THE

FOURTH ANNUAL REPORT OF THE SANITARY BOARD,

THE THIRTY-SIXTH ANNUAL REPORT OF THE SANITARY COMMISSIONER,

AND THE

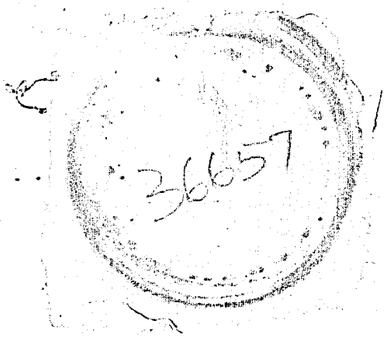
TENTH ANNUAL REPORT OF THE SANITARY ENGINEER,

MADRAS.

1899.

MADRAS:
PRINTED BY THE SUPERINTENDENT, GOVERNMENT PRESS.

1900.



2

CONTENTS.

FOURTH REPORT OF THE SANITARY BOARD.

A

FOURTH REPORT OF THE SANITARY BOARD

FOR THE YEAR 1899.

THE constitution of the Board, and the rules for the conduct of its business continued the same as in the previous year. As regards the *personnel*, Mr. W. B. deWinton, the President, having availed himself of three months' leave in February 1899, his place was filled temporarily by Colonel A. W. Smart, R.E. Surgeon-General D. Sinclair, M.B., C.S.I., I.M.S., succeeded Surgeon-General C. Sibthorpe, C.B., I.M.S., as medical member in October 1899. The Indian Civil Service Member's place on the Board was held by Mr. J. H. A. Tremenheere till April, when Mr. M. Hammick and subsequently Mr. C. J. Weir held office. In November Mr. Tremenheere resumed his place on the Board.

2. During the year the Board scrutinized plans and estimates of 114 sanitary works as shown in the appendix. Of these, 34 were for Municipalities, 79 for Local Fund Boards and 1 for the District Magistrate of Madura. The total estimated value of the projects amounted to Rs. 19,33,126.

3. The reports of the Sanitary Commissioner and the Sanitary Engineer contain details of sanitary works undertaken in this Presidency during the year. It is thus unnecessary for the Sanitary Board to do more than notice the more important of the projects with which it has, itself, had to deal.

4. Of these, the following schemes were examined by the Board and laid before Government:—

(1) Improvement to the water-supply of Tuticorin.
(2) Ootacamund bazaar drainage.
(3) A dispensary for women and children at Cocanada.
(4) Extension of the Trichinopoly water-works.
(5) Water-supply to Guntúr.
(6) An out-patients' dispensary for St. Bartholomew's Hospital, Ootacamund.
(7) Market sheds at Bhimanapalli, Konkopalli, Kottavur and Katranikona, in Rajahmundry taluk.
(8) Water-supply to Periyakulam.
(9) Water-supply to Bezwada.

5. The undermentioned projects were duly sanctioned by Government:

	Cost. Rs.
(1) Drainage scheme for the Tanjore Fort	33,440
(2) Extension of the water-supply of Trichinopoly	2 08,200
(3) Improvement of water-supply of Tuticorin	1,00,000
(4) Wellington valley scheme for the water-supply of Coonoor ...	99,200 or roughly 1,00,000

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:—

Vizianagram water-supply scheme.
Cuddalore water-supply scheme.
Ellore water-supply scheme.
Sinking an artesian well at Ellore.
Constructing an hospital at Bellary.
Kumbakónam drainage scheme.
Constructing vaccine depots at Bandur and Guntúr.
Improvement to the water-supply of Ootacamund.
Drainage scheme for the central part of Madura.
Negapatam water-supply scheme.
Introducing an instalment of Shone's pneumatic sewerage system in Bellary.
Water-supply for the Moplah quarters of Calicut.

Saidapet water-supply scheme.
Filtration of Cuddapah water-supply.
Laying out of a village-site (Turupupeta) at Ellore.
Constructing a line of bazaars on the east of the Dance market, Palghat.
Cuddapah drainage scheme.

7. *Meetings of the Sanitary Board.*—The Board was directed by Government to go over the catchment area of the Marlimund reservoir and then to report on the acquisition of a narrow strip of land round the reservoir instead of the whole area. The Board met on the 29th April at the bund of the tank and went over the catchment area. It arrived at the conclusion that it would be quite impracticable to cut off the tea estates, &c., which formed the major part of the area, and that the acquisition of a narrow strip of land round the reservoir would be of no utility. It suggested further enquiry into the existence of spring water in the hills round Ootacamund. Government had meanwhile been considering the expediency of filtering the Marlimund water by means of Anderson's revolvers, but as the purchase of the catchment area was finally arranged for, the proposal for filtering the water was dropped.

The Sanitary Board was consulted by Government in regard to the proposal of the Collector of the Nilgiris, that the action of the Municipal Council of Coonoor should be restricted to the gradual improvement of the existing supply instead of undertaking a comprehensive scheme. On the 16th August 1899, the Board, in company with the Collector, the Chairman of the Municipality, the Sanitary Commissioner and the Sanitary Engineer, visited the various sources of supply and made the requisite investigations on the ground. As the result of this, the Board recommended the adoption of the Wellington valley scheme. This proposal was approved by Government.

8. *Shone's Pneumatic Sewerage System.*—The Board was also consulted by Government on the proposal of the Sanitary Commissioner to introduce into the town of Bellary a small instalment of the Shone pneumatic sewerage system, with a view to deal primarily with the night-soil removal of the town, and secondarily to receive the sewage of that portion of the town through which the discharge pipes pass. The Sanitary Board considered it would be advantageous if the Shone or some analogous system were introduced as funds permit into the large towns of the Presidency, but did not think that Bellary was a place suitable to commence with, as it had not yet obtained its water-supply and was not likely to do so for some years. The Board was, therefore, unable to recommend the proposal, as the system was believed to require a larger supply of water for its efficient working than Bellary possesses at present.

9. *Formation of towns in the vicinity of Railway Stations.*—In the year 1897, the Board was consulted by the Board of Revenue as to the rules which should be enforced in the formation of towns in the vicinity of railway stations. The Board recommended the adoption of a set of rules based on sound sanitary principles. These rules having been considered too elaborate, the Board of Revenue issued the following revised rules :—

"(1) The Collector should notify the extent of land available as building sites in the neighbourhood of such railway stations as he may select for the purpose and the maximum and minimum size of plots that may be applied for. The extent notified should be exclusive of such space as the railway authority concerned may desire to reserve for the future requirements of the railway.

"(2) A rough plan of the space available should be drawn up by the Collector in communication with the District Medical and Sanitary Officer. In case there is sufficient space for laying out a new town, the plan should show the proposed alignment of streets, lanes and side drains, the source of water-supply, the location of sites for rubbish depots and burning and burial grounds, and any land to be reserved for public and communal purposes. The services of the establishment of the District Board Engineer should be utilized for the preparation of the plan which should be approved by the Presidents of the Local Boards concerned. A copy of the plan should be forwarded to the Sanitary Board.

"(3) Houses should be divided as in the rules contained in Standing Order No. 37 into 'thatched' and 'tiled or terraced,' and application for, as well as

assignments of, house-sites should be made in accordance with Part II of Standing Order No. 37, headed 'In Towns.'

"(4) The Collector may restrict applicants for thatched houses to particular parts of the proposed town and may require any applicant to execute a subsidiary agreement such as that contemplated in paragraph 15 of Standing Order No. 37 regarding the following matters: the provision of facilities for drainage, the alignment of the house-front with the line of street as indicated in the plan, the provision of access at the rear for scavengers, &c.

"(5) Plots may be divided into first and second class according to their position, business advantages and other conveniences.

"(6) All plots of the same class should be of uniform size, and the houses built thereon should conform to such dimensions as may be prescribed by the Collector in accordance with the requirements and usages of each locality.

"(7) The sub-division of plots and the erection of more than one house in each plot should be forbidden."

10. The following notes in connection with the building of dispensaries were issued by the Sanitary Board to be added to those already printed on type designs for dispensaries, Nos. 42, 63 and 64:—

"*Shelves.*—An ample supply of shelves should be provided in the drug store and in the dispensing room.

"*Protection from theft.*—The windows in the drug store room should be well protected.

"*Drains.*—The drains from the sinks in the dispensing and dressing rooms should be open so as to be easily cleaned, or made of stone-ware or iron pipes which could be flushed. Provision should be made for carrying off rain water or the water from the above drains.

"*Dispensing room.*—The windows of this room should be provided with serving shelves both on the in and outside and be partially closed like the ticket office in a railway station.

"*Dressing rooms.*—The windows of these rooms should be arranged, so that people from the outside cannot see in.

"*Designation boards.*—Each room should be provided with one.

"*Fences and paths.*—In most cases a fence should be made round the site, and the necessary paths and planting of trees should be provided for in the estimates.

"*Hospital Assistant's Quarters.*—It is most desirable that quarters for the medical subordinate should be provided at or near the dispensary.

"*Quarters of Servants.*—It is most desirable that quarters for, at least, one menial servant should be provided, so that he may act as caretaker."

11. *An addition to the rules of the Sanitary Board.*—The following addition was made to No. 7 of the rules for conducting the business of the Sanitary Board:—

"If a Local Board or a Municipal Council or other authority objects for financial or other reasons to adopt a design or an estimate prescribed by the Sanitary Board, it shall apply to Government for orders in the proper department."

12. Rule 16 of the rules of the Sanitary Board having been found to be inconvenient, the Board in consultation with the Sanitary Engineer and the Sanitary Commissioner submitted for the approval of Government the following amended rule :—

"(1) All plans and estimates for works of a sanitary nature, costing Rs. 5,000 or less, shall be prepared by local bodies in consultation, in all matters of importance, with the District Medical and Sanitary Officer.

"(2) In the case of District and Taluk Boards, they shall be signed or countersigned by the District Board Engineer in token of their accuracy in all respects.

"(3) In the case of Municipalities possessing an Engineer officer, they shall be prepared and signed by that officer.

"(4) In the case of Municipalities which do not possess an Engineer officer, they shall be sent for scrutiny and countersignature either to the District Board Engineer or to the Executive Engineer of the Public Works Department division, the Municipality paying the prescribed fee.

"(5) Plans and estimates costing upwards of Rs. 5,000 shall be prepared by the Sanitary Engineer.

"(6) Plans and estimates and reports prepared either by local bodies or the Sanitary Engineer shall be sent to the Sanitary Commissioner, who will note his opinion thereon on sanitary grounds only, and forward them to the Sanitary Board for its decision and issue of instructions by it to the Sanitary Engineer, or return them to the Sanitary Engineer direct, as he may think expedient in each case.

"(7) The Sanitary Engineer will then scrutinize and complete in the form finally decided upon all plans and estimates and forward them to the Sanitary Board which will consider them, either in meeting or by circulation of the correspondence, and after approval or amendment return them to the local bodies concerned, who will deal with them in accordance with the rules which may be in force from time to time.

"*Note.*—Nothing in this rule shall prevent local bodies from preparing estimates on standard plans to any amount. They may also prepare plans and estimates, exceeding Rs. 5,000, if the component parts are of similar design, *e.g.*, a market with three similar sheds costing, say, Rs. 1,700 each."

13. *Type designs.*—The Board's type designs of buildings are apparently found of use beyond the limits of the Madras Presidency, as applications for them have been received from foreign sources, *e.g.*, the Government of Burma and Native States. Many of them, however, have been found too expensive for the minor local bodies of the Presidency, and the Sanitary Board is now arranging for the preparation of cheaper designs for various buildings.

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

No. 80.—Quarters for Civil Hospital Assistants.
" 81.—Dispensary (permanent).
" 82.—Sheep slaughter-house.
" 83.—Dispensary (semi-permanent) for minor towns and villages, together with a key plan showing position of dispensary and hospital wards, kitchen and latrine.
" 84.—Open street drains.
" 85.—Sheep slaughter-house.

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

(1) Cheap design for lying-in ward.
(2) Cheap design for mortuary.
(3) Rural hospital.

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

21*st April* 1900.

APPENDIX.

STATEMENT OF ESTIMATES FOR SANITARY WORKS SCRUTINISED BY THE SANITARY BOARD DURING THE YEAR 1899.

APPENDIX.

Statement of estimates for sanitary works scrutinised by the Sanitary Board during the year 1899.

Locality.	Local body. M. = Municipality. D.B. = District Board. T.B. = Taluk Board.	Description of work.	Amount of estimate.	Proceedings of the Sanitary Board. Number.	Proceedings of the Sanitary Board. Date.	Remarks.
			Rs. A. P.			
Ambadipudi	Narasaraopet (T.B.) ...	Repairing a well	415 0 0	1/S.	2nd January 1899	Approval withheld pending receipt of information regarding the approximate cost of sinking new draw wells on one of the type designs.
Santamagulur	Do. ...	Do.	410 0 0			
Do.	Do. ...	Do.	Do.	254/S.	11th May „ ...	Disapproved. Construction of new draw wells on one of the type designs, recommended, the approximate cost of which would be Rs. 775 for Ambadipudi and Rs. 540 for Santamagulur.
Silattur	Pattukkóttai (T.B.) ...	Constructing a tiled shed in the market ...	630 0 0	2/S.	3rd January „ ...	Approved subject to certain modifications.
Do.	Do. ...	Do. cylindrical well in the market.	165 0 0			
Do.	Do. ...	Do. a tiled shed in the market ...	600 0 0	236/S.	4th May „ ...	Approved.
Do.	Do. ...	Do. cylindrical well in the market.	105 0 0			
Wutukur	Masulipatam (T.B.) ...	Repairing a well	780 0 0	13/S.	6th January „ ...	Disapproved with remarks.
Sembagudi	Madura (T.B.)	Improving a drinking-water well	785 0 0	21/S.	12th „ „ ...	Approved subject to certain modifications.
Denkanikota	Hosúr (T.B.)	Constructing a semi-permanent ward on type design No. 67.	980 0 0	34/S.	2nd February „ ...	Approved.
Wandiwash	Arni (T.B.) ... „	Converting a portion of the Old Taluk Cutcherry into a dispensary and Hospital Assistants' quarters.	1,359 0 0	44/S.	11th „ „ ...	Approved subject to certain modifications.
Kondapalli	Bezwada (T.B.)	Repairing a well	250 0 0	45/S.	11th „ „ ...	Do. do.
Cotacamund	Cotacamund (M.)	Constructing a double iron latrine in Mathanna street.	958 0 0	47/S.	11th „ „ ...	Do. do.
Inavally	Rajahmundry (T.B.) ...	Improving a drinking-water tank	7,000 0 0	54/S.	14th „ „ ...	Disapproved and certain suggestions offered for the consideration of the Taluk Board.
Kecrangudi	Negapatam (T.B.) ...	Improving the Iswaran Kovil tank ...	1,170 0 0	67/S.	21st „ „	Approval withheld till a drinking-water well on a type design has been built.
Do.	Do. ...	Sinking a drinking-water well	125 0 0			
Kanamalacheruvu ...	Narasaraopet (T.B.) ...	Constructing a draw well for Panchamas ...	360 0 0	68/S.	23rd „ „ ...	Approved.
Bezwada	Kistna (D.B.)	Constructing an hospital	1,03,000 0 0	75/S.	25th „ „ ...	Detailed estimates with plans called for.
Do.	Do.	Do.	1,03,000 0 0	301/S.	20th July „ ...	Recommended to adopt the Sanitary Board's semi-permanent design which will probably cost no more than Rs. 65,000.
Appapuram	Narasaraopet (T.B.) ...	Repairing a well	942 0 0	76/S.	28th February „ ...	Approval withheld pending receipt of certain information from the Taluk Board.
Dattavaripalem hamlet of Tsharlapalli.	Do. ...	Improving a well	750 0 0	77/S.	28th „ „	Approved with remarks.
Aracativamula	Proddatur (T.B.) ...	Repairing and deepening the Mala's well ...	750 0 0	84/S.	4th March 1899 ...	Disapproved and recommended to adopt a type design.
Trichinopoly	Trichinopoly (M.) ...	Extending pipe lines to Varaganeri Agraharam.	969 14 4	94/S.	6th „ „ ...	Approved with remarks.
Madanapalle	Madanapalle (T.B.) ...	Deepening and widening the well in the compound of the Local Fund Hospital.	340 0 0	103/S.	11th „ „ ...	Do.
Amalapur	Rajahmundry (T.B.) ...	Repairing the Gorigunta tank	660 0 0	104/S.	14th „ „ ...	Do.
Kavali	Nellore (T.B.)	Constructing a mortuary and *post-mortem* room on type design No. 57.	1,570 0 0	115/S.	17th „ „ ...	Approved.
Proddatur	Proddatur (T.B.)	Improving the labour ward attached to the Local Fund Hospital	300 0 0	117/S.	17th „ „ ...	Approved with remarks.
Longlypet, Yercaud ...	Salem (D.B.)	Constructing a slaughter-house	450 0 0	122/S.	18th „ „ ...	Approved subject to modifications.
Tirukkóyilúr	Tirukkóyilúr (T.B.) ...	Whitewashing and cementing the floor of the Local Fund Hospital.	205 0 0	135/S.	24th „ „ ...	Approved with remarks.
Hosúr	Hosúr (T.B.)	Sinking a well for washing purposes in the Tailor's street.	280 0 0	136/S.	24th „ „ ...	Approved.
Nachiarkovil	Kumbakónam (T.B.) ...	Repairing the temple tank	4,850 0 0	151/S.	5th April „ ...	Disapproved, the water of the tank being unfit for human consumption.
Bezwada	Bezwada (M.)	Water-supply scheme	3,75,400 0 0	165/S.	13th „ „ ...	The scheme prepared by the Sanitary Engineer submitted to Government, with the suggestion that it should be revised and amended.
Do.	Do.	Water-supply scheme (revised)	3,16,100 0 0	634/S.	4th December „ ...	Approved and submitted to Government.
Trichinopoly	Trichinopoly (M.) ...	Laying two lines of pipes for the extension of the Trichinopoly water works.	21,420 0 0	219/S.	24th April „ ...	Submitted to Government that an experiment should be made on the lines suggested by the Acting Chief Engineer.
Tuticorin	Tuticorin (M.)	Improving the water-supply	1,00,000 0 0	221/S.	27th „ „ ...	The proposals of the President, Sanitary Board, recommended to Government.
Calingapatam	Ganjám (D.B.)	Purchasing some building to be used as a dispensary.	.....	229/S.	27th „ „ ...	Approved with remarks.
Mallur	Salem (D.B.)	Constructing a shed in the market	750 0 0	232/S.	2nd May „ ...	Approved.
Malayampoliem	Do.	Constructing a market shed in accordance with type design No. 40. (III.)	1,300 0 0	237/S.	4th „ „ ...	Approved, and the remarks of the Sanitary Commissioner and the Sanitary Engineer communicated to the District Board.
Chilamur	Guntúr (T.B.)	Sinking a well	720 0 0	241/S.	6th „ „ ...	Approved subject to modifications.
Epur			594 0 0			Approved with remarks.
Surayapalam hamlet of Gollapudi.	Bezwada (T.B.)	Improving a well	470 0 0	242/S.	6th „ „ ...	
Ramachendrapuram ...	Ramachendrapuram (T.B.)	Constructing a single seated latrine in the School.	225 0 0	243/S.	6th „ „ ...	Approved, and the suggestions of the Sanitary Commissioner and the Sanitary Engineer communicated to the Taluk Board.
Ramachandrapuram and Passalapadi.	Do.	Constructing corrugated iron latrines ...	500 0 0	244/S.	6th „ „ ...	Disapproved. Recommended to adopt type design No. 12.
Kokarkulam in Kilavieraghavapuram union.	Tinnevelly (T.B.)	Sinking a well	385 0 0	249/S.	11th „ „ ...	Disapproved and recommended to adopt one of the Sanitary Board's type plans.
Do.	Do.	Sinking a circular open built well	490 0 0	568/S.	26th October „ ...	Approved with remarks.
Amalapur	Rajahmundry (T.B.) ...	Repairing the Local Fund Hospital ...	400 0 0	250/S.	11th May „ ...	Disapproved with remarks.
Do.	Do. ...	Do.	300 0 0	442/S.	24th August „ ...	Approved.
Angadipuram	Malapuram (T.B.)	Constructing an hospital ward with Dispensary and out-houses.	3,190 0 0	251/S.	11th May „ ...	Disapproved with remarks.

Statement of estimates for sanitary works scrutinised by the Sanitary Board during the year 1899—continued.

