THE

THIRD ANNUAL REPORT OF THE SANITARY BOARD,

THE THIRTY-FIFTH ANNUAL REPORT OF THE SANITARY COMMISSIONER,

AND THE

NINTH REPORT OF THE SANITARY ENGINEER,

MADRAS.

1898.

90981
S. E.

MADRAS:
PRINTED BY THE SUPERINTENDENT, GOVERNMENT PRESS.

1899.

36639

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THIRD REPORT OF THE SANITARY BOARD.

THIRD REPORT OF THE SANITARY BOARD

FOR THE YEAR 1898.

THE constitution of the Board, and the rules for the conduct of its business continued the same as in the previous year.

2. The Board scrutinized plans and estimates for 36 Municipal and 78 Local Fund Works of the total estimated value of Rs. 4,89,525-4-5. Details of these works will be found in the appendix to the report.

3. The Reports of the Sanitary Commissioner and the Sanitary Engineer contain detailed reviews of the sanitary works undertaken in this presidency. It is thus unnecessary for the Sanitary Board to do more than notice the most important of the projects with which it has had itself to deal.

4. Schemes for the water-supply of Vizianagram, for the extension of the water-works at Kurnool and Tanjore, and for the drainage of a portion of the town of Kumbakónam were examined and laid before Government.

5. The undermentioned projects were duly sanctioned by Government—

	Amount of estimate. RS.
(1) Improving the Ootacamund water-supply	35,700
(2) Fencing the site of the head works of the Tirupati water-supply.	...
(3) Extension of the water-works at Tanjore	27,000
(4) Drainage scheme for the Tanjore Fort	33,440

6. Proposals for undertaking the following schemes were received and considered by the Sanitary Board. As, however, estimates had not been prepared, the projects are not included in the list of works given in the appendix :—

(1) Berhampur water-supply scheme.
(2) Negapatam water-supply scheme.
(3) Extension of the Dindigul water-works.
(4) Cuddapah water-supply scheme.
(5) Kumbakónam drainage scheme.
(6) Calicut water-supply scheme.
(7) Tuticorin water-supply scheme.
(8) Tiruvannámalai water-supply scheme.
(9) Coonoor water supply scheme.
(10) Ellore water-supply scheme.
(11) Constructing pipe sewers in the Manual Pillay Street group of the Ootacamund drainage scheme.
(12) Improvements to the Trichinopoly water-works.
(13) Cuddapah drainage scheme.
(14) Extending and improving the municipal hospital at Madura.
(15) Combined hospital and dispensary for the Gódávari district.
(16) Combined hospital and dispensary at Cocanada.
(17) Bellary hospital.
(18) Improvements to the mortuary at Máyavaram.
(19) Constructing a burial ground for Muhammadans at Yadiki.

7. *Water analysis.*—The question of framing a set of rules for the periodical examination of the sources of proposed water-supply was considered by the Sanitary Board; but it finally determined that rules for this purpose, however carefully framed, would unduly interfere with the freedom of action of Sanitary authorities. The proposal was therefore allowed to drop.

8. *Filtration of water.*— The Board was much struck with the excellent results of filtration obtained in certain towns in the North-West Provinces and Oudh, and

instituted inquiries as to the methods employed. The matter was still under correspondence at the end of the year.

9. *Sanitary works of the Madras Municipality.*—The general question as to whether the sanitary works of the Madras Municipality should, in common with those of other municipalities, come under the cognizance of the Board, was raised by the Sanitary Engineer. The matter was referred by the Board to Government who suggested to the Municipal Commissioners the desirability of consulting the Board in regard to sanitary projects.

10. *Formation of towns in the vicinity of Railway Stations.*—The following addition was made to the rules on this subject by order of Government:—

"Collectors shall consult the Sanitary Board whenever, in laying out house sites near railway stations, special difficulties arise that may not be provided for in any general rules that the Board of Revenue may issue."

11. *Repairs and improvements to tanks.*—The Board issued a circular recommending to local bodies that all proposals for repairs and improvements to tanks hitherto used for bathing, watering cattle, and drinking indiscriminately should include separate provision for drinking purposes, so that the people might at least have the opportunity of drinking uncontaminated water.

12. *Repair estimates.*—In order to prevent wasteful expenditure on defective works, local bodies were invited last year to send up to the Board proposals for the repair and maintenance of works the designs of which had not been approved by the Board. It was subsequently decided that repairs to existing buildings not involving important structural alterations need not be laid before the Board; but local authorities were asked to consider in all cases of repairs to existing works built on defective designs whether it would not be more profitable to construct new buildings on approved sanitary principles.

13. *Drainage channels for storm or surface water.*—Statements of particulars to accompany proposals for such projects were drawn up by the Sanitary Engineer in communication with the Sanitary Commissioner and were, after approval by the Sanitary Board, issued to local officers for information and guidance.

14. In order to facilitate the consideration of sanitary projects and expedite their disposal, the Board prescribed rules as to the channel through which the schemes should be submitted. These rules having been repeatedly overlooked by local officers, the Board decided that all projects which were not sent up through the prescribed channel would be returned for resubmission. Notwithstanding these orders to which prominent attention was drawn, the plans and estimates for 28 works had to be returned.

15. The Sanitary Board maintains a list of officers and local bodies to which type designs issued by the Board are communicated. The Resident in Travancore and Cochin applied to be added to the list. The application was acceded to and the Resident was furnished with a complete set of the Board's type designs which, it is hoped, will prove of use and aid the progress of sanitary work in the Native States in question.

16. A series of type plans for hospital buildings was issued during the previous year and this was followed up in the year under review by the issue of detailed estimates for the buildings.

17. Having in view the possibility of plague visiting this presidency, the Sanitary Board considered it advisable to issue a type design of a temporary plague hospital, but, in the meanwhile, a plan prepared by the Sanitary Engineer and approved by the Sanitary Commissioner was circulated by Government. The subject was therefore dropped. In considering certain estimates for plague sheds the Board observed that as buildings for plague purposes would have to be erected on emergency, and as there was a special officer appointed by Government to supervise plague operations, the specific sanction of the Board to the estimates did not seem called for and proposed that the type design issued with G.O., No. 256-P., dated 23rd March 1898, should be adhered to.

18. The following type designs were approved during the year:—

No. 67. Ward for 4 beds, semi-permanent (suitable for general diseases).
No. 68. Do. (suitable for isolation cases).
No. 69. Choultry.
No. 70. Weekly market shed.
No. 71. Do.
No. 72. Do.
No. 73. Ward for caste patients issued under G.O., No. 923, Public, dated 14th November 1889, and G.O., No. 966, Public, dated 17th November 1891. Alternative to type design No. 62.
No. 74. Ward for 4 beds, also suitable for venereal cases (female) issued under G.O., No. 1297-M., dated 4th October 1889. Alternative to type design No. 54.
No. 75. House latrine.
No. 76. Single latrine with 12 seats.
No. 77. Double latrine with 12 seats.
No. 78. Double latrine with 20 seats.
No. 79. Iron water-tight conservancy cart.

19. In addition to the above, type plans for the undermentioned buildings were under preparation:—

(1) Vaccine depots for District Boards.
(2) Slaughter-house for small municipalities.
(3) Dispensary (semi-permanent) for minor towns and villages.
(4) Hospital wards of 3 beds each for males and females (semi-permanent).

27th April 1899.

(Signed) R. PARSONS,
Secretary, Sanitary Board.

APPENDIX.

Statement of estimates for sanitary work scrutinised by the Sanitary Board during 1898.

Locality.	Local body. M. = Municipality. D.B. = District Board. T.B. = Taluk Board.	Description of work.	Amount of estimate. Rs.	A.	P.	Proceedings of the Sanitary Board. Number.	Date.	Remarks.
Tiruchengódu	Namakkál (T.B.)	Converting the Tiruchengódu school-house into travellers' bungalow.	725	0	0	1/S.	4th January 1898 ..	Returned, as the sanction of the Sanitary Board was unnecessary.
Do.	Do.	Do. the old cutcherry into school-house.	275	0	0			
Gopalapuram	Rajahmundry (T.B.) ..	Digging a drainage channel	280	0	0	19/S.	11th ,, ,, ..	Approved.
Madurántakam	Chingleput (T.B.) ..	Constructing a dispensary in accordance with type design No. 26.	8,300	0	0	26/S.	14th ,, ,, ..	Recommended to adopt either type plan No. 42 or 63.
Usilampatti	Tirumangalam (T.B.) ..	Do. a compound wall to the market..	2,530	0	0	30/S.	17th ,, ,, ..	Approved.
Cannanore	Cannanore (M.)	Do. an iron latrine in the village of the Lebbas.	400	0	0	31/S.	17th ,, ,, ..	Recommended to adopt covered forms of latrine as shown in type designs Nos. 4 and 12.
Jinnur	Narasapur (T.B.) ..	Improving a drinking-water tank	750	0	0	32/S.	17th ,, ,, ..	Approved subject to certain remarks.
Udayagiri	Nellore (D.B.)	Restoring the dispensary building	1,250	0	0	39/S.	19th ,, ,, ..	Approved.
Sakkiamangalam	Madura (T.B.)	Repairing a drinking-water well	465	0	0	53/S.	25th ,, ,, ..	Do.
Védáranniyam	Mannárgudi (T.B.) ..	Reconstructing the inlet and outlet of the Vedanadi tank.	500	0	0	54/S.	25th ,, ,, ..	Do.
Tiruvannámalai	Tiruvannámalai (M.) ..	Constructing a well for the use of the cattle market.	303	8	11	57/S.	25th ,, ,, ..	Returned for revision.
Do.	Do. ..	Do. a reservoir for the use of the cattle market.	1,196	7	1	498/S.	3rd September	Recommended certain arrangements for adoption.
Wandiwash	Arni (T.B.)	Adapting a part of the old taluk cutcherry building for a dispensary and hospital assistant's quarters.	680	0	0	63/S.	27th January ,, ..	Returned for revision.
Ellore	Ellore (M.)	Sinking tube wells	500	0	0	76/S.	2nd February ,, ..	Recommended the Sanitary Engineer's suggestions.
Kumbakónam	Kumbakónam (M.) ..	Re-roofing the verandahs around the in-patients' ward of the municipal main hospital.	560	0	0	83/S.	9th ,, ,, ..	Approved.
Cannanore	Cannanore (M.)	Sinking a well near Talap toll-gate	250	0	0	93/S.	14th ,, ,, ..	Recommended to adopt one of the Sanitary Board's type designs for wells.
Coonoor	Coonoor (M.)	Constructing an isolation ward for old and incurable cases at the Coonoor hospital.	336	0	0	97/S.	15th ,, ,, ..	Disapproved. A cheapest design of an isolation ward suitable for a climate like Coonoor at a cost of Rs. 1,200 prepared by the Sanitary Engineer was forwarded for adoption.
Erode	Erode (M.)	Do. a contagious diseases shed based on type design No. 32.	1,530	0	0	105/S.	18th ,, ,, ..	Recommended cutcha shed on the type design No. 32, if the council cannot afford this sum.
Tiruvur	Kistna (D.B.)	Reconstructing a well	480	0	0	117/S.	25th ,, ,, ..	Approved with remarks.
Chandrala	Do.	Sinking a well in Malapalli	380	0	0	118/S.	25th ,, ,, ..	Do.
Kodali	Do.	Constructing two wells	480	0	0	119/S.	25th ,, ,, ..	Do.
Intur	Guntúr (T.B.)	Deepening a drinking-water tank	912	0	0	120/S.	25th ,, ,, ..	Approved.
Tirupati	Tirupati (M.)	Improving penta drains	2,324	0	0	121/S.	28th ,, ,, ..	Disapproved the detached scheme prepared by the Sanitary Engineer, and advised the council to spend the amount in commencing the main drainage scheme for the town.
Sendamangalam	Namakkál (T.B.)	Constructing a school-house and dispensary at Sendamangalam.	1,965	0	0	131/S.	2nd March ,, ..	Approved.
Wynaad	Wynaad (T.B.)	Do. a well at Sultan's Battery ..	1,350	0	0	139/S.	5th ,, ,, ..	Do.
Tirur	Palghat (T.B.)	Do. market sheds	..			141/S.	5th ,, ,, ..	Approved with remarks.
Manappárai	Trichinopoly (D.B.) ..	Sinking a well in the cattle market	1,375	0	0	150/S.	9th ,, ,, ..	Recommended the Sanitary Engineer's suggestions as to pumping and storage arrangements if within the means of the Taluk Board, and if not pully system suggested by him might be adopted.
Kancharagunta	Narasaraopet (T.B.) ..	Constructing a well	400	0	0	152/S.	10th ,, ,, ..	Approved.
Mélúr	Mélúr (T.B.)	Do. compound wall to Mélúr weekly market.	1,330	0	0	253/S.	22nd April ,, ..	Do.
Yercaud	Salem (D.B.)	Do. an iron slaughter-house	720	0	0	255/S.	25th ,, ,, ..	Recommended for adoption any one of the two designs prepared by the Sanitary Engineer instead of the one submitted by them.
Palapurru	Guntúr (T.B.)	Deepening a tank	1,720	0	0	257/S.	25th ,, ,, ..	Approved.
Ferringapett	Mangalore (T.B.) ..	Sinking and steining a well	350	0	0	261/S.	27th ,, ,, ..	Approved with remarks.
Proddatur	Proddatur (T.B.)	Repairing six wells and constructing one in the Pulivendla taluk.	2,910	0	0	262/S.	27th ,, ,, ..	Approved.
Nellore	Nellore (M.)	Constructing a beef slaughter-house	610	0	0	266/S.	2nd May ,, ..	Recommended to adopt one of the Sanitary Board's type designs for slaughter-house.
Karnathatankudy ..	Tanjore (M.)	Do. a drain in the Vania street ..	274	11	0	267/S.	2nd ,, ,, ..	Approved.
Mettupatti	Madura (T.B.)	Repairing a well	740	0	0	268/S.	2nd ,, ,, ..	Do.
Ammayanáyakkanúr ..	Madura (D.B.)	Constructing a dry goods market	1,600	0	0	274/S.	5th ,, ,, ..	Do. with remarks.
Hospet	Hospet (T.B.)	Rebuilding a contagious disease ward attached to the local fund hospital.	300	0	0	275/S.	5th ,, ,, ..	Disapproved the design proposed and recommended the Sanitary Board's type plan No. 32.
Bezwada	Bezwada (M.)	Constructing a vaccine depot in the Public Works quarry compound.	250	0	0	276/S.	5th ,, ,, ..	Recommended to adopt the design for an open shed such as that shown in the Sanitary Board's type plan No. 25.
Yeddanapudi	Narasaraopet (T.B.) ..	Repairing and increasing the capacity of a tank.	2,810	0	0	291/S.	14th ,, ,, ..	Advised certain additions to be provided in the estimate.
Do.	Do. ..	Do. do.	2,810	0	0	602/S.	18th October ,, ..	Approved with remarks.
Thali	Salem (D.B.)	Constructing a dispensary	1,975	0	0	293/S.	16th May ,, ..	Do.
Manamadura	Madura (D.B.)	Do. dispensaries	2,950	0	0	294/S.	16th ,, ,, ..	Approved.
Nelakota			2,950	0	0			
Kethayerumbu	Do.	Do. a dry goods market shed ..	1,285	0	0	321/S.	27th ,, ,, ..	Approved with remarks.
Kurupam	Vizagapatam (D.B.) ..	Do. an hospital	4,400	0	0	323/S.	30th ,, ,, ..	Returned for revision in accordance with the type plans for hospital buildings.
Do.	Do. ..	Do do.	4,400	0	0	468/S.	13th August ,, ..	Disapproved with remarks.
Ellore	Ellore (M.)	Do. an hospital at Turupupetta ..	....			352/S.	22nd June ,, ..	Approved.
Cocanada	Cocanada (M.)	Laying out a portion of the town in house-sites.	....			359/S.	27th ,, ,, ..	Do.
Méttupálaiyam	Coimbatore (T.B.)	Site plan for the Hindu and Muhammadan burial-grounds.	....			360/S.	27th ,, ,, ..	Disapproved.
Tiruppattúr	Tiruppattúr (M.)	Constructing a cholera shed	250	0	0	361/S.	27th ,, ,, ..	Recommended to adopt type design No. 68 if a building on type plan No. 32 could not be afforded.
Tiruchengódu	Salem (D.B.)	Do. a semi-permanent ward in the Tiruchengódu hospital.	930	0	0	362/S.	27th ,, ,, ..	Returned for revision in accordance with the type plan No. 67 or 68.
Do.	Do.	Do. do. ..	750	0	0	706/S.	8th December ,, ..	Approved.
Peruvoorani	Pattukkóttai (T.B.) ..	Improving the Peruvoorani market	1,185	0	0	363/S.	27th June ,, ..	Do.
Karivalamvandanallur ..	Tinnevelly (T.B.) ..	Constructing a tiled shed in the weekly market.	420	0	0	364/S.	27th ,, ,, ..	Approved with remarks.
Gopalpur	Ganjám (D.B.)	Repairing civil dispensary	855	0	0	365/S.	27th ,, ,, ..	Approved.

Statement of estimates for sanitary works scrutinised by the Sanitary Board during 1898—continued.

Locality.	Local body. M. = Municipality. D.B. = District Board. T.B. = Taluk Board.	Description of work.	Amount of estimate. RS. A. P.	Proceedings of the Sanitary Board. Number.	Date.	Remarks.
Palghat	Palghat (M.)	Constructing a drain near the Mappilla mosque.	260 0 0	366/S.	27th June 1898 ..	Approved.
Korukollu	Masulipatam (T.B.) ..	Deepening a tank	358 0 0	367/S.	27th ,, ,, ..	Disapproved with remarks.
Peppara	Ellore (T.B.)	Constructing stone steps to the drinking-water tank.	620 0 0	368/S.	27th ,, ,, ..	Do.
Thiruvangadam	Tinnevelly (T.B.) ..	Do. a tiled shed in the weekly market.	685 0 0	369/S.	27th ,, ,, ..	Approved.
Tanjore	Tanjore (M.)	Extending the Tanjore water-supply ..	27,000 0 0	370/S.	27th ,, ,, ..	Recommended for the sanction of Government.
Nachiargudi	Kumbakónam (T.B.) ..	Repairing a tank	4,450 0 0	373/S.	30th ,, ,, ..	Returned for revision with remarks.
Do.	Do. ..	Do.	4,450 0 0	497/S.	3rd September ,, ..	Recommended separate well-boring for drinking purposes.
Tanjore	Tanjore (M.)	Constructing a drain from fountain No. 29 in Kugilian kolam, Eda street.	315 12 0	395/S.	15th July ,, ..	Approved.
Madurántakam	Chingleput (T.B.) ..	Do. a dispensary	3,200 0 0	396/S.	15th ,, ,, ..	Approved.
Madilagam	Palghat (T.B.)	Renewing the Madilagam market	3,000 0 0	400/S.	18th ,, ,, ..	Approved subject to certain modifications.
Lingumgunta	Nellore (D.B.)	Repairing a pond	290 0 0	402/S.	18th ,, ,, ..	Approved with remarks.
Mantadi	Narasaraopet (T.B.) ..	Constructing a well	960 0 0	403/S.	20th ,, ,, ..	Approved.
Vániyambádi .. .	Vániyambádi (M.) ...	Do. male and female wards in the same building.	3,900 0 0	404/S.	20th ,, ,, ..	Disapproved with remarks.
Do.	Do. ..	Do. two separate male and female wards near the hospital.	5,880 0 0	582/S.	6th October	Approved with remarks.
Thirukkattupalli	Tanjore (T.B.)	Do. an out-door dispensary	3,665 0 0	409/S.	22nd July ,, ..	Disapproved with remarks.
Sankaranainárkóyil ..	Tinnevelly (T.B.)	Do. compound walls round the market.	1,035 0 0	410/S.	22nd ,, ,, ..	Approved.
Udayagiri	Nellore (D.B.)	Repairing the cisterns and restoring the conduit for the conveyance of drinking water-supply.	2,300 0 0	411/S.	22nd ,, ,, ..	Approved with certain additions.
Chidambaram	Chidambaram (M.) ..	Constructing corrugated iron latrines	230 0 0	412/S.	22nd ,, ,, ..	Disapproved with remarks.
Madras	Madras (M.)	Repairing and altering the out-patients' ward and main building, Royapetta hospital.	1,200 0 0	416/S.	26th ,, ,, ..	Approved.
Proddatur	Proddatur (T.B.) ..	Constructing a dead house for the local fund hospital.	530 0 0	418/S.	26th ,, ,, ..	Recommended to adopt type design No. 58.
Coonoor	Coonoor (M.)	Extending the maternity ward of the Coonoor hospital.	685 0 0	419/S.	26th ,, ,, ..	Returned for reconsideration with remarks.
Do.	Do.	Do. do. ..	685 0 0	523/S.	12th September ,, ..	Approved with remarks.
Kurumgudy	Negapatam (T.B.) ..	Repairing the Eswarankoil tank	1,170 0 0	424/S.	3rd August ,, ..	Approved subject to certain conditions.
Kumbakónam	Kumbakónam (M.) ..	Improving the Patchiappa Mudali tank ..	2,050 0 0	495/S.	3rd September ,, ..	Approved subject to certain remarks.
Pasoomalai	Madura (T.B.)	Do. a well	295 0 0	496/S.	3rd ,, ,, ..	Do. do.
Manasherry	Calicut (T.B.)	Constructing market stalls and improving the existing well.	700 0 0	502/S.	6th ,, ,, ..	Approved with remarks.
Nellore	Nellore (M.)	Do. a U-shaped drain in Madhvapathivari street.	785 0 0	503/S.	6th ,, ,, ..	Approved subject to certain modifications.
Palghat	Palghat (M.)	Do. stalls adjoining the Dance market.	550 0 0	504/S.	6th ,, ,, ..	Approved with remarks.
Do.	Do. ..	Do. lying-in ward attached to the municipal hospital.	2,820 0 0	524/S.	12th ,, ,, ..	Approved.
Tadikonda	Guntúr (T.B.)	Repairing a tank bund	1,159 0 0	525/S.	12th ,, ,, ..	Do.
Sivagiri	Tinnevelly (T.B.) ..	Constructing a dispensary	2,200 0 0	532/S.	14th ,, ,, ..	Disapproved the dispensary design and approved the plan for hospital assistant's quarters with remarks.
Do.	Do. ..	Do. a civil hospital assistant's quarters.	2,150 0 0			
Tirupattur	Madura (D.B.)	Do. a dispensary	3,100 0 0	533/S.	14th ,, ,, ..	Recommended to adopt type design No. 42 or to await the issue of still cheaper design then under preparation.
Vizianagram	Vizainagram (M.) ..	Water-supply scheme	2,82,000 0 0	556/S.	23rd ,, ,, ..	Submitted with remarks to Government the scheme prepared by the Sanitary Engineer.
Jammalamadugu	Proddatur (T.B.)	Constructing a slaughter-house	250 0 0	572/S.	30th ,, ,, ..	Disapproved with remarks.
Peddapulipaka	Kistna (D.B.)	Sinking a well	380 0 0	583/S.	6th October ,, ..	Do.
Mathukamalli	Narasaraopet (T.B.) ..	Constructing a well	710 0 0	584/S.	6th ,, ,, ..	Approved subject to certain modifications.
Chittoor	North Arcot (D.B.) ..	Do. an operation room for the civil hospital.	800 0 0	585/S.	8th ,, ,, ..	Disapproved with remarks.
Do.	Do. ..	Do. a labour ward to the lying-in hospital.	720 0 0			
Palni	Palni (M.)	Deepening the well in West car street ..	320 0 0	595/S.	13th ,, ,, ..	Approved with remarks.
Kurnool	Kurnool (M.)	Extending the Kurnool water-works	3,197 0 0	597/S.	13th ,, ,, ..	Approved and recommended for the sanction of Government.
Kotagiri	Nilgiris (D.B.)	Constructing an iron latrine on type plan No. 12.	670 0 0	601/S.	18th ,, ,, ..	Approved.
Bhuvanagiry	Chidambaram (T.B.) ..	Do. an outlet to the drinking-water tank.	750 0 0	652/S.	2nd November ,, ..	Disapproved and recommended to try the sinking of tube wells.
Do.	Do. ..	Do. a head-sluice do. do.	55 0 0			
Do.	Do. ..	Do. an inlet sluice do. do.	130 0 0			
Shulagiri	Hosur (T.B.)	Do. a compond wall around the market.	500 0 0	663/S.	8th ,, ,, ..	Approved.
Kistnagiri	Do.	Do. a compound wall on the southern and western sides of the local fund hospital.	210 0 0	664/S.	8th ,, ,, ..	Do.
Kumbakónam	Kumbakónam (M.) ..	Drainage scheme for the Patnulgar block ..	43,800 0 0	665/S.	10th ,, ,, ..	Recommended for the sanction of Government.
Draksharamu	Rajahmundry (T.B.) ..	Repairing market sheds	440 0 0	672/S.	14th ,, ,, ..	Approved.
Do.	Do. ..	Do. No. 2	720 0 0			
Do.	Do. ..	Do. No. 4	470 0 0			
Ambajipeta	Do. ..	Do.	1,440 0 0			
Kariangulam	Hosur (T.B.)	Constructing compound wall around the market.	1,500 0 0	684/S.	28th ,, ,, ..	Approved subject to certain remarks.
Aiyampalayam	Erode (T.B.)	Sinking a well	335 0 0	685/S.	28th ,, ,, ..	Approved with remarks.
Peraurani	Pattukkóttai (T.B.) ..	Sinking a cylindrical well in the market ..	175 0 0	686/S.	28th ,, ,, ..	Do.
Srívilliputtúr	Srívilliputtúr (M.) ..	Constructing a step-well near the new burial and burning ground.	440 0 0	698/S.	3rd December ,, ..	Approved.
Palghat	Palghat (M.)	Do. a latrine for the Victoria College.	1,240 0 0	703/S.	5th ,, ,, ..	Do.
Mylam	Tindivanam (T.B.) ..	Sinking a draw well	885 0 0	704/S.	5th ,, ,, ..	Considered useless to give any opinion on a work which is three parts completed.
Masulipatam	Masulipatam (M.) ..	Constructing three venereal sheds	2,000 0 0	707/S.	8th ,, ,, ..	Disapproved with remarks.
Mangalagiri	Guntúr (T.B.)	Repairing and clearing the Koneru tank ..	5,329 0 0	713/S.	14th ,, ,, ..	Do.
Bellary	Bellary (M.)	Constructing a plague operation shed ..	534 13 5	718/S.	17th ,, ,, ..	Approved with remarks.
Do.	Do.	Do. an European kitchen	420 0 0			
		Grand Total ..	4,89,525 4 5			

	NO.
Municipal estimates	32
Do. prepared by the Sanitary Engineer.	4
District Board estimates	22
Taluk do.	56
Total ..	114

PART I.

GENERAL SANITATION.

THIRTY-FIFTH ANNUAL REPORT

OF THE

SANITARY COMMISSIONER FOR MADRAS,

1898.

SECTION V.

GENERAL POPULATION.

RAINFALL.

1. In the Presidency, considered as a whole, the rainfall during the north-east monsoon of 1898 exceeded the decennial average (14·94 inches) by 6·13 inches; that during the south-west monsoon (25·70 inches) closely approximated it (25·84 inches). In Anantapur, Cuddapah, Salem, Malabar, Tanjore, Chingleput, Trichinopoly, Kistna, Nellore, Gódávari and Vizagapatam, the south-west monsoon was below the average; but the greatest deficit (in the case of Cuddapah) did not exceed 27·99 per cent. of the average. In the East Coast north districts—excepting Gódávari—and in the North Midland districts—excepting Cuddapah—the north-east monsoon was below the average, the greatest deficit being in Kurnool, where it amounted to 51·19 per cent. of the average. All districts south of, and including, Nellore registered an increase over the average during this monsoon; in South Arcot and Chingleput, the excess was more than 100 per cent. and, in seven others, it was more than half. In South Arcot and parts of the Chingleput district, the rain fell within so limited a period that it was feared the crops would suffer seriously. As it turned out, however, the rain decreased in time to permit of their recovery.

Table showing the Monthly Rainfall in Inches in the Madras Presidency during 1896, 1897 *and* 1898, *with the Average of previous ten years ending* 1895, *distributed according to Monsoon Currents.*

Groups.	Number.	Districts.		Number of places of observation.	North-East Monsoon. January.* Rainfall.	January.* Days.	Inter-Monsoon. † February. Rainfall.	February. Days.	March. Rainfall.	March. Days.	April. Rainfall.	April. Days.	May. Rainfall.	May. Days.	Total. Rainfall.	Total. Days.
East Coast, North.	1	Ganjám ...	Average of 10 years	20	0·22	0·4	0·63	1·2	0·93	1·9	0·76	1·7	2·44	4·0	4·98	9·2
			1896		...	...	...	...	0·53	0·6	0·88	1·0	1·88	4·2	3·29	5·8
			1897		0·03	0·1	1·59	2·2	1·76	3·1	0·72	1·5	1·30	2·7	5·40	9·6
			1898		...	...	0·79	1·8	0·02	0·1	0·89	2·1	1·77	3·8	3·47	7·8
	2	Vizagapatam.	Average of 10 years	27	0·11	0·2	0·32	0·7	0·96	1·8	1·21	2·2	2·25	4·3	4·85	9·2
			1896		...	...	...	...	0·41	0·8	0·76	1·2	2·26	3·9	3·43	5·9
			1897		0·08	0·3	0·38	0·9	2·20	2·8	0·99	1·9	3·07	4·8	6·72	10·7
			1898		...	...	1·43	1·0	0·08	0·2	1·08	1·6	2·74	4·6	5·33	7·4
	3	Gódávari ...	Average of 10 years	23	0·03	0·1	0·11	0·2	0·35	0·5	0·51	0·9	1·46	2·1	2·46	3·8
			1896		0·01	...	...	...	0·19	0·4	0·11	0·2	0·81	1·4	1·12	2·0
			1897		...	...	0·66	1·4	1·47	2·1	0·36	0·8	2·88	4·6	5·37	8·9
			1898		...	...	1·47	1·1	0·02	...	0·24	0·5	1·23	1·9	2·96	3·5
	4	Kistna ...	Average of 10 years	19	0·07	0·1	0·12	0·2	0·46	0·6	0·38	0·6	1·10	2·0	2·13	3·5
			1896		0·02	0·1	...	...	0·07	0·3	0·08	0·1	0·69	1·0	0·86	1·5
			1897		0·01	...	0·83	1·4	0·62	1·1	0·34	0·3	1·54	2·3	3·54	5·1
			1898		...	...	1·12	1·2	...	...	0·34	0·6	0·83	1·6	2·29	3·4
East Coast, Central.	5	Nellore ...	Average of 10 years	22	0·26	0·4	0·13	0·2	0·22	0·3	0·30	0·5	1·08	1·6	1·99	3·0
			1896		0·29	0·6	...	...	0·03	0·1	0·14	0·2	0·70	1·4	1·16	2·3
			1897		1·29	1·3	0·71	1·2	0·13	0·3	0·01	...	1·42	1·8	3·56	4·6
			1898		...	...	0·29	0·7	...	...	0·28	0·5	1·34	1·8	1·91	3·0
	6	Madras ...	Average of 10 years	1	0·36	1·2	0·18	0·5	0·23	0·7	0·36	0·9	1·07	1·9	2·20	5·2
			1896		0·13	1·9	...	...	...	...	...	...	...	...	0·13	1·0
			1897		0·46	2·0	0·53	2·0	0·06	...	0·07	...	0·18	1·0	1·30	5·0
			1898		...	...	0·49	1·0	...	...	...	...	0·65	1·0	1·14	2·0
	7	Chingleput.	Average of 10 years	15	0·38	0·6	0·18	0·4	0·24	0·4	0·37	0·7	1·42	1·7	2·59	3·8
			1896		0·08	0·3	...	...	...	...	...	...	0·16	0·5	0·24	0·8
			1897		0·41	0·9	0·56	1·2	0·31	0·7	0·16	0·6	0·84	0·8	2·28	4·2
			1898		...	...	0·05	0·3	...	...	0·07	0·3	0·68	1·2	0·80	1·8
	8	North Arcot.	Average of 10 years	20	0·14	0·4	0·24	0·4	0·23	0·4	0·70	1·1	2·24	3·3	3·55	5·6
			1896		0·62	0·7	...	...	0·10	0·1	...	...	2·21	3·5	2·93	4·3
			1897		0·37	1·0	0·88	2·3	0·63	0·2	0·21	0·8	1·89	3·4	3·98	7·7
			1898		...	...	0·24	0·3	...	...	0·81	1·5	2·47	3·8	3·52	5·6
East Coast, South.	9	South Arcot.	Average of 10 years	19	0·57	0·7	0·42	0·6	0·46	0·6	0·66	1·1	2·32	2·9	4·43	5·9
			1896		0·22	0·6	...	...	...	...	...	...	0·84	1·6	1·06	2·2
			1897		0·14	0·4	2·38	2·7	0·07	0·3	0·41	1·1	1·87	2·6	4·87	7·1
			1898		0·19	0·5	0·72	0·9	...	...	0·74	1·1	1·37	2·4	3·02	4·9
	10	Trichinopoly.	Average of 10 years	11	0·18	0·6	0·39	0·6	0·66	0·8	1·68	2·1	3·12	4·4	6·03	8·5
			1896		0·02	0·1	...	...	0·11	0·3	0·05	0·2	2·77	4·6	2·95	5·2
			1897		0·02	0·1	3·25	2·3	0·06	0·4	0·80	1·4	4·46	4·4	8·59	8·6
			1898		0·17	0·7	0·51	0·6	...	...	2·06	3·1	3·04	4·4	5·78	8·8
	11	Tanjore ...	Average of 10 years	21	0·67	1·2	0·47	0·8	0·72	0·8	0·83	1·7	2·67	3·0	5·36	7·5
			1896		0·15	0·5	...	...	0·27	0·1	0·10	0·3	0·66	1·4	1·18	2·3
			1897		0·04	0·1	3·76	3·2	0·35	0·7	0·98	1·9	1·56	2·0	6·69	7·9
			1898		1·27	2·7	0·43	0·8	0·01	0·1	1·16	1·6	1·62	2·3	4·49	7·5
South-eastern.	12	Madura ...	Average of 10 years	24	0·31	0·7	0·54	1·0	1·24	1·7	2·56	3·8	2·06	3·9	6·71	11·1
			1896		0·35	0·7	...	...	0·59	1·3	0·41	0·7	2·21	3·9	3·56	6·6
			1897		0·11	0·3	3·59	3·2	0·51	0·8	2·22	3·9	2·03	2·8	8·46	11·1
			1898		0·81	1·9	0·58	1·0	0·06	0·1	2·32	3·1	2·84	4·3	6·61	10·4
	13	Tinnevelly ...	Average of 10 years	19	0·37	0·7	0·79	1·3	1·91	2·9	2·54	3·9	1·33	3·0	6·94	11·8
			1896		0·30	0·6	...	...	1·39	0·2	0·54	1·3	1·71	2·7	3·94	4·8
			1897		0·14	0·5	2·88	3·1	0·33	0·4	4·64	7·1	0·77	1·3	8·76	12·4
			1898		2·58	3·2	2·18	2·4	0·30	0·6	2·08	3·0	1·01	2·2	8·15	11·4

Number.	Districts.		South-West Monsoon. June. Rainfall.	June. Days.	July. Rainfall.	July. Days.	August. Rainfall.	August. Days.	September. Rainfall.	September. Days.	Total. Rainfall.	Total. Days.	North-East Monsoon. October. Rainfall.	October. Days.	November. Rainfall.	November. Days.	December. Rainfall.	December. Days.	Total. Rainfall.	Total. Days.	Grand Total. Rainfall.	Grand Total. Days.
1	Ganjám ...	Average of 10 years	5·74	8·3	8·41	11·7	8·25	13·6	8·01	11·9	30·41	45·5	8·67	9·1	4·75	4·5	0·60	0·7	14·02	14·3	49·41	69·0
		1896	7·03	11·6	8·49	12·9	10·02	12·5	4·41	7·2	29·95	44·2	0·07	0·4	0·13	0·3	...	...	0·20	0·7	33·44	50·7
		1897	4·35	0·3	7·51	12·4	9·76	14·6	13·95	16·4	35·57	43·7	12·48	10·0	3·18	3·3	0·16	0·1	15·82	13·4	66·79	66·7
		1898	3·33	10·2	11·13	13·6	5·62	10·6	6·71	8·8	31·79	43·2	9·24	5·8	1·14	1·8	0·15	0·3	10·53	7·9	45·79	58·9
2	Vizagapatam.	Average of 10 years	·62	9·6	9·42	13·1	9·61	13·2	8·99	12·1	34·64	48·0	7·48	8·3	3·04	3·8	0·42	0·7	10·94	12·8	50·43	70·0
		1896	·60	10·3	7·56	11·9	10·59	13·9	6·34	11·3	31·09	47·4	0·05	0·1	0·36	0·6	...	...	0·41	0·7	34·93	54·0
		1897	·75	5·9	7·60	13·1	9·78	14·0	13·65	16·6	34·78	49·6	8·99	8·3	2·01	3·0	0·01	0·1	11·01	11·4	52·51	71·7
		1898	·38	9·3	9·21	13·3	5·39	9·6	6·23	8·0	28·21	40·2	5·07	6·1	3·66	3·2	0·05	0·2	8·78	9·5	42·32	57·1
3	Gódávari ...	Average of 10 years	·82	7·0	7·36	10·4	6·87	10·1	7·07	8·1	27·12	35·6	9·14	8·8	3·88	3·4	0·23	0·4	13·25	12·6	42·83	52·0
		1896	·27	5·3	7·24	11·1	7·25	11·4	4·03	7·0	21·79	34·8	0·24	0·3	1·95	3·0	...	...	2·19	3·3	25·10	40·1
		1897	·48	3·0	6·26	12·1	10·78	15·4	10·61	15·7	30·13	46·2	10·20	7·2	1·45	2·1	...	...	11·65	9·3	47·15	64·4
		1898	·45	6·5	10·38	11·0	4·84	7·8	6·41	8·4	27·08	33·7	5·80	7·1	8·13	4·2	0·02	0·1	13·95	11·4	43·99	48·6
4	Kistna ...	Average of 10 years	·47	6·3	5·84	9·5	6·35	9·9	6·02	8·6	22·68	34·3	6·92	8·6	3·26	3·9	0·26	0·5	10·44	13·0	35·25	50·8
		1896	·11	5·7	5·46	6·7	5·86	9·8	5·45	8·2	20·88	30·4	0·33	0·9	3·75	4·2	...	...	4·08	5·1	25·82	37·0
		1897	2·46	3·4	5·13	10·7	7·97	11·4	8·94	12·5	24·50	38·0	3·92	5·2	0·55	1·1	...	...	4·47	6·3	32·31	49·4
		1898	2·38	6·9	7·45	11·0	3·86	6·5	4·88	8·2	19·57	32·6	5·54	5·8	4·87	5·4	0·01	0·1	10·42	11·3	32·28	47·3
5	Nellore ...	Average of 10 years	·79	3·8	2·60	5·7	3·27	6·0	3·87	6·1	11·53	21·6	9·72	9·5	7·20	7·2	2·20	2·8	19·12	19·5	32·64	44·1
		1896	1·95	2·1	2·79	5·3	5·29	8·8	5·88	8·4	14·91	24·6	1·23	2·4	16·30	11·1	2·31	3·0	19·84	16·5	35·91	43·4
		1897	3·44	2·3	2·58	6·4	5·02	7·0	7·90	11·3	16·94	27·0	2·42	3·4	3·03	3·6	0·39	0·9	5·84	7·9	26·34	39·5
		1898	1·89	3·3	1·67	4·5	1·60	3·9	5·35	8·4	10·51	20·1	10·46	9·8	12·28	10·2	3·07	1·4	25·81	21·4	38·23	44·5
6	Madras ...	Average of 10 years	·53	8·3	4·71	13·4	5·56	13·8	4·15	9·7	16·95	45·2	11·85	13·9	9·84	13·1	5·23	7·7	26·92	34·7	46·07	85·1
		1896	·49	2·0	2·05	5·0	6·11	13·0	5·97	7·0	15·62	27·0	2·97	5·0	32·75	19·0	17·21	10·0	52·93	34·0	68·68	62·0
		1897	·21	3·0	2·37	4·0	7·83	11·0	11·01	13·0	24·42	31·0	3·56	3·0	7·50	7·0	1·69	5·0	12·75	15·0	38·47	51·0
		1898	·09	5·0	3·40	10·0	7·15	9·0	8·20	9·0	20·84	33·0	16·31	17·0	19·79	14·0	10·06	6·0	46·16	37·0	68·14	72·0
7	Chingleput.	Average of 10 years	·12	5·0	4·32	7·4	5·87	8·9	4·90	7·1	18·21	28·4	9·54	9·9	8·82	9·1	4·51	4·8	22·87	23·8	43·67	56·0
		1896	·50	1·4	1·76	4·2	6·39	10·5	4·96	7·1	13·61	23·2	2·28	4·4	25·33	17·2	13·35	8·8	40·96	30·4	54·81	54·4
		1897	·57	2·9	3·02	5·0	6·80	9·8	9·90	10·9	21·29	28·6	2·57	2·8	5·37	6·3	1·69	3·3	9·63	12·4	33·20	45·2
		1898	·22	4·2	3·91	7·6	4·86	8·0	7·11	8·3	18·10	28·1	17·80	14·9	19·57	13·8	9·02	5·9	46·39	34·6	65·29	64·5
8	North Arcot.	Average of 10 years	·33	5·2	3·77	6·1	4·79	7·3	5·56	7·0	17·45	25·6	7·70	9·2	5·26	6·2	2·98	3·3	15·94	18·7	36·94	49·9
		1896	·82	3·2	1·68	2·6	4·25	7·9	7·53	9·2	15·28	22·9	1·32	3·1	10·23	11·2	3·84	6·7	15·39	21·0	33·60	48·2
		1897	·96	3·6	2·96	6·0	7·59	10·0	10·42	13·8	22·93	33·4	3·69	4·2	2·17	3·7	0·34	0·9	6·20	8·8	33·11	49·9
		1898	·55	2·7	2·17	5·2	4·88	6·6	9·48	9·3	18·08	23·8	5·90	10·3	14·79	13·1	4·85	4·5	25·54	27·9	47·14	57·3
9	South Arcot.	Average of 10 years	·33	4·1	3·74	5·8	5·98	8·5	5·53	6·9	17·58	25·3	9·33	10·0	7·48	8·9	5·09	4·9	21·90	23·8	43·91	55·0
		1896	·21	2·7	0·68	2·0	2·99	5·9	7·21	8·3	12·09	18·9	3·18	5·2	14·22	13·9	10·46	9·8	27·86	28·9	41·01	50·0
		1897	·32	2·9	2·34	4·7	9·33	12·2	8·21	10·7	22·20	30·5	5·14	5·3	3·87	5·2	1·24	3·1	10·25	13·6	37·32	51·2
		1898	·81	3·8	2·57	4·8	6·01	8·6	10·68	10·6	21·07	27·8	9·83	11·7	24·21	14·9	10·69	6·4	44·73	33·0	68·82	65·7
10	Trichinopoly.	Average of 10 years	·60	2·7	2·06	3·2	4·69	6·6	4·10	6·4	12·45	18·9	8·01	10·8	4·46	7·6	2·84	4·5	15·31	22·9	33·79	50·3
		1896	·29	2·3	0·54	0·7	1·69	3·5	7·13	7·5	10·65	14·0	6·43	8·8	9·55	11·8	5·23	8·2	21·21	28·8	34·81	48·0
		1897	·31	3·8	0·89	1·3	5·35	7·8	13·02	12·9	21·57	25·8	4·39	4·5	3·01	5·2	0·39	1·3	7·79	11·0	37·95	45·4
		1898	·27	0·7	0·68	1·4	4·70	6·4	5·54	9·0	11·19	17·5	5·90	10·5	12·55	13·6	7·39	8·6	25·84	32·7	42·81	59·0
11	Tanjore ...	Average of 10 years	·91	3·2	2·97	4·8	5·08	7·5	4·25	5·9	14·21	21·4	9·21	11·3	9·61	10·8	7·49	7·7	26·31	29·8	45·88	58·7
		1896	·24	1·7	1·28	2·8	1·94	4·7	3·51	5·3	7·97	14·5	6·63	9·2	15·47	14·2	14·51	14·9	36·61	38·3	45·76	55·1
		1897	·09	2·0	0·97	1·9	5·46	8·0	8·00	9·7	15·52	21·6	3·34	4·1	3·04	4·9	4·04	5·1	10·42	14·1	32·63	43·6
		1898	·95	2·1	1·37	3·2	5·05	6·1	5·83	8·0	13·20	19·4	10·43	13·5	18·92	14·7	12·35	10·8	41·70	39·0	59·39	65·9
12	Madura ...	Average of 10 years	·45	2·9	1·49	3·0	2·71	4·9	2·53	4·6	8·18	15·4	8·28	10·5	5·03	7·5	3·00	4·2	16·31	22·2	31·20	48·7
		1896	·60	2·6	0·85	2·1	0·81	2·3	5·38	7·3	8·64	14·3	7·74	11·2	11·55	13·0	8·38	12·6	27·67	36·8	39·87	57·7
		1897	·28	3·0	0·70	1·8	3·67	6·8	6·85	8·3	12·50	19·9	3·14	4·7	4·56	5·6	0·89	2·5	8·59	12·8	29·55	43·8
		1898	·91	1·8	0·78	1·5	1·51	3·0	6·55	9·3	9·75	15·6	10·89	13·8	8·96	11·2	5·16	8·3	25·01	33·3	41·37	59·3
13	Tinnevelly ...	Average of 10 years	·69	2·0	0·53	1·6	0·84	1·9	0·98	2·3	3·04	7·8	7·40	10·0	5·72	8·5	3·48	4·8	16·60	23·3	26·58	42·9
		1896	·57	2·9	1·41	2·7	0·21	0·8	2·96	3·7	6·15	10·1	6·74	9·8	12·89	11·6	7·39	9·0	27·02	30·4	37·11	45·3
		1897	·77	4·0	0·57	1·8	1·72	3·2	2·33	4·7	6·39	13·7	3·65	5·0	5·12	6·3	0·82	1·9	9·59	13·2	24·74	39·3
		1898	·59	1·6	0·27	1·0	0·34	0·8	2·03	3·4	3·23	6·8	8·83	11·8	6·49	9·5	4·97	8·6	20·29	29·9	31·67	48·1

* The rainfall of this month should be classed with the north-east monsoon of the previous year; but the report deals with the calendar year, its inclusion under the "Inter-monsoon" period is unavoidable.

† Dr. Bellew.

Table showing the Monthly Rainfall in Inches in the Madras Presidency during 1896, 1897 *and* 189 *th the Average of previous ten years ending* 1895, *distributed according to Monsoon Currents*—cont.

Groups.	Number.	Districts.		Number of places of observation.	North-East Monsoon. January.* Rainfall.	Days.	Inter-Monsoon. † February. Rainfall.	Days.	March. Rainfall.	Days.	April. Rainfall.	Days.	May. Rainfall.	Days.	Total. Rainfall.	Days.
South-western.	14	Nilgiris ...	Average of 10 years	11	0·44	1·1	1·44	1·6	2·08	3·3	3·91	8·2	5·36	10·8	13·23	25·0
			1896		0·49	0·9	...	...	0·17	0·4	0·83	2·1	2·69	5·4	4·18	8·8
			1897		0·03	0·1	2·62	4·8	1·34	2·2	4·31	5·5	5·20	8·4	13·50	21·0
			1898		0·37	1·5	1·64	2·6	0·03	0·1	3·45	6·5	4·07	9·6	9·56	20·3
	15	South Canara.	Average of 10 years	9	0·02	0·1	0·10	0·2	0·16	0·4	2·03	3·9	5·99	8·4	8·30	13·
			1896		...	...	...	...	...	...	2·03	2·4	5·78	6·9	7·81	9·
			1897		...	...	0·06	0·1	...	...	1·85	3·0	3·77	5·1	5·68	8·
			1898		...	...	0·03	0·1	0·06	0·3	2·32	3·9	3·22	5·3	5·63	9·
	16	Malabar ...	Average of 10 years	16	0·06	0·1	0·29	0·6	1·08	1·9	4·54	7·2	8·15	10·4	14·12	20·2
			1896		0·32	0·4	...	...	0·26	0·6	2·52	3·8	7·49	9·0	10·59	13·8
			1897		0·03	...	1·31	2·1	0·09	0·1	3·94	5·5	6·16	7·0	11·53	14·7
			1898		...	...	0·24	0·4	0·16	0·2	3·32	4·5	6·06	8·1	9·78	13·2
South Midland.	17	Salem ...	Average of 10 years	22	0·09	0·2	0·32	0·6	0·50	0·9	1·54	3·0	3·81	6·2	6·26	10·3
			1896		0·09	0·3	...	...	0·05	0·2	0·02	0·1	2·91	5·0	3·07	5·6
			1897		0·01	...	1·35	2·0	0·37	0·1	0·44	1·0	4·75	7·9	6·92	11·0
			1898		0·02	...	0·84	1·1	0·06	0·1	2·76	3·8	2·94	5·5	6·62	10·
	18	Coimbatore.	Average of 10 years	17	0·07	0·2	0·41	0·7	0·82	1·2	2·68	3·9	3·30	5·6	7·28	11·
			1896		0·14	0·2	...	...	0·05	0·1	0·26	0·6	2·52	4·5	2·97	5·
			1897		...	...	1·53	3·2	0·33	0·4	1·38	2·8	4·42	6·9	7·66	13·
			1898		0·05	0·2	0·76	1·2	0·03	0·2	2·40	3·2	3·31	5·9	6·55	10·
North Midland.	19	Kurnool ...	Average of 10 years	12	0·04	0·1	0·03	0·1	0·30	0·5	0·62	1·4	0·97	2·4	1·96	4·
			1896		...	...	...	...	0·05	0·1	0·45	1·0	1·07	2·4	1·57	3·
			1897		0·06	0·2	0·12	0·5	0·14	0·1	0·56	1·0	1·53	2·7	2·41	4·
			1898		...	...	0·32	0·6	0·09	0·1	1·27	1·9	0·88	1·8	2·56	4·
	20	Cuddapah ...	Average of 10 years	14	0·03	0·1	0·12	0·2	0·12	0·3	0·47	1·0	1·37	2·7	2·11	4·
			1896		0·92	0·7	...	...	0·07	0·1	0·23	0·5	1·67	2·8	2·89	4·
			1897		0·12	0·3	0·14	0·3	0·09	0·4	...	...	1·17	2·2	1·52	3·
			1898		...	...	0·01	0·1	...	...	1·83	1·7	1·31	1·9	3·15	3·
	21	Bellary ...	Average of 10 years	11	0·01	...	0·08	0·1	0·28	0·5	0·89	2·1	1·73	3·4	2·99	6·
			1896		0·02	0·1	...	...	...	...	0·04	0·5	2·06	3·5	2·12	4·
			1897		...	...	0·01	...	0·06	0·1	0·98	2·2	1·88	3·7	2·93	6·
			1898		...	...	0·01	0·1	0·06	0·3	1·85	2·7	2·08	3·5	4·00	6
	22	Anantapur..	Average of 10 years	11	...	...	0·02	0·1	0·12	0·3	0·91	1·7	1·53	3·0	2·58	5
			1896		...	...	...	...	...	...	0·26	0·6	2·49	3·7	2·75	4
			1897		0·01	...	0·09	0·4	0·03	0·1	0·39	1·1	1·25	2·3	1·77	3
			1898		...	...	0·11	0·4	...	...	1·04	1·8	1·58	3·2	2·73	5
		Total ...	Average of 10 years	364	0·20	0·4	0·33	0·6	0·64	1·0	1·39	2·4	2·58	4·2	5·14	8
			1896		0·19	0·4	...	...	0·20	0·3	0·44	0·7	2·07	3·3	2·90	4
			1897		0·15	0·3	1·33	1·8	0·50	0·7	1·17	2·0	2·45	3·7	5·60	8
			1898		0·25	0·5	0·65	0·9	0·04	0·1	1·47	2·2	2·14	3·6	4·55	7

Groups.	Number.	Districts.		South-West Monsoon. June. Rainfall.	Days.	July. Rainfall.	Days.	August. Rainfall.	Days.	September. Rainfall.	Days.	Total. Rainfall.	Days.	North-East Monsoon. October. Rainfall.	Days.	November. Rainfall.	Days.	December. Rainfall.	Days.	Total. Rainfall.	Days.	Grand Total. Rainfall.	Days.
South-western.	14	Nilgiris ...	Average of 10 years	·80	15·3	13·04	17·6	8·77	14·9	6·25	12·5	37·86	60·3	10·17	15·9	5·04	9·2	2·27	4·0	17·48	29·1	68·57	114·4
			1896	·59	19·3	19·06	15·8	10·64	16·0	10·59	15·0	60·88	66·1	5·96	8·7	7·97	10·0	6·48	9·2	20·41	27·9	85·47	102·8
			1897	·70	14·6	11·50	14·0	18·05	16·9	10·38	15·3	53·63	60·8	5·48	9·1	2·87	5·6	1·27	2·4	9·62	17·1	76·75	98·9
			1898	·78	11·8	12·95	15·0	5·57	9·9	12·29	18·1	38·59	54·8	12·26	19·9	8·19	12·1	1·72	3·4	22·17	35·4	70·32	110·5
	15	South Canara.	Average of 10 years	·45	25·7	46·01	29·6	26·36	26·9	10·06	17·2	122·88	99·4	10·59	13·3	3·04	4·6	0·24	0·5	13·87	18·4	145·05	130·8
			1896	·96	26·3	41·17	29·7	47·18	29·3	6·20	10·0	141·51	95·3	5·23	7·2	3·47	5·9	0·46	0·9	9·16	14·0	158·48	118·6
			1897	·71	20·5	63·25	29·4	36·22	28·9	21·00	19·9	166·18	98·7	8·68	9·2	0·57	0·7	...	...	9·25	9·9	181·11	116·8
			1898	·79	25·3	48·94	30·6	18·55	22·4	20·14	22·2	132·42	100·5	12·07	16·6	5·04	7·2	0·23	0·3	17·34	24·1	155·39	134·2
	16	Malabar ...	Average of 10 years	·87	25·1	29·55	24·7	14·69	21·0	6·40	12·6	82·51	83·4	9·90	13·5	3·79	5·9	0·57	1·0	14·26	20·4	110·89	124·0
			1896	·22	25·9	36·82	27·9	26·04	24·9	3·50	7·5	112·58	86·2	6·73	9·0	4·40	6·7	1·42	2·8	12·55	18·5	135·72	118·5
			1897	·84	20·5	40·63	25·6	32·26	23·6	10·22	13·7	126·95	83·4	8·37	10·4	2·19	4·0	0·25	0·3	10·81	14·7	149·29	112·8
			1898	·47	22·7	32·29	27·6	6·40	14·1	9·51	17·2	79·67	81·6	11·98	14·6	6·92	8·8	0·48	1·2	19·38	24·6	108·83	119·4
South Midland.	17	Salem ...	Average of 10 years	·22	5·3	3·12	5·8	5·01	7·8	4·90	7·3	18·25	26·2	6·20	9·4	3·32	5·7	0·87	2·4	10·39	17·5	34·90	54·6
			1896	·82	4·9	0·69	2·1	2·64	7·1	9·97	11·0	16·12	25·1	4·16	5·5	4·49	7·7	2·36	4·4	11·01	17·6	30·20	48·3
			1897	·01	3·4	1·99	4·0	6·99	9·4	12·34	13·8	13·33	30·6	4·77	5·1	1·73	3·1	0·36	0·9	6·86	9·1	37·11	50·7
			1898	·14	2·7	0·95	2·2	3·65	5·2	9·23	12·4	14·97	22·5	5·42	9·9	12·01	11·8	2·40	3·3	19·83	25·0	41·42	58·0
	18	Coimbatore.	Average of 10 years	·71	3·8	1·30	3·4	2·32	4·8	2·32	4·6	7·65	16·6	6·17	9·0	3·19	5·4	0·93	2·2	10·29	16·6	25·22	44·8
			1896	·47	6·2	1·11	2·9	1·02	3·2	5·61	7·8	11·21	20·1	5·03	7·8	4·92	7·7	3·38	6·0	13·33	21·5	27·51	47·0
			1897	·91	3·9	0·98	2·6	4·36	5·6	6·09	7·8	13·34	19·9	3·31	5·2	3·97	5·5	0·16	0·6	7·44	11·3	28·44	44·5
			1898	·85	2·6	0·71	1·8	1·63	2·9	7·39	10·8	10·58	18·1	7·97	11·8	6·54	9·4	1·26	3·1	15·77	24·3	32·90	53·1
North Midland.	19	Kurnool ...	Average of 10 years	3·42	6·3	4·71	9·1	5·83	9·4	5·48	8·5	19·44	33·3	5·91	6·7	1·52	3·2	0·13	0·5	7·56	10·4	26·96	48·2
			1896	2·16	4·6	2·56	5·7	4·56	9·2	2·57	4·8	11·85	24·3	0·17	0·5	2·10	4·3	...	...	2·27	4·8	15·69	32·6
			1897	·79	5·1	3·88	7·8	4·45	6·8	9·03	13·6	20·15	33·3	2·38	3·8	0·06	0·2	...	...	2·44	4·0	25·00	41·8
			1898	·06	4·8	4·49	9·2	2·12	5·7	9·83	12·8	19·50	32·5	1·31	3·3	2·38	3·9	...	...	3·69	7·2	25·75	44·1
	20	Cuddapah ...	Average of 10 years	·36	4·6	3·37	6·4	4·92	7·7	5·07	8·0	15·72	26·7	6·46	8·5	3·37	5·0	1·11	2·0	10·94	15·5	28·77	46·5
			1896	·53	3·1	1·65	4·1	3·70	7·0	2·93	5·6	9·81	19·8	0·40	1·3	5·10	8·1	0·60	1·8	6·10	11·2	18·80	35·1
			1897	·84	5·0	2·08	4·0	6·95	8·1	7·58	14·2	18·45	31·3	2·28	2·9	1·31	2·6	0·44	0·6	4·03	6·1	24·00	40·6
			1898	·03	2·4	1·70	4·8	2·56	4·4	6·03	9·6	11·32	21·2	2·45	5·4	6·19	8·4	2·37	2·0	11·01	15·8	25·48	40·7
	21	Bellary ...	Average of 10 years	·83	5·6	2·63	7·3	3·94	7·5	4·74	8·1	14·14	28·5	4·46	7·0	1·94	3·4	0·12	0·3	6·52	10·7	23·65	45·3
			1896	·88	5·1	2·92	6·4	3·38	6·5	1·32	2·6	9·50	20·6	0·45	1·2	1·64	2·2	...	...	2·09	3·4	13·71	28·1
			1897	·97	5·9	1·51	4·1	3·05	5·4	14·46	14·7	23·99	30·1	2·64	4·3	0·10	0·3	...	...	2·74	4·6	29·66	40·7
			1898	·77	4·5	2·73	7·4	1·78	4·8	8·31	11·1	14·59	27·8	2·30	5·3	2·01	4·4	0·09	0·4	4·40	10·1	22·99	44·5
	22	Anantapur..	Average of 10 years	·47	4·3	2·73	5·8	5·58	8·7	4·88	6·6	15·66	25·4	5·01	6·9	2·07	3·3	0·28	0·7	7·36	10·9	25·60	41·4
			1896	·69	4·5	1·31	4·0	2·20	4·9	2·52	3·7	8·72	17·1	0·43	1·5	2·47	3·1	0·12	0·2	3·02	4·8	14·49	26·2
			1897	·49	5·5	1·51	2·8	3·65	5·7	12·30	15·9	20·95	29·9	2·66	4·0	0·14	0·4	0·18	0·4	2·98	4·8	25·70	38·6
			1898	·84	2·5	0·84	3·0	1·09	3·5	7·51	9·5	11·28	18·5	1·08	3·7	3·28	5·4	0·38	1·1	4·74	10·2	18·75	34·1
		Total ...	Average of 10 years	6·43	7·5	7·44	9·3	6·69	10·0	5·28	8·3	25·84	35·1	8·10	10·0	4·80	6·4	2·04	2·7	14·94	19·1	45·92	62·8
			1896	7·32	6·9	6·77	7·7	7·49	9·7	5·27	7·5	26·85	31·8	3·08	4·7	8·68	8·5	4·43	4·9	16·19	18·1	45·94	54·6
			1897	6·83	5·6	7·74	8·0	9·41	11·0	10·37	13·0	34·35	37·6	4·91	5·5	2·63	3·6	0·65	1·4	8·19	10·5	48·14	56·6
			1898	5·93	6·2	7·30	8·6	4·51	7·4	7·96	10·6	25·70	32·8	8·13	10·4	9·45	9·1	3·49	3·5	21·07	23·0	51·32	63·1

* The rainfall of this month should be classed with the north-east monsoon of the previous year; the report deals with the calendar year, its inclusion under the "Inter-monsoon" period is unavoidable.

