16.1
23	1,445,598	1,492,590	2,938,188	1,445,598	1,492,590	2,938,188	2,938,188	13.2	12.8	103.3	6.4	14.9	25.2	14.9	14.3
24	19,851,753	19,881,177	39,732,930	19,851,753	19,881,177	39,732,930	39,732,930	16.2	16.2	104.5	11.3	16.0	31.4	16.0	15.4
25	2,041,611	2,171,188	4,212,799	2,041,611	2,171,188	4,212,799	4,212,799	17.0	16.1	106.1	6.7	17.0	33.1	17.0	16.1
26	16,760,142	17,208,989	33,969,131	16,760,142	17,208,989	33,969,131	33,969,131	16.9	16.2	104.3	11.9	15.9	31.1	15.9	15.2

† Includes the population of the Venkatapur Circle transferred from the Central Provinces.

• Including the Hill Tracts.



35643

No. IV.—Deaths registered according to Age in the districts of the Madras Presidency during the year 1909.

Number.	Districts.	3		4		5		6		7		8		9		10		11		12			
		Under 1 year.		1 to 4.		5 to 9.		10 to 14.		15 to 19.		20 to 24.		25 to 29.		30 to 39.		40 to 49.		50 to 59.		60 and upwards.	
		Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.
1	Anantapur	2,409	2,049	729	776	313	283	231	258	192	341	488	812	580	603	689	547	802	357	1,754	1,687		
2	Bellary	2,967	2,384	1,578	1,562	552	500	303	288	395	421	679	1,082	663	785	1,021	631	946	779	1,802	2,089		
3	Chingleput	5,683	4,506	1,877	1,903	615	622	357	372	307	294	927	1,256	828	882	1,023	753	1,068	923	2,763	2,731		
4	Coimbatore	6,376	5,133	2,204	2,304	1,370	1,219	1,161	1,068	331	1,037	1,903	2,831	2,053	2,102	2,102	1,691	1,840	1,002	3,663	3,971		
5	Cuddalore	2,820	2,627	1,492	1,606	719	703	431	407	458	642	936	1,340	1,112	1,222	1,222	1,222	1,489	2,552	2,728			
6	Ganjam	3,523	2,262	1,971	1,740	831	746	528	498	349	616	965	1,065	919	836	1,116	840	1,244	1,251	1,773	2,212		
7	Godavari	4,413	5,848	2,443	2,320	1,043	925	710	646	621	816	1,410	1,568	1,320	1,170	1,316	944	1,357	1,074	2,804	2,496		
8	Guntur	5,821	5,014	2,416	2,205	788	714	449	475	542	727	1,071	1,448	1,016	945	1,039	702	1,137	789	2,869	2,681		
9	Katrina	6,035	5,046	2,233	2,162	359	343	273	233	276	354	603	781	777	638	939	690	1,024	762	1,559	1,556		
10	Kurnool	2,969	1,794	1,167	1,064	460	434	273	233	276	354	603	781	777	638	939	690	1,024	762	1,559	1,556		
11	Madras	2,962	2,352	1,272	1,289	339	350	90	216	232	313	483	889	662	675	751	696	665	561	1,662	1,765		
12	Madura	6,386	5,855	3,528	2,510	1,155	997	735	656	541	1,069	2,127	2,940	2,463	2,063	2,582	1,928	2,269	2,056	4,105	4,405		
13	Malabar	3,914	7,213	4,549	4,606	1,798	1,736	1,029	922	983	1,044	2,777	3,070	3,244	3,186	2,963	2,192	2,230	1,542	4,144	5,350		
14	Nellore	2,508	2,620	1,442	1,456	656	632	356	351	338	497	755	889	735	719	814	728	990	816	2,564	2,448		
15	Nilgiris, The	377	382	270	282	87	90	57	57	83	61	138	132	217	125	144	148	135	109	152	155		
16	North Arcot	5,052	5,045	3,015	3,055	1,001	946	650	613	565	931	1,390	1,789	1,321	1,670	1,676	1,533	2,114	1,708	4,610	4,371		
17	Salem	7,214	6,405	3,028	3,171	1,245	1,438	1,043	906	800	1,114	1,767	2,200	2,024	1,946	2,627	1,542	2,242	2,021	4,014	4,311		
18	South Arcot	8,597	7,084	4,005	4,039	1,440	1,320	913	931	1,036	1,216	1,504	2,124	1,708	1,760	1,968	1,593	2,392	1,597	3,359	3,742		
19	South Canara	3,089	3,173	1,474	1,613	578	563	378	325	401	519	1,171	1,440	1,262	1,332	1,336	1,056	1,229	1,173	1,917	2,183		
20	Tanjore	8,949	7,333	3,915	2,898	1,710	1,068	880	630	705	1,227	1,813	2,792	2,155	2,202	2,306	1,816	2,257	1,575	5,443	6,641		
21	Tinnevely	7,092	5,917	3,242	3,291	1,061	994	658	607	620	707	1,461	1,745	1,502	1,522	1,814	1,322	1,913	1,500	3,946	4,642		
22	Trichinopoly	4,826	4,431	2,192	2,100	836	838	608	541	540	712	1,236	1,432	1,349	1,283	1,471	1,136	1,526	1,350	3,118	3,755		
23	Vizagapatam	4,175	3,673	3,317	2,134	1,303	1,301	833	715	715	752	1,530	1,620	1,702	1,461	2,012	1,468	2,078	1,725	3,322	3,712		
Total, Madras Presidency		114,397	94,782	51,629	51,565	20,322	19,306	13,201	12,867	16,424	28,942	55,754	81,622	30,346	34,514	56,143	85,125	67,897	67,897	133,503	133,503		
Total Population according to the Census of 1901		514,334	593,573	1,263,200	1,090,759	2,658,151	2,658,197	2,898,166	2,167,949	1,519,649	1,830,421	2,689,384	3,140,576	2,564,899	2,664,210	1,919,215	1,597,734	1,271,921	1,222,863	928,200	1,134,114		
* Ratio per mille of population		269.8	176.7	90.8	25.3	77	7.2	5.5	5.7	6.5	11.3	10.6	11.2	12.2	11.4	18.0	15.8	29.0	23.6	70.5	65.0		

No. V.—Deaths registered according to classes in the districts of the Madras Presidency during the year 1909.

Number.	Districts.	2			3			4			5		
		Population for which returns were received.			Population for which returns were received.			Number of deaths registered.			Rates of deaths per 1,000 of population.		
		Native Christians.	Muham- madans.	Total.	Native Christians.	Muham- madans.	Total.	Native Christians.	Muham- madans.	Total.	Native Christians.	Muham- madans.	Total.
1	Anantapur	2,173	58,917	718,762	718,361	8,301	787,762	24	1,152	14,997	11.0	19.6	20.6
2	Bellary	3,756	97,474	957,067	854,056	1,781	957,067	53	2,064	19,391	14.1	21.1	22.6
3	Chingleput	28,714	30,010	1,300,370	1,255,257	389	1,300,370	327	440	29,780	13.8	14.7	23.3
4	Coimbatore	17,808	50,745	2,200,673	2,128,068	6,052	2,200,673	372	1,665	44,315	20.9	30.8	20.3
5	Cuddalore	18,781	129,537	1,201,125	1,142,454	353	1,201,125	322	2,613	25,490	17.1	20.2	22.1
6	Ganjam	2,407	6,889	1,362,163	1,312,475	40,695	1,362,163	15	120	26,113	6.2	18.2	19.8
7	Godavari	4,538	24,646	1,465,220	1,431,791	4,245	1,465,220	98	498	32,933	21.6	20.2	23.0
8	Guntur	101,225	97,324	1,490,685	1,284,592	7,384	1,490,685	1,615	2,162	29,264	16.0	22.2	22.3
9	Kistna	28,613	61,471	1,743,555	1,651,396	2,085	1,743,555	590	1,319	34,308	20.6	21.5	20.8
10	Kurnool	33,936	107,626	871,943	728,732	1,604	871,943	544	2,166	14,686	16.0	20.1	20.1
11	Madras	25,292	57,331	493,680	410,643	409	493,680	826	2,481	15,620	32.7	43.3	38.3
12	Madura	111,201	168,618	2,550,783	2,431,791	42	2,550,783	1,319	3,417	43,866	11.9	20.3	17.2
13	Malabar	46,519	832,970	1,904,474	1,904,474	1,344	1,904,474	1,075	20,313	42,231	23.1	35.0	23.0
14	Nellore	35,772	74,779	1,272,338	1,157,832	3,908	1,272,338	529	1,328	20,707	14.8	17.8	17.9
15	Nilgiris, The	11,081	5,867	107,673	86,608	4,057	107,673	308	208	2,417	27.8	36.5	29.1
16	North Arcot	22,069	103,038	2,206,817	2,068,886	13,924	2,206,817	207	1,700	42,298	9.4	16.5	20.1
17	Salem	18,701	68,407	2,116,768	2,116,768	67	2,116,768	290	1,536	49,595	15.5	23.2	23.4
18	South Arcot	65,748	64,976	2,349,177	2,349,177	5,905	2,349,177	875	1,080	50,822	13.3	16.8	22.5
19	South Canara	83,779	130,853	914,163	914,163	9,594	1,134,869	1,657	3,029	21,878	19.8	23.9	23.6
20	Tanjore	85,889	123,058	2,084,399	2,084,399	598	2,243,449	1,893	3,225	51,650	22.0	26.2	25.3
21	Tinnevely	168,809	101,876	1,798,519	1,798,519	23	2,059,203	2,991	2,349	40,086	18.8	28.1	22.1
22	Trichinopoly	76,585	46,319	1,324,768	1,324,768	23	1,443,695	1,725	1,144	32,276	22.8	26.4	24.3
23	Vizagapatam	2,757	22,476	2,006,926	2,006,926	50,069	2,081,228	30	235	40,338	10.9	10.5	19.6
Total, Madras Presidency		980,163	2,458,191	38,691,654	38,691,654	162,136	38,691,654	17,684	56,694	724,976	18.0	23.1	21.8

APPENDIX.

Number	Districts and towns.	Population for which returns were received.	Ratio of deaths per 1,000 of population.										From all causes.
			Births.	Cholera.	Small-pox.	Plague.	Rever.	Dysentery and diarrhoea.	Respiratory diseases.	Wounds, accidents, and suicides.	Injuries.	Total deaths from all causes.	
1	2	3	4	5	6	7	8	9	10	11	12	13	14
A.—Districts.													
1	Anantapur	675,322	22,436	332	761	26	1	389	613	1,976	11	13	13
2	Bellary	785,872	21,418	311	919	122	15	1,211	1,119	777	17	15	15
3	Chingleput	1,119,916	44,321	396	136	348	...	4,062	2,748	858	20	20	20
4	Coimbatore	2,041,419	66,037	323	3,763	733	1,337	7,514	3,719	2,432	34	65	65
5	Cuddapah	1,172,386	31,868	271	1,474	363	3	16,998	881	1,286	23	37	37
6	Ganjam	98,266,629	3,323	363	338	391	...	18,692	1,594	350	22	30	30
7	Godavari	1,296,836	45,188	371	22	592	...	15,872	635	786	27	96	96
8	Guntur	1,365,084	52,696	386	1,177	...	...	15,749	910	923	25	33	33
9	Kistna	1,492,635	56,224	353	122	587	...	16,011	736	2,116	17	31	31
10	Kurnoor	824,933	25,636	318	285	337	...	9,024	388	1,82	24	25	25
11	Madras	2,488,729	64,497	261	3,740	497	...	13,577	1,630	1,163	68	63	63
12	Malabar	2,507,366	100,673	362	2,673	1,530	30	18,032	6,265	3,911	54	27	27
13	Vellore	1,178,186	30,822	262	413	965	...	11,613	119	134	22	34	34
14	Nalgonda, The	80,552	2,142	166	26	11	...	754	444	145	2	5	5
15	North Arcot	2,035,618	64,371	316	2,113	1,536	...	8,896	3,571	1,773	79	67	67
16	Salem	626,764	21,571	319	4,811	531	...	14,713	1,671	1,671	915	34	34
17	South Arcot	2,177,242	61,856	376	2,639	1,627	...	13,831	2,187	1,495	58	14	14
18	South Canara	1,082,210	41,012	379	1,731	1,69	...	5,586	2,624	943	42	32	32
19	Tanjore	1,891,386	68,628	373	3,394	437	...	6,387	1,240	513	38	32	32
20	Tinnevely	1,288,142	44,059	342	1,962	283	...	6,336	711	379	26	32	32
21	Tiruchinopoly	1,881,883	48,521	257	94	3,781	...	6,471	565	327	27	36	36
22	Vizagapatam	32,928,833	1,74,749	331	35,094	17,513	1,731	244,843	35,111	22,167	689	872	872
Total, Bareil districts													

No. VI.—Births and Deaths registered from Different Causes in the Districts and towns of the Madras Presidency during the year 1909—cont.