Locality.	Local body. (M. = Municipality. D.B. = District Board. T.B. = Taluk Board.)	Description of work.	Amount of estimate.	Proceedings of the Sanitary Board. Number.	Date.	Remarks.
			Rs. A. P.			
Walajabad	Chingleput (T.B.) ...	Constructing a corrugated iron latrine in accordance with type design No. 12, circulated with G.O., No. 462 M., dated 5th April 1893.	220 0 0	252/S.	11th May 1899 ...	Returned to be resubmitted with certain information.
Do.	Do. ...	Do. do.	220 0 0	512/S.	23rd September „ ...	Approved with remarks.
Bellary	Bellary (M.)	(1) Removing silt and deepening the Nallacheruvu tank.	2,500 0 0	253/S.	11th May „ ...	(1) Approval withheld.
Do.	Do.	(2) Removing silt from the Fort Ditch ...	6,500 0 0			(2) Approved.
Nesladripuram	Ellore (T.B.)	Constructing a well at Neeladripuram in the Yernagudem Taluk.	2,080 0 0	255/S.	11th „ „ ...	Approved subject to modifications.
Trichinopoly	Trichinopoly (M.) ...	Repairing and altering the existing wells, Trichinopoly water works.	1,960 0 0	283/S.	1st June „ ...	The estimates submitted by the sanitary Engineer, approved.
Calicut	Calicut (M.)	Forming Christian and Parsee burial-grounds at the Old Elephant lines.	3,094 2 3	301/S.	12th „ „ ...	Approved subject to modifications.
Palghat	Palghat (M.)	(1) Constructing a screen wall on the western side of Muthumonthai burial-ground.	530 0 0	303/S.	12th „ „ ...	Approved.
Do.	Do.	(2) Chunam pointing the wall	54 0 0			
Velchoor	Narasaraopet (T.B.) ...	Improving the Nagaraju Bhavi (a well) in the bed of the irrigation tank.	800 0 0	312/S.	17th „ „ ...	Disapproved. Recommended to adopt Norton's tube wells.
Ootacamund	Ootacamund (M.)	The bazaar drainage scheme	1,36,148 0 0	314/S.	17th „ „ ...	Submitted to Government with the approval of the Sanitary Board, the scheme prepared by the Sanitary Engineer.
Daggupadu	Guntúr (T.B.)	Repairing a tank	750 0 0	316/S.	21st „ „ ...	Approved with remarks.
Ootacamund	Ootacamund (M.)	Constructing a market for the sale of inferior meat below the slaughter-house.	2,765 0 0	326/S.	29th „ „ ...	Returned for resubmission with information as to the stalls, levels, &c.
Do.	Do.	Do. do.	2,765 0 0	430/S.	17th August „ ...	Returned for revision.
Do.	Do.	Constructing a latrine in Manual Pillay street.	535 0 0	329/S.	30th June „ ...	Disapproved. Recommended to adopt type design No. 76, omitting 2 seats, if thought desirable.
Do.	Do.	Do. do.	535 0 0	501/S.	19th September „ ...	Disapproved and the Sanitary Engineer requested to adopt the original plans to suit the sanitary requirements.
Molaviraraghavapuram ...	Tinnevelly (T.B.)	Sinking a well for the Muhammadan chatrum.	385 0 0	350/S.	18th July „ ...	Approved subject to alterations.
Do. ...	Do.	Do. do.	485 0 0	626/S.	28th November „ ...	Approved with remarks.
Pippara	Ellore (T.B.)	Constructing a draw well to the drinking-water tank.	500 0 0	353/S.	18th July „ ...	Do.
Hirudiapuram	Trichinopoly (M.)	Extending the water-supply in pipes to Hirudiapuram.	422 5 0	354/S.	18th „ „ ...	Approved.
Do.	Do.	Constructing a tap fountain.	19 5 3	354/S.	18th „ „ ...	Do.
Gódávari District ...	Gódávari (D.B.)	Cheap design prepared by the District Medical and Sanitary Officer for a village Hospital consisting of two wards one to hold 4 males and the other 2 females.	.....	358/S.	20th „ „ ...	Disapproved with remarks.
Cocanada	Godavari (D.B.)	Constructing a dispensary for women and children with apothecary's quarters, based on type design No. 26.	13,150 0 0	359/S.	20th „ „ ...	Approved and submitted for the sanction of Government.
Madura	Madura (M.)	Extending the Hospital by constructing a new dispensary on type design No. 63.	.....	362/S.	21st „ „ ...	The site plan approved and the estimates for the proposed extension awaited.
Yadiki	Gooty (T.B.)	The site for the new burial ground for Muhammadans.	.....	382/S.	27th „ „ ...	Approved.
Ootacamund	Ootacamund (M.) ...	Filtering the Marlimund water by means of Anderson's Rollers.	68,307 0 0	389/S.	28th „ „ ...	Submitted to Government with remarks.
Rajahmundry	Rajahmundry (M.) ...	Constructing a tiled shed to serve as a vegetable stall in the market near Chinna Nagula tank.	520 0 0	391/S.	2nd August „ ...	Approved subject to modifications.
Koilkuntla Taluk ...	Nandyal (T.B.) ...	Improving a draw well for the Christians of Nossam.	610 0 0	392/S.	2nd „ „ ...	Do. do.
Komaragiripatnam ...	Rajahmundry (T.B.) ...	Sinking a drinking-water well	310 0 0	393/S.	2nd „ „ ...	Approved with remarks, the work having been already executed.
Trichinopoly	Trichinopoly (M.) ...	Reconstructing the fallen portion of the Western retaining wall of the Shanian tank in the sixth ward.	500 0 0	397/S.	2nd „ „ ...	Approved.
Cuddapah	Cuddapah (M.) ...	Extending the infiltration gallery to augment the water-supply.	1,600 0 0	402/S.	5th „ „ ...	Returned with remarks, the estimate having been already approved.
Omalur	Salem (T.B.)	Constructing a compound wall round the Local Fund Dispensary.	250 0 0	409/S.	10th „ „ ...	Approved.
Narsapur	Narsapur (T.B.) ...	Constructing a fish-stall	840 0 0	410/S.	10th „ „ ...	Approved subject to modifications.
Trichinopoly	Trichinopoly (M.) ...	Extending the water-supply in pipes to Chinnakammala street.	580 3 3	411/S.	10th „ „ ...	Approved.
Do.	Do. ...	Constructing three tap fountains	60 0 0			
Pakala	North Arcot (D.B.) ...	Constructing a well on type design No. 16...	885 0 0	412/S.	10th „ „ ...	Approved with remarks.
Krishnagiri	Hosur (T.B.)	Constructing a slaughter-house	360 0 0	413/S.	10th „ „ ...	Disapproved. Recommended to adopt type design No. 82.
Do.	Do.	Constructing a slaughter-house based on type design No. 82.	620 0 0	611/S.	17th November „ ...	Approved.
Guntúr	Guntúr (M.)	Water-supply scheme	5,13,400 0 0	431/S.	17th August „ ...	Submitted to Government with remarks the scheme prepared by the Sanitary Engineer.
Do.	Do.	Digging a trench across the Yengalapalliem Valley at the foot of the Kondavidu Hills for testing the yield of sub-soil water.	17,300 0 0	534/S.	2nd October „ ...	The scheme already submitted to Government approved with remarks.
Nellyady	Puttur (T.B.)	Sinking a well	290 0 0	441/S.	24th August „ ...	Recommended to revise the design in accordance with the remarks of the Sanitary Commissioner and the Sanitary Engineer.
Kadaba	Do.	Do.	324 0 0			
Gollalamamidada ...	Rajahmundry (T.B.) ...	Constructing two market sheds on type design No. 70.	1,794 0 0	443/S.	24th „ „ ...	Approved.
Ootacamund	Ootacamund (M.) ...	Erecting an Out-patient's Dispensary for the St. Bartholomew's Hospital.	6,500 0 0	451/S.	26th „ „ ...	The revised estimate approved and submitted to Government.

Statement of estimates for sanitary works scrutinized by the Sanitary Board during the year 1899—continued.

Locality.	Local body. (M. = Municipality. D.B. = District Board. T.B. = Taluk Board.)	Description of work.	Amount of estimate.	Proceedings of the Sanitary Board. Number.	Proceedings of the Sanitary Board. Date.	Remarks.
			Rs. A. P.			
Narsapur	Narsapur (T.B.) ...	Improving Rammgundum tank and constructing five dip wells in it.	5,385 0 0	468/S.	2nd September 1899 ...	Approved with remarks.
Peddapur	Cocanada (T.B.)	Constructing a latrine	320 0 0	468/S.	8th „ „ ...	Disapproved, recommended to adopt one of the type designs enlarged, if necessary.
Palghat	Palghat (M.)	Sinking a well in the bed of the Kundukulam tank.	332 0 0	469/S.	8th „ „ ...	Recommended to select a better site.
Do.	Do.	Filling up the Kundukulam tank ...	210 0 0	612/S.	17th November „ ...	Approved.
Jammalamadugu ...	Proddatur (T.B.)	Constructing a slaughter-house at the Local Fund Dispensary.	447 0 0	470/S.	8th September „ ...	Disapproved, recommended to adopt type design No. 82, shortened by two bays.
Tirupati	North Arcot (D.B.) ...	Constructing a masonry latrine to the Lying-in Hospital, *on type design No. 10.* (One of the earlier designs.)	260 0 0	482/S.	13th „ „ ...	Approved if the District Board could not afford to adopt type design No. 77, built with brick instead of corrugated iron.
Proddatur	Proddatur (T.B.)	Constructing a dead-house to the Local Fund Hospital.	321 0 0	487/S.	15th „ „ ...	Approved subject to the modifications suggested by the Sanitary Commissioner and the Sanitary Engineer.
Mori	Narsapur (T.B.)	Repairing and improving the drinking-water tank and sinking three dip wells.	2,020 0 0	497/S.	15th „ „ ...	Approved with remarks.
Tirupati	Ranipettai (T.B.) ...	Constructing drains round the Lying-in Hospital and a cistern to the kitchen, and plastering the floor of the kitchen with cement.	335 0 0	539/S.	6th October „ ...	Do.
Seruvaviduthi	Pattukkottai (T.B.) ...	Constructing a shed to store goods in the market.	500 0 0	540/S.	6th „ „ ...	Do.
Trichinopoly	Trichinopoly (M.)	Laying pipes to Kandy street in the first ward.	512 10 9	541/S.	6th „ „ ...	Approved.
Palni	Palni (M.)	Constructing a market	.....	543/S.	7th „ „ ...	Returned for revision.
Do.	Do.	Repairing the drains in Periya Kadai Street.	230 0 0			
Jangamahoswarapuram ...	Narasaraopet (T.B.) ...	Constructing a draw well for Mala Christians.	340 0 0	565/S.	26th „ „ ...	Approved subject to amendment.
Dharmavaram	Penukonda (T.B.) ...	Repairing the Local Fund dispensary and out-houses.	325 0 0	567/S.	26th „ „ ...	Approved subject to modification.
Bhimanapalli	Rajahmundry (T.B.) ...	Constructing market sheds at four villages.	17,040 0 0	572/S.	30th „ „ ...	Submitted with remarks for the sanction of Government.
Konkapalli						
Kettavur						
Kattavikota						
Ariyalur	Ariyalur (T.B.) ...	Repairing the surplus calingulah, supply channel and the inlet of the good water tank.	620 0 0	574/S.	30th „ „ ...	Approved.
Nuttam	Melur (T.B.) ...	Constructing stalls in the market compound.	1,190 0 0	576/S.	30th „ „ ...	Approved subject to modification.
Coonoor	Coonoor (M.) ...	Constructing an infectious ward for the Municipal Hospital.	1,450 0 0	585/S.	1st November „ ...	Approved subject to modifications.
Thirukkattupalli	Tanjore (T.B.) ...	Constructing an out-door dispensary ...	3,665 0 0	605/S.	14th „ „ ...	Disapproved, recommended to adopt type design No. 81.
Krishnagiri	Hosur (T.B.) ...	Repairing the Alagiah's well	300 0 0	607/S.	16th „ „ ...	Approved, if funds cannot permit the adoption of type design No. 29 or 30.
Mettupalayam	Coimbatore (T.B.) ...	Sites for the Hindu and Muhammadan burial grounds.	.....	621/S.	21st „ „ ...	Approved with remarks.
The Fort at Kampli Union.	Hospet (T.B.) ...	Constructing two latrines, one for males and the other for females.	921 2 0	623/S.	1st December „ ...	Disapproved with remarks.
Tenkasi	Shermadevi (T.B.) ...	Constructing a dispensary	3,552 0 0	630/S.	1st „ „ ...	Approved subject to modification.
Melur	District Magistrate, Madura.	Constructing a dead-house	373 0 0	632/S.	1st „ „ ...	Disapproved and the Sanitary Engineer requested to design a mortuary to cost not more than Rs. 400.
Coimbatore	Coimbatore (M.)	Constructing a bullock slaughter-house ...	620 0 0	647/S.	11th „ „ ...	Disapproved, recommended to adopt type design No. 25 with modifications.
Periyakulam	Periyakulam (M.) ...	Water-supply scheme	1,47,300 0 0	652/S.	15th „ „ ...	The Sanitary Engineer's proposal for a partial scheme, submitted to Government.
Thirumangalam	Narasaraopet (T.B.) ...	Constructing a well	535 0 0	662/S.	21st „ „ ...	Approved.
		Grand Total ...	19,33,125 11 4			

	No.
Municipal estimates	24
Do. prepared by the Sanitary Engineer.	10
District Board estimates	9
Taluk do.	70
The District Magistrate of Madura	1
Total ...	114

PART I.

GENERAL SANITATION.

THIRTY-SIXTH ANNUAL REPORT

OF THE

SANITARY COMMISSIONER FOR MADRAS,

1899.

SECTION V.

GENERAL POPULATION.

RAINFALL.

1. The total average annual rainfall in the Presidency during the ten years ending 1896 was 45·72 inches. The total received during 1899 was 21·92 per cent. below this. There was but one district, Bellary, which received an excess over the average of the south-west monsoon, and this but to the extent of ·21 per cent.; in all other districts there was a decrease, which amounted in Madura, Tanjore, Cuddapah, Kistna, North Arcot, Kurnool and Gódávari to over 35 per cent., and in South Arcot, Nellore, Nilgiris, South Canara, Chingleput, Malabar, Tinnevelly, Vizagapatam and Salem to over 25 per cent. The north-east monsoon was, however, still more markedly a failure. The average for the Presidency was 35·46 per cent. below normal. In Kurnool, Bellary and Kistna the decrease was more than 80 per cent., whilst in Gódávari, Anantapur, Salem, Nilgiris and South Canara it was over 50 per cent.

Table showing the Monthly Rainfall in Inches in the Madras Presidency during 1897, 1898 *and* 1899, *with the Average of previous ten years ending* 1896, *distributed according to Monsoon Currents.*

Groups.	Number.	Districts.	Number of places of observation.	North-East Monsoon.		Inter-Monsoon. †									
				January.*		February.		March.		April.		May.		Total.	
				Rainfall.	Days.	Rainfall.	Days.	Rainfall.	Days.	Rainfall.	Days.	Rainfall.	Days.	Rainfall.	Days.
East Coast, North.	1	Ganjám ... Average of 10 years	20	0·21	0·4	0·63	1·2	0·55	1·8	0·83	1·7	2·29	3·8	4·81	8·9
		1897		0·03	0·1	1·59	2·2	1·70	3·1	0·72	1·5	1·80	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
		1899		...	...	0·05	0·1	0·04	0·1	3·41	4·9	2·84	4·6	6·34	9·7
	2	Vizagapatam. Average of 10 years	27	0·10	0·2	0·32	0·3	0·90	1·7	1·28	2·3	2·03	3·9	4·63	8·7
		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
		1899		0·05	0·2	0·11	0·1	0·05	0·1	2·54	4·1	3·79	5·2	6·54	9·7
	3	Gódávari ... Average of 10 years	23	0·03	0·1	0·11	0·1	0·26	0·4	0·52	0·9	1·27	1·9	2·19	3·4
		1897		...	...	0·65	1·4	1·47	2·1	0·35	0·8	2·88	4·6	5·37	8·9
		1898		...	...	1·47	1·1	0·02	...	0·21	0·5	1·82	1·9	2·75	3·5
		1899		0·03	0·1	0·03	0·1	0·15	0·2	3·22	4·3	1·52	2·9	4·97	7·6
	4	Kistna ... Average of 10 years	19	0·07	0·1	0·19	0·2	0·35	0·5	0·39	0·6	0·95	1·7	1·56	3·1
		1897		0·01	...	0·80	1·4	0·65	1·1	0·81	0·3	1·54	2·8	3·26	5·1
		1898		...	...	1·13	1·3	...	...	0·24	0·5	0·85	1·9	1·22	3·2
		1899		...	...	...	...	...	...	4·35	4·9	1·12	1·7	5·50	6·6
	5	Nellore ... Average of 10 years	22	0·23	0·5	0·16	0·2	0·16	0·3	0·31	0·5	0·85	1·3	1·77	2·7
		1897		1·29	1·8	0·71	1·2	0·13	0·5	0·01	...	1·42	1·8	3·56	4·3
		1898		...	...	0·09	0·7	...	...	0·25	0·5	1·34	1·8	1·91	3·0
		1899		0·01	...	0·01	...	...	...	3·03	3·5	0·63	1·2	3·68	4·7
	6	Madras ... Average of 10 years	1	0·32	1·2	0·18	0·5	0·10	0·3	0·36	0·9	0·45	1·0	1·51	3·9
		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
		1899		0·03	...	...	...	...	...	2·73	4·0	0·93	1·0	3·69	5·0
	7	Chingleput. Average of 10 years	15	0·37	0·5	0·18	0·4	0·16	0·3	0·37	0·6	0·88	1·2	1·93	3·0
		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
		1899		0·04	0·3	0·18	0·5	0·01	0·1	4·02	5·0	1·05	1·7	5·30	7·6
	8	North Arcot. Average of 10 years	20	0·20	0·4	0·24	0·4	0·16	0·3	0·70	1·1	1·90	3·1	3·20	5·3
		1897		0·37	1·0	0·88	2·3	0·63	0·2	0·21	0·8	1·89	3·4	3·08	7·7
		1898		...	...	0·24	0·3	...	...	0·81	1·5	2·47	3·8	3·52	5·6
		1899		...	...	0·02	0·1	...	...	3·01	6·2	2·32	4·1	6·25	10·4
East Coast, South.	9	South Arcot. Average of 10 years	19	0·50	0·6	0·42	0·6	0·40	0·5	0·65	1·1	1·82	2·6	3·76	5·4
		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
		1899		0·27	0·5	0·44	0·6	0·06	0·1	4·77	6·2	2·47	3·2	7·97	10·6
	10	Trichinopoly. Average of 10 years	11	0·15	0·5	0·30	0·6	0·59	0·8	1·67	2·1	2·42	4·0	5·22	8·0
		1897		0·02	0·1	3·25	3·3	0·06	0·4	0·80	1·3	4·36	4·4	8·39	8·8
		1898		0·17	0·7	0·51	0·6	...	...	2·66	3·1	3·01	4·4	5·78	8·8
		1899		0·38	1·1	0·02	0·1	...	...	5·74	7·2	3·26	4·3	9·40	12·7
	11	Tanjore ... Average of 10 years	21	0·42	0·9	0·34	0·7	0·72	0·8	0·84	1·8	2·08	2·6	4·40	6·8
		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
		1899		0·39	1·4	0·08	0·4	0·10	0·2	6·57	6·8	2·49	2·8	9·63	11·6
South-eastern.	12	Madura ... Average of 10 years	24	0·25	0·6	0·53	0·9	1·23	1·7	2·58	3·8	1·96	3·7	6·47	10·7
		1897		0·11	0·3	5·49	3·2	0·51	0·8	2·22	3·9	2·03	2·8	8·45	11·1
		1898		0·81	1·9	0·38	1·0	0·06	0·1	2·32	3·1	2·84	4·3	6·61	10·4
		1899		0·17	0·5	0·39	0·3	0·22	0·4	9·33	10·3	0·81	1·6	10·62	13·0
	13	Tinnevelly ... Average of 10 years	19	0·38	0·6	0·76	1·3	2·00	2·8	2·53	3·9	1·22	2·8	5·61	11·5
		1897		0·14	0·5	2·88	3·1	0·33	0·4	4·61	7·1	0·77	1·5	8·76	12·4
		1898		2·58	3·2	2·18	2·9	0·32	0·6	2·08	3·0	1·01	2·2	8·15	11·4
		1899		0·73	1·6	2·42	2·1	0·37	0·8	5·42	8·0	0·71	1·0	9·05	14·0

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

† Ib. Bellow.