† Dr. Bellew.

PRICE OF FOOD.

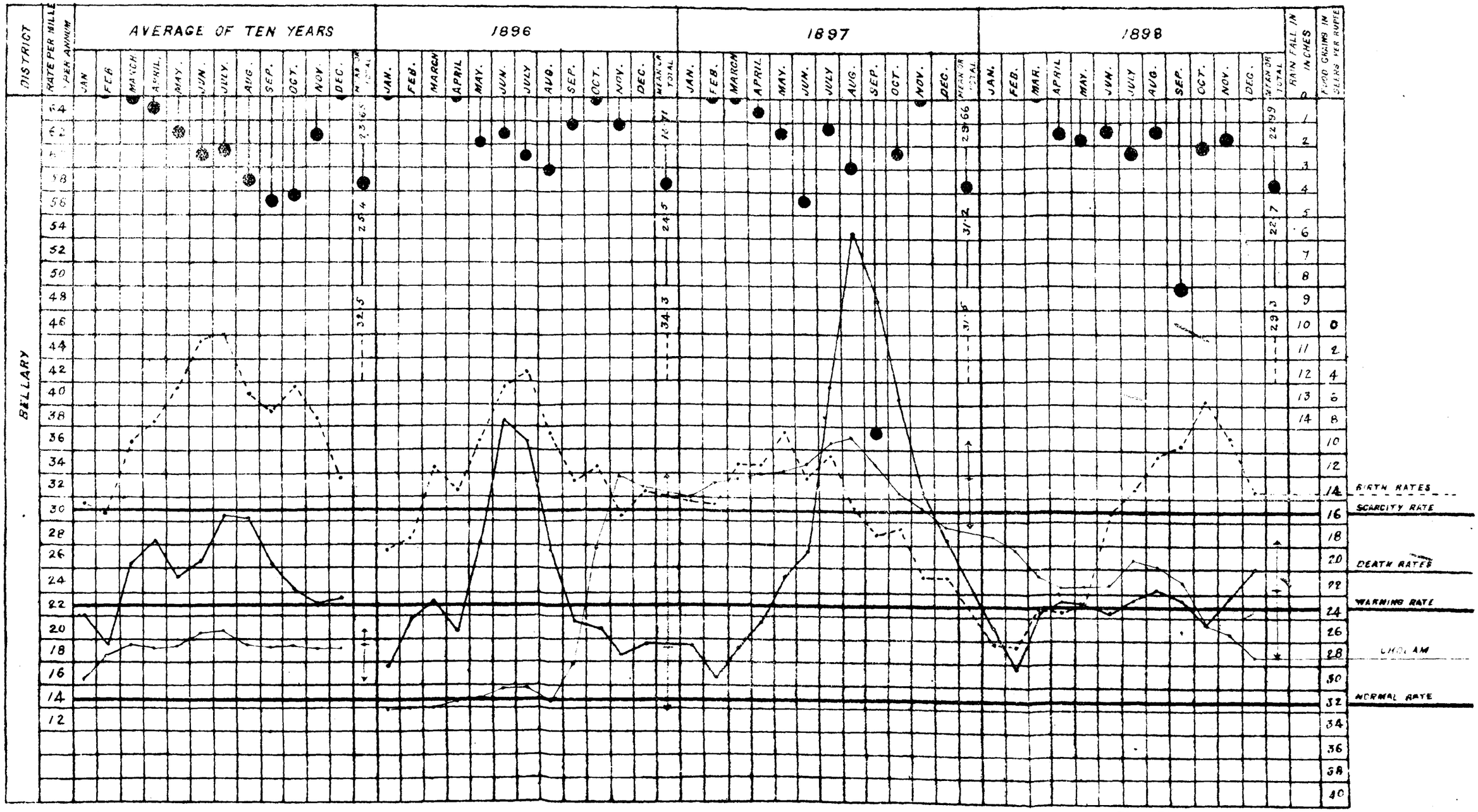
2. The conditions noted in the last report as influencing the price of food, which expressed themselves to an extent to produce a state of famine in the Ceded districts and the Northern Circars, continued to exhibit their effects during the year 1898. By the end of October 1897, Government had completed the closing of all relief works in the districts just referred to; but it was found necessary to offer facilities for relief, in the form of labour, in the district of Nellore in 1898, up to the month of October. The high prices prevailing throughout the Presidency in 1897 were accentuated in parts of this district during this period, owing to failure of crops, following the scanty north-east monsoon of 1897 and south-west monsoon of 1898. For three months, the staple grain (ragi) was more than 100 per cent. above the normal price, and therefore was above "scarcity rates," and, for nine months, above "warning rates." Indeed, so far as the "warning rate" is concerned (implying an increase above normal price of 33·3 per cent.), the price of staple grains was above this rate in all districts in the Presidency throughout the year, except in December, when it fell below it in thirteen districts. Taking the average for the whole Presidency, cholam was very slightly cheaper (1·6 seers) when compared with 1897, whilst ragi had the same average price. This cheapening of cholam must be regarded as due to the reaping of crops, and consequent tendency to recoupment of stocks in the districts which happened to be the chief scene of scarcity, and which are the great cholam producers and consumers of the Presidency; whilst the absence of fall of ragi indicates that stocks had not yet been fully replenished, following the unusual depletion which must have taken place, in response to the abnormal demand for it during the famine, in districts where the staple grain cholam had failed. The persistence with which prices have kept up, to an appreciable extent, must have been brought about by the unwillingness of ryots to part with their grain. The late famine and the introduction of plague have been regarded as mere forerunners of much heavier disasters, which it has been prophesied will occur during the last year of a cycle of the Kali Yuga—the "Vikari" (evil) year 1899–1900. But, whilst these factors may account for the prices not falling, with the rapidity that might reasonably be expected in the presence of favourable monsoons, it does not account for the persistence in high prices of food-grains which has been evident since 1883. The following table illustrates this fact:—

Years.	Prices of food-grains.		
	Rice.	Cholam.	Ragi.
1875	16·4	26·9	28·8
1876	13·4	22·3	*22·7
1877	8·1	10·5	*10·7
1878	8·6	12·8	*13·2
1879	11·5	17·6	19·0
1880	14·7	26·0	26·2
1881	15·9	31·3	31·6
1882	16·2	31·9	32·3
1883	16·1	32·2	32·6
1884	15·1	28·8	30·1
1885	13·4	22·9	25·3
1886	14·5	26·4	28·0
1887	15·5	28·0	29·9
1888	15·3	27·5	29·4
1889	13·6	24·6	27·8
1890	12·7	21·6	26·2
1891	11·8	21·1	22·4
1892	10·2	16·0	17·4
1893	11·2	18·2	20·3
1894	12·5	21·3	23·5
1895	12·8	2 ·5	26·5
1896	12·7	22·6	25·8
1897	9·9	14·5	17·2
1898	10·1	16·1	17·2

* Famine years.

Diagram showing the Birth and Death Rates per Mille per annum in the District of Bellary with Rainfall and price of food (CHOLAM) during the year 1898 Compared with 1897 and 1896 and the average of the ten years ending 1895.

Census population of 1891 = 900,126 ✻ Area = 5,975 Sqr. Miles ✻ Pasture & Agriculture 66·08 per cent ✻ Indefinite occupations 7·90 per cent



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1876	13·4	22·3	*22·7
1877	8·1	10·5	*10·7
1878	8·6	12·8	*13·2
1879	11·5	17·6	19·0
1880	14·7	26·0	26·2
1881	15·9	31·3	31·6
1882	16·2	31·9	32·3
1883	16·1	32·2	32·6
1884	15·1	28·8	30·1
1885	13·4	22·9	25·3
1886	14·5	26·4	28·0
1887	15·5	28·0	29·9
1888	15·3	27·5	29·4
1889	13·6	24·6	27·8
1890	12·7	21·6	26·2
1891	11·8	21·1	22·4
1892	10·2	16·0	17·4
1893	11·2	18·2	20·3
1894	12·5	21·3	23·5
1895	12·8	2 ·5	26·5
1896	12·7	22·6	25·8
1897	9·9	14·5	17·2
1898	10·1	16·1	17·2

* Famine years.

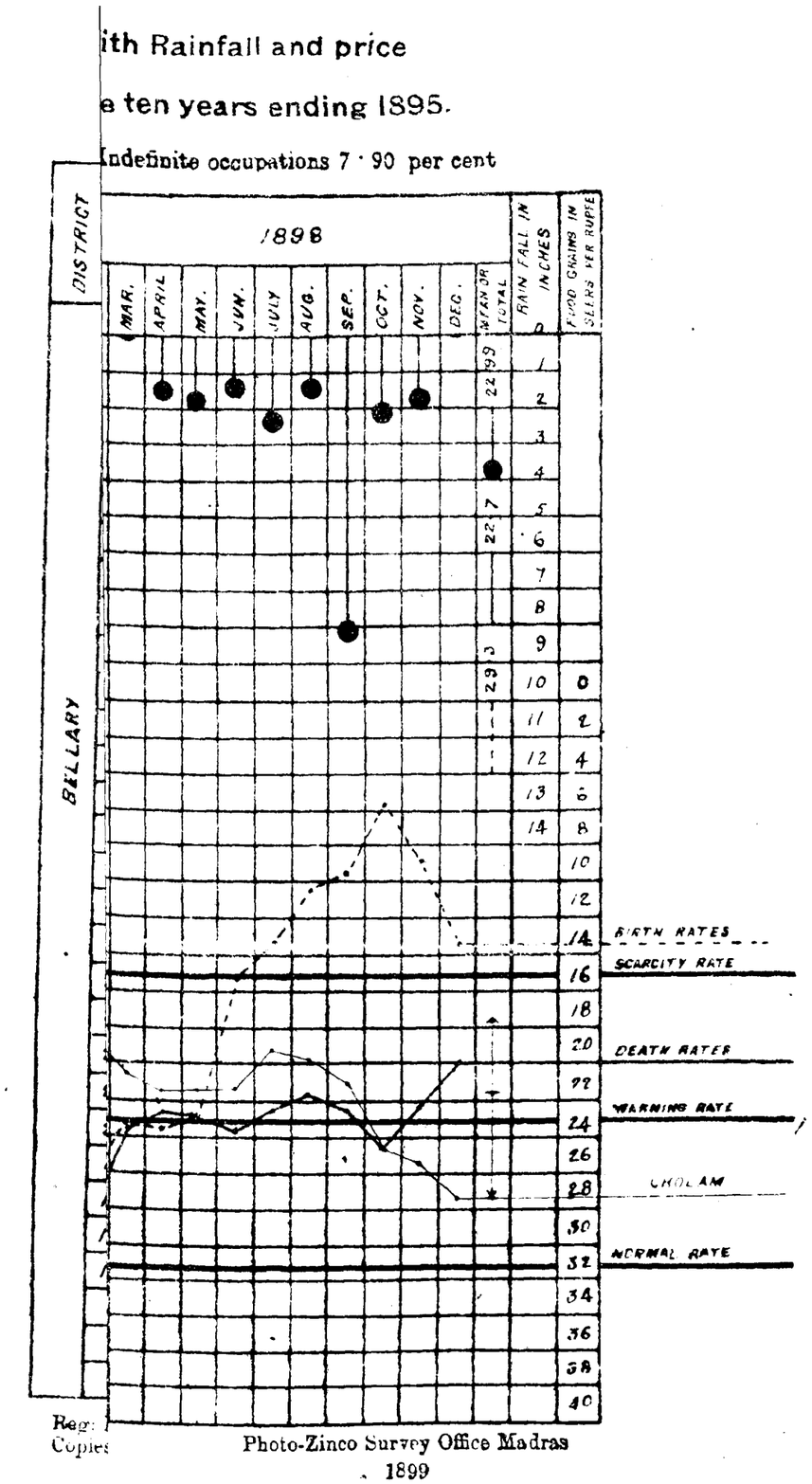

Photo-Zinco Survey Office Madras
1899

h Rainfall and price

years ending 1895.

Indefinite occupations 7 · 38 per cent

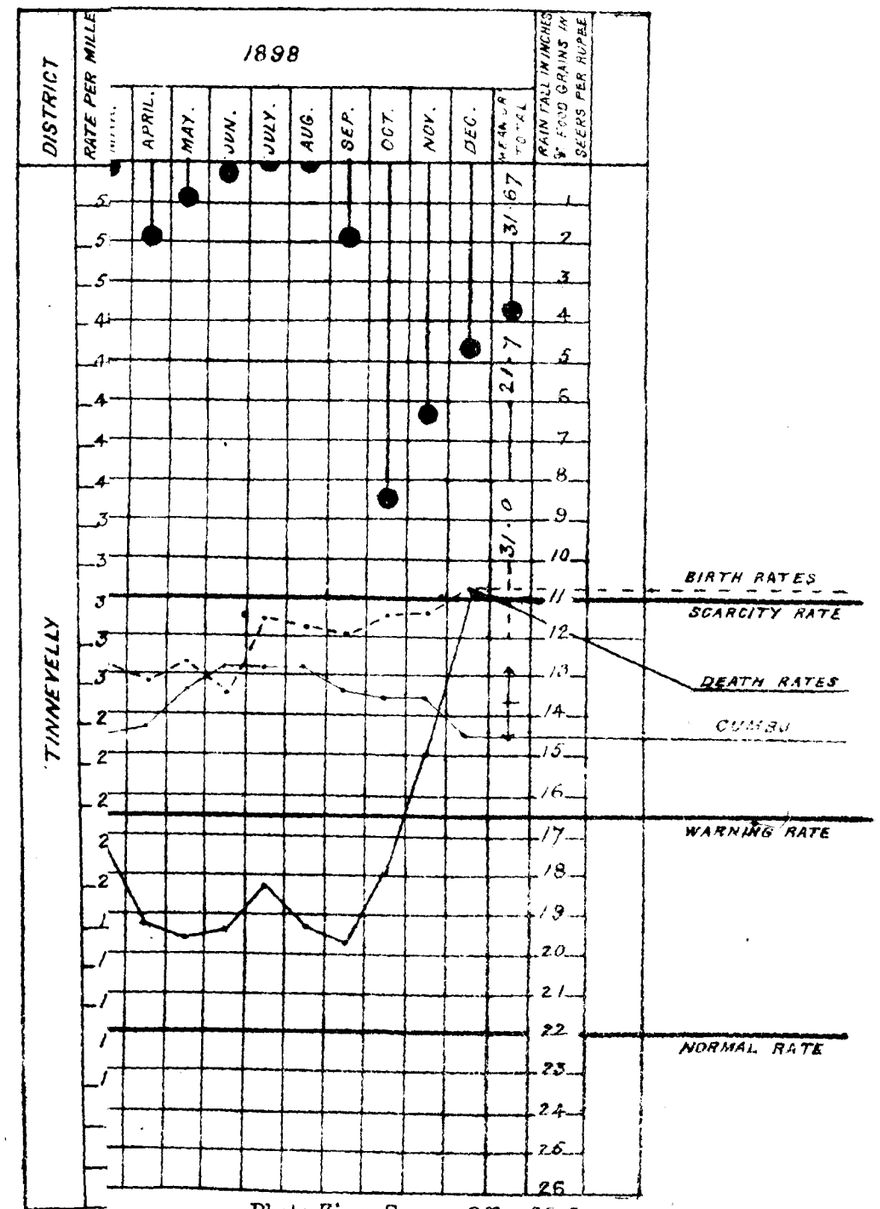

Photo-Zinco Survey Office Madras
1899

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3. It would go beyond the scope of this report to enter into the various factors which have brought about this rise in the price of food-grains; but, whilst it is probable that certain sections of the community have been affected adversely by it, or rather have been left *in statu quo* during the changes which have taken place around them, the chances are that for the majority it implies a wave of prosperity, that will, in due time, bear with it in its advance the temporarily suffering minority. Some little time must necessarily elapse before complete adjustment occurs to suit altered conditions. Such at least is the impression conveyed by a rough examination of the subject—disclosing a decided tendency to increase of wages of the lower classes, no diminution of the area under cultivation, a cycle of seasons not markedly abnormal, no excessive emigration (and this confined to localities where wages are good and the stay of the emigrant is but for a brief period), great increase of capabilities of interchange of products by rail and sea, the gradual accession of manufactories of raw products, and increasing exports of seeds and grains.

4. The annexed table demonstrates how far the prices of food-grains can be connected with the birth and death rates of two districts—one selected as representing a fair state of prosperity, the other as being known to have been recently under the influences of high prices:—

A.

Comparative Statement showing the Mortuary and Meteorological Statistics for the undermentioned two selected Districts of the Presidency, together with the prices current of the chief Food-grains sold at the Head-Quarter stations of each Collectorate for 1898 *and five years preceding it, as required by the Government of India*—vide *G.O., No.* 1239-*L., dated* 25*th May* 1892.

Districts.	Years.	Population.	Total deaths.	Deaths from				Temperature of air in shade.			Mean humidity.	Wind.		Rainfall in inches.	Average quantity in seers per rupee of the chief food-grains in general use in the districts.			
				Cholera.	Small-pox.	Fevers.	Dysentery and Diarrhœa.	Maximum.	Minimum.	Mean.		Prevailing direction.	Mean velocity in miles per diem.		Rice, second sort.	Cholam.	Cumbu.	Ragi.
Tinnevelly.	1898	1,915,702	41,610	3,224	149	5,013	1,228	95·1	76·7	85·9	68	N., W., N.-W. ...	142	31·67	10·0	14·4	13·9	...
	1897	,,	48,309	7,971	118	7,597	1,767	94·6	77·4	86·0	70	Do. ...	122	24·74	10·3	14·9	13·9	...
	1896	,,	41,597	2,260	54	7,088	1,191	93·8	76·6	85·3	71	N., S. W., W., N.-W. ...	142	37·11	12·5	19·5	16·4	...
	1895	,,	47,948	4,649	126	8,754	1,608	94·5	76·5	85·5	70	N., W., N.-W. ...	151	30·46	11·1	16·4	14·8	...
	1894	,,	51,585	7,084	451	8,731	1,947	94·6	76·8	85·7	67	Do. ...	163	19·86	11·3	17·3	15·6	...
	1893	,,	40,572	1,392	918	6,483	947	93·5	76·2	85·0	69	Do. ...	163	26·70	10·4	16·2	13·3	...
Bellary.	1898	890,485	20,237	161	450	7,376	1,681	93·5	71·4	82·5	54	Calm; W.; N.-W. ...	166	22·99	9·6	22·6	...	...
	1897	,,	27,802	3,135	401	11,703	1,783	94·7	72·2	83·4	52	Do. ...	122	29·66	8·37	11·81	...	...
	1896	,,	21,841	4,205	284	7,432	613	94·8	71·6	83·2	54	Do. ...	156	13·71	10·46	27·07	...	...
	1895	,,	18,810	1,778	529	7,255	616	91·9	69·6	80·3	62	Calm; S.-E., W., N.-W.	144	26·98	10·84	29·80	...	...
	1894	,,	21,384	53	702	10,375	581	92·6	70·5	81·8	64	Do. ...	166	22·26	10·92	23·70	...	...
	1893	,,	20,141	2	1,027	9,572	694	90·7	69·8	80·2	76	Calm; S.-E.; S.-W.; W.; N-W.	149	30·57	10·50	21·89	...	...

Statement showing the influence of Prices of Food upon the birth and death rates in each district in the Madras Presidency.

Districts.	Years.	Rainfall.			Prices of food-grains.												Ratio per mille of population.		Ratio per mille of population.			
									Rice.		Cholum.		Ragi.		Cumbu.				Birth.		Death.	
		Quantity in inches.	Increase.	Decrease.	Rice.	Cholum.	Ragi.	Cumbu.	Increase.	Decrease.	Increase.	Decrease.	Increase.	Decrease.	Increase.	Decrease.	Birth.	Death.	Increase.	Decrease.	Increase.	Decrease.
Anantapur ...	Average.	25·60	6·85	...	13·4	27·3	30·2	...	3·1	...	8·4	...	10·5	...	...	...	31·8	21·5	7·0	...	2·1	...
	1896 ...	14·49	...	4·26	11·5	26·7	29·1	...	1·2	..	7·8	...	9·4	...	...	...	29·1	19·4	4·3	...	...	...
	1897 ...	25·70	6·95	...	9·1	13·3	16·6	...	...	1·2	...	5·6	...	3·1	...	...	27·7	26·9	2·9	...	7·5	...
	1898 ...	18·75	...	...	10·3	18·9	19·7	...	...	...	...	...	...	...	...	...	24·8	19·4	...	...	...	...
					Warning rate. 22·5																	
Bellary	Average.	23·65	0·66	...	12·1	27·0	32·1	...	2·6	...	5·4	...	8·6	...	...	...	38·9	25·4	9·6	...	2·7	...
	1896 ...	13·71	...	9·28	10·8	27·0	33·2	...	1·3	...	5·4	...	9·7	...	...	...	34·3	24·5	5·0	...	1·8	..
	1897 ...	29·66	6·67	...	8·6	12·7	15·6	...	...	0·9	...	8·9	...	7·9	...	...	31·5	31·2	2·2	...	8·5	...
	1898 ...	22·99	...	...	9·5	21·6	23·5	...	...	...	...	...	...	...	...	...	29·3	22·7	...	...	...	...
					Warning rate. 22·5																	
Chingleput ...	Average.	43·67	...	21·62	13·5	...	22·7	...	4·2	...	...	...	8·1	...	...	...	37·0	24·4	1·3	...	0·1	...
	1896 ...	54·81	...	10·48	13·1	...	21·0	...	3·8	...	...	...	6·4	...	...	...	39·5	23·8	3·8	...	...	0·5
	1897 ...	33·20	...	32·09	10·7	...	15·5	...	1·4	...	...	...	0·9	...	...	...	37·1	23·2	1·4	...	...	1·1
	1898 ...	65·29	...	...	9·3	...	14·6	...	...	...	...	...	...	...	...	...	35·7	24·3	...	...	...	...
				Warning rate.	11·2																	
Coimbatore ...	Average.	25·22	...	7·68	12·4	20·4	24·8	24·7	2·5	...	5·3	...	6·9	...	7·1	...	30·4	18·6	3·1	...	0·1	...
	1896 ...	27·51	...	5·39	12·0	20·9	25·3	24·4	2·1	...	5·8	...	7·4	...	6·8	...	27·8	24·2	0·5	...	5·7	...
	1897 ...	28·44	...	4·46	10·5	16·0	19·6	18·9	0·6	...	0·9	...	1·7	...	1·3	...	26·9	20·1	...	0·4	1·6	...
	1898 ...	32·90	...	...	9·9	15·1	17·9	17·6	...	...	...	...	...	...	...	...	27·3	18·5	...	...	...	...
							Warning rate.	19·5														
Cuddapah ...	Average.	28·77	3·29	...	13·3	25·1	27·9	...	3·6	...	7·9	...	9·9	...	...	...	27·6	22·6	4·3	...	3·8	...
	1896 ...	18·80	...	6·68	11·8	23·7	26·9	...	2·1	...	6·5	...	8·9	...	...	...	30·1	19·5	6·8	...	0·7	...
	1897 ...	24·00	...	1·48	8·6	13·5	16·6	...	...	1·1	...	3·7	...	1·4	...	...	28·2	25·9	4·9	...	7·1	...
	1898 ...	25·48	...	...	9·7	17·2	18·0	...	...	...	...	...	...	...	...	...	23·3	18·8	...	...	...	...
					Warning rate. 22·5																	
Ganjám	Average.	49·41	3·62	...	15·3	...	27·1	...	2·5	..	...	...	10·4	...	...	...	19·3	17·6	...	3·6	...	5·1
	1896 ...	33·44	...	12·35	16·5	...	27·2	...	3·7	...	..	...	10·5	...	...	...	26·6	20·6	3·7	...	...	2·1
	1897 ...	56·79	11·00	...	9·7	...	13·3	...	...	3·1	...	...	...	3·4	...	...	23·9	50·1	1·0	...	27·4	...
	1898 ...	45·79	...	...	12·8	...	16·7	...	...	...	...	...	...	...	...	...	22·9	22·7	...	...	...	...
				Warning rate.	13·6																	

Statement showing the influence of Prices of Food upon the birth and death rates in each district in the Madras Presidency—cont.

Districts.	Years.	Rainfall.			Prices of food-grains.												Ratio per mille of population.		Ratio per mille of population.			
									Rice.		Cholum.		Ragi.		Cumbu.				Birth.		Death.	
		Quantity in inches.	Increase.	Decrease.	Rice.	Cholum.	Ragi.	Cumbu.	Increase.	Decrease.	Increase.	Decrease.	Increase.	Decrease.	Increase.	Decrease.	Birth.	Death.	Increase.	Decrease.	Increase.	Decrease.
Gódávari ...	Average.	42·83	...	1·16	14·2	24·1	25·7	...	3·5	...	7·1	...	8·9	...	...	...	22·3	20·3	...	3·9	3·6	...
	1896 ...	25·10	...	18·89	12·9	21·9	24·8	...	2·2	...	4·9	...	8·0	...	...	...	25·8	17·1	...	0·4	0·4	...
	1897 ...	47·15	3·16	...	9·4	14·0	13·7	...	...	1·3	...	3·0	...	3·1	...	...	25·4	22·8	...	0·8	6·1	...
	1898 ...	43·99	...	...	10·7	17·0	16·8	...	...	...	...	...	...	...	...	...	26·2	16·7	...	...	...	...
				Warning rate.	12·8																	
Kistna	Average.	35·25	2·97	...	13·9	20·6	26·0	...	3·3	...	5·2	...	8·9	...	...	...	33·4	22·1	...	0·8	...	1·0
	1896 ...	25·82	...	6·46	12·9	20·6	24·7	...	2·3	...	5·2	...	7·6	...	...	...	33·9	19·3	...	0·3	...	3·8
	1897 ...	32·31	0·03	...	9·7	13·7	15·0	...	...	0·9	...	1·7	...	2·1	...	...	34·9	22·0	0·7	...	...	1·1
	1898 ...	32·28	...	...	10·6	15·4	17·1	...	...	...	...	...	...	...	...	...	34·2	23·1	...	...	...	...
				Warning rate.	12·3																	
Kurnool	Average.	28·96	3·21	...	12·4	25·6	26·1	...	2·5	...	5·6	...	7·2	...	...	...	36·1	27·8	10·3	...	7·1	...
	1896 ...	15·69	...	10·06	11·8	25·2	25·1	...	1·9	...	5·2	...	6·2	...	...	...	30·9	23·1	5·1	...	2·4	...
	1897 ...	25·00	...	0·75	8·7	12·7	14·9	...	...	1·2	...	7·3	...	4·0	...	...	28·0	28·8	2·2	...	8·1	...
	1898 ...	25·75	...	...	9·9	20·0	18·9	...	...	...	...	...	...	...	...	...	25·8	20·7	...	...	...	...
				Warning rate.	22·5																	
Madras	Average.	46·07	...	22·07	11·7	18·7	22·9	...	2·8	...	6·4	...	7·5	...	...	...	40·2	41·5	...	1·3	...	3·7
	1896 ...	68·68	0·54	...	10·7	18·6	21·2	...	1·8	...	6·3	...	5·8	...	...	...	41·5	38·2	...	...	...	7·0
	1897 ...	38·47	...	29·67	9·7	12·2	15·7	...	0·8	...	...	0·1	0·3	...	...	...	41·6	35·8	0·1	...	...	9·4
	1898 ...	68·14	...	...	8·9	12·3	15·4	...	...	...	...	...	...	...	...	...	41·5	45·2	...	...	...	...
				Warning rate.	9·6																	
Madura	Average.	31·20	...	10·17	12·4	23·3	23·5	...	2·6	...	7·8	...	7·8	...	...	...	31·8	20·6	9·1	...	5·0	...
	1896 ..	39·87	...	1·50	13·2	22·2	24·7	...	3·4	...	6·7	...	9·0	...	...	...	30·1	20·1	7·4	...	4·5	...
	1897 ..	29·55	...	11·82	11·2	17·6	19·8	...	1·4	...	2·1	...	4·1	...	...	...	28·0	23·7	5·3	...	8·1	...
	1898 ...	41·37	...	...	9·8	15·5	15·7	...	...	...	...	...	...	...	...	...	22·7	15·6	...	...	...	...
				Warning rate.	21·0																	
Malabar	Average.	110·89	2·06	...	12·4	...	23·5	...	2·3	...	...	...	3·2	...	...	...	23·7	18·0	5·1	...	0·5	..
	1896 ...	135·72	26·89	...	11·9	...	29·0	..	1·8	..	...	...	8·7	...	...	...	22·5	15·7	3·9	..	...	1·8
	1897 ..	149·29	40·46	...	9·4		19·4	...	...	0·7	...	...	...	0·9	...	...	20·8	30·2	2·2	...	12·7	...
	1898 ..	108·83	...	...	10·1	..	20·3	...	...	...	...	...	...	...	...		23·6	17·5	...	...	..	...
				Warning rate.	10·7																	
Nellore	Average.	32·64	...	5·59	13·3	22·6	25·3	...	3·9	...	8·6	...	10·6	...	...	...	25·6	16·7	1·6	...	...	8·0
	1896 ...	35·91	...	2·32	13·2	25·4	27·2	...	3·8	...	11·4	..	12·5	...	...	...	27·3	16·9	3·3	...	...	2·8
	1897 ...	26·34	...	11·89	10·5	15·1	17·2	...	1·1	...	1·1	.	2·5	...	...	...	28·3	19·5	4·3	...	...	0·2
	1898 ...	38·23	...	...	9·4	14·0	14·7	...	...	...	...	..	...	...	...	...	24·0	19·7	...	...	...	...
				Warning rate.	21·0																	
Nilgiris	Average.	68·57	...	1·75	10·6	...	20·5	...	2·9	...	...	...	6·1	...	...	...	23·3	20·8	...	4·4	...	10·1
	1896 ...	85·47	15·15	...	9·4	...	19·2	...	1·7	...	...	...	4·8	...	..	...	27·6	27·0	...	0·1	...	3·9
	1897 ...	76·75	6·43	..	8·2	...	15·3	...	0·5	...	...	...	0·9	...	...	...	30·7	25·5	3·0	...	...	5·4
	1898 ...	70·32	...	...	7·7	...	14·4	...	...	...	...	...	...	...	...	...	27·7	30·9	...	...	...	...
				Warning rate.	8·8																	
North Arcot ...	Average.	36·94	...	10·20	13·6	23·0	26·2	...	3·5	...	8·0	...	9·4	...	...	...	29·6	19·7	3·0	...	1·4	...
	1896 ...	33·60	...	13·54	12·8	21·7	25·1	...	2·7	...	6·7	...	8·2	...	...	...	28·7	17·9	2·1	...	...	0·4
	1897 ...	33·11	...	14·03	10·5	14·4	17·8	...	0·4	...	...	0·6	1·0	...	...	...	27·3	20·2	0·7	...	1·9	...
	1898 ...	47·14	...	...	10·1	15·0	16·8	...	...	...	...	...	...	...	...	...	26·6	18·3	...	...	...	...
				Warning rate.	24·0																	
Salem	Average.	34·90	...	6·52	13·1	22·7	26·8	...	3·4	...	7·9	...	9·8	...	...	...	34·2	20·2	2·4	...	...	0·2
	1896 ...	30·20	...	11·22	12·6	21·7	25·8	...	2·9	...	6·9	...	8·8	...	...	...	32·1	20·4	0·3	...	...	...
	1897 ...	37·11	...	4·31	10·6	16·1	19·5	...	0·9	...	1·3	...	2·5	...	...	...	33·2	19·3	1·4	...	...	1·1
	1898 ...	41·42	...	...	9·7	14·8	17·0	...	...	...	...	...	...	...	...	...	31·8	20·4	...	...	...	...
				Warning rate.	23·0																	
South Arcot ...	Average.	43·91	...	24·91	13·8	...	24·4	26·1	3·6	...	...	...	8·3	...	9·0	...	30·3	22·6	1·0	...	...	1·8
	1896 ...	41·01	...	27·81	14·8	...	27·2	28·2	4·6	...	...	...	11·1	...	11·1	...	32·8	22·5	3·5	...	...	1·9
	1897 ...	37·32	...	31·50	11·9	...	19·1	19·5	1·7	...	...	...	3·0	...	2·4	...	28·7	21·2	...	0·6	...	3·2
	1898 ...	68·82	...	...	10·2	...	16·1	17·1	...	...	...	...	...	...	...	...	29·3	24·4	...	...	...	...
				Warning rate.	19·5																	
South Canara ...	Average.	145·05	...	10·34	13·5	...	...	...	2·4	...	...	...	...	...	...	...	31·6	21·8	5·7	...	...	2·8
	1896 ...	158·48	3·09	..	13·4	...	...	...	2·3	...	...	...	...	...	...	...	33·7	17·5	7·8	...	...	7·1
	1897 ...	181·11	25·72	...	10·1	...	...	...	..	1·0	...	...	...	...	...	...	34·1	28·0	8·2	...	3·4	...
	1898 ...	155·39	...	...	11·1	...	...	...	...	...	...	...	...	...	...	...	25·9	24·6	...	...	...	...
				Warning rate.	11·2																	
Tanjore	Average.	45·88	...	13·51	13·7	...	24·3	...	3·0	...	...	...	7·3	...	...	...	28·7	24·6	...	3·3	...	1·3
	1896 ...	45·76	...	13·63	14·9	...	29·4	...	4·2	...	...	...	12·4	...	...	...	29·7	24·7	...	2·3	...	1·2
	1897 ...	32·63	...	26·76	11·5	...	22·2	...	0·8	...	...	...	5·2	...	...	...	27·3	27·4	...	4·7	1·5	...
	1898 ...	59·39	...	...	10·7	...	17·0	...	...	...	...	...	...	...	...	...	32·0	25·9	...	...	...	...
				Warning rate.	12·0																	
Tinnevelly	Average.	26·58	...	5·09	11·7	19·8	21·2	17·7	1·9	...	5·3	...	5·6	...	4·1	...	28·7	22·9	...	2·3	1·2	...
	1896 ...	37·11	5·44	...	12·3	19·7	21·8	18·4	2·5	...	5·2	...	6·2	...	4·8	...	30·3	21·7	...	0·7	...	...
	1897 ...	24·74	...	6·93	10·6	16·3	18·5	15·9	0·8	...	1·8	...	2·9	...	2·3	...	30·1	25·2	...	0·9	3·5	...
	1898 ...	31·67	...	...	9·8	14·5	15·6	13·6	...	...	...	...	...	...	...	...	31·0	21·7	...	...	...	...
				Warning rate.	16·5																	

Statement showing the influence of Prices of Food upon the birth and death rates in each district in the Madras Presidency—cont.

Districts.	Years.	Rainfall.			Prices of food-grains.																		Ratio per mille of population.			
		Quantity in inches.	Increase.	Decrease.	Rice.			Cholum.			Ragi.			Cumbu.			Cholum.	Ragi.	Cumbu.	Ratio per mille of population.				Birth.		Death.	
					Rice.	Increase.	Decrease.	Cholum.	Increase.	Decrease.	Ragi.	Increase.	Decrease.	Cumbu.	Increase.	Decrease.				Birth.	Death.	Increase.	Decrease.	Increase.	Decrease.	Increase.	Decrease.
Trichinopoly	Average.	33·79	...	9·02	12·5	3·1	...	27·6	13·5	...	7·7	...	...	8·7	...	...	24·2	23·8	24·2	29·3	23·0	...	1·2	...	1·6	...	1·6
	1896	34·81	...	8·00	13·2	3·8	...	23·8	9·7	...	12·0	...	...	10·5	...	...	26·0	28·1	26·0	27·8	24·1	...	2·7	...	0·5	...	0·5
	1897	37·95	...	4·86	10·7	1·3	...	15·9	1·8	...	4·9	...	...	4·3	...	...	19·8	21·0	19·8	28·6	21·0	...	1·9	...	3·6	...	3·6
	1898	42·81	...	...	9·4	...	...	14·1	...	...	...	...	...	...	...	...	15·5	16·1	15·5	30·5	24·6	...	...	...	...	...	...
					Warning rate.												19·5										
Vizagapatam	Average.	50·43	8·11	...	...	...	...	...	...	...	...	...	...	...	...	...	...	26·4	...	23·0	17·8	...	0·8	...	0·7	...	...
	1896	34·93	...	7·30	13·8	...	...	...	...	...	6·8	...	...	...	...	...	...	26·2	...	31·7	18·5	7·9	...	...	...	...	...
	1897	52·52	10·20	...	13·7	...	...	...	...	...	6·6	...	5·1	...	...	...	...	14·5	...	28·3	31·6	4·5	...	13·1	...	...	...
	1898	42·32	...	...	8·9	...	...	...	...	...	...	...	...	...	...	...	...	19·6	...	23·8	18·5	...	...	...	...	...	...
					11·9																						
					Warning rate.																						
Total, Madras Presidency.	Average.	45·92	...	5·40	12·8	...	...	...	...	...	...	...	...	...	...	...	...	25·3	...	29·0	21·2	...	1·6	0·2	...	...	...
	1896	45·94	...	5·38	13·0	2·9	...	23·4	7·3	...	8·1	...	...	...	...	...	...	25·8	...	29·9	20·6	...	2·5	...	...	...	...
	1897	48·14	...	3·18	12·7	2·6	0·2	22·6	6·5	1·6	8·6	...	...	...	...	...	...	17·2	...	28·7	25·4	...	1·3	4·4	...	...	...
	1898	51·32	...	...	10·1	...	...	16·1	...	...	...	...	...	...	...	...	...	17·2	...	27·4	21·0	...	...	...	...	...	...

GENERAL POPULATION.

5. The population of the Madras Presidency, according to the last census, was, inclusive of Europeans and Eurasians, 35,641,828. The estimated population for 1898 is 37,715,417. The census population for which returns of vital registration were received, amounted to 33,288,122, or 93·4 per cent. of the total. Emigration and immigration statistics show that the Presidency lost 68,247, against 92,118 in the previous year, which was one of scarcity, and consequently favoured emigration. Of this number, about 98 per cent. was contributed by the districts of Ganjám, Vizagapatam, Gódávari, Madras, Tanjore, Madura and Tinnevelly. The migrations were chiefly to the ports of Burma, Ceylon and the Straits Settlements. The "natural increase" of the population under registration amounted to 212,774.

6. Compared with the previous year, the population brought under registration shows an increase of 649,879. This has been effected in the districts of Madura, Ganjám, and Vizagapatam.

7. No change has been made in the system of registration. This was fully described in the report for 1893, and need not be here repeated. It is unlikely, until the Village Proprietary Act comes into force, that any great improvement can be effected in registration in rural areas. As illustrating the influence which is exercised by districts where zemindari tracts are large, it may be said that if the districts of Ganjám, Vizagapatam and Madura, where these predominate, be excluded from the calculation, it is found that instead of the total death-rate for the Presidency (as subsequently shown) being 21·0 it becomes 21·5 per mille, and the birth-rate, instead of 27·4, becomes 28·2 per mille.

8. The following table exhibits the action taken by municipalities towards enforcing registration :—

Name of Municipality.	Penalties inflicted for failure to register.		Name of Municipality.	Penalties inflict for failure to register.	
	Births.	Deaths.		Births.	Deaths.
1. Anantapur ...	*Nil.*		30. Ongole ...	6	3
2. Adóni ...	*Nil.*		31. Coonoor ...	*Nil.*	
3. Bellary ...	28	28	32. Ootacamund ...	4	8
4. Chingleput ...	*Nil.*		33. Gudiyáttam ...	13	15
5. Conjeeveram ...	*Nil.*		34. Tirupati ...	4	...
6. Coimbatore ...	9		35. Vellore ...	*Nil.*	
7. Erode ...	20	32	36. Wallajapet ...	*Nil.*	
8. Karúr ...	*Nil.*		37. Salem ...	6	8
9. Cuddapah ...	2	1	38. Tirupattúr ...	8	6
10. Berhampur ...	14	35	39. Vaniyambadi ...	10	13
11. Chicacole ...	13	6	40. Chidambaram ...	9	37
12. Parlákimedi ...	6	...	41. Cuddalore ...	*Nil.*	
13. Cocanada ...	65	3	42. Tiruvannámalai ...	...	...
14. Ellore ...	14	..	43. Mangalore ...	*Nil.*	
15. Rajahmundry ...	*Nil.*		44. Kumbakónam ...	14	11
16. Bezwada ...	1	2	45. Mannargudi ...	3	2
17. Guntúr ...	26	9	46. Mayavaram ...	5	3
18. Masulipatam ...	35	19	47. Negapatam ...	6	17
19. Kurnool ...	* 29	21	48. Tanjore ...	*Nil.*	
20. Dindigul ...	*Nil.*		49. Palamcottah ...	*Nil.*	
21. Madura ...	26	35	50 Srívilliputtúr ...	*Nil.*	
22. Palni ...	5	...	51. Tinnevelly ...	9	16
23. Peryiakulam ...	9	...	52. Tuticorin ...	34	13
24. Calicut ...	* 41	34	53. Srirangam ...	45	37
25. Cannanore ...	4	1	54. Trichinopoly ...	26	6
26. Cochin ...	*Nil.*		55. Anakapalle ...	13	...
27. Palghat ...	23	22	56. Bimlipatam ...	...	...
28. Tellicherry ...	*Nil.*		57. Vizagapatam ...	*Nil.*	
29. Nellore ...	8	4	58. Vizianagram ...	14	11

* Number prosecuted.

districts of Malabar, Chingleput, North and South Arcot were also recognized, during the continuance of high prices, as approaching a condition where public help would have been necessary. These districts contribute 33·1 per cent. of the total decrease. On the other hand, increase of the birth-rate over the average occurred in districts where the chief characteristic is the large extent of country under irrigation, affording the agricultural coolie a fair amount of certain labour. Thus the districts of Trichinopoly, Gódávari, Kistna, Tinnevelly and Tanjore yielded 20,149 more births than warranted by the average for the previous five years. Births of boys to girls were in the proportion of 104·3 to 100 girls, against 103·9 and 100 of the previous year. The birth-rate according to classes was;—Native Christians 22·9, Muhammadans 23·5, and Hindus 27·8. In the previous year, the rates were 23·7, 25·4, and 22·3, respectively.

BIRTHS IN MUNICIPALITIES.

12. The total birth-rate in municipalities was 34·9 per mille, against 34·4 of the us year, and against 27·4 for the total Presidency for 1898. Notwithstanding f a total of 59 municipalities, 25 exhibit a decrease below the average of the ous five years in the aggregate, there has been a gain in the birth-rate of 0·5. gradual increase of the recorded rate (not be it remembered the true rate accord- ither the census of Stokes or Stuart) due to the influence of better ion and of increasing increments of population, is shown in the following

Years.	Birth-rate per mille of Population.
1892	31·4
1893	34·1
1894	33·2
1895	35·3
1896	36·1
1897	34·4
1898	34·9

In the Section dealing with prices of food grains, special conditions that Malabar and South Canara have been alluded to. These remarks seem out by the decrease of birth-rate, to a marked extent, in Tellicherry, Cochin, , Cannanore, and Mangalore—all towns situated on the coast. It is probable recorded decrease in the case of Conjeeveram, Palni, Walajapet, Coonoor, l, Tirupati, Palamcottah, Nellore (notwithstanding the existence of ty") and Bimilipatam is due, in chief part, to careless registration. The in Bellary, Cuddapah, Parlákimedi, and Vizagapatam may fairly be ascribed tions following the famine of 1896–97.

DEATHS IN DISTRICTS.

399,108 deaths were registered, giving a total death-rate on the census of 21·0, and, on the estimated population, of 18·6 per mille. This is a of 4·4, when compared with the previous year. This is accounted for er cholera, fever, and dysentery and diarrhœa. The distribution of death s given in the following table, which also enables a comparison to be previous years :—

Years.	Birth-rate per mille of population.	Death-rate per mille of population.						
		Cholera.	Small-pox.	Fevers.	Dysentery and diarrhœa.	Injuries.	All other causes.	Total.
1892	25·1	2·3	1·3	8·3	1·0	0·3	9·0	22·3
1893	27·0	1·0	0·8	7·7	0·7	0·3	8·8	19·3
1894	27·7	1·3	0·3	8·0	0·7	0·4	9·3	20·0
1895	29·1	0·6	0·1	8·3	0·7	0·3	9·6	19·6
1896	29·9	1·5	0·3	8·0	0·7	0·3	9·8	20·6
1897	28·7	4·4	0·7	9·0	1·2	0·3	9·8	25·4
1898	27·4	2·0	0·6	7·5	0·9	0·3	9·7	21·0

15. When compared with the previous year, the districts of Chingleput, Kistn Nellore, Nilgiris, Salem, South Arcot, and Trichinopoly showed an increase in tl total death-rate.

Districts.		Cholera.	Small-pox.	Fevers.	Dysentery and Diarrhœa.	Injuries.	All other causes.	Total.
Chingleput	1897	1·7	0·1	5·4	2·0	0·4	13·6	23·2
	1898	**1·6**	**0·2**	**3·9**	**2·6**	**0·4**	**15·6**	**24·3**
Kistna	1897	1·7	0·1	8·0	0·4	0·4	11·4	
	1898	**2·9**	**0·4**	**8·0**	**0·3**	**0·3**	**11·2**	
Nellore	1897	0·5	0·1	9·6	0·4	0·2	8·	
	1898	**2·8**	**0·1**	**8·0**	**0·5**	**0·3**	**8·**	
Nilgiris	1897	0·9	0·1	17·0	1·7	0·2	5·0	
	1898	**0·01**	**0·6**	**22·1**	**1·7**	**0·2**	**6**	
Salem	1897	1·7	0·2	7·7	0·5	0·4	8·	
	1898	**0·9**	**0·1**	**8·4**	**0·6**	**0·4**	**10·**	
South Arcot	1897	4·2	0·2	5·2	0·5	0·3	10	
	1898	**5·2**	**0·5**	**4·8**	**0·6**	**0·3**	**13**	
Trichinopoly	1897	2·7	0·05	4·0	0·4	0·4	13·5	
	1898	**5·5**	**0·1**	**3·6**	**0·6**	**0·3**	**14·5**	

16. The heads under which the increased death-rate occurred in these d in instances where it exceeded 2 per mille, are shown in the annexed table :

Districts.	Increase over 2 per mille.	Distribution of increase under sever			
		Cholera.	Small-pox.	Fevers.	Dysentery and Diarrhœa.
Nilgiris	+ 5·4	− 0·9	+ 0·5	+ 5·1	...
South Arcot	+ 3·2	+ 1·0	+ 0·3	− 0·4	+ 0·1
Trichinopoly	+ 3·6	+ 2·8	+ 0·05	...	+ 0·2

17. The total death-rate in rural towns was 19·0 per mille, against 21·0 f Presidency, and 31·9 for municipal towns. The following table gives the birt death rates in 34 towns; that is, in inhabited areas having more than 10,000 i itants. Their respective populations are quoted. Although this rule is universal, it will be seen that the larger the population the more inferior i registration--a natural sequence in an organization only suited for dealing with villages. The passing of the revised Local Boards Act, which may be exp shortly, will doubtless get rid of this difficulty :—

Number.	Rural towns.	Population for which returns were received.	Birth-rate per mille.	Death-rate per mille.
1	Tadpatri	10,275	18·5	12·9
2	Hospet	12,869	20·8	13·8
3	Kampli	10,528	28·0	24·8
4	Rayadrug	10,378	22·4	15·3
5	St. Thomas' Mount	12,140	30·4	19·0
6	Pithápuram	13,731	14·0	13·8
7	Peddápuram	13,652	37·2	26·7
8	Samalkot	13,409	12·3	8·1
9	Dowlaishwaram	10,454	27·1	19·5
10	Chírála	10,581	31·9	25·4
11	Nandyal	10,704	16·6	13·9
	ammad	13,589	18·5	33·2
	ruppukóttai	12,673	26·2	17·3
	ílakarai	12,396	17·8	15·8
	aramakudi	10,001	13·8	9·2
	álahasti	11,715	22·1	20·5
	rcot	10,928	27·5	27·6
	mbúr	10,583	19·9	12·3
	lamangalam	13,354	13·2	9·8
Munici	ipur	10,539	32·0	15·0
	to Novo	14,045	11·9	12·7
	uválúr	12,934	27·2	33·7
	lasékarapatnam	15,910	27·9	21·1
Anantapur	rudupatti	14,075	16·8	11·9
Bellary	ravanallur	13,951	21·3	16·8
Ádóni	ajahpalayam	13,301	37·8	18·7
Conjeev	Tenkási	12,861	40·2	27·6
	Sivakási	12,184	36·9	30·1
Chingle	Káyalpatnam	11,464	19·1	20·6
Coimbat	Kalladakurchi	11,096	26·6	23·8
Erode	Bobbili	14,448	25·5	19·5
	Sálúru	12,910	9·9	12·5
Karúr	Palkonda	10,364	20·7	16·3
udda	Párvatípuram	10,053	22·7	26·5
hica	Total of 34 rural towns	414,095	23·3	19·0

21.
33·3 for
22.
1897, a

18. The infantile death-rate, per mille of births, was 163·3—a rate 1·2 per mille less than the previous year, and 6·4 higher than in 1896. This result points to the influence of the higher price of food-grains on the obtaining of luxuries suitable for infant life during 1897–98, and the production of weakly infants by ill-nourished mothers.

19. The extent of variations in districts will be found at page 24 where, for convenience of contrast, they are exhibited side by side with rates found in Municipalities.

20. The following table exhibits the results of registration in 1898 in the various districts, as compared with 1897 and the average of the preceding five years :—

Districts.	Years.	Ratio per mille of population.		Ratio per mille of population.			
		Birth.	Death.	Birth.		Death.	
				Decrease.	Increase.	Decrease.	Increase.
Anantapur	Average ...	28·5	19·6	3·7	...	0·2	...
	1897	27·7	26·9	2·9	...	7·5	...
	1898	24·8	19·4	...	...	...	...
Bellary	Average ...	32·9	24·5	3·6	...	1·8	...
	1897	31·5	31·2	2·2	...	8·5	
	1898	29·3	22·7	...	...	...	
Chingleput	Average ...	36·9	22·1	1·2	...	...	
	1897	37·1	23·2	1·4	...	...	
	1898	35·7	24·3	...	...	...	
Coimbatore	Average ...	28·1	19·5	0·8	...	1·0	
	1897	26·9	20·1	...	0·4	1·6	
	1898	27·3	18·5	...	...	...	
Cuddapah	Average ...	27·2	22·4	3·9	...	3·6	
	1897	28·2	25·9	4·9	...	7·1	
	1898	23·3	18·8	...	...	...	
Ganjám	Average ...	21·0	21·9	...	1·9	...	
	1897	23·9	50·1	1·0	...	27·4	
	1898	22·9	22·7	...	...	...	
Gódávari	Average ...	24·4	18·6	...	1·8	1·9	
	1897	25·4	22·8	...	0·8	6·1	
	1898	26·2	16·7	...	...	...	
Kistna	Average ..	33·0	19·5	...	1·2	...	
	1897	34·9	22·0	0·7	...	...	
	1898	34·2	23·1	...	...	...	
Kurnool	Average ...	30·1	24·4	4·3	...	3·7	
	1897	28·0	28·8	2·2	...	8·1	
	1898	25·8	20·7	...	...	...	
Madras	Average ...	40·8	38·1	...	0·7	...	
	1897	41·6	35·8	0·1	...	...	
	1898	41·5	45·2	...	...	...	
Madura	Average ...	29·4	20·3	6·7	...	4·7	
	1897	28·0	23·7	5·3	...	8·1	
	1898	22·7	15·6	...	...	...	
Malabar	Average ...	21·9	19·3	3·3	...	1·8	
	1897	20·8	30·2	2·2	...	12·7	
	1898	18·6	17·5	...	...	...	
Nellore	Average ...	25·9	17·0	1·9	...	...	
	1897	28·3	19·5	4·3	...	...	
	1898	24·0	19·7	...	...	...	
Nilgiris	Average ...	28·6	24·4	0·9	...	...	
	1897	30·7	25·5	3·0	...	...	
	1898	27·7	30·9	...	...	...	
North Arcot	Average ...	28·2	17·7	1·6	...	...	
	1897	27·3	20·2	0·7	...	1·9	
	1898	26·6	18·3	...	...	...	
Salem	Average ...	31·8	18·6	...	...	...	
	1897	33·2	19·3	1·4	...	...	
	1898	31·8	20·4	...	...	...	

Districts.	Years.	Ratio per mille of population.		Ratio per mille of population.			
		Birth.	Death.	Birth.		Death.	
				Decrease.	Increase.	Decrease.	Increase.
South Arcot	Average ...	31·0	21·7	0·7	...	...	2·7
	1897	28·7	21·2	...	0·6	...	3·2
	1898	29·3	24·4	...	...	...	...
South Canara	Average ...	32·1	21·2	6·2	...	...	3·4
	1897	34·1	28·0	8·2	...	3·4	...
	1898	25·9	24·6	...	...	...	...
Tanjore	Average ...	28·4	25·8	...	3·6	...	0·1
	1897	27·3	27·4	...	4·7	1·5	...
	1898	32·0	25·9	...	...	...	...
Tinnevelly	Average ...	29·5	24·0	...	1·5	2·3	...
	1897	30·1	25·2	...	0·9	3·5	...
	1898	31·0	21·7	...	...	...	...
Trichinopoly	Average ...	28·1	22·6	...	2·4	...	2·0
	1897	28·6	21·0	...	1·9	...	3·6
	1898	30·5	24·6	...	...	...	...
Vizagapatam	Average ...	27·0	20·4	3·2	...	1·9	...
	1897	28·3	31·6	4·5	...	13·1	...
	1898	23·8	18·5	...	...	...	...
Total, Madras Presidency	Average ...	28·5	21·0	1·1	...	...	...
	1897	28·7	25·4	1·3	...	4·4	...
	1898	27·4	21·0	...	...	...	...

DEATHS IN MUNICIPALITIES.

21. The total death-rate in Municipalities amounted to 31·9 per mille, against 33·3 for the previous year.

22. The following table contrasts the rates registered in 1898 with those of 1897, and the average for the five previous years :—

Municipalities.	Years.	Ratio per mille of population.		Ratio per mille of population.			
		Birth.	Death.	Birth.		Death.	
				Decrease.	Increase.	Decrease.	Increase.
Anantapur	Average ...	33·9	20·6	1·5	...	...	0·4
	1897	38·2	25·4	5·8	...	...	4·4
	1898	32·4	21·0	...	...	...	...
Bellary	Average ...	32·8	29·4	2·7	...	...	5·6
	1897	30·1	41·8	...	...	6·8	...
	1898	30·1	35·0	...	...	...	...
Adóni	Average ...	38·2	26·7	...	6·3	0·2	...
	1897	38·2	37·9	...	6·3	11·4	...
	1898	44·5	26·5	...	...	...	...
Conjeeveram	Average ...	37·7	31·8	1·8	...	2·4	...
	1897	34·9	28·3	...	1·0	...	1·1
	1898	35·9	29·4	...	...	...	...
Chingleput	Average ...	... *	... *	...	...	...	...
	1897	32·9	31·2	...	4·3	1·5	...
	1898	37·2	29·7	...	...	...	...
Coimbatore	Average ..	38·3	31·5	...	2·1	0·3	...
	1897	37·1	36·5	...	3·3	5·3	...
	1898	40·4	31·2	...	...	...	...
Erode	Average ...	38·3	29·4	...	3·4	3·2	...
	1897	43·4	24·8	1·7	...	...	1·4
	1898	41·7	26·2	...	...	...	...
Karúr	Average ...	36·6	33·2	...	8·1	4·4	...
	1897	35·9	35·1	...	8·8	6·3	...
	1898	44·7	28·8	...	...	...	...
Cuddapah	Average ...	21·3	33·1	3·7	...	3·1	...
	1897	27·1	28·8	9·5	...	...	1·2
	1898	17·6	30·0	...	...	...	...
Chicacole	Average ...	21·8	28·0	...	2·2	1·5	...
	1897	18·6	43·7	...	5·4	17·2	...
	1898	24·0	26·5	...	...	...	...

* Being a new Municipality, the required information is not available.