Number	Districts and towns.	Population for which returns were received.	Ratio of deaths per 1,000 of population.										From all causes.
			Births.	Cholera.	Small-pox.	Plague.	Rever.	Dysentery and diarrhoea.	Respiratory diseases.	Wounds, accidents, and suicides.	Injuries.	Total deaths from all causes.	
1	2	3	4	5	6	7	8	9	10	11	12	13	14
B.—Towns.													
1	Anantapur—	7,938	276	348	10	1	...	30	16	1	...	154	154
2	T.C. Hindupur	19,575	386	197	...	...	...	45	10	12	...	164	164
3	T.C. Tadipatri	10,859	414	351	30	...	...	74	24	...	...	132	132
4	T.C. Madakira	10,666	182	124	...	...	...	5	4	...	...	83	83
5	T.C. Dharmavaram	10,658	205	192	...	...	...	3	...	...	...	66	66
6	T.C. Pundarik	10,657	198	186	...	...	...	9	...	...	...	53	53
7	T.C. Gooty	9,682	188	186	...	...	...	8	...	...	...	74	74
8	T.C. Uvasakonda	8,583	203	273	...	...	...	3	...	...	...	140	140
9	T.C. Ponnandur	7,744	113	221	...	...	...	18	19	...	...	79	79
10	T.C. Kottur	7,389	313	424	...	...	...	37	10	...	...	173	173
11	T.C. Perakonda	6,906	779	410	...	...	...	23	19	...	...	120	120
12	Bellary—	58,247	1,671	287	7	...	...	111	176	...	...	904	904
13	M.T.C. Bellary	30,416	923	300	9	15	...	105	92	...	...	560	560
14	T.C. Hospet	18,482	369	189	37	...	...	24	70	...	...	168	168
15	T.C. Yennamur	18,890	440	317	...	...	...	50	25	...	...	183	183
16	T.C. Rayadurg	10,488	218	208	...	...	...	76	54	...	...	153	153
17	T.C. Kumbh	9,503	118	120	...	...	...	39	10	...	...	177	177
18	T.C. Marpanahalli	9,320	389	329	...	...	...	32	16	...	...	156	156
19	T.C. Kogri	7,744	113	221	...	...	...	18	19	...	...	173	173
20	T.C. Kottur	6,906	779	410	...	...	...	23	19	...	...	120	120
21	T.C. Siregutta	6,906	779	410	...	...	...	23	19	...	...	120	120
22	Chingleput—	46,164	1,905	413	...	...	...	120	268	...	...	882	882
23	M.T.C. Chingleput	10,561	480	465	...	...	...	42	64	...	...	282	282
24	T.C. Sengem	17,507	387	163	...	...	...	76	116	...	...	156	156
25	T.C. Tiruvottiyur	13,919	388	291	...	...	...	76	116	...	...	156	156
26	T.C. St. Thomas Mount	13,571	114	73	...	...	...	33	7	...	...	74	74
27	T.C. Ponnandur	15,328	597	390	...	...	...	89	57	...	...	141	141
28	T.C. Saidapet	14,254	479	376	...	...	...	106	48	...	...	119	119
29	T.C. Uthamar	10,482	451	432	...	...	...	68	41	...	...	92	92
30	T.C. Tiruvallur	10,482	351	356	...	...	...	37	45	...	...	64	64
31	T.C. Pallavaram (C)	6,416	95	148	...	...	...	21	24	...	...	145	145
32	T.C. Madhavaram	5,238	207	361	...	...	...	41	23	...	...	79	79
33	T.C. Tirukkalkulam	5,481	249	454	...	...	...	28	23	...	...	82	82
34	T.C. Ponnandur	5,446	133	281	...	...	...	27	27	...	...	114	114
35	T.C. Ponnandur	5,446	133	281	...	...	...	27	27	...	...	114	114
36	T.C. Ponnandur	5,446	133	281	...	...	...	27	27	...	...	114	114
37	Coimbatore—	53,080	1,316	248	79	7	1,101	21	161	...	...	746	746
38	M.T.C. Coimbatore	15,529	604	389	61	1	3	13	70	...	...	268	268
39	M.T.C. Erode	15,367	595	387	60	...	...	102	62	...	...	214	214
40	M.T.C. Karur	17,178	241	140	...	...	...	19	56	...	...	169	169
41	T.C. Dharmavaram	13,729	190	138	...	...	...	19	56	...	...	169	169
42	T.C. Kollegal	10,503	183	174	...	...	...	19	56	...	...	169	169
43	T.C. Uthamapet	10,503	183	174	...	...	...	19	56	...	...	169	169

[illegible][illegible]

No. VI.—Births and Deaths registered from Different Causes in the districts and towns of the Madras Presidency during the year 1909—cont.

Number.	Districts and towns.	Population for which returns were received.	Births.		Deaths.		Ratio of deaths per 1,000 of population.		From all causes.		From all causes.	
			Total number.	Birth-rate per mille of popula.	Total number.	Death-rate per mille of popula.	From all causes.	From all causes.	From all causes.	From all causes.	From all causes.	From all causes.
121	Madhar- M.T.C. Cannanore	27,311	1,104	39.7	...	...	...	...	...	...	...	...
122	T.C. Badam	11,319	518	45.7	...	...	...	...	...	...	...	...
123	T.C. Ponnani	10,562	361	34.2	...	...	...	...	...	...	...	...
124	Nallore— M.T.C. Nellore	32,040	191	59.1	...	...	...	...	...	...	...	...
125	T.C. Gudur	17,241	276	16.0	...	...	...	...	...	...	...	...
126	T.C. Venkatagiri	13,202	449	33.9	...	...	...	...	...	...	...	...
127	T.C. Kandukur	9,580	379	39.6	...	...	...	...	...	...	...	...
128	T.C. Kavalu	8,635	145	16.8	...	...	...	...	...	...	...	...
129	T.C. Aluru	7,327	197	26.2	...	...	...	...	...	...	...	...
130	T.C. Kanigiri	5,628	164	29.1	...	...	...	...	...	...	...	...
131	Nilgiri— M.T.C. Ootacamund	18,546	732	39.4	...	...	...	...	...	...	...	...
132	M.T.C. Coonoor	8,225	336	40.4	...	...	...	...	...	...	...	...
133	North Arcot— M.T.C. Vellore	45,132	1,698	37.6	...	...	...	...	...	...	...	...
134	M.T.C. Walajpet	10,667	367	34.4	...	...	...	...	...	...	...	...
135	M.T.C. Gudiyattam	21,355	830	38.9	...	...	...	...	...	...	...	...
136	M.T.C. Tirupati	15,465	517	33.4	...	...	...	...	...	...	...	...
137	T.C. Ambur	15,903	420	26.4	...	...	...	...	...	...	...	...
138	T.C. Kalahasti	11,862	349	29.4	...	...	...	...	...	...	...	...
139	T.C. Chittoor	10,583	367	34.7	...	...	...	...	...	...	...	...
140	T.C. Chittoor	9,580	379	39.6	...	...	...	...	...	...	...	...
141	T.C. Tiruchengudi	7,607	180	23.8	...	...	...	...	...	...	...	...
142	T.C. Tiruchengudi	6,442	244	37.7	...	...	...	...	...	...	...	...
143	T.C. Sholingur	6,353	185	29.1	...	...	...	...	...	...	...	...
144	T.C. Punganur	...	...	...	...	...	...	...	...	...	...	...
145	Salem— M.T.C. Salem	70,621	3,156	44.7	...	...	...	...	...	...	...	...
146	M.T.C. Vanijambadi	12,296	631	51.4	...	...	...	...	...	...	...	...
147	M.T.C. Tirupattur	19,689	611	31.1	...	...	...	...	...	...	...	...
148	T.C. Sengamangalam	13,864	437	31.5	...	...	...	...	...	...	...	...
149	T.C. Basiparur	11,512	429	37.3	...	...	...	...	...	...	...	...
150	T.C. Krishnagiri	10,446	374	35.8	...	...	...	...	...	...	...	...
151	T.C. Avur	9,673	308	31.8	...	...	...	...	...	...	...	...
152	T.C. Tiruchengudi	8,162	244	29.9	...	...	...	...	...	...	...	...
153	T.C. Tiruchengudi	6,843	228	33.3	...	...	...	...	...	...	...	...
154	T.C. Namakkal	6,006	184	30.6	...	...	...	...	...	...	...	...
155	T.C. Hosur	...	...	...	...	...	...	...	...	...	...	...

APPENDIX.

No. VII.—Births and Deaths registered from Different Causes in the districts and towns of the Madras Presidency during the year 1909—cont.

Number.	Districts and towns.	Population for which returns were received.	Births.		Deaths.		Ratio of deaths per 1,000 of population.		From all causes.		From all causes.	
			Total number.	Birth-rate per mille of popula.	Total number.	Death-rate per mille of popula.	From all causes.	From all causes.	From all causes.	From all causes.	From all causes.	From all causes.
156	South Arcot— M.T.C. Oudalore	22,216	2,074	93.7	...	...	...	...	...	...	...	...
157	M.T.C. Chikambaram	19,990	698	34.9	...	...	...	...	...	...	...	...
158	M.T.C. Tiruvannamalai	17,009	772	45.4	...	...	...	...	...	...	...	...
159	T.C. Ponnani	15,246	480	31.5	...	...	...	...	...	...	...	...
160	T.C. Ponnani	13,127	423	32.2	...	...	...	...	...	...	...	...
161	T.C. Nellore	11,319	518	45.7	...	...	...	...	...	...	...	...
162	T.C. Nellore	10,562	361	34.2	...	...	...	...	...	...	...	...
163	T.C. Tiruchengudi	9,580	379	39.6	...	...	...	...	...	...	...	...
164	T.C. Tiruchengudi	8,635	145	16.8	...	...	...	...	...	...	...	...
165	T.C. Tiruchengudi	7,327	197	26.2	...	...	...	...	...	...	...	...
166	T.C. Tiruchengudi	5,628	164	29.1	...	...	...	...	...	...	...	...
167	South Arcot— M.T.C. Mangalore	44,108	1,638	37.1	...	...	...	...	...	...	...	...
168	T.C. Udipi	8,041	291	36.2	...	...	...	...	...	...	...	...
169	T.C. Udipi	7,570	241	31.8	...	...	...	...	...	...	...	...
170	M.T.C. Kumbakonam	24,276	889	36.6	...	...	...	...	...	...	...	...
171	M.T.C. Kumbakonam	21,190	741	34.9	...	...	...	...	...	...	...	...
172	M.T.C. Mannargudi	20,440	747	36.5	...	...	...	...	...	...	...	...
173	T.C. Tiruvallur	16,436	486	29.6	...	...	...	...	...	...	...	...
174	T.C. Tiruvallur	14,138	397	28.1	...	...	...	...	...	...	...	...
175	T.C. Tiruvallur	13,142	397	30.2	...	...	...	...	...	...	...	...
176	T.C. Tiruvallur	11,327	423	37.3	...	...	...	...	...	...	...	...
177	T.C. Tiruvallur	10,446	374	35.8	...	...	...	...	...	...	...	...
178	T.C. Tiruvallur	9,580	379	39.6	...	...	...	...	...	...	...	...
179	T.C. Tiruvallur	8,635	145	16.8	...	...	...	...	...	...	...	...
180	T.C. Tiruvallur	7,327	197	26.2	...	...	...	...	...	...	...	...
181	T.C. Tiruvallur	5,628	164	29.1	...	...	...	...	...	...	...	...
182	T.C. Tiruvallur	...	...	...	...	...	...	...	...	...	...	...
183	T.C. Tiruvallur	...	...	...	...	...	...	...	...	...	...	...
184	T.C. Tiruvallur	...	...	...	...	...	...	...	...	...	...	...
185	T.C. Tiruvallur	...	...	...	...	...	...	...	...	...	...	...
186	T.C. Tiruvallur	...	...	...	...	...	...	...	...	...	...	...
187	T.C. Tiruvallur	...	...	...	...	...	...	...	...	...	...	...
188	T.C. Tiruvallur	...	...	...	...	...	...	...	...	...	...	...
189	T.C. Tiruvallur	...	...	...	...	...	...	...	...	...	...	...
190	T.C. Tiruvallur	...	...	...	...	...	...	...	...	...	...	...
191	T.C. Tiruvallur	...	...	...	...	...	...	...	...	...	...	...
192	T.C. Tiruvallur	...	...	...	...	...	...	...	...	...	...	...
193	T.C. Tiruvallur	...	...	...	...	...	...	...	...	...	...	...
194	T.C. Tiruvallur	...	...	...	...	...	...	...	...	...	...	...
195	T.C. Tiruvallur	...	...	...	...	...	...	...	...	...	...	...

VITAL STATISTICS OF THE GENERAL POPULATION.

No. VI.—Births and Deaths registered from Different Causes in the districts and towns of the Madras Presidency during the year 1909—cont.