Groups.	Number.	Districts.	South-West Monsoon.										North-East Monsoon.								Grand Total.	
			June.		July.		August.		September.		Total.		October.		November.		December.		Total.			
			Rainfall.	Days.	Rainfall.	Days.	Rainfall.	Days.	Rainfall.	Days.	Rainfall.	Days.	Rainfall.	Days.	Rainfall.	Days.	Rainfall.	Days.	Rainfall.	Days.	Rainfall.	Days.
East Coast, North.	1	Ganjám ... Average of 10 years	5·98	3·5	8·10	11·5	8·24	13·2	7·34	11·1	29·66	44·3	7·11	7·3	4·18	3·8	0·16	0·4	11·44	11·5	40·21	64·7
		1897	4·35	0·3	7·51	12·1	9·73	14·0	13·95	10·4	35·57	49·7	12·48	10·0	3·18	3·3	0·16	0·1	15·82	13·4	60·79	66·7
		1898	8·53	10·2	11·13	13·6	5·62	10·6	6·71	8·8	31·79	43·3	9·24	5·6	1·14	1·8	0·15	0·3	10·53	7·9	45·79	58·9
		1899	4·46	9·0	7·65	10·8	8·51	12·4	5·69	8·1	26·31	59·3	10·68	4·1	...	...	0·03	0·1	10·71	4·2	43·86	53·2
	2	Vizagapatam. Average of 10 years	6·82	9·7	9·16	12·9	9·44	13·0	8·81	12·1	34·23	47·7	6·14	6·7	2·38	3·4	0·14	0·3	8·61	10·4	47·47	66·9
		1897	3·75	5·9	7·69	15·1	9·78	14·0	13·05	16·0	34·78	49·6	8·99	8·3	2·01	3·0	0·01	0·1	11·01	11·4	62·51	71·7
		1898	7·38	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
		1899	4·30	7·4	5·61	10·1	8·76	12·9	6·58	8·3	25·25	38·7	4·97	3·4	0·08	0·1	...	...	5·05	3·5	36·84	51·9
	3	Gódávari ... Average of 10 years	5·34	6·7	7·21	10·2	6·76	10·3	7·00	9·3	26·10	35·5	7·66	7·3	3·86	3·4	0·12	0·2	11·64	10·9	40·23	49·8
		1897	2·46	3·0	6·26	12·1	10·73	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	5·45	9·5	10·38	11·0	4·84	7·8	6·41	8·4	27·08	36·7	5·80	7·1	8·13	4·2	0·02	0·1	13·95	11·4	43·09	48·6
		1899	2·36	5·1	2·46	3·1	5·54	9·4	5·76	7·8	16·62	25·7	2·74	4·2	...	...	0·04	...	2·78	4·2	24·37	37·5
	4	Kistna ... Average of 10 years	4·37	6·5	5·75	9·1	5·63	9·6	6·20	8·7	21·95	33·9	5·28	7·2	3·48	4·1	0·06	0·2	9·52	11·5	33·35	48·5
		1897	2·40	3·4	5·13	10·7	7·07	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	3·89	6·9	7·45	11·0	3·86	6·5	4·89	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
		1899	1·39	3·7	2·40	3·9	4·88	10·0	4·83	7·5	13·50	25·0	1·09	2·5	...	...	...	...	1·09	2·5	20·09	53·5
East Coast, Central.	5	Nellore ... Average of 10 years	1·70	3·6	2·50	5·4	3·13	6·4	4·11	6·4	11·74	21·8	8·39	8·5	8·41	7·7	2·27	2·8	19·07	19·0	32·58	43·3
		1897	1·44	2·3	2·58	6·1	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	1·00	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
		1899	0·73	1·9	0·84	1·8	2·51	4·1	3·70	5·8	7·78	13·6	13·08	10·2	1·00	1·5	0·05	0·1	14·13	11·8	25·39	30·1
	6	Madras ... Average of 10 years	1·91	0·8	4·36	12·5	5·92	13·6	4·66	9·7	16·85	42·6	11·14	12·4	12·01	14·0	6·63	7·8	29·78	34·2	48·17	80·7
		1897	3·21	5·0	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	2·09	5·0	3·40	10·0	7·15	9·6	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
		1899	0·52	2·0	4·14	4·0	2·52	4·0	5·94	5·0	13·12	15·0	22·29	16·0	1·30	3·0	0·49	1·0	24·08	20·0	41·00	40·0
	7	Chingleput. Average of 10 years	2·42	4·2	3·73	7·0	5·96	9·1	5·15	7·2	17·26	27·5	8·97	9·1	10·65	10·0	5·65	5·2	25·27	24·3	44·49	54·8
		1897	1·57	2·9	3·02	5·0	6·80	9·8	9·90	10·9	21·29	33·6	2·57	2·8	5·37	6·3	1·66	3·3	9·63	12·4	33·20	45·2
		1898	2·23	4·2	3·81	7·9	4·36	8·0	7·11	8·3	18·10	28·1	17·56	14·9	19·57	13·8	9·02	5·9	46·39	34·6	65·29	64·5
		1899	0·82	1·5	3·41	4·3	3·08	5·5	4·61	7·0	11·96	18·6	15·36	14·1	1·95	3·0	1·03	1·1	21·34	18·2	38·60	44·4
	8	North Arcot. Average of 10 years	3·11	4·9	3·20	5·5	4·69	7·4	5·80	7·2	16·80	25·0	7·27	8·7	5·76	7·0	3·28	3·7	16·31	19·4	36·41	49·7
		1897	1·96	3·6	2·95	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	1·55	2·7	2·17	5·2	4·58	6·6	9·48	9·3	18·03	23·8	5·90	10·3	14·79	13·1	4·55	4·3	25·54	27·9	47·14	57·3
		1899	0·78	2·2	1·09	2·3	2·37	4·2	6·22	9·5	10·46	18·7	7·63	9·5	0·49	0·9	0·82	1·2	8·94	11·9	25·08	41·0
East Coast, South.	9	South Arcot. Average of 10 years	2·11	3·8	3·47	5·4	5·48	8·2	5·05	6·9	16·71	24·3	9·08	9·5	8·39	9·6	5·86	5·4	23·32	24·5	43·82	54·2
		1897	2·32	2·9	3·34	4·7	9·33	12·2	8·21	10·7	22·20	30·5	5·14	5·3	3·87	5·2	1·24	3·2	10·25	13·6	37·32	51·2
		1898	1·81	3·2	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
		1899	0·83	1·7	2·01	3·7	2·92	5·8	5·28	7·0	11·07	18·2	17·29	11·8	3·42	4·4	1·89	1·7	21·60	17·9	40·64	46·7
	10	Trichinopoly. Average of 10 years	1·63	2·7	1·72	2·8	4·22	6·2	4·28	6·2	11·85	17·9	3·27	11·0	5·23	8·2	3·23	4·0	16·72	24·1	33·79	50·0
		1897	2·31	3·8	0·80	1·3	3·35	7·3	13·02	12·9	21·57	25·8	4·30	4·5	3·01	5·2	0·39	1·2	7·79	11·0	37·95	45·4
		1898	0·27	0·7	0·68	1·4	4·70	9·4	5·64	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
		1899	0·44	0·9	1·01	1·4	1·78	2·6	5·75	6·7	8·99	11·6	6·95	10·0	1·03	2·3	1·58	2·6	9·56	14·9	27·94	39·2
	11	Tanjore ... Average of 10 years	1·67	2·7	2·58	4·1	4·50	7·1	3·68	5·5	12·73	19·7	9·07	11·2	10·28	11·5	8·64	8·6	27·99	31·3	45·12	57·8
		1897	1·09	2·0	0·97	1·9	5·46	8·0	8·90	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	0·95	2·1	1·37	3·3	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	59·89	65·9
		1899	0·51	1·4	0·73	1·5	1·53	2·6	4·58	5·5	7·36	11·0	18·86	10·6	5·78	7·0	2·51	3·3	27·15	20·9	44·14	48·5
South-eastern.	12	Madura ... Average of 10 years	1·41	3·6	1·30	2·7	2·34	4·3	2·56	4·5	7·61	14·3	8·53	10·8	5·86	8·2	3·74	5·4	18·13	24·4	32·21	49·4
		1897	1·28	3·0	0·70	1·9	3·97	6·8	6·85	8·3	12·80	20·9	3·14	4·7	4·56	5·0	0·89	2·5	8·59	12·8	29·55	43·8
		1898	0·91	1·5	0·78	1·5	1·51	3·0	6·55	9·3	9·75	15·6	10·89	10·3	8·96	11·2	5·18	8·3	25·01	23·2	41·37	59·3
		1899	0·21	0·6	0·58	1·3	0·83	1·6	2·45	4·0	4·07	8·1	9·13	9·5	2·54	5·0	1·07	2·2	12·79	16·7	27·08	37·8
	13	Tinnevelly ... Average of 10 years	0·73	2·0	0·55	1·6	0·66	1·6	1·11	2·3	3·07	7·5	7·50	10·3	6·57	8·9	4·13	5·4	18·20	24·6	28·18	42·4
		1897	1·77	4·0	0·57	1·8	1·73	3·2	2·33	4·7	6·80	13·7	3·65	5·0	5·12	6·3	0·82	1·3	9·59	13·2	24·74	39·8
		1898	0·59	1·0	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	6·0	20·29	29·9	31·07	48·1
		1899	0·53	1·4	0·69	1·3	0·39	0·7	0·65	1·4	2·26	4·8	7·88	10·2	3·27	5·1	0·93	1·6	12·08	16·9	23·97	35·7

as the report deals with the calendar year, its inclusion under the "Inter-monsoon" period is unavoidable.

Table showing the Monthly Rainfall in Inches in the Madras Presidency during 1897, 1898 and 1899

Groups.	Number.	Districts.	Number of places of observation.	North-East Monsoon.		Inter-Monsoon. †									
				January.*		February.		March.		April.		May.		Total.	
				Rainfall.	Days.	Rainfall.	Days.	Rainfall.	Days.	Rainfall.	Days.	Rainfall.	Days.	Rainfall.	Days.
South-western.	14	Nilgiris ... Average of 10 years	11	0·46	1·0	1·44	1·6	2·01	3·0	3·81	8·0	4·67	10·0	12·39	23·6
		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
		1899		...	...	1·15	1·3	0·02	0·1	10·84	14·7	3·12	6·0	15·13	22·1
	15	South Canara. Average of 10 years	9	0·02	...	0·10	0·1	0·16	0·4	2·21	4·1	5·83	7·8	8·32	12·4
		1897		0·06	0·1	...	...	1·85	3·0	3·77	5·1	5·68	8·2		9·6
		1898		...	...	0·03	0·1	0·06	0·3	2·32	3·9	3·22	5·3	5·63	
		1899		...	...	...	...	0·10	0·3	9·96	10·7	5·74	6·9	15·80	17·9
	16	Malabar ... Average of 10 years	16	0·09	0·1	0·28	0·6	1·11	1·9	4·58	7·3	7·00	9·7	13·06	19·6
		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
		1899		0·12	0·2	0·42	0·4	0·25	0·3	13·69	14·3	5·42	8·6	19·00	23·8
South Midland.	17	Salem ... Average of 10 years	22	0·10	0·2	0·32	0·6	0·42	0·8	1·52	2·9	3·48	5·9	5·84	10·4
		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	10·5
		1899		...	...	0·01	...	...	...	4·03	6·3	4·49	5·2	8·53	11·5
	18	Coimbatore. Average of 10 years	17	0·08	0·2	0·41	0·7	0·79	1·2	2·66	3·8	2·89	5·1	6·83	11·0
		1897		...	...	1·53	3·2	0·33	0·9	1·93	2·8	4·42	6·9	7·66	13·3
		1898		0·05	0·2	0·76	1·2	0·03	0·2	2·40	3·2	3·31	5·9	6·55	10·7
		1899		...	...	0·23	0·4	...	...	5·06	8·5	1·79	3·2	7·08	12·1
	19	Kurnool ... Average of 10 years	12	0·04	0·1	0·02	0·1	0·28	0·5	0·68	1·4	0·91	2·3	1·91	4·3
		1897		0·06	0·2	0·12	0·5	0·14	0·1	0·56	1·0	1·53	2·7	2·41	4·6
		1898		...	...	0·32	0·6	0·09	0·1	1·27	1·9	0·88	1·8	2·56	4·4
		1899		...	...	...	...	0·08	0·3	1·72	3·7	1·23	2·0	3·03	6·0
	20	Cuddapah ... Average of 10 years	14	0·12	0·1	0·12	0·2	0·10	0·3	0·49	1·0	1·23	2·5	2·06	4·1
		1897		0·12	0·3	0·14	0·3	0·09	0·4	...	...	1·17	2·2	1·52	3·2
		1898		...	...	0·01	0·1	...	...	1·83	1·7	1·31	1·9	3·15	3·7
		1899		...	...	...	...	...	...	2·47	4·3	2·01	2·3	4·48	6·6
	21	Bellary ... Average of 10 years	11	0·01	...	0·08	0·1	0·28	0·5	0·87	2·1	1·71	3·2	2	5·9
		1897		...	...	0·01	...	0·06	0·1	0·98	2·2	1·88	3·7	2·93	6·0
		1898		...	...	0·01	0·1	0·06	0·3	1·85	2·7	2·08	3·5	4·00	6·6
		1899		...	...	...	...	0·10	0·4	2·61	4·6	1·42	2·0	4·13	7·0
	22	Anantapur.. Average of 10 years	11	...	...	0·02	0·1	0·11	0·3	0·92	1·7	1·58	2·9	2·63	5·0
		1897		0·01	...	0·09	0·4	0·03	0·1	0·39	1·1	1·25	2·3	1·77	3·2
		1898		...	...	0·11	0·4	...	...	1·04	1·8	1·58	3·2	2·73	5·4
		1899		...	...	...	...	...	...	1·57	3·8	1·19	3·3	2·76	7·1
		Total ... Average of 10 years	364	0·19	0·4	0·32	0·5	0·60	1·0	1·39	2·5	2·28	3·8	4·78	8·2
		1897		0·15	0·3	1·33	1·8	0·50	0·7	1·17	2·0	2·45	3·7	5·00	8·5
		1898		0·25	0·5	0·65	0·9	0·04	0·1	1·47	2·2	2·14	3·6	4·55	7·3
		1899		0·10	0·3	0·25	0·3	0·07	0·2	5·05	6·6	2·29	3·5	7·70	10·9

* The rainfall of this month should be classed with the north-east monsoon of the previous year; but,
† Dr. Bellew.

with the Average of previous ten years ending 1896, distributed according to Monsoon Currents—cont.

South-West Monsoon.										North-East Monsoon.								Grand Total.	
June.		July.		August.		September.		Total.		October.		November.		December.		Total.			
Rainfall.	Days.	Rainfall.	Days.	Rainfall.	Days.	Rainfall.	Days.	Rainfall.	Days.	Rainfall.	Days.	Rainfall.	Days.	Rainfall.	Days.	Rainfall.	Days.	Rainfall.	Days.
10·70	15·6	13·03	16·8	8·65	14·3	6·37	12·0	38·75	58·7	10·08	15·4	5·46	9·5	2·83	4·5	18·37	29·4	69·51	111·7
13·70	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
7·78	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
7·44	12·1	5·29	9·5	3·39	7·9	10·29	12·5	26·41	42·0	6·60	11·6	0·34	1·2	1·25	1·5	8·20	14·3	49·74	78·4
41·69	25·6	45·43	29·7	20·87	27·2	9·82	16·4	126·51	98·9	10·07	12·2	3·08	4·8	0·27	0·5	13·42	17·5	148·25	128·8
45·71	20·5	63·25	29·4	36·22	28·3	21·00	12·9	166·18	98·7	8·68	9·2	0·57	0·7	...	...	9·25	9·9	181·11	116·8
14·79	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
44·49	22·4	15·79	21·2	15·53	19·3	10·74	10·6	86·55	73·5	5·87	7·8	0·19	0·1	...	...	6·06	7·9	108·41	99·3
34·02	25·0	39·46	24·9	16·52	21·6	6·08	11·3	87·08	83·3	9·74	12·7	3·86	5·9	0·63	1·2	14·23	19·8	114·97	122·7
43·84	20·5	40·63	25·6	32·26	23·0	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
31·47	22·7	32·29	27·6	6·40	14·1	9·51	17·2	79·67	81·6	11·98	14·6	6·32	8·8	0·48	1·2	19·38	24·6	108·83	119·4
35·60	23·2	15·68	17·3	5·55	11·3	3·66	8·3	60·49	60·1	9·12	12·2	0·17	0·7	0·11	0·1	9·40	13·0	89·79	96·9
5·19	5·2	2·68	5·3	4·38	7·4	5·14	7·3	17·39	25·2	6·31	9·3	3·55	6·0	1·00	2·6	10·86	17·9	34·09	53·5
2·01	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
1·14	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
0·55	1·3	1·06	1·7	1·70	3·4	9·68	11·1	12·99	17·5	3·61	7·0	0·20	0·5	0·92	1·4	4·73	8·9	20·25	37·9
1·94	4·1	1·07	3·0	2·07	4·3	2·49	4·5	7·57	15·9	6·45	9·3	3·40	5·6	1·23	2·6	11·08	17·5	25·48	44·4
1·91	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
0·85	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
0·61	1·4	0·61	1·4	0·79	1·5	5·14	7·1	7·15	11·4	5·31	8·5	0·17	0·7	0·52	1·6	6·00	10·8	20·23	34·3
3·30	5·9	4·34	8·2	5·50	9·3	5·50	8·5	18·73	31·9	4·83	5·8	1·65	3·5	0·09	0·3	6·57	9·6	27·21	45·8
2·79	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
3·06	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
0·77	1·8	0·60	1·8	4·30	6·1	6·11	8·4	11·78	18·1	0·90	2·7	0·16	0·4	...	...	1·06	3·1	15·87	27·2
2·36	4·5	3·09	5·9	4·72	7·7	4·89	8·0	15·06	26·1	5·67	7·8	3·54	5·5	1·09	2·0	10·30	15·3	27·42	45·5
1·81	5·0	2·68	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
1·03	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
0·57	2·0	0·36	1·0	1·48	3·6	6·85	9·8	9·26	16·4	4·86	7·1	0·58	1·1	0·03	0·1	5·47	8·3	19·21	32·3
2·61	5·4	2·64	7·6	3·96	7·5	4·57	7·7	13·78	27·6	3·95	6·4	2·02	3·5	0·09	0·2	6·06	10·1	22·79	43·6
4·97	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
1·77	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
0·98	2·5	0·89	2·5	2·34	4·6	9·60	11·9	13·81	21·5	0·99	2·8	0·05	0·2	...	...	1·04	3·0	18·98	31·5
2·51	4·2	2·35	5·3	5·14	8·5	4·92	6·5	14·92	24·5	4·56	6·4	2·10	3·5	0·23	0·6	6·89	10·5	24·44	40·0
3·49	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	39·6
1·84	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	0·33	1·1	4·74	10·2	18·75	34·1
0·43	1·1	0·13	0·5	2·05	3·2	9·69	10·0	12·30	14·8	1·03	4·3	0·36	0·7	...	...	2·29	5·0	17·35	26·9
6·53	7·3	7·23	9·0	6·71	9·9	5·20	8·1	25·77	34·3	7·58	9·3	5·23	6·7	2·33	2·9	15·17	18·9	45·72	61·4
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
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
4·93	4·8	3·32	4·9	3·76	6·2	6·08	7·9	18·15	23·8	8·19	8·2	1·00	1·7	0·60	0·9	9·79	10·8	35·70	45·5

as the report deals with the calendar year, its inclusion under the "Inter-monsoon" period is unavoidable.