Municipalities.	Years.	Ratio per mille of population.		Ratio per mille of population.			
		Birth.	Death.	Birth.		Death.	
				Decrease.	Increase.	Decrease.	Increa
Berhampur	Average ...	22·5	26·6	...	7·1	1·8	...
	1897	18·2	34·7	...	11·4	9·9	...
	1898	29·6	24·8	...	...	...	...
Parlákimedi	Average ...	34·3	26·1	7·8	...	1·6	...
	1897	36·2	44·5	9·7	...	20·0	...
	1898	26·5	24·5	...	...	...	...
Cocanada	Average ...	25·1	21·5	...	7·0	1·1	...
	1897	27·0	28·3	...	5·1	7·9	...
	1898	32·1	20·4	...	...	...	...
Rajahmundry	Average ...	33·5	33·0	0·8	...	4·8	...
	1897	33·5	39·1	0·8	...	10·9	...
	1898	32.7	28·2	...	...	...	...
Ellore	Average ...	25·1	22·7	...	9·0	...	1·9
	1897	29·4	28·4	...	4·7	3·8	...
	1898	34·1	24·6	...	...	...	...
Masulipatam	Average ...	29·6	27·1	...	0·4	4·0	...
	1897	30·0	25·3	...	...	2·2	...
	1898	30·0	23·1	...	...	...	...
Guntúr	Average ...	38·6	31·6	...	6·6	...	7·7
	1897	44·4	40·6	...	0·8	1·3	...
	1898	45·2	39·3	...	...	...	...
Bezwada	Average ...	31·3	30·7	...	...	4·6	...
	1897	32·2	31·2	0·9	...	5·1	...
	1898	31·3	26·1	...	...	...	...
Kurnool	Average ...	31·3	35·2	...	0·1	10·6	...
	1897	30·7	53·2	...	0·7	28·6	...
	1898	31·4	24·6	...	...	...	...
Madras	Average ...	40·8	38·1	...	0·7	...	7·1
	1897	41·6	35·8	0·1	...	...	9·4
	1898	41·5	45·2	...	...	...	...
Madura	Average ...	31·7	27·5	...	1·8	2·4	...
	1897	30·9	25·6	...	2·6	0·5	...
	1898	33·5	25·1	...	...	...	...
Dindigul	Average ...	39·6	22·8	9·0	...	3·9	...
	1897	26·4	22·0	...	4·2	3·1	...
	1898	30·6	18·9	...	...	...	...
Periyakulam	Average ...	41·3	34·6	...	7·7	2·7	...
	1897	40·8	43·5	...	8·2	11·6	...
	1898	49·0	31·9	...	...	...	...
Palni	Average ...	32·5	25·3	3·5	...	...	...
	1897	32·2	24·0	3·2	...	...	6·1
	1898	36·6	31·4	...	...	...	7·4
Tellicherry	A[illegible]	[illegible]	27·5	11·6	...	...	...
	1897	33·9	44·6	11·3	...	...	2·5
	1898	22·6	30·0	...	...	14·6	...
Calicut	Average ...	36·5	33·4	8·2	...	...	...
	1897	34·8	50·5	6·5	...	...	1·3
	1898	28·3	34·7	...	...	15·8	...
Palghat	Average ...	37·3	30·0	...	4·4	...	...
	1897	37·0	33·5	...	4·7	...	1·5
	1898	41·7	31·5	...	...	2·0	...
Cochin	Average ...	36·3	36·1	7·4	...	...	...
	1897	37·0	44·3	8·1	...	1·5	...
	1898	28·9	34·6	...	...	9·7	...
Cannanore	Average ...	40·1	34·7	10·8	...	...	...
	1897	39·3	56·8	10·0	...	11·5	...
	1898	29·3	23·2	...	...	33·6	...
Nellore	Average ...	29·2	22·3	4·7	...	...	...
	1897	29·5	30·6	5·0	...	...	11·5
	1898	24·5	33·8	...	...	...	3·2
Ongole	Average ...	33·6	26·0	...	...	...	...
	1897	34·3	29·0	...	1·4	...	2·5
	1898	35·0	28·5	...	0·7	0·5	...
Ootacamund	Average ...	31·1	26·4	...	...	...	...
	1897	39·4	30·8	1·4	3·9	...	12·9
	1898	38·0	39·3	...	...	...	8·5
Coonoor	Average ...	39·6	35·9	2·0	...	...	...
	1897	43·1	45·5	5·5	...	1·0	...
	1898	37·6	34·9	...	...	10·6	...
Vellore	Average ...	36·0	25·1	2·9	...	...	...
	1897	36·4	26·0	3·3	...	1·1	...
	1898	33·1	24·0	...	...	2·0	...
Walajapet	Average ...	36·0	26·8	3·6	...	...	...
	1897	35·3	31·9	2·9	...	1·8	...
	1898	32·4	25·0	...	...	6·9	...
Gudiyáttam	Average ...	37·3	27·6	...	3·8	...	...
	1897	40·7	32·5	...	0·4	3·6	1·3
	1898	41·1	28·9	...	...	...	...

Municipalities.	Years.	Ratio per mille of population.		Ratio per mille of population.			
		Birth.	Death.	Birth.		Death.	
				Decrease.	Increase.	Decrease.	Increase.
Tirupati	Average ..	29·6	32·2	2·2	...	2·6	...
	1897	26·7	34·0	...	0·7	4·4	...
	1898	27·4	29·6	...	...	...	...
Salem	Average ...	37·8	24·8	0·8	...	0·4	...
	1897	35·5	23·8	...	1·5	...	0·6
	1898	37·0	24·4	...	...	...	...
Vániyambádi	Average ...	52·1	34·8	...	2·4	...	2·3
	1897	53·9	32·9	...	0·6	...	4·2
	1898	54·5	37·1	...	...	...	...
Tiruppattúr	Average ...	43·4	29·4	...	2·7	...	0·1
	1897	44·6	26·0	...	1·5	...	3·5
	1898	46·1	29·5	...	...	...	...
Cuddalore	Average ...	35·5	24·1	...	6·2	...	10·2
	1897	37·1	30·6	...	4·6	...	3·7
	1898	41·7	34·3	...	...	...	...
Chidambaram	Average ...	27·4	31·9	...	7·0	...	2·1
	1897	25·4	31·4	...	9·0	...	2·6
	1898	34·4	34·0	...	...	...	...
Tiruvannámalai	Average ...	...*	...*	...	...	...	...
	1897	25·4	18·1	...	18·2	...	10·1
	1898	43·6	28·2	...	...	...	...
[illegible]alore	Average ...	31·7	24·9	7·2	...	...	5·0
	1897	34·6	29·3	10·1	...	...	0·6
	1898	24·5	29·9	...	...	...	...
[illegible]ore	Average ...	30·1	28·0	...	1·2	2·6	...
	1897	27·9	25·1	...	3·4	...	0·3
	1898	31·3	25·4	...	...	...	...
[illegible]bakónam	Average ...	31·6	35·8	...	2·1	5·8	...
	1897	28·9	39·9	...	4·8	9·9	...
	1898	33·7	30·0	...	...	...	...
[illegible]avaram	Average ...	34·0	30·8	...	1·7	3·7	...
	1897	31·7	35·3	...	4·0	8·2	...
	1898	25·7	27·1	...	...	...	...
[illegible]apatam	Average ...	30·4	32·7	...	0·1	0·9	...
	1897	26·5	33·8	...	4·0	2·0	...
	1898	30·5	31·8	...	...	...	...
[illegible]nnárgudi	Average ...	34·0	30·3	2·2	...	2·8	...
	1897	28·0	26·8	...	3·8	...	0·7
	1898	31·8	27·5	...	...	...	...
[illegible]nnevelly	Average ...	35·4	38·2	0·4	...	10·2	...
	1897	32·7	44·1	...	2·3	16·1	...
	1898	35·0	28·0	...	...	...	...
[illegible]alamcottah	Average ...	32·1	28·6	2·5	...	8·4	...
	1897	28·4	27·3	...	1·2	7·1	...
	1898	29·6	20·2	...	...	...	...
[illegible]atiocorin	Average ...	31·2	32·1	...	3·1	...	4·8
	1897	29·4	34·6	...	4·9	...	2·3
	1898	34·3	36·9	...	...	...	...
[illegible]villiputtúr	Average ...	...*	...*	...	...	...	...
	1897	30·2	18·3	...	1·4	...	1·3
	1898	31·6	19·6	...	...	...	...
[illegible]richinopoly	Average ...	25·7	27·7	...	4·5	...	2·8
	1897	30·8	23·1	0·6	...	...	7·4
	1898	30·2	30·5	...	...	...	...
[illegible]rángam	Average ...	30·5	33·6	...	1·3	1·4	...
	1897	26·5	31·1	...	5·3	...	1·1
	1898	31·8	32·2	...	...	...	...
[illegible]gapatam	Average ...	35·7	29·5	5·9	...	6·1	...
	1897	35·1	33·2	5·3	...	9·8	...
	1898	29·8	23·4	...	...	...	...
[illegible]mlipatam	Average ...	31·6	26·7	8·5	...	7·7	...
	1897	30·3	15·7	7·2	...	...	3·3
	1898	23·1	19·0	...	...	...	...
[illegible]zianagram	Average ...	29·7	27·0	...	1·7	...	0·5
	1897	30·4	28·7	...	1·0	1·2	...
	1898	31·4	27·5	...	...	...	...
[illegible]akapalle	Average ...	33·2	25·1	2·9	...	3·3	...
	1897	30·6	26·9	0·3	...	5·1	...
	1898	30·3	21·8	...	...	...	...
[illegible]otal, Municipalities ...	Average ...	34·6	30·8	...	0·3	...	1·1
	1897	34·4	33·3	...	0·5	1·4	...
	1898	34·9	31·9	...	...	...	...

* Being a new Municipality, the required information is not available.

23. There was a decrease of mortality in 39 towns. The following towns showed an increase of over 1 per mille. Against each is shown the head under which this excess took place:—

Municipalities.	Increase over 1 per mille.	Distribution of increase among several diseases.					
		Cholera.	Small-pox.	Fevers.	Dysentery and diarrhœa.	Injuries.	All other causes.
Conjeeveram	+ 1·1	− 1·6	+ 0·1	− 2·0	+ 0·8	...	+ 3·8
Erode	+ 1·4	+ 0·9	...	− 5·3	+ 0·6	+ 0·1	+ 5·1
Cuddapah	+ 1·2	− 1·15	+ 0·4	+ 2·7	− 0·1	− 0·2	− 0·4
Madras	+ 9·4	+ 1·4	...	...	+ 3·0	− 0·1	+ 5·1
Palni	+ 7·4	+ 12·0	...	− 0·6	− 0·15	...	− 3·8
Nellore	+ 3·2	+ 5·6	− 0·4	+ 1·0	− 0·9	− 0·1	− 2·0
Ootacamund	+ 8·5	− 0·3	...	+ 2·7	+ 0·7	− 0·3	+ 5·7
Vániyambádi	+ 4·2	− 2·0	...	− 2·7	+ 3·7	...	+ 5·2
Tiruppáttúr	+ 3·5	− 0·3	...	− 1·6	− 0·2	− 0·1	+ 5·7
Cuddalore	+ 3·7	− 1·8	+ 0·2	− 0·3	− 0·2	+ 0·1	+ 5·7
Chidambaram	+ 2·6	− 0·4	+ 0·4	− 0·2	+ 1·9	+ 0·2	+ 0·7
Tiruvannámalai	+ 10·1	− 1·5	+ 0·2	− 2·0	+ 1·7	− 0·3	+ 12·0
Tuticorin	+ 2·3	− 4·7	+ 0·04	− 1·7	+ 5·3	...	+ 3·4
Srívilliputtúr	+ 1·3	− 0·4	+ 0·1	+ 0·6	− 0·2	+ 0·1	+ 1·1
Trichinopoly	+ 7·4	+ 4·8	+ 0·1	− 0·3	...	+ 0·1	+ 2·7
Srírangam	+ 1·1	+ 1·3	− 0·06	− 0·6	− 1·0	− 0·1	+ 1·6

24. In certain of these will be noticed an increased mortality, which has been registered under the indefinite head of "all other causes." Thus, under this head in Municipalities, during 1898, a greater proportion of deaths has been registered than hitherto. This might be explained on the theory that, as education advances it is becoming increasingly common to specify the real cause of death, as diagnosed by a qualified medical man, instead of confining statements to the simple head given in the register; but the increase (1·8 per mille) is of too sudden a nature for this theory to satisfactorily account for it. It is more probable that the "plague scare" has caused alteration in methods of registration elsewhere than in the City of Madras (*vide* paragraph 38). This will be evident from perusal of the following table:—

No.	Municipalities.	Rate per mille from all other causes.		No.	Municipalities.	Rate per mille from all other causes.	
		1897.	1898.			1897.	1898.
1	Bellary	18·2	20·5	19	Vellore	11·5	12·7
2	Conjeeveram	16·9	20·7	20	Gudiyáttam	9·8	10·6
3	Chingleput	16·0	17·1	21	Salem	10·9	14·8
4	Coimbatore	16·0	17·3	22	Vániyambádi	14·7	19·9
5	Erode	13·3	18·4	23	Tiruppattúr	12·3	18·0
6	Karúr	13·2	13·3	24	Cuddalore	14·9	20·6
7	Berhampur	9·9	11·0	25	Chidambaram	14·5	15·2
8	Ellore	13·7	14·3	26	Tiruvannámalai	9·2	21·2
9	Guntúr	26·0	29·0	27	Mangalore	14·5	14·8
10	Madras	18·0	23·1	28	Tanjore	11·0	13·2
11	Madura	14·3	16·2	29	Kumbakónam	18·2	18·6
12	Dindigul	6·0	8·5	30	Máyavaram	15·3	15·9
13	Tellicherry	16·6	16·7	31	Negapatam	18·1	20·2
14	Calicut	17·4	19·3	32	Tuticorin	12·1	15·5
15	Palghat	15·3	21·0	33	Srívilliputtúr	6·0	7·1
16	Ongole	16·5	16·8	34	Trichinopoly	13·4	16·1
17	Ootacamund	17·2	22·9	35	Srírangam	19·3	20·9
18	Coonoor	24·7	22·2				

25. Such an explanation does not, however, get rid of the fact that increased total mortality actually existed in certain instances, and the suspicion may naturally arise that, in, say, Tiruvannámalai—a pilgrim resort—in the absence of any registered

increase of cholera and fever, the heavy rate of 12 per mille above the previous year must be due to some new condition, for example, unreported plague. It is, however, a Municipality that has been well drilled as to sanitary precautions in reference to festivals, and it may be taken for granted that the selection of "all other causes" for registration was induced by self-interest on the part of the inhabitants, whilst activity in registration in this but lately constituted Municipality may really account for the greater part of the supposed total increase. The probable actual cause of increased total death-rate in the City of Madras (cholera falsely registered) is alluded to under "Fevers."

26. The infantile death-rate in districts and towns is noted below. It is held that the demand of factory life upon a large number of the female population of England, tells most adversely upon the infantile death-rate, owing to insufficient time available for females to attend to their infants. In 1898, the London decennial average infantile death-rate was 151, and for the 33 "great towns" in England the same average rate was 167. If these figures be contrasted with those exhibited below, it will be seen that the death-rate amongst infants in this country is appalling. As both rates are reckoned per mille of births, they are strictly comparable—the error, if any, being most probably in the full mortality of Madras infants not being correctly exhibited; that is to say, that births in this country are more likely to be registered than the deaths of infants. I have, in a former report, adverted to the cause of such heavy mortality, namely, the ignorance of the poorer classes of the most simple ideas of sanitation, in connection with child-life. There need be no question as to purposeful neglect. The mothers of the uneducated classes in this Presidency cannot be excelled in any nation as to devotion to their children. The advent of a female infant is certainly regarded as somewhat humbling to the pride of the head of the family; still she gets fair treatment so long as, at reasonable prices, food is obtainable; when grain becomes dear, it is possible that the male child would receive the greater share of attention. The gradual rise of wages will ameliorate conditions following the high price of grain in time. The matter of ignorance of mothers can only be altered, by better attention to spread of general education and of sanitary knowledge amongst them.* It will, however, be noticed if Madras be placed in its proper place as a Municipality, and be not regarded as a district, that the total district infantile death-rate becomes 160·6 per mille of births, which is not much above that quoted for London, and is less than in the 33 "great towns." Probably, an infant's death in a rural area is less likely to be registered than that in a municipal town; but, allowing for this fact, the rates are so enormously to the disadvantage of the latter that they cannot but be regarded as the expression of the insanitary conditions incident to the inhabiting of sites crowded with dwellings, inefficiently protected by the present type of municipal efforts towards rubbish and night-soil removal, unprovided with sewerage systems, and frequently possessing water-supplies innocent of the most simple modes of protection.

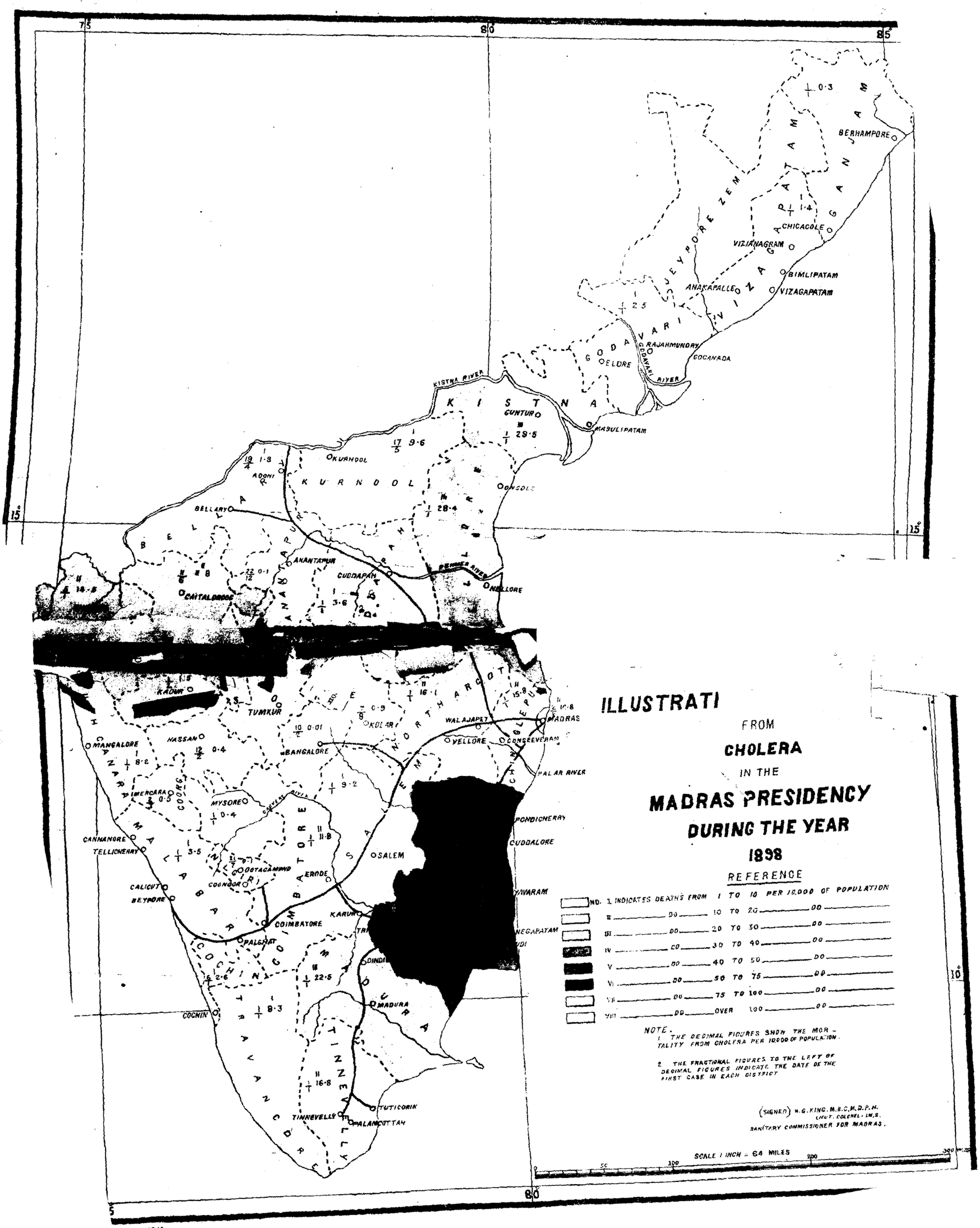
27. If it be granted that to a number of towns this description be correctly applied, the question as to which shall exhibit the heaviest infantile death-rate, would ultimately be determined by the relative capability of the soil to dispose of sewage reaching it, in respect to its nature and configuration, and proximity of the sub-soil water; all matters that possibly affect the *bacillus enteritidis sporogenes*, and other forms of microbic life having a relation to intestinal fluxes. Bellary may well be regarded as a town whose sub-soil is saturated with sewage; its rate is 324·9 per mille; the same may be said of Negapatam; its rate is 276·2; and of Madras, with its 297·7 per mille, the same is true. In the case of Ootacamund (304·5) not only has the soil saturated with sewage in the neighbourhood of the native dwellings to be thought of, but the rigour of its climate. It is noteworthy that in Coonoor the major portion of which is drained, but where the climate factor is also to be contended against, the rate is 190·5 per mille.

* The desirability of efforts for spread of sanitary knowledge amongst women is, I am glad to say, engaging the attention of several native gentlemen, notably, C. V. Swaminatha Aiyar, editor of the *Vivéka Chintamani*.

Statement showing the rate of Mortality of Infants under one year of age in Districts and Municipalities in 1898.

Districts.	Ratio per mille of registered births.*	Municipalities.	Ratio per mille of registered births.*
Ganjám	159·2	Berhampore	200·3
		Chicacole	221·5
		Párlakimedi	156·3
Vizágapatam	115·4	Vizagapatam	170·6
		Bimlipatam	129·5
		Vizianagram	155·4
		Anakápalle	184·5
Gódávari	132·1	Cocanada	158·4
		Rajahmundry	174·9
		Ellore	177·0
Kistna	168·6	Masulipatam	176·0
		Bezwáda	238·8
		Guntúr	296·9
Nellore	139·6	Nellore	133·2
		Ongole	226·9
Madras	297·7	Madras	297·7
Chingleput	194·1	Conjeeveram	229·4
		Chingleput	245·2
South Arcot	180·6	Cuddalore	199·8
		Chidambaram	226·2
		Tiruvannámalai	188·2
Trichinopoly	177·9	Trichinopoly	222·6
		Srírangam	199·1
Tanjore	179·6	Tanjore	207·1
		Kumbakónam	203·7
		Máyavaram	180·2
		Negapatam	276·2
		Mannárgudi	152·5
Madura	141·1	Madura	237·3
		Dindigul	110·6
		Periyakulam	229·1
		Palni	128·0
Tinnevelly	180·7	Tinnevelly	228·6
		Palamcottah	186·9
		Tuticorin	246·2
		Srívilliputtúr	157·4
Kurnool	139·4	Kurnool	170·2
Cuddapah	173·9	Cuddapah	224·4
Bellary	170·9	Bellary	324·9
		Ádóni	162·8
Anantapur	140·8	Anantapúr	141·6
North Arcot	150·8	Vellore	169·4
		Wallajahpet	197·1
		Tirupati	233·3
		Gudiyáttam	188·3
Salem	181·7	Salem	221·2
		Vániyambádi	221·3
		Tiruppattúr	189·7
Coimbatore	158·9	Coimbatore	219·2
		Erode	203·5
		Karúr	185·0
Nilgiris	257·3	Ootacamund	304·5
		Coonoor	190·5
South Canara	178·9	Mangalore	239·7
Malabar	101·4	Tellicherry	186·4
		Calicut	163·2
		Palghat	243·0
		Cochin	224·8
		Cannanore	164·1
	163·3		229·5

* Excluding Europeans and Eurasians.


ILLUSTRATI
FROM
CHOLERA
IN THE
MADRAS PRESIDENCY
DURING THE YEAR
1898
REFERENCE
NO. I INDICATES DEATHS FROM 1 TO 10 PER 10,000 OF POPULATION
II 10 TO 20
III 20 TO 30
IV 30 TO 40
V 40 TO 50
VI 50 TO 75
VII 75 TO 100
VIII OVER 100
NOTE.
1. THE DECIMAL FIGURES SHOW THE MORTALITY FROM CHOLERA PER 10,000 OF POPULATION.
2. THE FRACTIONAL FIGURES TO THE LEFT OF DECIMAL FIGURES INDICATE THE DATE OF THE FIRST CASE IN EACH DISTRICT
(SIGNED) W.G. KING, M.B.C.M.D.P.H.
LIEUT. COLONEL, I.M.S.
SANITARY COMMISSIONER FOR MADRAS.
SCALE 1 INCH = 64 MILES
BERHAMPORE
CHICACOLE
VIZIANAGRAM
BIMLIPATAM
VIZAGAPATAM
ANAKAPALLE
RAJAHMUNDRY
COCANADA
ELLORE
GODAVARI RIVER
KISTNA RIVER
GUNTUR
MASULIPATAM
KURNOOL
ADONI
BELLARY
ANANTAPUR
CUDDAPAH
NELLORE
PENNER RIVER
CHITALDROOG
KADUR
TUMKUR
KOLAR
WALAJAPET
MADRAS
VELLORE
CONGEEVERAM
PALAR RIVER
MANGALORE
HASSAN
BANGALORE
MERCARA
MYSORE
PONDICHERRY
CUDDALORE
CANNANORE
TELLICHERRY
SALEM
ERODE
CALICUT
BEYPORE
COIMBATORE
PALGHAT
COCHIN
MADURA
TUTICORIN
TINNEVELLY
PALAMCOTTAH
NORTH ARCOT
SOUTH ARCOT
TRICHINOPOLY
TANJORE
MALABAR
NILGIRIS
COORG
JEYPORE ZEMINDARY
VIZAGAPATAM
GANJAM
0·3
1·4
2·5
9·6
29·5
1·3
28·4
14·5
0·1
3·6
16·1
15·8
10·8
0·9
0·01
0·4
8·2
0·5
0·4
9·2
11·8
3·5
2·6
22·5
8·3
16·8
75
70
65
15
10

eg: No. 4941

SECTION VI.

GENERAL HISTORY OF CHIEF DISEASES.

CHOLERA.

28. A total of 65,444 deaths occurred from cholera, yielding a rate of 2 per mille of the population of the Presidency, against 4·4 per mille in 1897, and a decennial average of 2·1 per mille. The incidence of the disease was very heavy in Tanjore (6·7), Trichinopoly (5·5), South Arcot (5·2), and Kistna (2·9). These are the great irrigation centres of the Presidency, and offer good facilities for the transmission of the cholera microbe from village to village by means of lengthy channels that are liable to contamination, by reason of the insanitary habits of the people. The only district where irrigation under this plan is not carried out largely that was much affected was Nellore, where the death-rate from this cause was 2·8 per mille. This was the district affected with famine during the year. Granting that no cases of "famine diarrhœa" were included in the returns as cholera, the various conditions incident to scarcity indubitably predispose the individual to attack, and to spread of the disease in the community concerned. In the report for 1893, a table was prepared on the basis of a ten years' average, showing the months of the year in which each district was most likely to be affected, and the relation of these to the monsoons. Since then, a similar table has been issued annually for the period under review. It has invariably told one tale, namely, greater incidence of the disease during the monsoon which chiefly affects the districts concerned—a result which I ascribe to the surface and sub-soil water influencing the propagation of the cholera microbe; which matters being theoretical will, however, not be here dilated upon. But, this year, the table showing the incidence upon the districts chiefly affected by the north-east monsoon exhibits a departure, in a slightly greater number of attacks having occurred during the south-west monsoon. This variation, would imply, according to the theory advanced, under the abnormal increase of rainfall during the north-east monsoon, a quicker attainment of the maximum sub-soil water level—the point at which, I hold, decrease of prevalence sets in. The apparent difference would however disappear, were the month of January 1899, which forms really a part of the north-east monsoon period, taken into consideration. In the case of the data prepared in the report for 1893, statistics for this month were duly incorporated.

Cholera incidence exhibited according to monsoon periods.

	Districts.	Population for which returns were received.	South-west monsoon.					North-east monsoon.				Grand total of both the monsoon periods.
			June.	July.	August.	September.	Total.	October.	November.	December.	Total.	
Districts chiefly affected by south-west monsoon.	*East coast, north*—											
	Ganjám	1,335,898	...	...	...	...	...	...	...	...	...	...
	Vizagapatam	1,531,348	2	...	...	...	2	...	...	...	...	2
	Gódávari	2,077,858	12	19	4	19	54	5	3	4	12	66
	Kistna	1,855,024	249	836	1,451	965	3,501	219	30	21	270	3,771
	North midland—											
	Kurnool	817,660	4	79	237	271	591	120	56	1	177	768
	Cuddapah	1,271,721	...	1	...	6	7	15	36	208	259	266
	Bellary ...	890,485	28	22	11	4	65	...	...	51	51	116
	Anantapur ...	727,319	...	...	...	...	...	...	...	9	9	9
	South-western—											
	South Canara	1,052,002	...	...	...	...	...	...	...	...	...	...
	Malabar	2,636,674	6	1	14	1	22	1	1	...	2	24
	Nilgiris	96,765	...	1	...	...	1	...	...	...	...	1
	Total ...	14,292,754	301	959	1,717	1,266	4,243	360	126	294	780	5,023
	Incidence per mille of population of south-west monsoon group.	.....	...	...	...	...	0·30	...	...	...	0·05	0·35

Cholera incidence exhibited according to monsoon periods—cont.

Districts.	Population for which returns were received.	South-west monsoon.					North-east monsoon.				Grand total of both the monsoon periods.
		June.	July.	August.	September.	Total.	October.	November.	December.	Total.	
Districts chiefly affected by north-east monsoon.											
East coast, central—											
Nellore	1,463,357	65	141	273	457	936	310	566	791	1,667	2,603
Madras	436,375	1	88	298	166	553	45	41	13	99	652
Chingleput	1,199,901	12	9	164	347	532	181	236	378	795	1,327
North Arcot	2,113,585	15	54	382	366	817	163	305	1,662	2,130	2,947
East coast, south—											
South Arcot	2,162,336	730	1,093	969	473	3,265	142	804	2,230	3,176	6,441
Trichinopoly	1,371,726	299	672	491	271	1,733	48	57	379	484	2,217
Tanjore	2,227,081	127	322	430	334	1,213	272	158	648	1,078	2,291
South-eastern—											
Madura	2,099,668	208	232	60	10	510	81	121	95	297	807
Tinnevelly	1,915,702	41	196	134	85	456	33	28	127	188	644
South midland—											
Salem	1,961,784	50	...	2	2	54	...	...	31	31	85
Coimbatore	2,003,911	135	6	31	1	173	1	...	1	2	175
Total ...	18,955,426	1,683	2,813	3,234	2,512	10,242	1,276	2,316	6,355	9,947	20,189
Incidence per mille of population of north-east monsoon group.	...	...	...	...	...	0·54	...	...	...	0·52	1·06

29. The measures taken to combat the disease in rural areas by the local authorities, in spite of reminders, cannot be described as adequate. Notwithstanding the training of a large number of Certificated Sanitary Inspectors available for special work in connection with epidemics, Local Fund bodies cannot readily be prevailed upon to undertake systematic measures with the aid of these men. Matters are, however, very much better than a few years back, when the chief idea of certain Local Fund bodies in dealing with cholera was to distribute "cholera pills," by means of Vaccinators. Hospital Assistants are detached, if somewhat tardily, for this duty, and attempt to combat conditions (for which they are not specially fitted as in the case of Certificated Sanitary Inspectors), more especially with reference to specific contamination of the water-supplies of villages. These bodies, however, almost invariably fail to support their efforts, by supplying menial staffs necessary to ensure correct sanitary results.

30. The rules for combating cholera in municipalities laid down in G.O., No. 1536 M., dated 9th September 1896, continued in force. As remarked in last year's report, their utility is greatly minimized by the power left in the hands of the Collector to approve of any smaller staff being employed than that laid down in the rules as the minimum. Although the Order provides definitely for the provision of sufficient funds for effecting the scheme, the first thoughts of Chairmen of Municipalities seem to be how cheaply the system can be nominally effected, and, apparently on the ground of economy, this is a policy that is not

actively disapproved by the Collectors. The Government Order also places in the hands of the Collector the most important task of giving the warning to the municipality, as to when it is necessary to put in force the rule requiring the employment of a staff for observation. No instance has yet come to the notice of this office of Collectors having given warning to municipalities *at this stage.* Consequently, the system which contemplated a method of observation, which should secure rapid action, on the introduction of the first case of the disease, has degenerated into a method of prevention of spread, *after the disease has exhibited itself.* The effecting of sanitary measures against epidemic disease demands at the hands of the local bodies responsible a rigid adherence to certain principles and methods; relaxation of these, at the option of this or that official, condemns their original necessity, and permits of flaws that stultify them.

31. In the municipal towns of Palni, Nellore, Chidambaram, Mannárgudi, and Trichinopoly, the disease was severe. Of these, Trichinopoly is the only town in which the rules above referred to are in force.

32. On making a comparison of the total population under the rules and those not, the incidence of the disease is found to be as follows :—

	Incidence of cholera in			
	1895.	1896.	1897.	1898.
Populations under the Cholera Rules in 24 towns=987,835.	0·7	2·3	5·3	2·2
Populations *not* under the Cholera Rules in 21 towns=428,914.	0·8	3·3	7·6	1·8

Had the populations under the rules been attacked at the same rate as those not subject to them, they would have lost, during 1895 to 1898, 2,964 more lives than they actually did.

Statement illustrating the distribution, &c., of Cholera in the Madras Presidency during the year 1898, *to accompany the Cholera Map.*

1	2	3	4	5	6	7		8	9	10	
						Cholera.				Number of those	
Districts.	Number of Circles of Registration.	Name of Circle.	Population for which Returns were received.	Date of First Case of Cholera in the Circle during the Year.	Date of Last Case of Cholera in the Circle during the Year.	Total Deaths in each of the Circles.	Ratio per 10,000 of Population.	Period of Maximum Intensity of the Disease.	Number of Villages in each of the Circles.	Affected by Cholera.	Not affected by Cholera.
Anantapur.	1	Anantapur ... M.T.C.	6,933	...	...	...	...	...	1	...	1
	2	Tadpatri ... T.C.	10,275	...	...	...	...	...	1	...	1
	3	Anantapur ... R.C.	97,481	...	...	...	...	...	126	...	126
	4	Gooty ... R.C.	142,577	...	...	...	...	...	153	...	153
	5	Tadpatri ... R.C.	102,373	...	...	...	...	...	95	...	95
	6	Penukonda ... R.C.	81,100	...	...	...	...	...	105	...	105
	7	Dharmavaram ... R.C.	66,113	...	...	...	...	...	94	...	94
	8	Hindúpur ... R.C.	80,843	...	...	...	...	...	99	...	99
	9	Madakasíra ... R.C.	67,992	22nd Dec....	27th Dec. ...	3	0·4	December.	150	1	149
	10	Kalyandroog ... R.C.	71,592	27th Dec....	31st Dec....	6	0·8	December.	141	3	138
	10	Total, District ...	727,319	22nd Dec....	31st Dec....	9	0·1	December.	965	4	961
Bellary.	11	Bellary ... M.T.C.	57,780	...	...	...	...	...	1	...	1
	12	Ádóni ... M.T.C.	26,216	...	...	...	...	...	1	...	1
	13	Hospet ... T.C.	12,869	...	...	...	...	...	1	...	1
	14	Kampli ... T.C.	10,528	...	...	...	...	...	1	...	1
	15	Rayadrug ... T.C.	10,378	3rd Dec....	3rd Dec....	1	1·0	...	1	1	...
	16	Bellary ... R.C.	120,800	20th Dec. ...	30th Dec....	16	1·3	...	129	6	123
	17	Hospet ... R.C.	69,103	...	...	...	...	...	77	...	77
	18	Kádligi ... R.C.	94,295	8th July ..	22nd Sept.	16	1·7	August ...	105	3	102
	19	Hadagalli ... R.C.	104,035	12th May ...	23rd July ...	48	4·6	June ..	85	7	78
	20	Harpanahalli ... R.C.	82,240	19th April.	7th Aug....	46	5·6	May ...	83	6	77
	21	Alúr ... R.C.	88,076	...	...	...	...	...	91	...	91
	22	Ádóni ... R.C.	134,551	...	...	...	...	...	129	...	129
	23	Rayadrug ... R.C.	68,243	3rd Dec....	31st Dec....	34	5·0	...	67	10	57
	24	Zemindari	11,371	...	...	...	...	...	24	...	24
	14	Total, District ...	890,185	19th April...	31st Dec....	161	1·8	December.	795	33	762
Chingleput.	25	Conjeeveram ... M.T.C.	42,543	21st Jan. ...	29th Dec....	14	3·3	December.	1	1	...
	26	Chingleput ... M.T.C.	9,763	19th June...	8th Dec....	9	9·2	...	1	1	...
	27	St. Thomas' Mount T.C.	12,140	...	...	...	...	...	1	...	1
	28	Saidapet ... R.C.	209,477	1st Jan. ...	22nd Dec....	363	17·3	January ..	275	59	216
	29	Chingleput ... R.C.	127,413	21st Jan. ...	31st Dec....	214	16·8	September.	299	12	287
	30	Madurántakam R.C.	263,130	7th Jan. ..	31st Dec....	298	11·3	December.	514	41	473
	31	Conjeeveram ... R.C.	176,121	2nd Jan....	31st Dec....	225	12·8	October ...	372	38	334
	32	Tiravallúr ... R.C.	236,916	7th Jan....	31st Dec....	204	8·6	November.	431	35	396
	33	Ponnéri ... R.C.	122,398	1st Jan. ...	31st Dec....	570	46·6	September.	240	68	172
	9	Total, District ...	1,199,901	1st Jan. ...	31st Dec....	1,897	15·8	December.	2,134	255	1,879
Coimbatore.	34	Coimbatore ... M.T.C.	46,007	13th Jan. ...	28th May...	75	16·3	April ...	1	1	...
	35	Erode ... M.T.C.	12,238	13th Jan. ...	10th April.	12	9·8	...	1	1	...
	36	Karúr ... M.T.C.	10,740	6th Jan. ...	29th Sept.	40	37·2	February ...	1	1	...
	37	Coimbatore ... R.C.	260,421	12th Jan. ...	7th Aug....	195	7·5	March ...	263	25	238
	38	Erode ... R.C.	234,677	15th Jan. ...	6th June ...	332	14·1	April ..	202	23	179
	39	Satyamangalam R.C.	184,088	10th Mar. ...	5th July...	342	18·6	March ...	191	23	168
	40	Pollachi ... R.C.	183,650	1st Jan. ...	27th Aug...	326	17·7	April ...	161	22	139
	41	Palladam ... R.C.	270,384	1st Jan. ...	6th July...	360	13·3	March ...	195	37	158
	42	Bhaváni ... R.C.	119,867	18th Jan....	30th June...	101	8·4	June ...	63	5	58
	43	Kollegal ... R.C.	88,524	3rd April.	25th April.	5	0·6	...	130	1	129
	44	Udamalpet ... R.C.	143,056	2nd Jan....	28th Aug....	235	16·4	April ...	93	15	78
	45	Karúr ... R.C.	201,043	2nd Jan....	30th Dec....	197	9·8	January ...	95	17	78
	46	Dhárápuram ... R.C.	249,216	3rd Jan. ...	1st June..	146	5·9	January ...	82	29	53
	13	Total, District ...	2,003,911	1st Jan. ..	30th Dec...	2,366	11·8	April ...	1,478	200	1,278
Cuddapah.	47	Cuddapah ... M.T.C.	17,211	7th July ...	7th July...	1	0·6	...	1	1	...
	48	Badvel ... R.C.	93,150	7th Feb. ...	31st Dec....	108	11·6	December.	120	21	99
	49	Proddatur ... R.C.	98,417	5th Mar....	— Sept....	4	0·4	...	91	1	90
	50	Sidhavattam ... R.C.	66,809	26th Sept.	28th Sept.	2	0·3	...	79	2	77
	51	Pullampet ... R.C.	149,093	1st Jan. ...	31st Dec. ..	288	19·3	December.	135	23	112
	52	Cuddapah ... R.C.	137,455	...	...	...	...	...	151	...	151
	53	Jammalamadugu R.C.	101,273	...	...	...	...	...	127	...	127
	54	Pulivendla ... R.C.	105,842	...	...	...	...	...	106	...	106
	55	Ráyachóti ... R.C.	113,234	2nd Mar....	18th Dec. ..	14	1·2	March ...	94	4	90
	56	Kadiri ... R.C.	134,892	...	...	...	...	...	142	...	142
	57	Vayalpad ... R.C.	127,035	14th Nov....	29th Dec....	30	2·4	December.	125	6	119
	58	Madanapalle ... R.C.	127,310	5th Feb....	24th Feb....	10	0·8	...	105	1	104
	12	Total, District ...	1,271,721	1st Jan. ...	31st Dec. ..	457	3·6	December.	1,276	59	1,217

Statement illustrating the distribution, &c., of Cholera in the Madras Presidency during the year 1898, *to accompany the Cholera Map*—cont.

1	2	3	4	5	6	7		8	9	10	
						Cholera.				Number of those	
Districts.	Number of Circles of Registration.	Name of Circle.	Population for which Returns were received.	Date of First Case of Cholera in the Circle during the Year.	Date of Last Case of Cholera in the Circle during the Year.	Total Deaths in each of the Circles.	Ratio per 10,000 of Population.	Period of Maximum Intensity of the Disease.	Number of Villages in each of the Circles.	Affected by Cholera.	Not affected by Cholera.
Ganjám.	59	Chicacole ... M.T.C.	18,204	...	...	...	...	...	1	...	1
	60	Berhampur ... M.T.C.	25,493	...	...	...	...	...	1	...	1
	61	Parlákimedi ... M.T.C.	16,379	...	...	...	...	...	1	..	1
	62	Chicacole ... R.C.	170,240	...	...	...	...	...	305	...	305
	63	Berhampur ... R.C.	265,303	5th Feb....	28th Mar....	11	0·4	February ...	543	3	540
	64	Goomsur ... R.C.	169,235	...	...	...	...	..	710	..	710
	65	Zamíndaries	652,092	1st Jan. ...	22nd May...	34	0·5	January ...	2,630	14	2,616
	66	Agency Tracts	18,952	18th Feb. ...	18th Feb. ...	1	0·5	...	1,846	1	1,845
	8	Total, District ...	1,335,898	1st Jan. ...	22nd May.	46	0·3	January ...	6,037	18	6,019
Gódávari.	67	Cocanada ... M.T.C.	40,068	...	...	...	...	...	1	...	1
	68	Rajahmundry ... M.T.C.	28,279	19th Jan. ...	20th Mar....	28	9·9	February ...	1	1	...
	69	Ellore ... M.T.C.	29,296	5th Jan. ...	27th July ...	71	24·2	January ...	1	1	...
	70	Pithápuram ... T.C.	13,731	...	...	...	...	...	1	...	1
	71	Peddápuram ... T.C.	13,652	...	...	...	...	...	1	...	1
	72	Samalkot ... T.C.	13,409	...	...	...	...	...	1	...	1
	73	Dowlaishweram T.C.	10,454	...	...	...	...	...	1	...	1
	74	Rámachandrapuram. R.C.	261,183	23rd Feb....	17th July...	36	1·4	March ...	164	4	160
	75	Narsapúr ... R.C.	230,315	4th Jan. ...	25th June.	21	0·9	January ...	139	4	135
	76	Amalápuram ... R.C.	256,072	1st Jan. ...	2nd June.	44	1·7	March ..	170	5	165
	77	Tanuku ... ... R.C.	204,040	1st Jan. ...	1st Dec....	82	4·0	January ...	176	8	168
	78	Bhímavaram ... R.C.	121,990	20th Jan. ...	1st Dec. ...	26	2·0	February ...	138	6	132
	79	Ellore ... ... R.C.	142,585	1st Jan. ...	23rd Nov....	83	5·8	January ...	219	9	210
	80	Yernagúdem ... R.C.	136,204	26th Jan. ...	28th July ...	54	3·9	February ...	137	4	133
	81	Rajahmundry ... R.C.	106,866	22nd Jan. ...	2nd Nov....	66	6·1	April ...	116	4	112
	82	Peddápuram ... R.C.	124,028	1st Jan. ...	1st Jan. ...	1	0·08	...	123	1	122
	83	Bhadráchalam ... R.C.	* 127,114	14th Jan. ...	1st July ...	3	0·2	...	969	1	968
	84	Zamíndaries	218,572	1st Jan. ...	27th June.	5	0·2	...	245	3	242
	18	Total, District ...	2,077,858	1st Jan. ...	1st Dec. ...	520	2·5	January ...	2,603	51	2,552
Kistna.	85	Masulipatam ... M.T.C.	38,667	3rd Jan. ...	6th Sept.	36	9·3	January ...	1	1	...
	86	Guntúr ... M.T.C.	23,267	19th July...	13th Sept.	39	16·7	August ...	1	1	...
	87	Bozwada ... M.T.C.	20,611	2nd Jan. ...	26th Feb....	45	21·8	January ...	1	1	..
	88	Chírála ... T.C.	10,581	7th Jan. ...	4th Sept....	2	1·9	...	1	1	...
	89	Tenali ... R.C.	222,756	1st Jan. ...	21st Oct. ...	535	24·0	January ...	151	67	84
	90	Bápatla ... R.C.	171,345	1st Jan. ...	22nd Dec.	619	36·1	September.	116	57	59
	91	Guntúr ... R.C.	143,367	4th Jan. ...	18th Sept.	227	15·8	August ...	112	31	81
	92	Palnad ... R.C.	142,005	4th Mar....	30th Nov....	884	62·2	August ...	98	45	53
	93	Narasaraopet ... R.C.	156,364	19th Jan. ...	12th Dec....	688	44·0	August ...	115	67	48
	94	Gudiváda ... R.C.	118,308	2nd Jan....	— Nov....	275	23·2	January ...	213	47	166
	95	Sattenapallo ... R.C.	138,611	5th Jan. ...	6th Dec....	778	56·1	August ...	176	70	106
	96	Masulipatam ... R.C.	159,547	3rd Jan....	14th Oct....	235	14·7	September.	188	28	160
	97	Nandigáma ... R.C.	126,698	— May ...	2nd Dec.	50	3·9	October ...	169	9	160
	98	Bezwada ... R.C.	85,731	3rd Jan. ...	4th Oct. ...	199	23·2	July ...	108	24	84
	99	Vinukonda ... R.C.	82,431	2nd Jan....	26th Oct. ...	539	65·4	August ...	72	46	26
	100	Zamíndaries	214,735	1st Jan. ...	10th Nov....	324	15·0	August ...	326	46	280
	16	Total, District ...	1,855,024	1st Jan. ...	22nd Dec....	5,475	29·5	August ...	1,848	541	1,307
Kurnool.	101	Kurnool ... M.T.C.	24,306	...	...	...	...	...	1	...	1
	102	Nandyal ... T.C.	10,704	...	...	...	...	...	1	...	1
	103	Ramallakot ... R.C.	100,590	5th Nov....	5th Nov....	1	1·0	...	106	1	105
	104	Pattikonda ... R.C.	138,703	...	...	...	...	...	107	...	107
	105	Nandikotkur ... R.C.	88,559	...	...	...	...	...	113	...	113
	106	Nandyal ... R.C.	85,542	...	..	...	...	...	100	...	100
	107	Koilkuntla ... R.C.	86,543	...	...	...	...	...	85	...	85
	108	Sirvél ... R.C.	65,164	...	...	...	...	...	87	...	87
	109	Cumbum ... R.C.	117,578	12th July ...	4th Dec. ...	339	28·8	August ...	108	27	81
	110	Markapúr ... R.C.	99,971	17th May...	24th Oct. ...	444	44·4	September.	94	43	51
	10	Total, District ...	817,660	17th May...	4th Dec....	784	9·6	September.	802	71	731
Madras.	111	Madras ... M.T.C.	436,375	2nd Jan. ...	26th Dec....	734	16·8	August ...	1	1	...

* Including Agency Hill Tracts.

Statement illustrating the distribution, &c., of Cholera in the Madras Presidency during the year 1898, *to accompany the Cholera Map*—cont.

1	2	3	4	5	6	7		8	9	10	
Districts.	Number of Circles of Registration.	Name of Circle.	Population for which Returns were received.	Date of First Case of Cholera in the Circle during the Year.	Date of Last Case of Cholera in the Circle during the Year.	Cholera. Total Deaths in each of the Circles.	Cholera. Ratio per 10,000 of Population.	Period of Maximum Intensity of the Disease.	Number of Villages in each of the Circles.	Number of those Affected by Cholera.	Number of those Not affected by Cholera.
Madura.	112	Madura ... M.T.C.	87,121	1st Jan. ...	31st Dec. ...	98	11·5	February ...	1	1	...
	113	Dindigul ... M.T.C.	20,115	10th Jan. ...	23rd May ...	60	29·8	April ...	1	1	...
	114	Periyakulam ... M.T.C.	16,363	16th Apl. ...	23rd July ...	32	19·5	April ...	1	1	...
	115	Palni ... M.T.C.	16,940	2nd Feb. ...	2nd May ...	244	144·0	April ...	1	1	...
	116	Ramnad ... T.C.	13,589	1st Jan. ...	13th Nov. ...	333	245·0	January ...	1	1	...
	117	Aruppukóttai T.C.	12,673	13th Jan. ...	5th Mar. ...	16	12·6	January ...	1	1	...
	118	Kílakarai ... T.C.	12,396	18th Jan. ...	6th Apl. ...	6	4·8	...	1	1	...
	119	Paramagudi ... T.C.	10,001	1st Jan. ...	28th July ...	15	15·0	January ...	1	1	...
	120	Madura ... R.C.	173,755	1st Jan. ...	31st Dec. ...	243	14·0	January ...	280	43	237
	121	Mélúr ... R.C.	148,650	1st Jan. ...	25th Nov. ...	351	23·6	January ...	100	27	73
	122	Tirumangalam R.C.	264,620	1st Jan. ...	29th Dec. ...	561	21·2	November ...	273	62	211
	123	Periyakulam R.C.	246,845	1st Jan. ...	20th Aug. ...	567	23·0	May ...	85	41	44
	124	Dindigul ... R.C.	370,857	1st Jan. ...	20th Aug. ...	512	13·8	April ...	213	26	187
	125	Palni ... ... R.C.	178,110	1st Jan. ...	25th May ...	1,165	65·4	April ...	115	26	89
	126	Kodaikanal ... R.C.	18,288	9th Jan. ...	24th June ...	69	37·7	April ...	11	6	5
	127	Sattenandal Villages ...	1,283	2nd Apl. ...	14th Apl. ...	7	54·5	...	4	1	3
	128	Zamindaries ...	508,062	1st Feb. ...	31st July ...	456	9·0	April ...	3,014	212	2,802
	17	Total, District ...	*2,099,668	1st Jan. ...	31st Dec. ...	4,735	22·5	April ..	4,103	452	3,651
Malabar.	129	Tellicherry ... M.T.C.	26,631	29th Jan. ...	2nd Feb. ...	4	1·5	...	1	1	...
	130	Calicut ... M.T.C.	64,798	1st Jan. ...	14th Mar. .	40	6·2	January ...	1	1	...
	131	Palghat ... M.T.C.	39,367	7th Feb. ...	19th Apl. ...	11	2·8	February ...	1	1	...
	132	Cochin ... M.T.C.	16,147	20th Jan. ...	23rd Feb. ...	4	2·5	...	1	1	...
	133	Cannanore ... M.T.C.	26,653	...	...	...	...	...	1	...	1
	134	Chirakkal ... R.C.	283,471	1st Jan. ...	11th Mar. ...	18	0·6	January ...	282	4	278
	135	Kóttayam ... R.C.	168,260	...	...	..	...	...	220	...	220
	136	Kurumbranád ... R.C.	304,011	1st Jan. ...	18th Mar. ...	20	0·6	January ...	340	5	335
	137	Calicut ... R.C.	171,582	1st Jan. ...	24th Feb. ...	47	2·7	February ...	191	5	186
	138	Ernád ... R.C.	339,187	1st Jan. ...	30th May ...	201	5·9	January ...	233	22	211
	139	Ponnáni ... R.C.	449,253	6th Jan. ...	19th May ...	202	4·5	February ...	460	25	435
	140	Walavanád ... R.C.	332,334	2nd Jan. ...	13th Nov. ...	94	2·8	January ...	317	17	300
	141	Palghat ... R.C.	332,627	1st Jan. ...	2nd Aug. ...	283	8·5	April ...	136	21	115
	142	Wynaad ... R.C.	76,365	...	...	...	...	...	58	...	58
	143	Cochin ... R.C.	5,988	3rd Jan. ...	9th Jan. ...	8	13·3	...	3	1	2
	15	Total, District ...	2,636,674	1st Jan. ...	13th Nov. ..	932	3·5	January ...	2,245	104	2,141
Nellore.	144	Nellore ... M.T.C.	29,128	1st Jan. ...	31st Dec. ...	297	101·9	November ...	1	1	...
	145	Ongole ... M.T.C.	10,832	29th July ...	29th Sept.	9	8·3	...	1	1	...
	146	Gudur ... R.C.	116,758	5th Jan. ...	31st Dec. ...	344	29·5	March ...	121	35	86
	147	Rapúr ... R.C.	61,305	4th Jan. ...	31st Dec. ...	173	28·2	January ...	113	16	97
	148	Nellore ... R.C.	168,548	1st Jan. ...	31st Dec. ...	1,181	70·0	February ...	150	81	69
	149	Átmakúru ... R.C.	96,349	6th Jan. ..	31st Dec. ...	535	55·5	December ...	104	39	65
	150	Kávali ... R.C.	68,876	13th Jan. ...	12th Dec. ...	306	44·4	November ...	55	26	29
	151	Udayagiri ... R.C.	55,382	1st Jan. ...	28th Dec. ...	143	25·8	January ...	53	15	38
	152	Kandukúr ... R.C.	113,357	1st Jan. ...	15th Dec. ...	106	9·3	June ...	115	22	93
	153	Kanigiri ... R.C.	61,066	13th Aug. ...	23rd Dec. ...	59	9·6	September ...	50	13	37
	154	Ongole ... R.C.	166,979	1st Jan. ...	1st Dec. ...	425	25·4	July ...	112	48	64
	155	Zamíndaries	514,777	11th Jan. ...	29th Dec. ...	578	11·2	August ...	918	103	815
	12	Total, District ...	1,463,357	1st Jan. ...	31st Dec. ...	4,156	28·4	December ...	1,793	400	1,393
Nilgiris.	156	Ootacamund ... M.T.C.	13,991	...	...	...	...	...	1	...	1
	157	Coonoor ... M.T.C.	5,586	...	...	...	...	...	1	...	1
	158	Nilgiris ... R.C.	52,168	...	...	...	...	...	38	...	38
	159	South-East Wynaad R.C.	25,020	21st July ...	21st July ...	1	0·4	...	12	1	11
	4	Total, District ...	96,765	21st July ...	21st July ...	1	0·1	...	52	1	51
North Arcot.	160	Vellore ... M.T.C.	44,724	5th Sept. ...	30th Dec. ...	63	14·0	December ...	1	1	...
	161	Wálajápet ... M.T.C.	10,485	30th Jan. ...	30th Dec. ...	19	18·1	September ...	1	1	...
	162	Gudiyáttam ... M.T.C.	18,745	5th Jan. ...	31st Dec. ...	78	41·6	December ...	1	1	...
	163	Tirupati ... M.T.C.	14,238	30th Nov. ...	30th Dec. ...	11	7·7	December ...	1	1	...
	164	Kálahasti ... T.C.	11,715	4th Dec. ...	31st Dec. ...	55	46·9	...	1	1	...
	165	Arcot ... T.C.	10,928	22nd Aug. ...	30th Dec. ...	88	80·5	August ...	1	1	...
	166	Ambúr ... T.C.	10,583	27th Dec. ...	31st Dec. ...	3	2·8	...	1	1	...
	167	Chittoor ... R.C.	200,186	1st Jan ...	31st Dec. ...	622	31·0	December ...	337	48	289
	168	Chendragiri ... R.C.	100,030	2nd Jan. ...	31st Dec. ...	257	25·7	December ...	231	15	216
	169	Palmanér ... R.C.	48,131	23rd Jan. ...	23rd Jan. ...	1	0·2	...	93	1	92
	170	Gudiyáttam ... R.C.	157,863	4th Feb. ...	31st Dec. ...	162	10·2	December ...	183	11	172

* Increase due to the inclusion of populations of Kodaikanal taluk and certain Zamindaries from which vital statistical returns were received for the first time.

Statement illustrating the distribution, &c., of Cholera in the Madras Presidency during the year 1898, *to accompany the Cholera Map*—cont.