Number.	Districts and towns.	Population for which returns were received.	Births.	Ratio of deaths per 1,000 of population.										Total deaths from all causes.	Ratio of deaths per 1,000 of population.	From all causes.
				Cholera.	Small-pox.	Plague.	Rever.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	All other causes.	From all causes.				
1	2	3	4	5	6	7	8	9	10	11		12	13	14	15	
B.—Towns—cont.																
184	Timerville—cont.	18,150	324	179	2	...	...	...	...	...	...	...	...	...	...	
185	T.C. Bangalore	18,150	702	387	14	...	...	...	...	...	...	...	...	...	...	
186	T.C. Bellary	17,326	483	387	34	14	...	...	...	...	...	...	...	...	...	
187	T.C. Bellary	17,326	483	387	34	14	...	...	...	...	...	...	...	...	...	
188	T.C. Bellary	17,326	483	387	34	14	...	...	...	...	...	...	...	...	...	
189	T.C. Bellary	17,326	483	387	34	14	...	...	...	...	...	...	...	...	...	
190	T.C. Bellary	17,326	483	387	34	14	...	...	...	...	...	...	...	...	...	
191	T.C. Bellary	17,326	483	387	34	14	...	...	...	...	...	...	...	...	...	
192	T.C. Bellary	17,326	483	387	34	14	...	...	...	...	...	...	...	...	...	
193	T.C. Bellary	17,326	483	387	34	14	...	...	...	...	...	...	...	...	...	
194	T.C. Bellary	17,326	483	387	34	14	...	...	...	...	...	...	...	...	...	
195	T.C. Bellary	17,326	483	387	34	14	...	...	...	...	...	...	...	...	...	
196	T.C. Bellary	17,326	483	387	34	14	...	...	...	...	...	...	...	...	...	
197	T.C. Bellary	17,326	483	387	34	14	...	...	...	...	...	...	...	...	...	
198	T.C. Bellary	17,326	483	387	34	14	...	...	...	...	...	...	...	...	...	
199	T.C. Bellary	17,326	483	387	34	14	...	...	...	...	...	...	...	...	...	
200	T.C. Bellary	17,326	483	387	34	14	...	...	...	...	...	...	...	...	...	
201	T.C. Bellary	17,326	483	387	34	14	...	...	...	...	...	...	...	...	...	
202	T.C. Bellary	17,326	483	387	34	14	...	...	...	...	...	...	...	...	...	
203	T.C. Bellary	17,326	483	387	34	14	...	...	...	...	...	...	...	...	...	
204	T.C. Bellary	17,326	483	387	34	14	...	...	...	...	...	...	...	...	...	
205	T.C. Bellary	17,326	483	387	34	14	...	...	...	...	...	...	...	...	...	
206	T.C. Bellary	17,326	483	387	34	14	...	...	...	...	...	...	...	...	...	
207	T.C. Bellary	17,326	483	387	34	14	...	...	...	...	...	...	...	...	...	
208	T.C. Bellary	17,326	483	387	34	14	...	...	...	...	...	...	...	...	...	
209	T.C. Bellary	17,326	483	387	34	14	...	...	...	...	...	...	...	...	...	
210	T.C. Bellary	17,326	483	387	34	14	...	...	...	...	...	...	...	...	...	
211	T.C. Bellary	17,326	483	387	34	14	...	...	...	...	...	...	...	...	...	
212	T.C. Bellary	17,326	483	387	34	14	...	...	...	...	...	...	...	...	...	
213	T.C. Bellary	17,326	483	387	34	14	...	...	...	...	...	...	...	...	...	
214	T.C. Bellary	17,326	483	387	34	14	...	...	...	...	...	...	...	...	...	
215	T.C. Bellary	17,326	483	387	34	14	...	...	...	...	...	...	...	...	...	
216	T.C. Bellary	17,326	483	387	34	14	...	...	...	...	...	...	...	...	...	
217	T.C. Bellary	17,326	483	387	34	14	...	...	...	...	...	...	...	...	...	
218	T.C. Bellary	17,326	483	387	34	14	...	...	...	...	...	...	...	...	...	
219	T.C. Bellary	17,326	483	387	34	14	...	...	...	...	...	...	...	...	...	
220	T.C. Bellary	17,326	483	387	34	14	...	...	...	...	...	...	...	...	...	
221	T.C. Bellary	17,326	483	387	34	14	...	...	...	...	...	...	...	...	...	
222	T.C. Bellary	17,326	483	387	34	14	...	...	...	...	...	...	...	...	...	
223	T.C. Bellary	17,326	483	387	34	14	...	...	...	...	...	...	...	...	...	
224	T.C. Bellary	17,326	483	387	34	14	...	...	...	...	...	...	...	...	...	
225	T.C. Bellary	17,326	483	387	34	14	...	...	...	...	...	...	...	...	...	
226	T.C. Bellary	17,326	483	387	34	14	...	...	...	...	...	...	...	...	...	
227	T.C. Bellary	17,326	483	387	34	14	...	...	...	...	...	...	...	...	...	
228	T.C. Bellary	17,326	483	387	34	14	...	...	...	...	...	...	...	...	...	
229	T.C. Bellary	17,326	483	387	34	14	...	...	...	...	...	...	...	...	...	
230	T.C. Bellary	17,326	483	387	34	14	...	...	...	...	...	...	...	...	...	
231	T.C. Bellary	17,326	483	387	34	14	...	...	...	...	...	...	...	...	...	
232	T.C. Bellary	17,326	483	387	34	14	...	...	...	...	...	...	...	...	...	
233	T.C. Bellary	17,326	483	387	34	14	...	...	...	...	...	...	...	...	...	
234	T.C. Bellary	17,326	483	387	34	14	...	...	...	...	...	...	...	...	...	
235	T.C. Bellary	17,326	483	387	34	14	...	...	...	...	...	...	...	...	...	
236	T.C. Bellary	17,326	483	387	34	14	...	...	...	...	...	...	...	...	...	
237	T.C. Bellary	17,326	483	387	34	14	...	...	...	...	...	...	...	...	...	
238	T.C. Bellary	17,326	483	387	34	14	...	...	...	...	...	...	...	...	...	
239	T.C. Bellary	17,326	483	387	34	14	...	...	...	...	...	...	...	...	...	
240	T.C. Bellary	17,326	483	387	34	14	...	...	...	...	...	...	...	...	...	
241	T.C. Bellary	17,326	483	387	34	14	...	...	...	...	...	...	...	...	...	
242	T.C. Bellary	17,326	483	387	34	14	...	...	...	...	...	...	...	...	...	
243	T.C. Bellary	17,326	483	387	34	14	...	...	...	...	...	...	...	...	...	
244	T.C. Bellary	17,326	483	387	34	14	...	...	...	...	...	...	...	...	...	
245	T.C. Bellary	17,326	483	387	34	14	...	...	...	...	...	...	...	...	...	
246	T.C. Bellary	17,326	483	387	34	14	...	...	...	...	...	...	...	...	...	
247	T.C. Bellary	17,326	483	387	34	14	...	...	...	...	...	...	...	...	...	
248	T.C. Bellary	17,326	483	387	34	14	...	...	...	...	...	...	...	...	...	
249	T.C. Bellary	17,326	483	387	34	14	...	...	...	...	...	...	...	...	...	
250	T.C. Bellary	17,326	483	387	34	14	...	...	...	...	...	...	...	...	...	
251	T.C. Bellary	17,326	483	387	34	14	...	...	...	...	...	...	...	...	...	
252	T.C. Bellary	17,326	483	387	34	14	...	...	...	...	...	...	...	...	...	
253	T.C. Bellary	17,326	483	387	34	14	...	...	...	...	...	...	...	...	...	
254	T.C. Bellary	17,326	483	387	34	14	...	...	...	...	...	...	...	...	...	
255	T.C. Bellary	17,326	483	387	34	14	...	...	...	...	...	...	...	...	...	
256	T.C. Bellary	17,326	483	387	34	14	...	...	...	...	...	...	...	...	...	
257	T.C. Bellary	17,326	483	387	34	14	...	...	...	...	...	...	...	...	...	
258	T.C. Bellary	17,326	483	387	34	14	...	...	...	...	...	...	...	...	...	
259	T.C. Bellary	17,326	483	387	34	14	...	...	...	...	...	...	...	...	...	
260	T.C. Bellary	17,326	483	387	34	14	...	...	...	...	...	...	...	...	...	
261	T.C. Bellary	17,326	483	387	34	14	...	...	...	...	...	...	...	...	...	
262	T.C. Bellary	17,326	483	387	34	14	...	...	...	...	...	...	...	...	...	
263	T.C. Bellary	17,326	483	387	34	14	...	...	...	...	...	...	...	...	...	
264	T.C. Bellary	17,326	483	387	34	14	...	...	...	...	...	...	...	...	...	
265	T.C. Bellary	17,326	483	387	34	14	...	...	...	...	...	...	...	...	...	
266	T.C. Bellary	17,326	483	387	34	14	...	...	...	...	...	...	...	...	...	
267	T.C. Bellary	17,326	483	387	34	14	...	...	...	...	...	...	...	...	...	
268	T.C. Bellary	17,326	483	387	34	14	...	...	...	...	...	...	...	...	...	
269	T.C. Bellary	17,326	483	387	34	14	...	...	...	...	...	...	...	...	...	
270	T.C. Bellary	17,326	483	387	34	14	...	...	...	...	...	...	...	...	...	
271	T.C. Bellary	17,326	483	387	34	14	...	...	...	...	...	...	...	...	...	
272	T.C. Bellary	17,326	483	387	34	14	...	...	...	...	...	...	...	...	...	
273	T.C. Bellary	17,326	483	387	34	14	...	...	...	...	...	...	...	...	...	
274	T.C. Bellary	17,326	483	387	34	14	...	...	...	...	...	...	...	...	...	
275	T.C. Bellary	17,326	483	387	34	14	...	...	...	...	...	...	...	...	...	
276	T.C. Bellary	17,326	483	387	34	14	...	...	...	...	...	...	...	...	...	
277	T.C. Bellary	17,326	483	387	34	14	...	...	...	...	...	...	...	...	...	
278	T.C. Bellary	17,326	483	387	34	14	...	...	...	...	...	...	...	...	...	
279	T.C. Bellary	17,326	483													

[illegible]

No. IX.—Deaths registered from Fevers in the districts of the Madras Presidency during each month of the year 1908.

Number.	Districts.	3		4		5												6			7	8		
		Circles of Registration.		Villages.		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.						
		Number in each district.	Number from which deaths from fevers were reported.	Number in each district.	Number from which deaths from fevers were reported.													Males.	Females.	Total.				
1	Anantapur	19	19	965	214	71	82	70	70	56	56	105	82	102	99	479	453	932	1-2	1-2	1-2	17		
2	Bellary...	19	19	914	317	100	156	145	142	124	104	182	149	154	134	849	751	1,600	1-7	1-6	1-7	1-8		
3	Chingleput	21	21	2,271	861	348	367	419	305	454	381	423	324	448	505	492	2,446	2,361	4,807	3-7	3-6	3-7	3-4	
4	Coimbatore	23	23	1,558	778	785	610	562	593	647	592	608	599	651	691	708	4,080	3,783	7,863	3-7	3-3	3-5	4-1	
5	Cuddapah	21	21	1,338	1,185	1,325	970	972	1,102	1,056	961	1,063	845	1,163	1,910	2,068	3,376	8,745	17,501	19-3	18-8	13-5	12-5	
6	Ganjām	12	12	4,537	2,921	1,749	1,328	1,725	1,629	1,852	1,977	1,833	1,278	1,653	1,850	1,313	1,426	9,661	9,661	19,322	15-5	13-4	14-4	17-3
7	Godāvari	22	22	2,286	1,162	1,477	1,001	1,051	1,090	1,346	1,369	989	1,272	1,401	1,570	2,115	2,191	8,647	8,225	16,872	12-0	11-1	11-5	10-7
8	Guntūr	20	20	979	845	1,364	1,049	1,264	1,226	1,421	1,324	1,267	1,328	1,647	1,565	1,429	1,466	8,393	7,947	16,340	11-2	10-8	11-0	11-0
9	Kistna	20	20	1,787	1,165	1,317	955	1,166	1,113	1,363	1,289	1,391	1,812	1,585	1,594	1,768	1,698	8,798	8,228	16,986	10-9	9-4	9-7	9-7
10	Kurnool	11	11	787	701	818	768	768	806	799	770	887	958	1,014	892	1,081	991	5,480	5,080	10,560	12-4	11-7	12-1	12-8
11	Madras	1	1	1	1	423	498	461	414	493	534	523	402	479	472	518	2,723	2,933	5,656	5-9	5-1	5-5	5-7	
12	Madura	29	29	4,132	1,651	1,485	1,257	1,177	1,111	1,108	1,312	1,276	1,287	1,244	1,203	1,270	1,760	8,034	7,516	15,550	6-9	6-5	6-7	9-2
13	Malabar	18	18	765	769	1,410	1,711	1,642	1,529	1,565	1,650	2,119	1,686	1,509	1,322	1,183	1,290*	9,433	9,133	18,566	9-8	9-8	9-8	9-5
14	Nellore...	19	19	1,718	826	966	854	869	793	918	863	960	897	993	1,336	1,469	1,546	6,278	6,178	12,456	7-5	7-1	7-3	9-5
15	Nilgiris, The	6	6	51	51	58	52	79	38	84	81	85	74	64	63	55	63	497	350	787	4-3	4-2	4-2	3-3
16	North Arcot	22	22	3,426	1,921	760	722	715	567	621	603	637	630	819	1,077	1,122	1,054	4,680	4,653	9,333	7-3	7-0	7-1	9-6
17	Salem	20	19	3,802	1,794	1,171	1,031	921	909	938	1,048	1,109	1,215	1,418	1,710	2,096	2,159	7,907	7,798	15,705	6-9	6-5	6-9	9-3
18	South Arcot	18	18	2,711	1,126	1,238	1,801	1,045	902	1,140	1,135	1,072	1,022	1,208	1,332	1,256	1,266	7,060	6,885	13,945	5-8	5-8	5-9	6-3
19	South Canara	7	7	1,280	628	984	880	733	532	511	721	893	836	688	665	582	667	4,365	4,317	8,682	8-0	7-4	7-7	10-0
20	Tanjore	28	28	2,825	1,328	673	571	703	683	675	647	608	606	714	716	738	685	3,923	4,060	8,013	3-7	3-5	3-6	3-7
21	Tinnevely	38	37	1,624	887	844	598	647	577	596	730	626	700	650	654	693	956	4,226	4,045	8,271	4-2	3-8	4-0	4-9
22	Tichinopoly	10	10	937	645	629	541	588	568	602	547	583	580	641	643	606	665	3,508	3,680	7,183	5-0	4-9	5-0	5-4
23	Vizagapatam	27	26	2,678	1,209	2,743	2,379	2,967	2,243	2,149	2,562	2,408	2,818	2,811	2,913	2,999	2,909	16,173	15,148	31,321	15-9	14-2	15-1	17-7
Total, Madras Presidency		431	427	43,872	23,270	22,738	19,681	20,737	19,063	20,608	21,286	21,548	21,873	22,842	24,820	25,742	26,056	136,541	131,867	268,408	7-6	7-1	7-3	7-9

APPENDIX.

No. X.—Deaths registered from Dysentery and Diarrhoea in the districts of the Madras Presidency during each month of the year 1909.