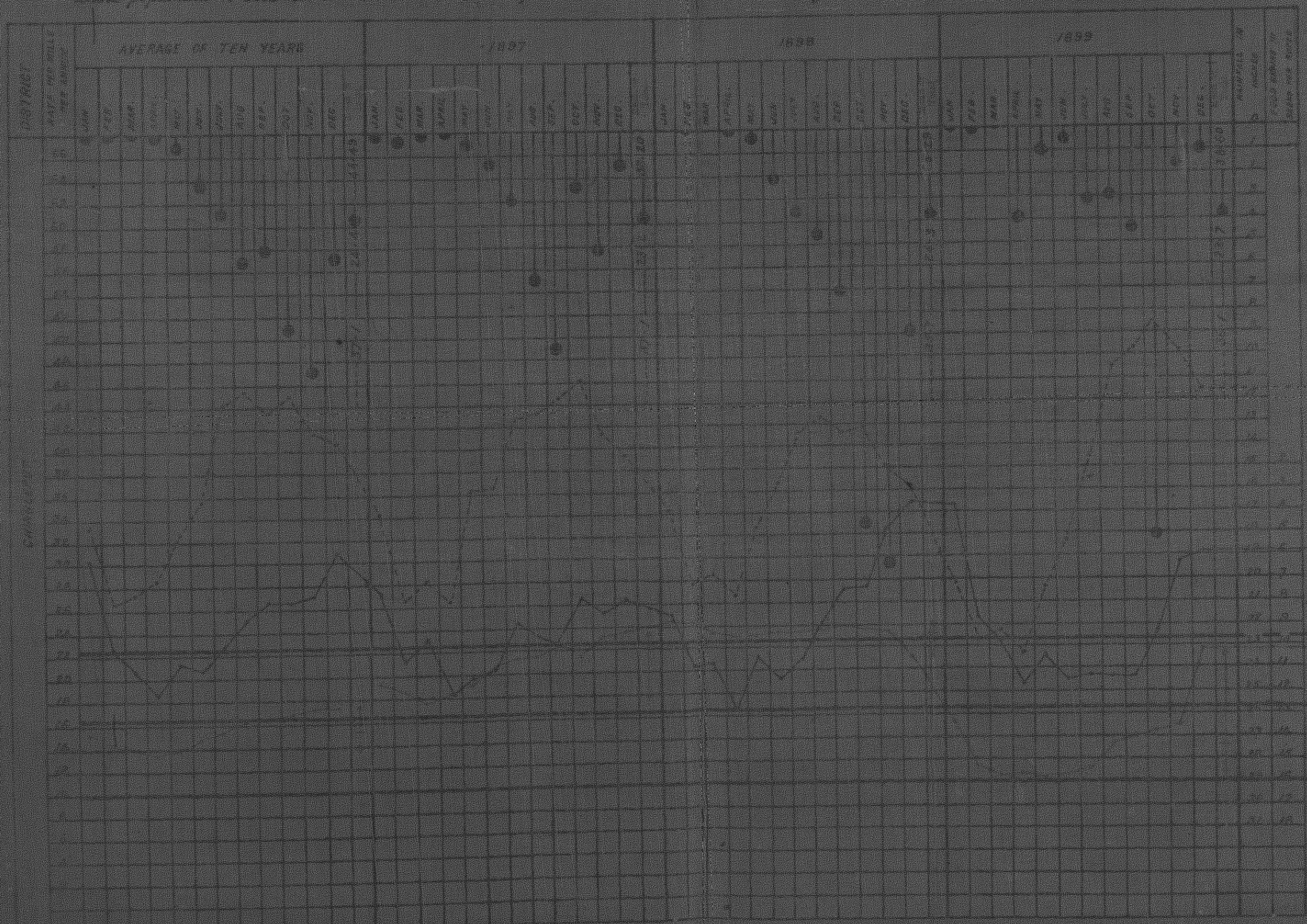
PRICES OF FOOD-GRAINS.

2. The high prices of food-grains, which followed the famine of 1897 and which were maintained throughout 1898, fell with some rapidity in the early months of 1899, owing, apparently, to the forcing of the hands of merchants who had stored grain against the anticipated rise of prices, by influx on the market of the north-east monsoon crops. The south-west monsoon, though scanty, was not so to the marked extent that would justify the gloomy predictions of the native astrologers as to the "Vikari" period. Hence, grain continued to reach the market freely during the first nine months of the year—more especially ragi—which had shown, in the previous year, a special tendency not to become cheap in proportion with the fall of cholum; it was not until the north-east monsoon showed indubitable signs of failure, and the purchases of other Presidencies already feeling the pinch of scarcity affected the market, that prices tended again to dearness. Thus, though, on the total average, ragi and cholum—the chief dry grains—were cheaper than on the total average of two previous years, during the last three months of 1899 their prices were 19·1 and 30·4 per cent., respectively, above it. It must, however, be remembered, in making these comparisons, that the total average with which the contrast is made includes a famine period. Moreover, in the districts that were affected with famine in 1896–97, prices adjusted themselves with less rapidity than elsewhere, so that in Anantapur, Bellary, Cuddapah, Ganjám and Vizagapatam, the prices hovered closely upon famine "warning rates" throughout the year. In the districts of Madura, Malabar and Salem, these rates were also closely approximated.

3. I annex, as required by the Government of India, a comparative statement contrasting the mortuary and meteorological statistics of two districts. It is not possible to produce from the contrast any deduction of sanitary importance. It may be possible to suspect a connection between the influence of a high price of food during 1898 and 1899 in the district of Chingleput and an increase of dysentery and diarrhœa; but, on the other hand, there is nothing to explain, so far as these figures are concerned, the steady decrease of fevers shown in Chingleput and the less marked decrease under the same head in Trichinopoly.

Diagram showing the Birth and Death Rate per Mille per annum in the District of Chorlton with Rainhill and proportion of Sick (Note) during the year 1899 Compared with 1898 and 1897 and the average of the ten years ending 1896

General population of 1891 = 155225 & Area = 2812 Ac. Rate = 6.42 per cent. Rate = 12.22 per cent



Bar Diagram Showing ...
period of 100 (seven) days
Census population of ...
number of ten years

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 1899 *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.
Chingleput.	1899	1,199,901	28,382	724	478	3,132	3,642	92·5	75·2	83·9	72	W., S. & S-W.	153	38·60	12·97	...	...	17·74
	1898	„	29,148	1,537	308	4,628	3,137	91·0	74·3	82·7	76	S., S.-W. & W.	151	65·29	8·67	...	...	14·32
	1897	„	27,960	2,067	134	6,488	2,462	91·8	75·6	83·7	77	Do.	153	33·20	9·48	...	...	14·59
	1896	„	28,577	337	158	7,698	2,534	91·7	75·1	83·4	77	Do.	146	54·81	11·17	...	...	20·10
	1895	„	26,897	771	76	7,743	2,289	91·2	74·3	82·7	75	Calm; S.-W. & W. ...	156	47·70	11·32	...	...	20·98
	1894	„	24,757	376	157	7,351	2,458	91·5	74·8	83·1	76	S.-W., W., S., N. ...	148	43·95	10·9	...	12·9	20·0
Trichinopoly.	1899	1,371,726	28,987	3,287	162	5,097	635	95·9	74·3	85·1	63	Calm; W. & S.-W. ...	154	27·94	12·25	23·12	...	21·61
	1898	„	33,702	7,481	134	4,939	754	94·9	74·5	84·8	72	Calm; W.	137	42·81	9·23	13·67	...	14·74
	1897	„	28,884	3,750	78	5,418	525	95·1	75·2	85·2	72	Do.	115	37·95	9·93	15·84	...	19·13
	1896	„	33,048	3,421	40	6,455	638	95·5	74·9	85·2	70	Calm; S.-W. & W. ...	139	34·81	12·93	23·46	...	25·74
	1895	„	30,009	1,175	176	7,064	608	94·5	74·3	84·4	72	N., W. & N.-W.	157	41·08	10·82	22·49	...	23·29
	1894	„	30,776	3,546	265	6,042	716	95·0	74·5	84·8	70	Calm; W.	106	29·01	12·5	21·5	21·9	25·4

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.		Cholam.		Ragi.		Cumbu.		Birth.		Death.	
		Quantity in inches.	Increase.	Decrease.	Rice.	Cholam.	Ragi.	Cumbu.	Increase.	Decrease.	Increase.	Decrease.	Increase.	Decrease.	Increase.	Decrease.				
Anantapur	Average.	24·44	7·09	...	13·2	27·2	30·0	...	0·9	...	2·6	...	4·6	...	...	...	31·1	21·7	...	0·3	2·8	...
	1897	25·70	8·35	...	9·1	13·3	16·6	...	...	3·2	...	10·5	...	8·8	...	...	27·7	26·9	...	3·7	8·0	...
	1898	18·75	1·40	...	10·3	18·9	19·7	...	...	2·0	...	4·7	...	5·7	...	...	21·8	19·4	...	0·6	0·5	...
	1899	17·35	...	...	12·3	23·5	25·4	...	...	...	...	...	...	...	...	...	31·4	18·9	...	...	...	...
					Warning rate. 22·5															
Bellary	Average.	22·79	3·81	...	11·0	27·0	32·3	...	...	0·4	4·1	...	4·9	...	...	...	38·1	25·9	3·3	...	1·3	...
	1897	20·66	10·68	...	8·6	12·7	15·6	...	...	2·8	...	10·2	...	11·8	...	...	31·5	31·2	...	3·3	0·6	...
	1898	22·09	4·01	...	9·5	21·3	23·5	...	...	1·9	...	1·3	...	3·9	...	...	22·3	22·7	...	3·5	...	1·9
	1899	18·08	...	...	11·4	22·9	27·4	...	...	...	...	...	...	...	...	...	34·8	24·6	...	...	...	...
					Warning rate. 22·5															
Chingleput	Average.	44·40	5·89	...	13·2	...	22·2	...	1·2	...	...	...	2·8	...	...	...	36·8	21·3	0·7	...	0·5	...
	1897	38·20	...	5·40	10·7	...	15·5	...	...	3·7	...	...	...	3·9	...	...	37·1	23·2	1·0	...	...	0·5
	1898	65·29	26·06	...	9·3	...	14·6	...	...	5·1	...	...	...	4·8	...	...	35·7	24·3	...	0·4	0·5	...
	1899	38·60	...	...	11·1	...	19·4	...	...	...	...	...	...	...	...	...	36·1	23·7	...	...	...	...
					Warning rate. 11·2															
Coimbatore	Average.	25·48	5·25	...	12·1	20·2	24·5	23·6	...	...	1·1	...	3·3	...	1·3	...	30·1	19·5	...	0·4	3·0	...
	1897	28·44	8·21	...	10·5	16·0	19·3	18·9	...	1·6	...	3·1	...	1·6	...	2·8	26·9	20·1	...	3·6	3·6	...
	1898	32·30	12·67	...	9·9	15·1	17·9	17·6	...	2·2	...	4·0	...	3·3	...	4·1	27·3	18·5	...	3·2	2·0	...
	1899	20·22	...	...	12·1	19·1	21·2	21·7	...	...	...	...	...	...	...	...	30·5	16·5	...	...	...	...
					Warning rate. 19·5															
Cuddapah	Average.	27·42	8·21	...	13·0	24·8	27·6	...	0·5	...	2·6	...	4·4	...	...	...	27·6	22·6	...	0·3	3·2	...
	1897	24·00	4·79	...	8·6	13·5	16·6	...	...	3·9	...	8·7	...	6·6	...	...	28·2	25·9	0·3	...	6·6	...
	1898	25·48	6·27	...	9·7	17·2	18·0	...	...	2·8	...	5·0	...	5·2	...	...	23·3	18·8	...	4·6	...	0·5
	1899	19·21	...	...	12·5	22·2	23·2	...	...	...	...	...	...	...	...	...	27·9	19·3	...	...	...	...
					Warning rate. 22·5															
Ganjám	Average.	46·21	2·85	...	15·5	...	26·8	...	1·5	...	...	...	4·0	...	...	...	19·7	18·0	...	12·0	3·6	...
	1897	66·79	22·45	...	9·7	...	13·3	...	...	4·3	...	...	...	9·5	...	...	23·9	50·1	...	7·8	35·7	...
	1898	45·70	2·43	...	12·8	...	16·7	...	...	1·2	...	...	...	0·1	...	...	22·9	22·7	...	5·8	8·3	...
	1899	43·36	...	...	14·0	...	22·6	...	...	...	...	...	...	...	...	...	31·7	14·4	...	...	...	...
					Warning rate. 13·6															
Gódávari	Average.	40·23	15·86	...	14·1	23·7	25·3	...	0·5	...	0·4	...	2·9	...	...	...	22·5	19·5	...	14·4	...	0·4
	1897	47·15	22·78	...	9·4	14·0	12·7	...	...	4·2	...	9·3	...	8·7	...	...	25·4	22·8	...	11·5	2·9	...
	1898	43·99	19·62	...	10·7	17·6	16·8	...	...	2·9	...	6·3	...	5·6	...	...	26·2	16·7	...	10·7	...	3·2
	1899	24·37	...	...	12·6	23·3	22·4	...	...	...	...	...	...	...	...	...	36·9	19·9	...	...	...	...
					Warning rate. 12·0															
Kistna	Average.	33·35	13·26	...	13·7	20·6	25·6	...	...	...	...	...	2·2	0·6	...	...	33·4	21·8	...	7·1	...	1·3
	1897	32·31	12·22	...	9·7	13·7	15·0	...	...	4·0	...	...	3·3	...	10·0	...	34·9	22·0	...	5·6	...	1·1
	1898	32·28	12·19	...	10·6	15·4	17·1	...	...	3·1	...	...	7·6	...	7·9	...	34·2	23·1	...	6·3	...	...
	1899	20·09	...	...	13·7	23·0	25·0	...	...	...	...	...	...	...	...	...	40·5	23·1	...	...	...	...
					Warning rate. 12·3															
Karnool	Average.	27·21	11·34	...	12·3	25·4	25·7	...	...	0·1	...	1·0	2·2	...	...	...	35·0	27·8	4·7	...	11·3	...
	1897	25·00	9·13	...	8·7	12·7	14·9	...	...	3·7	...	13·7	...	8·6	...	...	28·0	28·8	...	2·3	12·3	...
	1898	25·75	9·88	...	9·9	20·0	18·9	...	...	2·5	...	6·4	...	4·6	...	...	25·8	20·7	...	4·5	4·2	...
	1899	15·87	...	...	12·4	26·4	23·5	...	...	...	...	...	...	...	...	...	30·3	16·5	...	...	...	...
					Warning rate. 22·5															
Madras	Average.	48·17	7·17	...	11·4	18·5	22·3	...	...	0·6	...	...	2·0	...	...	...	40·4	41·7	...	...	3·2	...
	1897	38·47	...	2·53	9·7	12·2	15·7	...	...	2·5	...	...	...	3·0	...	...	41·0	35·8	1·2	...	...	2·7
	1898	68·14	27·14	...	8·9	12·3	15·4	...	...	3·3	...	...	...	4·2	...	...	41·5	45·2	1·1	...	6·7	...
	1899	41·00	...	...	12·2	...	19·6	...	...	...	...	...	...	...	...	...	40·4	38·5	...	...	...	...
					Warning rate. 9·6															
Madura	Average.	32·21	4·53	...	12·2	21·9	22·8	...	...	0·8	...	1·5	2·0	...	...	...	31·6	20·7	9·3	...	6·6	...
	1897	29·55	1·87	...	11·2	17·6	19·8	...	...	1·8	...	5·8	...	1·0	...	...	28·0	23·7	5·7	...	9·6	...
	1898	41·37	13·69	...	9·8	15·5	15·7	...	...	3·2	...	7·9	...	5·1	...	...	22·7	15·6	0·4	...	1·5	...
	1899	27·68	...	...	13·0	23·4	20·8	...	...	...	...	...	...	...	...	...	22·3	14·1	...	...	...	...
					Warning rate. 21·0															
Malabar	Average.	114·97	25·18	...	12·2	...	21·8	...	0·5	...	...	...	...	...	1·3	...	23·1	17·8	...	2·8	2·3	...
	1897	149·29	59·50	...	9·4	...	19·4	...	...	2·3	...	...	...	3·7	...	...	20·8	30·2	...	5·1	14·7	...
	1898	108·83	19·04	...	10·1	...	20·3	...	...	1·6	...	...	...	2·8	...	...	18·6	17·5	...	7·3	2·0	...
	1899	89·79	...	...	11·7	...	23·1	...	...	...	...	...	...	...	...	...	25·9	15·5	...	...	...	...
					Warning rate. 10·7															
Nellore	Average.	32·58	6·09	..	13·1	22·6	25·1	...	...	1·4	0·8	...	1·3	...	...	...	25·6	16·9	...	0·8	...	1·0
	1897	26·34	0·75	...	10·5	15·1	17·2	...	...	4·0	...	6·7	...	6·6	...	...	28·3	19·5	1·9	...	1·6	...
	1898	38·23	12·64	...	9·4	14·0	14·7	...	...	5·1	...	7·8	...	9·1	...	...	21·0	19·7	...	2·1	1·8	...
	1899	25·59	...	...	14·5	21·3	23·8	...	...	...	...	...	...	...	...	...	26·4	17·9	...	...	...	...
					Warning rate. 21·0															
Nilgiris	Average.	69·51	19·77	...	10·3	...	20·2	...	1·1	...	...	...	5·0	...	...	...	24·2	21·8	...	5·0	1·0	...
	1897	76·75	27·01	...	8·2	...	15·3	...	...	1·0	...	...	0·1	...	...	...	30·7	25·5	1·5	...	4·7	...
	1898	70·32	20·58	...	7·7	...	14·1	...	...	1·5	...	...	...	0·8	...	...	27·7	30·9	...	1·5	10·1	...
	1899	49·74	...	...	9·2	...	15·2	...	...	...	...	...	...	...	...	...	29·2	20·8	...	...	...	...
					Warning rate. 8·8															

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.		Cholam.		Ragi.		Birth.		Death.			
		Quantity in inches.	Increase.	Decrease.	Rice.	Cholam.	Ragi.	Cumbu.	Increase.	Decrease.	Increase.	Decrease.	Increase.	Decrease.	Increase.	Decrease.	Birth.	Death.	Increase.	Decrease.	Increase.	Decrease.
North Arcot ...	Average.	30·41	10·73	...	13·3	22·5	25·8	...	...	1·6	1·9	...	4·0	...	...	...	29·4	19·5	0·9	...	0·3	...
	1897 ...	33·11	7·13	...	10·5	14·4	17·8	...	...	4·4	...	6·2	...	4·0	...	...	27·3	20·2	...	1·1	1·0	...
	1898 ...	47·14	21·46	...	10·1	15·0	16·8	...	...	4·8	...	5·6	...	5·0	...	...	25·6	16·3	...	1·8	...	0·9
	1899 ...	25·68	...	...	14·9	20·6	21·8	...	...	...	...	...	...	...	...	...	29·4	19·2	...	...	...	...
					Warning rate.		24·0															
Salem	Average.	34·09	7·84	...	12·8	22·1	26·4	...	...	0·3	0·5	...	2·0	...	...	...	33·6	20·4	1·1	...	...	2·8
	1897 ...	37·11	10·86	...	10·6	16·1	19·5	...	...	2·5	...	5·5	...	3·9	...	...	33·2	19·3	0·5	...	...	3·9
	1898 ...	41·42	15·17	...	9·7	14·8	17·0	...	...	3·4	...	6·8	...	6·4	...	...	31·8	20·4	...	0·9	...	2·8
	1899 ...	25·25	...	...	13·1	21·6	23·4	...	...	...	...	...	...	...	...	...	32·7	23·2	...	...	...	...
					Warning rate.		23·0															
South Arcot ...	Average.	42·82	3·18	...	13·6	...	24·0	22·4	...	0·6	...	...	2·9	...	...	1·1	33·6	22·9	2·0	...	1·6	...
	1897 ...	37·32	...	2·32	11·9	...	19·1	19·5	...	2·3	...	...	...	2·0	...	4·0	28·7	21·2	0·1	...	...	0·1
	1898 ...	68·82	28·18	...	10·2	...	16·1	17·1	...	4·0	...	...	...	5·0	...	6·4	29·3	24·4	0·7	...	3·1	...
	1899 ...	40·64	...	...	14·2	...	21·1	23·5	...	...	...	...	...	...	...	...	28·6	21·2	...	...	...	...
					Warning rate.			19·5														
South Canara ...	Average.	148·25	39·84	...	13·3	...	...	...	0·8	...	...	...	...	...	...	...	31·7	31·2	0·3	...	...	6·7
	1897 ...	181·11	72·70	...	10·1	...	...	...	...	2·4	...	...	...	...	...	...	34·1	25·0	2·7	...	...	1·9
	1898 ...	155·39	46·98	...	11·1	...	...	...	...	1·4	...	...	...	...	...	...	33·9	24·6	...	5·5	...	5·3
	1899 ...	108·41	...	...	12·5	...	...	...	...	...	...	...	...	...	...	...	31·4	26·9	...	...	...	...
					Warning rate.		11·2															
Tanjore	Average.	45·12	0·98	...	13·6	...	24·3	...	0·2	...	...	...	...	0·6	...	...	28·7	25·9	...	3·0	0·2	...
	1897 ...	32·63	...	11·51	11·5	...	22·2	...	...	1·9	...	...	...	2·7	...	...	27·3	27·4	...	4·4	2·6	...
	1898 ...	59·39	15·25	...	10·7	...	17·0	...	...	2·7	...	...	...	7·9	...	...	32·0	25·9	0·3	...	1·1	...
	1899 ...	44·14	...	...	13·4	...	24·9	...	...	...	...	...	...	...	...	...	31·7	24·8	...	...	...	...
					Warning rate.		12·0															
Tinnevelly ...	Average.	28·18	4·21	...	11·5	19·3	20·7	17·4	...	0·6	1·0	...	1·9	...	...	...	28·7	23·2	...	5·8	2·2	...
	1897 ...	24·74	0·77	...	10·6	16·3	18·5	15·9	...	1·5	...	2·0	...	0·3	...	1·5	30·1	25·2	...	4·4	4·2	...
	1898 ...	31·67	7·70	...	9·3	14·5	15·6	13·6	...	2·3	...	3·8	...	5·2	...	5·8	31·0	23·7	...	3·5	0·7	...
	1899 ...	23·97	...	...	12·1	18·3	18·8	17·4	...	...	...	...	...	...	...	...	24·5	21·0	...	...	...	...
					Warning rate.			19·5														
Trichinopoly ...	Average.	33·79	5·85	...	12·2	25·6	23·5	22·4	...	0·9	...	0·6	0·8	...	0·5	...	29·0	23·5	...	0·2	2·4	...
	1897 ...	37·95	10·01	...	10·7	15·9	21·0	19·8	...	2·4	...	10·3	...	1·7	...	2·1	28·6	21·0	...	0·6	...	0·1
	1898 ...	42·81	14·87	...	9·4	14·1	16·1	15·5	...	3·7	...	12·1	...	6·6	...	6·4	30·5	24·6	1·3	...	3·5	...
	1899 ...	27·94	...	...	13·1	26·2	22·7	21·9	...	...	...	...	...	...	...	...	29·2	21·1	...	...	...	...
					Warning rate.			19·5														
Vizagapatam ...	Average.	47·47	10·63	...	13·8	...	26·2	...	1·7	...	...	...	2·2	...	...	...	23·8	18·0	...	13·4	...	0·5
	1897 ...	52·51	15·67	...	8·9	...	14·5	...	...	3·2	...	...	...	9·5	...	...	28·3	31·6	...	8·9	13·1	...
	1898 ...	42·32	5·42	...	11·9	...	19·6	...	...	0·2	...	...	...	4·1	...	...	23·8	18·5	...	13·4	...	...
	1899 ...	36·84	...	...	12·1	...	24·0	...	...	...	...	...	...	...	...	...	37·2	18·5	...	...	...	...
					Warning rate.		12·0															
Total, Madras Presidency.	Average.	45·72	10·02	...	12·8	23·0	24·9	...	...	...	0·5	...	2·5	...	...	...	28·9	21·3	...	2·4	1·2	...
	1897 ...	48·14	12·44	...	9·9	14·5	17·2	...	...	2·9	...	8·0	...	5·2	...	...	29·7	25·4	...	2·6	5·3	...
	1898 ...	51·32	15·02	...	10·1	16·1	17·2	...	...	2·7	...	6·4	...	5·2	...	...	27·4	21·0	...	3·9	0·9	...
	1899 ...	35·70	...	...	12·8	22·5	22·4	...	...	...	...	...	...	...	...	...	31·3	20·1	...	...	...	...