1	2	3	4	5	6	7		8	9	10	
Districts.	Number of Circles of Registration.	Name of Circle.	Population for which Returns were received.	Date of First Case of Cholera in the Circle during the Year.	Date of Last Case of Cholera in the Circle during the Year.	Cholera. Total Deaths in each of the Circles.	Cholera. Ratio per 10,000 of Population.	Period of Maximum Intensity of the Disease.	Number of Villages in each of the Circles.	Number of those Affected by Cholera.	Number of those Not affected by Cholera.
N. Arcot—cont.	171	Vellore ... R.C.	137,367	6th Jan. ...	31st Dec. ...	414	30·1	December ...	149	40	109
	172	Pólúru ... R.C.	139,697	14th Aug. ...	24th Dec. ...	118	8·4	September	263	14	249
	173	Wandiwash ... R.C.	177,719	16th Jan. ...	31st Dec. ...	80	4·5	August ...	285	17	268
	174	Arcot ... R.C.	165,948	14th Aug. ...	31st Dec. ...	178	10·7	August ...	258	30	228
	175	Wálajápet ... R.C.	228,630	6th Jan. ...	31st Dec. ...	255	11·1	December ...	250	32	218
	176	Zamíndaries	636,596	1st Jan. ...	31st Dec. ...	995	15·6	December ...	2,272	116	2,156
	17	Total, District ...	2,113,585	1st Jan. ...	31st Dec. ...	3,399	16·1	December ...	4,328	331	3,997
Salem.	177	Salem ... M.T.C.	67,640	10th Apl. ...	18th May ...	42	6·0	April ..	1	1	...
	178	Vániyambádi ... M.T.C.	15,838	24th Aug. ...	31st Dec. ...	19	12·0	December ...	1	1	...
	179	Tiruppattúr ... M.T.C.	16,463	...	...	...	...	...	1	...	1
	180	Sendamangalam T.C.	13,354	16th May ...	21st May ...	9	6·7	...	1	1	...
	181	Rásipuram ... T.C.	10,539	11th Jan. ...	12th May ...	21	19·9	April ...	1	1	...
	182	Salem ... R.C.	338,759	16th Feb. ...	7th June ...	314	9·3	April ...	499	51	448
	183	Atúr ... R.C.	183,202	1st Jan. ...	24th Dec. ...	252	13·7	January ...	176	49	127
	184	Námakkal ... R.C.	286,686	4th Feb. ...	28th June ...	567	19·8	April ...	347	97	250
	185	Tiruchengódu R.C.	248,667	8th Jan. ...	18th June ...	349	14·0	April ...	168	52	116
	186	Hosúr ... R.C.	155,693	15th Aug. ...	15th Aug. ...	1	0·06	...	757	1	756
	187	Krishnagiri ... R.C.	152,116	11th Jan. ...	23rd Dec. ...	82	5·4	February ...	510	18	492
	188	Dharmapuri ... R.C.	178,420	1st Jan. ...	27th Feb. ...	18	1·0	...	575	5	570
	189	Tiruppattúr ... R.C.	156,295	8th Jan. ...	29th Apl. ...	104	6·7	March ...	322	11	311
	190	Úttangarai ... R.C.	138,112	10th Jan. ...	20th Apl. ...	24	1·7	April ...	452	4	448
	14	Total, District ...	1,961,784	1st Jan. ...	31st Dec. ...	1,802	9·2	April ...	3,811	292	3,519
South Arcot.	191	Cuddalore ... M.T.C.	47,025	2nd Jan. ...	31st Dec. ...	103	21·9	November ...	1	1	...
	192	Chidambaram ... M.T.C.	18,634	1st Jan. ...	29th Aug. ...	144	77·3	January ...	1	1	...
	193	Tiruvannámalai M.T.C.	13,643	...	...	...	...	...	1	...	1
	194	Porto Novo ... T.C.	14,045	2nd Jan. ...	14th Dec. ...	41	29·2	January ...	1	1	...
	195	Cuddalore ... R.C.	289,908	1st Jan. ...	31st Dec. ...	1,631	56·2	December ...	231	135	96
	196	Villupuram ... R.C.	301,690	1st Jan. ...	31st Dec. ...	1,664	55·1	December ..	305	138	167
	197	Chidambaram R.C.	249,569	1st Jan. ...	27th Dec. ...	3,223	129·1	January ...	437	276	161
	198	Tindivanam ... R.C.	315,994	16th Jan. ...	31st Dec. ...	951	30·1	August ...	474	93	381
	199	Kallakurchi ... R.C.	240,179	3rd Jan. ..	31st Dec. ...	581	24·2	December ...	383	56	327
	200	Tirukkóyilúr .. R.C.	257,115	1st Jan. ...	31st Dec. ...	1,483	57·7	December ...	354	123	231
	201	Tiruvannámalai R.C.	191,743	19th Jan. ...	31st Dec. ...	182	9·5	December ...	402	20	382
	202	Vriddhachalam R.C.	222,791	1st Jan. ...	31st Dec. ...	1,278	57·3	January ...	307	145	162
	12	Total, District ...	2,162,336	1st Jan. ...	31st Dec. ...	11,281	52·2	January ..	2,897	989	1,908
S. Canara.	203	Mangalore ... M.T.C.	40,620	2nd Jan. ...	30th Apl. ...	58	14·3	January ...	1	1	...
	204	Mangalore ... R.C.	237,974	1st Jan. ...	1st Apl. ...	206	8·6	February ...	307	42	265
	205	Kasaragód ... R.C.	280,655	1st Jan. ...	7th May ...	346	12·3	January ...	243	36	207
	206	Uppinangadi ... R.C.	118,804	5th Jan. ...	30th Mar. ...	63	5·3	February ...	277	28	249
	207	Udipi ... R.C.	253,699	1st Jan. ...	16th Apl. ...	115	4·5	January ...	259	24	235
	208	Coondapoor ... R.C.	120,250	1st Jan. ...	4th Feb. ...	74	6·1	January ...	190	22	168
	6	Total, District ...	1,052,002	1st Jan. ...	7th May ...	862	8·2	January ...	1,277	153	1,124
Tanjore.	209	Tanjore ... M.T.C.	54,258	1st Jan. ...	31st Dec. ...	226	41·6	January ...	1	1	...
	210	Kumbakónam ... M.T.C.	54,254	1st Jan. ...	30th Dec. ...	193	35·6	January ...	1	1	...
	211	Máyavaram ... M.T.C.	23,754	2nd Jan. ...	27th Dec. ...	54	22·7	February ...	1	1	...
	212	Negapatam ... M.T.C.	58,573	1st Jan. ...	8th Oct. ...	335	57·2	January ...	1	1	...
	213	Mannárgudi ... M.T.C.	20,392	1st Jan. ...	27th Dec. ...	133	65·2	January ...	1	1	...
	214	Tiruválúr ... T.C.	12,934	1st Jan. ...	15th Dec. ...	146	112·9	January ...	1	1	...
	215	Tanjore ... R.C.	356,021	1st Jan. ...	31st Dec. ...	2,575	72·3	January ...	426	208	218
	216	Kumbakónam ... R.C.	323,350	1st Jan. ...	31st Dec. ...	2,556	79·0	January ...	519	238	281
	217	Máyavaram ... R.C.	220,977	1st Jan. ...	31st Dec. ...	1,279	57·9	January ...	338	129	209
	218	Shiyali ... R.C.	119,801	1st Jan. ...	28th Dec. ...	818	68·3	January ...	191	75	116
	219	Nannilam ... R.C.	215,905	1st Jan. ...	31st Dec. ...	1,663	77·0	January ...	388	179	209
	220	Negapatam ... R.C.	148,177	1st Jan. ...	31st Dec. ...	1,513	102·1	January ...	317	161	156
	221	Mannárgudi ... R.C.	167,033	1st Jan. ...	31st Dec. ..	1,095	65·5	January ...	308	141	167
	222	Tirutturaippúndi R.C.	180,293	1st Jan. ...	31st Dec. ..	1,132	62·8	January ...	226	112	114
	223	Pattukkóttai ... R.C.	271,359	1st Jan. ...	31st Dec. ...	1,183	43·6	January ...	831	152	679
	15	Total, District ...	2,227,081	1st Jan. ...	31st Dec. ...	14,901	66·9	January ...	3,550	1,401	2,149

Statement illustrating the distribution, &c., of Cholera in the Madras Presidency during the year 1898, *to accompany the Cholera Map*—cont.

1	2	3		4	5	6	7		8	9	10	
Districts.	Number of Circles of Registration.	Name of Circle.		Population for which returns were received.	Date of First Case of Cholera in the Circle during the Year.	Date of Last Case of Cholera in the Circle during the Year.	Cholera. Total Deaths in each of the Circles.	Cholera. Ratio per 10,000 of Population.	Period of Maximum Intensity of the Disease.	Number of Villages in each of the Circles.	Number of those Affected by Cholera.	Number of those Not affected by Cholera.
Tinnevelly.	224	Tinnevelly ...	M.T.C.	24,756	1st Jan. ...	11th Mar. ...	23	9·3	January ...	1	1	...
	225	Palamcottah ...	M.T.C.	18,612	4th Jan. ...	8th Mar. ...	47	25·2	January ...	1	1	...
	226	Taticorin ...	M.T.C.	24,964	11th Jan. ...	22nd Dec....	128	51·2	August ...	1	1	...
	227	Srívilliputtúr ...	M.T.C.	29,541	3rd Feb. ...	7th May ...	12	4·0	March ...	1	1	...
	228	Kulasékarapatnam ...	T.C.	15,910	18th Sept....	31st Dec. ...	35	22·0	December ...	1	1	...
	229	Virudupatti ...	T.C.	14,075	1st Jan. ...	30th Dec....	37	26·3	January ...	1	1	...
	230	Viravanallúr ...	T.C.	13,951	26th Feb. ...	26th Feb. ...	1	0·7	...	1	1	...
	231	Rajahpalaiyam.	T.C.	13,301	...	...	...	...	...	1	...	1
	232	Tenkási ...	T.C.	12,861	1st Jan. ...	1st Feb. ...	20	15·5	January ...	1	1	...
	233	Sivakási ...	T.C.	12,184	27th Feb. ...	26th Mar. ...	10	8·2	March ...	1	1	...
	234	Káyalpatnam...	T.C.	11,464	13th Feb. ...	31st Dec. ...	38	33·1	December...	1	1	...
	235	Kalladakurchi.	T.C.	11,096	29th Jan. ...	27th May ...	18	16·2	February ...	1	1	...
	236	Ottappidáram.	R.C.	316,990	5th Jan. ...	20th Dec. ...	399	12·6	July ...	395	48	347
	237	Srívaikuntam ...	R.C.	260,196	1st Jan. ...	31st Dec. ...	627	24·1	January ...	146	73	73
	238	Tinnevelly ...	R.C.	141,252	1st Jan. ...	30th April...	216	15·3	January ...	120	45	75
	239	Srívilliputtúr...	R.C.	152,253	1st Jan. ...	16th Aug. ...	346	22·7	January ...	98	29	69
	240	Sankaranayinárkóyil ...	R.C.	209,213	1st Jan. ..	15th May ...	274	13·1	January ...	127	30	97
	241	Nángunéri ...	R.C.	174,410	1st Jan. ...	27th Dec. ...	150	8·6	January ...	236	39	197
	242	Ambásamudram ...	R.C.	158,552	1st Jan. ...	27th May ...	95	6·0	January ...	94	34	60
	243	Sáttúr ...	R.C.	158,046	1st Jan. ...	30th Dec....	541	34·2	March ...	209	61	148
	244	Tenkási ...	R.C.	142,075	1st Jan. ...	31st Dec....	207	14·5	January ...	101	33	68
	21	Total, District ...		1,915,702	1st Jan. ...	31st Dec...	3,224	16·8	January ...	1,538	403	1,135
Trichinopoly.	245	Trichinopoly ...	M.T.C.	89,666	1st Jan. ...	31st Dec. ...	656	73·1	February ...	1	1	...
	246	Srírangam ...	M.T.C.	21,632	1st Jan. ...	31st Dec. ...	104	48·0	January ...	1	1	..
	247	Trichinopoly ...	R.C.	248,561	1st Jan. ...	31st Dec. ...	1,359	54·8	January ..	364	238	126
	248	Musiri ...	R.C.	282,615	1st Jan. ...	31st Dec. ...	715	25·3	February ...	223	73	150
	249	Kulittalai ...	R.C.	243,685	2nd Jan. ...	31st Dec. ...	764	31·3	February ...	246	102	144
	250	Perambalúr ...	R.C.	195,004	1st Jan. ...	27th Dec. ...	674	34·5	January ...	219	87	132
	251	Udaiyárpálaiyam.	R.C.	201,530	1st Jan. ...	30th Dec. ...	2,538	125·9	July ...	335	205	130
	252	Zamíndaries ...	...	89,033	1st Jan. ...	28th Oct. ...	671	75·3	August ...	113	83	30
	8	Total, District ...		1,371,726	1st Jan. ...	31st Dec. ...	7,481	54·5	January ...	1,502	790	712
Vizagapatam.	253	Vizagapatam ...	M.T.C.	33,961	...	...	...	...	...	1	...	1
	254	Bimlipatam ...	M.T.C.	9,696	...	...	...	...	...	1	...	1
	255	Vizianagram ...	M.T.C.	30,735	1st Jan. ...	23rd Jan....	13	4·2	...	1	1	...
	256	Anakápalle ...	M.T.C.	17,001	...	...	...	...	...	1	...	1
	257	Bobbili ...	T.C.	14,448	...	...	...	...	...	1	...	1
	258	Sálúru ...	T.C.	12,910	9th Mar. ...	9th Mar. ...	3	2·3	...	1	1	...
	259	Palkonda ...	T.C.	10,364	...	...	...	...	...	1	...	1
	260	Párvatípuram...	T.C.	10,053	...	...	...	...	...	1	...	1
	261	Sarvasiddhi ...	R.C.	131,652	4th Feb. ...	18th April...	54	4·1	February ...	145	7	138
	262	Narasapatnam or Golgonda ...	R.C.	98,389	9th Mar. ...	20th May ...	148	15·0	March ...	176	29	147
	263	Anakápalle ...	R.C.	127,392	...	...	...	...	...	142	...	142
	264	Vizagapatam ...	R.C.	52,186	...	...	...	...	...	74	...	74
	265	Viravilli ...	R.C.	170,600	17th June ...	21st June ...	2	0·1	...	240	1	239
	266	Bimlipatam ...	R.C.	92,438	...	...	...	...	...	117	...	117
	267	Srungavarapukota ...	R.C.	113,170	...	...	...	...	...	181	...	181
	268	Vizianagram ...	R.C.	92,357	...	...	...	...	...	193	...	193
	269	Gajapatinagaram	R.C.	88,924	...	...	...	...	...	222	...	222
	270	Chipurupalle ...	R.C.	110,230	...	...	...	...	...	268	...	268
	271	Sálúru ...	R.C.	44,657	8th Mar. ...	8th Mar. ...	1	0·2	...	159	1	158
	272	Bobbili ...	R.C.	82,820	...	...	...	...	...	169	...	169
	273	Palkonda ...	R.C.	135,331	...	...	...	...	...	371	...	371
	274	Párvatípuram	R.C.	52,034	...	...	...	...	...	203	...	203
	22	Total, District ...		1,531,348	1st Jan. ...	21st June ...	221	1·4	March ...	2,668	40	2,628

SMALL-POX.

33. There occurred 20,490 deaths from small-pox. This represents a rate of 0·6 per mille upon the census population. Appended is a table showing the rates in municipalities and rural areas, respectively, during the last ten years. It will be observed that, within the last three years, a steady improvement in the rates within municipal towns as compared with their surrounding rural areas, is noticeable. This is possibly *inter alia* due to the influence of G.O., No. 1502 M., dated 19th October 1894, which demands that the Chairman shall give a complete account of the methods of disposal of all births that have been registered, and have arrived at an age to receive vaccination :—

Statement showing Small-pox Mortality in Municipalities and Rural areas for 10 *years commencing from* 1889.

Districts.	Municipal Town.	Ratio of deaths from small-pox per mille of population.																			
		1889.		1890.		1891.		1892.		1893.		1894.		1895.		1896.		1897.		1898.	
		Municipalities.	Rural areas.	Municipalities.	Rural areas.	Municipalities.	Rural areas.	Municipalities.	Rural areas.	Municipalities.	Rural areas.	Municipalities.	Rural areas.	Municipalities.	Rural areas.	Municipalities.	Rural areas.	Municipalities.	Rural areas.	Municipalities.	Rural areas.
Anantapur ...	Anantapur ...	1·6	2·9	...	1·0	...	0·4	...	0·2	...	0·3	...	0·2	0·6	0·5	0·6	0·7	0·1	0·9	2·0	0·6
Bellary ...	Bellary	2·6		1·6		0·4		0·3	0·4	0·03	1·3	...	0·8	0·02	0·6	...	0·3	0·1	0·5	0·5	0·5
	Adóni	2·5		0·3		...		...		...		...		...		0·3		...		0·1	
Chingleput.	Conjeeveram ...	0·5	0·5	1·7	0·6	0·7	0·6	0·5	0·3	0·8	0·2	0·1	0·1	0·2	0·05	0·02	0·1	0·1	0·1	0·2	0·2
	Chingleput ...	...		...		...		...		...		...		...		...		...		0·2	
Coimbatore.	Coimbatore ...	0·5	0·4	0·4	0·3	2·1	1·1	4·5	1·3	0·4	0·4	0·1	0·08	0·3	0·02	0·1	0·02	...	0·06	...	0·1
	Erode	0·5		0·7		1·0		...		0·7		0·1		...		0·1		...		...	
	Karúr	0·1		0·7		...		0·09		0·5		0·8		0·2		0·3		...		0·1	
Cuddapah ...	Cuddapah ...	0·3	2·0	0·4	1·2	0·4	0·6	0·1	0·3	0·7	0·2	0·6	0·2	0·1	0·2	1·2	0·2	0·1	0·7	0·5	0·7
Ganjám ...	Chicacole ...	2·9	4·4	0·1	0·6	...	0·2	...	0·3	0·7	0·1	0·2	0·1	...	0·2	0·05	1·2	1·1	12·2	2·9	8·5
	Berhampur ...	5·1		0·08		...		...		...		...		0·04		0·4		1·3		6·1	
	Parlákimedi ...	0·4		...		...		0·2		...		0·1		0·1		...		0·7		5·0	
Gódávari ...	Cocanada ...	0·8	0·1	9·9	0·8	0·8	2·3	0·9	3·1	0·02	1·0	0·1	0·2	0·5	0·1	0·02	0·1	0·02	0·05	...	0·1
	Rajahmundry ...	0·2		2·7		3·5		0·7		0·04		0·2		0·9		0·1		...		0·2	
	Ellore	...		0·4		1·5		1·7		0·07		0·4		0·4		...		...		...	
Kistna ...	Masulipatam ...	...	0·2	1·3	1·1	5·4	5·3	0·05	3·6	0·05	0·2	0·1	0·07	0·03	0·04	0·02	0·06	...	0·1	0·05	0·4
	Guntúr	...		0·6		2·3		0·1		...		...		1·3		...		...		..	
	Bezwada	2·7		10·2		4·2		0·2		0·1		0·2		...		...		...		0·5	
Kurnool ...	Kurnool	2·0	4·3	...	0·6	...	0·3	...	0·5	...	0·3	0·04	0·3	0·1	0·6	0·6	1·8	1·7	0·3	...	0·7
Madras ...	Madras	0·1	...	0·2	...	0·1	...	0·06	...	0·04	...	0·03	...	0·006	...	0·1	...	0·2	...	0·2	...
Madura ...	Madura	0·9	0·6	3·9	0·8	2·6	2·4	2·9	1·5	2·3	0·7	0·3	0·2	0·2	0·06	0·1	0·05	0·1	0·1	0·1	0·2
	Pindigul	0·8		...		1·1		0·1		0·1		...		...		0·2		0·5		0·2	
	Periyakulam ...	0·06		...		8·7		0·7		0·2		...		...		...		...		...	
	Palni	0·9		0·2		1·4		0·5		0·3		0·1		0·4		...		...		...	
Malabar ...	Tellicherry ...	0·08	0·5	..	0·1	2·4	2·3	6·9	4·2	0·4	4·8	0·1	1·4	...	0·03	...	0·1	0·04	0·006	...	0·03
	Calicut	1·2		0·4		20·4		5·6		0·5		0·2		0·01		0·01		0·2		0·01	
	Palghat	...		0·8		2·2		8·7		2·3		0·3		...		0·1		0·3		0·4	
	Cochin	...		...		5·2		19·9		1·7		0·6		0·1		0·1		...		0·4	
	Cannanore ...	1·2		0·2		0·3		0·7		0·4		...		0·04		...		...		0·03	
Nellore ...	Nellore	...	0·2	0·04	0·2	0·1	0·3	0·3	0·9	0·1	0·2	0·3	0·1	...	0·05	0·03	0·1	0·7	0·1	0·3	0·1
	Ongole	0·2		..		0·8		1·5		1·0		0·1		0·1		...		...		...	

Statement showing Small-pox Mortality in Municipalities and Rural areas for 10 *years commencing from* 1889—*cont.*

Districts.	Municipal Towns.	Ratio of deaths from small-pox per mille of population—*cont.*																			
		1889.		1890.		1891.		1892.		1893.		1894.		1895.		1896.		1897.		1898.	
		Municipalities.	Rural areas.	Municipalities.	Rural areas.	Municipalities.	Rural areas.	Municipalities.	Rural areas.	Municipalities.	Rural areas.	Municipalities.	Rural areas.	Municipalities.	Rural areas.	Municipalities.	Rural areas.	Municipalities.	Rural areas.	Municipalities.	Rural areas.
Nilgiris ...	Ootacamund ...	0·1	0·5	1·4	0·5	0·1	0·9	0·3	0·9	0·07	0·2	...	0·1	...	0·01	...	0·1	...	0·1	...	0·8
	Coonoor	...		0·6		0·8		0·5		...		...		...		0·2		0·2		...	
North Arcot.	Vellore	1·1	0·9	1·5	1·9	1·9	1·7	2·1	0·9	1·0	0·6	0·2	0·2	1·2	0·2	5·3	1·0	0·2	0·8	6·9	0·6
	Walajapet ...	2·0		4·5		...		...		...		...		...		...		...		0·1	
	Gudiyáttam ...	0·7		2·0		3·8		0·6		0·2		0·05		0·3		2·1		0·7		0·2	
	Tirupati	...		1·7		0·5		1·1		4·1		0·6		...		0·1		0·1		0·1	
Salem ...	Salem	0·3	1·0	1·2	0·7	0·2	0·7	0·5	0·8	0·2	0·6	0·04	0·2	0·01	0·1	0·01	0·3	...	0·2	...	0·1
	Vániyambádi ...	0·8		5·7		0·4		...		...		...		0·2		...		...		...	
	Tiruppattúr ...	0·5		6·2		3·8		0·2		0·06		...		...		0·1		0·1		0·1	
South Arcot.	Cuddalore ...	0·3	2·2	0·9	4·6	0·6	2·7	0·7	0·7	0·9	0·8	0·6	0·6	0·3	0·3	0·8	0·2	0·2	0·2	0·4	0·5
	Chidambaram ...	1·7		0·6		0·9		0·2		1·0		0·2		0·4		0·05		0·2		0·6	
	Tiruvannámalai ...	...		...		...		...		...		...		...		...		0·8		1·0	
South Canara.	Mangalore ...	0·03	0·3	...	0·07	...	0·1	0·05	0·5	0·3	0·2	...	0·2	...	0·1	...	0·04	0·04	0·1	0·4	0·1
Tanjore ...	Tanjore	1·1	0·7	1·8	0·8	1·3	0·5	0·3	0·3	0·8	0·6	0·3	0·5	0·2	0·2	0·5	0·1	0·1	0·04	0·1	0·2
	Kumbakónam ...	3·3		3·2		0·5		0·4		0·4		0·2		0·2		...		...		...	
	Máyavaram ...	0·1		1·2		0·6		0·1		1·1		0·2		0·2		0·04		0·1		0·4	
	Negapatam ...	0·1		0·6		0·7		0·2		0·6		0·4		...		0·1		0·03		...	
	Mannárgudi ...	2·2		3·3		0·5		0·2		1·5		0·2		0·1		0·1		...		0·04	
Tinnevelly.	Tinnevelly ...	0·3	0·1	2·2	0·6	1·6	2·1	0·4	1·1	0·4	0·5	0·04	0·2	0·04	0·06	...	0·02	...	0·06	..	0·1
	Palamcottah ...	0·05		0·2		1·4		0·4		0·9		0·9		0·2		...		0·4		0·05	
	Tuticorin	0·1		0·1		8·3		2·4		0·6		0·1		0·04		0·1		...		0·04	
	Srívilliputúr ...	...		...		...		...		...		...		0·2		0·8		0·2		0·3	
Trichinopoly	Trichinopoly ...	1·2	0·4	1·2	0·4	1·2	0·2	1·5	0·2	1·4	0·4	0·4	0·2	0·1	0·1	0·2	0·01	0·3	0·04	0·4	0·1
	Srírangam ...	0·6		1·1		0·3		0·3		0·7		0·05		...		0·04		0·1		0·04	
Viazgapatam	Vizagapatam ...	6·7	0·5	2·6	0·4	0·03	0·2	0·03	0·8	0·03	0·6	0·2	0·2	0·01	0·1	...	0·3	0·03	0·6	0·05	0·8
	Bimlipatam ...	0·1		1·5		...		0·5		...		...		...		...		..		...	
	Vizianagram ...	4·9		2·2		...		0·1		0·1		0·1		0·1		0·2		0·9		0·1	
	Anakápalle ...	1·4		0·5		0·1		3·4		1·9		0·06		...		...		...		...	
	Total ...	0·9	1·0	1·3	0·9	1·7	1·4	1·2	1·3	0·5	0·8	0·2	0·3	0·1	0·1	0·2	0·3	0·2	0·7	0·3	0·6

34. It will be noticed that the frightful rate of 12·2 per mille registered against Ganjám, during 1897, has undergone a decline; but that, in 1898, the mortality from this cause (8·5 per mille) was still of a most serious nature. It will be remembered that the impetus given to the disease during 1897 was due to famine conditions, leading to the crowding of the people upon works. What with the existence of extensive hill tracts inhabited by a class of people who probably would much prefer inoculation to vaccination, and the impossibility of dealing satisfactorily with any sanitary subject in zemindari tracts, Ganjám presents a most unpromising field to the sanitarian. Indeed, so little has it been considered possible to deal with this district by ordinary methods, that for the last ten years, in the hill tracts, the entire responsibility for administration of the Vaccination Department has been in the hands of the civil authorities.

35. In judging of the magnitude of small-pox epidemics, it is well to hold in mind that under our present system of registration in rural areas, and to a less extent in municipal towns, deaths from measles are apt to be included under "small-pox."

36. The decline in small-pox mortality in the district of Malabar noticed in the previous report, continued pretty much the same during 1898, as shown below:—

Years.	Actual number of deaths from small-pox.	Rate per mille.
1893	12,068	4·6
1894	3,540	1·3
1895	89	0·03
1896	267	0·1
1897	43	0·01
1898	99	0·04

FEVERS.

37. It is a trite statement, but one necessary to be held in mind that, under the head of "fevers," the majority of all affections in which pyrexia is a prominent symptom are likely to appear, as a sequence of the present system of registration and state of medical advance of the country. Nevertheless, it is safe to assume that the greater number of deaths so registered are due to malaria. In the year under review, there were 248,638 deaths from fevers, which represent 35·6 per cent. of the total mortality reported, and a death-rate from this special cause of 7·5 per mille of the population, against 9·0 of the previous year. The decrease was chiefly marked in districts that in 1897 had been affected with famine; but, in Anantapur, it is trivial. From this may be argued better nutrition and better resisting power to malaria of the people of these districts. A marked exception to the general decrease is exhibited in the case of the Nilgiris, where the death-rate of 22·1 per mille from this cause was registered, against 17 per mille in 1897. This was accompanied by a fall in the birth-rate. If this does not represent mere vagaries in registration, the only feasible explanation, in default of special investigation, is the departure from the rainfall conditions of 1896, representing a gradual decline and, consequently, a changed line of saturation of the sub-soil influencing the production of the malaria germ; thus, in 1896 the total rainfall was 85·47 inches, in 1897, 76·75 inches, in 1898, 70·32 inches.

38. It is probable that the death-rate from fever in Madras town does not represent the truth. During the prevalence of cholera, there was an increased registration of deaths under "fever." A joint investigation by the Health officer and myself satisfactorily proved that the apparent increase had been brought about by false registration of cholera under that head. Subsequent to October, however, a decline in fever below what might normally be expected, during the last quarter of

the year, occurred. This result has been stated by the President of the Municipality to be due to the people reporting an abnormal number of cases under "other causes." "Dysentery and diarrhœa" had become an unsafe head under which to register, as it was likely to be followed by enquiry as to cholera. On the occurrence of plague in the Mysore territory and increased vigilance of the municipal sanitary staff as to "fevers," it became unsafe to register under this head, lest enquiry should be made as to plague. Hence, the refuge for false registration under the convenient head of "other causes" has been fully utilized. The following statement illustrates these facts, and affords a curious illustration of the difficulties the sanitarian in this country encounters, in attempting to interpret registration results, in reference to the health state of populations:—

—	Years.	July.	August.	September.	October.	November.	December.
Cholera	1897	0·3	1·1	1·0	"Plague scare."		
	1898	2·3	7·6	4·3			
Fevers	1897	10·8	13·2	11·5			
	1898	15·0	19·8	16·0			
Fevers	1897	Cholera prevalent.			12·9	10·5	9·8
	1898				5·3	3·7	2·5
All other causes ...	1897				17·7	17·2	18·6
	1898				25·9	25·2	26·8

39. The death-rate from fever in municipalities was 7·5 per mille, the same rate as in districts as a whole, that is, including municipalities. The highest rates were registered in Cuddapah (14·8), Kurnool (12·5), Madras (12·4), Ootacamund (11·8), and Vizianagaram (11·7). I have already shown, in former reports, that the variation in the fever rate in Madras town follows closely the fluctuations of the sub-soil water. In my inspection notes of 1894 on the town of Madras, I showed that the "period of greatest mortality is that which immediately follows the greatest fall of the sub-soil water level, and heralds a commencing rise." In my report on the same subject, embodied in G.O., No. 672, Public, dated 28th May 1897, I also pointed out that the incidence of fever, diarrhœa, dysentery, and cholera, is influenced by sub-soil water fluctuation, more especially during the stage of depression. This term "fluctuation," I may state, was used in reference to variation from a known normal period regarded as a standard. I also pointed out that, for the time being, the town exhibited during the continuance of a high sub-soil water level greater freedom from fever; this qualification being with reference to the fact that a fall subsequent to a great rise—a heavy fluctuation—would be followed by increased mortality. These statements from records maintained in this office seem justified. In the absence of any other observations, the levels hitherto trusted to have been those supplied by the Military Works Department in respect to the Seven Wells water-works. These, however, cannot be regarded as fully satisfactory. Systematic observation in suitable localities throughout Madras would seem most desirable. I specially draw attention to this, as the data at my disposal show that since the North-East monsoon of 1896 there has been a tendency for an abnormal rise of the sub-soil water. There has also been of late years an increased consumption of Red-hills water in the but partly drained city, as shown by the following statement, that must at least add to soil moisture:—

	C.FT.
1896	436,053,834
1897	476,215,173
1898	488,625,534

40. There are reasons with reference to the diminishing use of the Seven Wells water, why the supposed rise of the sub-soil water may be less than supposed; but the chances are that a fluctuation of this nature has occurred. In this connection, the fact is worth remembering in regard to future prospects as to plague.

41. In Cuddapah also the incidence of fever prevalence is, within certain limits, affected by the rainfall, and, it may therefore be safely argued, by fluctuations of the sub-soil water, as will be seen from the following statement :—

Official years.	Total rainfall in inches.	Death-rate from fevers.
1890–91	32·15	19·3
1891–92	15·40	14·1
1892–93	44·68	22·2
1893–94	38·97	29·6
1894–95	34·86	16·9
1895–96	33·02	14·9
1896–97	20·57	19·2
1897–98	31·11	13·2
1898–99	* 27·85	* 14·7

DYSENTERY AND DIARRHŒA.

42. The rate for deaths from "dysentery and diarrhœa" fell from 1·2 of the previous year to 0·9 per mille of the population. This less frequency of bowel affections may fairly be regarded as due to improved dietary of the people, following the fall in the price of grain. The decrease occurred in all districts except Madras, Chingleput, Nellore, Salem, and South Arcot. The greatest mortality occurred in the months of January, November, and December. I have already referred to the condition of the soil as influencing infantile mortality—usually by inducing catarrhal affections of the intestine. The intimate relation of soil and water, however, further forces itself upon notice in considering the mortality at other ages. It is, of course, possible to have a town situated on sewage sodden soil supplied with pure water, should it be brought from beyond the contaminated area; but, it may happen, that a pure water derived from the outside may, under several circumstances, be defiled by the sewage-laden soil. It is, in short, difficult to escape the penalty of the close connection between the soil and water. Thus, there heads the list of mortality from diarrhœa and dysentery within municipal towns, Tuticorin, which yields a rate of 9·3 per mille. In this town, water is received from a tank four miles distant. It is open to contamination on its way to the town, but probably to nothing like the extent it is on delivery within the town, as old and pervious pipes are employed emptying into pervious cisterns forming dip-wells. The sub-soil passed through contains much brackish water, and the filtered sewage of the town—which has no sewerage system. The Sanitary Board has recently, against my advice, approved of a scheme for improvement of the water-supply on the principle of protecting it during its transport to the town, but neglecting its protection when passing through the sub-soil in the pervious conduits referred to, and when exposed in the open wells. It will be of advantage to note the result upon the "dysentery and diarrhœa" rate, in future years, of this halting policy. In Cochin, which has the next highest rate (7·5), the water obtainable is brackish and, presumably, sewage-tainted—considering the nature of the surroundings. Such fairly pure water as is obtainable, is procured at great expense by boat from a distance of twelve miles. The prevalence of filariasis to an extent to cause the name of "Cochin leg" to be synonymous with elephantiasis, sufficiently bespeaks the fact that the water of the locality is open to lodgment by the mosquito. The fact that Madras (7·5) possesses a public water-supply (albeit delivered unfiltered after passage through an unprotected channel) by no means implies that the people obtain the full possible sanitary benefit from it. There hardly exists a house in the thickly inhabited areas that does not have on its premises an open well, with pervious steining, two or three paces removed from the latrine. Of course, the plea is that such water—chemically little better than a sewage filtrate—is used solely for the washing of eating and cooking vessels:

* Obtained from the statistics of first nine months of 1898-99.

but this statement does not absolve from the sanitary sin, nor its consequences. As for Coonoor with its rate of 6·3, it affords a lamentable example of a town being surrounded with pure water sources, but allowing such as it possesses to be grossly defiled by absence of protection.

36659

INJURIES.

43. Under "injuries," the practically invariable figure of 0·3 per mille was registered. It is evident that neither the increase of railways nor of manufactories—the latter being in number still very small and under full operation of the Factory Act—has sufficed to cause any marked result on mortality.

ALL OTHER CAUSES.

44. Although, as remarked in discussing registration, there was an increased tendency in municipalities to register under this head, owing to "plague scare," the total was not sufficient to affect the supposed incidence in the population as a whole. The figure for 1898 (9·7) approximates closely that for 1897 (9·8).

SECTION IX.

SANITARY WORKS—CIVIL.

MUNICIPALITIES.

45. It might have been thought, with plague threatening to invade the Presidency, that the improvement of the sanitation of municipal areas would have been carried on with unusual energy. In the matter of attempting to make the best effort with the means available, this is probably the case; but it is not possible to record any departure from routine that would signify the introduction of new methods, or additions to those already in existence. The funds available in 1897–98 were "nursed" carefully by municipalities, because it was not till the success of the north-east monsoon was established that all fears of famine had departed; during 1898, there existed the restraining influence of the knowledge that, should plague invade the Presidency, there would be great difficulty in meeting the expenditure required for special measures to combat it.

46. The following statement shows the expenditure for the first nine months of 1898–99:—

Statement showing the estimated income, allotment, and expenditure for sanitary purposes in each Municipality during the year 1898–99.

Districts.	Municipalities.	Population as per census of 1891.	Estimated income, 1898–99.	Ratio per cent. of sanitary allotment to estimated income.	Rate per cent. of sanitary expenditure to amount sanctioned.	1898–99. Sanitary allotment.	Sanitary allotment. Expenditure during the 9 months ending December 1898.	Conservancy. Allotment.	Conservancy. Expenditure.	Improvement of village sites. Allotment.	Improvement of village sites. Expenditure.	Improvement of water-supply, including cleansing, repairing, &c. Allotment.	Improvement of water-supply, including cleansing, repairing, &c. Expenditure.	Sanitary arrangements during fairs and festivals. Allotment.	Sanitary arrangements during fairs and festivals. Expenditure.	Construction and repair of markets and slaughter-houses. Allotment.	Construction and repair of markets and slaughter-houses. Expenditure.	Other sanitary objects, including construction and repair of tanks. Allotment.	Other sanitary objects, including construction and repair of tanks. Expenditure.
			RS.			RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.
Anantapur	Anantapur	6,973	20,340	21·0	58·9	4,390	2,596	2,930	2,409	750	160	110	8	...	...	...	...	600	9
Bellary	Ádóni	26,216	36,010	41·3	72·9	14,890	10,851	12,690	9,604	1,000	361	900	876	...	...	...	...	300	10
	Bellary	57,780	78,980	54·6	61·2	43,110	26,366	37,700	25,943	3,500	1,023	1,610	294	...	...	100	23	200	13
Chingleput	Chingleput	9,763	13,780	35·1	73·3	4,840	3,560	2,700	1,830	1,900	1,529	210	191	...	...	...	...	...	...
	Conjeeveram	42,543	53,020	19·9	71·8	79,580	57,104	13,580	7,934	4,350	1,575	58,910	44,955	2,610	2,500	250	...	780	200
Coimbatore	Coimbatore	46,007	50,920	42·9	92·8	21,850	20,276	15,330	12,811	4,950	3,240	750	808	...	...	70	108	750	2,649
	Erode	12,938	17,960	23·7	90·1	4,260	3,840	3,550	3,473	50	28	320	141	50	56	100	18	190	124
	Karur	10,740	19,330	36·1	77·7	6,980	5,427	4,950	3,904	1,800	1,910	100	36	...	...	...	98	100	79
Cuddapah	Cuddapah	17,211	46,300	26·2	106·4	12,130	12,911	8,410	9,273	...	...	3,520	3,605	...	...	200	...	...	33
	Berhampur	25,493	29,900	40·5	70·5	12,100	8,533	7,530	5,866	2,750	1,901	1,220	594	...	3	40	14	560	155
Ganjám	Chicacole	18,204	23,500	27·0	67·9	7,710	5,241	5,030	3,156	2,150	1,739	230	170	...	...	100	176	200	...
	Parlákimedi	16,379	13,820	21·6	71·2	2,990	2,128	2,150	1,874	...	...	170	123	...	...	250	10	120	121
Gódávari	Cocanada	40,068	1,14,550	27·3	87·4	31,310	27,515	18,870	15,892	9,200	9,021	1,760	1,416	...	...	...	...	1,480	1,186
	Ellore	29,296	37,900	42·2	60·0	16,010	9,611	10,110	6,445	3,100	2,380	500	53	...	...	400	8	1,900	725
	Rajahmundry	28,279	41,150	46·9	64·2	19,301	12,391	13,250	9,659	3,680	1,076	421	236	...	...	1,950	1,153	...	267
	Bezwada	20,611	42,810	36·7	60·3	15,730	9,480	10,740	7,240	3,840	1,830	170	110	80	...	100	70	800	230
Kistna	Guntúr	23,267	50,730	45·0	77·2	22,830	17,625	12,870	10,059	7,000	5,168	1,800	1,672	...	...	800	461	300	245
	Masulipatam	38,667	60,430	48·8	58·6	29,500	17,204	18,390	11,412	8,000	3,558	1,380	1,309	...	...	100	25	9,650	990
Kurnool	Kurnool	24,306	45,480	26·1	103·9	11,890	12,353	8,500	9,705	2,000	1,445	300	46	...	...	1,005	1,073	85	84
	Dindigul	20,115	32,490	11·8	20·9	38,620	8,061	7,300	4,735	3,590	1,577	25,610	1,425	...	15	250	72	1,870	227
Madura	Madura	87,121	1,65,440	37·1	64·1	62,510	40,104	37,200	28,763	14,000	6,562	4,510	1,750	2,500	1,208	300	...	4,000	1,791
	Palni	16,940	14,540	53·1	39·4	7,730	3,050	5,780	2,488	1,500	318	200	182	100	31	50	31	...	...
	Periyakulam	16,363	13,840	62·0	56·8	8,580	4,879	5,360	3,089	2,810	1,700	210	90	...	...	...	...	200	...
Malabar	Calicut	64,798	71,150	34·0	70·6	24,230	17,106	15,730	10,658	8,500	6,333	...	115	...	...	...	...	...	...
	Cannanore	26,653	30,040	42·0	68·8	12,695	8,696	9,650	6,379	1,550	1,209	200	123	...	...	195	158	1,040	827
	Cochin	16,147	22,530	43·2	63·9	9,740	6,228	5,400	4,318	2,270	945	170	20	...	...	820	225	1,080	720
	Palghat	39,367	65,790	29·2	54·5	19,228	10,476	12,550	5,815	6,040	4,372	100	...	100	28	...	...	410	264
	Tellicherry	26,631	49,690	25·3	53·2	12,596	6,703	10,000	5,795	2,000	800	50	...	5	5	50	24	430	84
Nellore	Nellore	29,128	42,050	40·6	56·4	17,090	9,644	10,650	7,548	5,300	1,535	110	5	...	...	...	...	1,000	496
	Ongole	10,832	13,560	51·7	54·7	7,012	3,886	4,310	2,479	1,534	854	500	323	...	...	40	...	628	180
Nilgiris	Coonoor	5,586	44,370	52·1	53·9	23,157	12,482	13,369	7,360	7,350	3,639	888	720	...	...	860	696	700	67
	Ootacamund	13,991	1,48,770	75·2	75·9	1,11,905	83,937	37,230	23,478	20,100	14,546	14,030	12,693	...	...	1,015	305	39,530	32,915

Statement showing the estimated income, allotment, and expenditure for sanitary purposes in each Municipality during the year 1898–99—cont.

Districts.	Municipalities.	Population as per census of 1891.	Estimated income, 1898–99.	Rate per cent. of sanitary allotment to estimated income.	Rate per cent. of sanitary expenditure to amount sanctioned.	1898–99. Sanitary allotment. Allotment.	Sanitary allotment. Expenditure during the 9 months ending December 1898.	Conservancy. Allotment.	Conservancy. Expenditure.	Improvement of village sites. Allotment.	Improvement of village sites. Expenditure.	Improvement of water-supply, including cleansing, repairing, &c. Allotment.	Improvement of water-supply, including cleansing, repairing, &c. Expenditure.	Sanitary arrangements during fairs and festivals. Allotment.	Sanitary arrangements during fairs and festivals. Expenditure.	Construction and repair of markets and slaughter houses. Allotment.	Construction and repair of markets and slaughter houses. Expenditure.	Other sanitary objects, including construction and repair of tanks. Allotment.	Other sanitary objects, including construction and repair of tanks. Expenditure.
			RS.			RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.
North Arcot.	Gudiyáttam ...	18,745	17,850	44·3	43·5	7,910	3,442	5,230	3,128	1,300	138	286	171	10	5	690	...	400	...
	Tirupati	14,238	2,56,940	3·3	76·9	8,410	6,469	5,020	4,377	1,650	1,293	620	159	400	636	50	4	670	...
	Vellore	44,724	61,560	50·2	51·6	30,940	15,982	16,720	12,841	5,850	1,153	610	617	...	...	2,100	1	5,660	1,370
	Wálláj̇apet ...	10,485	16,120	37·7	42·7	6,080	2,599	3,750	2,116	1,000	...	320	383	...	...	200	100	810	...
Salem ...	Salem	67,640	72,560	41·9	61·6	30,397	18,735	23,520	15,547	3,000	1,821	1,370	1,239	...	...	2,120	...	387	128
	Tiruppattúr ...	16,463	26,090	44·1	57·9	11,780	6,827	8,840	4,854	2,250	1,494	330	298	...	...	130	70	230	111
	Vániyambádi ...	15,838	21,820	44·7	73·0	9,760	7,125	6,620	4,813	2,190	1,618	280	178	..	...	150	115	520	401
South Arcot.	Chidambaram ...	18,634	22,470	47·3	73·7	10,642	7,845	6,202	3,808	2,800	2,833	890	555	750	236	...	164	...	249
	Cuddalore ...	47,025	51,290	42·5	74·6	21,800	16,263	11,500	8,452	6,100	4,730	960	821	1,500	1,331	230	201	1,510	728
	Tiruvannámalai...	13,643	21,840	54·5	46·5	11,900	5,530	3,740	2,328	3,800	2,058	1,010	855	3,000	239	...	...	350	50
South Canara.	Mangalore ...	40,620	44,540	50·1	67·1	22,320	14,984	13,170	7,498	6,360	6,166	100	22	...	...	750	438	1,940	860
Tanjore ...	Kumbakónam ...	54,254	1,17,430	64·0	35·0	75,240	26,392	29,530	17,961	9,260	5,493	1,210	920	100	...	600	604	34,540	1,414
	Mannárgudi ...	20,392	24,240	42·5	65·8	10,310	6,790	8,430	4,118	2,600	1,907	430	344	550	263	300	158	...	...
	Máyavaram ...	23,754	36,810	39·9	76·3	14,310	10,920	9,290	6,221	2,800	2,599	970	859	150	181	30	...	1,070	1,060
	Negapatam ...	58,573	78,640	48·7	71·7	38,270	27,452	25,620	18,519	10,270	7,258	1,980	1,461	300	127	...	...	105	87
	Tanjore	54,258	1,10,860	67·5	43·0	74,850	32,180	24,210	17,110	500	480	47,240	13,570	...	...	600	220	2,300	800
Tinnevelly.	Palamcottah ...	18,612	24,430	39·3	66·7	9,600	6,405	8,340	5,142	900	985	140	110	...	...	120	109	100	59
	Srívilliputtór ...	29,541	30,440	26·7	57·9	8,140	4,719	6,010	3,712	1,410	670	380	87	190	147	...	...	150	103
	Tinnevelly ...	24,756	29,010	57·9	69·3	16,797	11,629	10,524	6,891	3,900	2,841	549	460	50	5	692	554	1,082	878
	Tuticorin ...	24,964	40,100	52·9	78·5	21,206	16,652	13,870	10,065	5,950	3,959	1,286	1,216	...	...	50	10	50	802
Trichinopoly.	Srírangam ...	21,632	26,480	48·5	66·5	12,850	8,546	9,310	6,310	2,150	1,555	240	97	1,050	492	...	...	100	92
	Trichinopoly ...	89,666	1,43,100	55·1	87·1	78,920	68,763	42,270	36,034	12,000	10,643	21,800	20,774	...	...	1,250	686	1,600	626
Vizagapatam.	Anakápalle ...	17,001	15,770	46·8	64·6	7,390	4,775	5,120	3,452	1,800	1,118	120	89	...	...	...	...	350	116
	Bimlipatam. ...	9,696	13,730	36·4	54·0	5,000	2,703	3,300	2,609	1,250	1	...	4	...	...	...	..	450	89
	Vizagapatam ...	33,961	1,02,030	286·8	6·3	2,92,660	18,520	17,900	11,900	7,000	4,220	2,62,730	423	...	...	300	12	4,730	1,965
	Viziansgram ..	30,735	30,800	57·2	69·8	17,630	12,310	9,830	7,245	4,500	2,595	1,120	444	...	...	120	55	2,060	1,971
	Total for 1898 ...	1,687,563	29,56,220	53·2	53·8	15,71,540	8,44,931	7,10,095	4,98,175	2,39,254	1,52,042	4,67,094	1,20,315	13,490	7,480	19,545	8,249	1,22,062	58,670
	Total for 1897 ...	1,687,563	33,28,120	63·6	55·4	20,52,273	11,37,397	6,50,524	4,63,861	2,78,375	1,63,353	9,48,885	4,07,095	13,760	10,085	40,111	13,766	1,20,618	79,237
	Madras City ..	436,375	13,48,150	62·6	63·9	8,44,481	5,39,451	4,45,990	2,96,000	72,262	52,941	53,864	13,303	140	104	80,770	28,492	1,91,455	1,48,611

	1897–98. Amount sanctioned.	1897–98. Amount expended.	Rate per cent. of expenditure to total allotment.	1898–99. Amount sanctioned.	1898–99. Amount expended during the nine months ending December 1898.	Rate per cent. of expenditure to total allotment.
	RS.	RS.		RS.	RS.	
For conservancy	6,47,324	6,27,947	97·0	7,10,095	4,98,175	70·2
For improvement of village or town sites	2,83,930	2,45,734	86·5	2,39,254	1,52,042	63·5
For improvement of water-supply, cleansing, repairing, and construction of tanks and wells	9,75,921	4,98,620	51·0	4,67,094	1,20,315	25·8
For sanitary arrangements during fairs and festivals ..	13,411	11,923	88·9	13,490	7,480	55·4
For construction and repair of markets and slaughter-houses	39,684	23,561	59·4	19,545	8,249	42·2
For other sanitary outlay ..	1,19,889	1,07,783	89·9	1,22,062	58,670	48·0
Total ..	20,80,159	15,15,568	72·9	15,71,540	8,44,931	53·8

Table showing the conservancy establishment and plant available in each Municipality during 1898.

Districts.	Municipalities.	Population as per census of 1891.	Sanitary inspectors.	Sanitary overseers.	Sanitary maistries.	Sanitary peons.	Sweepers for cleaning roads, streets, &c.	Tofies for cleaning public latrines.	Tofies for private scavengering.	Private latrines. Total number in town.	Private latrines. Number cleaned by the municipal tofies.	Carts. Night-soil.	Carts. Rubbish.	Carts. Sewage.	Public latrines. Puka built.	Public latrines. Brick-wall enclosures.	Public latrines. Mud-wall enclosures.	Public latrines. Tatty.	Dust-bins. Wooden.	Dust-bins. Masonry.	Dust-bins. Iron.	Tank watchers.
Anantapur ...	Anantapur	6,973	1	...	...	2	14	8	3	140	138	1	3	...	2	4	2	...	...	26	46	...
Bellary	Ádóni	26,216	1	...	3	6	30	29	16	1,500	834	12	12	3	6	† 10	4	...	...	74	51	5
	Bellary	57,780	8	...	...	23	66	30	24	2,492	1,392	32	33	...	23	...	6	...	...	285	95	4
Chingleput ...	Chingleput	9,763	1	...	...	1	14	4	4	500	162	2	6	...	5	3	...	...	...	24	26	...
	Conjeeveram	42,543	1	4	...	1	48	14	17	2,850	994	9	24	...	22	9	...	...	...	376	153	...
Coimbatore ...	Coimbatore	46,007	3	1	1	7	76	28	27	900	460	15	27	5	14	4	10	...	...	...	83	1
	Erode	12,238	1	...	...	5	25	16	7	700	450	11	12	3	3	6	3	2	...	46	118	1
	Karúr	10,740	2	...	1	3	30	12	6	520	320	2	7	1	4	...	11	...	...	25	60	...
Cuddapah ...	Cuddapah	17,211	2	...	1	6	30	25	17	...	945	4	12	1	22	2	7	5	...	183	12	...
Ganjám ...	Berhampur	25,493	5	...	4	...	61	23	26	...	616	1	11	11	2	5	17	...	§ 27	71	34	2
	Chicacole	18,204	1	...	1	4	39	5	18	400	354	2	10	2	6	8	1	...	...	28	31	3
	Parlákimedi	16,379	1	...	1	3	29	7	20	400	150	...	7	1	* 4	10	...	...	...	...	63	4
Gódávari ...	Cocanada	40,068	3	...	...	6	49	40	35	...	950	7	12	...	8	...	8	...	...	...	125	9
	Ellore	29,296	5	...	...	5	63	11	13	500	483	2	10	3	2	9	1	7	...	46	54	1
	Rajahmundry ...	28,279	2	1	1	7	49	26	35	...	1,043	2	...	...	2	...	6	2	29	95	70	4
Kistna	Bezwada	20,611	1	6	1	6	33	20	14	700	550	7	14	6	4	...	...	* 16	...	...	179	...
	Guntúr	23,267	1	...	4	6	44	35	23	1,194	1,145	24	24	3	21	...	...	...	...	3	78	4
	Masulipatam	38,667	2	1	3	2	75	7	13	1,000	367	5	31	3	5	8	...	...	...	...	...	3
Kurnool	Kurnool	24,306	1	...	1	8	40	17	16	1,763	830	3	5	1	40	...	...	...	...	255	...	...
Madura ...	Dindigul	20,115	1	...	2	1	23	19	10	532	382	5	15	6	2	‡ 3	14	...	...	24	17	5
	Madura	87,121	10	...	...	12	68	76	29	12,500	1,934	30	67	...	4	7	1	1	...	54	340	...
	Palni	16,940	1	...	...	3	9	6	10	1,272	861	3	8	...	1	6	1	...	...	23	20	2
	Periyakulam	16,363	...	...	1	2	8	7	9	1,000	724	4	9	3	...	1	9	* 2	...	13	75	2
Malabar ...	Calicut	64,798	1	4	...	...	84	31	27	...	1,277	18	20	...	20	1	...	...	...	20	121	1
	Cannanore	26,653	1	2	3	2	48	17	14	...	527	9	8	...	12	...	...	15	...	24	14	...
	Cochin	16,147	1	4	...	...	23	24	16	...	299	...	23	...	8	...	...	3	4	...	24	...
	Palghat	39,367	1	...	8	2	48	18	20	1,000	885	12	27	...	10	...	4	...	...	...	151	...
	Tellicherry	26,631	1	...	4	...	23	14	20	...	525	5	4	...	4	...	...	3	...	...	6	...
Nellore ...	Nellore	29,128	2	...	9	..	54	27	21	1,275	942	10	18	4	† 10	13	...	7	...	66	189	1
	Ongole	10,832	1	...	1	2	20	8	8	...	300	1	3	2	...	7	...	4	...	52	29	1
Nilgiris ...	Coonoor	5,586	1	...	2	...	16	7	10	148	148	8	8	2	12	...	...	...	...	...	67	...
	Ootacamund	13,991	4	2	8	...	76	24	22	520	370	30	17	5	48	...	...	...	...	...	226	...

* Corrugated iron. † Iron. ‡ Metal. § Tatty.

Table showing the conservancy establishment and plant available in each Municipality during 1898—cont.

Districts.	Municipalities.	Population as per census of 1891.	Sanitary inspectors.	Sanitary overseers.	Sanitary maistries.	Sanitary peons.	Sweepers for cleaning roads, streets, &c.	Tofies for cleaning public latrines.	Tofies for private scavengering.	Private latrines. Total number in town.	Private latrines. Number cleaned by the municipal tofies.	Carts. Night-soil.	Carts. Rubbish.	Carts. Sewage.	Public latrines. Puka built.	Public latrines. Brick-wall enclosures.	Public latrines. Mud-wall enclosures.	Public latrines. Tatty.	Dust-bins. Wooden.	Dust-bins. Masonry.	Dust-bins. Iron.	Tank watchers.
North Arcot ...	Gudiyáttam	18,745	1	...	5	...	19	17	4	439	439	3	12	...	8	4	2	...	...	100	74	6
	Tirupati	14,238	1	...	3	...	36	13	7	510	197	4	16	...	3	1	...	9	...	145	35	3
	Vellore	44,724	6	...	...	7	40	48	24	2,016	889	16	39	2	1	28	...	...	...	309	271	7
	Wállájapet	10,485	1	...	1	1	19	9	8	1,000	550	3	6	1	9	...	...	...	...	440	...	5
Salem	Salem	67,640	3	...	11	4	149	67	34	1,195	1,136	17	30	2	15	10	27	...	...	37	248	2
	Tiruppattúr	16,463	1	...	3	...	40	19	24	3,463	997	19	8	...	1	10	...	2	...	...	151	2
	Vániyambádi ...	15,838	2	...	5	...	44	12	14	3,500	629	22	17	...	1	6	...	5	...	...	150	5
South Arcot ...	Chidambaram ...	18,634	1	...	6	...	22	18	9	...	498	9	11	3	2	2	...	3	...	165	115	6
	Cuddalore	47,025	7	...	...	6	57	28	8	560	511	16	29	3	13	...	...	12	23	187	173	2
	Tiruvannámalai ...	13,643	1	...	...	3	28	1	3	1,000	106	10	6	...	1	...	...	...	...	10	82	2
South Canara ...	Mangalore	40,620	1	* 8	1	1	39	8	29	4,234	2,413	5	5	1	8	1	1	§ 10	...	73	78	...
Tanjore	Kumbakónam ...	54,254	5	...	...	15	36	21	57	...	1,679	19	35	...	...	21	...	§ 4	...	...	308	4
	Mannárgudi	20,392	1	...	3	...	38	9	...	600	368	3	11	8	3	...	...	...	...	18	72	4
	Máyavaram	23,754	2	...	...	6	17	7	18	...	834	5	17	2	4	...	...	4	...	179	39	2
	Negapatam	58,573	6	...	1	15	103	20	103	5,000	2,557	11	17	18	9	14	...	...	...	498	135	...
	Tanjore	54,258	2	4	...	18	53	65	24	...	1,120	16	30	...	...	...	33	...	...	173	69	14
Tinnevelly ...	Palamcottah	18,612	1	...	2	3	9	10	36	3,500	2,517	30	9	6	6	2	6	...	...	74	74	1
	Srívilliputtúr ...	29,541	1	2	...	4	24	9	6	1,000	461	6	3	3	2	4	1	4	...	28	26	1
	Tinnevelly	24,756	2	...	2	7	45	13	19	3,000	1,980	6	10	9	6	...	...	§ 15	...	15	161	2
	Tuticorin	24,964	3	...	...	5	32	9	20	1,222	1,222	12	10	6	7	4	...	2	...	15	178	5
Trichinopoly ...	Srírangam	21,632	3	...	...	7	14	24	19	...	1,179	9	19	1	...	13	...	6	...	60	128	2
	Trichinopoly	89,666	10	† 3	...	19	64	84	104	4,959	4,959	32	62	2	8	4	72	1	...	212	176	13
Vizagapatam ...	Anakápallo	17,001	...	1	7	...	29	28	8	180	180	12	5	...	§ 3	4	18	3	...	5	116	...
	Bimlipatam	9,696	1	4	...	2	42	6	20	320	300	...	2	...	6	...	...	...	...	29	1	1
	Vizagapatam	33,961	3	‡ 13	6	...	119	57	53	1,414	1,183	14	21	...	5	36	...	36	...	180	191	1
	Vizianagram ...	30,735	4	...	11	46	101	28	63	1,320	1,000	5	30	2	30	...	...	...	...	11	310	11
	Total for 1898 ...	1,687,563	136	60	127	294	2,534	1,265	1,264	74,238	51,261	580	947	134	477	280	265	183	83	4,776	5,918	154
	Total for 1897 ...	1,687,563	168	29	128	292	2,468	1,215	1,217	52,634	44,198	566	931	130	463	305	215	197	569	4,524	5,362	162
Madras	Madras City	436,375	7	20	49	183	1,820	275	22	...	13	408	292	215	135	90	...	...	...	714	76	...

* Sanitary Maistries or Ward Sub-Inspectors. † Slaughter-house Superintendents. ‡ Conservancy Inspectors. § Iron.

47. The following table shows the changes in staff and plant that have been secured since 1893 :—

Years.	Sanitary Inspectors.	Sanitary Overseers	Sanitary Maistries.	Sanitary peons.	Sweepers for cleaning roads, streets, &c.	Toties for cleaning public latrines.	Toties for private scavengering.	Private latrines. Total number in town.	Private latrines. Number cleaned by the Municipal toties.
1	2	3	4	5	6	7	8	9	10
1894	176	38	147	270	2,356	1,097	1,008	35,352	35,252
1895	166	47	116	305	2,390	1,104	982	59,650	38,310
1896	154	58	133	275	2,463	1,149	1,121	68,164	42,247
1897	168	29	128	292	2,468	1,215	1,217	52,634	44,198
1898	136	60	127	294	2,534	1,265	1,264	74,238	51,261

Years.	Carts. Night soil.	Carts. Rubbish.	Carts. Sewages.	Public latrines. Pucka built.	Public latrines. Brick-wall enclosures.	Public latrines. Mud-wall enclosures.	Public latrines. Tatty.	Dust bins. Wooden.	Dust bins. Masonry.	Dust bins. Iron.
	11	12	13	14	15	16	17	18	19	20
1894	404	772	97	424	261	220	256	516	4,453	4,332
1895	467	856	105	431	273	211	272	410	4,757	4,926
1896	509	875	123	451	288	233	199	700	4,744	4,977
1897	566	931	130	463	305	215	197	569	4,524	5,362
1898	580	947	134	477	280	265	183	83	4,776	5,918

It will be observed that there has been a decided advance in the essential matter of night-soil conservancy, as expressed by the larger staff employed for public and private scavengering, public latrine accommodation, and night-soil carts. The supervising staff of Sanitary Inspectors and maistries has been decreased in quantity, in favour of quality.

48. In my report for 1895, I drew attention to the advantage that would accrue to municipalities not provided with a sewerage system and not likely to be in a position to undertake a complete scheme, by introducing the Shone's system permanently for night-soil disposal by pail depots and, subsequently, by gradual extension, for receipt of sewage from areas within a reasonable distance of these depots. Since then, I have been in communication with Messrs. Ault & Sons, the patentees, who agree with me as to the practicability of the method. An estimate was framed for the town of Bellary showing that the total night-soil of a population of 59,467 could be discharged upon farms outside the town at an initial cost of annas 12 per head. This suggestion must not be confused with the use of the Shone's system for a complete sewerage scheme. The proposal looks solely to disposal of night-soil in a more cleanly and expeditious manner than at present by the cart system, whilst sewage can be added for section after section of the town as funds or inclination decide. Such a method, of course, ought not to be applied, when a complete scheme, intended to deal with night-soil as well as sullage water, can be afforded within a reasonable period. Its correct place would be the serving of towns which are in debt for water schemes, and are not likely to be able to find funds for complete sewerage during this generation.