1		2		3		4		5												6		7		8
Number.	Districts.	Circles of Registration.		Villages.		Months.												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 dysentery and diarrhoea were reported.	Number in each district.	Number from which deaths from dysentery and diarrhoea were reported.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Males.	Females.	Total.				
1	Anantapur	19	17	965	191	52	64	60	55	34	40	63	63	74	82	57	73	356	371	727	0.9	1.0	0.9	1.2
2	Bellary	19	19	914	253	96	101	80	89	115	135	154	246	218	183	145	84	826	840	1,666	1.7	1.8	1.7	2.1
3	Chingleput	21	20	2,271	549	339	303	312	202	285	246	300	283	281	347	331	331	1,929	1,731	3,660	2.8	2.7	2.7	2.9
4	Coimbatore	23	23	1,558	480	361	281	304	265	329	327	317	354	416	397	418	430	2,072	2,127	4,199	1.9	1.9	1.9	2.4
5	Cuddapah	21	19	1,388	287	89	64	52	59	43	60	74	33	74	127	133	169	498	482	980	0.8	0.8	0.8	0.9
6	Ganjam	13	12	4,537	532	119	92	91	120	197	206	218	149	130	128	73	241	980	790	1,770	1.5	1.1	1.3	1.0
7	Godavari	22	21	2,286	201	89	35	68	60	90	96	93	130	112	84	77	65	535	471	1,046	0.7	0.6	0.7	0.9
8	Guntur	20	20	979	130	53	53	57	56	68	81	66	88	168	144	101	58	577	524	1,101	0.8	0.7	0.7	0.6
9	Kistna	20	20	1,787	169	53	22	57	56	68	81	66	88	168	144	101	58	577	524	1,101	0.8	0.7	0.7	0.6
10	Kuraoel	11	11	787	138	29	55	37	58	40	40	50	45	84	49	36	294	293	587	0.7	0.7	0.7	0.7	
11	Madras	1	1	1	1	201	218	170	219	275	264	226	196	222	194	163	125	1,257	1,324	2,581	5.1	5.4	5.2	7.9
12	Madura	29	27	4,132	386	281	238	190	151	148	170	182	185	161	155	147	221	1,187	1,022	2,209	0.9	0.7	0.8	0.8
13	Malabar	18	18	765	700	611	879	788	669	607	558	804	769	501	361	303	338	3,836	3,632	7,468	2.6	2.6	2.6	3.8
14	Nellore	19	18	1,713	57	37	36	45	33	35	11	27	103	61	72	26	34	279	250	529	0.4	0.4	0.4	0.5
15	Nilgiris, The	6	6	51	51	36	50	33	33	90	86	63	47	30	31	40	24	266	277	563	4.2	5.3	5.2	5.1
16	North Arcot	22	22	3,426	919	583	365	306	233	261	262	340	289	365	422	370	353	2,174	2,029	4,194	2.0	1.8	1.9	2.1
17	Salem	20	20	3,802	601	248	188	164	131	140	149	142	124	202	300	325	288	1,205	1,240	2,445	1.1	1.1	1.1	1.3
18	South Arcot	18	18	2,711	595	315	295	242	181	182	141	158	257	218	216	239	252	1,442	1,324	2,766	1.2	1.1	1.1	1.3
19	South Canara	7	7	1,280	407	439	437	256	142	126	153	243	227	192	197	163	214	1,465	1,324	2,789	2.7	2.3	2.5	3.0
20	Tanjore	28	28	2,825	555	269	224	183	125	149	140	194	165	228	192	207	197	1,169	1,105	2,274	1.1	0.9	1.0	0.9
21	Tinnevely	38	38	1,624	263	251	111	90	106	108	172	193	149	134	170	182	218	956	922	1,878	1.0	0.9	0.9	1.1
22	Trichinopoly	10	10	937	320	104	86	122	130	107	74	82	62	75	100	93	88	577	546	1,123	0.8	0.7	0.8	0.7
23	Vizagapatam	27	24	2,078	75	150	73	75	100	67	92	122	105	76	80	63	74	632	465	1,097	0.6	0.4	0.5	0.6
Total, Madras Presidency		431	410	43,372	7,950	4,872	4,310	3,876	3,281	3,575	3,689	4,309	4,206	4,171	4,181	3,800	4,006	24,755	23,421	48,176	1.4	1.3	1.3	1.6

VITAL STATISTICS OF THE GENERAL POPULATION.

No. XI.—Deaths registered from Respiratory Diseases in the districts of the Madras Presidency during each month of the year 1909.

1	2	3	4	5												6		7		8		
Number.	Districts.	Circles of Registration.		Villages.		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 in each district.	Number from which deaths from respiratory diseases were reported.	Number in each district.	Number from which deaths from respiratory diseases were reported.											Males.	Females.			Males.	Females.	
1	Anantapur	19	10	965	301	88	92	95	100	126	132	147	159	157	149	799	675	1,474	2.0	1.8	1.9	1.4
2	Bellary	19	17	914	282	94	91	80	82	89	110	138	108	98	84	609	547	1,156	1.3	1.2	1.2	1.0
3	Chingleput	21	20	2,271	179	80	68	98	102	79	87	120	119	121	104	349	498	1,142	0.9	0.8	0.9	0.6
4	Coimbatore	23	23	1,558	427	201	202	208	216	195	187	195	235	263	279	1,457	1,207	2,684	1.3	1.1	1.2	1.1
5	Cuddapah	21	18	1,338	334	105	101	83	91	102	110	101	116	175	164	773	608	1,379	1.2	1.0	1.1	1.0
6	Ganjam	12	9	4,537	210	82	17	32	41	34	16	65	31	17	90	266	172	438	0.4	0.2	0.3	0.2
7	Godavari	22	21	2,286	236	71	88	77	83	72	114	...	91	116	108	566	440	1,006	0.8	0.6	0.7	0.4
8	Guntur	20	18	979	230	63	74	84	73	99	108	137	136	104	114	657	498	1,155	0.9	0.7	0.8	0.4
9	Kistna	20	16	1,787	439	213	178	219	195	274	162	214	116	87	308	1,358	1,000	2,358	1.6	1.1	1.4	1.0
10	Kurnoel	11	11	787	114	14	5	14	22	19	30	44	39	46	40	165	127	292	0.4	0.3	0.3	0.1
11	Madras	1	1	1	1	93	82	91	89	76	82	95	90	106	63	568	530	1,096	2.3	2.2	2.2	2.4
12	Madura	29	24	4,132	274	107	120	120	111	117	110	131	143	151	186	882	632	1,564	0.7	0.5	0.6	0.4
13	Malabar	18	16	765	440	270	258	275	265	397	371	302	297	250	256	1,914	1,612	3,526	1.4	1.1	1.3	1.1
14	Nellore	19	14	1,718	32	1	26	...	...	36	6	3	34	32	15	91	75	166	0.1	0.1	0.1	0.1
15	Nilgiris, The	6	5	51	34	11	22	35	37	54	43	29	27	15	23	190	145	335	3.3	2.9	3.1	2.6
16	North Arcot	22	19	3,426	593	188	136	154	122	124	138	164	173	206	156	1,074	881	1,955	1.0	0.8	0.9	0.7
17	Salem	20	20	3,802	322	78	77	86	75	92	61	96	114	118	127	630	532	1,162	0.6	0.5	0.5	0.5
18	South Arcot	18	16	2,711	329	99	94	118	114	135	126	170	130	128	142	835	653	1,488	0.7	0.5	0.6	0.4
19	South Canara	7	7	1,280	255	110	62	69	77	94	94	99	95	61	90	556	465	1,051	1.0	0.8	0.9	0.8
20	Tanjore	23	23	2,825	95	83	102	58	65	60	59	92	84	73	91	557	388	945	0.5	0.3	0.4	0.4
21	Tinnevely	38	29	1,624	176	114	60	57	91	83	124	91	87	108	134	630	482	1,112	0.6	0.5	0.5	0.5
22	Trichinopoly	10	9	937	154	31	22	36	29	25	18	18	28	17	35	179	162	341	0.3	0.2	0.2	0.3
23	Vizagapatam	27	21	2,678	40	48	36	39	35	37	53	30	42	61	35	271	223	494	0.3	0.2	0.2	0.2
Total, Madras Presidency		431	376	43,372	5,668	2,194	1,995	2,162	2,120	2,419	2,341	2,479	2,495	2,510	2,848	15,674	12,625	28,299	0.9	0.7	0.8	0.6

Number.	Districts.	3		4		5												6			8			
		Circles of registration.		Villages.														Total.						
		Number in each district.	Number from which deaths were reported.	Number in each district.	Number from which deaths were reported.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Males.	Females.	Total.		Ratio of deaths per 1,000 of population.	Mean ratio 1,000 for previous 6 years.	
1	Avantapur	19	1	935	1	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	0.02	...	0.5	
2	Bellary	18	6	914	8	...	...	...	...	...	...	...	...	...	...	...	...	10	...	...	0.02	0.02	3.5	
3	Chingleput	21	2	2,271	2	...	1	...	...	...	...	...	...	...	...	...	...	2	...	...	0.03	...	0.001	
4	Coimbatore	23	12	1,558	63	...	51	64	38	89	153	357	571	655	355	298	247	1,475	1,498	...	1.4	1.3	1.4	0.5
5	Cuddapah	21	8	1,338	3	...	...	1	1	...	1	...	...	...	...	...	...	2	...	...	0.03	0.02	0.04	
6	Ganjam	12	...	4,537	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0.063	
7	Godavari	22	...	2,286	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0.005	
8	Guntur	20	...	979	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0.001	
9	Kistna	20	...	1,787	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
10	Kurnool	11	...	787	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0.1	
11	Madras	1	1	1	1	...	...	1	...	...	...	...	...	2	...	...	...	3	...	...	0.01	0.01	0.03	
12	Madras	29	...	4,132	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0.004	
13	Malabar	18	7	765	14	...	2	3	...	...	...	21	64	6	26	40	40	119	83	...	0.1	0.1	0.05	
14	Nellore	19	...	1,718	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
15	Nilgiris, The	6	6	51	16	36	16	2	28	...	8	15	8	22	33	25	16	132	75	...	2.3	1.6	2.6	1.9
16	North Arcot	22	5	3,426	17	1	3	...	1	...	...	2	4	1	6	2	...	8	12	...	0.01	0.01	0.01	
17	Salem	20	7	3,802	46	99	83	19	3	1	...	10	22	29	28	9	1	155	147	...	0.1	0.1	0.1	0.3
18	South Arcot	18	...	2,711	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0.01
19	South Canara	7	2	1,280	3	5	6	18	7	...	3	3	5	6	23	9	13	49	49	...	0.1	0.1	0.2	
20	Tanjore	28	...	2,835	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0.005
21	Tinnevely	38	...	1,624	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
22	Trichinopoly	10	5	937	5	...	...	...	...	...	2	...	...	4	5	...	...	8	3	...	0.01	0.04	0.01	0.001
23	Viragapatam	27	...	2,678	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0.0005
Total, Madras Presidency		431	57	43,372	179	185	165	111	80	90	168	410	674	755	506	383	317	1,964	1,880	3,844	0.1	0.1	0.2	

No. XIII.—*Statements prescribed by the Government of India in Letter No. 10—926, dated 8th December 1894, Home Department (Sanitary), communicated with G.O., No. 2654 L, Mis., dated 20th December 1894.*

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

1	2	3	4				5	6									
Name of municipality.	Drainage.	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.						
			Years.	Death-rate.	Cholera.	Small-pox.	Fevers.	Dysentery and Diar- rhoea.	All other causes.	Years.	Death-rate.	Cholera.	Small-pox.	Fevers.	Dysentery and Diar- rhoea.	All other causes.	
Ádóni	...	September 1895.	1895	23.6	0.3	...	38.1	0.3	61.3	1890	19.2	...	...	51.6	...	...	48.4
	1896		25.4	1.0	...	31.2	0.9	66.8	1891	38.1	41.9	...	31.0	...	0.4	26.7	
	1897		37.9	9.3	...	31.7	3.9	55.1	1892	34.7	13.1	...	38.1	...	3.0	46.8	
	1898		26.5	...	0.3	29.7	5.3	64.7	1893	22.2	...	...	51.7	...	0.3	48.0	
	1899		24.1	0.1	...	22.1	2.4	75.4	1894	24.3	0.3	...	37.0	...	...	62.7	
	1900		24.4	...	...	34.9	5.3	59.8	...	...	...	...	...	...	...	...	...
	1901		20.1	0.3	...	2.4	0.9	60.8	...	...	...	...	...	...	...	...	...
	1902		56.5	11.2	...	6.0	10.9	82.5	...	...	...	...	...	...	...	...	...
	1903		23.1	...	0.6	2.8	2.6	94.6	...	...	...	...	...	...	...	...	...
	1904		71.3	...	...	5.7	11.3	65.5	...	...	...	...	...	...	...	...	...
	1905		31.1	0.3	...	17.2	6.7	63.5	...	...	...	...	...	...	...	...	...
	1906		39.8	13.4	0.4	8.8	13.2	81.5	...	...	...	...	...	...	...	...	...
Oocanada.	...	July 1903	1907	24.2	0.3	...	10.9	10.4	73.1	...	...	...	...	...	...	...	...
	1908		26.3	6.6	...	13.5	11.9	71.5	...	...	...	...	...	...	...	...	...
	1909		25.5	1.2	...	1.9	...	...	...	...	...	...	...	...	...	...	...
	1903		20.4	1.0	...	...	12.2	66.9	1898	20.5	...	...	...	...	...	...	78.0
	1904		25.8	...	...	...	13.3	62.8	1899	23.1	...	1.3	19.2	...	...	...	70.4
	1905		28.8	2.3	...	...	11.3	67.6	1900	26.1	9.6	0.8	18.8	...	...	...	60.7
	1906		37.5	11.0	1.1	...	12.6	62.8	1901	23.8	2.1	5.4	18.9	...	...	...	63.1
	1907		29.9	1.3	0.1	...	10.5	16.3	71.8	1902	21.8	0.1	22.6	...	...	...	64.8
Conjeevaram	...	July 1897	1908	30.6	2.2	...	17.1	13.7	69.4	...	...	...	...	...	...	...	...
	1909		35.4	...	...	13.2	10.7	69.0	...	...	...	...	...	...	...	...	...
	1897		28.3	6.6	...	...	...	...	1892	...	2.7	1.5	24.1	...	...	...	12.2
	1898		29.4	1.1	0.6	21.3	10.7	61.0	1893	32.5	1.3	2.2	26.0	...	...	...	13.0
	1899		29.8	1.9	0.7	13.5	13.0	71.8	1894	33.0	4.5	0.5	26.8	...	...	...	57.5