GENERAL POPULATION.

4. According to the census of 1891, the population of the Presidency is *35,641,828; the estimated population is 38,256,526. 185,814 souls emigrated during 1899 to places beyond the Presidency, against 245,862 in 1898. Immigrations, when balanced against these figures, show that a decrease of the population occurred to the extent of 23,394. The "natural increase" of the population was 373,499. Of the total census population—which, unless otherwise stated, is that referred to hereafter—only 33,565,859 inhabit areas where registration is conducted; or, in other words, of a population of 2,075,969 no vital statistical records are maintained. These represent chiefly inhabitants of mountain ranges, where the subordinate administrative machinery is not of the class that would enable a system of registration to be conducted efficiently. Necessarily, efficiency of registration in this Presidency is less in rural areas where registration is not compulsory than in municipalities, where it is so. Difficulties in rural areas are further accentuated by the existence of large tracts in several important districts, which are under semi-independent administration; from these, the punctual submission of statistical returns has ever been a matter of difficulty for the District officers concerned to enforce. In these special cases, as remarked in former reports, much improvement may be expected on the introduction of the Village Proprietary Act. In the meantime, more especially since 1897, Government has considered various proposals for the improvement of registration in rural areas. An outcome of these considerations has been the passing of the "Madras Registration of Births and Deaths Act" of 1899. Under this Act, it is intended not to at once bring under influence the whole of the rural tracts, but such as may from time to time be selected by Government. Registration of births and deaths is rendered compulsory. Provision is made for the appointment of Registrars, and for the granting of extracts from the registers free of charge. The latter is a point, the legal importance of which the average uneducated native is quite capable of appreciating, and which will therefore probably conduce greatly to the popularity of the measure. The difficulty in finding a sufficiently educated staff to secure a marked improvement even under the influence of this Act is, however, apparent; as anything approaching a specially organized staff would present financial difficulties not likely to be overcome—a matter which is further referred to in paragraph 70 of Personal Proceedings. In the meantime, indubitably, ever increasing attention has been paid to the subject of correct registration by the Revenue Department. In inspecting the birth and death registers, the Revenue Department continues to receive material aid from Deputy Inspectors of Vaccination, District Medical and Sanitary officers, and from this office. During the year, the attention of Collectors was specially invited to the condition of registration in various villages within their respective districts in 78 instances. In the case of both districts and municipalities, irrespective of personal examination of the registers during ordinary inspection duties, I make it a point to draw attention to the variations in monthly returns when compared with previous years, directly the vital statistical returns compiled in this office are available for exhibition of results.

5. The following table exhibits the extent to which prosecution for failure to register was pursued by municipalities:—

* Inclusive of Europeans and Eurasians.

Name of Municipality.	Penalties inflicted for failure to register.		Name of Municipality.	Penalties inflicted for failure to register.	
	Births.	Deaths.		Births.	Deaths.
1. Anantapur	Nil.		31. Nellore	33	12
2. Adóni	Nil.		32. Ongole	10	5
3. Bellary	17	6	33. Connoor	...	1
4. Chingleput	Nil.		34. Ooracamund	Nil.	
5. Conjeeveram	* 11	...	35. Gudiyáttam	Nil.	
6. Coimbatore	14	...	36. Tirupati	* 4	...
7. Erode	Nil.		37. Vellore	Nil.	
8. Karúr	* 20	9	38. Wallajapet	1	4
9. Cuddapah	1	...	39. Salem	4	29
10. Berhampur	5	14	40. Tiruppattúr	2	1
11. Chicacole	8	2	41. Vániyambádi	6	15
12. Parlákimedi	8	6	42. Chidambaram	50	82
13. Cocanada	56	...	43. Cuddalore	1	...
14. Ellore	35	11	44. Tiruvannámalai	35	21
15. Rajahmundry	Nil.		45. Mangalore	Nil.	
16. Bezwada	8	4	46. Kumbakónam	28	40
17. Guntúr	28	3	47. Mannárgudi	1	...
18. Masulipatam	11	7	48. Máyavaram	6	1
19. Kurnool	* 37	12	49. Negapatam	20	24
20. Nandyal	4	...	50. Tanjore	22	5
21. Dindigul	* 42	...	51. Palamcottah	Nil.	
22. Kodaikánal	Nil.		52. Srívilliputtúr	77	24
23. Madura	* 16	15	53. Tinnevelly	24	15
24. Palni	29	9	54. Tuticorin	16	5
25. Periyakulam	6	...	55. Srírangam	30	30
26. Calicut	* 50	41	56. Trichinopoly	13	8
27. Cannanore	12	3	57. Anakápallo	14	7
28. Cochin	Nil.		58. Bimlipatam	Nil.	
29. Palghat	30	11	59. Vizagapatam	Nil.	
30. Tellicherry	34	...	60. Vizianagram	27	...

* These figures represent number prosecuted.

6. As might be expected, poor registration results usually follow undue leniency in respect to penal clauses, as witness the poor birth-rates in the towns of Anantapur, Cochin, Vellore, Palamcottah and Bimlipatam, which are coincident with absence of prosecution in a single instance.

BIRTHS IN DISTRICTS.

7. The total birth-rate for the Presidency is the highest on record, namely, 31·3 per mille. The following table shows that, with the exception of the deficient birth-rate for the year 1898 (which it was pointed out in the report for that year was due to the influence of famine on the population during 1896–97), there has been a steady increase in the birth-rate registered—a result that must be ascribed to better attention to registration by all concerned:—

Table showing the total birth-rates for the Presidency from 1892 *to* 1899.

Years.	Birth-rate on the census population.*	Birth-rate on the estimated population.*
1892	25·1	24·4
1893	26·9	25·9
1894	27·7	26·2
1895	28·9	27·1
1896	29·1	26·8
1897	25·3	23·0 †
1898	24·6	22·0 †
1899	31·3	27·4

8. It would, of course, be possible to ascribe this increase to the larger population dealt with in the inter-censal period than apparent when rates are reckoned upon the census population. I have, therefore, side by side with the results upon the

* Inclusive of Europeans and Eurasians both in the births and population.
† Famine influence.

census population, shown those on the estimated population. It will be seen that an increment is still evident that bears out my assertion.

9. Of a total of 22 districts, only Madura, South Arcot, Tanjore, Madras and Trichinopoly exhibit a slight decrease; in all other cases, an increase in the birth-rate is shown. The rate is remarkably high in districts that suffered from famine in 1896–97, and where, consequently, there had been an increased infantile death-rate, and later a decrease in the birth-rate when compared with the previous year, although still below the average of these districts. The great feature in the severe famine of 1877 was that the adult population suffered severely, with the consequence that the birth-rate was decreased for a series of years, until the influx of a young population reaching the child-bearing age suddenly caused the birth-rate to rapidly increase, so that, whilst in the census of 1881, it was held that the normal birth-rate of the Presidency was 42·45 per mille, in the census of 1891, it was suggested that for at least a period it must have attained the rate of 55 per mille. But such conditions as occurred in the 1877 famine are never likely to again be faced by the population; the wide distribution of railways and the better methods of organization of relief are such as should not be followed by a material increase of the death-rate of adults. It is, however, unlikely that the methods employed will ever be sufficiently developed to prevent a depression of the birth-rate, and an increase of the infantile death-rate. On the return of prosperity, the famine population subjected to such conditions must be expected, as shown in the present instance, to develop an increased birth-rate, so that a famine combated on modern lines must not be looked upon as a "natural check" to the increase of populations. For example, the following shows the strides made in the birth-rate in the districts which were affected by famine:—

Name of district.	Average of previous five years.	Birth-rate during 1898.	Average yearly increase or decrease of the birth-rate in the previous five years.	Actual increase between 1898 and 1892.
Anantapur	28·3	24·8	− 0·2	6·5
Bellary	32·8	29·3	− 0·2	5·5
Cuddapah	27·3	23·3	+ 0·1	4·6
Ganjám	21·9	22·9	+ 0·9	8·8
Malabar	21·6	18·6	− 0·3	7·4
Vizagapatam	27·4	23·8	+ 0·3	13·4

10. At the same time, it is not claimed that a reaction after famine is the sole cause, as the increase is exhibited in districts other than those named, although it must be remembered, as pointed out in paragraph 11 of the last year's report, that the depressed birth-rate did not confine itself solely to districts where famine had been officially declared—others suffered in a less degree from the high prices of food-grains, and exhibited increase of the infantile death-rate and decreased birth-rate. To increased care in registration must be ascribed much of the result. The occurrence of marriages that had been deferred must also have had influence.

11. 103·9 births of boys were registered to every one hundred births of girls. According to races, the birth-rates were as follows:—Native Christians 26·5, Muhammadans 29·9 and Hindus 31·5, per mille of their respective populations.

DEATHS IN DISTRICTS.

12. The total deaths for the Presidency amounted to 675,094, giving a rate of 20·1 per mille on the census, and 17·6 per mille on the estimated population. The following table shows under causation the percentage due to each disease. To enable a comparison to be conveniently made, the table is extended so as to include the previous seven years:—

Years.	Birth-rate per mille of population.	Percentage of deaths from						Death-rate per mille of population.
		Cholera.	Small-pox.	Fevers.	Dysentery and diarrhœa.	Injuries.	All other causes.	
1892	25·1	10·5	5·3	37·4	4·3	1·5	40·5	22·3
1893	27·0	5·0	4·2	39·2	3·6	1·6	45·7	19·3
1894	27·7	6·3	1·7	40·2	3·7	1·7	46·4	20·0
1895	28·1	3·2	0·8	42·1	3·6	1·6	48·7	19·6
1896	29·9	7·1	1·4	38·6	3·7	1·6	47·6	20·6
1897	28·7	17·3	2·6	35·3	4·7	1·4	38·7	35·4
1898	27·4	9·4	2·9	35·6	4·2	1·6	46·3	21·0
1899	31·3	4·3	2·5	38·4	4·6	2·0	50·2	20·1

13. It is hopeless to attempt, under existing circumstances of registration, to criticize the death-rates reported from districts. They may possibly sink to the almost certainly ridiculous rate of 14·4 per mille in Ganjám, or rise to nearly 30 per mille in South Canara, without its being possible to state definitely what are the errors of omission and commission. The only criterion available is the approach to accuracy of the birth-rate, and the acknowledged existence of special diseases. One cause of deficient death-rate is certainly a tendency to ignore the deaths of infants below one year of age. This conclusion was forced upon me by the perusal of numerous abstracts of village registers furnished to this office by District Medical and Sanitary officers during their inspections. It was obvious that the death of an infant who had not managed to struggle through a year of life was often held unworthy of official recognition by the village officer, with the result of marring the total statistics supplied. To this subject, I have drawn the attention of Collectors, and a demand for increased care by their village officers was promptly made by them. Although there is no reason to believe that the rate of 14·4 per mille credited to Ganjám represents the facts of the case, it is evident a satisfactory fall in mortality has occurred. It will be remembered that in this district the fearful rate of 50·1 per mille was reached in 1897—a result due to famine and small-pox, whilst in 1898 small-pox was again responsible for a heavy proportion of the total mortality, which amounted to 22·7 per mille.

14. Excluding Madras district—the circumstances of which do not permit it to be fairly compared with rural districts—the highest death-rate was registered in South Canara (29·9 per mille). This increased rate over the preceding year is accounted for by the larger proportion of fever registered. There is no reason to believe that the majority of these fever cases were not due to malaria, but it is well to remember that both in South Canara and Malabar typhoid fever is an acknowledged factor of the mortality amongst natives. In Bellary, the increase of 1·9 per mille over the previous year was due to the increased death-rate from cholera. In other instances, the fluctuations with reference to previous recorded rates are of little importance, and in 14 of a total of 22 districts, the variation represents a decrease.

15. The following table exhibits the extent of variation in each district:—

Districts.	Death-rates per mille during		Variation.	Districts.	Death-rates per mille during		Variation.
	1899.	1898.			1899.	1898.	
Anantapur	16·9	19·4	− 0·5	Malabar	15·5	17·5	− 2·0
Bellary	24·6	22·7	+ 1·9	Nellore	18·0	19·7	− 1·7
Chingleput	23·7	24·3	− 0·6	Nilgiris	20·3	30·9	− 10·1
Coimbatore	16·5	18·5	− 2·0	North Arcot	19·2	18·3	+ 0·9
Cuddapah	19·2	18·8	+ 0·4	Salem	23·3	20·4	+ 2·9
Ganjám	14·4	22·7	− 8·3	South Arcot	21·3	24·4	− 3·1
Gódávari	19·9	16·7	+ 3·2	South Canara	29·9	24·6	+ 5·3
Kistna	23·1	23·1	Equal.	Tanjore	24·8	25·9	− 1·1
Kurnool	16·5	20·7	− 4·2	Tinnevelly	21·0	21·7	− 0·7
Madras	38·5	45·2	− 6·7	Trichinopoly	21·1	24·6	− 3·5
Madura	14·1	15·6	− 1·5	Vizagapatam	18·5	18·5	Equal.
				Total ...	20·1	21·9	− 0·9

16. It has been frequently remarked in the reports of this office that the rates for rural towns are specially untrustworthy, and the cause has been ascribed to the impossibility of village officers attending to registration where the population had reached the limits which accompany the definition of a "Town," namely, 10,000 inhabitants. It is specially in dealing with these towns that the benefit of the Registration Act of 1899 above referred to should be felt, if special Registrars be supplied. The following table exhibits the rates obtained in 1899, as contrasted with 1898 :—

Number.	Rural towns.	Population for which returns were received.	1899.		1898.	
			Birth-rate per mille.	Death-rate per mille.	Birth-rate per mille.	Death-rate per mille.
1	Tadpatri	10,275	39·3	16·6	18·5	12·9
2	Hospet	12,869	11·0	27·6	20·8	13·8
3	Kampli	10,528	33·7	32·3	23·0	21·8
4	Rayadrug	10,578	32·9	17·6	22·4	15·3
5	St. Thomas' Mount	12,140	29·2	18·3	30·4	19·0
6	Pithápuram	13,731	10·9	7·4	14·0	13·8
7	Peddápuram	13,652	45·0	27·2	37·2	23·7
8	Samalkot	13,409	23·0	12·8	12·3	8·1
9	Dowlaishweram	10,454	37·5	20·2	27·1	19·5
10	Chirála	10,581	45·6	23·3	31·9	25·4
11	Nandyal *	10,704	19·9	12·2	16·6	13·9
12	Ramnad	13,589	21·6	15·8	18·5	33·2
13	Aruppukóttai	12,073	42·8	33·3	26·2	17·3
14	Kilakarai	12,396	17·8	19·6	17·8	15·8
15	Paramakudi	10,091	10·6	15·1	13·8	9·2
16	Kálahasti	11,715	20·8	18·1	22·1	26·5
17	Arcot	16,928	26·9	39·0	27·5	27·6
18	Ambúr	10,583	31·8	30·6	19·9	12·3
19	Sendamangalam	13,354	19·9	16·9	13·2	9·8
20	Rasípur	10,539	26·8	15·9	32·0	15·0
21	Porto Novo	14,045	14·5	10·6	11·9	12·7
22	Tiruvállúr	12,934	30·5	30·3	27·2	33·7
23	Kulasékarapatnam	15,910	25·8	18·8	27·9	21·1
24	Virudupatti	14,075	45·2	37·5	16·8	11·9
25	Viravanallur	13,951	29·2	21·9	21·3	16·8
26	Rajahpalayam	13,301	44·2	19·2	37·8	18·7
27	Tenkási	12,861	46·6	27·1	40·2	27·6
28	Sivakási	12,184	37·6	24·7	86·9	30·1
29	Káyalpatnam	11,464	20·6	20·4	19·1	20·6
30	Kalladakurchi	11,096	27·5	24·9	26·6	23·8
31	Bobbili	14,448	33·9	12·5	25·5	19·5
32	Sálúra	12,910	18·1	13·8	9·9	12·5
33	Palkonda	10,364	37·5	17·1	20·7	16·3
34	Párvatípuram	10,053	36·9	14·9	22·7	23·5
	Total of 34 rural towns ...	411,095	28·7	20·9	23·3	19·0

* This was constituted a municipality in the last quarter of the year.

17. It will be seen that, although marked improvement in registration has occurred in 25 towns, in Pithápuram, Paramakudi and Porto Novo, falling off in care has continued. The poor results reported by Hospet must in part be ascribed to disturbance of registration during existence of plague in that town.