49. In the sanitary history of municipalities, during the year, the "typhoid fever scare" at Ootacamund attracted some public attention. The cases were but few: the social position of the patients, however, induced considerable publicity. The fact that sporadic cases of typhoid fever are not unknown in Ootacamund, has been recognized for many years. This being so, I sought in my Inspection Notes in 1893 and in 1896, and, again, in discussions with the Collector, Chairman of the Municipality, and Sanitary Board, in 1896, to force upon notice those improvements connected with the protection of the water-supply, night-soil conservancy, milk supply, and clothes washing, which the existence of this special disease obviously demanded. In face, however, of the good health of the station in those years, these warnings were regarded by some of the officials concerned as due to the theoretical tendencies of the votaries of sanitation. Nevertheless, Government took the matter into consideration, with the result that much data have been laboriously collected in regard to improvement of the water-supply, certain urgent defects as to the main sewer have been attended to, and a scheme for sewerage has been worked out. The lesson derived from the incident is that it is difficult for municipalities to comprehend that the function of the sanitarian is not solely to deal with epidemics that are existent, but to give timely warning of the defects that may bring them about. As stated under "Personal Proceedings," the investigation of the occurrence of typhoid fell to Major Thomson, I.M.S., who acted during my absence on leave. He submitted a valuable report on the subject, which confirmed the sanitary pleadings of myself and my Deputy during the preceding years.

50. The income derived by municipalities by the sale of night-soil is gradually undergoing an increase, as the utility of this form of manure is better appreciated; money realized by sales at the end of this decade has exceeded that at its opening by about Rs. 10,000. I regret that I can place on record no further advance as to sewage farming. It was practised in the following towns :—Madras, Erode, Tanjore, Anakápalle and Vizagapatam. Tinnevelly purchased a plot of ground, but, beyond this, took no further step in the matter.

51. The question of improving the condition under which sewage farming shall be conducted at Tanjore, still engages the attention of the Sanitary Board.

52. Filtration of sewage is conducted at Vizianagram, Vizagapatam, Kumbakónam, Bezwada, Negapatam and Rajahmundry, and on a small scale at Bellary. A Sanitary Inspector engaged on plague duty has also informed me that he successfully introduced this method in certain villages for disposal of sewage, where no regular system for removal existed. Sewage filtration (by means of "filter trenches") is recognized in the official regulations as the method to be adopted in the health camps, during plague operations.

53. In Madras City, night-soil and rubbish disposal continued under the usual unsatisfactory conditions. The incinerator, which will deal with part of the rubbish, was under construction. In Mylapore, an under-ground sewerage system was completed. I regret to say the principle of receiving sullage water, to the exclusion of night-soil, was adopted.

DISTRICT BOARDS.

54. The Act for Local Fund areas is, I understand, in a state of revision that will shortly permit its appearance. If it embraces certain of the points I anticipate, it will bring about an enormous advance of sanitation in rural areas, and provide the requisite funds. At present, the necessity for husbanding funds for plague purposes, mentioned in reference to municipalities, was more marked in District Boards. The result was a fall off in the amounts allotted for sanitary purposes of a routine nature. The following table will show that the sums allowed by various districts differed within wide limits, the proportion of income allotted in certain of these being absolutely inadequate. The President of one of the Boards, which gave a contribution to which this term may be safely applied, has defended this position by pointing to some absurdities in the way of attempts at conservancy in villages; but, with the same breath, allows that such results are due to want of supervision, ignoring the simple fact that did his Board allot sufficient funds supervision could be obtained. Per head of population served, the total expenditure by District Boards upon sanitation during 1897–98 amounted to only 3·1 pies or about one farthing at current exchange :—

District Boards.	Population as per census of 1891.	Area in square miles.	Number of villages in the circle.	Number of villages conserved.		Estimated income of 1897–98.	Rate per cent. of allotment to estimated income.	Rate per cent. of sanitary expenditure to allotment.	1898–99.			
									Sanitary allotment.		Conservancy.	
				Number of unions.	Number of villages.				Allotment.	Expenditure.	Allotment.	Expenditure.
1	2	3	4	5	6	7	8	9	10	11	12	13
						RS.			RS.	RS.	RS.	RS.
Anantapur ...	720,346	5,275	965	11	12	1,25,550	11·5	63·0	14,450	9,104	9,740	7,041
Bellary ...	806,489	6,136	795	21	...	2,22,380	8·3	68·2	18,530	12,640	14,830	11,190
Chingleput ...	1,147,595	2,812	2,134	18	6	2,37,650	9·7	70·2	23,139	16,239	11,586	8,248
Coimbatore ...	1,934,926	7,800	1,478	20	17	3,95,520	8·3	55·6	32,712	18,196	16,837	13,147
Cuddapah ...	1,254,510	8,722	1,276	17	35	2,50,820	6·7	61·6	16,710	10,298	11,730	8,838
Ganjám ...	1,836,234	8,370	6,037	15	7	2,97,250	4·5	61·2	13,270	8,125	9,780	6,688
Gódávari ...	1,980,215	7,857	2,603	26	92	7,38,530	10·8	42·2	79,560	33,571	26,620	20,057
Kistna ...	1,772,479	8,397	1,848	28	19	6,31,420	6·6	51·0	41,790	21,337	25,610	18,755
Kurnool ...	793,354	7,514	802	18	7	1,93,530	9·0	52·4	17,550	9,199	10,570	7,816
Madura ..	2,467,223	5,024	4103	37	23	5,22,280	14·3	49·2	71,813	36,862	37,140	24,700
Malabar ...	2,463,078	5,585	2,215	...	18	4,59,090	6·9	60·0	4,348	2,611	838	1,341
Nellore ...	1,423,397	8,765	1,793	15	19	3,20,670	7·7	60·8	24,715	15,034	6,797	5,006
Nilgiris ...	77,188	957	52	...	6	1,52,630	2·2	61·7	3,343	2,062	1,920	1,377
North Arcot.	2,025,393	7,616	4,328	21	41	4,14,990	7·7	56·8	32,034	18,207	18,046	12,835
Salem ...	1,861,843	7,529	3,811	34	12	3,74,530	13·2	68·6	49,445	33,937	26,147	18,599
South Arcot ...	2,083,034	5,217	2,897	21	8	4,05,640	12·2	62·9	49,414	31,074	22,320	15,673
South Canara.	1,011,382	3,902	1,277	...	19	2,35,320	4·0	46·7	9,338	4,358	3,760	2,627
Tanjore ...	2,015,850	3,709	3,550	19	20	8,67,150	4·4	64·6	38,600	24,939	28,922	20,297
Tinnevelly ...	1,817,829	5,387	1,538	34	38	4,88,250	15·3	49·9	74,024	37,279	41,017	27,329
Trichinopoly.	1,260,428	3,631	1,502	13	30	2,74,450	8·2	61·7	22,615	13,957	13,460	9,520
Vizagapatam.	1,850,802	4,619	2,668	15	15	3,55,050	4·8	63·5	16,997	10,803	11,200	8,080
Total for 1898 ..	32,603,685	124,914	47,703	383	444	79,62,700	8·3	56·2	6,57,396	3,69,832	3,48,870	2,49,164
Total for 1897 ..	31,592,647	124,914	44,678	377	469	79,10,750	8·4	58·3	6,63,259	3,88,481	3,47,265	2,48,065

District Boards.	1898–99—*cont.*									
	Improvement of village sites.		Improvement of water-supply, including cleansing, repairing, and construction of tanks and wells.		Sanitary arrangements during fairs and festivals.		Construction and repair of markets and slaughter-houses.		Other sanitary objects, including construction and repair of latrines, dust-bins, drains, &c.	
	Allotment.	Expenditure.	Allotment.	Expenditure.	Allotment.	Expenditure.	Allotment.	Expenditure.	Allotment.	Expenditure.
	14	15	16	17	18	19	20	21	22	23
	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.
Anantapur	930	113	1,990	1,025	300	122	...	173	1,490	630
Bellary	420	...	1,450	970	220	170	140	170	1,470	140
Chingleput	3,596	2,245	4,464	3,551	1,350	780	231	101	1,912	1,314
Coimbatore	2,026	496	6,219	1,285	875	589	4,264	1,833	2,491	816
Cuddapah	470	196	3,140	835	340	97	720	96	310	326
Ganjám	1,400	431	1,070	854	320	15	...	...	700	137
Gódávari	9,800	5,114	19,220	4,134	1,510	324	19,730	3,573	2,680	369
Kistna	4,550	659	9,860	1,666	1,190	224	...	...	580	33
Kurnool	990	65	3,600	1,161	720	176	70	...	1,600	463
Madura	17,345	5,192	7,635	3,290	456	287	9,164	2,867	3,073	426
Malabar	90	...	1,430	206	290	213	1,150	821	550	30
Nellore	3,028	1,360	14,063	8,220	430	423	...	...	397	25
Nilgiris	800	78	423	282	...	...	...	...	200	325
North Arcot	936	1,142	6,503	2,619	1,938	1,148	1,670	192	2,940	271
Salem	7,470	4,209	6,503	3,810	515	208	7,161	6,418	1,649	693
South Arcot	3,122	934	22,224	13,638	769	269	...	...	979	560
South Canara	...	...	2,450	330	1,100	920	1,603	173	425	308
Tanjore	2,375	859	4,595	2,036	1,801	1,472	...	...	907	275
Tinnevelly	13,804	3,003	8,395	2,406	1,826	1,557	3,904	857	5,078	2,127
Trichinopoly	1,393	864	4,052	1,979	388	182	2,437	1,132	882	280
Vizagapatam	562	216	2,925	1,250	460	164	706	614	1,144	479
Total for 1898 ...	75,110	26,956	1,32,211	55,547	16,798	8,988	52,950	19,120	31,457	10,057
Total for 1897 ...	79,413	30,872	1,23,672	67,724	17,400	11,005	64,469	16,974	31,040	11,835

—	1897–98.		Rate per cent. of expenditure to total allotment.	1898–99.		Rate per cent. of expenditure to total amount.
	Amount sanctioned.	Amount expended.		Amount sanctioned.	Amount expended during nine months ending December 1898.	
	RS.	RS.		RS.	RS.	
For conservancy	3,49,406	3,10,256	88·8	3,48,870	2,49,164	71·4
For improvement of village or town sites	78,504	36,216	46·1	75,110	26,956	35·9
For improvement of water-supply, cleansing, repairing, and construction of tanks and wells	1,51,421	1,17,178	77·4	1,32,211	55,547	42·0
For sanitary arrangements during fairs and festivals ..	17,838	16,616	93·1	16,798	8,988	53·5
For construction and repair of markets and slaughter-houses	65,149	43,318	66·2	52,950	19,120	36·1
For other sanitary objects ..	32,730	23,194	70·9	31,457	10,057	31·9
Total ..	6,95,348	5,46,778	78·6	6,57,396	3,69,832	56·2

55. It is a maxim in sanitation that epidemics do not come to populations as unmixed disasters. They force upon the authorities responsible, facts that much report-making would not convince them of. Should, however, plague persist in this Presidency, before any advantage can take place, the chances are that routine sanitary improvements will be very materially decreased in number and value, owing to the demand for funds. Even the sanguine sanitarian finds at last that it is hopeless reporting to bodies that have no funds to bestow on the improvements he indicates. Not only is advance thus likely to be impeded in sanitary matters proper, but the prophylactic operation of vaccination is likely to receive material check. As will be further explained in the Vaccination Report, the people (more especially of rural areas) have confused anti-plague inoculation with vaccination, with the result that a very heavy decrease in operations has occurred throughout the Presidency. The result must be, in the end, a greater loss of lives by small-pox than can have been saved by anti-plague inoculation. In short, the maxim will doubtless remain true: as an effect of the "plague scare" sanitation in the presidency will advance, but *when* this will occur the future alone can show, and in the meantime, an approach to stagnation is the immediate result.

56. The following statement shows the extent to which the system of maintaining Village Sanitary Inspection Books has been followed in Unions:—

District.	Remarks by District Sanitary Officers.
Anantapur	Owing to the prevalence of plague in the district, there was no time to issue instructions for the maintenance of Sanitary Inspection Books. Steps will be taken to maintain them in the current year.
Chingleput	Village Sanitary Inspection Books were supplied to the various unions inspected during the year. These were duly filled in by Major J. C. Marsden, I.M.S.
Coimbatore	All union villages were supplied with a copy of Village Sanitary Inspection Book. Entries have been made in each of the books maintained by the union.
Cuddapah	The Village Sanitary Inspection Books are not maintained in all the villages. The Chairmen of smaller unions to whom they are supplied do not know English, and have hitherto made no entries whatever.
Ganjám	The unions have all been supplied with the Village Sanitary Inspection Book (edited for the first time) at Itchapur, Sompet, Baruwa, Tekkali, Chatrapur, Ganjám, Aska and Russellkonda. It is hoped that the remainder will be edited before the end of the current official year.
Kistna	The total number of Village Sanitary Inspection Books compiled during the year was 9. It is hoped that the remainder will be compiled in the course of this year.

District.	Remarks by District Sanitary Officers.
Kurnool	The Village Sanitary Inspection Books were all compiled by me and supplied to union villages only.
Madura	The Village Sanitary Inspection Books are maintained.
Nellore	The Village Sanitary Inspection Books have been maintained for 13 out of 15 unions. No entries have been made by the inspecting officers in the Village Sanitary Inspection Report Book, which is kept up by the Hospital Assistant. The fact has been invariably brought to the notice of the President, Taluk Board, and the President, District Board, in the Sanitary Report communicated to them.
Nilgiris	Village Sanitary Inspection Books in the new form were printed and supplied to the Civil Apothecaries, Gúdalúr and Kotagiri. Progress made in the preparation and maintenance of the Village Sanitary Inspection Book is satisfactory.
North Arcot ..	Owing to the outbreak of plague in the district, the preparation of the remaining Village Sanitary Inspection Book has been retarded. Steps, however, are being taken to edit them as soon as the towns are inspected.
Salem	After the information required by the headings has once been entered, very little care is taken to record any further particulars.
South Arcot ..	The Village Sanitary Inspection Books for Chinna Salem, which were not opened in the previous year, were completed this year. All the books are maintained properly.
Tanjore	The books for all unions are almost completed, and are being sent to the Union Chairmen.
Tinnevelly	The Village Sanitary Inspection Book is maintained in only 25 unions. The remaining unions, many of which were newly constituted, have not yet been provided with books. The books were only recently received from the District Board, and will be supplied as soon as the required information is gathered from them.
Trichinopoly ..	Sanitary Inspection Books were provided for all union villages, and, as far as inspection was carried out, the results were satisfactory.
Vizagapatam ..	Village Sanitary Inspection Books have been prepared for all the unions in the district during the year. They will undergo revision during the current year.
Bellary	Owing to the stimulus given by plague, almost all the villages maintain Village Sanitary Inspection Book.

57. The following table exhibits the influence on public health of major sanitary works, as judged by the death-rates recorded in the towns noted therein :—

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., Mis., dated 20th December 1894.

Name of Municipality.	Date of completion of works of		Average annual death-rate since the introduction of drainage system or water-supply.	Average annual death-rate for the five-year period preceding the introduction of drainage system or water-supply.	Remarks.
	Drainage.	Water-supply.			
Coonoor ...	January 1893.	...	1893 ... 31·9 1894 ... 31·9 1895 ... 27·9 1896 ... 41·3 1897 ... 43·8 1898 ... 34·6	1888 ... 28·4 1889 ... 26·9 1890 ... 42·7 1891 ... 37·2 1892 ... 37·0	In proportion of total deaths, there is a decided decrease under "Fevers," since the introduction of drainage; this is also exhibited under rate per mille of the population.
Cuddapah ...	...	July 1893.	1893 ... 46·9 1894 ... 33·9 1895 ... 32·9 1896 ... 21·7 1897 ... 28·5 1898 ... 29·7	1888 ... 31·7 1889 ... 30·5 1890 ... 43·0 1891 ... 27·0 1892 ... 38·3	There is a marked decrease of deaths under cholera, and diarrhœa and dysentery, for the last three years.

Name of Municipality.	Date of completion of works of		Average annual death-rate since the introduction of drainage system or water-supply.	Average annual death-rate for the five-year period preceding the introduction of drainage system or water-supply.	Remarks.
	Drainage.	Water-supply.			
Kumbakónam ...	Oct. 1894.	...	1894 ... 37·5 1895 ... 31·2 1896 ... 34·2 1897 ... 39·9 1898 ... 30·0	1889 ... 34·8 1890 ... 31·6 1891 ... 33·1 1892 ... 29·1 1893 ... 36·2	The scheme did not hold sanitary requirements in view—so much as the "convenience" of the inhabitants. No result is perceptible on the death-rate.
Madura ...	...	April 1894.	1894 ... 32·6 1895 ... 26·1 1896 ... 23·2 1897 ... 25·6 1898 ... 25·1	1889 ... 31·2 1890 ... 32·7 1891 ... 35·7 1892 ... 29·3 1893 ... 29·9	There is a decrease under cholera.
Madras ...	...	1872 ...	1872 ... 35·2 1873 ... 36·7 1874 ... 36·6 1875 ... 35·6 1876 ... 39·6 1877 (Famine year). 1878 ... 47 1879 ... 34·7 1880 ... 37·4 1881 ... 38·9 1882 ... 35·6 1883 ... 39·1 1884 ... 49·5 1885 ... 36·8 1886 ... 36·2 1887 ... 39·8 1888 ... 37·4 1889 ... 42·0 1890 ... 42·4 1891 ... 58·6 1892 ... 46·0 1893 ... 41·1 1894 ... 36·6 1895 ... 37·7 1896 ... 37·8 1897 ... 35·5 1898 ... 44·8	1867 ... 27·2 1868 ... 23·7 1869 ... 17·5 1870 ... 26·4 1871 ... 28·9	The water-supply and drainage systems of Madras are incomplete, and sanitarily faulty. They meet the "convenience" of certain sections of the community, but sanitarily are of little value.
Ádóni	...	Sept. 1895.	1895 ... 23·6 1896 ... 25·4 1897 ... 37·9 1898 ... 26·5	1890 ... 19·2 1891 ... 44·5 1892 ... 34·7 1893 ... 22·2 1894 ... 24·3	It is too early to pronounce an opinion as to results, as conditions have been complicated by the presence of famine.
Tanjore ...	...	Oct. 1895 ...	1895 ... 25·5 1896 ... 27·0 1897 ... 25·2 1898 ... 25·5	1890 ... 28·2 1891 ... 29·1 1892 ... 29·2 1893 ... 35·7 1894 ... 26·9	The supply is used side by side with erroneous sources. No utility is, as yet, discoverable.
Dindigul ...	..	August 1896.	1896 ... 23·1 1897 ... 22·1 1898 ... 18·9	1891 ... 41·4 1892 ... 20·5 1893 ... 23·5 1894 ... 23·7 1895 ... 21·7	The supply is too small for it to be hoped any influence can be expected.
Trichinopoly ...	...	December 1896, but water supplied from April 1896.	1896 ... 30·4 1897 ... 23·1 1898 ... 30·4	1891 ... 31·6 1892 ... 25·6 1893 ... 36·6 1894 ... 24·4 1895 ... 23·6	There is a decrease under "diarrhœa and dysentery"; mixed supplies are still employed.
Conjeeveram ...	...	July 1897 ...	1897 ... 28·3 1898 ... 29·4	1892 ... 32·5 1893 ... 33·0 1894 ... 30·6 1895 ... 33·6 1896 ... 33·3	The period since construction is too short for definite statements; but so far there would appear to be a decrease under "cholera" and "fevers."
Kurnool ...	...	Oct. 1897 ...	1897 ... 53·2 1898 ... 24·6	1892 ... 55·2 1893 ... 30·2 1894 ... 31·3 1895 ... 30·5 1896 ... 30·4	Period too short to form an opinion.

MECCA PILGRIMAGE.

58. The Collectors of the Maritime Districts of this Presidency, the Britis Resident in Travancore and Cochin, and the British Consular Agent at Pondicherry and Karikal, were requested by a circular letter to report if any pilgrims embarked from any of their ports for the Haj at Mecca, in 1898. With the exception of Malabar, all rendered *nil* returns. The information furnished by the Collector of Malabar is abstracted below :—

Name.—S.S. "Cashmere."
Tonnage.—1,695·27.
Date of departure.—8th March 1898.
Number of pilgrims—

Men including 10 passengers treated as pilgrims under the Act ...	169
Women	33
Children	5
Total ...	207

Quantity of water allowed per head.—One gallon per head daily.
Amount of floor and air space allowed for each pilgrim.—Ninety-six cubic feet and 16 superficial feet of space for each pilgrim.
All pilgrims and passengers had their own rations; the ship had also rations sufficient for the whole number of crew and pilgrims to last for the voyage, and the same had been inspected by the local Port officer.

SECTION X.

PERSONAL PROCEEDINGS AND GENERAL REMARKS.

59. At the beginning of the year, the Government Order requiring me to devote my attention to plague and famine matters, instead of routine sanitation (G.O., No. 1545 L.,Mis., dated 13th August 1897) continued in force. Famine work terminated with attendance at the Famine Conference at Waltair, except that I carried out a tour near Panem and Dhone, Kurnool district, with the object of ascertaining the condition of agriculturists at the termination of famine operations. In February, at the request of the Inspector-General of Prisons, I was deputed by Government to report on the unhealthy condition of the Rajahmundry Jail. The prisoners seemed to me to be suffering from sub-acute beri-beri. The recommendations then made have, I understand, been acted upon with good results. During March, I proceeded to Tungabhadra and, in consultation with the Local Fund Engineer and Collector, advised as to the erection of a railway inspection plague camp. In consultation with Mr. Moss, the officer in charge of the Public Works Workshops, the supply of temporary steam disinfecting machines for present and future requirements of plague was arranged for, and their effectiveness was tested. In this month also, I inspected the railway inspection plague camp at Arkonam. References, at this period, from Government were of a frequency and nature that it was considered advisable by Government I should not undertake touring until further orders; especially as in the state of uncertainty as to future demands on the funds of Local Bodies, practically no good could result from a series of reports on the routine sanitary requirements of localities.

60. In the first week of June, I was granted privilege leave for a period of three months. During this time, Major Thomson, D.P.H. (Camb.), acted for me. Towards the end of June, the presence of typhoid fever in Ootacamund having excited public alarm, Major Thomson proceeded there, and rendered a full report for the information of Government. He was then directed to proceed to Hubli, with the object of examining methods for combating plague, and, at the same time, to ascertain how far suitable measures were being taken to guard the frontier stations of this Presidency. He, consequently, visited Hospet, Adóni and Hubli. In August, plague having appeared at Guntakal, this officer was directed to proceed thither. He inspected the villages of Tiruvallam and Jungalpalli of North Arcot, where plague had been imported from the Mysore Province. He also selected the site for a plague camp at Jalarpet.

61. I resumed charge of the office from Major Thomson in the first week of September. I found Government had directed that a special inspection of Madras City should be conducted, in reference to an unexplainable increase of mortality under the head of "fever," which it was feared might imply that plague had become epidemic, without its being recognized. In conjunction with the Health Officer of the Municipality (Lieutenant Cornwall, I.M.S.), I conducted a house-to-house inspection in various typical localities. This inspection occupied several days: its result is referred to under "Fevers." On the 14th September, I proceeded to the villages of Guntakal and Timmancherla in the Anantapur district, and Chippagiri in the Bellary district. In these, indigenous plague had appeared. This occupied up to the 25th of that month. During September, a Plague Commissioner, Mr. Hammick, I.C.S., was appointed by Government. The position of this office with respect to the Plague Commissioner is thus defined, in the Government Order directing his appointment (G.O., No. 1122 P., dated 20th September 1898):—"The Sanitary Commissioner and the officers in his Department shall give every possible assistance to the Plague Commissioner in the conduct of his duties, lending him their assistance and advice to the utmost of their power, and carrying out his orders."

62. In October, I was directed by Government to supply a scheme for the defence of the City of Madras against plague, in consultation with the President, and subsequently was desired by the Plague Commissioner to report on various sites intended for Municipal plague hospitals and camps, and caste hospitals. During this month, it being found, in respect to the *personnel* for the scheme for maintaining a system of observation in districts "imminently threatened" with plague, that the Certificated Sanitary Inspectors available were insufficient in numbers, with the sanction of Government, I trained and examined 59 men as Temporary Sanitary Inspectors, in reference to the legal and sanitary requirement and methods in respect to plague, and sufficiently as to general sanitation to enable them to grasp the main particulars as to conservancy, water-supply, and the hygiene of dwellings, etc. On November 10th, I returned to the plague-infected areas round Guntakal, and remained there till the 14th. On that date, at the special request of the Collector of South Arcot, I proceeded to Tiruvannámalai, with reference to preparations against importation of plague at the important annual festival at that place. On the 25th November, I proceeded to inspect the railway inspection station at Hospet, and the frontier road stations in the district of Bellary, as the Bellary district seemed threatened by invasion from H.H. the Nizam's territory. I proceeded to Kopbal in the Nizam's territory, and ascertanied the extent to which plague was prevalent. Kamalapur, Hosur and Taliari ghat were inspected. The town of Bellary was carefully examined in reference to its preparations against plague, and the Municipal Council was met and conferred with. On the 1st December, I proceeded to Bangalore to give evidence before the Plague Commission. On the 16th December, I proceeded to Guntakal, and accompanied the Plague Commission during its inspection. By this time, Mr. Buckley, I.C.S., had been appointed Plague Commissioner; with him I inspected Maddikera, a village in the Kurnool district, where plague had appeared. From thence I proceeded to Gooty, where I met the Union Panchayat and the chief inhabitants of the town in reference to plague preparations. I then inspected the railway inspection camp at Tungabhadra. For the rest of the month, I was occupied in inspecting the plague-infected areas of Peddahotur and Molagavalli. During my inspection of Gooty, Hospet and Bellary, I undertook plague inoculation.

63. In accordance with the usual custom in this Presidency, a written report was submitted on the result of each inspection made. In addition to this and routine sanitary and vaccination correspondence, special references for sanitary opinions from Government and local authorities (Collectors, Municipalities and District Boards) were frequent, and exceptionally large in number.

64. Practically, Major Bannerman, the incumbent of the office of Inspector of Vaccination and Deputy Sanitary Commissioner, was not available for duty within the Presidency longer than four and half months, in the aggregate, during the whole year. He, however, during his absence, conducted his usual share of office work, in connection with the Vaccination Department. He continued to attend the laboratory of M. Haffkine for instruction in the making of plague prophylactic serum until 19th April 1898, when, after a temporary stay in Madras, he was placed at the disposal of the Government of India, for duty in Calcutta. He returned to Madras on the 31st August 1898, when he was placed on special duty in the town of Madras for the introduction of anti-plague inoculation. He devoted himself to this work with much zeal, and, by means of popular lectures and demonstrations of the method, he did work of great importance in persuading the people to submit to this operation. The people displayed particular confidence in his methods. Three medical officers specially engaged for plague duty were also placed at his disposal, together with one lady Civil Apothecary. With this staff from September to the end of the year, 5,685 cases had been inoculated in the City of Madras.

65. The endeavour to provide an educated class of Certificated Sanitary Inspectors in this Presidency, in lieu of the so-called "Sanitary Inspectors" of the old type, whose comprehension of their functions usually extended no further, in sanitary matters, than to see that the conservancy staffs were at their posts, whilst even this useful duty was interfered with by Chairmen requiring of them the duties of tax-collectors, has progressed fovourably. Gradually, under the ruling that those who had no more than five years' service must qualify or leave their posts, men who have undergone a fair training in theoretical and practical hygiene have replaced them. Inspection of their diaries (which form their media of communication with Chairmen of Municipalities) shows that many thoroughly sound suggestions have been excogitated. They now form a distinct factor in the sanitary advance of the Presidency, in that, having adopted sanitation as a profession, they have influence amongst the inhabitants in bringing hygienic truths home to them. But, whilst this advance has been secured in Municipalities, it seems most unreasonable that Local Fund areas should, with few exceptions, be unprovided with any staff that can deal with sanitary matters. It is to be hoped that the introduction of the revised Local Boards Act (Madras Act No. V of 1884) will secure the necessary funds and organization. The movement has attracted a well-educated and respectable class of young men, and, if nothing occurs "to put back the hands of the clock," the profession of a Certificated Sanitary Inspector in this Presidency should be one which should carry with it much respect. From the class assembled in 1898, not less than 55 Matriculates were rejected, on account of the want of sufficient accommodation. In the meantime, there is a tendency for men of still better educational status to undertake sanitary work, who find themselves debarred from obtaining any qualification other than that of the Licentiate of Sanitary Science of the Madras University, which can only be given to medical men. Whilst I hold that for the post of administrative Health officers, it is essential that a medical education should be undergone, I do not see that it is requisite where executive sanitary work is required. Given a good general education as a foundation, an excellent executive staff could be evolved, by demanding a special course of study from those who have not been put to the unnecessary toil of being qualified as medical men in the first place. In this connection, it must be remembered that there are large numbers of well-educated young men available,* whose services could be secured at a considerably smaller sum than qualified medical men—possessed of the same general educational status. Under these circumstances, I have placed myself in communication with the Director of Public Instruction (owing to whose liberal views of matters educational, it has been possible to adapt existing examinations for the requirement of Sanitary Inspectors) with the object of ascertaining whether it is not possible to place before Government a scheme for a higher grade of sanitary executive officers. My suggestion is that candidates should have passed the F.A. examination, and that thereafter they should undergo a course of twelve months' training in subjects that would go towards making the necessary ideal standard. I believe, in this period, it would be possible to impart to them the main truths of theoretical and practical chemistry, bacteriology, physiology, pathology, medical diagnosis (human and veterinary), sanitary engineering, and general sanitation, that would render them valuable acquisitions to the sanitary service of the Presidency. Such a movement demands, on the one hand, that it should be possible to give a special diploma, and, on the other, that Government will insist on Local Fund bodies following the example of Municipalities by employing sanitary staffs. My report embodied in G.O., No. 435, Public, dated 17th April 1897, shows that a Vaccine Institute could be maintained and a complete sanitary and vaccination staff be organized, at an increase over present demand upon municipal income of 1·82 per cent., and a total cost for District Boards that would be covered by 4·85 per cent. upon their incomes.

66. Up to the end of the year, 64 Certificated Sanitary Inspectors were employed in Municipalities, 12 in District Boards, and 69 were on special plague duty. In not a single instance was any complaint received as to the conduct of any Certificated Sanitary Inspector. Of the 98 temporary Sanitary Inspectors on plague duty, it cannot be said that all were equally efficient, or that no complaints were received as to them. Nevertheless, considering the hasty manner in which it was necessary to select and train them, I think they proved of very great utility. Six Certificated Sanitary Inspectors were, after two months' training in the Mysore Government Vaccine Institute, admitted to the Vaccination Department as Deputy Inspectors of Vaccination.

* During the last five years the Madras University conferred the degree of B.A. in 2,120 instances.

67. In reference to plague administration, Government adhered to the principles of "Observation" as opposed to quarantine, alluded to in paragraph 75 of the Personal Proceedings of the preceding year's report.

68. Following the heavy incidence of plague in the Mysore territory, during the last five months of the year, the disease was imported in 96 separate localities, in a total of eleven districts of this Presidency. In 95 localities, plague was imported 223 times. In 11 of these, importation was repeated from four times to over thrice that number of times. Thus, in Madras * 12 separate instances of importation were detected. Yet, the City of Madras remained free from plague, and in only 20 localities of 5 districts was it reported as indigenous, up to the end of the year. It is fair to argue that the progress of plague, so long at least as it is confined to human beings, can be absolutely checked by a correctly worked "surveillance system," backed up by isolation of the sick, and the prompt application of sanitary measures. This is, of course, nothing but what might be expected. But, it is possible to argue that we are not acquainted with how many instances of plague may have been imported, and yet no indigenous plague has followed. This argument is tenable; but, having regard to the certainty with which plague slowly but surely spreads where concealment has been effected, the chances are greatly in favour of the supposition that the system really effectively kept touch of all arrivals from infected areas. I refer to this subject, as the natural tendency is to point to the heavy expenditure necessary for the support of the staff required to work such a method, and, secondly, to show that of so many thousands of cases that were inspected, so few really turned out to be plague. But it seems to me that the chances would have been 100 to 1, that each case detected would, if it had been undiscovered, have led to indigenous plague in the locality concerned, and that, consequently, not only have the people in these places been spared an unnecessarily early visitation from the disease, but they have been spared the loss of lives and money that must follow its appearance, compared to which the expenditure necessary for the staff must be insignificant. It is apt to be felt too that perhaps this escape of localities was not so much due to the precautions taken as to some fortuitous circumstances, depending upon the inability of the plague microbe to accommodate itself to its environment. This factor undoubtedly does modify the chances of spread and, probably, the virulence of the microbe; but it obviously is very methodical and persevering in its efforts to overcome all difficulties, and it seems to me that, given time and season, there is no place in this Presidency that can be regarded as safe from the possibility of plague importation, and subsequent spread. In no instance has a case of plague been reported as having originated from infected articles received from any locality outside the Presidency. The origin of the disease has always been found to be due to human beings suffering from the disease, arriving from an infected locality. Evacuation of indigenously affected areas has been found, as in all epidemics of this disease that history has recorded, the best sanitary measure. M. Haffkine's anti-plague prophylactic has also its sphere of utility, and Government has done its best to encourage its use. I have, however, consistently opposed advice tendered to Government from time to time by other officers to neglect, or abolish, necessary sanitary measures in favour of solely practising inoculation. A total of 5,685 anti-plague inoculations was performed in the Madras town and 10,532 in the Presidency generally, up to the end of December 1898. I have not put on record any sanitary experiences in this report as to plague, as I understand these will be dealt with by the Plague Commissioner: indeed, had I wished to do so, it would have been practically impossible to correctly trace facts on which such remarks should be based, owing to the operation of G.O., No. 1440, Public, dated 30th November 1898.

69. There has been a decided falling off since 1896 in the total number of localities reported upon by District Medical and Sanitary Officers, notwithstanding the continued provision in each district of an Assistant Surgeon, capable of undertaking their duty at head-quarters, whilst on tour—*vide* Appendix B.

1896	284
1897	261
1898	254

* Since the first appearance of the disease in Bombay up to May 1899, 18 cases have been imported, and have been duly isolated.

It is impossible for me to ascertain how far this falling off is due to the absence of permanent incumbents in districts, owing to plague and other exigencies. It is desirable that District Medical and Sanitary Officers should be reminded of the necessity for greater activity. Irrespective of current sanitary requirements of their districts, seeing that this office is provided with but one Deputy, it is specially necessary in the present critical state of vaccination, that in districts where plague is not existent, better attention be devoted by them to their sanitary duties beyond their head-quarters.

70. My Manager and Assistant M.R.Ry. Balasundra Mudaliyar and staff worked with their usual zeal during the year. A recent calculation of receipts of genuine official communications, that is, excluding all mere forms or documents of a routine nature, shows that since the last re-organization of my office, the staff fulfils more than four times the amount of work it was calculated to be capable of effecting. The consequence is that work is often produced far more slowly than I could wish.

71. The condition of stores, &c., in this office has been duly checked as required by G.O., No. 920, Financial, dated 18th September 1893.

72. The service registers of my office establishment have been regularly maintained and kept up to date.

W. G. KING, M.B., C.M., D.P.H., Lt.-Col., I.M.S.,
Sanitary Commissioner for Madras.

EGMORE,
25th May 1899.

APPENDICES

TO

GENERAL SANITATION REPORT.

APPENDIX A.

Tables showing places visited by Sanitary Commissioner and Deputy Sanitary Commissioner during 1898.

Municipal Towns and Rural Areas inspected by									
Sanitary Commissioner.					Deputy Sanitary Commissioner.				
Districts.	Municipalities.	Date of inspection.	Date of report.	G.O. on report.	Districts.	Municipalities.	Date of inspection.	Date of report.	G.O. on report.
				Nil.					

APPENDIX B.

Statement showing the Number of Towns and Villages inspected by the District Medical and Sanitary Officers during the year 1898.

Districts.	Number of towns and villages inspected and reports received.	Number of towns and villages inspected, but no reports received.	Total number of towns and villages inspected.
Anantapur	8	...	8
Bellary	2	...	2
Chingleput	11	11	22
Coimbatore	10	4	14
Cuddapah	11	4	15
Ganjám	36	1	37
Gódávari	7	15	22
Kistna	16	11	27
Kurnool	17	32	49
Madura	32	25	57
Malabar	1	...	1
Nellore	16	8	24
Nilgiris	2	...	2
North Arcot	12	11	23
Salem	21	5	26
South Arcot	4	7	11
South Canara	...	...	...
Tanjore	4	9	13
Tinnevelly	21	5	26
Trichinopoly	11	...	11
Vizagapatam	14	...	14
Total ...	256	148	404

APPENDIX C.

Statement showing Statistics of Sickness and Mortality in the Lawrence Asylum, Ootacamund, during the year 1898, *as required in G.O., No.* 2100 *L., dated 4th November* 1895.

—	Average strength.		Total number of admissions to hospital.		Number of deaths.		Rate of sickness (per 100 of average strength).		Death-rate (per 100 of average strength).	
	1897.	1898.	1897.	1898.	1897.	1898.	1897.	1898.	1897.	1898.
Lawrence Asylum ...	379	380	197	227	1	1	51·9	59·7	0·26	0·26

APPENDIX D.

VITAL STATISTICS OF THE GENERAL POPULATION.

No. I.—*Showing the Births registered in the districts of the Madras Presidency during the year* 1898.

1	2			3	4			5			6			7	8	9	10		
Number.	Population (exclusive of Europeans and Eurasians) as per census of 1891.			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 over deaths per 1,000 of population.	Excess of deaths over births per 1,000 of population.	Mean ratio of births per 1,000 during previous five years.		
	Males.	Females.	Total.		Males.	Females.	Total.	Males.	Females.	Total.	Males.	Females.	Total.				Males.	Females.	Total.
1	372,034	355,285	**727,319**	Anantapur	**372,034**	355,285	**727,319**	9,032	9,013	**18,045**	12·4	12·4	**24·8**	102·0	5·4	...	14·4	14·1	**28·5**
2	453,537	436,948	**890,485**	Bellary	453,537	436,948	**890,485**	13,306	12,800	**26,106**	14·9	14·4	**29·3**	103·9	6·6	...	16·7	16·2	**32·9**
3	604,816	595,085	**1,199,901**	Chingleput	604,816	595,085	**1,199,901**	21,896	20,951	**42,847**	18·2	17·5	**35·7**	104·5	11·4	...	18·8	18·1	**36·9**
4	981,233	1,022,678	**2,003,911**	Coimbatore	981,233	1,022,678	**2,003,911**	27,198	27,452	**54,650**	13·6	13·7	**27·3**	99·0	8·8	...	14·3	13·8	**28·1**
5	646,132	625,589	**1,271,721**	Cuddapah	646,132	625,589	**1,271,721**	14,990	14,682	**29,672**	11·8	11·5	**23·3**	102·1	4·5	...	13·8	13·4	**27·2**
6	923,300	973,400	**1,896,400**	Ganjám	641,808	694,090	**1,335,898**	16,200	14,357	**30,557**	12·1	10·8	**22·9**	112·8	0·2	...	10·9	10·1	**21·0**
7	1,026,632	1,051,226	**2,077,858**	Gódávari	1,026,632	1,051,226	**2,077,858**	27,896	26,517	**54,413**	13·4	12·8	**26·2**	105·2	9·5	...	12·5	11·9	**24·4**
8	938,057	916,967	**1,855,024**	Kistna	938,057	916,967	**1,855,024**	32,210	31,333	**63,543**	17·3	16·9	**34·2**	102·8	11·1	...	16·8	16·2	**33·0**
9	414,035	403,625	**817,660**	Kurnool	414,035	403,625	**817,660**	10,728	10,356	**21,084**	13·1	12·7	**25·8**	103·6	5·1	...	15·3	14·8	**30·1**
10	217,690	218,685	**436,375**	Madras	217,690	218,685	**436,375**	9,410	8,690	**18,100**	21·6	19·9	**41·5**	108·3	...	3·7	20·8	20·0	**40·8**
11	1,251,217	1,356,545	**2,607,762**	Madura	*1,014,041	1,085,627	*2,099,668	24,422	23,290	**47,712**	11·6	11·1	**22·7**	104·9	7·1	...	15·1	14·3	**29·4**
12	1,306,782	1,329,892	**2,636,674**	Malabar	1,306,782	1,329,892	**2,636,674**	25,327	23,665	**48,992**	9·6	9·0	**18·6**	107·0	1·1	...	11·3	10·6	**21·9**
13	736,394	726,963	**1,463,357**	Nellore	736,394	726,963	**1,463,357**	17,670	17,452	**35,122**	12·1	11·9	**24·0**	101·2	4·3	...	13·2	12·7	**25·9**
14	54,485	42,280	**96,765**	Nilgiris	54,485	42,280	**96,765**	1,371	1,314	**2,685**	13·6	14·1	**27·7**	95·8	...	3·2	14·8	13·8	**28·6**
15	1,060,273	1,053,312	**2,113,585**	North Arcot	1,060,273	1,053,312	**2,113,585**	28,680	27,541	**56,221**	13·6	13·0	**26·6**	104·1	8·3	...	14·4	13·8	**28·2**
16	961,199	1,000,585	**1,961,784**	Salem	961,199	1,000,585	**1,961,784**	31,996	30,348	**62,344**	16·3	15·5	**31·8**	105·4	11·4	...	16·2	15·6	**31·8**
17	1,078,855	1,083,481	**2,162,336**	South Arcot	1,078,855	1,083,481	**2,162,336**	32,341	30,961	**63,302**	15·0	14·3	**29·3**	104·4	4·9	...	15·8	15·2	**31·0**
18	508,970	543,032	**1,052,002**	South Canara	508,970	543,032	**1,052,002**	13,968	13,279	**27,247**	13·3	12·6	**25·9**	105·2	1·3	...	16·5	15·6	**32·1**
19	1,065,450	1,161,631	**2,227,081**	Tanjore	1,065,450	1,161,631	**2,227,081**	36,619	34,813	**71,432**	16·4	15·6	**32·0**	105·2	6·1	...	14·6	13·8	**28·4**
20	933,222	982,480	**1,915,702**	Tinnevelly	933,222	982,480	**1,915,702**	30,501	28,936	**59,437**	15·9	15·1	**31·0**	105·4	9·3	...	15·2	14·3	**29·5**
21	708,691	663,035	**1,371,726**	Trichinopoly	708,691	663,035	**1,371,726**	21,248	20,548	**41,796**	15·5	15·0	**30·5**	103·4	5·9	...	14·3	13·8	**28·1**
22	982,283	959,912	**1,942,195**	Vizagapatam	755,251	776,097	**1,531,348**	18,566	17,869	**36,435**	12·1	11·7	**23·8**	103·9	5·3	...	13·7	13·3	**27·0**
22	17,159,960	17,570,663	**34,727,623**	Grand Total for the Presidency.	16,433,931	16,814,249	**33,248,180**	465,518	446,224	**911,742**	14·0	13·4	**27·4**	104·3	6·4	...	14·6	13·9	**28·5**
93	1,241,394	1,296,639	**2,538,033**	Total of Town circles in the Presidency.	1,241,394	1,296,639	**2,538,033**	43,081	40,744	**83,825**	17·0	16·0	**33·0**	105·7	3·2	...	16·9	16·1	**33·0**
181	15,915,566	16,274,024	**32,189,590**	Total of Rural circles in the Presidency.	15,192,537	15,517,610	**30,710,147**	422,437	405,480	**827,917**	13·7	13·2	**26·9**	104·2	6·6	...	14·4	13·7	**28·1**

* Increase due to the inclusion for the first time of the statistics of Kodaikanal Taluk and some of the Zemindaries of the district.

No. II.—*Statement of births and deaths registered in the districts of the Madras Presidency, and the receipts and expenditure in each district from and on conservancy, during the year* 1898.

1	2	3	4	5												6		7		8	9									10		11	12
Serial number.	Districts.	Area in square miles.	Average population per square mile.	Population (exclusive of Europeans and Eurasians) for which returns were received.			Deaths per 1,000 of population from											Number of deaths registered (exclusive of Europeans and Eurasians and born dead).			Number of deaths of males to every 100 deaths of females.	Births.			Net receipt of each district under conservancy.	Net expenditure of each district under conservancy.
							All causes.																							Mean ratio of deaths per 1,000 during previous five years.			
				Males.	Females.	Total.	Cholera.	Small-pox.	Fevers.	Dysentery and diarrhœa.	Injuries.	All other causes.	Males.	Females.	Total.	Cholera.	Small-pox.	Fevers.	Dysentery and diarrhœa.	Injuries.	All other causes.	Total number.	Birth rate per 1,000 of population.	Total number.	Birth rate per 1,000 of population.	Rs.	Rs.
1	Anantapur	5,275	134·2	372,034	355,285	727,319	0·6	0·1	4·3	0·7	0·4	13·4	19·6	19·3	19·4	0·1	0·0	7·5	3·3	0·3	9·7	14,151	19·6	18,045	24·8	+ 746	2,817
2	Bellary	6,136	148·2	453,537	436,948	890,485	0·2	0·0	8·3	1·9	0·3	11·5	22·9	22·6	22·7	0·2	0·0	8·3	3·9	2·6	21·9	20,237	22·7	26,106	29·3	8,203	56,045
3	Chingleput	2,842	399·0	604,816	595,085	1,199,901	1·6	0·2	3·9	2·6	0·4	15·6	24·6	24·0	24·3	1·6	0·2	7·5	2·5	0·4	20·1	29,148	24·3	42,847	35·7	4,523	22,732
4	Coimbatore	7,860	254·9	981,233	1,022,678	2,003,911	1·2	0·1	13·6	0·5	0·4	3·2	19·2	18·4	18·8	1·2	0·1	7·5	2·3	0·3	8·9	37,106	18·5	54,350	27·3	4,028	41,540
5	Cuddapah	8,722	145·8	646,132	625,589	1,271,721	0·4	0·7	11·1	0·6	0·3	2·4	24·7	20·8	22·7	0·4	0·7	13·6	2·3	0·3	19·5	23,910	18·5	29,672	23·3	+ 1,198	9,273
6	Ganjám	8,370	226·6	641,808	694,090	1,335,898	0·08	8·3	11·1	0·6	0·3	2·4	24·7	20·8	22·7	0·08	8·3	11·1	0·6	0·3	8·9	30,328	22·7	30,557	22·9	2,658	23,882
7	Gódávari	7,857	264·4	1,026,632	1,051,226	2,077,858	0·2	0·1	7·5	0·3	0·3	8·3	17·5	15·9	16·7	0·2	0·1	7·5	0·3	0·3	19·5	34,710	16·7	54,413	26·2	+ 9,865	40,563
8	Kistna	8,397	229·0	938,057	916,967	1,855,024	2·9	0·4	8·0	0·3	0·3	11·2	23·9	22·4	23·1	2·9	0·4	8·0	0·3	0·3	21·9	42,961	23·1	63,543	34·2	6,944	54,905
9	Kurnool	7,514	109·0	414,035	403,625	817,660	1·0	0·6	14·8	0·5	0·3	3·5	21·2	20·2	20·7	1·0	0·6	14·8	0·5	0·3	16·4	16,934	20·7	21,084	25·8	2,874	26,769
10	Madras	29	15,378·8	217,690	218,685	436,375	1·7	0·2	12·4	7·5	0·3	23·1	44·3	46·0	45·2	1·7	0·2	12·4	7·5	0·3	19·7	19,715	45·2	9,651	37·6	...	...
11	Madura	* 8,808	* 296·1	* 1,014,041	* 1,085,627	* 2,099,668	2·3	0·2	4·3	0·4	0·3	8·1	16·8	14·5	15·6	2·3	0·2	4·3	0·4	0·3	21·1	32,799	15·6	17,074	22·7	7,009	75,384
12	Malabar	5,585	472·1	1,306,782	1,329,892	2,636,674	0·4	0·04	9·4	1·6	0·3	5·8	19·0	19·1	17·5	0·4	0·04	9·4	1·6	0·3	19·0	46,236	17·5	24,814	20·1	+ 8,400	47,865
13	Nellore	8,765	166·9	736,394	726,963	1,463,357	0·2	0·1	8·0	0·5	0·3	8·3	17·5	15·9	16·7	0·2	0·1	7·5	0·3	0·3	19·7	28,875	16·7	15,109	24·0	+ 9,865	40,563
14	Nilgiris	957	101·1	54,455	42,280	96,765	0·6	0·01	22·1	1·7	0·2	6·3	29·8	32·5	30·9	0·6	0·01	22·1	1·7	0·3	23·6	2,995	30·9	1,622	25·5	385	8,366
15	North Arcot	7,616	286·2	1,050,273	1,053,312	2,113,585	1·7	0·2	12·4	7·5	0·3	23·1	44·3	46·0	45·2	1·7	0·2	12·4	7·5	0·3	19·7	38,844	18·3	19,792	17·5	7,494	36,437
16	Salem	7,529	260·6	961,199	1,000,585	1,961,784	0·9	0·1	8·4	0·6	0·4	10·0	21·1	19·7	20·4	0·9	0·1	8·4	0·6	0·4	19·3	40,009	18·3	20,268	17·9	11,774	43,659
17	South Arcot	5,217	414·5	1,078,855	1,083,481	2,162,336	5·2	0·5	4·8	0·6	0·3	13·0	25·2	23·6	24·4	5·2	0·5	4·8	0·6	0·3	22·4	52,810	24·4	27,209	21·0	6,575	57,089
18	South Canara	3,902	269·6	508,970	543,032	1,052,002	0·8	0·2	12·1	2·0	0·5	9·0	26·4	23·0	24·6	0·8	0·2	12·1	2·0	0·5	19·7	25,943	24·6	13,440	22·7	7,589	60,803
19	Tanjore	3,709	600·4	1,065,450	1,161,631	2,227,081	10·4	0·1	1·5	0·7	0·3	16·6	27·5	24·4	25·9	10·4	0·1	1·5	0·7	0·3	21·2	57,758	25·9	29,363	32·0	2,695	14,150
20	Tinnevelly	5,387	355·1	933,222	982,480	1,915,702	6·7	0·1	2·6	0·6	0·3	16·4	22·5	20·9	21·7	6·7	0·1	2·6	0·6	0·3	22·8	41,610	21·7	21,030	31·0	15,174	1,18,816
21	Trichinopoly	3,631	377·8	663,065	708,681	1,371,726	5·5	0·1	3·6	0·6	0·3	14·5	25·5	23·6	24·6	5·5	0·1	3·6	0·6	0·3	23·4	33,702	24·6	16,939	30·5	6,619	57,229
22	Vizagapatam	4,619	420·5	755,251	776,097	1,531,348	0·2	0·8	15·1	0·5	0·3	1·6	19·6	17·4	18·5	0·2	0·8	15·1	0·5	0·3	21·6	28,337	18·5	14,797	23·8	13,475	76,503
	Grand total for the Presidency.	128,727	269·8	16,433,931	16,814,249	33,248,180	2·0	0·6	7·5	0·9	0·3	9·7	21·9	20·1	21·0	2·0	0·6	7·5	0·7	0·3	9·2	699,108	20·8	911,742	27·4	83,825	2,183
	Total of Town circles in the Presidency.	...	...	1,241,394	1,296,639	2,538,033	2·1	0·3	7·2	3·5	0·3	16·4	30·8	28·8	29·8	2·1	0·3	7·2	3·5	0·3	30·2	38,295	33·0	83,825	33·0	...	...
	Total of Rural circles in the Presidency.	...	...	15,192,537	15,517,610	30,710,147	2·0	0·6	7·5	0·7	0·3	9·2	21·8	19·4	20·3	2·0	0·6	7·5	0·7	0·3	21·0	322,011	26·9	827,917	26·9	...	...

Note.—The born-dead cases are not included in this or any of the other statements.
* Increase due to the statistics of Kodaikanal and some of the Zemindaries of the district being shown here for the first time.
† These figures represent the net receipts and expenditure for Municipal towns.

No. III.—*Deaths registered in the districts of the Madras Presidency during each month of the year* 1898.

1	2	3												4
Number.	Districts.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total death registered during the
1	Anantapur	1,317	977	1,056	1,178	991	1,025	992	1,137	1,111	1,258	1,506	1,603	14,1
2	Bellary	1,561	1,313	1,662	1,725	1,713	1,965	1,737	1,823	1,751	1,592	1,769	1,926	20,2
3	Chingleput	2,524	2,030	2,096	1,668	2,135	1,948	2,096	2,398	2,754	2,761	3,232	3,506	29,1
4	Coimbatore	4,138	3,031	3,563	3,282	2,762	2,886	2,692	2,450	2,693	2,782	3,369	3,458	37,1
5	Cuddapah	2,313	1,681	2,129	2,039	1,535	1,401	1,538	1,570	1,846	2,019	2,785	2,994	23,9
6	Ganjám	6,051	4,550	4,187	2,660	1,784	1,576	1,700	1,698	1,599	1,394	1,487	1,653	30,3
7	Gódávari	3,412	3,278	2,442	2,067	2,156	2,920	3,044	2,854	3,203	2,774	3,226	3,334	34,71
8	Kistna	3,922	2,457	2,434	2,445	2,506	3,654	4,387	5,513	5,017	3,747	3,218	3,251	42,95
9	Kurnool	1,437	1,003	1,453	1,203	1,315	1,260	1,414	1,674	1,744	1,585	1,487	1,359	16,93
10	Madras	1,465	1,213	1,458	1,329	1,501	1,421	1,806	2,417	2,051	1,745	1,642	1,667	19,71
11	Madura	3,223	2,540	2,509	4,351	2,855	2,716	2,746	1,947	1,893	2,131	2,929	2,959	32,79
12	Malabar	4,314	3,819	3,467	3,428	4,061	4,751	5,132	4,407	3,738	3,176	2,909	3,034	46,23
13	Nellore	2,744	2,335	2,286	1,783	1,950	2,021	2,033	2,329	2,662	2,783	2,796	3,153	28,87
14	Nilgiris	178	165	213	261	327	419	373	295	226	201	176	161	2,99
15	North Arcot	3,198	2,661	2,823	2,450	2,486	3,399	2,821	3,212	3,219	3,484	4,361	5,730	38,84
16	Salem	3,756	2,887	3,165	3,554	3,324	2,956	2,858	2,745	2,829	3,536	4,160	4,239	40,00
17	South Arcot	5,495	4,016	3,370	2,649	3,359	3,630	3,586	4,769	3,872	4,064	5,880	7,120	52,81
18	South Canara	3,420	2,421	1,913	1,424	1,509	1,940	3,099	2,356	2,066	1,873	1,765	2,247	25,94
19	Tanjore	13,175	6,090	3,484	2,984	3,545	3,292	3,822	3,795	3,821	4,032	4,507	5,21	57,758
20	Tinnevelly	4,974	3,612	3,465	2,803	2,699	2,743	3,087	2,787	2,616	3,185	4,150	5,489	610
21	Trichinopoly	4,762	3,818	2,480	2,367	2,457	2,319	2,666	2,896	2,246	2,138	2,613	3,340	33,702
22	Vizagapatam	3,378	2,231	2,655	1,958	2,030	1,990	2,052	2,425	2,464	2,151	2,360	2,583	28,337
	Total, Madras Presidency	80,757	58,128	54,290	49,617	50,030	50,332	56,591	57,097	55,421	54,441	62,327	70,017	699,108
	Ratio of deaths per 1,000 in each month	2·4	1·8	1·6	1·5	1·5	1·5	1·7	1·7	1·7	1·6	1·9	2·1	21·0

No. IV.—*Deaths registered according to age in the districts of the Madras Presidency during the year* 1898.

1	2	3		4		5		6		7		8		9		10		11		12	
Number.	Districts.	Under 1 year.		1 to 4.		5 to 9.		10 to 14.		15 to 19.		20 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.
1	Anantapur	1,354	1,187	1,136	1,102	459	439	216	202	161	282	538	791	694	623	803	482	794	634	1,146	1,108
2	Bellary	2,375	2,087	1,978	2,077	731	685	280	211	233	348	777	981	997	846	1,052	725	854	740	1,102	1,156
3	Chingleput	4,452	3,868	2,150	2,308	701	793	441	384	368	531	892	1,175	1,015	984	1,184	845	1,344	1,049	2,337	2,417
4	Coimbatore	4,707	3,976	2,459	2,349	1,281	1,135	1,030	768	785	851	1,557	1,760	1,756	1,681	1,628	1,404	1,737	1,614	2,250	2,378
5	Cuddapah	2,804	2,357	1,505	1,242	656	652	326	300	357	428	965	1,227	1,330	1,286	1,568	1,139	1,484	1,283	1,680	1,612
6	Ganjám	2,553	2,315	3,079	3,005	1,908	1,584	883	698	768	826	1,387	1,340	1,276	974	1,249	819	1,160	1,012	1,607	1,887
7	Gódávari	3,770	3,420	2,463	2,301	1,105	1,013	742	550	763	975	1,632	1,691	1,698	1,317	1,705	1,122	1,570	1,330	2,574	2,963
8	Kistna	5,885	4,829	2,592	2,947	1,450	1,318	835	773	830	1,205	1,814	2,759	1,771	1,494	1,775	1,102	1,624	1,161	3,418	3,56
9	Kurnool	1,570	1,370	1,355	1,338	682	624	324	287	217	369	746	893	1,020	851	984	678	882	739	994	1,011
10	Madras	2,851	2,538	1,690	1,780	490	473	269	272	210	317	660	924	654	694	619	571	628	502	1,580	1,993
11	Madura	3,640	3,092	2,296	2,270	1,075	950	727	490	620	606	1,303	1,651	1,793	1,569	1,849	1,447	1,665	1,547	1,906	2,102
12	Malabar	2,649	2,320	3,763	3,499	1,493	1,335	1,049	850	1,147	1,037	2,737	2,143	3,035	2,256	2,655	1,798	2,392	1,722	3,894	4,46
13	Nellore	2,705	2,199	2,034	1,798	1,352	1,285	1,093	970	959	775	1,039	907	1,081	928	1,175	933	1,458	1,206	2,213	2,66
14	Nilgiris	354	337	299	260	84	75	60	40	59	55	266	159	209	157	152	102	99	74	100	114
15	North Arcot	4,540	3,941	2,842	2,855	1,135	1,076	680	574	619	850	1,383	1,887	1,775	1,767	1,881	1,437	1,988	1,656	2,949	3,00
16	Salem	6,035	5,297	2,834	2,939	1,114	1,022	636	581	523	595	1,292	1,661	1,739	1,664	1,857	1,531	2,009	1,818	2,229	2,63
17	South Arcot	6,054	5,379	4,622	4,509	1,754	1,498	1,064	935	1,012	1,067	2,036	2,312	2,394	2,070	2,258	1,813	2,369	2,059	3,646	3,922
18	South Canara	2,635	2,241	1,465	1,464	671	687	466	407	601	652	1,374	1,471	1,596	1,180	1,424	917	1,208	1,078	2,000	2,40
19	Tanjore	7,067	5,760	3,024	2,761	1,774	1,588	1,302	1,070	1,190	1,747	2,548	3,411	2,767	2,735	2,846	2,408	2,695	2,398	4,150	4,51
20	Tinnevelly	5,743	4,999	3,373	3,491	1,072	941	635	608	570	643	1,374	1,624	1,663	1,520	1,900	1,543	1,909	1,869	2,791	3,34
21	Trichinopoly	3,925	3,512	2,259	2,175	1,074	975	693	564	630	776	1,367	1,744	1,565	1,419	1,492	1,330	1,554	1,491	2,380	2,77
22	Vizagapatam	2,229	1,975	1,922	1,910	955	768	648	502	589	637	1,352	1,268	1,625	1,342	1,665	1,219	1,649	1,636	2,163	2,28
	Total, Madras Presidency	79,397	68,997	51,340	50,380	23,016	20,826	14,390	12,036	13,211	15,572	29,179	33,208	33,453	29,357	33,721	25,365	33,072	28,718	49,018	54,34
	* Ratio per mille of population	149·9	116·0	25·9	24·1	9·6	8·8	7·7	7·4	9·3	11·4	10·3	10·3	13·7	12·0	18·9	14·9	31·7	26·3	54·4	49·6

* Calculated on the total population as per census of 1891 including Europeans and Eurasians, though the statistics are exclusive of Europeans and Eurasians and born de

No. V.—*Deaths registered according to Classes in the districts of the Madras Presidency during the year* 1898.