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

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.	Cholera.	Small-pox.		Fevers.	Dysentery and Diarrhoea.	All other causes.	Years.	Death-rate.						
Conjeevaram—cont.	July 1897	1892	32.8	0.1	1.0	11.6	25.9	61.4	1892	28.4	15.4	0.3	1.3	44.2	1.2	36.8	
		1893	32.4	1.6	...	30.3	17.6	50.2	1893	28.4	15.4	0.3	1.3	44.2	1.2	36.8	
		1894	32.0	2.6	...	28.0	19.7	49.7	1894	28.4	15.4	0.3	1.3	44.2	1.2	36.8	
		1895	28.8	...	...	21.9	13.6	64.5	1895	28.4	15.4	0.3	1.3	44.2	1.2	36.8	
		1896	34.3	41.3	2.8	0.4	22.4	17.6	56.9	1896	28.4	15.4	0.3	1.3	44.2	1.2	36.8
		1897	26.8	43.8	5.6	0.4	20.8	15.3	57.7	1897	28.4	15.4	0.3	1.3	44.2	1.2	36.8
		1898	28.5	31.6	...	...	14.8	17.2	68.0	1898	28.4	15.4	0.3	1.3	44.2	1.2	36.8
		1899	30.4	28.5	...	...	9.4	22.9	67.7	1899	28.4	15.4	0.3	1.3	44.2	1.2	36.8
		1900	31.9	30.5	1.6	1.4	20.4	19.4	58.8	1900	28.4	15.4	0.3	1.3	44.2	1.2	36.8
		1901	24.4	24.4	1.6	...	20.2	14.9	63.9	1901	28.4	15.4	0.3	1.3	44.2	1.2	36.8
Coonoor	Jan. 1893	1902	29.0	...	...	25.1	13.0	55.9	1902	28.4	15.4	0.3	1.3	44.2	1.2	36.8	
		1903	40.0	...	...	8.2	16.3	75.5	1903	28.4	15.4	0.3	1.3	44.2	1.2	36.8	
		1904	27.6	...	...	3.0	23.4	73.6	1904	28.4	15.4	0.3	1.3	44.2	1.2	36.8	
		1905	37.0	...	...	1.6	19.7	78.7	1905	28.4	15.4	0.3	1.3	44.2	1.2	36.8	
		1906	44.4	...	...	0.8	16.6	82.1	1906	28.4	15.4	0.3	1.3	44.2	1.2	36.8	
		1907	31.4	...	...	1.1	17.2	81.7	1907	28.4	15.4	0.3	1.3	44.2	1.2	36.8	
		1908	26.6	...	...	4.8	20.3	74.5	1908	28.4	15.4	0.3	1.3	44.2	1.2	36.8	
		1909	32.5	...	...	4.0	15.9	78.4	1909	28.4	15.4	0.3	1.3	44.2	1.2	36.8	
		1893	46.9	...	...	1.5	68.0	2.0	28.5	1893	28.4	15.4	0.3	1.3	44.2	1.2	36.8
		1894	33.9	...	...	0.3	49.9	4.4	43.8	1894	28.4	15.4	0.3	1.3	44.2	1.2	36.8

APPENDIX.

Municipality	Date of completion of works of	Drainage.	Water-supply.	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.	Fevers.	Dysentery and Diarrhoea.	All other causes.	Years.						
Oudayan	July 1893	...	...	1896	21.7	0.5	4.3	1.1	1.8	49.4	1896	21.7	0.5	4.3	1.1	1.8	49.4
				1897	28.5	0.2	1.8	49.4	2.1	46.5	1897	21.7	0.5	4.3	1.1	1.8	49.4
				1898	20.7	0.2	1.8	49.4	2.1	46.5	1898	21.7	0.5	4.3	1.1	1.8	49.4
				1899	29.0	...	...	...	...	...	1899	21.7	0.5	4.3	1.1	1.8	49.4
				1900	31.7	...	...	...	...	...	1900	21.7	0.5	4.3	1.1	1.8	49.4
				1901	29.5	...	...	...	...	...	1901	21.7	0.5	4.3	1.1	1.8	49.4
				1902	21.2	...	...	...	...	...	1902	21.7	0.5	4.3	1.1	1.8	49.4
				1903	27.3	...	...	...	...	...	1903	21.7	0.5	4.3	1.1	1.8	49.4
				1904	25.3	...	...	...	...	...	1904	21.7	0.5	4.3	1.1	1.8	49.4
				1905	28.4	...	...	...	...	...	1905	21.7	0.5	4.3	1.1	1.8	49.4
Dindigul	Aug 1896	...	...	1896	23.1	0.5	4.3	1.1	1.8	49.4	1896	23.1	0.5	4.3	1.1	1.8	49.4
				1897	22.1	...	...	...	...	...	1897	23.1	0.5	4.3	1.1	1.8	49.4
				1898	18.9	...	...	...	...	...	1898	23.1	0.5	4.3	1.1	1.8	49.4
				1899	18.9	...	...	...	...	...	1899	23.1	0.5	4.3	1.1	1.8	49.4
				1900	25.6	...	...	...	...	...	1900	23.1	0.5	4.3	1.1	1.8	49.4
				1901	16.6	...	...	...	...	...	1901	23.1	0.5	4.3	1.1	1.8	49.4
				1902	17.5	...	...	...	...	...	1902	23.1	0.5	4.3	1.1	1.8	49.4
				1903	25.5	...	...	...	...	...	1903	23.1	0.5	4.3	1.1	1.8	49.4
				1904	33.1	...	...	...	...	...	1904	23.1	0.5	4.3	1.1	1.8	49.4
				1905	33.9	...	...	...	...	...	1905	23.1	0.5	4.3	1.1	1.8	49.4
Gadiyattam	1908	...	...	1906	39.6	...	...	...	...	...	1906	39.6	...	...	...	...	...
				1907	37.1	...	...	...	...	...	1907	39.6	...	...	...	...	...
				1908	38.9	...	...	...	...	...	1908	39.6	...	...	...	...	...
				1909	34.9	...	...	...	...	...	1909	39.6	...	...	...	...	...
				1908	31.6	...	...	...	...	...	1908	39.6	...	...	...	...	...
				1909	25.8	...	...	...	...	...	1909	39.6	...	...	...	...	...
				1908	50.7	...	...	...	...	...	1908	39.6	...	...	...	...	...
				1909	37.4	...	...	...	...	...	1909	39.6	...	...	...	...	...
				1908	37.5	...	...	...	...	...	1908	39.6	...	...	...	...	...
				1909	31.2	...	...	...	...	...	1909	39.6	...	...	...	...	...
Guntur	1908	...	...	1908	50.7	...	...	...	...	...	1908	50.7	...	...	...	...	...
				1909	37.4	...	...	...	...	...	1909	50.7	...	...	...	...	...
				1908	37.5	...	...	...	...	...	1908	50.7	...	...	...	...	...
				1909	31.2	...	...	...	...	...	1909	50.7	...	...	...	...	...
				1908	37.5	...	...	...	...	...	1908	50.7	...	...	...	...	...
				1909	31.2	...	...	...	...	...	1909	50.7	...	...	...	...	...
				1908	37.5	...	...	...	...	...	1908	50.7	...	...	...	...	...
				1909	31.2	...	...	...	...	...	1909	50.7	...	...	...	...	...
				1908	37.5	...	...	...	...	...	1908	50.7	...	...	...	...	...
				1909	31.2	...	...	...	...	...	1909	50.7	...	...	...	...	...
Kaniakulam	Oct. 1894	...	...	1894	37.5	...	...	...	...	...	1894	37.5	...	...	...	...	...
				1895	31.2	...	...	...	...	...	1895	37.5	...	...	...	...	...
				1896	34.2	...	...	...	...	...	1896	37.5	...	...	...	...	...
				1897	39.9	...	...	...	...	...	1897	37.5	...	...	...	...	...
				1898	30.0	...	...	...	...	...	1898	37.5	...	...	...	...	...
				1899	36.4	...	...	...	...	...	1899	37.5	...	...	...	...	...
				1900	30.3	...	...	...	...	...	1900	37.5	...	...	...	...	...
				1901	31.9	...	...	...	...	...	1901	37.5	...	...	...	...	...
				1902	29.1	...	...	...	...	...	1902	37.5	...	...	...	...	...
				1908	31.6	...	...	...	...	...	1908	37.5	...	...	...	...	...

1881	38.9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
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No. XIII.—Statement prescribed by the Government of India in Letter No. 10—326, dated 8th December 1894, Home Department (Sanitary), communicated with G.O., No. 2654 L., Mys., dated 20th December 1894—cont.

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

1	2	3		4			5		6				
		Average annual death-rate since the introduction of drainage system or water-supply.		Percentage of deaths to total mortality under each head of death causation.			Average annual death-rate for the five-year period preceding the introduction of drainage system or water-supply.		Percentage of deaths to total mortality under each head of death causation.				
		Years.		Cholera.	Small-pox.	Fevers.	Years.		Cholera.	Small-pox.	Fevers.	Dysentery and Diarrhoea.	All other causes.
Ootacamund	1900	1900	29.6	...	0.5	18.2	1895	73.0	...	...	...	...	...
		1901	23.0	...	...	26.2	1896	64.5	...	...	...	...	52.0
		1902	28.1	...	0.2	11.5	1897	76.3	...	...	...	...	58.3
		1903	37.9	...	...	5.5	1898	83.6	...	...	...	...	59.6
		1904	25.0	...	...	2.4	1899	86.1	...	...	...	...	73.2
		1905	31.8	...	...	4.4	...	...	...	...	...	...	...
		1906	35.4	...	0.5	2.6	...	...	...	...	...	...	...
		1907	29.6	...	...	3.6	...	...	...	...	...	...	...
		1908	31.3	...	...	5.7	...	...	...	...	...	...	...
		1909	35.8	...	...	3.3	...	...	...	...	...	...	...
Mangalore	O. C. 1895	1895	25.5	...	...	22.1	1890	50.1	...	...	...	...	...
		1896	27.0	...	...	23.5	1891	45.4	...	...	...	...	...
		1897	25.2	...	...	20.4	1892	44.3	...	...	...	...	...
		1898	25.5	...	...	13.1	1893	52.1	...	...	...	...	...
		1899	26.0	...	...	14.2	1894	55.1	...	...	...	...	...
		1900	27.0	...	...	22.2	...	...	...	...	...	...	...
		1901	29.0	...	...	18.2	...	...	...	...	...	...	...
		1902	29.2	...	...	9.7	...	...	...	...	...	...	...
		1903	29.1	...	...	16.0	...	...	...	...	...	...	...
		1904	30.3	...	...	12.3	...	...	...	...	...	...	...
Mangalore	O. C. 1895	1905	30.3	...	...	13.4	...	...	...	...	...	...	...
		1906	33.6	...	...	15.5	...	...	...	...	...	...	...
		1907	35.1	...	...	15.4	...	...	...	...	...	...	...
		1908	33.3	...	...	12.2	...	...	...	...	...	...	...
		1909	34.1	...	...	11.8	...	...	...	...	...	...	...
		1910	31.5	...	...	33.4	...	...	...	...	...	...	...
		1911	33.9	...	...	18.5	...	...	...	...	...	...	...
		1912	30.8	...	...	22.7	...	...	...	...	...	...	...
		1913	...	...	...	...	...	...	...	...	...	...	...
		1914	...	...	...	...	...	...	...	...	...	...	...

APPENDIX.

VITAL STATISTICS OF THE GENERAL POPULATION.

Tirupati	1899	1902	35.3	...	...	4.2	27.4	13.7	54.7	1897	34.2	2.7	0.4	36.5	10.0	50.4
		1903	30.5	...	...	0.2	20.9	20.1	58.8	1898	29.6	2.6	0.5	37.7	5.0	54.2
		1904	28.6	...	...	...	17.6	12.6	69.6	...	...	...	...	...	...	...
		1905	35.3	...	...	...	14.3	22.7	58.8	...	...	...	...	...	...	...
		1906	41.7	...	...	...	21.9	20.1	52.4	...	...	...	...	...	...	...
		1907	36.8	...	...	...	18.1	21.9	60.0	...	...	...	...	...	...	...
		1908	45.0	...	...	...	20.4	19.7	56.4	...	...	...	...	...	...	...
		1909	39.3	...	...	...	28.1	15.4	55.5	...	...	...	...	...	...	...
		1910	30.4	...	...	...	22.4	11.9	46.7	...	...	...	...	...	...	...
		1911	29.1	...	...	...	19.6	9.2	59.2	...	...	...	...	...	...	...
Tiruchinopoly	April 1896	1896	30.4	...	...	...	10.6	19.6	59.2	1891	29.5	1.7	3.8	19.9	11.4	47.8
		1897	29.1	...	...	...	24.1	14.1	53.7	1892	25.6	1.3	3.9	26.6	13.7	40.8
		1898	30.4	...	...	...	5.9	9.0	53.7	1893	36.6	3.8	3.9	20.8	13.7	40.8
		1899	28.6	...	...	...	15.3	9.0	53.7	1894	24.4	1.6	3.9	20.8	13.7	40.8
		1900	30.3	...	...	...	10.5	7.9	53.7	1895	23.6	1.4	3.9	20.8	13.7	40.8
		1901	24.8	...	...	...	12.8	10.6	53.7	...	...	...	...	...	...	...
		1902	21.2	...	...	...	18.3	10.0	53.7	...	...	...	...	...	...	...
		1903	25.7	...	...	...	12.2	10.8	53.7	...	...	...	...	...	...	...
		1904	20.8	...	...	...	2.0	11.7	53.7	...	...	...	...	...	...	...
		1905	23.6	...	...	...	4.7	9.7	53.7	...	...	...	...	...	...	...
Vellore	1908	1908	31.3	...	...	...	4.3	26.1	61.9	1903	33.3	1.9	1.1	3.1	19.6	74.3
		1909	23.7	...	...	...	6.2	21.9	68.6	1904	44.8	1.6	0.8	1.3	18.7	63.2
		1910	...	...	...	...	...	...	...	1905	24.5	0.3	0.7	1.4	31.0	66.6
		1911	...	...	...	...	...	...	...	1906	41.2	7.0	2.5	0.9	24.5	42.1
		1912	...	...	...	...	...	...	...	1907	25.8	8.4	3.8	3.2	23.2	61.4
		1913	...	...	...	...	...	...	...	1908	23.6	...	0.2	2.2	20.0	54.6
		1914	...	...	...	...	...	...	...	1909	31.6	...	0.1	2.6	24.0	49.1
		1915	...	...	...	...	...	...	...	1910	21.3	...	...	21.3	20.8	57.1
		1916	...	...	...	...	...	...	...	1911	26.8	...	...	20.8	18.9	59.9
		1917	...	...	...	...	...	...	...	1912	26.6	...	...	19.8	20.1	60.1
Mysagapatam	Dec. 1902	1902	32.1	...	...	...	22.9	20.5	58.6	...	...	...	...	...	...	...
		1903	29.8	...	...	...	20.1	18.9	60.6	...	...	...	...	...	...	...
		1904	33.8	...	...	...	25.3	17.3	65.5	...	...	...	...	...	...	...
		1905	25.5	...	...	...	32.6	13.1	52.5	...	...	...	...	...	...	...
		1906	36.2	...	...	...	27.0	12.6	49.7	...	...	...	...	...	...	...
		1907	27.8	...	...	...	27.3	10.8	58.3	...	...	...	...	...	...	...
		1908	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		1909	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		1910	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		1911	...	...	...	...	...	...	...	...	...	...	...	...	...	...