18. The infantile death-rate was 159·0 per mille of births—a result contrasting favourably with that of the previous year (163·3) :—

Districts.	Ratio per mille of registered births.	Districts.	Ratio per mille of registered births.
Anantapur	124·4	Nellore	131·1
Bellary	151·7	Nilgiris	154·6
Chingleput	189·8	North Arcot	151·2
Coimbatore	155·1	Salem	173·4
Cuddapah	158·0	South Arcot	189·5
Ganjám	134·1	South Canara	179·6
Gódávari	145·4	Tanjore	209·9
Kistna	169·6	Tinnevelly	178·6
Kurnool	123·1	Trichinopoly	177·1
Madras	275·6	Vizagapatam	107·1
Madura	159·3		
Malabar	96·7	Total ...	159·0

19. The following table will enable the extent of increase and decrease of both birth and death rates to be readily traced and contrasted with the results of the previous years :—

Districts.	Years.	Ratio per mille of population.		Ratio per mille of population.			
		Birth.	Death.	Birth.		Death.	
				Decrease.	Increase.	Decrease.	Increase.
Anantapur	Average ...	23·3	19·9	...	3·0	1·0	...
	1898	24·8	19·4	...	0·5	0·5	...
	1899	31·3	18·9	...	...	...	...
Bellary	Average ...	32·8	24·6	...	2·0	...	...
	1898	29·3	22·7	...	5·5	...	1·9
	1899	34·8	24·6	...	...	...	...
Chingleput	Average ...	36·9	22·9	0·8	...	...	0·8
	1898	35·7	24·3	...	0·4	0·6	...
	1899	36·1	23·7	...	...	...	...
Coimbatore	Average ...	27·9	19·5	...	2·6	3·0	...
	1898	27·3	18·5	...	3·2	2·0	...
	1899	30·5	16·5	...	...	...	...
Cuddapah	Average ...	27·3	21·4	...	0·6	2·2	...
	1898	23·3	18·8	...	4·6	...	0·4
	1899	27·9	19·2	...	...	...	...
Ganjám	Average ...	21·9	23·9	...	9·8	9·5	...
	1898	23·9	22·7	...	8·8	8·3	...
	1899	31·7	14·4	...	...	...	...
Gódávari	Average ...	25·0	16·6	...	11·9	...	1·3
	1898	20·2	16·7	...	10·7	...	3·2
	1899	36·9	19·9	...	...	...	...
Kistna	Average ...	33·9	20·5	...	6·6	...	2·6
	1898	34·2	23·1	...	6·3	...	...
	1899	40·5	23·1	...	...	...	...
Kurnool	Average ...	29·9	23·9	...	0·3	7·4	...
	1898	25·8	20·7	...	4·4	4·2	...
	1899	30·2	16·5	...	...	...	...
Madras	Average ...	40·9	38·8	0·5	...	0·3	...
	1898	41·5	45·2	1·1	...	6·7	...
	1899	40·4	38·5	...	...	...	...
Madura	Average ...	28·1	19·9	5·8	...	5·8	...
	1898	22·7	15·6	0·4	...	1·5	...
	1899	22·3	14·1	...	...	...	...
Malabar	Average ...	21·6	19·1	...	4·4	3·6	...
	1898	18·6	17·5	...	7·4	2·0	...
	1899	26·0	15·5	...	...	...	...
Nellore	Average ...	26·1	17·9	...	0·3	...	0·1
	1898	24·0	19·7	...	2·4	1·7	...
	1899	26·4	18·0	...	...	...	...
Nilgiris	Average ...	28·8	26·4	...	0·4	5·6	...
	1898	27·7	30·9	...	1·5	10·1	...
	1899	29·2	20·8	...	...	...	...
North Arcot	Average ...	27·9	17·9	...	0·4	...	1·3
	1898	26·6	18·3	...	1·7	...	0·9
	1899	28·3	19·2	...	...	...	...
Salem	Average ...	32·3	19·1	...	0·4	...	4·2
	1898	31·8	20·4	...	0·9	...	2·9
	1899	32·7	23·3	...	...	...	...
South Arcot	Average ...	30·6	22·8	2·0	...	1·5	...
	1898	29·3	24·4	0·7	...	3·1	...
	1899	29·6	21·3	...	...	...	...
South Canara	Average ...	31·4	22·3	...	...	...	7·6
	1898	25·9	24·6	...	5·5	...	5·3
	1899	31·4	29·9	...	...	...	...

Districts.	Years.	Ratio per mille of population.		Ratio per mille of population.			
		Birth.	Death.	Birth.		Death.	
				Decrease.	Increase.	Decrease.	Increase.
Tanjore	Average ...	28·7	25·5	...	2·9	0·7	...
	1898	32·0	25·9	0·4	...	1·1	...
	1899	31·6	24·8	...	...	...	...
Tinnevelly	Average ...	30·0	24·1	...	4·5	3·1	...
	1898	31·0	21·7	...	3·5	0·7	...
	1899	34·5	21·0	...	...	...	...
Trichinopoly	Average ...	26·4	22·8	...	0·8	1·7	...
	1898	30·5	24·6	1·3	...	3·5	...
	1899	29·2	21·1	...	...	...	...
Vizagapatam	Average ...	27·4	23·2	...	0·8	4·7	...
	1898	23·3	18·5	...	13·4	...	...
	1899	37·2	18·5	...	...	...	...
Total, Madras Presidency.	Average ...	28·6	21·3	...	2·7	1·2	...
	1898	27·4	21·0	...	3·9	0·9	...
	1899	31·3	20·1	...	...	...	...

BIRTHS IN MUNICIPALITIES.

20. As in the case of rural areas, the total birth-rate of municipalities has shown an increase, it being 37·0 against 34·9 per mille of the previous year. This result testifies well to better activity in registration in rural areas, where the increase over the previous year is 5·4 against 2·1 per mille for municipalities. In both, the rates still fall far short of what, as already observed in discussing district rates, must be held as the standard birth-rate of this Presidency. The total average has been much impaired by such glaring instances of decline of the birth-rate as exhibited by Vellore (8·8 per mille) and Walajapet (8·4 per mille) below the average. In both cases, the rates for the previous year were also unsatisfactory and showed a decline—due undoubtedly to careless registration for which there was no excuse—but in 1899, the obtaining of correct statistics must have been much impeded by the existence of plague in both towns. The continued low rate registered in Cuddapah is due to a large extent to the usual absence of fecundity in a population stricken with malaria. In face of the reaction in the birth-rate which has been exhibited in the district of Cuddapah (an increase of 4·6 per mille over the previous year) and other areas that were affected with famine, it is exceedingly unlikely that the late famine still exhibits its influence upon the birth-rate of this town. Consequently, the absurd rate of 14·3 per mille—a decline of no less than 7·3 per mille below the very poor average of 21·6 for the previous five years—must be regarded as very largely due to apathy on the part of the Municipal Council. Other towns showing notable decrease for which there is no reasonable excuse are Cuddalore, Madura, Mannárgudi, Palamcottah, Salem, Tirupati, Cochin and Conjeeveram. When compared with the previous year, it is found that increase of the birth-rate has been attained in 44 towns against 39 in that year. It is satisfactory to find that Cocanada, Berhampur and Parlákimedi, which for so long a period exhibited markedly inferior results, have now secured a better approach to the normal rate. There remains, however, much room for improvement.

21. Of the total of 59 municipalities, 16 show rates above 30, 21 above 35, 11 above 40 and 5 above 45.

DEATHS IN MUNICIPALITIES.

22. The average death-rate for the year has been 30·7—a decrease of 0·3 below the average for the past five years, and 1·2 below the previous year. In 28 instances, there has been a decrease in the total death-rate; in 29, there has been an increase. In Anantapur and Palni, seeing that there has been an increase of the birth-rate, the fall to 16·5 per mille from 21·0, and to 17·5 per mille from 31·4, respectively, of the previous year is suspicious of imperfect registration of deaths, although the absence of epidemic cholera in Palni during the year under review contributes to the sharpness of the contrast.

23. The same may be said of Dindigul where, although the birth-rate has increased 9·7 per mille for the year, the death-rate remains the same as during 1898, namely 18·9.

24. In Masulipatam, Ellore, Máyavaram, Vizagapatam, Bimlipatam and Vizianagram the increased death-rate, when judged side by side with the increased birth-rate, merely implies better care in registration. In Karúr, Gudiyáttam, Salem, Vániyambádi, Kumbakónam and Tinnevelly, the chief cause of increased mortality was cholera. In Vellore and Tiruppattúr, both cholera and plague caused the increase, whilst in Walajapet it was chiefly due to plague. In the Madras town, there was registered a satisfactory fall when compared with the previous year of 6·7 per mille, and of 0·3 per mille below the average of the previous five years. Madras has, on account of the necessity for keeping it prepared for the advent of plague, never had bestowed upon it so great attention hitherto as to the executive details of sanitary administration. Seeing that the meteorological conditions were fairly normal in this locality, it is probable that beneficial influence has been exercised upon the general health of the people, although a decrease of 1·65 per mille in the cholera death-rate has contributed mainly to this result.

25. The following table contrasts the rates registered in 1899 with those of 1898, 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 ...	35·2	21·0	1·2	...	4·5	...
	1898	32·4	21·0	...	1·6	4·5	...
	1899	54·0	16·5	...	...	...	...
Adóni	Average ...	40·9	27·6	...	9·1	3·5	...
	1898	44·5	26·5	...	5·5	2·4	...
	1899	50·0	24·1	...	...	...	...
Bellary	Average ...	32·7	31·7	...	2·1	2·4	...
	1898	30·1	35·0	...	4·7	5·7	...
	1899	34·8	29·3	...	...	...	...
Chinglepat	Average ...	...*	...*	...	...	...	...
	1898	37·2	29·7	...	2·2	...	0·2
	1899	39·4	29·9	...	...	...	...
Conjeeveram	Average ...	37·7	31·0	2·1	...	1·2	...
	1898	35·9	29·4	0·3	...	...	0·4
	1899	35·6	29·8	...	...	...	...
Coimbatore	Average ...	39·0	32·2	...	3·4	3·1	...
	1898	40·4	31·2	...	2·0	2·1	...
	1899	42·4	29·1	...	...	...	...
Erode	Average ...	38·9	26·8	0·3	...	...	1·7
	1898	41·7	26·2	3·1	...	...	2·3
	1899	38·6	28·5	...	...	...	...
Karúr	Average ...	38·3	32·4	...	1·6	0·6	...
	1898	44·7	28·8	4·8	...	...	3·0
	1899	39·9	31·9	...	...	...	...
Cuddapah	Average ...	21·6	29·6	7·3	...	0·6	...
	1898	17·6	30·0	3·3	...	1·0	...
	1899	14·3	29·0	...	...	...	...
Berhampur	Average ...	23·3	27·7	...	15·3	4·9	...
	1898	29·6	24·8	...	9·0	2·0	...
	1899	38·6	22·8	...	...	...	...

* 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.	Increase.
Chicacole	Average ...	25·8	28·6	...	7·5	3·6	...
	1898	24·0	26·5	...	9·3	1·5	...
	1899	33·3	25·0	...	...	...	...
Parlákimedi	Average ...	33·3	26·5	...	10·5	3·1	...
	1898	26·5	21·5	...	17·3	1·1	...
	1899	43·8	23·4	...	...	...	...
Cocanada	Average ...	26·4	21·6	...	9·2	...	1·4
	1898	32·1	20·4	...	3·5	...	2·6
	1899	35·6	23·0	...	...	...	...
Ellore	Average ...	26·5	22·9	...	14·0	...	6·0
	1898	34·1	24·6	...	6·4	...	4·3
	1899	40·5	28·9	...	...	...	...
Rajahmundry	Average ...	33·8	32·6	...	6·0	4·6	...
	1898	32·7	28·2	...	7·1	0·2	...
	1899	30·8	25·0	...	...	...	...
Bezwada	Average ...	31·5	29·5	...	10·8	...	2·5
	1898	31·3	26·1	...	11·0	...	5·9
	1899	42·3	32·0	...	...	...	...
Guntúr	Average ...	40·6	34·3	...	7·1	...	1·7
	1898	45·2	39·3	...	2·5	3·3	...
	1899	47·7	36·0	...	...	...	...
Masulipatam	Average ...	30·4	26·0	...	2·8	...	0·3
	1898	30·0	23·1	...	3·2	...	3·2
	1899	33·2	26·3	...	...	...	...
Kurnool	Average ...	32·3	31·0	...	7·3	7·0	...
	1898	31·4	24·6	...	8·2	...	2·4
	1899	39·6	27·0	...	...	...	...
Madras	Average ...	41·0	38·8	0·6	...	0·3	...
	1898	41·5	45·2	1·1	...	6·7	...
	1899	40·4	33·5	...	...	...	...
Dindigul	Average ...	37·3	21·8	...	3·0	2·9	...
	1898	30·6	13·9	...	9·7	...	...
	1899	40·3	13·9	...	...	...	...
Madura	Average ...	31·7	23·5	1·9	...	2·0	...
	1898	33·5	25·1	3·7	...	0·6	...
	1899	29·8	24·5	...	...	...	...
Palni	Average ...	30·3	26·2	...	1·6	8·7	...
	1898	29·0	31·4	...	2·9	13·9	...
	1899	31·9	17·5	...	...	...	...
Periyakulam	Average ...	43·6	36·9	...	0·5	10·9	...
	1898	49·0	31·9	4·9	...	6·9	...
	1899	44·1	26·0	...	...	...	...
Calicut	Average ...	35·2	34·9	...	4·3	5·6	...
	1898	28·3	34·7	...	11·2	5·4	...
	1899	39·5	29·3	...	...	...	...
Cannanore	Average ...	38·6	33·2	0·3	...	8·8	...
	1898	29·3	23·2	...	9·0	...	1·2
	1899	38·3	24·4	...	...	...	...
Cochin	Average ...	35·5	37·1	1·6	...	8·3	...
	1898	28·9	34·6	...	5·0	5·8	...
	1899	33·9	28·8	...	...	...	...
Palghat	Average ...	39·3	30·9	...	4·4	0·4	...
	1898	41·7	31·5	...	2·0	1·0	...
	1899	43·7	30·5	...	...	...	...
Tellicherry	Average ...	32·1	29·0	...	1·6	7·5	...
	1898	22·6	30·0	...	11·4	8·5	...
	1899	33·7	21·5	...	...	...	...
Nellore	Average ...	29·1	25·4	...	3·5	0·3	...
	1898	24·5	33·8	...	8·1	8·7	...
	1899	32·6	25·1	...	...	...	...
Ongole	Average ...	34·2	27·1	...	7·1	...	6·3
	1898	35·0	28·5	...	6·3	...	4·9
	1899	41·3	33·4	...	...	...	...
Coonoor	Average ...	37·6	36·3	...	2·0	7·7	...
	1898	37·3	34·9	...	2·0	6·3	...
	1899	39·6	28·6	...	...	...	...
Ootacamund	Average ...	35·7	29·0	...	5·9	3·4	...
	1898	38·0	39·3	...	3·6	12·8	...
	1899	41·6	26·5	...	...	...	...
Vellore	Average ...	34·8	24·9	8·8	...	...	4·6
	1898	33·1	24·0	7·1	...	...	5·6
	1899	26·0	29·5	...	...	...	...
Walajapet	Average ...	34·7	27·3	8·4	...	...	9·9
	1898	32·4	25·0	6·1	...	...	12·2
	1899	26·3	37·2	...	...	...	...
Gudiyáttam	Average ...	38·5	26·1	0·3	...	...	14·5
	1898	41·1	28·9	2·9	...	...	11·7
	1899	38·2	40·6	...	...	...	...

Municipalities.	Years.	Ratio per mille of population.		Ratio per mille of population.			
		Birth.	Death.	Birth.		Death.	
				Decrease.	Increase.	Decrease.	Increase.
Tirupatúr	Average ...	29·4	30·8	1·7	...	...	0·7
	1898	27·4	29·6	...	0·3	...	1·9
	1899	27·7	31·5	...	...	...	...
Salem	Average ...	36·0	24·0	1·7	...	...	6·5
	1898	37·0	24·4	0·7	...	...	6·1
	1899	36·3	30·5	...	...	...	...
Tirappattúr	Average ...	43·9	29·9	...	1·4	...	17·8
	1898	46·1	29·5	0·8	...	...	18·2
	1899	45·3	47·7	...	...	...	...
Vániyambádi	Average ...	53·6	35·8	...	1·8	...	22·4
	1898	54·5	37·1	...	0·9	...	21·1
	1899	55·4	58·2	...	...	...	...
Chidambaram	Average ...	28·3	32·4	...	10·7	...	0·5
	1898	34·4	34·0	...	4·6	1·1	...
	1899	39·0	32·9	...	...	...	...
Cuddalore	Average ...	37·8	27·1	0·4	...	...	3·3
	1898	41·7	34·3	4·3	...	3·9	...
	1899	37·4	30·4	...	...	...	...
Tiruvannámalai	Average ...	22·2	16·8	...	25·1	...	11·7
	1898	33·6	28·2	...	3·7	...	0·3
	1899	47·3	26·5	...	...	...	...
Mangalore	Average ...	30·9	28·3	0·9	...	1·2	...
	1898	21·5	29·9	...	5·5	4·8	...
	1899	30·0	25·1	...	...	...	...
Kumbakónam	Average ...	31·8	34·5	...	2·0	...	1·9
	1898	33·7	30·0	...	0·1	...	6·4
	1899	30·8	36·4	...	...	...	...
Manárgudi	Average ...	33·3	28·6	1·9	...	1·1	...
	1898	31·8	27·5	1·4	...	...	...
	1899	30·4	27·5	...	...	...	...
Máyavaram	Average ...	33·8	30·3	...	2·7	...	5·0
	1898	25·7	27·1	...	0·8	...	8·2
	1899	36·5	35·3	...	...	...	...
Negapatam	Average ...	30·3	33·3	...	1·9	2·1	...
	1898	30·5	31·8	...	1·7	0·6	...
	1899	32·2	31·2	...	...	...	...
Tanjore	Average ...	28·3	26·0	...	2·3	...	...
	1898	31·3	25·4	...	1·8	...	0·6
	1899	38·1	26·0	...	...	...	...
Palamcottah	Average ...	30·0	27·0	1·7	...	5·3	...
	1898	29·6	29·2	0·4	...	...	1·5
	1899	29·2	21·7	...	...	...	...
Srivillipattúr	Average ...	30·2	19·6	...	5·8	...	3·1
	1898	31·6	19·6	...	4·4	...	3·1
	1899	35·0	22·7	...	...	...	...
Tinnevelly	Average ...	34·6	30·4	...	3·0	2·3	...
	1898	35·0	28·0	...	2·6	...	6·1
	1899	37·6	34·1	...	...	...	...
Tuticorin	Average ...	31·3	33·2	...	4·9	1·1	...
	1898	34·3	36·9	...	1·9	4·8	...
	1899	36·2	32·1	...	...	...	...
Srirangam	Average ...	30·6	32·4	...	2·7	2·2	...
	1898	31·8	32·2	...	1·5	2·0	...
	1899	33·3	30·2	...	...	...	...
Trichinopoly	Average ...	26·6	26·4	...	7·5	...	0·2
	1898	30·2	30·5	...	3·9	3·9	...
	1899	34·1	26·6	...	...	...	...
Anakápallo	Average ...	32·6	24·6	...	8·9	0·7	...
	1898	30·3	21·8	...	11·2	...	2·1
	1899	41·5	29·9	...	...	...	...
Bimlipatam	Average ...	30·8	25·3	...	0·2	2·3	...
	1898	23·1	19·6	...	7·9	...	4·0
	1899	31·0	23·0	...	...	...	...
Viragapatam	Average ...	34·2	28·5	...	4·0	...	2·9
	1898	29·8	23·4	...	8·4	...	8·0
	1899	38·2	31·4	...	...	...	...
Vizianagram	Average ...	30·1	27·7	...	5·0	...	3·4
	1898	31·4	27·5	...	3·7	...	3·6
	1899	35·1	31·1	...	...	...	...
Total, Municipalities ...	Average ...	34·8	31·0	...	2·2	0·3	...
	1898	34·9	31·9	...	2·1	1·2	...
	1899	37·0	30·7	...	...	...	...