1	2	3					4					5				
Number.	Districts.	Population for which returns were received.					Number of deaths registered.					Ratio of deaths per 1,000 of population.				
		Native Christians.	Muhammadans.	Hindus.	Other classes.	Total.	Native Christians.	Muhammadans.	Hindus	Other classes.	Total.	Native Christians.	Muhammadans.	Hindus	Other classes.	Total.
1	Anantapur	1,378	31,946	673,667	328	727,319	32	875	13,232	12	14,151	23·2	16·8	19·6	36·6	19·4
2	Bellary	3,468	87,025	798,516	1,476	890,485	93	1,914	18,230	...	20,237	26·8	22·0	22·8	...	22·7
3	Chingleput	15,944	27,235	1,156,365	357	1,199,901	185	469	28,456	38	29,148	11·6	17·2	24·6	106·4	24·3
4	Coimbatore	14,638	43,947	1,945,010	316	2,003,911	231	440	36,430	5	37,106	15·8	10·0	18·7	15·8	18·5
5	Cuddapah	9,374	119,564	1,142,727	56	1,271,721	162	1,858	21,890	...	23,910	17·3	15·5	19·1	...	18·8
6	Ganjám	1,657	5,129	1,329,060	52	1,335,898	27	78	30,223	...	30,328	16·3	15·2	22·7	...	22·7
7	Gódávari	8,140	41,042	2,028,605	71	2,077,858	92	630	33,988	...	34,710	11·3	15·4	16·8	...	16·7
8	Kistna	67,966	108,567	1,678,333	158	1,855,024	1,085	2,075	39,791	...	42,951	16·0	19·1	23·7	...	23·1
9	Kurnool	22,584	97,416	697,616	44	817,660	404	1,849	14,681	...	16,934	17·9	19·0	21·0	...	20·7
10	Madras	23,599	53,184	358,997	595	436,375	802	2,868	16,449	6	19,715	37·8	44·5	45·8	10·1	45·2
11	Madura	* 71,418	* 116,866	* 1,911,271	* 113	* 2,099,668	570	1,889	30,340	...	32,799	8·0	16·2	15·9	...	15·6
12	Malabar	42,372	759,242	1,834,284	776	2,636,674	963	13,678	31,567	28	46,236	22·7	18·0	17·2	36·1	17·5
13	Nellore	46,797	78,185	1,337,979	396	1,463,357	178	853	27,844	...	28,875	3·8	10·9	20·8	...	19·7
14	Nilgiris	8,594	4,600	83,531	40	96,765	242	178	2,575	...	2,995	28·1	38·7	30·8	...	30·9
15	North Arcot	14,101	65,239	1,996,116	8,129	2,113,585	85	1,443	37,307	9	38,844	6·0	15·2	18·7	1·1	18·3
16	Salem	17,661	61,505	1,882,409	209	1,961,784	259	1,272	38,478	...	40,009	14·7	20·7	20·4	...	20·4
17	South Arcot	54,326	58,661	2,043,679	5,670	2,162,336	338	683	51,756	33	52,810	6·2	11·6	25·3	5·8	24·4
18	South Canara	70,902	108,261	862,573	10,266	1,052,002	1,299	2,609	21,750	285	25,943	18·3	24·1	25·2	27·7	24·6
19	Tanjore	84,338	119,864	2,022,300	579	2,227,081	1,726	3,211	52,821	...	57,758	20·5	26·8	26·1	...	25·9
20	Tinnevelly	145,569	95,951	1,674,150	32	1,915,702	2,628	2,244	36,738	...	41,610	18·0	23·4	21·9	...	21·7
21	Trichinopoly	69,410	38,271	1,264,037	8	1,371,726	1,351	709	31,642	...	33,702	19·5	18·5	25·0	...	24·6
22	Vizagapatam	1,712	17,529	1,512,038	69	1,531,348	31	150	28,153	3	28,337	18·1	8·6	18·6	43·5	18·5
	Total, Madras Presidency.	795,948	2,189,229	30,233,263	29,740	33,248,180	12,873	41,475	644,341	419	699,108	16·2	18·9	21·3	14·1	21·0

No. VI.—*Deaths registered from different causes in the districts and towns of the Madras Presidency during the year* 1898.

1	2	3	4	5	6	7	8					9	10	11							
							Injuries.							Ratio of deaths per 1,000 of population.							
							Suicides													From all causes	
Number.	Districts and towns.	Population for which returns were received.	Cholera.	Small-pox.	Fevers.	Dysentery and diarrhœa.	Males.	Females.	Wounds and accidents.	Snake-bite and killed by wild beasts.	Total.	All other causes.	Total deaths from all causes.	Cholera.	Small-pox.	Fevers.	Dysentery and diarrhœa.	Injuries.	All other causes.	For the year.	Mean of previous 5 years.
	A.—Districts.†																				
1	Anantapur	710,071	9	434	3,128	516	16	32	188	36	272	9,512	13,871	0·01	0·6	4·4	0·7	0·4	13·4	19·5	19·6
2	Bellary	772,714	160	415	6,134	1,393	17	41	159	36	253	8,566	16,921	0·2	0·5	8·0	1·8	0·3	11·1	21·9	24·3
3	Chingleput	1,135,455	1,874	293	4,357	2,892	48	35	251	100	434	17,527	27,377	1·7	0·3	3·8	2·5	0·4	15·4	24·1	21·8
4	Coimbatore	1,934,926	2,239	234	14,415	880	45	43	394	160	642	16,627	35,037	1·2	0·1	7·4	0·5	0·3	8·6	18·1	19·1
5	Cuddapah	1,254,510	456	877	17,699	573	51	68	335	70	524	3,865	23,394	0·4	0·7	13·6	0·5	0·4	3·1	18·7	22·3
6	Ganjám	1,275,822	46	10,838	14,396	612	51	43	218	81	395	2,525	28,812	0·04	8·5	11·3	0·5	0·3	2·0	22·6	21·7
7	Gódávari	1,928,969	421	177	14,731	476	55	110	279	109	553	15,147	31,505	0·2	0·1	7·6	0·2	0·3	7·9	16·3	16·3
8	Kistna	1,761,898	5,353	728	14,345	403	61	88	325	89	563	18,941	40,333	3·0	0·4	8·2	0·2	0·3	10·8	22·9	19·0
9	Kurnool	782,650	784	528	11,643	351	22	56	140	38	256	2,624	16,186	1·0	0·7	14·9	0·4	0·3	3·4	20·7	24·2
10	Madura	*1,910,470	3,931	415	8,392	424	45	62	284	159	550	14,499	28,211	2·1	0·2	4·4	0·2	0·3	7·6	14·8	19·7
11	Malabar	2,463,078	873	74	23,574	3,504	70	46	457	123	696	12,039	40,760	0·4	0·03	9·6	1·4	0·3	4·9	16·6	18·5
12	Nellore	1,423,397	3,850	207	11,335	663	5	2	302	37	346	11,180	27,581	2·7	0·1	8·0	0·5	0·2	7·9	19·4	16·5
13	Nilgiris	77,188	1	59	1,942	66	1	...	15	1	17	165	2,250	0·01	0·8	25·2	0·9	0·2	2·1	29·2	25·3
14	North Arcot	1,992,167	3,082	1,220	12,846	1,678	51	58	571	151	808	15,240	35,874	1·5	0·6	7·0	0·8	0·4	7·7	18·0	17·2
15	Salem	1,837,950	1,711	204	15,580	917	57	78	451	187	773	17,811	36,996	0·9	0·1	8·5	0·5	0·4	9·7	20·1	18·2
16	South Arcot	2,068,989	10,993	1,109	10,011	891	37	26	302	187	552	26,442	49,998	5·3	0·5	4·9	0·4	0·3	12·8	24·2	21·6
17	South Canara	1,011,382	804	146	12,392	1,961	46	25	381	94	546	8,880	24,729	0·8	0·1	12·3	1·9	0·5	8·8	24·4	21·0
18	Tanjore	2,002,916	13,814	324	2,622	871	35	25	309	184	553	33,059	51,243	6·9	0·2	1·3	0·4	0·3	16·5	25·6	25·2
19	Tinnevelly	1,712,987	2,855	135	4,220	767	47	95	291	99	532	28,318	36,827	1·7	0·1	2·5	0·4	0·3	16·5	21·5	23·5
20	Trichinopoly	1,260,428	6,721	94	4,475	514	39	38	232	126	435	18,031	30,270	5·3	0·1	3·6	0·4	0·3	14·3	24·0	22·0
21	Vizagapatam	1,392,180	205	1,188	21,819	355	8	14	380	69	471	1,223	25,261	0·1	0·9	15·7	0·3	0·3	0·9	18·2	20·0
	Total, Rural districts ...	30,710,147	60,182	19,699	230,456	20,707	807	964	6,264	2,136	10,171	282,221	623,486	2·0	0·6	7·5	0·7	0·3	9·2	20·3	20·3

* Increase due to the inclusion for the first time of the statistics of Kodaikanal taluk and some of the Zemindaries of the district.
† Exclusive of B.—Towns.

No. VI.—*Deaths registered from different causes in the districts and towns of the Madras Presidency during the year* 1898—cont.

1	2	3	4	5	6	7	8					9	10	11							
							Injuries.							Ratio of deaths per 1,000 of population.							
							Suicides.													From all causes.	
Number.	Districts and towns.	Population for which returns were received.	Cholera.	Small-pox.	Fevers.	Dysentery and diarrhœa.	Males.	Females.	Wounds and accidents.	Snake-bite and killed by wild beasts.	Total.	All other causes.	Total deaths from all causes.	Cholera.	Small-pox.	Fevers.	Dysentery and diarrhœa.	Injuries.	All other causes.	For the year.	Mean of previous 5 years.
	B.—Towns.																				
1	Anantapur. M.T.C. Anantapur.	6,973	...	14	17	12	...	...	4	...	4	100	147	...	2·0	2·4	1·7	0·6	14·3	21·0	20·6
2	Anantapur. T.C. Tadpatri ...	10,275	...	8	...	3	...	...	1	...	1	121	133	...	0·8	...	0·3	0·1	11·7	12·9	17·2
3	Bellary. M.T.C. Bellary ...	57,780	...	28	583	205	1	1	22	1	25	1,182	2,023	...	0·5	10·1	3·5	0·4	20·5	35·0	29·4
4	Bellary. M.T.C. Adoni ...	26,216	...	2	207	37	2	5	12	...	19	431	696	...	0·1	7·9	1·4	0·7	16·4	26·5	26·7
5	Bellary. T.C. Hospet ...	12,869	...	2	160	1	...	...	2	...	2	12	177	...	0·2	12·4	0·1	0·2	0·9	13·8	17·1
6	Bellary. T.C. Kampli ...	10,528	...	3	167	45	...	...	2	...	2	44	261	...	0·3	15·8	4·3	0·2	4·2	24·3	25·5
7	Bellary. T.C. Rayadrug ...	10,378	1	...	125	...	...	...	...	1	1	32	159	0·1	...	12·0	...	0·1	3·1	15·3	16·5
8	Chingleput. M.T.C. Conjeeveram.	42,543	14	7	169	163	...	...	18	...	18	879	1,250	0·3	0·2	4·0	3·8	0·4	20·7	29·4	31·8
9	Chingleput. M.T.C. Chingleput.	9,763	9	2	33	66	2	4	5	2	13	167	290	0·9	0·2	3·4	6·8	1·3	17·1	29·7	...
10	Chingleput. T.C. St. Thomas' Mount.	12,140	...	6	69	16	...	1	5	2	8	132	231	...	0·5	5·7	1·3	0·6	10·9	19·0	18·3
11	Coimbatore. M.T.C. Coimbatore.	4[illegible],007	75	...	395	156	1	2	10	3	16	796	1,438	1·6	...	8·6	3·4	0·3	17·3	31·2	31·5
12	Coimbatore. M.T.C. Erode ...	12,238	12	...	52	30	...	...	1	1	2	225	321	1·0	...	4·2	2·4	0·2	18·4	26·2	29·4
13	Coimbatore. M.T.C. Karúr ...	10,740	40	1	36	38	...	...	2	...	2	143	310	3·7	0·1	8·0	3·5	0·2	13·3	28·8	33·2
14	Cuddapah. M.T.C. Cuddapah.	17,211	1	9	255	11	...	...	4	3	7	233	516	0·05	0·5	14·8	0·7	0·4	13·6	30·0	33·1
15	Ganjám. M.T.C. Chicacole ...	18,204	...	52	173	37	1	5	5	1	12	208	482	...	2·9	9·5	2·0	0·7	11·4	26·5	28·0
16	Ganjám. M.T.C. Berhampur.	25,493	...	156	142	45	1	2	6	...	9	280	632	...	6·1	5·6	1·8	0·3	11·0	24·8	26·6
17	Ganjám. M.T.C. Parlákimedi	16,379	...	81	154	50	...	...	2	...	2	115	402	...	5·0	9·4	3·0	0·1	7·0	24·5	26·1
18	Gódavari. M.T.C. Cocanada ...	40,068	...	...	119	61	...	1	2	2	5	634	819	...	...	3·0	1·5	0·1	15·8	20·4	21·5
19	Gódavari. M.T.C. Rajahmundry.	28,279	28	5	257	71	...	...	25	1	26	411	798	1·0	0·2	9·1	2·5	0·9	14·5	28·2	33·0
20	Gódavari. M.T.C. Ellore ...	29,296	71	...	168	55	...	...	8	...	8	419	721	2·4	...	5·7	1·9	0·3	14·3	24·6	22·7
21	Gódavari. T.C. Pithápuram ...	13,731	...	2	49	3	...	2	3	...	5	130	189	...	0·1	3·6	0·2	0·4	9·5	13·8	11·0
22	Gódavari. T.C. Peddápuram ...	13,652	...	...	69	4	3	3	2	...	8	284	365	...	...	5·0	0·3	0·6	20·8	26·7	27·9
23	Gódavari. T.C. Samalkot ...	13,409	...	...	107	1	...	...	...	...	...	1	109	...	...	7·9	0·1	...	0·1	8·1	8·1
24	Gódavari. T.C Dowlaishweram.	10,454	...	...	2	7	...	...	...	...	...	195	204	...	...	0·2	0·7	...	18·6	19·5	27·7
25	Kistna. M.T.C. Masulipatam.	38,667	36	2	266	23	...	...	9	1	10	558	895	0·9	0·05	6·9	0·6	0·3	14·4	23·1	27·1
26	Kistna. M.T.C. Guntúr ...	23,267	39	...	98	63	3	5	32	1	41	674	915	1·7	...	4·2	2·7	1·7	29·0	39·3	31·6
27	Kistna. M.T.C. Bezwada ...	20,611	45	11	109	42	...	3	6	2	11	321	539	2·2	0·5	5·3	2·0	0·5	15·6	26·1	30·7
28	Kistna. T.C. Chirala ...	10,531	2	...	49	15	...	2	2	...	4	199	269	0·2	...	4·6	1·4	0·4	18·8	25·4	22·6
29	Kurnool. M.T.C. Kurnool ...	24,306	...	...	304	36	1	...	5	...	6	253	599	...	...	12·5	1·5	0·2	10·4	24·6	35·2
30	Kurnool. T.C. Nandyal ...	10,704	...	1	143	1	...	...	1	1	2	2	149	...	0·1	13·3	0·1	0·2	0·2	13·9	15·7
31	M.T.C. Madras	436,375	734	99	5,398	3,248	7	5	138	2	152	10,084	19,715	1·7	0·2	12·4	7·5	0·3	23·1	45·2	35·1
32	Madura. M.T.C. Madura ...	87,121	98	10	301	339	1	5	28	2	36	1,410	2,194	1·1	0·1	3·4	3·9	0·4	16·2	25·1	27·5
33	Madura. M.T.C. Dindigul ...	20,115	60	4	85	52	...	...	8	...	8	171	380	3·0	0·2	4·2	2·6	0·4	8·5	18·9	22·3
34	Madura. M.T.C. Periyakulam.	16,363	32	...	110	100	...	...	1	6	7	273	522	2·0	...	6·7	6·1	0·4	16·7	31·9	34·6
35	Madura. M.T.C. Palni ...	16,940	244	...	23	1	...	...	4	1	5	259	532	14·4	...	1·4	0·05	0·3	15·3	31·4	25·3
36	Madura. T.C. Ramnad	13,589	333	18	6	...	...	...	1	...	1	94	452	24·5	1·3	0·4	...	0·1	6·9	33·2	16·6
37	Madura. T.C. Aruppukóttai.	12,673	16	3	98	1	2	5	3	...	10	92	220	1·3	0·2	7·7	0·1	0·8	7·2	17·3	19·1
38	Madura. T.C. Kilakarai ...	12,396	6	...	79	...	...	1	...	...	1	110	196	0·5	...	6·4	...	0·1	8·8	15·8	25·9
39	Madura. T.C. Paramagudi ...	10,001	15	...	40	...	...	...	4	...	4	33	92	1·5	...	4·0	...	0·4	3·3	9·2	13·7
40	Malabar. M.T.C. Tellicherry.	26,631	4	...	200	144	1	2	5	...	8	415	801	0·1	...	7·5	5·4	0·3	16·7	30·0	27·5
41	Malabar. M.T.C. Calicut ...	64,798	40	1	609	327	8	6	6	5	25	1,251	2,253	0·6	0·01	9·4	5·0	0·4	19·3	34·7	33·4
42	Malabar. M.T.C. Palghat ...	36,367	11	17	226	154	...	...	7	1	8	826	1,242	0·3	0·4	5·7	3·9	0·2	21·0	31·5	30·0
43	Malabar. M.T.C. Cochin ...	16,147	4	6	99	121	...	...	2	...	2	328	560	0·2	0·4	6·1	7·5	0·1	20·3	34·6	36·1
44	Malabar. M.T.C. Cannanore.	26,653	...	1	153	85	1	...	1	...	2	379	620	...	0·03	5·7	3·2	0·1	14·2	23·2	34·7
45	Nellore. M.T.C. Nellore ...	29,128	297	8	238	37	1	1	11	3	16	389	985	10·2	0·3	8·2	1·3	0·5	15·3	33·8	22·3
46	Nellore. M.T.C. Ongole ...	10,932	9	...	78	35	...	...	5	...	5	182	309	0·8	...	7·2	3·2	0·5	16·8	28·5	26·0
47	Nilgiris. M.T.C. Ootacamund.	13,991	...	...	165	61	1	...	3	...	4	320	550	...	...	11·8	4·3	0·3	22·9	39·3	36·4
48	Nilgiris. M.T.C. Coonoor ...	5,536	...	...	30	35	...	...	6	...	6	124	195	..	...	5·4	6·3	1·0	22·2	34·9	35·9
49	North Arcot. M.T.C. Vellore ...	44,724	63	38	216	170	...	...	14	5	19	566	1,072	1·4	0·9	4·8	3·8	0·4	12·7	24·0	25·1
50	North Arcot. M.T.C. Walajapet...	10,485	19	1	34	36	...	1	...	3	4	169	263	1·8	0·1	3·2	3·4	0·4	16·1	25·0	26·8
51	North Arcot. M.T.C. Gudiyattam.	18,745	78	4	167	89	...	...	4	1	5	198	541	4·2	0·2	8·9	4·7	0·3	10·6	25·9	27·6
52	North Arcot. M.T.C. Tirupati ...	14,238	11	2	159	21	1	2	3	...	6	223	422	0·8	0·1	11·2	1·5	0·4	15·6	29·6	32·2
53	North Arcot. T.C. Kálahasti ...	11,715	55	1	...	...	...	...	2	...	2	182	240	4·7	0·1	...	...	0·2	15·5	20·5	17·4
54	North Arcot. T.C. Arcot ...	10,928	88	3	18	8	2	2	2	...	6	179	302	8·1	0·3	1·6	0·7	0·5	16·4	27·6	30·1
55	North Arcot. T.C. Ambúr ...	10,583	3	1	125	...	...	...	...	...	...	1	130	0·3	0·1	11·8	...	...	0·1	12·3	15·3
56	Salem. M.T.C. Salem ...	67,640	42	...	461	127	5	3	11	3	22	998	1,630	0·6	...	6·8	1·9	0·3	14·8	24·4	24·8
57	Salem. M.T.C. Vániyambádi.	15,838	19	...	177	73	...	...	3	...	3	315	587	1·2	...	11·2	4·6	0·2	19·9	37·1	34·8
58	Salem. M.T.C. Tiruppattúr.	16,463	...	1	172	12	...	...	5	...	5	297	487	...	0·1	10·4	0·7	0·3	18·0	29·5	29·4
59	Salem. T.C. Shendamangalam.	13,354	9	...	61	...	...	2	8	...	10	51	131	0·7	...	4·6	...	0·7	3·8	9·8	9·6
60	Salem. T.C. Rásipuram ...	10,539	21	...	...	3	...	1	1	...	2	132	158	1·9	...	...	0·3	0·2	12·6	15·0	14·3
61	South Arcot. M.T.C. Cuddalore.	47,025	103	19	286	221	...	...	14	8	22	962	1,613	2·2	0·4	6·0	4·7	0·4	20·6	34·3	24·1
62	South Arcot. M.T.C. Chidambaram.	18,634	144	11	107	80	...	...	4	5	9	284	635	7·7	0·6	5·7	4·3	0·5	15·2	34·0	31·9
63	South Arcot. M.T.C. Tiruvannámalai.	13,643	...	14	36	45	...	...	1	...	1	289	385	..	1·0	2·6	3·3	0·1	21·2	28·2	13·7
64	South Arcot. T.C. Porto Novo ...	14,045	41	...	8	...	...	...	4	...	4	126	179	2·9	...	0·6	...	0·3	8·9	12·7	13·4

No. VI.—*Deaths registered from different causes in the districts and towns of the Madras Presidency during the year* 1898—cont.

1	2		3	4	5	6	7	8					9	10	11							
								Injuries.							Ratio of deaths per 1,000 of population.							
								Suicides.													From all causes.	
Number.	Districts and towns.		Population for which returns were received.	Cholera.	Small-pox.	Fevers.	Dysentery and diarrhœa.	Males.	Females.	Wounds and accidents.	Snake-bite and killed by wild beasts.	Total.	All other causes.	Total deaths from all causes.	Cholera.	Small-pox.	Fevers.	Dysentery and diarrhœa.	Injuries.	All other causes.	For the year.	Mean of previous 5 years.
	B.—Towns—cont.																					
65	South Canara.	M.T.C. Mangalore.	40,620	58	14	353	170	1	...	16	1	18	601	1,214	1·4	0·4	8·7	4·2	0·4	14·8	29·9	24·9
66	Tanjore.	M.T.C. Tanjore ...	54,258	226	4	181	251	...	...	2	...	2	718	1,382	4·2	0·1	3·3	4·6	0·03	13·2	25·4	28·0
67		M.T.C. Kumbakónam.	54,254	193	...	246	167	...	...	9	2	11	1,012	1,629	3·6	...	4·5	3·1	0·2	18·6	30·0	35·8
68		M.T.C. Máyavaram.	23,754	54	10	75	125	...	...	2	...	2	378	644	2·3	0·4	3·1	5·3	0·1	15·9	27·1	30·8
69		M.T.C. Negapatam.	58,573	335	...	218	115	1	...	7	2	10	1,184	1,862	5·7	...	3·7	2·0	0·2	20·2	31·8	32·7
70		M.T.C. Mannárgudi.	20,392	133	1	78	72	...	2	7	1	10	268	562	6·5	0·04	3·8	3·5	0·5	13·2	27·5	30·3
71		T.C. Tiruváللúr ...	12,934	146	...	17	5	...	...	2	...	2	266	436	11·3	...	1·3	0·4	0·1	20·6	33·7	28·9
72	Tinnevelly.	M.T.C. Tinnevelly.	24,756	23	...	77	65	1	...	5	...	6	523	694	0·9	...	3·1	2·6	0·3	21·1	28·0	38·2
73		M.T.C. Palamcottah.	18,612	47	1	59	46	...	...	4	1	5	218	376	2·5	0·05	3·2	2·5	0·3	11·7	20·2	28·6
74		M.T.C. Tuticorin ...	24,964	128	1	170	233	...	...	5	...	5	386	923	5·1	0·04	6·8	9·3	0·2	15·5	36·9	32·1
75		M.T.C. Srivilliputtúr.	29,541	12	10	243	85	1	1	16	2	0	210	580	0·4	0·3	8·2	2·9	0·7	7·1	19·6	19·6
76		T.C. Kulasékarapatnam.	15,910	35	2	14	2	...	...	1	...	1	282	336	2·2	0·1	0·9	0·1	0·1	17·7	21·1	27·2
77		T.C. Virudupatti ...	14,075	37	...	41	8	...	3	...	...	3	79	168	2·6	...	2·9	0·6	0·2	5·6	11·9	11·6
78		T.C. Viravanallur ...	13,951	1	...	31	2	...	2	...	...	2	199	235	0·1	...	2·2	0·1	0·1	14·3	16·8	20·7
79		T.C. Rajahpalaiyam	13,301	...	...	1	...	...	...	2	1	3	245	249	...	...	0·1	...	0·2	18·4	18·7	18·5
80		T.C. Tenkási ...	12,861	20	...	40	15	...	2	2	...	4	276	355	1·5	...	3·1	1·2	0·3	21·5	27·6	36·6
81		T.C. Sivakási ...	12,184	10	...	71	...	1	2	3	...	6	280	367	0·8	...	5·8	...	0·5	23·0	30·1	32·5
82		T.C. Kayalpatnam .	11,464	38	...	46	5	...	1	3	...	4	143	236	3·3	...	4·0	0·4	0·4	12·5	20·6	43·6
83		T.C. Kalladakurchi.	11,096	18	...	...	...	1	1	...	...	2	244	264	1·6	...	...	...	0·2	22·0	23·8	32·6
84	Trichinopoly.	M.T.C. Trichinopoly.	89,666	656	39	388	184	1	...	22	2	25	1,443	2,735	7·3	0·4	4·3	2·1	0·3	16·1	30·5	27·7
85		M.T.C. Srírangam.	21,632	104	1	76	56	1	1	5	2	9	451	697	4·8	0·04	3·5	2·6	0·4	20·9	32·2	33·6
86	Vizagapatam.	M.T.C. Vizagapatam.	33,961	...	2	200	162	...	...	7	...	7	424	795	...	0·05	5·9	4·8	0·2	12·5	23·4	29·5
87		M.T.C. Bimlipatam.	9,696	...	...	45	24	...	1	1	...	2	114	185	...	...	4·6	2·5	0·2	11·7	19·0	26·7
88		M.T.C. Vizianagram.	30,735	13	4	361	128	1	1	4	2	8	331	843	0·4	0·1	11·7	4·2	0·3	10·8	27·5	27·0
89		M.T.C. Anakápalle.	17,001	...	...	111	54	...	...	6	...	6	200	371	...	...	6·5	3·2	0·3	11·8	21·8	25·1
90		T.C. Bobbili ...	14,448	...	6	194	1	...	2	4	2	8	73	282	...	0·4	13·4	0·1	0·6	5·0	19·5	19·4
91		T.C. Sálúru ...	12,910	3	28	91	35	...	...	4	...	4	...	161	0·2	2·2	7·1	2·7	0·3	...	12·5	16·6
92		T.C. Palkonda ...	10,364	...	6	130	...	...	...	1	...	1	33	170	...	0·5	12·5	...	0·1	3·2	16·3	27·1
93		T.C. Párvatipuram.	10,053	...	8	133	15	...	...	1	...	1	110	267	...	0·8	13·2	1·5	0·1	10·9	26·5	27·6
93	Total, Town Circles ..		2,538,033	5,262	791	18,182	8,947	54	91	646	85	876	41,614	75,672	2·1	0·3	7·2	3·5	0·3	16·4	29·8	29·1
181	Total, Rural districts ...		30,710,147	60,182	19,699	230,456	20,707	807	964	6,264	2,136	10,171	282,221	623,436	2·0	0·6	7·5	0·7	0·3	9·2	20·3	20·3
274	Total, Madras Presidency.		33,248,180	65,444	20,490	248,638	29,654	861	1,055	6,910	2,221	11,047	323,835	699,108	2·0	0·6	7·5	0·9	0·3	9·7	21·0	21·6

No. VII.—*Deaths registered from Cholera in the districts of the Madras Presidency during each month of the year* 1898.

1	2	3		4		5												6			7		8
		Circles of registration.		Villages.														Total.			Ratio of deaths per 1,000 of population.		
Number.	Districts.	Number in each district.	Number from which deaths from cholera were reported.	Number in each district.	Number from which deaths from cholera were reported.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Males.	Females.	Total.	Males.	Females.	Total.	Mean ratio per 1,000 for previous 5 years.
1	Anantapur ...	10	2	965	4	...	...	...	...	...	...	...	...	...	...	...	9	6	3	9	0·01	0·01	0·01	2·1
2	Bellary ...	14	6	795	33	...	...	...	8	37	28	22	11	4	...	...	51	84	77	161	0·2	0·2	0·2	2·1
3	Chingleput ...	9	8	2,134	255	226	114	149	46	35	12	9	164	347	181	236	378	996	901	1,897	1·6	1·5	1·6	0·6
4	Coimbatore ...	13	13	1,478	200	211	216	693	963	108	135	6	31	1	1	...	1	1,315	1,051	2,366	1·3	1·0	1·2	2·5
5	Cuddapah ...	12	8	1,276	50	116	40	28	7	...	...	1	...	6	15	36	208	242	215	457	0·4	0·3	0·4	1·0
6	Ganjám ...	8	3	6,037	18	23	18	2	2	1	...	...	...	...	...	...	...	19	27	46	0·03	0·04	0·03	2·8
7	Gódávari ...	18	13	2,603	51	197	107	88	41	21	12	19	4	19	5	3	4	278	242	520	0·2	0·2	0·2	1·0
8	Kistna ...	16	16	1,848	541	601	335	297	273	198	249	836	1,451	965	219	30	21	2,946	2,529	5,475	3·1	2·7	2·9	0·8
9	Kurnool ...	10	3	802	71	...	...	...	...	16	4	79	237	271	120	56	1	383	401	784	0·9	1·0	1·0	1·5
10	Madras ...	1	1	1	1	46	20	7	8	1	1	88	298	196	45	41	13	358	376	734	1·6	1·7	1·7	0·3
11	Madura ...	* 17	17	* 4,103	452	659	480	423	1,883	483	208	232	60	10	81	121	95	2,538	2,147	4,735	2·5	2·0	2·3	2·6
12	Malabar ...	15	12	2,245	104	359	265	104	130	50	6	1	14	1	1	1	...	502	430	932	0·4	0·3	0·4	2·4
13	Nellore ...	12	12	1,793	400	470	549	373	113	48	65	141	273	457	310	566	791	2,299	1,857	4,156	3·1	2·5	2·8	0·1
14	Nilgiris ...	4	1	52	1	...	...	...	...	...	...	1	...	...	...	...	...	1	...	1	0·02	...	0·01	0·3
15	North Arcot ...	17	17	4,328	331	192	158	67	16	19	15	54	382	366	163	305	1,662	1,737	1,662	3,399	1·6	1·6	1·6	1·2
16	Salem ...	14	13	3,811	292	152	243	255	685	382	50	...	2	2	...	...	31	992	810	1,802	1·0	0·8	0·9	1·1
17	South Arcot ...	12	11	2,897	989	2,213	1,206	608	271	462	730	1,093	969	473	142	804	2,230	6,057	5,224	11,281	5·6	4·8	5·2	2·3
18	South Canara.	6	6	1,277	153	543	200	92	17	10	...	...	...	...	...	...	...	464	398	862	0·9	0·7	0·8	3·3
19	Tanjore ...	15	15	3,550	1,401	8,930	2,800	518	172	190	127	322	430	334	272	158	648	7,672	7,229	14,901	7·2	6·2	6·7	3·9
20	Tinnevelly ...	21	20	1,538	403	979	526	550	409	125	41	196	134	85	33	28	127	1,775	1,449	3,224	1·9	1·4	1·7	2·4
21	Trichinopoly.	8	8	1,502	790	2,112	1,772	621	516	243	299	672	491	271	48	57	379	3,963	3,518	7,481	6·0	5·0	5·5	2·7
22	Vizagapatam.	22	6	2,668	40	13	3	151	30	22	2	...	...	...	...	...	...	120	101	221	0·2	0·1	0·2	0·8
	Total, Madras Presidency...	274	211	47,703	6,589	18,113	9,052	5,026	5,590	2,451	1,984	3,772	4,951	3,778	1,636	2,442	6,649	34,797	30,647	65,444	2·1	1·8	2·0	1·8

* Increase due to the inclusion of Kodaikánal taluk and certain zemindaries from which vital statistical returns were for the first time received.

No. VIII.—*Deaths registered from small-pox in the districts of the Madras Presidency during each month of the year* 1898.

1	2	3		4		5												6			7		8			9
		Circles of Registration.		Villages.														Total.			Number of deaths among children.		Ratio of deaths per 1,000 of population.			
Number.	Districts.	Number in each district.	Number from which deaths from small-pox were reported.	Number in each district.	Number from which deaths from small-pox were reported.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Males.	Females.	Total.	Under 1 year.	Under 10 years.*	Males.	Females.	Total.	Mean ratio per 1,000 for previous 5 years.
1	Anantapur ...	10	10	965	146	47	48	55	33	39	34	26	40	39	21	25	49	223	233	456	149	261	0·6	0·6	0·6	0·5
2	Bellary ...	14	13	795	126	15	58	47	56	33	49	56	55	29	25	20	7	207	243	450	155	294	0·4	0·5	0·5	0·7
3	Chingleput ...	9	9	2,134	140	13	24	50	38	33	25	29	19	26	13	12	28	159	149	308	88	77	0·3	0·2	0·2	0·1
4	Coimbatore ...	13	10	1,478	35	16	10	42	35	38	38	12	14	17	4	4	5	127	108	235	16	38	0·1	0·1	0·1	0·1
5	Cuddapah ...	12	12	1,276	258	28	105	113	92	51	86	96	72	86	42	53	62	466	420	886	315	357	0·7	0·7	0·7	0·3
6	Ganjám ...	8	8	6,037	1,453	3,479	2,806	2,481	1,242	404	276	149	92	55	62	24	57	5,848	5,279	11,127	1,652	6,042	9·1	7·6	8·3	2·7
7	Gódávari ...	18	13	2,603	38	8	25	19	15	4	15	13	12	7	6	10	50	107	77	184	13	33	0·1	0·1	0·1	0·3
8	Kistna ...	16	13	1,848	178	54	66	113	118	124	50	45	40	49	20	12	40	382	359	741	202	237	0·4	0·4	0·4	0·1
9	Kurnool ...	10	9	802	135	57	26	59	80	48	62	36	35	41	34	21	30	262	267	529	113	265	0·6	0·6	0·6	0·7
10	Madras ...	1	1	1	1	8	19	25	17	9	2	3	9	2	2	...	3	52	47	99	24	32	0·2	0·2	0·2	0·1
11	Madura ...	*17	12	*4,103	118	11	20	13	44	52	48	50	50	40	43	38	41	203	247	450	143	139	0·2	0·2	0·2	0·3
12	Malabar ...	15	11	2,245	35	24	12	23	7	2	8	4	2	2	7	3	5	51	48	99	6	25	0·04	0·04	0·04	1·2
13	Nellore ...	12	11	1,793	84	22	27	9	13	23	24	17	17	14	14	19	16	119	96	215	51	51	0·2	0·1	0·1	0·1
14	Nilgiris ...	4	2	52	9	1	...	7	3	24	15	9	...	...	...	...	...	40	19	59	2	3	0·7	0·4	0·6	0·2
15	North Arcot ...	17	17	4,328	317	89	123	141	94	63	61	93	80	114	127	151	134	610	660	1,270	319	561	0·6	0·6	0·6	0·3
16	Salem ...	14	10	3,811	88	36	18	19	12	10	31	18	10	12	9	16	14	99	106	205	63	90	0·1	0·1	0·1	0·2
17	South Arcot ...	12	11	2,897	244	37	43	66	136	104	58	110	120	90	142	133	114	603	550	1,153	245	416	0·5	0·5	0·5	0·3
18	South Canara.	6	6	1,277	73	16	22	24	27	12	13	12	9	3	7	4	4	94	66	160	5	14	0·2	0·1	0·2	0·1
19	Tanjore ...	15	12	3,550	96	4	8	11	20	13	17	16	31	29	58	51	81	162	177	339	65	133	0·1	0·1	0·1	0·3
20	Tinnevelly ...	21	13	1,538	72	11	18	5	32	11	2	12	22	4	7	12	13	77	72	149	12	52	0·1	0·1	0·1	0·2
21	Trichinopoly...	8	7	1,502	56	11	18	10	11	12	11	9	17	17	9	6	3	67	67	134	34	44	0·1	0·1	0·1	0·2
22	Vizagapatam.	22	20	2,668	189	107	196	231	233	110	67	53	60	69	37	43	36	633	609	1,242	119	121	0·8	0·8	0·8	0·4
	Total, Madras Presidency...	274	230	47,703	3,891	4,094	3,692	3,563	2,368	1,219	992	875	806	745	689	657	790	10,591	9,899	20,490	3,791	9,285	0·6	0·6	0·6	0·4

* Increase due to the inclusion of Kodaikánal taluk and certain zemindaries from which vital statistical returns were for the first time received.

No. IX.—*Deaths registered from Fevers in the Districts of the Madras Presidency during each month of the year* 1898.

1	2	3		4		5												6			7			8
		Circles of registration.		Villages.														Total.			Ratio of deaths per 1,000 of population.			
Number.	Districts.	Number in each district.	Number from which deaths from fevers were reported.	Number in each district.	Number from which deaths from fevers were reported.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Males.	Females.	Total.	Males.	Females.	Total.	Mean ratio per 1,000 for previous 5 years.
1	Anantapur ...	10	9	965	447	360	291	285	395	283	288	237	237	197	192	200	180	1,633	1,512	3,145	4·4	4·2	4·3	3·5
2	Bellary ...	14	14	795	524	882	720	866	723	626	608	576	595	490	385	395	510	3,830	3,546	7,376	8·4	8·1	8·3	10·3
3	Chingleput ...	9	9	2,134	1,089	460	399	400	352	516	447	465	394	358	263	286	288	2,286	2,342	4,628	3·8	3·9	3·9	6·1
4	Coimbatore ...	13	13	1,478	726	1,884	1,258	1,232	1,021	1,125	1,240	1,211	1,022	1,070	1,067	1,400	1,418	7,606	7,342	14,948	7·7	7·2	7·5	7·2
5	Cuddapah ...	12	12	1,276	1,179	1,742	1,196	1,588	1,581	1,173	1,907	1,045	1,116	1,282	1,516	2,038	2,070	8,936	8,418	17,354	13·8	13·4	13·6	16·6
6	Ganjám ...	8	8	6,037	2,800	2,110	1,445	1,407	1,176	1,040	994	1,108	1,146	1,141	983	1,083	1,232	7,715	7,150	14,865	12·0	10·3	11·1	12·6
7	Godávari ...	18	18	2,603	1,240	1,835	1,500	1,077	913	918	1,219	1,274	1,334	1,239	1,256	1,366	1,571	8,184	7,313	15,502	8·0	6·9	7·5	8·5
8	Kistna ...	16	16	1,848	888	1,413	802	827	813	1,332	1,044	1,448	1,601	1,540	1,392	1,307	1,348	7,625	7,242	14,867	8·1	7·9	8·0	7·5
9	Kurnool ...	10	10	802	668	1,133	807	1,178	928	1,042	947	988	1,054	1,037	1,001	985	995	6,312	5,778	12,090	15·2	14·3	14·8	17·4
10	Madras ...	1	1	1	1	443	414	504	446	569	514	604	795	644	217	151	106	2,533	2,865	5,398	11·6	13·1	12·4	13·8
11	Madura ...	*17	17	*4,103	1,072	826	719	620	965	777	919	916	583	579	554	853	823	4,707	4,427	9,134	4·6	4·0	4·3	6·1
12	Malabar ...	15	15	2,245	442	2,275	1,977	1,934	1,835	2,155	2,538	2,845	2,474	1,927	1,674	1,527	1,709	13,661	11,200	24,861	10·4	8·4	9·4	7·9
13	Nellore ...	12	12	1,793	995	1,115	910	972	807	938	943	946	903	921	1,132	985	1,079	6,019	5,632	11,651	8·2	7·7	8·0	8·6
14	Nilgiris ...	4	4	52	51	111	113	134	187	237	311	284	228	155	137	119	121	1,127	1,010	2,137	20·7	23·8	22·1	17·5
15	North Arcot ...	17	16	4,328	2,198	1,296	1,088	1,259	1,161	1,132	1,083	1,209	1,217	1,013	1,211	1,432	1,464	7,363	7,202	14,565	6·9	6·8	6·9	7·1
16	Salem ...	14	13	3,811	2,260	1,741	1,256	1,394	1,320	1,332	1,332	1,289	1,206	1,170	1,334	1,543	1,534	8,144	8,307	16,451	8·5	8·3	8·4	7·9
17	South Arcot ...	12	12	2,897	1,608	933	761	755	585	728	732	917	868	754	1,016	1,209	1,190	5,274	5,174	10,448	4·9	4·8	4·8	6·4
18	South Canara.	6	6	1,277	1,166	1,363	1,083	885	630	815	1,086	1,894	1,217	1,009	887	765	1,031	6,514	6,231	12,745	12·8	11·4	12·1	8·8
19	Tanjore ...	15	15	3,550	785	331	239	259	240	351	354	302	263	248	258	282	310	1,674	1,763	3,437	1·5	1·5	1·5	2·3
20	Tinnevelly ...	21	20	1,538	700	615	421	421	332	409	446	372	330	295	333	428	611	2,528	2,485	5,013	2·7	2·5	2·6	4·1
21	Trichinopoly.	8	8	1,502	720	485	349	378	392	472	428	407	384	365	389	431	459	2,436	2,503	4,939	3·7	3·5	3·6	4·4
22	Vizagapatam.	22	22	2,668	1,275	2,916	1,781	1,997	1,454	1,640	1,623	1,701	2,019	2,000	1,785	1,985	2,183	12,010	11,074	23,084	15·0	14·3	15·1	16·7
	Total, Madras Presidency.	274	270	47,703	22,834	26,269	19,529	20,372	18,306	19,601	20,103	22,038	21,016	19,434	18,982	20,765	22,223	128,117	120,521	248,638	7·8	7·2	7·5	8·2

* Increase due to the inclusion of Kodaikánal taluk and certain zemindaries from which vital statistical returns were for the first time received.

No. X.—*Deaths registered from Dysentery and Diarrhœa in the Districts of the Madras Presidency during each month of the year* 1898.

1	2	3		4		5												6			7			8
		Circles of registration.		Villages.														Total.			Ratio of deaths per 1,000 of population.			
Number.	Districts.	Number in each district.	Number from which deaths from dysentery and diarrhœa were reported.	Number in each district.	Number from which deaths from dysentery and diarrhœa were reported.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Males.	Females.	Total.	Males.	Females.	Total.	Mean ratio per 1,000 for previous 5 years.
1	Anantapur ..	10	10	965	176	36	23	39	18	20	24	42	54	47	51	83	94	298	233	531	0·8	0·6	0·7	0·4
2	Bellary ...	14	13	795	240	75	57	79	105	101	127	151	163	198	193	220	212	877	804	1,681	1·9	1·8	1·9	1·0
3	Chingleput ..	9	9	2,134	888	234	188	174	106	146	168	237	305	339	367	408	465	1,611	1,526	3,137	2·6	2·6	2·6	2·1
4	Coimbatore ..	13	13	1,478	144	110	84	114	88	47	82	90	89	75	102	121	102	558	546	1,104	0·6	0·5	0·5	0·6
5	Cuddapah ...	12	12	1,276	250	28	39	38	26	18	39	45	50	49	67	102	83	355	229	584	0·5	0·4	0·5	0·4
6	Ganjám ...	8	8	6,037	344	109	50	48	40	74	46	75	88	72	48	49	45	429	315	744	0·7	0·4	0·6	0·3
7	Gódávari ...	18	18	2,603	87	54	71	36	43	45	51	90	79	76	47	46	40	372	306	678	0·4	0·3	0·3	0·5
8	Kistna ...	16	16	1,848	208	61	28	27	47	47	48	73	79	59	36	14	27	303	243	546	0·3	0·3	0·3	0·3
9	Kurnool ..	10	10	802	134	21	9	16	11	18	16	49	34	48	64	76	23	200	188	388	0·5	0·5	0·5	0·4
10	Madras ...	1	1	1	1	177	112	129	148	171	167	305	408	384	411	403	433	1,566	1,682	3,248	7·2	7·7	7·5	5·2
11	Madura ...	*17	13	*4,103	165	73	75	96	57	100	55	93	64	75	59	80	90	503	414	917	0·5	0·4	0·4	0·6
12	Malabar ...	15	15	2,245	188	393	345	262	318	498	601	526	449	332	227	196	190	2,240	2,095	4,335	1·7	1·5	1·6	1·8
13	Nellore ...	12	12	1,793	220	67	68	47	54	35	22	59	66	74	86	96	81	412	323	735	0·6	0·4	0·5	0·2
14	Nilgiris ...	4	4	52	17	15	4	12	11	15	20	26	9	21	11	9	9	101	61	162	1·8	1·4	1·7	1·5
15	North Arcot.	17	15	4,328	507	139	105	115	93	75	78	117	138	186	269	338	349	1,086	916	2,002	1·0	0·8	0·9	0·7
16	Salem ...	14	13	3,811	459	72	54	47	63	62	53	61	78	97	154	218	173	605	527	1,132	0·6	0·5	0·6	0·4
17	South Arcot.	12	11	2,897	368	70	112	59	62	48	57	107	123	91	121	200	187	682	555	1,237	0·6	0·5	0·6	0·5
18	South Canara.	6	6	1,277	577	432	302	179	97	62	97	164	186	167	135	127	183	1,214	917	2,131	2·4	1·7	2·0	1·6
19	Tanjore ...	15	15	3,550	336	341	216	86	93	77	53	127	80	104	95	122	182	808	798	1,606	0·7	0·7	0·7	0·7
20	Tinnevelly ...	21	18	1,538	203	151	151	105	60	47	52	73	77	59	82	151	220	605	623	1,228	0·6	0·6	0·6	0·8
21	Trichinopoly.	8	8	1,502	249	88	94	46	46	51	28	59	70	44	62	71	95	396	358	754	0·6	0·5	0·6	0·5
22	Vizagapatam.	22	21	2,668	89	51	48	51	42	63	61	53	81	95	78	65	86	434	340	774	0·6	0·4	0·5	0·6
	Total, Madras Presidency.	274	261	47,703	5,850	2,797	2,235	1,805	1,608	1,818	1,975	2,622	2,770	2,692	2,765	3,195	3,372	15,655	13,999	29,654	0·9	0·8	0·9	0·8

* Increase due to the inclusion of Kodaikánal taluk and certain zemindaries from which vital statistical returns were for the first time received.

No. XI.—*Statement showing the chief Sanitary defects in the Municipalities of the Madras Presidency during the year* 1898.

District.	Name of Municipality.	Population according to census of 1891.	Total death-rate per 1,000 of population.	Chief sanitary defects.	Remedial measures adopted.
Anantapur.	Anantapur.	6,973	21·0	*Drainage.* Except in the main streets where there are rough stone drains, elsewhere side cuttings exist. Platforms exist over side drains in Bazaar street which renders cleaning difficult. *Water-supply.* No steps are taken to prevent the only drinking water tank from being subject to pollution. *Conservancy.* Night-soil is removed in an open common country cart.	
Bellary ...	Adóni ...	26,216	26·5	*Drainage.* In the main streets there are masonry drains, while in others side cuttings exist.	Rs. 71 were spent in executing certain repairs to drains. Two latrines were repaired at a cost of Rs. 10.
Do. ...	Bellary ...	57,780	35·0	*Drainage.* There is no proper system of drainage. Drainage of houses is defective on account of cess-pools being used to a large extent.	Rs. 238 were spent in repairing latrines and urinals. Slaughter-house was repaired (Rs. 17).
Chingleput.	Chingleput.	9,763	29·7	*Drainage* of houses and of streets defective; waste water in some cases percolates through the ground or runs into side ditches in streets. *Water-supply.* Scarcity is felt throughout the year, more especially during the hot season. *Conservancy.* Backyards of houses are in some cases kept in a very uncleanly condition.	People who allow waste water to run along road sides or who keep their backyards dirty are prosecuted. Wells are cleared of silt during the hot season. A new latrine was constructed at a cost of Rs. 190.
Do.	Conjeeveram.	42,543	29·4	*Drainage.* No system. Sewage from houses flows into backyards where it soaks and evaporates. Cess-pools exist which are cleaned when full.	Side channels to metalled roads were cut at a cost of Rs. 200. Prickly-pear and rank vegetation were removed (Rs. 37).
Do.	Cuddapah ...	17,211	30·0	*Drainage.* Side channels are cut on either side of the streets to carry off rain water. House drains empty into cess-pools — large pits filled with shingles and covered with slabs which are cleaned by the house owners when full.	Steps are being taken to introduce a proper system of drainage. Rs. 33 were spent in repairing public latrines. Improvements to public water-supply were effected at a cost of Rs. 3,605.
Coimbatore.	Coimbatore.	46,007	31·2	*Drainage.* Sullage water stands in many cases at the sides of the streets and becomes most offensive. *Conservancy.* The number of latrines is insufficient for requirements.	A tank and eight wells were repaired (Rs. 851). Two drains were made (Rs. 164) and eight others repaired (Rs. 2,126). A public latrine was constructed and three others were repaired (Rs. 359). A market was repaired (Rs. 103).
Do.	Erode ...	12,238	26·2	*Drainage.* Very defective. No regular drains exist.	.....
Do.	Karúr ...	10,740	28·8	.....	Rs. 36 were spent in effecting improvements to water-supply. Three public latrines and a market were constructed (Rs. 68 and 37, respectively). A slaughter-house was repaired (Rs. 60).

No. XI.—*Statement showing the chief Sanitary defects in the Municipalities of the Madras Presidency during the year* 1898—cont.

District.	Name of Municipality.	Population according to census of 1891.	Total death-rate per 1,000 of population.	Chief sanitary defects.	Remedial measures adopted.
Ganjám ...	Berhampur.	25,493	24·8	*Drainage* of streets and of houses defective. The street drains get choked with earth. Drainage of houses empties into cess-pools which are either mere holes dug in the ground or kerosine tins or chatties which are too old and tumble down and could not be properly cleaned. *Water-supply.* Drinking water is obtained chiefly from two tanks which are fed by Rushikulya reservoir through an open channel subject to pollution during its course. The surroundings of the tanks are used as latrines. *Conservancy.* The tatti dust-bins are in a very bad state of repair. Most of the latrines are mere enclosures without drains or trenches; hence the liquid portion of the excreta soaks into the ground and emits a very bad smell. The ground near the latrines and the approaches to them are used as latrines and urinals.	The council intend having a complete drainage system after the water-supply scheme which is now being prepared by the Sanitary Engineer is completed. Some dust-bins were constructed at a cost of Rs. 93. Rs. 61 were spent in erecting two urinals.
Do. ...	Chicacole ...	18,204	26·5	*Drainage.* The street drains are not properly constructed; hence they are not suited to carry off sewage. *Water-supply.* The river water is open to contamination.	Two tanks and five wells were repaired (Rs. 18 and 70, respectively).
Do. ...	Parlákimedi.	16,379	24·5	*Drainage.* There is no proper system of house drainage; sewage soaks mostly into the sub-soil. Most of the existing cess-pools are in very bad order. They should be rebuilt. *Water-supply.* During the rainy season fæcal matter of men and pigs is washed away into drinking water tanks from the hill sides. The surroundings of most of the private wells are unsatisfactory. They are constructed of earthen rings which allow of easy percolation of spilt water. *Conservancy.* Most of the existing latrines are mere tatty enclosures. The floorsing of these is much cut up and allows of seakage of urine. More latrines and dust-bins are required.	A well was sunk (Rs. 31). Twenty-three dust-bins were constructed (Rs. 121) and fourteen public latrines repaired (Rs. 18). A slaughter-house was constructed (Rs. 10).
Gódávari ...	Cocanada ...	40,068	20·4	*Drainage.* With the exception of a sewer which extends from the market to the canal, there is practically no drainage. Some streets have side cuttings. The sewer still remains an eye sore. *Conservancy.* More latrines are wanted.	Twelve wells were sunk and four tanks repaired (Rs. 251 and 77, respectively). Rs. 721 were spent in carrying out improvements to water-supply. Eight latrines were repaired (Rs. 89). Rs. 545 were spent in executing certain repairs to drains.
Do. ...	Ellore ...	29,296	24·6	*Drainage.* No system. Sewage water from houses soaks into the ground. *Conservancy.* Some of the latrines require repair.	Two public latrines were constructed and three others repaired (Rs. 245 and 12, respectively). The town was surveyed by the Sanitary Engineering department for proper drainage of the town, but the scheme had to be postponed for want of funds.

No. XI.—*Statement showing the chief Sanitary defects in the Municipalities of the Madras Presidency during the year* 1898—cont.

District.	Name of Municipality.	Population according to census of 1891.	Total death-rate per 1,000 of population.	Chief sanitary defects.	Remedial measures adopted.
Gódávari ...	Rajahmundry.	28,279	28·2	*Drainage.* No regular system. Side cuttings and indifferently constructed masonry drains exist. Cess-pools exist which are not thoroughly cleaned. *Water-supply.* The River Gódávari, which is the principal source of supply for the well-to-do inhabitants, is subject to contamination, as dhobies are permitted to wash clothes upstream. *Conservancy.* Removal of night-soil in cavadies is still in force.	A slaughter-house was constructed (Rs. 886). Two public latrines were repaired (Rs. 134). Drains and two markets were repaired (Rs. 133 and 267, respectively).
Kistna ...	Bezwada ..	20,611	26·1	*Drainage.* No system. Except in houses, where there are cess-pools, elsewhere sewage soaks into the ground in backyards. *Water-supply.* Unsatisfactory.	Estimates and plans for water-supply are being revised. Four wells were repaired (Rs. 45). A drain was made (Rs. 60). Ten latrines and a market were repaired (Rs. 170 and 70, respectively).
Do. ...	Guntúr ...	23,267	39·3	*Drainage.* There is no proper system of drainage. *Water-supply.* The black tank, one of the drinking water sources, is subject to contamination.	Plans and estimates for supplying the town with water are under preparation. Four wells were sunk (Rs. 488) and seven others repaired (Rs. 420). Twelve dust-bins were constructed (Rs. 100). Four public latrines, a market and two slaughter-houses were repaired (Rs. 145, 115 and 346, respectively).
Do. ...	Masulipatam.	38,667	23·1	*Drainage.* No regular system, except ordinary side cuttings. In most houses there being no arrangement for the proper disposal of sewage it soaks into the ground. *Water-supply.* Unsatisfactory. *Conservancy.* The existing latrines are not provided with receptacles for storage of night-soil before removal. The cinerators in use are not in working order. The number of toties at present employed is insufficient.	Rs. 461 were spent on the construction of dust-bins. A public latrine, six drains and a market were repaired (Rs. 28, 211 and 25, respectively).
Kurnool ...	Kurnool ...	24,306	24·6	*Drainage.* No system	For want of funds no drainage scheme has been prepared. A market was constructed (Rs. 970). Repairs to latrines, drains and slaughter-house were made (Rs. 150).
Madura ...	Dindigul ...	20,115	18·9	*Drainage.* No system. *Water-supply.* Quantity available is insufficient.	A well was sunk (Rs. 210). Two tanks and three wells were repaired (Rs. 128 and 20, respectively).
Do. ...	Madura ...	87,121	25·1	*Drainage* is as bad as can be. The sanitary condition of the town cannot be improved unless a drainage scheme is introduced.	Arrangements are being made to introduce a drainage scheme for a portion of the town. Three latrines on the standard design were erected.
Do. ...	Palni ..	16,940	31·4	*Drainage.* No system. *Water-supply.* Drinking water is subject to pollution.	*Nil.*

No. XI.—*Statement showing the chief Sanitary defects in the Municipalities of the Madras Presidency during the year* 1898—cont.

District.	Name of Municipality.	Population according to census of 1891.	Total death-rate per 1,000 of population.	Chief sanitary defects.	Remedial measures adopted.
Madura ...	Periyakulam.	16,363	31·9	*Drainage.* No system. Sewage from houses soaks either in front or back of the houses. Cess-pools which are either mud pots or chatties buried in the ground are not properly and regularly cleaned. *Water-supply* very unsatisfactory being subject to very great pollution. *Conservancy.* The staff and plant need strengthening. The existing mud-wall latrines should be replaced by substantial ones.	*Nil.*
Malabar .	Calicut ...	64,798	34·7	*Drainage.* No system. Sewage from houses flows into cess-pits and there soaks. *Water-supply.* Wells of which there is one in the compound of every house are not provided with parapet walls. The quality of water obtained is exceedingly bad.	Owing to the scattered condition of the houses in many places, it is not possible to introduce a regular system of drainage. A drain was repaired at a cost of Rs. 253. Two wells were sunk (Rs. 115), and a tank and a well repaired, (Rs. 19 and 12, respectively).
Do. ...	Cannanore.	26,653	23·2	*Drainage.* No proper system in old town. The cess-pools here are rarely kept clean. *Water-supply.* Wells in old town are shallow and are subject to contamination being near latrines, house drains and burial grounds.	Drains were repaired at a cost of Rs. 66. A well was repaired (Rs. 123). Fourteen dust-bins were constructed (Rs. 91). A public latrine and a slaughter-house were repaired (Rs. 16 and 158).
Do. ...	Cochin ...	16,147	34·6	*Drainage.* Is still very defective especially in Kalvetty where, owing to an imperfect fall in the drains, sewage does not freely escape. The masonry drains only serve to carry rain water. *Water-supply.* Quality bad being brackish. The surroundings of tanks are bad and are subject to pollution. No wells or tanks are conserved.	The proposed improvements to the drainage of the town are yet held in abeyance for want of funds. The attempt to supply artesian well water has proved a failure. A drain was made (Rs. 496). Four tanks were repaired (Rs.20.) Six public latrines, seven drains and two markets were repaired (Rs. 68, 153 and 115, respectively).
Do. ...	Palghat ...	39,367	31·5	*Drainage.* Very defective. Except in Big Bazaar and Sultanpet streets where there are masonry drains, elsewhere side channels are dug which become closed after one or two showers. Sewage of houses is drained off to backyards.	The consideration of a drainage scheme has been indefinitely postponed (G.O., No. 1668, L. and M., dated 8th November 1894). A drain was made (Rs. 260) and four latrines were repaired (Rs. 24).
Do. ..	Tellicherry.	26,631	30·0	*Drainage.* No system. The stone-built drains in chali being constructed without principle are more a source of nuisance than advantage to the locality. House drains where they exist are defective. *Water-supply.* The wells here of which there is one in each house or in small group of three or four houses are shallow and are subject to pollution during the monsoon being without parapet walls.	Rs. 81 were spent in the repair of drains. A market was repaired (Rs. 24).
Nellore ...	Nellore ...	29,128	33·8	*Drainage.* Very bad especially in the western portion of the town. The drains on the eastern portion of the town are connected with cess-pools which emit noxious odours.	Two wells and four tanks were repaired (Rs. 10 and 111 respectively). Rs. 10 were spent in repairing drains.