PART II.

SANITARY ENGINEERING.

THE TWENTIETH ANNUAL REPORT

OF THE

SANITARY ENGINEER TO THE GOVERNMENT OF MADRAS, 1909.

I.—INVESTIGATION OF SCHEMES.

GOVERNMENT in their Order No. 490 M., dated 30th March 1909, approved the investigation of the following schemes during 1909:—

Incomplete schemes in the programme for 1908 to be completed in 1909.	1. Ongole water-supply.
	2. Srirangam drainage.
Incomplete schemes in the programme for 1908, carried forward to the programme for 1909.	3. Palamcottah water-supply.
	4. Vellore drainage.
	5. Rajahmundry drainage.
	6. Negapatam water-supply.
	7. Srirangam water-supply.
	8. Chittoor water-supply.
	9. Gudur water-supply.
	10. Ellore drainage.
	11. Cuddapah drainage.
New schemes in the programme for 1909.	12. Nellore drainage.
	13. Saidapet and Sembium drainage.
	14. Tirupati water-works improvements.
	15. Cuddapah do.
	16. Dindigul do.
	17. Madura water-works improvements—construction of a reservoir.
Revision of old schemes to be done in 1909.	18. Vizianagram water-supply.
	19. Negapatam drainage.
Schemes, the preparation of detailed plans and estimates for which are to be undertaken in 1909 after preliminary proposals are approved.	20. Mangalore water-supply.
	21. Coimbatore do.
	22. Chingleput do.

(a) SCHEMES ON THE PROGRAMME FOR 1909.

(1) *Ongole water-supply*.—An interim report on Ongole water-supply scheme was submitted to the Sanitary Board in February 1909, giving a summary of the proposals previously made and of the results of the investigations carried out. The Sanitary Board, in forwarding the proposals to Government, supported the recommendation of the Sanitary Engineer that the opinion of a Geological officer be obtained before incurring any considerable expenditure on boring for artesian water. The further investigation can only be undertaken after orders are passed by Government.

(2) *Srirangam drainage*.—In compliance with G.O., No. 238 M., dated 12th February 1908, plans and estimates for a drainage scheme for the town of Srirangam were submitted on 23rd January 1909. The scheme is confined to the town proper, Tiruvanakaval, Melur and hamlets being excluded.

Owing to the manner in which the town has been laid out, there being four rectangles, one within the other, and each enclosed by a high masonry wall, the problem of efficient drainage presents peculiar difficulties.

The scheme prepared consists of open drains with intercepting pipes and a tank sewer terminating in a pump well, whence the sewage will be pumped to sedimentation tanks. From these tanks the sewage will return by gravitation, through percolating beds, to another pump well, whence it will be pumped to a farm on the padugais of the Coleroon or during periods of flood, to the river direct. The drains will be carried through conservancy lanes to be opened out along the backyards of houses. These lanes will require protection by walls and gates. Detailed plans and estimates for disposal works have not been prepared pending accurate information of river flood levels.

This scheme is designed for a population of 22,000 at 15 gallons a head, the present population of Srirangam proper being 15,000.

The estimated cost of the scheme is Rs. 1,86,000 and the annual working charges Rs. 3,360.

The Sanitary Board in recommending the proposals to Government, in its Proceedings No. 398-S., dated 15th November 1909, observed that they are generally suitable, that the question as to the size of the intercepting sewers—whether they should along with sullage carry night-soil also—the design and working of the sewer and the best means of disposal of the sewage and the amount of run off of rainfall to be allowed are points requiring consideration, and that the proposed conservancy lanes which are too narrow should be designed to allow a night-soil hand-cart to pass.

(3) *Palamcottah water-supply*.—Plans and estimates for a scheme of water-supply for the town of Palamcottah were submitted on 20th July 1909 with reference to G.O., No. 106 M., dated 18th January 1906, the source of supply being the Tambraparni river. It is proposed to construct a gallery in the bed of the Tambraparni river 12,800 feet above the Tinnevely Bridge and to lead the water obtained by this gallery to a suction well located on high ground on the right bank of the river. From the suction well the water will be pumped up by triple expansion steam pumps, steam being supplied by Babcock and Wilcox water-tube boilers, and forced through a 12-inch steel main to steel storage tanks located on the high ground above Melapalayam and Palamcottah. From these steel storage tanks water will be distributed by steel and cast iron pipes and by fountains in the usual way. The scheme also provides for supplying the small town of Tinnevely Bridge, which is close to Palamcottah municipal limits.

An alternative proposal for a 10-gallon supply roughly estimated to cost Rs. 4,12,380 was also submitted. The annual working charges are divided as follows:—

Palamcottah	...	...	...	...	...	...	...	...	Rs.
Tinnevely	...	...	...	...	...	...	...	...	12,965
									2,030
Total	...	...	...	...	...	...	...	...	14,995

The total cost of supply to the Tinnevely Bridge ward including distribution arrangements is Rs. 81,842. The Municipal Council, Tinnevely, has since resolved not to undertake the supply to the Tinnevely Bridge ward at present, the cost being prohibitive. The Sanitary Board in its Proceedings No. 432-S., dated 7th December 1909, recommended that the proposals are generally suitable with the remarks that the infiltration gallery as designed will not be safe against scour in floods and that extra cross walls will probably be necessary, that suction gas-producing plant is preferable to steam plant and that the Sanitary Engineer be asked to reconsider his proposals with reference to the above points. Government in their order No. 46 M., dated 8th January 1910, requested the Sanitary Engineer to reconsider and revise his proposals with reference to the remarks of the Sanitary Board and also to report whether the estimate is the lowest possible consistent with efficiency.

(4) *Vellore drainage*.—At the request of the Municipal Council, Government, in G.O., No. 1736 M., dated 19th August 1907, directed the Sanitary Engineer to revise the scheme of Mr. Oldham prepared in 1889 with reference to present requirements and to include the sewers of Thottapalayam and Kakithapattadi. Accordingly plans and estimates for an open drainage scheme for the town of Vellore were submitted on 24th December 1909.

The general idea of this scheme is to construct 39 miles of open drains in the main town of Vellore embraced in the first four wards and $7\frac{1}{2}$ miles of open drains in the fifth ward which lies to one side as a separate drainage unit. These open drains vary in size from 6 inches to 30 inches. The scheme is an open drainage one with two intercepting sewers in the main town section. These intercepting sewers have been designed for a population of 44,500 and will carry three times the dry weather flow of sewage from this population when flowing half full. The sewage from the intercepting sewers of the main town is pumped on to a sewage farm of 44 acres, located to the north of the town adjoining the Palar river.

The scheme for the fifth ward has been drawn up separately. For this ward there will be a separate pumping station and a small sewage farm adjoining the

ward. The ultimate population of the fifth ward has been taken at 10,500 in the scheme. The total population for which the whole scheme has been designed is 55,000; but as the open drains carry half inch rainfall per hour, a much larger population can be served by these drains when carrying sewage.

The estimated cost of the scheme is Rs. 4,33,700 as detailed below:—

Wards Nos. I to IV	...	...	...	...	...	...	Rs.
Ward No. V	...	...	...	...	...	...	3,53,900
							79,800
Total	...	...	...	...	...	...	4,33,700

(5) *Rajahmundry drainage*.—Government have in G.O., No. 711 M., dated 3rd May 1909, directed the Sanitary Engineer to complete the investigation and to submit a preliminary report which is being done. Plans and estimate for this scheme, it is expected, will only be completed in 1911.

(6) *Negapatam water-supply*.—In G.O., No. 1294 M., dated 3rd August 1908, the Sanitary Engineer was directed to prepare plans and estimates for a water-supply scheme for the town of Negapatam, the source of supply being the sub-soil water in the sandy bed of the Vettar above the Devanadi Dam. Both the Collector and the Executive Engineer were of opinion that there was no objection to the proposed source of supply provided the water-works were kept clear of the head-works at the Devanadi Regulator and that the proposed masonry conduit was so constructed as not to obstruct the free flow of water in any irrigation and drainage channels which may be crossed. These stipulations have been attended to in working out the scheme. The headworks have been placed 2,000 feet above the Devanadi Dam and the difficulty with irrigation and drainage channels has been overcome by the adoption of a steel main instead of a masonry conduit. Plans and estimates for the scheme were submitted on 14th October 1909.

In this scheme, it is proposed to construct in the bed of the Vettar 2,000 feet above the Devanadi Dam, an infiltration gallery 1,200 feet long in line with the axis of the river and at a depth of 15 feet which is the depth of the sandy bed at this place. From this gallery water will be conducted to a suction well on the right bank of the river and from this suction well the water will be forced by steam pumps through a 15-inch steel main, 12 miles long to service reservoirs located at Jubilee Park in Negapatam. From the service reservoirs water will be distributed by pipes and fountains in the usual manner.

The scheme has been drawn up for a population of 82,250 at 15 gallons per head per day.

The estimated cost of the complete scheme with a third engine and boiler and complete distribution pipes is Rs. 7,45,460 and that of the partial scheme is Rs. 6,57,680 with annual working charges of Rs. 14,538.

(7) *Srirangam water-supply*.—The further investigations ordered in G.O., No. 461 M., dated 26th March 1909, on the recommendation of the Sanitary Board, in its resolution No. 112-S., dated 4th March 1909, will not be completed sufficiently early in 1910 so that the detail plans and estimates can be drawn up before the end of the year 1910. This scheme will be drawn up and submitted in 1911.

(8) *Chittoor water-supply*.—A preliminary report on the proposal to supply the town of Chittoor with potable water from springs in the Ganganeri tank bed was submitted in March 1909. Government in their order No. 1095-L., dated 8th September 1909, communicated the proceedings of the Sanitary Board No. 313-S., dated 26th August 1909, to the District Board of North Arcot and ordered that the District Board should decide whether it would arrange with the Sanitary Engineer for carrying out the pumping test in the next dry weather and if it so wishes, it should place the necessary funds at the disposal of the Sanitary Engineer. The District Board resolved that it would be useless to take such experiments in 1910 owing to the heavy rainfall of the past season. The investigation of this scheme will be taken up in 1911.

(9) *Gudur water-supply*.—Out-door work is in progress. This scheme will be submitted in 1910.

(10) *Ellore drainage*.—The out-door investigation has been completed. In-door work is in progress. The scheme will be submitted in 1910.

(11) *Cuddapah drainage*.—The drawing up of this scheme could not be undertaken this year. It will be included in the programme for 1910.

(12) *Nellore drainage*.—The out-door investigation has been completed. In-door work is in progress. This scheme will be submitted in 1910.

(13) *Saidapet and Sembium drainage*.—Levels for the drainage schemes of these two places have been taken and plotted. To effectually drain the house sullage conservancy lanes will have to be opened up in Saidapet and open drains built in the new lanes.

A preliminary report with plan showing the new conservancy lanes will be forwarded early in 1910.

(14) *Tirupati water-works improvements*.—A hydrological survey in connection with the improvements of water-supply of Tirupati as required in G.O., No. 1587 M., Mis., dated 23rd September 1908, was completed during the year. The report on the results of the survey with plans and estimate will be submitted early in 1910.

(15) *Cuddapah water-works improvements*.—In compliance with Chief Engineer's Memorandum No. 2696-C., dated 12th June 1909, the Sanitary Engineer submitted on 24th August 1909 a report with plans on the hydrological survey of the head works of Cuddapah water-works and an estimate for Rs. 6,084 for the construction of an experimental pump well, for testing the yield, which afterwards will be used as the pump well of the final scheme. This estimate has since been sanctioned and is now under execution.

(16) *Dindigul water-works improvements*.—Further investigation is in progress. This scheme will be submitted in 1910.

(17) *Madura water-works improvements*.—Construction of a reservoir.—Detail plans and estimates are in an advanced stage of preparation. It is expected that the scheme will be completed and submitted early in 1910.

(18) *Vizianagram water-supply*.—In compliance with G.O., No. 1854 M., dated 7th November 1908, revised plans and estimates for a water-supply scheme for the town of Vizianagram including the area occupied by the abandoned cantonment which has now been included within Municipal limits were submitted on 23rd August 1909.

It is proposed to construct in the bed of the Nallimerla river, which is the largest river in the vicinity of Vizianagram, an infiltration gallery 26 feet deep below deep bed level (90.52) and 1,000 feet long, capable of future extensions and to pump the water from this gallery by steam engines and pumps through a 12-inch steel rising main nearly five miles long to a service tank located on rocks on the outskirts of the town and to lay down some 16 miles of distribution pipes in the town with the usual public fountains 85 in number. The site of the head works selected is above the points where the Palkonda road and the railway bridge cross the river. This site was approved by the Sanitary Commissioner and the Municipal Council.

In order to ascertain the sufficiency of the supply of water, it was recommended that an experimental gallery 400 feet long and the well at the end of it at a cost of Rs. 10,300, should be first constructed and the yield gauged. As regards possible sources of contamination the estimate provides for the diversion of the Jarajapupet drainage channel and its discharge into the river a furlong below the head works.

This scheme is designed to supply 15 gallons per head to a population of 50,000 which is the expected population of 1,941.

The estimated cost of the scheme is Rs. 4,86,790 with annual working charges of Rs. 13,586.

The Sanitary Board, in its Proceedings No. 338-S., dated 4th September 1909, approved of the scheme generally subject—

(1) to the results of the proposed tests for sufficiency of supply proving satisfactory, and

(2) to professional scrutiny of the scheme in the Public Works Department.