26. In instances where the death-rate has exceeded 2 per mille, the following table will exhibit under what head the increase has occurred :—

Municipalities.	Increase over 2 per mille.	Distribution of increase among several diseases.					
		Cholera.	Small-pox.		Dysentery and diarrhœa.	Injuries.	All other causes.
Erode	+ 2·3	+ 1·9	...	+ 0·2	+ 1·5	+ 0·2	— 1·5
Karúr	+ 3·0	+ 1·2	+ 0·3	— 1	— 2·0	+ 0·1	+ 4·5
Cocanada	+ 2·6	...	+ 0·3	+ 1·	+ 0·6	+ 0·1	+ 0·2
Ellore	+ 4·3	— 2·4	...	+ 1·9	+ 0·1	+ 0·1	+ 4·6
Bezwada	+ 5·9	— 2·1	— 0·5	— 1·3	+ 1·9	+ 0·2	+ 7·7
Masulipatam	+ 3·2	— 0·9	+ 0·15	+ 1·2	+ 0·6	— 0·1	+ 2·2
Kurnool	+ 2·4	...	...	+ 0·5	+ 2·7	+ 0·4	— 1·2
Ongole	+ 4·9	— 0·3	...	+ 2·4	...	+ 0·1	+ 3·2
Gudiyáttam	+ 11·7	+ 10·0	+ 0·2	— 5·0	+ 3·9	— 0·25	+ 2·9
Vellore	+ 5·5	+ 4·8	— 0·7	— 4·3	0·9	+ 0·1	+ 4·7
Walajapet	+ 12·2	— 1·2	— 0·1	— 1·7	+ 4·3	+ 0·9	+ 10·0
Tirappattúr	+ 18·2	+ 11·3	— 0·1	+ 0·1	+ ·4	...	+ 5·5
Vániyambádi	+ 21·1	+ 17·5	+ 0·3	— 0·2	+ 1·3	+ 0·1	+ 2·1
Salem	+ 6·1	+ 8·4	...	— 2·3	— 0·6	— 0·2	+ 0·8
Kumbakónam	+ 6·4	+ 1·1	...	+ 0·8	+ 0·3	+ 0·2	+ 4·0
Máyavaram	+ 8·2	+ 2·7	+ 0·1	+ 1·3	+ 0·8	+ 0·4	+ 2·9
Srívilliputtúr	+ 3·1	— 0·4	+ 0·2	— 1·8	— 1·5	— 0·2	+ 6·8
Tinnevelly	+ 6·1	+ 4·3	+ 0·3	— 0·9	— 1·2	...	+ 3·6
Anakápalle	+ 2·1	...	+ 0·1	+ 0·8	+ 1·4	+ 0·2	— 0·4
Bimlipatam	+ 4·0	...	...	+ 0·2	+ 2·1	...	+ 1·7
Vizagapatam	+ 8·0	...	+ 0·25	+ 2·6	+ 2·8	+ 0·3	+ 2·0
Vizianagram	+ 3·6	— 0·4	+ 0·5	— 2·0	+ 4·2	— 0·2	+ 1·5

27. The total average infantile death-rate for Municipalities was 223·9 per mille of births, against 229·5 in the past year—a measure of improvement that may be ascribed to better ability of the people to obtain luxuries owing to easier prices of grains. The causes of high rate of infantile mortality in periods of normal prices of food-grains have, from time to time, been discussed in my Annual Reports, and therefore need not be now entered into. It suffices to remember that no more delicate test of the hygienic condition of a population and its surroundings exists than exhibited by the infantile death-rate—more especially with reference to the cleanliness of the soil. Judged by this rough standard, theoretically, it may be concluded that the towns of Tinnevelly, Tuticorin, Masulipatam, Madras, Negapatam, Madura, Ellore, Bezwada, Chingleput, Kumbakónam and Periyakulam must possess foul soils—as in practice undoubtedly they do.

28. The following table shows the rate of mortality of infants under one year of age in Municipalities in 1899 :—

Municipalities.	Ratio per mille of registered births.	Municipalities.	Ratio per mille of registered births.
Anantapur	113·9	Coonoor	167·4
Adóni	160·1	Ootacamund	201·0
Bellary	218·4	Gudiyáttam	223·2
Chingleput	241·6	Tirupati	210·7
Conjeeveram	219·9	Vellore	189·5
Coimbatore	214·0	Walajapet	188·4
Erode	190·8	Salem	194·3
Karúr	214·5	Tiruppattúr	200·0
Cuddapah	186·2	Vániyambádi	194·8
Berhampur	224·8	Chidambaram	231·1
Chicacole	168·3	Cuddalore	207·7
Parlákimedi	191·1	Tiruvannámalai	170·5
Cocanada	170·2	Mangalore	180·6
Ellore	258·9	Kumbakónam	250·3
Rajahmundry	173·3	Mannárgudi	212·9
Bezwada	264·1	Máyavaram	234·1
Guntúr	238·9	Negapatam	280·5
Masulipatam	242·2	Tanjore	223·0
Kurnool	191·1	Palamcottah	202·6
Madras	275·6	Srívilliputtúr	178·6
Dindigul	116·9	Tinnevelly	313·3
Madura	269·9	Tuticorin	272·1
Palni	179·3	Srírangam	196·9
Periyakulam	241·3	Trichinopoly	216·2
Calicut	140·3	Anakápalle	136·2
Cannanore	172·5	Bimlipatam	172·7
Cochin	173·4	Vizagapatam	211·1
Palghat	231·8	Vizianagram	206·9
Tellicherry	129·3		
Nellore	158·0		
Ongole	241·6	Total ..	223·9

SECTION VI.

GENERAL HISTORY OF CHIEF DISEASES.

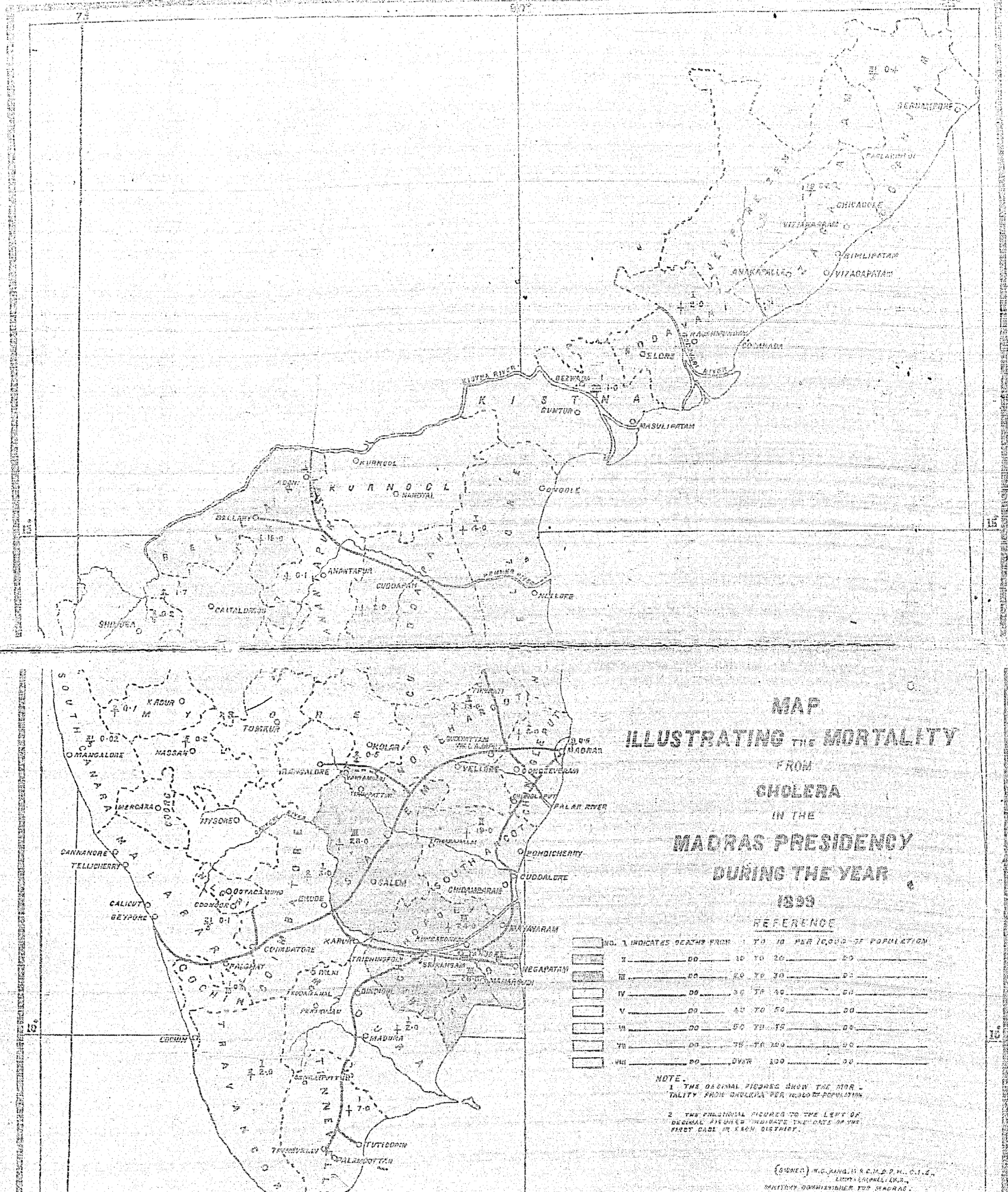
CHOLERA.

29. The deaths from cholera were but 0·9 per mille of the population, against 2·0 per mille in the previous year. The greatest number of deaths occurred in Salem, where they amounted to 5,568 (2·8 per mille of the population), in Tanjore, where they were 5,864 (2·6 per mille of the population), and Trichinopoly, where they were 3,287 (2·4 per mille of the population). As has been pointed out in former reports, the incidence of mortality was, as usual, in the south-west monsoon districts, greatest during the south-west monsoon, and, in the north-east monsoon districts, during the north-east monsoon. Commencing with 1894, when the facts were illustrated by diagrams representing the average for the preceding ten years, with the exception of the slight variation in 1898, the truth of this observation has been annually proved by the statistics available.

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	1,437,232	3	24	17	3	47	1	...	...	1	48
	Vizagapatam	1,622,945	...	1	...	11	12	4	6	4	14	26
	Gŏdâvari	2,077,858	...	6	32	68	106	143	181	17	341	447
	Kistna	1,855,024	1	...	3	97	101	105	11	...	116	217
	North midland—											
	Kurnool	817,630	...	...	...	...	...	...	...	...	...	...
	Cuddapah	1,271,721	...	...	...	...	...	...	...	...	...	...
	Bellary	890,485	164	188	70	113	535	35	7	...	42	577
	Anantapur	727,310	...	1	...	...	1	...	...	...	...	1
	South-western—											
	South Canara	1,052,002	...	...	...	...	...	...	...	1	1	1
	Malabar	2,636,674	...	1	...	...	1	1	2	...	3	4
	Nilgiris	96,765	...	...	...	...	...	...	...	...	...	...
	Total ...	14,485,685	168	221	122	292	803	289	207	22	518	1,321
	Incidence per mille of population of south-west monsoon group.	.....	...	...	...	...	0·05	...	...	...	0·03	0·08

MAP
ILLUSTRATING THE MORTALITY
FROM
CHOLERA
IN THE
MADRAS PRESIDENCY
DURING THE YEAR
1899



REFERENCE

No. 1 INDICATES DEATHS FROM 1 TO 10 PER 10,000 OF POPULATION

II	DO	10	TO	20	DO
III	DO	20	TO	30	DO
IV	DO	30	TO	40	DO
V	DO	40	TO	50	DO
VI	DO	50	TO	75	DO
VII	DO	75	TO	100	DO
VIII	DO	OVER		100	DO

NOTE.

1 THE ORDINAL 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. JAMESON, C.S.I., M.D., F.R.C.P.E., C.I.E.,
LIEUT.-COLONEL I.M.S.,
SANITARY COMMISSIONER FOR MADRAS.

SCALE 1 INCH = 64 MILES

S.O. { Reg: No. 5651
1899 { Copies. 500

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	...	...	...	...	...	...	...	...	...	...
	Madras	436,375	1	...	1	...	2	...	...	...	...	2
	Chingleput	1,199,201	...	...	...	...	...	...	...	...	...	...
	North Arcot	2,113,585	13	35	...	...	48	...	5	...	5	53
	East coast, south—											
	South Arcot	2,162,336	23	11	22	13	69	74	156	506	736	805
	Trichinopoly	1,371,726	17	92	...	...	109	...	...	142	142	251
	Tanjore	2,227,081	43	60	71	108	282	60	52	437	549	831
	South-eastern—											
	Madura	2,184,351	17	8	1	...	26	...	...	...	...	26
	Tinnevelly	1,915,702	84	32	24	3	143	...	...	...	...	143
	South midland—											
	Salem	1,961,784	280	159	180	61	689	246	473	378	1,099	1,788
	Coimbatore	2,003,911	27	15	1	...	43	...	...	...	...	43
	Total ...	19,040,109	514	412	300	185	1,411	382	686	1,463	2,531	3,942
	Incidence per mille of population of north-east monsoon group.	.....	...	...	...	...	0·07	...	...	...	0·13	0·20

30. In the 59 Municipalities, the total deaths from cholera were 3,200 or 1·5 per mille of the population. The greatest sufferers were Vellore, Gudiyáttam, Salem, Kumbakónam, Vániyambádi, Tiruppattúr, Máyavaram, Tinnevelly, Karúr and Trichinopoly. All evidence received continues to point to the usually accepted fact that water contaminated with the specific germ is the chief method of local propagation of the disease. For example, the District Medical Officer, Salem (Captain Gabbett), states:—

"Cholera has been as usual widely prevalent in the district. The disease was prevailing in an epidemic form in the Atúr taluk from February to April and October to December, in Tiruchengode taluk from January to May, Salem and Tiruppattúr taluks from February to May, in the Námakkal taluk January to March, Krishnagiri taluk during August, Uttankarai taluk during October and in the Municipal towns of Vániyambádi and Salem during January and February to April, respectively, causing in all 5,568 deaths in the district. The worst outbreaks are invariably in taluks where the population are chiefly dependent by necessity or choice on river water for drinking. The most typical instance of this occurred in the Atúr taluk. Every village along the banks of the river which runs the length of the taluk was affected. In addition to the civil apothecary and hospital assistant already in the taluk, two hospital assistants were sent there on special cholera duty. It was an impossible task to prevent use of the infected river water or its constant re-infection and other measures were of little avail. In villages and towns dependent on well water-supply cholera outbreaks have often been promptly checked by closing the infected well and preventing infection of other wells by appointing caste waterman and guards."

31. The rules laid down for the guidance of municipalities for prevention of cholera (G.O., No. 1536 M., dated 9th September 1896) continue to be of utility. The tactics pursued, however, have rarely been otherwise than attempts to curb epidemics already in existence. I have never yet known a Collector fulfil the requirements of these rules, by warning a municipality of the approach of cholera, and thereupon demand that "observation staffs" shall be enlisted before cholera is actually present in the midst of a population. Yet, this is the prime object of the existence of these rules. It was my custom, as soon as it had been announced that cholera had entered a municipality, to ascertain with what strictness these and other rules were being observed by the municipality. In this way, it was possible to make certain that early and energetic action was adopted by the municipality concerned. For thirty years past, this office has been supplied with daily information by Collectors as to existence of cholera in the villages, and from information so supplied was prepared to advise Collectors as to the necessity for adopting special sanitary measures. In the last quarter of the year, however, the Revenue Board issued an order preventing Collectors from furnishing the information in future. The result is to take from this office all power of taking any action with reference to cholera. It must, in fact, remain ignorant of the existence or progress of cholera or small-pox, in any part of a Presidency, until receipt of the usual vital statistical returns of the population, which would imply the lapse of about six weeks after the event. The undesirability of cutting off the supply of information as to epidemics from an office, which is at least supposed to possess sanitary functions, has been represented to Government. The matter is still under consideration.

32. Medical officers continue to report favourably upon the use of permanganate of potash in specifically contaminated water sources, but point out that it is impossible to give definite statements, as disinfection of the water-supply often results in other sources being employed by the people.

Statement illustrating the distribution, &c., of Cholera in the Madras Presidency during the year 1899, *to accompany the Cholera Map.*

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.		Period of Maximum Intensity of the Disease.	Number of Villages in each of the Circles.	Number of these	
							Total Deaths in each of the Circles.	Ratio per 10,000 of Population.			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	27th July...	27th July ...	1	0·1	...	105	1	104
	7	Dharmavaram ...	R.C.	66,113	...	...	...	...	...	91	...	91
	8	Hindúpur ...	R.C.	89,845	...	...	...	...	...	99	...	99
	9	Madakasira ...	R.C.	67,992	4th Jan. ...	5th Jan. ...	4	0·6	January ...	150	2	148
	10	Kalyandrug ...	R.C.	71,592	...	...	...	...	...	141	...	141
	10	Total, District ...		727,310	4th Jan. ...	27th July...	5	0·1	January ...	965	3	962
Bellary.	11	Bellary ...	M.T.C.	57,780	26th Jan. ...	2nd Aug.	12	2·1	June ...	1	1	...
	12	Ádóni ...	M.T.C.	26,216	16th July ...	16th July.	1	0·4	...	1	1	...
	13	Hospet ...	T.C.	12,860	8th May ...	29th Aug.	139	108·0	July ...	1	1	...
	14	Kampli ...	T.C.	10,528	6th May ...	30th Sept.	12	11·4	August ...	1	1	...
	15	Rayadrug ...	T.C.	10,378	19th Jan. ...	19th Jan. ...	1	1·0	...	1	1	...
	16	Bellary ...	R.C.	120,869	1st Jan. ...	21st Nov.	76	6·3	September.	129	13	116
	17	Hospet ...	R.C.	69,103	4th Mar....	11th Oct.	280	40·5	May ...	77	23	54
	18	Kúdligi ...	R.C.	94,293	11th Feb. ...	16th Aug.	200	21·2	May ...	105	17	88
	19	Hadagalli ...	R.C.	104,035	1st Mar. ...	2nd Oct. ...	244	23·4	May ...	85	31	54
	20	Harpanahalli ...	R.C.	82,240	14th Feb. ...	21st Nov.	639	77·7	April ...	83	28	55
	21	Ahúr ...	R.C.	89,076	15th Feb. ...	27th Feb.	12	1·4	February ...	91	1	90
	22	Ádóni ...	R.C.	134,551	23rd Oct. ...	31st Oct. ...	7	0·5	October ...	129	1	128
	23	Rayadrug ...	R.C.	68,243	1st Jan. ...	27th Jan. ...	50	7·3	January ...	67	7	60
	24	Zamindari ...	...	11,371	29th Jan. ...	9th Feb....	4	3·5	January ...	24	1	23
	14	Total, District ...		890,485	1st Jan. ...	21st Nov. ...	1,677	18·8	May ...	795	127	668
Chingleput.	25	Conjeeveram ...	M.T.C.	42,543	1st Jan. ...	14th Feb....	24	5·6	January ...	1	1	...
	26	Chingleput ...	M.T.C.	9,763	22nd Jan....	6th Feb. ...	3	3·1	January ...	1	1	...
	27	St. Thomas' Mount	T.C.	12,140	...	...	...	...	...	1	...	1
	28	Saidapet ...	R.C.	209,477	4th Jan. ...	15th Mar. ...	61	2·9	February ...	275	13	262
	29	Chingleput ...	R.C.	127,413	2nd Jan....	19th Feb. ...	42	3·3	January ...	299	11	288
	30	Madurántakam	R.C.	263,130	1st Jan. ...	8th Mar. ...	87	3·3	January ...	514	21	493
	31	Conjeeveram ...	R.C.	176,124	1st Jan. ...	30th April.	100	5·7	January ...	372	20	352
	32	Tiruvallúr ...	R.C.	236,916	1st Jan. ...	16th Mar. ...	213	8·9	January ...	431	32	399
	33	Ponnéri ...	R.C.	122,393	2nd Jan. ...	7th Mar. ...	194	15·8	January ...	240	34	206
	9	Total, District ...		1,199,901	1st Jan. ...	30th April.	724	6·0	January ...	2,134	133	2,001
Coimbatore.	34	Coimbatore ...	M.T.C.	46,007	...	...	...	...	...	1	...	1
	35	Erode ...	M.T.C.	12,238	22nd Feb.	15th April.	35	28·6	March ...	1	1	...
	36	Karúr ...	M.T.C.	10,740	17th Jan. ...	24th June ...	53	49·3	February ...	1	1	...
	37	Coimbatore ...	R.C.	230,121	15th Jan. ...	30th April.	4	0·2	April ...	263	1	262
	38	Erode ...	R.C.	234,677	10th Feb.	7th June...	235	10·0	March ...	202	16	186
	39	Satyamangalam	R.C.	184,088	11th Feb.	21st Feb. ...	3	0·2	February ...	191	1	190
	40	Pollachi ...	R.C.	183,650	29th Mar. ...	29th Mar. ...	1	0·1	...	161	1	160
	41	Palladam ...	R.C.	270,384	24th April.	22nd May...	11	0·4	April ...	195	3	192
	42	Bhavání ...	R.C.	119,867	18th Feb.	21st July...	23	2·0	June ...	63	4	59
	43	Kollegal ...	R.C.	88,524	...	...	...	...	...	130	...	130
	44	Udamalpet ...	R.C.	143,056	...	...	...	...	...	93	...	93
	45	Karúr ...	R.C.	201,043	2nd Jan....	2nd Aug. ...	143	7·1	February ...	95	14	81
	46	Dhárápuram ...	R.C.	249,216	7th Feb.	24th July...	57	2·3	March ...	82	7	75
	13	Total, District ...		2,003,911	2nd Jan....	2nd Aug. ...	565	2·8	March. ...	1,478	49	1,429
Cuddapah.	47	Cuddapah ...	M.T.C.	17,211	...	...	...	...	...	1	...	1
	48	Badvel ...	R.C.	93,150	1st Jan. ...	14th Feb. ...	111	11·9	January ...	120	19	101
	49	Proddatur ...	R.C.	98,117	...	...	...	...	...	91	...	91
	50	Sidhavattam....	R.C.	66,809	...	...	...	...	...	79	...	79
	51	Pullampet ...	R.C.	149,093	4th Jan. ...	31st Mar....	185	12·4	January ...	135	14	121
	52	Cuddapah ...	R.C.	137,455	19th Jan....	12th Mar....	3	0·2	January. ...	151	2	149
	53	Jammalamaduga	R.C.	101,273	...	...	...	...	...	127	...	127
	54	Pulivendla ...	R.C.	105,842	...	...	...	...	...	106	...	106
	55	Rayachóti ...	R.C.	113,234	...	...	...	...	...	94	...	94
	56	Kadiri ...	R.C.	134,892	...	...	...	...	...	142	...	142
	57	Vayalpad ...	R.C.	127,035	...	...	...	...	...	125	...	125
	58	Madanapalle ...	R.C.	127,310	...	...	...	...	...	105	...	105
	12	Total, District ...		1,271,721	1st Jan. ...	31st Mar. ...	299	2·4	January ...	1,276	35	1,241

Statement illustrating the distribution, &c., of Cholera in the Madras Presidency during the year 1899, to accompany the Cholera Map—cont.