No. XI.—*Statement showing the chief Sanitary defects in the Municipalities of the Madras Presidency during the year* 1898—cont.

District.	Name of Municipality.	Population according to census of 1891.	Total death-rate per 1,000 of population.	Chief sanitary defects.	Remedial measures adopted.
Nellore ...	Ongole ..	10,832	28·5	*Drainage.* None of the existing drains are intended to carry sewage water from houses.	Two wells and two public latrines were repaired (Rs. 197 and Rs. 150, respectively).
Ootacamund.	Coonoor ...	5,586	34·9	*Water-supply.* Water is brought into the town by an open channel from a catchment area. This is highly defective being subject to pollution both by human beings and animals. House drains also empty into it.	Rs. 67 and Rs. 75 were spent in the repair of certain drains and wells. A market was repaired (Rs. 696).
Do. ...	Ootacamund.	13,991	39·3	*Drainage.* Many of the houses have no connecting pipes with street drains. *Water-supply.* The Marlimund reservoir, one of the drinking-water sources, is open to surface contamination, the catchment area being under tea cultivation. Wells of which there are many in compounds of houses also supply drinking water, but they are exposed to surface impurities of all kinds as they are not provided with parapet walls and platforms.	Rs. 62 were spent in repairing drains. Rs. 783 were spent in the execution of rerepairs to water-supply
North Arcot.	Gudiyáttam.	18,745	28·9	*Drainage.* No proper system.	.....
Do. ...	Tirupati ...	14,238	29·6	*Drainage.* No proper system.	.....
Do. ...	Vellore ...	44,724	24·0	*Drainage.* Sewage stagnates in some places owing to the faulty construction of drains. House drains in some cases flow into streets and form filthy stagnant pools. The existing cess-pools are not often cleaned. *Water-supply.* Unsatisfactory. Suriagunta, one of the drinking-water sources, is fed by a channel from the hill. It is subject to much pollution during its course.	Rs. 221 were spent in making the drains. Two tanks and some wells were repaired (Rs. 393). A latrine was repaired (Rs. 14).
Do. ...	Wallajapet.	10,485	25·0	*Drainage.* No system. House drains find their way into backyards where the sewage is allowed to stagnate and ultimately desiccate in the sun.	A tank and nine wells were repaired (Rs. 202).
Salem ...	Salem ...	67,640	24·4	*Drainage.* Except in Salem proper, agraharam and Shevapet where there are masonry drains, elsewhere drainage is very bad. Sewage from houses empties into side ditches in streets and there soaks. Cess-pools abound, but no system of cleaning them exists. *Water-supply.* The river which is one of the sources of supply is polluted in every conceivable way.	Five wells and five public latrines were repaired (Rs. 34 and Rs. 128, respectively).
Do. ...	Tiruppattur.	16,463	29·5	*Drainage.* The streets are mostly provided with earth drains into which the house drains empty their contents and form pools of mud and sewage. Cess-pits abound which are seldom cleaned out. *Water-supply.* The supply from Chetti tank is unsatisfactory, as the channel which feeds it is unprotected.	V-shaped drains with burnt slab stones were constructed in two lanes. Lovels were taken under the supervision of the Sanitary Engineer in 1893 for the introduction of drainage and water-supply schemes. A drain was made (Rs. 30) and sixteen dust-bins were constructed (Rs. 31).

No. XI.—*Statement showing the chief Sanitary defects in the Municipalities of the Madras Presidency during the year* 1898—cont.

District.	Name of Municipality.	Population according to census of 1891.	Total death-rate per 1,000 of population.	Chief sanitary defects.	Remedial measures adopted.
Salem ...	Vániyambádi.	15,838	37·1	*Drainage.* Side cuttings exist, but in places where there are masonry drains they are neglected and allowed to become obstructed by rubbish. House drains empty into cess pits which are numerous and are seldom cleaned. *Water-supply.* The river is the chief drinking-water supply, but its bed is highly polluted during the dry season. *Conservancy.* The existing latrines are small and insufficient in number.	A public latrine was constructed (Rs. 184) and six others were repaired (Rs. 101). Twenty-four dust-bins and a slaughter-house were constructed (Rs. 230).
South Arcot.	Chidambaram.	18,634	34·0	*Drainage.* There are no specially built drains. House drains discharge their contents either into backyards or cess-pools. *Water-supply.* The tanks receive their supply of water from an irrigation tank ten miles distant through a channel which undergoes pollution during its course.	Two tanks were constructed (Rs. 379). A latrine was constructed and three others were repaired (Rs. 221 and Rs. 28, respectively).
Do. ...	Cuddalore ...	47,025	34·3	*Drainage.* Some of the streets have badly constructed masonry drains without regular outlets, while others have mere temporary side channels.	Two tanks were repaired (Rs. 541). Rs. 58 and Rs. 670 were spent in executing certain repairs to latrines and drains, respectively.
Do. ..	Tiruvannámalai.	13,643	28·2	*Drainage.* Most of the streets have side channels cut in them. *Water-supply.* All the drinking-water tanks are not guarded by watchmen.	The council will soon concert measures for carrying out one of the three water-supply schemes recommended by Government with the approval of the Sanitary Board. Four tanks and twelve wells were repaired (Rs. 333 and Rs. 348, respectively). Seven dust-bins were constructed (Rs. 50).
South Canara.	Mangalore.	40,620	29·9	*Drainage.* Unsatisfactory. Some of the large drains which are water courses during rains are used as latrines. *Water-supply.* Some of the private wells have neither platforms nor parapet walls with the result that surface water finds its way into them during rains. In some cases these wells are situated near nullahs or water courses which are used as latrines.	.....
Tanjore ...	Máyavaram.	23,754	27·1	*Drainage.* No system. Some of the existing cess-pools are mere pits in the ground. *Water-supply.* The two tanks reserved for drinking purposes derive their supply from the Cauvery through irrigation channels and their surroundings are anything but satisfactory. *Conservancy.* Most of the latrines are mere enclosures. They are not much resorted to.	.....
Do. ...	Mannárgudi.	20,392	27·5	*Drainage.* No system. Cess-pools exist, which are ever overflowing and never cleaned. *Water-supply.* Except wells-one of the sources of drinking-water supply, all others are subject to contamination. *Conservancy.* The existing latrines are not freely resorted to.	.....
Do. ...	Negapatam.	58,573	31·8	*Drainage.* No system. The condition of cess-pools is unsatisfactory *Water-supply.* Well water is subject to pollution. The quality of water in tanks is suspicious. *Conservancy.* The number of existing sewage carts is insufficient.	Sixteen wells were repaired (Rs. 54). Some dust-bins were constructed.

No. XI.—*Statement showing the chief Sanitary defects in the Municipalities of the Madras Presidency during the year* 1898—cont.

District.	Name of Municipality.	Population according to census of 1891.	Total death-rate per 1,000 of population.	Chief sanitary defects.	Remedial measures adopted.
Tanjore ...	Kumbakónam.	54,254	30·0	*Drainage.* There is no street drainage for the town. Sewage from some of the houses is allowed to run into streets or to stagnate and soak into the ground in backyards. *Water-supply.* Unsatisfactory. The surroundings especially of private drinking-water wells are insanitary. *Conservancy.* Most of the latrines are small and their number is not equal to requirements.	Three drains were made (Rs. 234). A well was sunk (Rs. 179) and two tanks were repaired (Rs. 458). Ten public latrines and three drains were repaired (Rs. 255 and Rs. 925, respectively).
Do. ...	Tanjore ...	54,258	25·4	*Drainage.* With the exception of the Fort which is well provided with drains, elsewhere it is very defective. Some of the streets in Manambuchavady have masonry drains with bad gradient. They are not also of proper size and form. *Water-supply.* People prefer tank water to that distributed by pipes, as the former is soft. Sivaganga, one of the drinking water tanks, is fed by an open channel. *Conservancy.* The contract system is in force. The bullocks supplied being ill-fed and old are unable to remove the rubbish collected daily. The rubbish carts are not of proper size and capacity.	Nine drains were made (Rs. 613). Two public latrines and four drains repaired (Rs. 45 and Rs. 144, respectively).
Tinnevelly...	Palamcottah.	18,612	20·2	*Drainage.* No proper system. House drains in some cases discharge their contents into streets. The existing cess-pools are not of the standard plan. *Water-supply.* The Paliani channel which is the chief source of water-supply is subject to much pollution during its course, dirty clothes, mats and cattle being washed in it.	Seven wells and six public latrines repaired (Rs. 77 and Rs. 59, respectively).
Do. ...	Srívilliputtúr.	29,541	19·6	*Drainage.* Main streets have side cuttings. Refuse water from houses soaks into the soil or is allowed to run out into the streets or lanes. The existing cess-pools are not equal to requirements. *Water-supply.* Water is obtained from two tanks which get their supply from a large rain-fed tank. People are allowed to bathe and wash clothes in one of these tanks though guarded by a watchman. Several of the wells need proper platforms and drains. *Conservancy.* The practice of storing in backyards house refuse with cow-dung, &c., is still in vogue. The number of latrines at present in use is too inadequate for the needs of the people.	Four drains and three wells were repaired (Rs. 30 and Rs. 35, respectively).
Do. ...	Tinnevelly.	24,756	28·0	*Drainage.* Very defective both of houses and of streets. There are no properly-constructed drains anywhere except in the main streets of the town. *Water-supply.* Bad in quality and insufficient in quantity; channels and tanks which form the chief source of water-supply are contaminated with drainage and other kinds of filth.	.....

No. XI.—*Statement showing the chief Sanitary defects in the Municipalities of the Madras Presidency during the year* 1898—cont.

District.	Name of Municipality.	Population according to census of 1891.	Total death-rate per 1,000 of population.	Chief sanitary defects.	Remedial measures adopted.
Tinnevelly.	Tuticorin ...	24,964	36·9	*Drainage.* No system. The existing cess-pools are insufficient for the requirements of the town and are not on the standard plan. *Water-supply.* During the hot weather people obtain their drinking water from wells dug in sandy topes which are used as "places d'aisance." The wells have neither platforms nor drains.	Water-supply scheme prepared by the Sanitary Engineer is still under the consideration of Government. A drain was constructed (Rs. 54) and three others were repaired (Rs. 166). Seven wells were repaired (Rs. 210). Two public latrines were constructed (Rs. 200) and three others repaired (Rs. 138).
Trichinopoly	Trichinopoly	89,666	30·5	*Drainage.* There is no system of drainage. *Water-supply.* Unsatisfactory as a portion of the town is still supplied by the river Cauvery and its channels.	Some dust-bins were constructed (Rs. 216) and public latrines repaired (Rs. 383).
Do.	Srirangam...	21,632	32·2	*Drainage.* No system. Side channels exist to carry off storm water. Cess-pools abound which are cleaned once or twice in a year at the option of the owner. *Water-supply.* No tank or well is set apart for drinking purpose.	*Nil.*
Vizagapatam.	Anakápalle.	17,001	21·8	*Drainage.* The existing pucka-built drains are a nuisance not being properly sloped and no proper outlet having been arranged for the final disposal of the sewage.	Four wells and a drain were repaired (Rs. 45 and Rs. 47, respectively).
Do. ...	Bimlipatam.	9,696	19·0	.....	Rs. 33 were spent in the repair of certain drains.
Do. ...	Vizagapatam.	33,961	23·4	.....	.....
Do. ...	Vizianagram.	30,735	27·5	*Drainage.* No regular system of drainage.	.....

No. XII.—*Births registered according to months and classes in the districts of the Madras Presidency during the year* 1898.

1	2	3												4	5						6				
Number.	Districts.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total births.	Births registered according to classes.						Ratio of births per mille of population.				
															Native Christians.	Muhammadans.	Hindus.	Other classes.	Total.	Native Christians.	Muhammadans.	Hindus.	Other classes.	Total.
1	Anantapur ...	1,374	1,194	1,289	1,203	1,185	1,261	1,308	1,684	1,764	2,017	1,919	1,787	18,045	21	1,205	16,808	11	18,045	15·2	23·2	25·0	35·4	24·8
2	Bellary ...	1,479	1,432	1,632	1,647	1,704	2,292	2,125	2,632	2,679	2,975	2,742	2,407	26,106	96	2,870	23,139	1	26,106	27·7	33·0	29·0	6·7	29·3
3	Chingleput ...	3,482	2,795	2,851	2,675	3,269	3,671	4,135	4,243	4,139	4,292	3,820	3,615	42,847	309	600	41,895	64	42,847	19·4	22·4	23·2	17·2	23·7
4	Coimbatore ...	4,571	4,143	4,374	4,297	4,319	4,606	4,703	4,623	4,732	4,813	4,811	4,708	54,650	263	805	53,580	2	54,650	17·9	18·3	27·6	6·3	27·3
5	Cuddapah ...	2,084	1,757	1,930	1,896	1,882	2,039	2,441	3,000	3,199	3,367	3,226	2,861	29,672	279	2,931	26,462	...	29,672	29·7	24·5	23·1	...	25·3
6	Ganjám ...	1,531	1,104	1,141	1,304	1,759	2,063	2,758	3,526	3,960	3,890	3,812	3,729	30,557	39	85	30,433	...	30,557	23·5	16·6	22·9	...	22·9
7	Gódávari ...	3,080	3,729	2,586	2,658	3,208	4,838	4,984	4,964	5,800	5,805	5,376	6,285	54,413	159	738	53,516	...	54,413	19·5	18·0	26·4	...	26·2
8	Kistna ...	3,862	2,665	2,992	3,894	4,931	5,092	4,984	6,842	6,877	7,007	6,567	6,815	63,543	1,436	3,648	58,459	...	63,543	21·1	33·6	34·8	...	34·2
9	Kurnool ...	1,231	1,045	1,246	1,243	1,421	1,695	1,927	2,391	2,479	2,420	2,139	1,847	21,084	518	2,590	17,976	...	21,084	22·9	26·6	25·8	...	25·8
10	Madras ...	1,278	1,027	1,242	1,354	1,556	1,467	1,445	1,818	1,758	1,917	1,696	1,542	18,100	108	2,283	14,806	3	18,100	38·5	42·9	41·5	50	41·5
11	Madura ...	3,302	3,248	4,066	4,098	4,379	4,565	5,007	3,897	3,831	3,768	3,890	3,931	47,712	160	2,132	44,420	2	47,712	16·2	18·2	23·2	17·7	22·7
12	Malabar ...	3,246	2,704	3,114	3,399	3,916	4,813	5,082	4,791	4,673	4,627	4,334	4,294	48,992	889	14,753	33,324	26	48,992	21·0	19·4	18·3	33·5	18·6
13	Nellore ...	2,835	2,178	2,454	2,636	2,732	2,876	2,958	3,148	3,590	3,381	3,032	3,002	35,122	257	1,109	33,756	...	35,122	55	14·2	25·2	...	24·0
14	Nilgiris ...	209	217	239	256	215	263	255	229	219	240	170	180	2,685	273	104	2,308	...	2,685	31·8	22·6	27·6	...	27·7
15	North Arcot ...	4,635	3,664	3,658	3,523	4,085	4,685	5,671	5,635	5,546	5,596	4,848	4,897	56,221	101	2,214	53,882	24	56,221	7·1	23·2	27·9	29	26·6
16	Salem ...	4,901	4,236	4,762	4,964	5,525	5,212	5,886	5,391	5,370	5,672	5,417	5,168	62,314	395	2,073	59,878	...	62,344	22·2	33·7	31·8	...	31·8
17	South Arcot ...	4,195	3,826	3,737	3,869	5,009	5,464	6,361	6,833	6,125	6,290	5,680	5,112	63,302	870	1,023	61,370	39	63,302	16·0	17·4	30·9	6·8	29·3
18	South Canara ...	2,016	1,621	1,859	1,876	1,996	2,541	2,999	2,382	2,785	2,210	2,405	2,357	27,247	1,969	2,511	22,189	248	27,247	27·8	33·5	26·1	24·1	25·9
19	Tanjore ...	4,736	4,045	4,916	4,827	5,270	5,531	6,716	7,523	7,426	7,247	6,631	6,514	71,432	2,150	3,284	65,998	...	71,432	25·5	27·4	32·6	...	32·0
20	Tinnevelly ...	4,423	4,192	4,859	4,717	4,896	4,666	5,233	5,154	5,102	5,366	5,325	5,544	59,437	1,163	3,239	52,995	...	59,437	28·6	31·1	31·7	...	31·0
21	Trichinopoly ...	3,112	2,702	3,365	3,425	3,649	3,614	3,868	3,697	3,566	3,614	3,569	3,503	41,796	1,971	1,005	38,817	...	41,796	28·4	26·5	30·7	...	30·5
22	Vizagapatam ...	1,762	1,095	1,212	1,442	1,756	2,438	3,216	1,120	4,805	5,209	4,692	4,088	36,435	26	263	36,141	5	36,435	15·2	15·0	25·9	7·5	25·8
	Total, Madras Presidency ...	63,545	54,769	59,885	61,292	68,062	75,052	85,778	88,714	89,775	91,833	87,131	85,356	911,742	18,251	51,534	841,592	425	911,712	22·9	25·5	27·8	11·3	27·4
	Ratio per mille of population ...	1·9	1·6	1·8	1·8	2·1	2·3	2·6	2·7	2·7	2·7	2·6	2·6	27·4										

No. XIII.—*Births and Deaths registered among Europeans and Eurasians from different causes in each district of the Madras Presidency and the number of born dead among all classes during the year* 1898.

1	2		3			4			5			6			7			8															9			10			11			12															13			14		
			Population for which returns were received.			Cholera.			Small-pox.			Fevers.			Dysentery and Diarrhœa.			Injuries.															All other causes.			Total Deaths from all causes.			Total Births.			Ratio per 1,000 of population.														Born dead among Europeans and Eurasians.			Born dead among all other classes.		
																		Suicides.			Wounds and accidents.			Snake-bite.			Killed by wild beasts.														Cholera.	Small-pox.	Fevers.	Dysentery and Diarrhœa.	Injuries.	Total Deaths.			Total Births.											
Number.	Districts.		Males.	Females.	Total.	Males.	Females.	Total.	Males.	Females.	Total.	Males.	Females.	Total.	Males.	Females.	Total	Males.	Females.	Total.	Males.	Females.	Total.	Males.	Females.	Total.	Males.	Females.	Total.	Males.	Females.	Total.	Males.	Females.	Total.	Males.	Females.	Total.	Males.	Females.	Total.						Males.	Females.	Total.	Males.	Females.	Total.	Males.	Females.	Total.	Males.	Females.	Total.	Males.	Females.	Total.
1	Anantapur.	Europeans.	75	28	103										1		1																1		1	1		1	1	4	5																					
		Eurasians.	163	140	303										1		1																1	1	2	2	1	3																								
2	Bellary	Europeans.	877	252	1,129							2	1	3	1		1																9	3	12	12	4	16	11	4	15				3·3		3·3	12·3	7·1	9·9												
		Eurasians.	345	389	724							1		1													1	1	2	1	5	6	2	6	8	8	6	14				2·6	0·9		13·7	15·9	14·1	9·7	3·5	13·2												
3	Chingleput.	Europeans.	1,001	499	1,500							9	2	11	1	1	2																7	2	9	17	5	22	10	9	19				1·4		1·4	6·0	15·4	11·0	11·0	8·3	19·3												
		Eurasians.	770	757	1,527							1		1		1	1																1	3	4	2	4	6	4	1	5				7·3	1·3		17·0	10·0	14·6	6·7	6·0	12·7	1		1									
4	Coimbatore.	Europeans.	117	117	234																																		1		1							2·6	5·3	3·9	2·6	0·6	3·2				545	463	1,008			
		Eurasians.	350	344	694																																		3	4	7										4·3		4·3									
5	Cuddapah.	Europeans.	78	49	127																																		1		1										7·9		7·9									
		Eurasians.	130	94	224																																																								
6	Ganjám	Europeans.	151	53	204							1	1	2																			1	1	2	2	2	4	6	1	7							13·2	37·7	19·6		4·9	4·9				218	207	425			
		Eurasians.	105	94	199																												1		1	1		1	1	4	5				9·8																		
7	Gódávari	Europeans.	233	128	361										1	1																		1	1				2	3	5							9·5		5·0	20·1	5·0	25·1												
		Eurasians.	272	291	563							1	1	2	1	1	2																6	4	10	7	6	13	10	10	20					2·8			15·6	5·5	5·5	8·3	13·8				307	312	619			
*	Kistna	Europeans.	137	109	246							1		1	1	1	2																	2	2	1	3	4	3	3	6				3·7	1·8		25·7	20·6	23·1	17·8	17·7	35·5												
		Eurasians.	158	154	312								2	2																			1	5	6	1	7	8	5	7	12				4·0	4·0		7·3	27·5	16·2	12·2	12·2	24·4				401	427	828			
9	Kurnool	Europeans.	51	18	69																																			1	1							6·4			6·3	45·4	25·6	16·0	22·4	38·4												
		Eurasians.	50	32	82																																																14·5	14·5								
10	Madras	Europeans.	2,448	1,752	4,200	6	5	11				7	5	12	7	2	9	1		1	2		2										34	30	64	57	42	99	60	42	102	2·6		2·9	2·2	0·7	23·3	24·0	23·6	14·3	10·0	24·3	2		2									
		Eurasians.	5,679	6,264	11,943	17	16	33	8	9	17	33	46	79	20	25	45				3	1	4									164	120	294	245	227	472	251	241	492	2·8	1·4	6·6	3·8	0·3	43·1	36·2	39·5	21·0	20·2	41·2	9	6	15									
11	Madura	Europeans.	152	116	* 268										1		1																						2	2	4																					
		Eurasians.	199	175	* 374																												2	2	4	2	2	4	10	3	13					3·7		6·6		3·7	7·5	7·4	14·9				266	257	523			
12	Malabar	Europeans.	828	235	1,063										1		1																4	1	5	5	1	6	3	7	10							10·0	11·4	10·7	26·7	8·0	34·7												
		Eurasians.	1,984	2,207	4,191	1	1	1				14	9	23	4	2	6															26	16	42	44	28	72	47	40	87	0·2		5·5	1·4		22·2	12·7	17·1	11·2	9·5	20·7				267	217	484			
13	Nellore	Europeans.	82	53	135																																		1	1	2										7·4	7·4	14·8									
		Eurasians.	132	112	244	1	1	2				1		1																			2	1	3	4	2	6	5	1	6	8·2		4·1			30·3	17·8	24·6	20·5	4·1	24·6				136	117	253			
14	Nilgiris	Europeans.	922	873	1,795							7	8	15	1	2	3	1		1													12	20	32	21	30	51	22	29	51							22·8	34·4	28·4	12·3	16·1	28·4												
		Eurasians.	748	489	1,237							2	3	5		1	1																6		6	8	4	12	9	8	17				8·3	1·7	0·6	10·7	8·0	9·7	7·3	6·4	13·7				21	18	39			
15	North Arcot.	Europeans.	127	100	227	1		1																									0		0	1		1	1	1	2	4·4			4·0	5·8					7·9		4·4	4·4	4·4	8·8												
		Eurasians.	328	347	675	3		3					2	2																			1	1	2	4	3	7	4	3	7	4·4			3·0			12·2	8·6	10·4	5·9	4·4	10·3				466	362	768			
16	Salem	Europeans.	161	158	319																												2		2	2		2	1	2	3							12·4		6·3	3·1	6·3	9·4												
		Eurasians.	261	227	488							2		2																						2		2	2		2							7·7		4·1	4·1		4·1				512	436	948			
17	South Arcot	Europeans.	102	57	159								1	1																			1	1	2	1	2	3	2	1	3				6·3			9·8	35·1	18·9	12·6	6·3	18·9												
		Eurasians.	177	179	356																												1	1	2	1	1	2	5	3	8							5·6	5·6	5·6	14·0	8·4	22·4				337	329	666			
18	South Canara.	Europeans.	107	46	153																												1	1	2	1	1	2	6	2	8							9·3	21·7	13·0	39·2	13·1	52·3												
		Eurasians.	122	82	204																																		1	1	2																					
19	Tanjore	Europeans.	181	111	292							1		1	1		1																1	1	2	3	1	4	1		1					4·9			24·4	9·8		4·9	4·9				519	420	939			
		Eurasians.	414	327	741	2		2				2	5	7	1	2	3																8	4	12	13	11	24	18	19	37	2·7		3·4	3·4		16·6	9·0	13·7	3·4		3·4				1,203	1,021	2,224			
20	Tinnevelly.	Europeans.	151	76	227							1		1																				2	2	1	2	3	2	6	8				9·5	4·0		31·4	33·6	32·4	24·3	25·6	49·9												
		Eurasians.	94	72	166	1		1				1	1	2	1		1																1	1	2			6	4	2	6				4·4			6·6	26·3	13·2	8·8	26·4	35·2				402	355	757			
21	Trichinopoly.	Europeans.	173	92	265							1		1																			3	1	4	4		5	2	2	4				12·6	6·0		42·5	27·8	36·1	24·1	12·0	36·1												
		Eurasians.	360	366	726	2	5	7				1		1																			6	1	7	9		15	16	10	26	9·6			3·8			23·1	10·9	18·9	7·5	7·5	15·0				459	385	844			
22	Vizagapatam.	Europeans.	192	145	337							1		1																			4		4		1	5	1	4	5				1·4			25·0	16·4	20·7	22·0	13·8	35·8												
		Eurasians.	310	369	679							3	1	4		1	1																4	6	10	7	8	15	10	16	26				2·9			20·8	6·9	14·8	2·9	11·9	14·8				196	191	387			
	Total	Europeans.	8,346	5,067	13,413	7	5	12				30	19	49	13	7	20	2		2	2		2										80	66	146	134	97	231	133	124	257	0·9		3·6	1·5	0·3	16·0	19·1	17·2	9·9	9·2	19·1	3		3									
		Eurasians.	13,141	13,511	26,652	26	23	49	8	9	17	62	70	132	27	34	61				3	1	4				1	1	232	182	414	358	320	678	416	376	792	1·8	0·6	5·0	2·3	0·2	27·2	23·7	25·4	15·6	14·1	29·7	9	6	15	6,902	6,141	13,043			

* Increase due to the inclusion, for the first time, of the population of Kodaikánal taluk and some of the Zamindaries of the district

Return showing the Births and Deaths registered in the Municipalities of the Madras Presidency during the year 1898.

* *Return showing the Births and Deaths registered in the Municipalities of the Madras Presidency during the year* 1898.

Districts.	Municipal towns.	Population according to Census of 1891.	Births. Class. Europeans.	Eurasians.	Native Christians.	Hindus.	Muhammadans.	Other Classes.	Total births. M.	F.	Total.	Deaths. Class. Europeans.	Eurasians.	Native Christians.	Hindus.	Muhammadans.	Other Classes.	Total deaths. M.	F.	Total.
Ganjám	Chicacole	18,241	...	1	5	399	24	...	224	205	429	1	...	3	396	20	...	195	225	420
	Berhampur	25,653	1	3	33	687	42	3	384	385	769	...	...	18	647	29	1	343	352	695
	Parlákimedi	16,390	...	...	2	420	13	...	217	218	435	...	...	2	396	14	...	201	201	402
Vizagapatam.	Vizagapatam	34,487	6	26	7	908	96	...	520	523	1,043	5	17	10	731	51	...	452	362	814
	Bimlipatam	9,827	...	1	3	198	10	...	109	103	212	...	1	3	178	4	...	99	87	186
	Vizianagram	30,881	...	...	...	895	70	...	492	473	965	...	...	...	812	33	...	454	391	845
	Anakápalle	17,010	...	...	...	513	2	...	253	262	515	...	...	...	367	4	...	194	177	371
Gódávari	Cocanada	40,553	2	15	5	1,249	34	...	619	686	1,305	...	12	1	786	31	...	423	407	830
	Rajahmundry	28,397	2	...	8	869	48	1	485	443	928	...	...	5	731	61	1	416	382	798
	Ellore	29,382	...	1	16	884	101	...	542	460	1,002	...	1	9	614	99	...	376	347	723
Kistna	Masulipatam	38,809	1	2	15	993	151	...	590	572	1,162	1	1	10	781	104	...	459	438	897
	Guntúr	23,359	3	3	22	747	282	...	522	535	1,057	...	3	27	691	197	...	469	449	918
	Bezwada	20,741	1	5	18	526	101	...	317	334	651	1	4	11	459	69	...	281	263	544
Nellore	Nellore	29,336	...	5	15	584	114	...	361	357	718	...	4	26	761	199	...	545	445	990
	Ongole	10,860	2	...	23	305	51	...	197	184	381	...	1	29	240	40	...	155	155	310
Madras	Madras	452,518	102	492	908	14,906	2,283	3	9,721	8,973	18,694	99	472	892	16,449	2,368	6	9,953	10,333	20,286
Chingleput.	Conjeeveram	42,548	...	...	3	1,492	31	...	796	730	1,526	...	...	...	1,207	43	...	673	577	1,250
	Chingleput	9,763	...	...	20	249	31	63	184	179	363	...	...	6	229	18	37	166	124	290
South Arcot.	Cuddalore	47,355	1	5	33	1,878	51	...	982	986	1,968	1	1	17	1,543	53	...	800	815	1,615
	Chidambaram	18,640	...	...	...	568	48	25	318	323	641	...	...	...	575	40	20	317	318	635
	Tiruvannámalai	13,650	...	...	1	521	73	...	298	297	595	...	...	...	351	34	...	202	183	385
Trichinopoly	Trichinopoly	90,609	4	26	401	1,989	315	...	1,391	1,344	2,735	5	15	327	2,103	305	...	1,362	1,393	2,755
	Srirangam	21,632	...	...	1	686	1	...	323	365	688	...	...	2	695	...	...	322	375	697
Tanjore	Tanjore	54,390	...	7	138	1,476	86	...	874	833	1,707	1	5	71	1,226	85	...	674	714	1,388
	Kumbakonam	54,307	...	...	38	1,734	59	...	990	841	1,831	...	...	22	1,551	56	...	859	770	1,629
	Mayavaram	23,765	...	...	9	820	20	...	410	439	849	...	...	22	602	20	...	321	323	644
	Negapatam	59,221	1	27	176	1,176	433	...	917	896	1,813	2	17	156	1,248	458	...	910	971	1,881
	Mannárgudi	20,395	...	...	12	619	18	...	316	333	649	...	...	7	536	19	...	271	291	562
Madura	Madura	87,428	1	12	114	2,642	164	...	1,496	1,437	2,933	...	3	38	2,020	136	...	1,155	1,042	2,197
	Periyakulam	16,363	...	...	54	669	80	...	415	388	803	...	...	26	442	54	...	278	244	522
	Dindigul	20,203	1	...	46	484	85	...	319	297	616	...	1	16	319	45	...	220	161	381
	Palni	16,940	...	...	6	434	53	...	251	262	493	...	...	9	487	36	...	300	232	532
Tinnevelly	Tinnevelly	24,768	...	...	11	818	37	...	452	414	866	...	...	4	665	25	...	362	332	694
	Palamcottah	18,686	2	...	54	483	14	...	270	283	553	1	...	25	341	11	...	199	179	378
	Tuticorin	25,107	1	3	284	510	51	...	450	399	849	...	6	243	604	70	...	474	449	923
	Srivilliputtúr	29,541	...	...	35	869	13	...	470	447	917	...	...	18	548	10	...	272	304	576
Kurnool	Kurnool	24,376	1	3	8	532	422	...	390	376	766	...	...	2	280	316	2	302	298	600
Cuddapah	Cuddapah	17,379	2	2	13	120	168	...	167	138	305	...	...	7	282	224	3	270	266	516
Bellary	Bellary	59,467	14	12	77	1,031	630	1	925	840	1,765	15	7	64	1,377	582	...	1,072	973	2,045
	Ádóni	26,243	...	2	2	693	472	...	617	552	1,169	...	...	3	417	276	...	351	345	696
Anantapur	Anantapur	6,994	...	...	2	157	67	...	118	108	226	...	1	4	100	43	...	71	77	148
North Arcot.	Vellore	44,925	1	4	24	1,070	388	...	761	726	1,487	1	1	15	762	295	...	535	539	1,074
	Gudiyáttam	18,747	...	...	...	642	128	...	396	374	770	...	...	1	445	95	...	283	258	541
	Walajapet	10,485	...	...	1	300	39	...	178	162	340	...	...	...	233	30	...	131	132	263
	Tirupati	14,242	1	...	...	362	28	...	183	208	391	...	...	1	400	21	...	208	214	422
Salem	Salem	67,710	1	...	34	2,093	365	13	1,364	1,142	2,506	1	2	33	1,502	115	...	824	829	1,653
	Vániyambádi	15,838	...	...	2	373	488	...	445	418	863	...	...	...	254	333	...	289	298	587
	Tiruppattúr	16,499	...	...	5	446	308	...	380	379	759	...	...	3	316	168	...	232	255	487
Coimbatore.	Coimbatore	46,383	1	5	70	1,672	113	1	944	918	1,862	1	4	110	1,238	86	...	765	674	1,439
	Erode	12,330	...	2	21	416	76	...	258	257	515	...	...	6	294	35	...	157	168	325
	Karúr	10,750	...	...	25	402	54	...	248	233	481	...	1	12	267	30	...	153	157	310
Nilgiris	Ootacamund	15,053	34	3	160	260	63	49	288	281	569	33	3	126	287	90	48	318	269	587
	Coonoor	6,049	15	10	57	129	24	...	109	126	235	10	4	52	114	29	...	119	90	209
South Canara.	Mangalore	40,922	7	...	269	543	128	37	518	486	1,004	1	2	320	600	251	45	634	585	1,219
Malabar	Tellicherry	27,196	1	11	43	274	284	...	302	311	613	...	5	33	418	350	...	395	411	806
	Calicut	66,078	2	27	65	941	826	...	904	957	1,861	5	25	130	1,204	919	...	1,211	1,072	2,283
	Palghat	39,481	1	1	38	1,344	260	...	825	819	1,644	...	1	27	1,045	170	...	643	600	1,243
	Cochin	17,601	2	43	263	93	111	...	280	232	512	4	54	303	154	76	...	308	283	591
	Cannanore	27,418	3	11	72	244	438	26	409	375	784	1	3	43	239	329	21	321	315	636
	Total	2,153,921	217	760	3,767	59,157	10,965	222	38,464	36,624	75,088	189	677	3,350	54,539	9,704	184	34,724	33,919	68,643

Districts.	Municipal towns.	Deaths. Causes of death. Cholera. M.	F.	Small-pox. M.	F.	Fevers. M.	F.	Dysentery and diarrhœa. M.	F.	Injuries. Suicides M.	F.	Wounds or accidents. M.	F.	Snake-bite. M.	F.	Killed by wild beasts. M.	F.	All other causes. M.	F.	Still-born or born dead. M.	F.	Ratio per mille of population. Cholera.	Small-pox.	Fevers.	Dysentery and diarrhœa.	Injuries.	All other causes.	Births.	Deaths.	Average ratio per mille per annum of population for previous five years ending 1897. Births.	Deaths.
Ganjám	Chicacole	...	...	10	2	80	93	17	15	2	5	2	1	1	...	...	...	83	109	4	...	...	0·6	9·5	1·8	0·6	10·5	23·5	23·0	21·8	27·[illegible]
	Berhampur	...	...	94	102	62	81	27	24	1	2	4	2	...	...	...	...	155	141	4	5	...	7·0	5·6	2·0	0·4	11·5	30·0	27·1	22·6	26·[illegible]
	Parlákimedi	...	...	44	37	72	82	22	28	...	...	1	1	...	...	...	...	62	53	2	1	...	4·9	9·4	3·1	0·1	7·0	26·5	24·5	34·3	26·[illegible]
Vizagapatam.	Vizagapatam	...	...	1	1	110	95	88	75	...	...	7	...	...	...	...	...	247	190	...	5	...	0·1	5·9	4·7	0·2	12·7	30·2	23·6	35·9	29·[illegible]
	Bimlipatam	...	...	...	...	23	22	13	11	...	1	...	1	...	...	...	...	63	52	3	5	...	...	4·6	2·4	0·2	11·7	21·6	18·9	31·6	26·[illegible]
	Vizianagram	6	7	2	2	205	156	70	58	1	1	2	4	...	...	...	...	168	163	...	...	0·4	0·1	11·7	4·2	0·3	10·7	31·2	27·4	29·5	26·[illegible]
	Anakápalle	...	...	...	...	60	51	27	27	...	...	3	3	...	...	...	...	104	96	11	7	...	...	6·5	3·2	0·3	11·8	30·3	21·8	33·2	25·[illegible]
Gódávari	Cocanada	...	...	...	...	77	53	25	27	...	...	2	...	2	...	...	...	317	327	10	6	...	...	3·2	1·3	0·1	15·9	32·2	20·5	25·2	21·[illegible]
	Rajahmundry	15	13	3	2	126	131	43	28	...	...	14	11	...	...	1	...	215	196	19	16	1·0	0·2	9·0	2·5	0·9	14·5	32·7	28·1	33·4	32·[illegible]
	Ellore	36	35	...	...	93	76	31	24	...	...	2	6	...	...	...	...	214	206	6	4	2·4	...	5·7	1·9	0·3	14·3	34·1	24·6	25·2	22·[illegible]
Kistna	Masulipatam	17	19	1	1	133	134	12	11	...	...	7	2	1	...	...	...	288	271	40	36	0·9	0·1	6·9	0·5	0·3	14·4	29·9	23·1	29·5	27·[illegible]
	Guntúr	18	21	...	...	55	43	33	31	3	5	20	11	...	1	...	...	340	337	16	11	1·7	...	4·2	2·7	1·7	29·0	45·3	39·3	38·6	31·[illegible]
	Bezwada	25	20	7	4	56	54	21	22	...	3	4	2	...	...	...	2	168	156	24	19	2·2	0·5	5·3	2·1	0·5	15·6	31·4	26·2	31·4	30·[illegible]
Nellore	Nellore	179	120	5	3	135	104	24	14	...	1	7	3	2	2	...	...	193	198	12	9	10·2	0·3	8·1	1·3	0·5	13·3	24·5	33·7	29·0	22·[illegible]
	Ongole	6	4	...	...	34	44	15	13	...	...	3	2	...	...	...	...	97	92	7	7	0·9	...	7·2	2·6	0·5	17·4	35·1	28·6	33·7	26·[illegible]
Madras	Madras	381	397	60	56	2,573	2,916	1,593	1,709	8	5	98	46	2	...	...	...	5,238	5,204	213	171	1·7	0·3	12·1	7·3	0·3	23·1	41·3	44·8	40·6	37·[illegible]
Chingleput.	Conjeeveram	11	3	3	4	100	69	81	82	...	...	11	7	...	...	...	...	467	412	38	40	0·3	0·2	4·0	3·8	0·4	20·7	35·9	29·4	37·7	31·[illegible]
	Chingleput	4	5	1	1	17	16	39	33	...	...	3	2	...	2	...	...	102	65	16	23	0·9	0·2	3·4	7·4	0·7	17·1	37·2	29·7	‡ ...	‡ ...
South Arcot.	Cuddalore	56	47	10	9	131	156	126	95	...	...	9	5	5	3	...	...	463	500	35	36	2·2	0·4	6·1	4·6	0·5	20·3	41·6	34·1	35·9	24·[illegible]
	Chidambaram	66	78	5	6	47	60	42	38	...	...	1	3	3	...	...	...	153	133	14	8	7·7	0·6	5·7	4·3	0·4	15·4	34·4	34·1	27·4	31·[illegible]
	Tiruvannámalai	...	...	6	8	22	14	22	23	...	...	1	...	...	...	...	...	151	138	4	7	...	1·0	2·6	3·5	0·1	21·2	43·6	28·2	‡ ...	‡ ...
Trichinopoly	Trichinopoly	341	323	18	21	196	194	92	92	1	...	11	11	1	...	...	1	702	751	38	22	7·3	0·4	4·3	2·0	0·3	16·1	30·2	30·4	25·7	27·[illegible]
	Srirangam	52	52	1	...	34	41	24	32	1	1	3	2	1	1	...	...	206	246	11	14	4·8	0·05	3·5	2·6	0·4	20·9	31·8	32·2	36·5	33·[illegible]
Tanjore	Tanjore	114	112	3	1	82	100	102	150	...	...	1	1	...	...	...	...	372	350	34	31	4·2	0·1	3·3	4·6	0·04	13·3	31·4	25·5	30·1	28·[illegible]
	Kumbakonam	116	77	...	...	114	132	92	75	...	...	6	3	2	...	...	...	529	483	87	69	3·6	...	4·5	3·1	0·2	18·6	33·7	30·0	31·5	35·[illegible]
	Mayavaram	25	29	4	6	36	39	62	63	...	...	1	1	...	...	...	...	193	185	39	25	2·3	0·4	3·1	5·3	0·1	15·9	35·7	27·1	34·0	30·[illegible]
	Negapatam	162	175	...	...	108	116	53	65	1	...	3	4	2	...	...	...	581	611	34	26	5·7	...	3·8	2·0	0·2	20·1	30·6	31·8	30·5	32·[illegible]
	Mannárgudi	78	55	...	1	33	45	29	45	...	...	1	6	...	1	...	...	130	138	24	20	6·5	0·05	3·8	3·6	0·4	13·2	31·8	27·5	34·0	30·[illegible]
Madura	Madura	60	38	4	6	153	148	176	163	1	5	18	10	2	...	...	...	741	672	38	26	1·1	0·1	3·5	3·9	0·4	16·1	33·5	25·1	31·8	27·[illegible]
	Periyakulam	19	13	...	...	67	43	59	41	...	...	1	...	3	1	1	1	128	145	15	10	2·0	...	6·7	6·1	0·4	16·7	40·1	31·9	41·5	34·[illegible]
	Dindigul	47	13	2	2	45	40	29	23	...	...	3	5	...	...	...	...	94	78	...	...	3·0	0·2	4·2	2·6	0·4	8·5	30·5	18·9	39·6	22·[illegible]
	Palni	133	111	...	...	14	9	1	...	...	...	2	2	1	...	...	...	149	110	...	...	14·4	...	1·3	0·1	0·3	15·3	29·1	31·4	32·3	25·[illegible]
Tinnevelly	Tinnevelly	12	11	...	...	37	40	31	34	1	...	3	2	...	...	...	...	278	245	...	...	0·9	...	3·1	2·6	0·3	21·1	35·0	28·0	35·4	38·[illegible]
	Palamcottah	29	18	1	...	31	29	21	25	...	...	4	...	...	1	...	...	113	106	2	...	2·5	0·1	3·2	2·4	0·3	11·7	29·6	20·2	32·1	28·[illegible]
	Tuticorin	67	62	...	1	70	99	116	122	...	...	5	...	...	...	...	...	216	165	...	...	5·1	0·04	6·7	9·5	0·2	15·2	33·8	36·7	31·2	32·[illegible]
	Srivilliputtúr	7	5	5	5	102	138	41	41	1	1	9	7	1	1	...	...	196	106	11	6	0·4	0·3	8·1	2·8	0·7	7·2	31·0	19·5	† 29·4	† 1[illegible]
Kurnool	Kurnool	...	...	...	...	139	166	22	14	1	...	5	...	...	...	...	...	135	118	10	9	...	...	12·5	1·5	0·2	10·4	31·4	24·6	31·2	35·[illegible]
Cuddapah	Cuddapah	1	...	4	5	118	137	7	4	...	...	4	...	...	...	...	...	116	120	13	13	0·1	0·5	14·7	0·6	0·2	13·6	17·6	29·7	21·1	32·[illegible]
Bellary	Bellary	...	...	...	...	325	267	118	109	1	1	15	7	1	...	...	1	612	588	29	24	...	...	10·0	3·8	0·4	20·2	29·7	34·4	32·3	28·[illegible]
	Ádóni	...	..	2	...	107	100	17	20	2	5	5	7	...	...	...	...	218	213	3	...	...	0·1	7·9	1·4	0·7	16·4	44·5	26·5	38·2	26·[illegible]
Anantapur	Anantapur	2	1	4	7	8	9	7	6	...	...	3	1	...	...	...	...	47	53	...	...	0·4	1·6	2·4	1·9	0·6	14·3	32·3	21·2	33·8	20·[illegible]
North Arcot.	Vellore	23	41	20	18	108	108	83	71	...	..	8	6	...	...	...	...	293	295	16	17	1·4	0·9	4·8	3·4	0·3	13·1	33·1	23·9	36·1	25·[illegible]
	Gudiyáttam	32	46	1	3	81	86	46	43	...	...	2	2	1	...	...	...	120	78	8	11	4·2	0·2	8·9	4·7	0·3	10·6	41·1	28·9	37·2	27·[illegible]
	Walajapet	15	4	...	1	16	18	15	22	...	1	...	...	...	...	...	...	85	86	6	4	1·8	0·1	3·3	3·5	0·1	16·3	32·4	25·1	36·0	26·[illegible]
	Tirupati	9	2	1	1	79	80	17	4	1	2	2	1	...	...	...	...	99	124	8	3	0·8	0·1	11·2	1·5	0·4	15·6	27·5	29·6	29·7	32·[illegible]
Salem	Salem	21	21	...	...	229	234	66	61	5	3	5	6	3	...	...	...	495	504	18	14	0·6	...	6·8	1·9	0·3	14·8	37·0	24·4	37·8	24·[illegible]
	Vániyambádi	12	7	...	...	84	93	29	44	...	...	2	1	...	...	...	...	162	153	4	6	1·2	...	11·2	4·6	0·2	19·9	54·5	37·1	52·0	34·[illegible]
	Tiruppattúr	...	...	1	...	82	90	6	6	...	...	3	2	...	...	...	...	140	157	10	4	...	0·1	10·4	0·7	0·3	18·0	46·0	29·5	43·4	29·[illegible]
Coimbatore.	Coimbatore	41	34	...	...	204	191	75	81	1	2	8	2	3	...	...	...	433	364	5	1	1·6	...	8·5	3·4	0·3	17·2	40·2	31·0	38·6	31·[illegible]
	Erode	8	4	...	...	27	25	10	20	...	...	1	...	1	...	...	...	110	119	4	...	1·0	...	4·2	2·4	0·2	18·6	41·8	26·4	38·1	29·[illegible]
	Karúr	20	20	...	1	42	44	15	23	...	...	1	1	...	...	...	...	75	68	17	10	3·7	0·1	8·0	3·5	0·2	13·3	44·7	28·8	36·8	33·[illegible]
Nilgiris	Ootacamund	...	...	...	...	105	68	30	34	2	...	...	3	...	...	...	...	181	164	...	1	...	...	11·5	4·3	0·3	22·9	37·8	39·0	34·5	26·[illegible]
	Coonoor	...	...	...	...	14	17	24	12	...	...	3	3	...	...	...	...	78	58	...	...	...	...	5·1	6·0	1·0	22·5	38·8	34·6	39·7	35·[illegible]
South Canara.	Mangalore	29	31	7	7	180	173	88	83	1	...	6	10	1	...	...	...	322	281	23	17	1·5	0·3	8·6	4·2	0·4	14·8	24·5	29·8	31·7	24·[illegible]
Malabar	Tellicherry	1	3	...	...	104	97	73	71	1	2	5	...	...	...	...	...	211	238	33	22	0·1	...	7·4	5·3	0·2	16·5	22·5	29·5	33·9	27·[illegible]
	Calicut	19	21	...	1	351	265	173	160	8	6	5	1	2	3	...	...	653	615	52	42	0·6	0·02	9·3	5·1	0·4	19·2	28·2	34·6	36·3	33·[illegible]
	Palghat	10	1	11	6	113	113	83	71	...	...	2	5	1	...	...	...	425	404	...	...	0·3	0·4	5·7	3·9	0·2	21·0	41·6	31·5	37·3	30·[illegible]
	Cochin	3	2	...	...	68	43	55	66	...	...	2	...	...	...	...	...	180	172	23	18	0·3	...	6·3	6·9	0·1	20·0	29·1	33·6	36·1	32·[illegible]
	Cannanore	...	...	1	...	71	82	43	42	1	...	1	...	...	...	...	...	204	191	9	4	...	0·04	5·6	3·1	0·1	14·4	28·6	23·2	39·4	34·[illegible]
Total		2,388	2,101	342	331	7,988	8,169	4,401	4,426	45	52	360	224	42	16	2	5	19,218	18,593	1,102	885	2·1	0·3	7·5	4·1	0·3	17·6	34·9	31·9	34·6	30·[illegible]

* This is compiled from the monthly returns received from Chairmen of Municipal Councils and the figures therein, which include Europeans and Eurasians, do not always agree with those furnished by the Collectors in their District Returns from which the other Statements of the Appendix (D) are prepared and made use of in the body of this report.

† Average of three years.

‡ Being new Municipalities, the required information is not available.

PART II.

SANITARY ENGINEERING.

SANITARY ENGINEERING DEPARTMENT.

J. A. JONES, M.I.C.E., F.R S.E.,
Sanitary Engineer to Government.

THE NINTH ANNUAL REPORT

OF THE

SANITARY ENGINEER TO THE GOVERNMENT OF MADRAS,

1898.

THE Sanitary Engineer, having returned from privilege leave of absence for a period of three months, resumed charge from Mr. A. S. Russell, Acting Sanitary Engineer, on the forenoon of 6th April 1898. Mr. Hormusji Nowroji, Assistant Sanitary Engineer to Government, availed himself of one month's privilege leave from 1st June 1898.

2. The following statement shows the surveys in regard to the water-supply of municipal towns and one taluk board undertaken during 1898 :—

No.	Towns.	For what purpose.	Completed or in progress.	Remarks.
	Municipal Towns.			
1	Berhampur	Water-supply	In progress	Since completed.
2	Bezwada	Do.	Completed	Additional surveys and levels.
3	Chidambaram	Do.	Do.	Further survey will be required.
4	Guntúr	Do.	Do.	
5	Kumbakónam	Do.	Do.	
	Taluk Board.			
6	Chatrapur	Do.	In progress	Since completed.

3. The following schemes prepared by the Sanitary Engineer were submitted during the year :—

No.	Towns.	Water-supply or drainage.	Date of submission.	To whom sent.	Estimated cost.
					RS.
1	Vizianagram	Water-supply	30th Mar. 1898 ...	Sanitary Board ...	2,82,000
2	Tanjore	Do. (Extension).	26th April 1898 ...	Do. ...	27,000
3	Bezwada	Do.	5th Aug. 1898 ...	Do. ...	3,75,400
4	Tiruvannámalai * ...	Do.	10th Aug. 1898 ...	Government ...	3,56,000 or 1,55,000
	Kumbakónam	Drainage of Putnool Block.	22nd Aug. 1898 ...	Sanitary Board ...	43,800
	Kurnool	Water-supply (Extension).	7th Dec. 1898	Government ...	5,820
† 7	Pudukkóttai	Do.	7th Nov. 1898 ...	Political Agent for Pudukkóttai.	46,300 / 77,700

* Preliminary reports and estimates.
† Prepared and submitted by the Assistant Sanitary Engineer to Government.

4. Of the above schemes and of those submitted during previous years, the schemes for the extension of water-supply pipes in Tanjore, for the drainage of the Tanjore Fort and for the extension of the water-supply of Trichinopoly have been sanctioned during the year with the exception of the last project which was sanctioned in January 1899, whilst item No. 5 above has been referred to the Sanitary Engineer for revision of the estimate with reference to the recommendation of the Sanitary Board to substitute a sewage farm for the filter beds proposed. The drainage scheme for Tanjore Fort has been ordered to be executed by the Public Works Department.

5. The following table shows concisely the amount of work done and to be done with reference to water-supply and drainage schemes in the municipal towns in the Presidency at the end of 1898:—

	Water-supply.	Drainage.
Number of municipalities	58	58
Deduct—		
Towns not surveyed	22	33
	— 22	— 33
Towns surveyed up to 1897	36	25
Towns surveyed in 1898	...	...
	— 36	— 25
(Neglecting, for purposes of this statement, the four towns, namely, Berhampur, Bezwada, Chidambaram and Kumbakónam, in respect of which additional surveys have been undertaken, and the town of Guntúr which has been re-surveyed for its water-supply scheme.)		
Schemes abandoned or still in abeyance.	5	4
Schemes under consideration or revision.	6	1
Surveys made, but schemes not prepared.	13	16
	24	21
Balance—		
Schemes sanctioned, works for which have been completed	9	3
Schemes sanctioned, works for which are in progress	3	...
Schemes sanctioned, but execution not commenced	...	1
	12	4

6. The following paragraphs have reference to the preparation of schemes and the maintenance of works in the towns mentioned:—

Town.	District.	Population, 1891.
BERHAMPUR.	GANJÁM.	25,653.

7. Surveys and levels were taken during the year in this town, with the view of preparation of a water-supply scheme, but the work was not completed before the year closed though very little remained to be done.

Town.	District.	Population, 1891.
BEZWADA.	KISTNA.	20,741.

8. The scheme for a water-supply to the town, on the preparation of which a fair progress was made before the end of 1897, was completed during the year and plans and estimates amounting to Rs. 3,75,400 were forwarded to the Sanitary Board in August last and are still under its consideration.

The scheme, when summarised, is as follows:—

To sink three infiltration wells each 15′ diameter on the bank of the Kistna above the anicut, in each of which wells will be placed an hydraulic motor pump; to construct a pumping station consisting of an engine and boiler-house, engine drivers' quarters and stores, on high ground between the wells and service reservoir; the engine and boiler-house accommodates, in addition, the accumulator and tanks for the reserve water for the hydraulic pumping; to construct a service reservoir on the highest point available between the pumping station and Bezwada. The motor pumps will be actuated by the engines at the pumping station and will raise the water from the infiltration wells into the service reservoir through a 12″ main. The quantity thus to be raised is 625 gallons per minute and will equal the supply required at 15 gallons per head for the increased population of 30,000 allowed for in the scheme; the service reservoir will hold more than a day's supply; to distribute the supply finally by gravitation through pipes to fountains in the usual manner. The scheme is estimated to cost as stated before, Rs. 3,75,400. On the assumption that one-half of it would be contributed by Government, the interest

and sinking fund are estimated at Rs. 11,187, and the annual working charges at Rs. 12,918 or a total Rs. 24,105.

Town.	District.	Population, 1891.
CALICUT.	MALABAR.	66,078.

9. The trial well referred to in last year's report was inspected and reported upon and a scheme for the water-supply to the Moplah quarters will be prepared in 1899 as desired in G.O., No. 1548-M., Mis., dated 5th September 1898. Water was pumped from the well but the supply was unsatisfactory as to quantity; it has been analysed by the Chemical Examiner who is of opinion that the well water is fit for *drinking purposes but not for cooking* owing to the presence of magnesium salts and that the tank water is better suited if the water could be purified and possible sources of organic pollution prevented. A further reference and revised proposals have been made through the Sanitary Board.

Town.	District.	Population, 1891.
CHIDAMBARAM.	SOUTH ARCOT.	18,640.

10. The investigation of a water-supply scheme for this town was commenced in January 1898. Two of the three available sources of supply, viz., (1) a spring known as Ponnu Kuttai near Lalpuram, (2) (*a*) a spring known as Sivapuri Vadapathy Avayar, and (*b*) Sivapuri Trupathi Government well were investigated, but the results were unsatisfactory. A further investigation will be made in 1899.

Town.	District.	Population, 1891.
CONJEEVERAM.	CHINGLEPUT.	42,548

11. The construction of the additional works, viz., (1) fencing the pumping station, (2) construction of a service reservoir, and (3) extension of the pipe lines, sanctioned out of the savings from the original estimate, was undertaken during the year with the result that works Nos. 1 and 3 were nearly completed, while about 19 per cent. of the work in service reservoir remained incomplete at the end of the year.

The following are particulars of pipes, fountains, hydrants, &c., laid in the town:—

—	Diameter of pipes in inches.												Valves.			Hydrants.	Fountains.					
	16	12	10	9	8	7	6	5	4	3	2½	2	Sluice valves.	Air valves.	Relief valve.		Single wall tap.	Double wall tap.	Pillar.	Masonry pillar.	Jet.	Masonry pillar with cistern.
	FT.	FT.	FT.	FT.	FT.	FT.	FT.	FT.	FT.	FT.	FT.	FT.	NO.	NO.	NO.	NO.	NO.	NO.	NO.	NO.	NO.	NO.
Original works ...	7,015	4,818	984	4,986	3,626	903	2,533	11,724	4,128	21,526	1,004	768	50	7	1	27	30	16	16	14	1	..
Extension works ...	...	...	..	...	794	..	39	498	...	21,326	198	933	26	..	.	3	34	...				2
Total ...	7,015	4,818	984	4,986	4,420	903	2,572	12,222	4,128	42,852	1,202	1,701	76	7	1	30	64	16	16	14	1	2

Appendix, table No. 2, gives the cost of work done during the year.

Town.	District.	Population, 1891.
CUDDAPAH.	CUDDAPAH.	17,379.

12. The extension of the infiltration gallery at the Bugga, which was estimated to cost Rs. 1,600 and the necessity for which was felt in April 1898, was not carried out by the Council for want of funds.

Town.	District.	Population, 1891.
DINDIGUL.	MADURA.	20,203.

13. The proposal for an extension of the infiltration gallery for augmenting the town supply sanctioned in G.O., No. 14-M., Mis., dated 8th January 1897, has been

dropped, on the ground that the expectations as to obtaining the additional quantity of water required for the town might not be realized. Two other sources of supply were, however, proposed, but the investigations to test the yield of water thereof were not completed before the end of the year and can be undertaken only in coming hot weather.

Town.	District.	Population, 1891.
ELLORE.	GÓDÁVARI.	29,382.

14. The application of the Council for the preparation of a water-supply scheme was forwarded to the Sanitary Board with the remark that the investigation cannot be undertaken in 1899–1900, unless one of the schemes proposed in the Sanitary Engineer's programme for that year is omitted.

Town.	District.	Population, 1891.
GUNTÚR.	KISTNA.	23,359.

15. Plans and estimates for water-supply scheme for the town were under preparation, but not quite complete at the end of the year. The scheme will be completed early in 1899.

Town.	District.	Population, 1891.
KUMBAKÓNAM.	TANJORE.	54,307.

16. *Water-supply.*—During the year the Municipal Council allotted funds for the investigation of a water-supply scheme. The surveys and additional levels required in connection with the proposed scheme have been completed. Two experimental wells to test the yield of water were sunk at a cost of Rs. 580. The preparation of the scheme is included in the proposed programme of work for 1899.