The Sanitary Board also recommended that the construction of the experimental well and gallery recommended by the Sanitary Engineer to gauge the yield be undertaken immediately.

Government, in their order No. 1945 M., dated 29th November 1909, approved the revised scheme submitted by the Sanitary Engineer and directed that the scheme be executed by the Public Works Department and that as recommended by the Sanitary Board the construction of the experimental well and gallery should be undertaken immediately.

(19) *Negapatam drainage*.—The drawing up of the revised scheme could not be undertaken this year. It will be submitted in 1910.

(20) *Mangalore water-supply*.—Government, in their order No. 2108 M., dated 18th December 1908, ordered that the Kadiri Hill water-supply scheme need not be investigated further and requested the Sanitary Engineer to investigate the Maroli valley scheme. Accordingly a report on this scheme accompanied by an approximate estimate amounting to 4½ lakhs, which excludes land compensation, was submitted on 2nd June 1909.

(21) *Coimbatore water-supply*.—The investigation of the sub-artesian source of supply to the town of Coimbatore recommended by the Sanitary Board in May 1909 has since been ordered by Government, in G.O., No. 1 M., dated 3rd January 1910, to be deferred till the finances of the Municipal Council improve.

(22) *Chingleput water-supply*.—A preliminary report on the Chingleput water-supply was forwarded on 4th January 1909. The Sanitary Board, in its Proceedings No. 431-S., dated 7th December 1909, recommended that a scheme for a 10-gallon supply from the Pálár be investigated, as a 15-gallon supply would appear to be beyond the means of the Municipality and that levels may, at the same time, be taken for a drainage scheme. Government, in G.O., No. 2090 M., dated 22nd December 1909, approved the recommendations of the Sanitary Board and requested the Sanitary Engineer to investigate a scheme for a 10-gallon supply for Chingleput from the Pálár and to take levels at the same time for a drainage scheme. This will be taken up in 1910.

(b) PLANS AND ESTIMATES PREPARED FOR WORKS NOT INCLUDED IN THE PROGRAMME.

(1) *Saidapet water-supply*.—A revised estimate amounting to Rs. 21,420 was submitted to Government for constructing a well and gallery for the Saidapet water-supply in lieu of the estimate for Rs. 13,400 sanctioned in G.O., No. 1188 W., dated 30th May 1906.

(2) *Gudiyáttam water-supply extensions*.—Plans and estimates amounting to Rs. 8,540 were submitted to Government for the extension of Gudiyáttam water-supply to Bodipet and for additional pipe lines with fountains in the areas that are badly served in the northern part of the town of Gudiyáttam.

An estimate amounting to Rs. 9,240 for connecting up dead ends and for erecting five new fountains in connection with the Gudiyáttam water-works extensions was also submitted to Government.

(3) *Conjeeveram water-works extensions*.—Revised estimate amounting to Rs. 17,585 and a plan showing the extensions to the engine-house in the pumping station at Conjeeveram were submitted to Government.

(4) *Ootacamund drainage*.—An estimate amounting to Rs. 13,340 for the proposed arrangements for supply of water for flushing purposes in connection with the Kandal extension of Ootacamund drainage was forwarded to the Superintending Engineer, IV Circle.

(5) *A Small-pox hospital for Madras*.—In compliance with G.O., No. 760 M., dated 12th May 1909, plans and estimates amounting to Rs. 91,096 were forwarded to the Surgeon-General with the Government of Madras for the construction of a new small-pox hospital for Madras.

(6) *Nellore water-works*.—Government, in G.O., No. 1329 M., dated 18th August 1909, requested the Sanitary Engineer to have plans and estimates

prepared for a tank service reservoir. Accordingly alternative plans and estimates for iron and reinforced concrete tank reservoirs were submitted to Government. The estimated cost of a reinforced concrete reservoir is Rs. 24,030, and that of an iron tank reservoir is Rs. 30,980.

(7) *Tuticorin water-supply—Reservoir tank improvements.* Plans and estimates amounting to (1) Rs. 43,960 for a storage supply for 34,000 people and (2) Rs. 55,900 for 45,000 people, were submitted to Government for the improvement of the reserve tank of the Tuticorin water-supply.

(8) *Berhampur water-works—Reservoir at new sites.*—Plans and estimates as mentioned below were forwarded to the Chief Engineer, Public Works Department:—

(a) Estimate amounting to Rs. 31,868 for constructing a reinforced concrete reservoir opposite to the old hospital on the Aska Loop Road for Berhampur water-works, which is the site selected by the Municipal Council.

(b) Estimate amounting to Rs. 26,678 for constructing a reinforced concrete reservoir near the sanctioned site for Berhampur water-works selected by the Sanitary Engineer.

(9) *Tirupati water-works.*—An estimate amounting to Rs. 1,600 was forwarded to the Chairman, Municipal Council, Tirupati, for constructing a Venturi meter-house.

(10) *Cocanada water-supply improvements.*—An estimate amounting to Rs. 4,600 for water-supply improvements for the town of Cocanada (duplicating main to Rajah tank) was forwarded to the Chairman, Municipal Council, Cocanada.

(11) *Trichinopoly water-works.*—An estimate amounting to Rs. 10,500 for relaying the existing infiltration gallery of the Trichinopoly water-works was forwarded to the Chairman, Municipal Council, Trichinopoly, through the Collector of Trichinopoly.

(12) The preparation of revised plans and estimates for (a) Waltair water-supply and (b) Combined General Hospital for Tinnevely and Palamcottah were approaching completion, and they will be forwarded early in 1910.

(13) In compliance with Memorandum No. 1576-1 M., dated 13th May 1909, the Sanitary Engineer inspected Chidambaram to formulate a scheme for the water-supply of that town. A preliminary report was submitted to Government through the Sanitary Board.

II.—EXECUTION OF WORKS.

(a) WORKS UNDER EXECUTION BY THE PUBLIC WORKS DEPARTMENT.

	Estimated cost of scheme. Rs.
(1) Berhampur water-supply	3,11,000
(2) Bezvada do.	3,11,790
(3) Salem do.	8,10,535
(4) Gudiyattam water-works extensions	22,000
(5) Constructing a service reservoir in connection with the water-supply scheme, Trichinopoly	63,300
(6) Constructing an infiltration trench at the pumping station, Madura water-works	8,210
(7) Periyakulam water-supply	1,62,670
(8) Constructing an experimental trench or gallery in connection with the proposed water-works, Tinnevely	33,750
(9) Ootacamund drainage	4,21,007

(b) WORKS UNDER EXECUTION BY THE SANITARY ENGINEER.

(1) *Saidapet water-works.*—A boring was put down in the well at the Butt plain at St. Thomas' Mount, the original site for the head works, to ascertain the nature of soil before sinking the well further, with the result that the quality of the water as found was pronounced unsuitable.

A new site has been chosen and an experimental well excavated with hopeful results, as the quality of water is pronounced to be good. Further investigations are in progress for early submission of a revised estimate.

(2) *Sub-artesian water-supply at Kumbakonam.*—Temporary arrangements for providing water-supply from the sub-artesian boring for the Mahamakam festival proved successful. Experiments are now in progress. Sub-soil water has been excluded completely and the yield is satisfactory.

(3) *Experimental artesian boring at Tanjore.*—A deep boring with tubes of 7-inch diameter was commenced at the end of August 1909 at site of head-works and pumping station, Tanjore, in accordance with G.O., No. 531 M., dated 26th March 1908. This boring, after passing through alternate layers of ordinary alluvial deposits of sand and sandy clay up to a depth of 22.5 feet below ground level, met with a stratum of sand containing large quantity of water and 19 feet thick.

Below this, the boring went practically through thick layers of very hard plastic clay, excluding a small intervening layer of sand $5\frac{1}{2}$ feet thick up to a depth of 108 feet and met with soft rock. Boring was continued further in this rock, which gradually increased in hardness, until it reached very hard rock at a depth of 146 feet. The water in the bore-hole rose to a depth of 2 feet 4 inches below ground level or 4 feet above the adjacent sub-soil water level or water level in the river; but the quality was condemned by the Director of King Institute. The Sub-Assistant Superintendent of Geological Survey of India, who visited this boring on 18th November 1909, reported that the rock met with is decomposed "Felspar and granite" and it is very unlikely to find water below this. Further work on this boring was abandoned.

III.—MAINTENANCE OF WATER-WORKS.

The Municipal Councils have, from time to time, been advised of the defects found in the maintenance of the water-works. The weekly statements issued to each council have been continued and the consumption of fuel and stores when found to be excessive was promptly brought to the notice of the council concerned for necessary action. In this way an efficient check is kept on the staff at the pumping stations.

Complete examinations of the machinery were made by the Inspectors of Steam-boilers and Prime-movers and reports on their condition forwarded to the authorities concerned. The report on the condition of the pumping plant and working of the various stations will be found in the Boiler Inspector's annual report as usual. The following statement shows the quantity of water pumped and cost of maintenance in all towns having a water-supply by means of pumping during 1908-1909:—

Number.	Town.	Population.	Quantity of water pumped.	Consumption per diem.	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	Cocanada	48,096	GALES. 137,183,395	GALES. 7.8	FT. 45.88	FT. 50	RS. 4,494	RS. 1,301	RS. 1,077	RS. 10	RS. 7,682	RS. 1.22	Worthington horizontal compound surface condensing.	Locomotive.
2	Conjeevaram.	46,164	230,767,414	13.1	41.41	55	6,503	582	1,317	1,419	9,821	1.07	Worthington horizontal compound direct acting non-condensing.	Do.
3	Kurnool	25,378	107,153,960	11.6	45.50	48	4,329	1,028	2,113	2,448	9,912	2.03	Invisible vertical twin series centrifugal pumping engine. Diesel oil-engine.	Do.
4	Madura	105,964	481,837,963	13.5	32.89	34	12,132	963	3,565	896	17,556	1.09	Worthington triple expansion horizontal surface condensing.	Do.
5	Tanjore	57,870	314,131,427	14.0	78.00	108	14,468	1,317	3,274	2,356	21,435	.87	Worthington vertical triple expansion surface condensing.	Babcock and Wilcox patent water tube.
6	Trichinopoly (Main).	104,721	616,292,423	13.2	85.23	103	18,603	1,219	5,003	1,463	26,308	.50	Worthington vertical triple expansion surface condensing.	Do.
7	Trichinopoly (Sub).		78,364,510		61.39	50	4,590	500	1,002		6,192	1.28	Worthington horizontal triple expansion surface condensing.	Locomotive.

* Including cost of working a centrifugal pump for about two months.

IV.—MAJOR AND MINOR SANITARY WORKS.

The following statement shows the major and 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.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
		RS.		RS.		RS.		RS.		RS.		RS.		RS.		RS.
Estimates below Rs. 1,000 sanctioned by the Sanitary Engineer.	4	2,766	6	2,560	4	3,270	7	5,330	48	35,790	13	5,804	5	3,776	...	...
Estimates above Rs. 1,000 and below Rs. 10,000.	80	3,08,113	5	11,400	6	13,980	36	75,388	122	2,04,688	14	37,028	8	18,580	8	42,260
Estimates above Rs. 10,000.	2	1,06,400	...	...	...	...	...	...	1	50,000	2	48,560	...	...	3	48,800
Total	86	4,17,609	11	13,960	10	17,250	43	80,718	171	2,90,478	29	91,382	13	22,356	11	90,860
Rs. 10,24,623.																

The following type designs were prepared and forwarded :—

- (1) For drain junction with closed sewer.
- (2) For cart service dumping pit.
- (3) For hand service dumping pit.
- (4) For water carriage latrine.
- (5) For a municipal workshop.

Type design No. 81 for hospital buildings was revised and forwarded during the year.

V.—CONCLUDING REMARKS.

During the year Mr. F. E. Morgan continued as Acting Sanitary Engineer to Government till 15th March 1909, when the undersigned returned from leave and resumed charge of the office of Sanitary Engineer to Government.

Mr. J. R. Thurai Singham continued as Acting Assistant Sanitary Engineer. M.R.Ry. V. S. Gnanaprakasam Pillai continued as Additional Assistant Sanitary Engineer.

The staff has worked satisfactorily during the year.

W. HUTTON,

Sanitary Engineer to Government.

OFFICE OF SANITARY ENGINEER TO GOVERNMENT,
KENSINGTON HOUSE, KILPAUK,
MADRAS, 1st April 1910.

Government of Madras.

LOCAL AND MUNICIPAL DEPARTMENT.

Recd.

Enclosures

Regd.

Spare copies

1910.

G.O., etc., Nos. 814, 815 L., 29th June 1910.

Sanitation.

Reviewing the reports on — for 1909.

GOVERNMENT OF MADRAS

LOCAL AND MUNICIPAL DEPARTMENT.

READ—the following paper :

Proceedings of the Sanitary Board, No. 107-S., dated 27th May 1910.

Read—the following papers :—

Report of the Sanitary Board for 1909.

" " *Sanitary Engineer for 1909.*

" " *Sanitary Commissioner for 1909.*

Resolution—No. 107-S., dated 27th May 1910.

Submitted to Government 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 1908.

(True Extract.)

P. HAWKINS,
Secretary, Sanitary Board.

To the Secretary to Government, Local and Municipal Department
(with three reports.)
Copy to the Sanitary Commissioner (with a copy of the
Sanitary Board's report).
" " Sanitary Engineer (with a copy of the
Sanitary Board's report).

Order—No. 814 L., dated 29th June 1910.

The reports submitted by the Sanitary Board with its Proceedings No. 107/S., dated 27th May 1910, contain the Sanitary history of the year 1909. Under rule 23 of the rules regulating the constitution and functions of the Sanitary Board these reports were due with Government not later than the 15th May 1910, but they were not received until the 31st idem. The delay should have been explained.

2. The total average rainfall for the year was in excess of that of the preceding year; but owing to its uneven distribution, and to the failure of the north-east monsoon of 1908, the prices of the staple food-grains showed no appreciable fall.