17. *Drainage.*—Government having in G.O., No. 1253-M., Mis., dated 12th July 1898, directed that small schemes of drainage of the worst parts of the town should be taken up and carried out as funds become available, plans and estimates amounting to Rs. 43,800 for the sewerage of a portion of the town called Putnool block were prepared and sent to the Sanitary Board on 22nd August 1898, and have been approved by that body with a suggestion that a sewage farm be substituted for the filter beds. The scheme covers an area of about 27·5 acres with five streets and a population of 1,215 persons in 296 houses. In the estimate are included Rs. 8,600 for compensation for property, the acquisition of which is necessary to the carrying out of the works. The proposed sewers are all of 6″ diameter. There are 6 subsidiary sewers and one main sewer having a velocity of 2 feet per second. The total length of branch sewers will be 6,093 feet laid at a depth of between 8 and 13 feet. The main intercepting sewer is 1,567 feet in length and ends in a well from which the sewage will be lifted on to a filter bed. This bed is of two compartments, each of which will hold 420 cubic feet of sewage. After discharge from the filter the sewage is intended to run along a channel 400 feet long and empty itself into the South Branch Channel.

An alternative estimate was also framed for the construction of lanes with boundary walls at the back of and between the houses to be drained. This estimate amounted to Rs. 27,000.

At the instance of the Executive Engineer, Tanjore Division, the scheme for the drainage of Soliappa Mudaly Street was further considered and reported upon. The Public Works Department has been ordered to execute the work when funds are placed at its disposal by the Municipal Council.

Town.	District.	Population, 1891.
KURNOOL.	KURNOOL.	24,376.

18. On completion of water works in the town it was found that there remained an unspent balance of Rs. 5,820 out of the amount allotted for the works. The Municipal Council was of opinion that this sum could be utilized in fixing additional taps and requested the Sanitary Engineer to prepare detailed estimates for the work. This was accordingly done and the estimate amounting to Rs. 3,197 was sent to Government for sanction. Government disapproved of same and

considered that the unexpended balance would be better utilized in extending the pipes to a district where there were no pipes than in the manner proposed. An estimate amounting to Rs. 5,820 was accordingly prepared and forwarded to Government for sanction.

Town.	District.	Population, 1891.
MADURA.	MADURA.	87,428.

19. At the request of the Municipal Council the Sanitary Engineer furnished it with detailed and abstract estimates amounting to Rs. 3,260 for extending the pipe lines to the District Jail from the Lutheran Church.

Town.	District.	Population, 1891.
OOTACAMUND.	THE NILGIRIS.	15,053.

20. *Drainage.*—In G.O., No. 1989 M., Mis., dated 25th November 1898, the Sanitary Engineer was requested to revise, with reference to the remarks of the Sanitary Commissioner and his own, the plans and estimates submitted by the Executive Engineer on special duty for the drainage of one of the blocks of the Ootacamund Main Bazaar and also to submit complete estimates for the whole project, remodelling it, where necessary. The plans and sections not having been received before the close of the year nothing was done during the year. The matter is now receiving attention.

Town.	District.	Population, 1891.
PALAMCOTTAH.	TINNEVELLY.	18,686.

21. Government in G.O., No. 1349 M., Mis., dated 28th July 1898, requested the Sanitary Engineer to investigate a joint scheme for the water-supply of Palamcottah and Tinnevelly when his other duties permitted him. The joint scheme had been, to a great extent, investigated, but time has not allowed of the preparation of a scheme for these towns, nor can it be placed on this year's (1899–1900) programme.

Town.	District.	Population, 1891.
PARLÁKIMEDI.	GANJÁM	16,390.

22. The investigation of a scheme for the water-supply of this town ordered in G.O., No. 318-M., dated 3rd February 1898, has been put aside by order of Government in favour of schemes for Berhampur and Chatrapur which have been taken in hand.

Town.	District.	Population, 1891.
SRÍRANGAM.	TRICHINOPOLY.	21,632.

23. On the recommendation of this department the proposal to draw water from the main belonging to the Trichinopoly water works for the water-supply of Srírangam has been ordered to be dropped, and the Sanitary Engineer was, in G.O., No. 488-M., Mis., dated 3rd March 1898, requested to prepare a scheme for the town with independent head works with a suggestion that the Coleroon might, with advantage, be adopted as a source for the supply instead of the Cauvery. Pressure of other work has prevented any attention being given to the preparation of this scheme.

Town.	District.	Population, 1891.
TANJORE.	TANJORE.	54,390.

24. *Water-supply.*—Government in G.O., No. 1365-M., Mis., dated 2nd August 1898, approved of the estimate amounting to Rs. 27,000 for the extension of the water works and ordered its execution by this department. Contracts for the supply of the water works materials and for laying and jointing pipes, &c., have been arranged, and the work will be put in hand on arrival of the materials in February 1899.

25. *Drainage.*—The scheme for the disposal of the sewage of the Fort described in the report for 1897 has been approved and ordered to be executed by

the Public Works Department as soon as the necessary funds are provided by the Council (G.O., No. 2176-M., dated 16th December 1898).

Town.	District.	Population, 1891.
TIRUVANNÁMALAI.	SOUTH ARCOT.	13,650.

26. In response to a reference from Government and the Sanitary Board the town was inspected by the Assistant Sanitary Engineer to Government and a report made as to the feasibility or otherwise of the various proposed sources of supply with an approximate cost of execution and maintenance. The Sanitary Engineer in forwarding the report to Government remarked that the cheapest of the three schemes investigated, viz., the Samoodram valley scheme, was high in annual cost. Even if Government made a grant of one-half of the cost, it would be beyond the means of the Council to carry out; should Government concur in this opinion he suggested that the Hill Reservoir scheme should further be investigated with the view of obtaining a moderate or partial supply and that the Municipal Council should be requested to make available Rs. 400 or 500 for taking the necessary contours and making a survey of the town.

Town.	District.	Population, 1891.
TRICHINOPOLY.	TRICHINOPOLY.	90,609.

27. On 24th January 1898 the Chairman reported that pumping to the town was impossible owing to quantities of sand being thereby drawn into the well. The Acting Sanitary Engineer Mr. Russell inspected the works and, after certain experiments made, thought that the inlet pipe laid between the screening chamber and suction well had broken and that the sand was coming through it. He then sent a report to the Sanitary Board on the subject describing the arrangements made to give the town temporarily an adequate supply of water and detailing the recommendations regarding the permanent repairs to the water works. These were—

(1) That the suction well be abandoned and filled in.

(2) That a new suction well be sunk outside the engine-house or the screening well be used as a suction well after removing the screens from it as they are not required.

(3) That the construction of the three proposed additional infiltration wells be put in hand at an early date.

Plans and estimates amounting to Rs. 12,380 for the proposed alterations to the suction pipes of the engines were also forwarded to Government through the Chief Engineer, Public Works Department, for sanction.

The works were inspected by the undersigned on return from leave and after examination it was ascertained that the inlet pipe had not broken and that the sand found in the pump well was the sand that came from the infiltration wells which had been drawn through the pipe by over-pumping. Pumping from the screening chamber was discontinued as unnecessary and the expensive proposals made under the erroneous impression that the inlet pipe had been broken were set aside. The estimate for Rs. 12,380 has therefore been held in abeyance, but the proposals for a service reservoir and for a balance valve on the delivery main as also the improvements to the pumps and engines suggested by Messrs. James Simpson and Company, the suppliers of the engines, were concurred in by the Public Works Department. Government have called for detailed plans and estimates for these improvements.

The Chairman, Municipal Council, Trichinopoly, in July 1897, reported to Government that the collecting wells, the screening chamber and the engine and boiler house at the head works were unsatisfactorily constructed. The Government, after obtaining the remarks of the Sanitary Engineer on the points noticed by the Chairman, requested the Public Works Department to direct the Superintending Engineer, VI Circle, to inspect the works and to give his opinion on their state. An inspection was accordingly made, and the report and the Chief Engineer's views thereon were before Government, but no orders were passed before the year closed.

A suggestion was made by the Municipal Council to dig a spring channel in the Cauvery in the hot weather before sinking the three additional infiltration wells proposed by this department, the channel being made to discharge into the screening chamber. This was to be an experimental measure at first, but to become permanent, if it proved a success. The proposal was carefully considered by the Sanitary Engineer who was unable to approve of it especially on sanitary grounds and as also likely to affect the utility of the works.

Town.	District.	Population, 1891.
TUTICORIN.	TINNEVELLY.	25,107.

28. During the year the Municipal Council of Tuticorin urged upon Government the necessity of deciding, without further delay, upon some particular water-supply scheme suitable to the financial and sanitary position of the town. The Government on hearing the views of the Sanitary Board on the various schemes presented by the Sanitary Engineer, said that, as the adoption of any particular scheme of water-supply must depend mainly on the amount of contribution or aid which it can afford to give to the Municipal Council, nothing could be done until its financial position was clearer.

The Sanitary Engineer in answer to an enquiry from Government said that he was unable to suggest any cheaper scheme than the one he had already sent to Government. There is, however, before Government a proposal of the President of the Sanitary Board to expend a lakh of rupees in the construction of a conduit and water-tight reservoirs in different parts of the town.

Town.	District.	Population, 1891.
VIZIANAGRAM.	VIZAGAPATAM.	30,881.

29. A scheme for the water-supply of the town was prepared and submitted to the Sanitary Board during the year.

The scheme, in brief, is as follows :—

To construct an infiltration gallery or trench 1,700 feet long parallel to, and about 100 feet from, the Ootaigedda a perennial stream about a mile and a half to the north of the town; to pump the water so obtained into a reservoir at a sufficient elevation on the adjoining hill and finally to distribute the supply from the reservoir by pipes and fountains in the usual manner. The scheme provides for a population of 40,000 at 15 gallons per head, and is estimated to cost Rs. 2,82,000. The annual pumping and maintenance charges are estimated at Rs. 9,000. The scheme is now under the consideration of the Board.

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30. *Chatrapur Water-supply.*—At the request of Government, surveys and levels were taken in this town with the view of the preparation of a water-supply scheme, but the work was not completed before the year closed.

31. *Pudukkóttai Water-supply.*—The water-supply of Pudukkóttai was investigated by the Assistant Sanitary Engineer, and in November 1898 report, plans and estimates for two schemes were forwarded to the Political Agent for Pudukkóttai. One is a pumping scheme with the Pudukolam tank as its source of supply, and the other a gravitation scheme having, as its source of supply, a new tank to be formed to the north-west of the town. The former is estimated to cost Rs. 46,300 with the annual working charges of Rs. 2,700 against an initial cost of Rs. 77,700, and annual working charges of Rs. 700 for the latter. The scheme recommended for adoption is the Pudukolam scheme as the tank is in existence and the available supply can be accurately gauged, whereas in the case of the other scheme there is an element of doubt as the tank is one to be formed hereafter. The Pudukolam scheme would provide $6\frac{1}{2}$ gallons per head per diem for the entire population of 16,855. The scheme provides for the filtration of water and distribution in the usual manner by pipes and fountains.

32. *Miscellaneous.*—At the request of Government the Sanitary Engineer forwarded certain proposals in view to the protection of the Secretariat buildings

in the Fort from fire. The cost was estimated at Rs. 3,360. The matter was then referred to a committee consisting of the Consulting Architect, the Sanitary Engineer and the Executive Engineer, Military Works. The committee's report is now before Government.

33. *Execution of Major Sanitary Works.*—The Sanitary Engineer requested Government to retransfer to him the work of executing the water and drainage schemes designed by him. The subject is under the consideration of Government.

34. At the request of Government copies of town plans showing pipe lines and fountains in the municipalities of Madura, Dindigul, Tanjore, Trichinopoly, Adóni, Kurnool, Conjeeveram and Cuddapah were furnished during the year.

35. The following statement shows the papers on which advice was given to the Sanitary Board during the year :—

I.—MINOR DRAINAGE WORKS—

The Municipality of—
Nellore.
Palghat.
Tanjore.

The Taluk Board of—
Rajahmundry.

II.—MINOR WATER-SUPPLY WORKS—

The Municipality of—
Cannanore.
Ellore.
Kumbakónam.
Palni.
Srívilliputtúr.
Tiruvannámalai.

The District Board of—
Kistna.
Madura.
Nellore.
Trichinopoly.

The Taluk Board of—
Bezwada.
Chidambaram.
Ellore.
Erode.
Guntúr.
Kumbakónam.
Madura.
Mangalore.
Mannargudi.
Masulipatam.
Narasaraopet.
Negapatam.
Penukonda.
Proddatur.
Pattukottai.
Tindivanam.
Wynaad.

III.—HOSPITALS—

The Municipality of—
Bellary.
Bezwada.
Coonoor.
Erode.
Kumbakónam.
Madras.
Masulipatam.
Palghat.
Tiruppattur.
Vániyambádi.

III.—HOSPITALS—*cont.*

The District Board of—
Ganjám.
Gódávari.
Kistna.
Madura.
North Arcot.
Salem.
Vizagapatam.

The Taluk Board of—
Arni.
Chingleput.
Hospet.
Hosur.
Kumbakónam.
Námakkal.
Proddatur.
Tinnevelly.

IV.—MARKETS—

The Municipality of—
Palghat.

The District Board of—
Madura.

The Taluk Board of—
Calicut.
Dindigul.
Hosur.
Palghat.
Pattukottai.
Rajahmundry.
Tinnevelly.

V.—SLAUGHTER-HOUSES—

The Municipality of—
Nellore.

The District Board of—
Salem.

The Taluk Board of—
Proddatur.

VI.—LATRINES—

The Municipality of—
Chidambaram.
Palghat.

The District Board of—
The Nilgiris.

VII.—EXTENSION OF VILLAGE SITE—

The Municipality of—
Cocanada.

VIII.—FILTERS.

36. The following type plans from Nos. 47 to 66 were prepared by the Consulting Architect to Government :—

47. Site plan of hospital with fifty-two beds.
48. Administrative block.
49. Administrative block for a hospital.
50. Store block for a hospital.
51. Hospital kitchen.
52. Ward for fourteen beds.
53. Ward for eight beds.
54. Ward for four beds.
55. Lying-in ward or isolation ward for sceptic cases, &c.
56. Hospital laundry.
57. Mortuary and post-mortem room for hospitals below twenty beds.
58. Mortuary and post-mortem room for hospitals of twenty beds and above.
59. Matrons' quarters.
60. Hospital Assistants' quarters.
61. Out-houses for matrons' and hospital assistants' quarters.
62. Compounders', hospital servants' and midwives' quarters, also caste wards for both males and females.
63. Dispensary.
64. Dispensary (sections).
65. Ambulance shed for wheeled ambulances.
66. Ambulance shed for doolies or dandies.

37. The following type plans were prepared by the Sanitary Engineer during the year and were approved of by the Sanitary Board :—

67. Type design for a semi-permanent ward for four beds (suitable for general diseases).
68. Type design for a semi-permanent ward for four beds (suitable for isolation cases).
69. Type design for a choultry.
70. Type design for a weekly market for mofussil stations.
71. Alternative type design for a weekly market for mofussil stations.
72. Type design for a weekly market for mofussil stations (with Mangalore tiled roofing supported by iron rail standards).
73. Type design for a ward for caste patients.
74. Type design for a ward for four beds also suitable for venereal cases (females) alternative to type design No. 54.
75. Type design for a house latrine.
76. Type design for a single latrine with twelve seats.
77. Type design for a double latrine with twelve seats.
78. Type design for a double latrine with twenty seats.
79. Type design for an iron water-tight conservancy cart.

PERSONAL PROCEEDINGS.

38. Table No. 1 of the appendix shows the towns visited during 1898. It will be observed that the Sanitary Engineer during nine months in the year visited the following municipal towns in addition to the town of Chatrapur :—

(1) Berhampur,
(2) Conjeeveram (four times),
(3) Kumbakónam,
(4) Trichinopoly (twice).

The Acting Sanitary Engineer visited ten towns, viz., Adóni, Bezwada, Chidambaram, Conjeeveram, Dindigul, Guntúr, Párlákimedi, Trichinopoly (twice), Vizagapatam and Vizianagram; the Assistant Sanitary Engineer to Government visited the following towns :—

(1) Bezwada,
(2) Calicut,
(3) Conjeeveram (eight times),
(4) Dindigul,
(5) Guntúr (four times),
(6) Kumbakónam,
(7) Madura,
(8) Tanjore,
(9) Tiruvannámalai,
(10) Trichinopoly (thrice),
(11) Vizagapatam,
(12) Vizianagram.

39. The following is a record of the travelling done during the year :—

—	By the Sanitary Engineer.	By the Acting Sanitary Engineer.	By the Assistant Sanitary Engineer.
Number of visits to towns	9	11	24
Number of miles by sea	..	374	..
Do. by rail	3,756	4,366	9,419½
Do. by canal	..	..	..
Do. by road	60	233	309
Total Miles ..	3,816	4,973	9,728½
Number of days on tour ..	25	30	75

MAINTENANCE OF WATER WORKS.

40. The works in operation at Adóni, Cuddapah, Kurnool, Madura, Dindigul, Trichinopoly, Tanjore and Conjeeveram were maintained in charge of the respective Municipal Councils throughout the year.

41. During the year the Sanitary Engineer visited Trichinopoly and the Assistant Sanitary Engineer visited Madura, Dindigul and Tanjore.

42. The Inspector of Steam-boilers and Prime-movers visited the undermentioned pumping stations during the year under review and made a complete inspection of the engines, boilers and pumps :—

Kurnool (twice),
Conjeeveram (twice),
Dindigul (twice),
Trichinopoly (five times),
Cuddapah (twice),
Tanjore (thrice),
Madura (thrice).

43. In regard to these inspections, details will be given by the Inspector of Steam-boilers and Prime-movers in his report.

44. The Inspector, after completing the survey of each station's plant, forwarded reports, which were sent to the respective Municipal Chairmen for their information and guidance, with the request that repairs, additions and alterations, as mentioned, be carried out as early as practicable.

45. It was reported on the second inspection that repairs advised in two cases were still incomplete; this neglect will involve a larger amount of unnecessary expenditure to put the parts in repair than would have been necessary if such had been carried out as soon as they arose; moreover engines in bad repair require much more fuel and oil to work them.

46. Indicator diagrams were taken from the engines, and the indicated power of each engine determined. Fuel trials were conducted by the Inspector for the purpose of ascertaining the amount of fuel expended per pump horse-power throughout an ordinary day's work; the expenditure of fuel compares favourably with the results of the inspection of 1897, but reductions were made at only two stations. The price of coal was higher this year than during the last year; should the price of coal be lowered as it might be by the opening of the East Coast Railway, it will be advisable for most municipalities to use it in place of wood for generating steam at their respective pumping stations.

47. The Inspector reports that the general condition and working of each station's plant are good.

CONCLUDING REMARKS.

48. Inventories of valuable stock have been maintained in this office.

49. The service registers have been duly maintained and kept up to date.

50. The conduct of the staff has been satisfactory.

J. A. JONES, M.I.C.E., F.R.S.E.,
Sanitary Engineer to Government.

OFFICE OF SANITARY ENGINEER TO GOVERNMENT,
POONAMALLEE ROAD, (PARK TOWN),
Madras, 28th February 1899.

APPENDIX

TABLES NOS. 1 AND 2.

TABLE

Statement showing progress made in respect of Water-supply and Drainage of District Municipalities during 1898.

District.	Serial number of Municipalities.	Town.	Date of inspection of town.	Date of preliminary report— (1) Water-supply. (2) Drainage.	Whether Council has sanctioned funds for surveys and levels.	Water-supply. Under survey or not.	Water-supply. Estimate under preparation or not.	Water-supply. Date on which scheme was forwarded.	Water-supply. Amount of estimate sent in or anticipated cost.	Drainage. Under survey or not.	Drainage. Estimate under preparation or not.	Drainage. Date on which scheme was forwarded.	Drainage. Amount of estimate sent in or anticipated cost.	Remarks.
									RS.				RS.	
1. Anantapur ...	1	Anantapur	S.E.—21/22-9-92 ...	(1) 26-9-92 ...	...	...	...	...	...	..	...	...	...	Preparation of a water-supply scheme ordered to be dropped in G.O., No. 2108 M., Mis., dated 22nd December 1892.
2. Bellary ...	2	Ádóni	Ag. S.E.—11-3-98 ...	.....	...		Water work	Completed in 1895.		...	...	...	...	Drainage scheme is under contemplation of the Council.
	3	Bellary	A.S.E.—24 to 29-2-96; 22/23-3-96; 10/11-4-96; 11/16-5-96 and 1 to 26-6-96.	(1) 15-10-90 ...	Yes ...	Completed	Prepared	29-7-96	8,00,000	...	...	...	...	Hagri scheme, estimated to cost 8 lakhs of rupees, has been approved by Government, but its execution has been abandoned on financial grounds (G.O., No. 1463 M., dated 21st June 1897).
3. Chingleput ...	4	Chingleput ...	.....	.....	...	...	...	...	...	...	...	...	...	Constituted into a Municipality in October 1896.
	5	Conjeeveram ...	Ag. S.E.—4-3-98 ... S.E.—14-6-98; 23-6-98; 18-8-98; 20-10-98. Asst. S.E.—4-3-98; 5/6-5-98; 4/5-7-98; 5-8-98; 26-8-98; 16-9-98; 29-9-98; and 13-12-98.	(1) 19-12-90 ...	Yes ...	...	Water-work	Completed in 1897.		...	...	...	...	Extension of the water-works is nearly completed.
4. Coimbatore ...	6	Coimbatore ...	A.S.E.—17 to 20-3-93...	(1) & (2) 21-11-90.	Yes ...	Completed	Prepared.	1-10-92	(1) 4,01,000 (2) 3,72,000	Completed.	...	...	...	This scheme has been allowed to lie over pending revision of the District Municipalities Act 4 of 1884, which provides for extended powers of taxation.
	7	Erode	A.S.E.—16 to 19-12-91.	.....	Yes ...	...	...	...	...	Completed.	...	...	...	Temporary measure to improve the water-supply of the town suggested by the Sanitary Commissioner is under consideration. The Council is anxious to go on with a complete scheme. Scheme for drainage not yet drawn up.
	8	Karúr	A.S.E.—11 to 13-6-93 ...	.....	Yes ...	...	...	...	...	Completed.	Prepared ...	28-11-93	95,853	A water-supply scheme has been ordered to precede the drainage scheme. Pressure of other works delayed its preparation.
5. Cuddapah ...	9	Cuddapah	A.S.E.—14/15-4-97 ...	(1) 3-9-90; (2) 17-9-94.	Yes ...		Water-work	Completed in 1893.		Completed.	Prepared ...	31-5-97	5,40,000	A scheme for drainage has been submitted and is under consideration by the Sanitary Board.
6. Ganjám ...	10	Berhampur ...	S.E.—20/26-9-98 ...	(1) & (2) 20-2-91...	...	In Progress.		...	...	...	...	...	...	Levels are now being taken for water-supply scheme.
	11	Chicacole	S.E.—26-2-92	(1) & (2) 2-3-92 ...	...	...	...	...	...	...	...	...	...	Council has not taken any steps to improve its drainage.
	12	Parlákimedi ...	Ag. S.E. 20/22-3-98 ...	.....	...	...	...	...	...	...	...	...	...	The investigation for a water-supply scheme has been put aside by order of Government (G.O., No. 1078 M., Mis., dated 13th June 1898.)
7. Gódávari ...	13	Cocanada	S.E.—5 to 7-3-92 ...	(1) & (2) 31-1-91; (1) 2-2-91.	Yes ...	Completed	Prepared.	7-11-92	3,74,396	...	...	...	...	Water-works are being executed by the Public Works Department.
	14	Ellore	A.S.E.—27/28-6-92 ...	(1) & (2) 7-2-91...	Yes ...	..	...	15-2-97	(1) 1,70,000 (2) 1,28,000	Completed.	...	...	...	Council requests that a water-supply scheme may be prepared and submitted to Government.
	15	Rajahmundry ...	A.S.E.—26/27-7-94 ...	(1) 9-2-91 ...	Yes ...	Completed	...	...	...	...	...	...	...	Preparation of the water-supply scheme has been delayed owing to the proposed change of pumping station site which involves further investigation and survey.
8. Kistna ...	16	Bezwada	Ag. S.E.—23-3-98 ... A.S.E.—20/21-3-98.	.....	Yes ...	Completed	Prepared.	5-8-98	3,75,400	Completed.	...	...	...	A water-supply scheme has been submitted and is under the consideration by the Sanitary Board.
	17	Guntúr	Ag. S.E. 16/21-2-98 ... A.S.E.—16/25-2-98; 22/24-3-98; 16/22-5-98; and 8/13-8-98.	(1) & (2) 15-2-91...	Yes ...	Completed by Local Fund Engineer.	...	...	...	Completed by Local Fund Engineer.	...	...	...	A water-supply scheme is under preparation. Surveys and levels have been taken for drainage scheme.
	18	Masulipatam ...	S.E.—18/19-2-91 ...	(1) 25-2-91 ...	...	...	...	...	...	...	...	...	...	No progress has been made in regard to drainage or water-supply.
9. Kurnool ...	19	Kurnool	S.E.—15/19-3-97; 3 to 6-8-97; 12 to 15-10-97.	(1) 10-4-91 ...	...	...	Water-work	completed in 1897.		...	...	...	...	An estimate for the extension of works is under the consideration of Government.
10. Madura ...	20	Dindigul	Ag. S.E.—17/18-1-98 ... A.S.E.—22/23-11-98.	(1) 15-9-90 ...	...		Water-work	completed in 1896.		..	...	...	...	Other sources for augmenting the town supply are being investigated.
	21	Madura	A.S.E.—24-11-98 ...	(1) 8-4-90 ...	...		Water-work	completed in 1894.		Completed.	...	...	...	Scheme for drainage not yet drawn up.
	22	Palni	S.E.—23/24-10-91 ...	(1) & (2) 27-10-91.	Yes ...	Completed	...	...	...	Completed.	...	...	...	Schemes for water-supply and drainage not yet drawn up.

TABLE No. 1—*continued.*

Statement showing progress made in respect of Water-supply and Drainage of District Municipalities during 1898—continued.

District.	Serial number of Municipalities.	Town.	Date of inspection of town.	Date of preliminary report— (1) Water-supply. (2) Drainage.	Whether Council has sanctioned funds for surveys and levels.	Water-supply. Under survey or not.	Water-supply. Estimate under preparation or not.	Water-supply. Date on which scheme was forwarded.	Water-supply. Amount of estimate sent in or anticipated cost.	Drainage. Under survey or not.	Drainage. Estimate under preparation or not.	Drainage. Date on which scheme was forwarded.	Drainage. Amount of estimate sent in or anticipated cost.	Remarks.
									Rs.				Rs.	
10. Madura—*cont.* ...	23	Periyakulam ...	S.E.—20/21-10-91 ...	(1) & (2) 23-10-91.	...	...	...	...	...	...	...	...	...	Scheme for water-supply will be investigated during 1899–1900.
11. Malabar ...	24	Calicut	A.S.E.—17/21-10-98 ...	(1) & (2) 12-10-96.	Yes ...	Completed	...	...	...	Completed.	...	...	...	Scheme for water-supply is under investigation.
	25	Cannanore	S.E.—26 to 28-7-91 ...	(1) & (2) 30-7-91...	...	...	...	...	...	...	...	...	..	Council has not taken any steps to improve its water-supply, which is urgently needed principally to the Moplah quarters.
	26	Cochin	S.E.—6 to 14-9-95 ...	(1) & (2) 3-9-91.	...	...	Prepared.	...	...	...	...	...	...	Deep well-boring has been abandoned. The other schemes proposed are, owing to their cost, impracticable and the question of water-supply is therefore postponed for the present (G.O., No. 65 M., Mis., dated 11th January 1896).
	27	Palghat	S.E.—18/19-9-97 ...	(1) & (2) 6-8-91 ...	Yes ...	...	...	...	...	Completed.	...	...	...	Drainage scheme not yet drawn up.
	28	Tellicherry ...	S.E.—29/31-7-91 ...	.....	...	...	...	...	...	...	...	...	...	Works of water-supply or drainage not urgent to this town.
12. Nellore ...	29	Nellore	A.S.E.—21/23-10-92 ...	.....	Yes ...	Completed	...	...	..	Completed.	...	...	...	These schemes have been allowed to lie over pending the revision of the District Municipalities Act, which provides for extended powers of taxation.
	30	Ongole	S.E.—17 to 20-3-91 ...	(1) 7-4-91 ...	...	Completed	Prepared.	22-4-92	(1) 1,20,000 (2) 49,700	...	...	...	...	The new Act recently passed may allow of one of the schemes already prepared being carried out.
13. Nilgiris ...	31	Coonoor	S.E.—23 to 28-8-96 ...	.....	Yes ...	Completed	Prepared.	29-4-97	1,13,800	Drainage works completed in 1893.				A water-supply scheme is under consideration by Government.
	32	Ootacamund ...	S.E.—3 to 8-4-95 and 8 to 30-6-95.	(1) 3-9-90 ...	...	Completed	...	...	35,700	Kandal drainage completed in 1892.				A portion of the water-supply scheme drawn up by Mr. G. T. Walch is sanctioned for execution by the Public Works Department (G.O., No. 15 M., Mis., dated 4th January 1898). Plans and estimates prepared by Mr. Somers-Eve for the drainage of Ootacamund Main Bazaar are under revision.
14. North Arcot ...	33	Gudiyáttam ...	A.S.E.—14 to 16-7-96; 27 to 29-7-96; and 27-10-96.	(1) 18-12-95 ...	Yes ...	Completed	Prepared.	4-12-96	51,500	...	...	...	..	Government has ruled that if the Municipal Council cannot carry out the work without the assistance of Provincial finances, which the Government is unable to promise, the question of a water-supply for the town must stand over for the present (G.O., No. 1772 M., Mis., dated 13th August 1897).
	34	Tirupati	A.S.E.—15/16-1-97; 25/26-2-97.	(2) 1-7-90 ...	Yes ...	Completed	Prepared.	1-4-96	2,31,000	Completed.	Prepared ...	7-9 91	96,000	Drainage scheme sanctioned but execution deferred. Water-works are being executed by the Public Works Department.
	35	Vellore	A.S.E.—6 to 8-12-95 ...	(1) & (2) 12-5-90.	Yes ...	Completed	Prepared.	9-12-91	3,13,000	Completed.	Prepared ...	...	2,11,000	Water-supply scheme abandoned as being too costly. Drainage works executed piecemeal were ordered to be stopped (G.O., No. 1302 M., Mis., dated 5th August 1896).
	36	Wálájapet	.....	.....	...	...	...	...	...	...	...	...	...	No major scheme proposed.
15. Salem	37	Salem	Ag. S.E.—14 to 19-5-94. A.S.E.—14 to 23-5-94.	(1) 30-9-91 ...	Yes ...	Completed	...	...	...	Completed.	...	...	...	Public Works Department is investigating a water-supply scheme.
	38	Tiruppattúr ...	A.S.E.—20 to 22-7-93.	(1) & (2) 26-12-91.	Yes ...	...	...	...	...	Completed.	...	...	...	Scheme for drainage not yet drawn up.
	39	Vániyambádi ...	A.S.E.—21/22-12-91 ...	(1) & (2) 26-12-91.	Yes ...	...	...	...	...	...	...	...	...	The Council has allotted funds for survey and levels for drainage scheme, but the Sanitary Commissioner considers that water-supply should precede drainage. Neither of them could be dealt with until other towns, that are urgently in need of improvements, are done with.
16. South Arcot ...	40	Chidambaram ...	Ag. S.E.—14/16-1-98 ...	.....	Yes ...	Completed	...	...	...	...	...	...	...	Further investigation for the water-supply scheme of the town will be made early in 1899–1900.
	41	Cuddalore	A.S.E.—6 to 8-12-94, and 21 to 25-12-94.	(1) & (2) 17-11-91.	Yes ...	Completed	Prepared.	8-1-95	3,71,200	Completed.	...	...		The financing of the water-supply scheme is still under the consideration of the council.
	42	Tiruvannámalai ...	A.S.E.—11/18-7-98 ...	.....	...	...	...	10-8-98	3,56,000 1,55,000	...	...	...	...	A report on the preliminary investigation of a water-supply scheme is now under the consideration of Government.
17. South Canara ...	43	Mangalore ...	S.E.—20 to 28-9-97 ...	(1) & (2) 9-10-96 ...	Yes ...	Completed	...	...	...	Completed.	...	...	...	Surveys and levels have been taken for water-supply and drainage schemes.
18. Tanjore ...	44	Kumbakónam ...	S.E.—19 to 21-6-98 A.S.E.—10 to 12-3-98.	.....	Yes ...	Completed	...	...	...	Completed.	Prepared ...	19-12-95 22-8-98	6,250 43,800	Surveys and levels have been taken for the water-supply scheme and a scheme is under preparation. Public Works Department has been requested to execute the sewerage works of Soliappa Moodelly Street costing Rs. 6,250 when the Council allots funds for the purpose. Plans and estimates amounting to Rs. 43,800 for the drainage of Putnool block have been approved by the Sanitary Board with a suggestion that a sewage farm be substituted for the filter-beds.

TABLE

No. 1—*concluded.*

Statement showing progress made in respect of Water-supply and Drainage of District Municipalities during 1898—concluded.

District.	Serial number of Municipalities.	Town.	Date of inspection of town.	Date of preliminary report— (1) Water-supply. (2) Drainage.	Whether Council has sanctioned funds for surveys and levels.	Water-supply. Under survey or not.	Water-supply. Estimate under preparation or not.	Water-supply. Date on which scheme was forwarded.	Water-supply. Amount of estimate sent in or anticipated cost.	Drainage. Under survey or not.	Drainage. Estimate under preparation or not.	Drainage. Date on which scheme was forwarded.	Drainage. Amount of estimate sent in or anticipated cost.	Remarks.
									Rs.				Rs.	
18. Tanjore—*cont.*	45	Mannárgudi ...	.....	.....	...	...	...	...	...	...	...	...	...	No major scheme proposed in regard to these towns.
	46	Máyavaram ...	.....	.....	...	...	...	...	...	...	...	...	...	
	47	Negapatam ...	S.E.—17/18-2-96 ... A.S.E.—2 to 4-2-96.	(2) 16-12-90 ...	Yes ...	Completed	Prepared.	11-2-97	(1) 9,89,680 (2) 7,22,720	Completed.	Prepared ...	8-2-92	4,13,000	Water-supply scheme is under the consideration of the Sanitary Board. Drainage scheme sanctioned in 1893, but execution held in abeyance, as the Council desired that water-supply scheme should precede the drainage scheme.
	48	Tanjore	A.S.E.—25-11-98 ...	(1) 2-6-90 ...	Yes ...		Water-works	completed in 1895.		Completed.	Prepared ...	18-9-97	33,440	Arrangements are being made to carry out the extension of the water-works estimated to cost Rs. 27,000, sanctioned in G.O., No. 1365 M., Mis., dated 2nd August 1898. A scheme for the disposal of sewage of the fort by gravitation is sanctioned for execution by the Public Works Department (G.O., No. 2176 M., dated 16th Dec. 1898).
19. Tinnevelly ...	49	Palamcottah ...	A.S.E.—27 to 29-1-96 ...	(1) 25-11-91 ...	Yes ...	Completed.	...	...	...	...	...	...	...	Surveys and levels for a joint water-supply scheme with the Municipality and the District Board of Tinnevelly have been completed.
	50	Srívilliputtúr ..	.....	.....	...	...	...	...	...	...	...	...	...	Constituted into a Municipality in October 1894.
	51	Tinnevelly	A.S.E.—24-8-95 ...	(1) 25-11-91 ...	Yes ...	Completed.	...	...	...	Completed.	...	...	...	Surveys and levels for a joint water-supply scheme with the Municipality of Palamcottah and the District Board of Tinnevelly have been completed.
	52	Tuticorin	S.E.—8 to 12-8-92 ...	(1) 30-11-91 ...	Yes ...	Completed.	Prepared.	28-7-96	(1) 2,73,140 (2) 3,30,800	...	...	...	...	Several schemes are before Government.
20. Trichinopoly ...	53	Srírangam ...	S.E.—16/17-9-90 ...	.....	...	Completed.	Prepared.	10-2-96	1,75,000	...	...	...	...	This is a preliminary estimate for supplying from the head works of Trichinopoly. An independent scheme has been ordered to be prepared (G.O., No. 488 M., Mis., dated 3rd March 1898).
	54	Trichinopoly ...	Ag. S.E.—25/27-1-98; 4/7-2-98. S.E.—13/15-4-98; 12/15-7-98. A.S.E.—25/28-1-98; 6/8-4-98; 19/24-4-98.	(1) 21-4-90 ...	...		Water-works	completed in 1896.		...	...	...	...	Plans and estimates amounting to Rs. 2,08,200 for the extension of water-supply to Worraiyur and Puttur, have been sanctioned for execution (G.O., No. 54 M., dated 11th January 1899).
21. Vizagapatam ...	55	Anakápalle ...	.....	.....	...	...	...	...	...	...	...	...	...	No major scheme proposed in regard to these towns.
	56	Bimlipatam ...	.....	.....	...	...	...	...	...	...	...	...	...	
	57	Vizagapatam ...	Ag. S.E.—14/17-3-98. ... A.S.E.—14/17-3-98.	(1) & (2) 31-1-91.	Yes ...	Completed.	Prepared.	23-7-96	4,21,000	Completed.	...	...	...	Water-works are being executed by the Public Works Department.
	58	Vizianagram ...	Ag. S.E.—18/19-3-98. ... A.S.E. 17/19-3-98.	.....	Yes ...	Completed.	Prepared.	30-3-98	2,82,000	...	...	...	...	Scheme for water-supply is under the consideration of the Sanitary Board.

TABLE No. 2.

CONJEEVERAM WATER WORKS, INCLUDING EXTENSION.

Statement of work done during the year 1898.

1	2	3		4				6		7
No.	Main head.	Work done previously.		Work done during 1898.		Work to be done.		Total estimated cost.		Remarks.
		Percentage.	Value.	Percentage.	Value.	Percentage.	Value.	Percentage.	Value.	
			RS.		RS.		RS.		RS.	
1	Infiltration works ...	100	13,588	...	...	...	...	100	13,586	
2	Collecting chamber ...	100	1,412	...	...	...	...	100	1,412	
3	Suction well and valve house	100	2,582	...	...	...	...	100	2,582	
4	Engine and boiler house.	100	10,647	.	...	...	...	100	10,654	
5	Store shed	100	1,958	...	...	...	...	100	1,958	
6	Engine Drivers' quarters	100	4,098	...	...	...	..	100	4,098	
7	Compensation for land, metalling and fencing.	31	1,177	69	2,528	...	...	100	3,765	
8	Engines, pumps and boilers	100	22,404	...	...	...	...	100	22,405	
9	Supply and delivery of pipes, &c.	86	1,19,754	12	17,405	2	1,741	100	1,38,900	
10	Laying and jointing pipes, &c.	81	21,887	18	4,976	1	137	100	27,000	
11	Service reservoir ...	...	...	81	17,360	19	3,940	100	21,300	
12	Tools and plant ...	78	400	...	...	...	...	100	513	
13	Establishment and office contingencies ..	74	* 6,513	14	† 1,268	12	1,046	100	8,827	
	Total ...	80	2,06,420	17	43,537	3	6,864	100	2,57,000	

	Materials at site.	RS.
1	Departmentally collected and paid for	...
2	Departmentally collected and unpaid for	...
3	Supplied by contractors and paid for	...
4	Supplied by contractors and unpaid for	...
	Total value of materials collected for the works (items 1, 2, 3 and 4) and remaining unused on 31st December 1898.	...
	Total value of work done up to 31st December 1898 (as per table above columns 3 and 4 'work done').	2,49,957
(*a*)	Grand Total	2,49,957
(*b*)	Total estimated cost	2,57,000
	‡ Percentage of work done (inclusive of materials at site, viz., items 1, 2, 3 and 4)	97 per cent.

* This includes Rs. 3,114 met from Provincial Revenues on account of pay, &c., of the Supervisor in charge of the works.

† This includes Rs. 860 met from Provincial Revenues on account of pay, &c., of the Supervisor in charge of the works.

‡ As (*a*) to (*b*), *i.e.*, percentage (*a*) bears to (*b*).

No. 1409 L., 15TH JULY 1899.

GOVERNMENT OF MADRAS.

LOCAL AND MUNICIPAL DEPARTMENT.

READ—the following paper :—

Proceedings of the Sanitary Board, No. 299-S., dated 10th June 1899.

Read—the following papers :—

Report of the Sanitary Engineer to the Government of Madras for the year 1898.
" " Commissioner for Madras for the year 1898.
" " Board for the year 1898.

From the Sanitary Commissioner, No. 1505-S., dated 19th May 1899.

Resolution—No. 299-S., dated 10th June 1899.

Submitted to Government with reference to rule 20 of the "Rules for conducting the business of the Sanitary Board."

2. With reference to paragraph 1 of G.O., No. 1475 L., dated 13th August 1898, it is explained that the delay in the submission of these reports is due to the late receipt of the report of the Sanitary Commissioner, which reached the Sanitary Board only on the 5th June 1899.

ORDER—No. 1409 L., dated 15th July 1899.

With the proceedings read above, the Sanitary Board submits the reports of the Sanitary Commissioner and the Sanitary Engineer on the administration of their departments in 1898, and a separate report regarding the work done by the Board itself during the year. These reports were due in the Government office on the 15th May 1899 and the delay of one month in their submission was due to the late receipt, in the Board's office, of the report of the Sanitary Commissioner. The circumstances under which the report last named was not submitted in proper time, notwithstanding the resolution of the Government of India communicated with G.O., No. 599 L., dated 28th March 1898, should have been explained.

GENERAL SANITATION.

2. *Rainfall.*—The average quantity of rain registered during the south-west monsoon fell from 34·35 to 25·70 inches, while that during the north-east monsoon rose from 8·19 to 21·07 inches, the total average rainfall for the whole year being 51·32 inches or 3·18 inches more than in the previous year. The rainfall of the south-west monsoon was, however, very nearly up to the average for the ten years ending 1895, although there were considerable variations in South Canara (+ 9·54 inches), Vizagapatam (— 6·43), Cuddapah (— 4·40) and Anantapur (— 4·38). On the other hand, the rainfall during the north-east monsoon was in excess of the average by 6·13 inches, the excess being considerable in Chingleput (23·52), South Arcot (22·83), Madras (19·24), Tanjore (15·39) and Trichinopoly (10·53). In Ganjám, Vizagapatam, Kistna, Kurnool, Bellary and Anantapur the rainfall was below the average.

3. *Prices of Food Grains.*—The prices of the principal food grains are compare below with those of the preceding two years and with the average for the ten yea ending with 1895:—

—	Number of seers for the rupee.			Average for the ten years ending with 1895.
	1898.	1897.	1896.	
Rice	10·1	9·9	12·7	13·0
Ragi	17·2	17·2	25·8	25·3
Cholam	16·1	14·5	22·6	23·4

As a result of the favourable rainfall, there was a slight decrease in the price of rice and a more appreciable reduction in that of cholam, although the prices were still much below the average for the ten years ending with 1895. The average price of ragi, however, continued unaltered owing apparently to stocks not having been fully replenished after the unusual depletion which must have occurred in consequence of the abnormal demand for it during the famine of 1897 in the districts in which the staple grain, namely cholam, had failed. The Sanitary Commissioner considers that the appearance of plague and the belief of the native population that the year 1899-1900 would be a disastrous one have made the ryots unwilling to part with their grain and have thus prevented an appreciable fall in the prices of food-grains.

4. *Vital Statistics* *.—There was no change in the system of registration. Returns of births and deaths were received in respect of a population of 33,288,122 according to the census of 1891. The increase of 649,879 persons brought under registration in 1898 in Madura, Ganjám and Vizagapatam has not been explained.

5. *Births.*—The number of births registered during the year was 911,742 or 27·4 per mille of the census population against 935,845 or 28·7 per mille in the previous year, the rates for the urban and rural areas being 33·0 and 26·9 against 32·7 and 28·4, respectively, in that year. The decrease in the total number of births is ascribed partly to marriages having been as far as possible deferred during the past three years in consequence of the expectation of "evil times" by the native population, and partly to the prevalence of famine in Bellary, Kurnool, Cuddapah, Ganjám and Vizagapatam and to defective registration chiefly in Madura. Excluding Madras, the highest birth-rate was recorded in the Chingleput district (35·7 per mille) and the results were also fair in Kistna, Salem, Tanjore, Tinnevelly and Trichinopoly, the rate being more than 30 per mille. The lowest rates were recorded in Malabar (18·6), Madura (22·7) and Ganjám (22·9); in Malabar there has been a retrogression for three years in succession and in Ganjám for two years, notwithstanding the fact that the attention of the Collectors concerned was specially drawn to this matter in the review of the report for the previous year. These officers are now requested to report the steps which they propose to take, to effect an improvement in this direction. Amongst Municipalities, Vániyambádi headed the list with a rate of 54·5 and the rate exceeded 40 per mille in Guntúr, Cuddalore, Tiruvannámalai, Periyakulam, Adóni, Gudiyáttam, Tiruppattúr, Coimbatore, Erode, Karúr and Palghat. In 31 towns it ranged between 40 and 30 and in fourteen others between 30 and 20, while in Cuddapah, it was only 17·6 per mille against 27·1 in the previous year, thus indicating neglect on the part of the municipal executive. It is a matter for regret that notwithstanding the remark in paragraph 5 of G.O., No. 1475 L., dated 13th August 1898, the compulsory provisions of the Act in regard to the registration of births and deaths were resorted to in only 38 out of the 58 Municipalities in the Presidency. The Government must therefore again impress upon the Municipal Councils concerned the necessity for greater energy in enforcing obedience to the provisions of the law in this respect.

* The figures given in this paragraph include Europeans and Eurasians numbering some 40,000; the succeeding paragraphs give statistics relating to natives only. Full particulars regarding Europeans and Eurasians will be found in appendix XIII.

6. *Deaths.*—The annexed statement exhibits the number of deaths per mille of the population during the year under review as compared with the figures of the preceding five years:—

—	1893.	1894.	1895.	1896.	1897.	1898.
Cholera	1·0	1·3	0·6	1·5	4·4	2·0
Small-pox	0·8	0·3	0·1	0·3	0·7	0·6
Fevers	7·7	8·0	8·3	8·0	9·0	7·5
Dysentery and diarrhœa	0·7	0·7	0·7	0·7	1·2	0·9
Injuries	0·3	0·4	0·3	0·3	0·3	0·3
Other causes	8·8	9·3	9·6	9·8	9·8	9·7
Total ..	19·3	20·0	19·6	20·6	25·4	21·0

7. The total number of deaths registered in 1898 was 699,108 or 128,417 less than in the previous year, the decrease occurring chiefly in Ganjám and Malabar, where the deaths registered were only 22·7 and 17·5 per mille of the population against 50·1 and 30·2, respectively, in 1897. The causes which led to these results should have been explained by the Sanitary Commissioner. The mortality among infants under one year of age in the rural tracts was 163·3 per mille of the registered births of the year or 1·2 per mille less than in the previous year, but the rate for Municipalities rose from 223·1 to 229·5. Infantile mortality was very high in the City of Madras (297·7) and in the Nilgiris (257·3), while in 27 municipal towns it was more than 200 per mille, Bellary heading the list with a rate of 324·9 per mille followed by Ootacamund (304·5). The average rate of infantile mortality for 33 "great towns" in England being only 167 per mille against 229·5 for the Municipalities in the Madras Presidency, the Sanitary Commissioner considers that this heavy mortality is to be ascribed in part at least to the ignorance of the poorer classes of natives of the most simple ideas of sanitation in connection with child life, while the higher rate in Municipalities as compared with the rate in rural tracts, he considers, is the result of more accurate registration and of the more insanitary conditions prevailing in municipal towns, inefficiently protected as they are in the matter of water-supply and rubbish and night-soil removal, and unprovided with sewage systems.

8. The highest death-rate (45·2) was, as usual, recorded in the City of Madras, a result which may be attributed partly to the insanitary condition of the city and partly to greater accuracy in registration. Although no material improvement was made during the year in the sanitary condition of the city, yet several measures of reform were being carried out. The scheme for the drainage of Mylapore was completed. An incinerator for the destruction of rubbish and a new general market were in course of construction. Some objectionable burning and burial grounds, situated in the midst of inhabited areas, were closed and others opened in their stead and a *paracherry* was improved by the opening of a street. But until adequate provision is made for the effective drainage of the whole city, for the supply of more wholesome water and for other sanitary improvements of prime importance, the health of the city cannot be expected to make an advance on the unsatisfactory state in which it is at present.

9. The death-rate registered in rural villages was 20·3 per mille against 24·8 in the previous year and evidences defective registration. It was highest in the Nilgiris (29·2) and was above 20 per mille in eleven other districts, while in the remaining ones it was below 20, being lowest in Madura (14·8). The rates for rural towns with a population of over 10,000 inhabitants ranged between 33·7 in Tiruválúr and 8·1 in Samalkot and thus clearly show the untrustworthy character of the returns. The rates were also very low in the rural towns named in the margin. The Collectors concerned, except that of Salem, who has already reported on the subject, are requested to state what steps they propose to take towards the improvement of registration.

Paramagudi	9·2
Séndamangalam	9·8
Virudupatti	11·9
Ambur	12·3
Saluru	12·5
Porto Novo	12·7
Tadpatri	12·9

10. The average rate for Municipalities, where, as a rule, more trustworthy statistics are obtained, was 31·9 per mille or 1·4 less than in the previous year, while

the individual rate varied from 39·3 per mille in Ootacamund and Guntúr to 18·9 in Dindigul. In 16 other towns rates above 30 and in 37 others, rates above 20 were recorded, while in Srívilliputtúr and Bimlipatam the mortality was 19·6 and 19 per mille, respectively. Compared with the previous year, there was a large decline in Cannanore (33·6), Kurnool (28·6) and Parlákimedi (20·0), which is evidently the result of inattention on the part of the Municipal Councils concerned to this branch of their administration.

11. *Principal Diseases—Cholera.*—The mortality under this head fell from 4·4 to 2 per mille of the population. The disease prevailed throughout the year, being very virulent in January and least so in October. No district was free from this epidemic; but in the Nilgiris, Anantapur and Ganjám there were no more than 1, 9 and 46 deaths respectively. It was felt most severely in Tanjore, Trichinopoly and South Arcot, which lost 6·7, 5·5 and 5·2 per mille, respectively, of the population, a result which is ascribed to the facilities for the transmission of the cholera microbe from village to village by means of lengthy irrigation channels which are liable to contamination on account of the insanitary habits of the people. The average death-rate in municipal and other towns was 2·1 per mille against 5·0 in 1897 and in rural tracts 2·0 against 4·3. Sixteen of the Municipalities enjoyed perfect immunity from this disease. Of those which suffered, Palni headed the list with a death-rate of 14·4 per mille, followed by Nellore (10·2), Chidambaram (7·7), Trichinopoly (7·3), Mannárgudi (6·5), Negapatam (5·7) and Tuticorin (5·1). The mortality in rural towns was high in Ramnad (24·5), Tiruvalur (11·3) and Arcot (8·1). The attention of all Collectors is drawn to the remarks of the Sanitary Commissioner in paragraph 30 of his report, regarding the working of the rules for combating cholera in Municipalities sanctioned in G.O., No. 1536 M., dated 9th September 1896.

12. *Small-Pox.*—The number of deaths under this head was 20,490 or 0·6 per mille of the population against 21,678 in the previous year and 9,410 in 1896. The rate of mortality in rural areas was 0·6 per mille and in Municipalities 0·3 against 0·7 and 0·2, respectively, in 1897. Ganjám again suffered very severely from this disease, although the number of deaths fell from 14,515 or 12·2 per mille to 10,838 or 8·5 per mille. This is ascribed by the Sanitary Commissioner to the existence of extensive hill tracts inhabited by a class of people much averse to vaccination and to the impossibility of dealing satisfactorily with any sanitary subject in the zamindari tracts, of which this district is principally made up. It must be remembered, however, that statistics of deaths from small-pox are not received from the hill tracts except in respect of about 6 per cent. of the population. The death-rate was also high in Vizagapatam (0·8), Cuddapah (0·7), the Nilgiris (0·6), Kurnool (0·6), Anantapur (0·6) and North Arcot (0·6), while in Malabar, the lowest rate was recorded, namely, 0·04. Among District Municipalities, the mortality from this cause was heaviest in Berhampur (6·1), Parlákimedi (5·0), Chicacole (2·9), Anantapur (2·0) and Tiruvannámalai (1·0)—a fact which indicates that the compulsory provisions of the law as regards vaccination are not strictly enforced in these towns. There were 19 towns against 25 in the previous year, which enjoyed perfect immunity from this disease.

13. *Fevers.*—The mortality under this head fell from 292,292 or 9·0 per mille of the population to 248,638 or 7·5 per mille, the decrease which occurred chiefly in the districts which were affected by famine in the previous year being due apparently to better nutrition and better resistance to malaria on the part of the people. On the other hand, the death-rate in the Nilgiris rose from 17 to 22·1 per mille and it was accompanied by a fall in the birth-rate,—conditions which are ascribed to the scanty rainfall of the year. The mortality was also high in Vizagapatam (15·1), Kurnool (14·8), Cuddapah (13·6), Madras (12·4), South Canara (12·1) and Ganjam (11·1). On the other hand, it was very low in Tanjore (1·5), Tinnevelly (2·6), Trichinopoly (3·6) and Chingleput (3·9). Among Municipalities, eight towns recorded a death-rate of more than 10 per mille. It was high in Cuddapah (14·8) and Kurnool (12·5), and this is attributed to fluctuations of the sub-soil water, the period of greatest mortality being that which immediately follows the greatest fall of the sub-soil water level.

14. *Dysentery and Diarrhœa.*—The number of deaths from these diseases fell from 38,716 or 1·2 per mille of the population to 29,654 or 0·9 per mille, the decrease

which occurred in all the districts except Chingleput, Nellore, Salem and South Arcot being apparently due to improved dietary of the people following the reduction in the prices of grains. As usual, the mortality in rural areas was less than that recorded in municipal and other towns, being 0·7 per mille of the population against 3·5, the large difference being due to the existence of insanitary conditions in urban areas. The highest death-rate was recorded in Madras, where it was 7·5 per mille against 4·5 in the previous year. The rate was also high in Chingleput (2·6) and South Canara (2·0), while in Gódávari (0·3), Kistna (0·3) and Madura (0·4), it was very low. Among District Municipalities, the mortality was high in Tuticorin (9·3), Cochin (7·5), Chingleput (6·8), Coonoor (6·3), Tellicherry (5·4) and Máyavaram (5·3) where the water-supply is more or less contaminated, and low in Palni (0·05), Masulipatam (0·6), Cuddapah (0·7) and Tiruppattúr (0·7).

15. *Injuries, &c.*—The deaths attributed to injuries, suicides, &c., numbered 11,047 against 11,553 in 1897, while those from unspecified causes rose from 322,137 to 323,835.

16. *Sanitary Works—Civil.*—The subjects dealt with by the Sanitary Commissioner under this head will be noticed at length in the reviews of the administration reports of the local bodies concerned and in the general Local Fund and Municipal reviews.

The observation of railway passengers arriving from plague-infected tracts which commenced in 1897 was continued during the year under review, and additional inspection stations were established at Tungabhadra and Jalarpet on the Madras Railway, Pákala on the South Indian Railway and Hindúpur on the Southern Mahratta Railway. Besides this, a system of inspection of passengers arriving by road was also maintained on the frontiers of the districts of Anantapur, Bellary, Coimbatore, Cuddapah, Kurnool, North Arcot and Salem and of the Wynaad taluk of the Malabar district. Plague was imported into the districts of this Presidency towards the close of the year, and, on the whole, 96 separate localities in a total of eleven districts, including Madras, were more or less affected, although in only 20 localities of five districts was it reported as indigenous. Major Bannerman, I.M.S., the Deputy Sanitary Commissioner, who had been deputed by Government to Bombay for the purpose of studying under Mons. Haffkine the methods of inoculation and other bacteriological matters connected with plague, returned in April 1898, and after a temporary stay in Madras was placed at the disposal of the Government of India for duty in Calcutta, where an outbreak of plague had occurred. He came back to Madras in the following August and was immediately placed on special duty in the town of Madras for the introduction of plague inoculation. Altogether 5,685 persons were inoculated in the City by the close of the year and 10,532 in the Presidency generally. In connection with the scheme for maintaining a system of observation in districts imminently threatened with plague, it was found that the number of certificated sanitary inspectors available for employment was insufficient and the Sanitary Commissioner accordingly trained and sent out 59 men as temporary sanitary inspectors.

17. *General Remarks.*—Dr. King was on privilege leave for a period of three months during the year, when his place was taken up by Major Thomson, I.M.S. Towards the end of June 1898, the presence of typhoid fever in Ootacamund having excited public attention, Major Thomson, I.M.S., was directed to make an investigation on the spot and the Municipal Council has promised to take the necessary steps to carry out the recommendations made by him for the improvement of the health of the station. The usual inspection of Municipalities was again postponed, as both the Sanitary Commissioner and his Deputy continued to be fully engaged in connection with plague. The District Medical and Sanitary Officers visited, on an average, only 19 places each against 27 in the previous year. The Surgeon-General is requested to explain this decrease and to impress on the medical officers concerned the importance of their touring in the districts as frequently as possible.

SANITARY ENGINEERING.

18. In the year under review, which was the ninth since the organisation of the department, the Sanitary Engineer visited fifteen towns and the Assistant Sanitary Engineer twelve against ten and eight, respectively, in 1897.

19. The extension of the water-works at Conjeeveram at an estimated outlay of Rs. 50,401 was undertaken during the year and more than 86 per cent. of the allotment was spent before its close.

20. Four surveys in connection with water-supply were completed during the year and one drainage and five water-supply schemes were prepared and submitted either to the Sanitary Board or to Government. The schemes for improving the water-supply of Ootacamund, for the extension of that of Tanjore and for the drainage of the Tanjore Fort were sanctioned by Government during the year, the first and the third for execution by the Public Works Department and the second by the Sanitary Engineer. The water-works in Trichinopoly were visited by the Sanitary Engineer and those in Madura, Dindigul and Tanjore by the Assistant Sanitary Engineer, while the pumping stations at Kurnool, Conjeeveram, Dindigul, Trichinopoly, Cuddapah, Tanjore and Madura were inspected and reported upon by the Inspector of Steam Boilers and Prime Movers. Thirteen type designs for sanitary works were prepared by the Sanitary Engineer and his advice was obtained by the Sanitary Board in 73 cases.

SANITARY BOARD.

21. The constitution of the Sanitary Board remained the same as in the previous year; but the rules for the conduct of its business were slightly modified by the addition of a rule making it incumbent on Collectors to consult the Sanitary Board whenever, in laying out house-sites near railway stations, there arise special difficulties not provided for in any general rules which the Board of Revenue may issue. The Board scrutinised plans and estimates for 36 Municipal and 78 Local Fund works, estimated to cost Rs. 4,89,525 in the aggregate. Schemes for the water-supply of Vizianagram, for the extension of the water-works at Kurnool and Tanjore and for the drainage of a portion of the Kumbakónam town were examined and laid before Government and proposals in connection with nineteen other schemes, for which however estimates had not been prepared, were considered by the Board. The Board also approved for issue thirteen type designs and sent a circular to all local bodies requiring that proposals for repairing and improving tanks hitherto used indiscriminately for bathing, washing and drinking should include separate provision for drinking purposes so as to secure to the populations concerned a supply of pure drinking-water.

(True Extract.)

C. J. WEIR,
Ag. Secretary to Government.

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