3. The returns of vital statistics were received for the entire population according to the last census, excepting only the hill tribes of Ganjam and Vizagapatam and the inhabitants of the Laccadives. The birth-rate for the Presidency taken as a whole was 33.1 per mille or 0.7 more than in the previous year; and was the highest on record. The provisions of Act III of 1899 relating to the registration of births and deaths were in force in 3,558 towns and villages in 19 districts as in the previous year. The birth-rate for the populations in these areas was, however, the same (32.1 per mille) as that in the non-compulsory areas in the districts concerned. In ten districts, however, the rates in compulsory areas were in excess of those recorded in non-compulsory areas, but the excess was inappreciable in any of them. On the other hand, there were noteworthy decreases in six districts. As regards deaths, the average rate in the compulsory areas was 20.4 per mille or 0.7 per mille less than in

the non-compulsory areas, there having been noteworthy increases in four districts and marked decreases in five districts. The Sanitary Commissioner considers that no definite conclusions can be drawn from these figures except that registration was much neglected in the districts concerned and that judging from the results there is not much to be said in favour of the Act.

Taking the districts as a whole, the birth-rate as compared with that of the preceding year showed an increase in seven districts, the excess in South Canara and Malabar being as much as 5.5 and 6.9 per mille respectively. The increase is attributed to an improved state of the public health and more accurate registration. There was, however, a decrease in the recorded rate in 15 districts, the largest decrease occurring in the Nilgiris where the rate was 29.8 against 33.6 per mille in 1908.

4. The general death-rate for the Presidency fell from 26.2 to 21.8 per mille. The decrease was large in Malabar (16.0), Ganjam (10.7), Kurnool (10.3), Anantapur (9.1), Vizagapatam (8.5), Guntur (8.4) and South Canara (7.2).

The Sanitary Commissioner explains that the decrease in these districts occurred mainly under cholera, fevers, dysentery and diarrhoea. There was an increase in the death-rate in three districts, namely, the Nilgiris, Salem and Trichinopoly. The increase in the Nilgiris was mainly due to the prevalence of plague, dysentery and diarrhoea, in Salem to cholera and fevers, and in Trichinopoly to cholera.

5. Compared with the previous year, there was an increase in the recorded birth-rate in 28 municipal towns and this was particularly noticeable in Conjeeveram (8.5), Cuddapah (5.9), Bellary (5.8), Calicut (5.7), Tellicherry and Tirupati (5.6 each) and Mangalore (5.0). On the other hand, there was a decline in 32 towns chiefly in Mangalore (17.9), Vaniyambadi (11.8), Rajahmundry (9.6), Anantapur (9.4), Kodai-kanal (8.3), Nellore (8.0) and Tirupattur (6.9). The decline in Coimbatore is ascribed to the dispersion of the population in consequence of the outbreak of plague. The decrease in the remaining cases is apparently due to defective registration and the attention of the Councils concerned will be drawn to the subject.

The recorded death-rate in municipalities fell from 38.2 to 31.8 the decrease occurring for the most part under cholera, fevers, dysentery and diarrhoea. Turning to individual District Municipalities, there was an increase in eight and a decrease in 51 towns, while the rate for the town of Trichinopoly was the same as that of the previous year. The increase was most marked in Palni (14.1 per mille) and Coimbatore (8.3) and was chiefly due to the prevalence of cholera in the former and of cholera and plague in the latter; there was a large fall in Calicut (39.9), Tellicherry (32.4), Cannanore (29.8), Nandyal (26.9), Cuddapah (20.2), Rajahmundry (18.8), Vaniyambadi (18.2), Bezwada (17.6), and Bimlipatam (15.1). The decrease in the towns of Calicut, Tellicherry and Cannanore occurred chiefly under cholera and plague and in the remaining towns under cholera.

The mortality among infants in municipal towns averaged 229.3 per mille against 173.6 in districts; the higher rate in the former being evidently due partly to more accurate registration and partly to the greater prevalence of insanitary conditions. The rate of infant mortality was the highest in the city of Madras (298.2) followed by Ellore (293.5), Bezwada (291.0), Guntur (284.6), Dindigul (277.9), Kurnool (260.1), Bellary (259.1), Negapatam (258.6) and Chidambaram (254.5). This heavy mortality is attributed by the Sanitary Commissioner to the want of nutrition owing to the high prices of food grains, to the ignorance of mothers in tending their children, and to the insanitary environments in which the children are born and brought up. The attention of the Municipal Councils concerned is drawn to the omission noticed by the Sanitary Commissioner in paragraph 5 of his report to furnish him with complete statistics regarding the number of prosecutions instituted for failure to report births and deaths and the number of convictions secured and the amount of fines inflicted and recovered.

6. Fever continued to be the chief classified cause of death, the mortality under this head having been 7.3 per mille or about a third of the total deaths from all causes. The incidence of fever mortality was heavier in rural tracts than in town circles. From paragraph 34 of the Sanitary Commissioner's report, it appears that the subject of malaria prevention received fair attention at the hands of local bodies except in Coimbatore, Chingleput and Salem. The Local Boards in these districts will be

requested to allot funds for carrying out anti-malarial operations. The Government are glad to note that the prohibition of wet cultivation in and around the town of Cuddapah had its desired effect in reducing the fever mortality from 11.0 to 7.5 per mille.

7. From statement XIII appended to the Sanitary Commissioner's report, it appears that in 12 municipal towns, in which a protected water-supply has been in force for more than five years, the number of deaths from fever during the last five years was on an average 16.3 per cent. of the total mortality against 25.0 during the five years previous to the date of the introduction of the protected water-supply, while the number of deaths from cholera was 5.2 per cent. in the later as against 9.8 in the earlier period.

8. The mortality from cholera was 1.1 per mille against 3.9 in the previous year. It prevailed in all districts except Guntur, and was severe in Trichinopoly (2.6) and Salem (2.5). It was also prevalent in 45 District Municipalities, the total mortality in municipal towns being 1.0 per mille against 5.1 in 1908. The towns most affected were Palni (17.2), Salem (6.5) and Palghat (4.1).

9. Small-pox prevailed in all districts, but the mortality under this head fell from 0.6 per mille to 0.5. It was virulent in Vizagapatam (2.0), but in all other districts the rate was below 1 per mille. Seventeen municipal towns enjoyed immunity from this disease, and in 23 towns the number of reported deaths did not exceed five in each. The death-rate was however large in Cocanada (6.1), Cochin (5.4), and Ongole and Anakapalle (3.1 each). The Councils of these municipalities should enforce strictly the compulsory provisions of the District Municipalities Act in regard to vaccination. In urban areas where vaccination was generally compulsory the death-rate was 0.3 against 0.5 in rural tracts. More than one-third of the number of deaths from small-pox occurred among children under one year, and about one-fourth occurred among children from one to ten years of age.

10. The number of deaths due to plague rose from 3,358 to 3,844. The death-rate was high in the Nilgiris (2.0) and Coimbatore (1.4) and the epidemic prevailed in every month of the year in the district of Coimbatore. There was practically no change in the methods adopted for the observation of persons arriving from infected areas and the evacuation and disinfection of affected localities.

11. The remarks of the Sanitary Commissioner in paragraph 36 of his report in regard to the increased mortality from dysentery and diarrhoea in certain Municipalities, as the result chiefly of over-crowded dwellings and insanitary conditions surrounding them should receive the attention of the Councils concerned.

12. Sanitary Assistants to District Medical and Sanitary Officers continued to be employed in seven districts as in previous years and these officers are reported to have done much useful work. In G.O., No. 1225 L., dated 1st October 1909, the Sanitary Commissioner and the Presidents of such of the District Boards as employed Sanitary Assistants to District Medical and Sanitary Officers were requested to report whether these officers had justified their employment by substantially improving vaccination or by effectively advancing the sanitation of rural villages, and whether any change in their position and duties or in their staff appeared to be necessary. Their replies have been received and the subject is under the consideration of Government.

13. The attention of all Municipal Councils will again be invited to the remarks of the Sanitary Commissioner in paragraph 48 of his report, as to the absence of sufficient control over the work of Sanitary Inspectors and to G.O., No. 328 M., dated 21st February 1904, under which the work of collecting the taxes should not be entrusted to this class of servants. The remarks and suggestions of the Sanitary Commissioner in paragraphs 50, 51, 55 and 57 in regard to the disposal of night-soil and sewage and the sanitation of backyards will also be commended to all local bodies for consideration.

14. A special grant of Rs. 4,97,060 from Provincial funds was distributed in 1909-1910 among District Boards and Municipal Councils for expenditure on sanitary works such as the opening up of congested areas, town extensions, forming conservancy lanes and the improvement of water-supplies, which the local bodies were unable to carry out from their own funds.

A marked improvement in the sanitary condition of towns and villages is confidently anticipated from the steady application of this system of grants-in-aid.

15. The King Institute of Preventive Medicine continued to do excellent work, and the periodical analysis of water obtained from Municipalities provided with a piped water-supply, was of special value in pointing out errors in management and in suggesting remedial measures. A commissioned Medical officer was appointed during the year to the newly created post of Assistant Director of the Institute, and the appointment of Deputy Superintendent hitherto filled by a Military Assistant Surgeon was abolished. The proposals of the Sanitary Commissioner towards the improvement of the accommodation and staff for research work in connection with the institute are awaited.

16. With the object of ensuring that Sanitary Inspectors in the employ of local bodies maintain their efficiency and are kept well-informed of the latest advances in Sanitary Science, the Government have lately prescribed a special short course in Hygiene and Minor Sanitary Engineering at the Medical College, Madras, and the Sanitary Inspectors are required to attend this course once in every five years of their service and to pass an examination at the end of the course.

17. The water-works of Berhampur, Bezwada, Salem and Periyakulam, the extension of water-works at Gudiyattam and certain improvements to those at Trichinopoly and Madura, and the construction of an experimental trench or gallery in connection with the proposed water-works at Tinnevely, and of the Ootacamund drainage works were under execution by the Public Works Department during the year. The experimental artesian boring at Tanjore conducted by the Sanitary Engineer was abandoned as the quality of the water was condemned by the Director of the King Institute. The boring put down in connection with the S. daptet water-works was also unsuccessful as the quality of the water was pronounced unsuitable, and a new site had therefore to be selected for the excavation of an experimental well.

18. The Sanitary Engineer prepared and submitted to the Sanitary Board or other authorities during the year, plans and estimates for the works noted in the margin.*

- * 1. Srirangam drainage.
2. Palamcottah water-supply.
3. Vellore drainage.
4. Negapatam water-supply.
5. Cuddapah water-works improvements.
6. Vizianagram water-supply.
7. Mangalore water-supply.
8. Saidapet water-supply.
9. Gudiyattam water-supply extensions.
10. Conjeevaram water-works extensions.
11. Ootacamund drainage.
12. Small-pox hospital for Madras.
13. Nellore water-works (tank service reservoir).
14. Tuticorin water-supply (reservoir tank improvements).
15. Berhampur water-works (reservoir at new sites).
16. Tirupati water-works (construction of a venturi metre-house).
17. Cocanada water-supply improvements.
18. Trichinopoly water-works improvements.

As in previous years, the Sanitary Engineer from time to time advised Municipal Councils in regard to the defects found in the maintenance of the water-works. He also checked and scrutinised estimates for eight works costing more than Rs. 10,000 each, 279 works costing between Rs. 1,000 and Rs. 10,000 and 87 works costing below Rs. 1,000, besides preparing type designs for drain junction with closed sewer, for cart service dumping pit, for hand service dumping pit, for water carriage latrine and for a municipal workshop, and revising the type design for hospital buildings.

From the statement furnished by the Sanitary Engineer showing the quantity of water pumped in 1908-1909 and the cost of maintenance in all towns having a water-supply by means of pumping, it appears that the cost of raising a million gallons of

water 1 foot high was cheapest in Trichinopoly being half a rupee, for the consumption of 18.2 gallons per diem by each person, and heaviest in Kurnool where the expenditure on maintenance was Rs. 2.03 for an average consumption of 11.6 gallons. The question of reducing this high cost of maintenance should engage the attention of the Municipal Council.

19. The new pumping stations at the Law College and Rayapuram within the city of Madras which were intended to abate the nuisance caused by Kelly's drain, could not be fitted up within the year, as in the case of the first, the question of the site was under correspondence, and in the case of the second, some alterations had to be made

in the designs. The work has since been taken in hand. As a further remedy for the removal of this nuisance, estimates have been sanctioned by the Corporation for covering the open section of the channel on the foreshore and for constructing a new sea out-fall. The scheme for the drainage of Tondiarpet, on which the future drainage works for the city are to be based, was prepared during the year and sanctioned by Government in April last. A complete new scheme for the reconstruction and extension of the distributary channels at the sewage farm was also prepared and the work has almost been completed. The construction of the conduits and filter beds, etc., in connection with the new water-works is in progress and the Special Engineer is still engaged in the revision of the scheme for the improvement of the water-supply distributary system of the City.

20. The Sanitary Board scrutinised the plans and estimates relating to 143 sanitary works estimated to cost over 26 lakhs and finally approved the plans and estimates for 131, out of these works. Fourteen of the works were completed during the year, and 38 were in progress, while the remaining 79 had to be deferred for execution by local bodies as famine-relief works when necessary. The Sanitary Board issued type designs for drain coverings suitable for wheeled traffic and for flush latrines and also a revised design for dispensary buildings.

21. The Government note with satisfaction the thorough and efficient manner in which the work of their departments was carried out by the Sanitary Commissioner and the Sanitary Engineer during the year under report.

(True Extract.)

L. M. WYNCH,
Ag. Secretary to Government.

To the Sanitary Board.
 „ the Sanitary Commissioner.
 „ the Sanitary Engineer (through Public Works Department).
 „ the Surgeon-General.
 „ the Public Works Department.
 „ the Public Department.
 „ the Revenue Department.
 „ the Assistant Adjutant-General, 9th (Secunderabad) Division (with C.L.).
 „ the Inspector-General of Police.
 „ the Inspector-General of Prisons.
 „ the Accountant-General.
 „ the Director of Public Instruction.
 „ all Collectors.
 „ all Presidents, District Boards.
 „ all Chairmen, Municipal Councils.
 „ the President, Corporation of Madras.
 Editors' Table.

Endorsement No. 815 L., dated 29th June 1910.
 Copy to the Government of India, Home Department.

L. M. WYNCH,
Ag. Secretary to Government.