1 Districts.	2 Number of Circles of Registration.	3 Name of Circle.	4 Population for which Returns were received.	5 Date of First Case of Cholera in the Circle during the Year.	6 Date of Last Case of Cholera in the Circle during the Year.	7 Cholera. Total Deaths in each of the Circles.	7 Cholera. Ratio per 10,000 of Population.	8 Period of Maximum Intensity of Disease.	9 Number of Villages in each of the Circles.	10 Number of those Affected by Cholera.	10 Number of those Not affected by Cholera.
Ganjam.	59	Chicacole ...M.T.C.	15,204	...	...	...	...	...	1	...	1
	60	Berhampur ...M.T.C.	25,493	...	...	...	...	...	1	...	1
	61	Parlakimedi ...M.T.C.	16,379	...	...	...	...	...	1	...	1
	62	Chicacole ... R.C.	183,079	31st Mar...	1st April...	2	0·1	March ...	305	1	304
	63	Berhampur ... R.C.	265,325	13th July...	26th Aug....	19	0·7	August ...	543	8	535
	64	Gumsur ... R.C.	173,262	1st June..	8th Oct. ...	7	0·4	September.	716	2	708
	65	Zamindaries	696,312	1st April...	26th Aug....	23	0·3	July ...	2,660	16	2,644
	66	Agency Tracts	59,175	...	...	...	...	...	1,846	...	1,846
	8	Total, District ...	1,437,232	31st Mar...	8th Oct....	51	0·3	July ...	6,037	27	6,010
Godavari.	67	Cocanada ...M.T.C.	40,068	...	...	...	...	...	1	...	1
	68	Rajahmundry ...M.T.C.	28,279	31st Aug. ...	14th Sept.	7	2·5	September.	1	1	...
	69	Ellore ...M.T.C.	29,296	...	...	...	...	...	1	...	1
	70	Pithápuram ... T.C.	13,731	...	...	...	...	...	1	...	1
	71	Peddápuram ... T.C.	13,052	...	...	...	...	...	1	...	1
	72	Samalkot ... T.C.	13,409	...	...	...	...	...	1	...	1
	73	Dowlaishweram ... T.C.	10,454	...	...	...	...	...	1	...	1
	74	Rámachandrapuram. R.C.	261,188	28th July ...	26th Dec....	73	2·8	September.	164	12	152
	75	Narsapúr ... R.C.	230,315	1st Jan. ...	1st Jan. ...	1	0·04	...	159	1	158
	76	Amalápuram ... R.C.	266,072	1st Oct. ...	26th Dec. ...	246	9·6	November...	173	68	167
	77	Tanuku ... ... R.C.	204,040	14th Jan. ...	15th Jan. ...	1	0·1	...	158	1	157
	78	Bhímavaram ... R.C.	121,900	25th Feb. ...	25th Aug. ..	17	1·4	August ...	139	2	138
	79	Ellore ... ... R.C.	142,583	14th Feb. ...	30th Nov....	5	0·4	November...	219	2	217
	80	Yernagúdem ... R.C.	136,204	1st Feb. ...	1st Feb. ...	2	0·1	...	137	2	135
	81	Rajahmundry ... R.C.	106,866	...	...	...	...	...	116	...	116
	82	Peddápuram ... R.C.	121,028	8th August.	21st Oct. ...	9	0·7	August ...	133	3	130
	83	Bhadráchalam ... R.C.	* 127,114	...	...	...	...	...	909	...	909
	84	Zamindaries	218,572	25th Jan....	30th Nov....	93	4·3	October ...	245	14	231
	18	Total, District ...	2,077,858	1st Jan....	26th Dec....	455	2·2	November...	2,603	101	2,502
Kistna.	85	Masulipatam ...M.T.C.	38,667	...	...	...	...	...	1	...	1
	86	Guntúr ...M.T.C.	23,267	...	...	...	...	...	1	...	1
	87	Bezwada ...M.T.C.	20,611	1st Aug. ...	1st Aug. ...	2	1·0	...	1	1	...
	88	Chirála ... T.C.	10,581	...	...	...	...	...	1	...	1
	89	Penali ... R.C.	222,756	20th Jan. ...	26th Jan....	1	0·04	...	151	1	150
	90	Bápatla ... R.C.	171,345	30th June...	30th June...	1	0·1	...	116	1	115
	91	Guntúr ... R.C.	143,667	1st Aug....	1st Aug. ...	1	0·1	...	112	1	111
	92	Paland ... R.C.	142,005	...	...	...	...	...	98	...	98
	93	Narasaraopet ... R.C.	156,304	...	...	...	...	...	115	...	115
	94	Gudivada ... R.C.	118,508	15th Sept...	30th Nov....	51	4·3	October ...	213	10	203
	95	Sattenapalle ... R.C.	128,611	...	...	...	...	...	176	...	176
	96	Masulipatam ... R.C.	150,517	15th Sept...	17th Nov....	78	4·9	October ...	188	12	176
	97	Nandigáma ... R.C.	126,098	1st Oct....	20th Oct. ...	5	0·4	October ...	169	2	167
	98	Bezwada ... R.C.	85,731	4th Sept...	23th Oct. ...	30	3·5	September.	108	5	103
	99	Vinukonda ... R.C.	82,431	...	...	...	...	...	72	...	72
	100	Zamindaries	214,735	17th Sept...	31st Oct. ...	49	2·3	September.	326	10	316
	16	Total, District ...	1,855,024	20th Jan....	30th Nov....	218	1·2	October ...	1,848	43	1,805
Kurnool.	101	Kurnool ...M.T.C.	24,306	...	...	...	...	...	1	...	1
	102	Nandyal ... T.C.	10,704	...	...	...	...	...	1	...	1
	103	Ramallakot ... R.C.	160,290	...	...	...	...	...	106	...	106
	104	Pattikonda ... R.C.	138,703	...	...	...	...	...	107	...	107
	105	Nandikockur ... 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	...	...	...	...	...	108	...	108
	110	Markapúr ... R.C.	90,371	...	...	...	...	...	94	...	94
	10	Total, District ...	817,660	...	...	...	...	...	802	...	802
Madras.	111	Madras ... M.T.C.	436,275	9th Jan. ...	28th Aug....	23	0·5	May ...	1	1	...

* Including Agency Hill Tracts.

Statement illustrating the distribution, &c., of Cholera in the Madras Presidency during the year 1899, to accompany the Cholera Map—cont.

1 Districts.	2 Number of Circles of Registration.	3 Name of Circle.	4 Population for which Returns were received.	5 Date of First Case of Cholera in the Circle during the Year.	6 Date of Last Case of Cholera in the Circle during the Year.	7 Cholera. Total Deaths in each of the Circles.	7 Cholera. Ratio per 10,000 of Population.	8 Period of Maximum Intensity of Disease.	9 Number of Villages in each of the Circles.	10 Number of those Affected by Cholera.	10 Number of those Not affected by Cholera.
Madura.	112	Madura ... M.T.C.	87,121	1st Jan. ...	13th Aug. ...	64	7·3	January ...	1	1	...
	113	Dindigul ... M.T.C.	20,115	...	...	...	...	...	1	...	1
	114	Periyakulam ... M.T.C.	16,363	...	...	...	...	...	1	...	1
	115	Palni ... M.T.C.	16,940	3rd Mar....	3rd Mar. ...	1	0·6	...	1	1	...
	116	Ramnad ... T.C.	13,589	12th Jan. ...	6th Mar. ...	26	19·1	February ...	1	1	...
	117	Aruppukóttai ... T.C.	12,673	2nd May...	13th June ...	57	45·0	May ...	1	1	...
	118	Kilakarai ... T.C.	12,326	12th Jan. ...	24th Feb. ...	3	2·4	February ...	1	1	...
	119	Paramagudi ... T.C.	10,001	8th Jan. ...	22nd Feb. ...	45	45·0	January ...	1	1	...
	120	Madura ... R.C.	173,755	1st Jan. ...	11th July ...	50	2·8	January ...	250	...	...
	121	Melúr ... R.C.	148,650	15th Feb ...	15th Feb....	1	0·1	...	100	...	...
	122	Tirumangalam ... R.C.	264,620	4th Jan. ...	23rd April...	37	1·4	January ...	273	...	...
	123	Periyakulam ... R.C.	246,845	...	...	...	...	...	85	...	85
	124	Dindigul ... R.C.	370,857	3rd April...	31st July ...	16	0·4	April ...	213	...	...
	125	Palni ... ... R.C.	178,110	23rd Mar....	25th May ...	3	0·2	May ...	115	...	...
	126	Kodaikanal ... R.C.	18,288	...	...	...	...	...	11	...	11
	127	Sattenandal Villages ...	1,283	13th Jan. ...	17th Feb....	7	54·6	January ...	4	...	...
	128	Zamindaries	592,715	8th Jan. ...	13th June....	173	2·9	April ...	3,014	...	...
	17	Total, District ...	2,184,351	1st Jan. ...	13th Aug....	483	2·2	March ...	4,103	*	*
Malabar.	129	Tellicherry ... M.T.C.	26,631	...	...	...	...	...	1	...	1
	130	Calicut ... M.T.C.	64,798	...	...	...	...	...	1	...	1
	131	Palghat ... M.T.C.	30,307	...	...	...	...	...	1	...	1
	132	Cochin ... M.T.C.	16,147	...	...	...	...	...	1	...	1
	133	Cannanore ... M.T.C.	26,653	...	...	...	...	...	1	...	1
	134	Chirakkal ... R.C.	223,171	...	...	...	...	...	282	...	282
	135	Kóttayam ... R.C.	168,260	...	...	...	...	...	220	...	220
	136	Kurumbranád ... R.C.	201,011	...	...	...	...	...	349	...	349
	137	Calicut ... R.C.	171,582	...	...	...	...	...	191	...	191
	138	Ernád ... R.C.	389,187	...	...	...	...	...	233	...	233
	139	Ponnáni ... R.C.	449,253	21st Oct. ...	21st Oct. ...	1	0·02	...	460	1	459
	140	Walavanád ... R.C.	332,334	3rd Nov....	3rd Nov....	1	0·03	...	317	1	316
	141	Palghat ... R.C.	332,627	21st May ...	8th Nov....	16	0·3	May ...	136	3	133
	142	Wynaad ... R.C.	76,305	...	...	...	...	...	58	...	58
	143	Cochin ... R.C.	5,988	...	...	...	...	...	3	...	3
	15	Total, District ...	2,636,674	21st May ...	8th Nov....	12	0·05	May ...	2,245	5	2,240
Nellore.	144	Nellore ... M.T.C.	29,128	1st Jan. ...	20th Mar....	20	6·8	January ...	1	1	...
	145	Ongole ... M.T.C.	16,632	...	...	...	...	...	1	...	1
	146	Gudur ... R.C.	116,758	6th Jan. ...	26th Feb. ...	25	2·1	January ...	121	9	112
	147	Rapúr ... R.C.	61,305	2nd Jan. ...	19th Feb. ...	39	6·4	February ...	113	10	103
	148	Nellore ... R.C.	168,548	1st Jan. ...	23rd May ...	175	10·4	January ...	150	25	125
	149	Atmakúru ... R.C.	96,310	1st Jan. ...	18th Feb. ...	123	12·8	January ...	104	12	92
	150	Kavali ... R.C.	69,879	5th Jan. ...	10th Feb. ...	51	7·4	January ...	56	6	50
	151	Udayagiri ... R.C.	55,382	...	...	...	...	...	53	...	53
	152	Kandukúr ... R.C.	113,357	1st Jan. ...	10th Feb. ...	45	4·0	January ...	115	6	109
	153	Kanigiri ... R.C.	61,066	...	...	...	...	...	59	...	57
	154	Ongole ... R.C.	146,979	10th Feb. ...	4th Mar....	8	0·5	February ...	112	1	111
	155	Zamindaries	611,777	1st Jan. ...	23rd Feb. ...	58	1·1	January ...	918	14	904
	12	Total, District ...	1,468,357	1st Jan. ...	23rd May ...	541	3·7	January ...	1,793	86	1,707
Nilgiris.	156	Ootacamund ... M.T.C.	13,991	...	...	...	...	...	1	...	1
	157	Coonoor ... M.T.C.	5,586	...	...	...	...	...	1	...	1
	158	Nilgiris ... M.C.	52,198	...	...	...	...	...	38	...	38
	159	South-East Wynaad R.C.	25,620	...	...	...	...	...	12	...	12
	4	Total, District ...	98,795	...	...	...	...	...	52	...	52
North Arcot.	160	Vellore ... M.T.C.	44,744	1st Jan. ...	31st May ...	279	62·4	February ...	1	1	...
	161	Wálajápet ... M.T.C.	10,485	8th Jan. ...	10th Feb....	6	5·7	February ...	1	1	...
	162	Gudiyattam ... M.T.C.	13,745	1st Jan. ...	25th Feb....	266	141·9	January ...	1	1	...
	163	Tirupati ... M.T.C.	14,298	6th Jan. ...	13th Mar....	42	29·3	January ...	1	1	...
	164	Kálahasti ... T.C.	11,715	1st Jan. ...	29th Jan....	18	15·3	January ...	1	1	...
	165	Arcot ... T.C.	10,928	3rd Jan. ...	14th Feb....	22	20·1	January ...	1	1	...
	166	Ambúr ... T.C.	10,583	2nd Jan....	20th May...	114	107·7	May ...	1	1	...
	167	Chittoor ... R.C.	309,186	1st Jan. ...	28th Nov....	333	16·6	January ...	337	31	306
	168	Chandragiri ... R.C.	160,030	1st Jan. ...	27th Mar....	175	17·3	January ...	231	4	227
	169	Palmanér ... R.C.	45,181	...	...	...	...	...	93	...	93
	170	Gudiyattam ... R.C.	157,853	1st Jan. ...	19th Nov....	267	36·0	January ...	183	19	164

* Return not yet received.

Statement illustrating the distribution, &c., of Cholera in the Madras Presidency during the year 1899, *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.	137,887	1st Jan. ...	29th Nov...	509	36·9	January ...	149	44	105
	172	Pólúru ...	R.C.	139,697	1st Jan. ...	28th Mar....	110	7·9	February ...	263	18	245
	173	Wandiwash ...	R.C.	177,719	1st Jan. ...	20th Feb. ...	39	2·2	January ...	285	4	281
	174	Arcot ...	R.C.	165,548	1st Jan. ...	29th April...	17	1·0	January ...	258	11	247
	175	Wálajápet ...	R.C.	228,639	2nd Jan. ...	21st April...	281	12·3	January ...	250	14	236
	176	Zamindaries ...	...	636,536	1st Jan. ...	10th July...	986	15·5	January ...	2,272	75	2,197
	17	Total, District ...		2,113,585	1st Jan. ...	29th Nov....	3,754	17·8	January ...	4,328	227	4,101
Salem.	177	Salem ...	M.T.C.	67,640	29th Jan. ...	31st Dec. ...	609	90·0	February ...	1	1	...
	178	Vániyambádi ...	M.T.C.	15,838	1st Jan. ...	19th June...	287	187·5	January ...	1	1	...
	179	Tiruppattúr ...	M.T.C.	16,463	8th Feb. ...	10th Nov....	183	112·4	May ...	1	1	...
	180	Sendamangalam	T.C.	13,354	1st Nov. ...	15th Nov....	15	11·2	November.	1	1	...
	181	Rásipuram ...	T.C.	10,539	24th Mar....	22nd Dec....	5	4·7	April ...	1	1	...
	182	Salem ...	R.C.	338,759	18th Jan. ...	29th Dec. ...	732	21·6	April ...	429	111	358
	183	Atúr ...	R.C.	182,202	8th Jan. ...	31st Dec. ...	1,217	66·4	November.	176	106	70
	184	Námakkal ...	R.C.	228,636	1st Jan. ...	26th Dec. ...	517	18·0	February ...	347	69	278
	185	Tiruchengódu ...	R.C.	248,667	15th Jan. ...	29th Dec. ...	845	32·8	February ...	168	61	107
	186	Hosúr ...	R.C.	155,693	4th May ...	15th June ...	75	4·8	May ...	757	19	738
	187	Krishnagiri ...	R.C.	152,116	15th Jan. ...	1st Oct. ...	219	10·3	August ...	510	38	472
	188	Dharmapuri ...	R.C.	178,420	3rd Jan. ...	20th Dec. ...	83	4·7	August ...	575	10	565
	189	Tiruppattúr ...	R.C.	156,295	3rd Jan. ...	6th Nov....	546	34·9	February ...	322	39	283
	190	Úttangarai ...	R.C.	138,112	7th Jan. ...	29th Nov....	173	12·5	October ...	452	8	444
	14	Total, District ...		1,961,784	1st Jan. ...	31st Dec. ...	5,568	28·4	February ...	3,811	466	3,345
S. Arcot.	191	Cuddalore ...	M.T.C.	47,025	4th Jan. ...	4th Aug....	34	7·2	February ...	1	1	...
	192	Chidambaram...	M.T.C.	18,634	24th Jan. ...	18th Mar....	36	19·3	February ...	1	1	...
	193	Tiruvannámalai	M.T.C.	12,643	6th Jan. ...	4th Mar....	11	8·1	January ...	1	1	...
	194	Porto Novo ...	T.C.	14,045	2nd Jan....	24th May ...	14	9·9	February ...	1	1	...
	195	Cuddalore ...	R.C.	230,908	1st Jan. ...	7th Nov....	622	21·5	January ...	231	86	145
	196	Villupuram ...	R.C.	301,690	1st Jan. ...	12th Dec....	1,027	34·0	January ...	305	111	194
	197	Chidambaram	R.C.	248,589	2nd Jan....	31st Dec. ...	351	15·4	March ...	437	96	341
	198	Tindivanam ...	R.C.	315,984	1st Jan. ...	31st May ...	64	2·0	January ...	474	17	457
	199	Kallakurchi ...	R.C.	240,479	1st Jan. ...	31st Dec. ...	508	21·2	December...	383	78	305
	200	Tirukkóyilúr ...	R.C.	257,115	1st Jan. ...	29th Dec....	812	31·5	January ...	354	110	244
	201	Tiruvannámalai	R.C.	191,748	1st Jan. ...	20th Dec. ...	304	15·9	January ...	402	37	365
	202	Vriddhachalam	R.C.	222,791	19th Jan. ...	30th Dec. ...	444	19·9	December...	207	67	240
	12	Total, District ...		2,162,336	1st Jan. ...	31st Dec. ...	4,260	19·7	January ...	2,897	605	2,292
S. Canara.	203	Mangalore ...	M.T.C.	40,620	...	...	...	...	...	1	...	1
	204	Mangalore ...	R.C.	237,974	...	...	...	...	...	207	...	207
	205	Kasaragód ...	R.C.	280,655	...	...	...	...	...	243	...	243
	206	Uppinangadi ...	R.C.	116,804	31st May ...	21st Dec. ...	2	0·2	December...	277	2	275
	207	Udipi ...	R.C.	253,699	...	...	...	...	...	259	...	259
	208	Coondapoor ...	R.C.	120,250	...	...	...	...	...	190	...	190
	6	Total, District ...		1,052,002	31st May ...	21st Dec. ...	2	0·02	December...	1,277	2	1,275
Tanjore.	209	Tanjore ...	M.T.C.	54,258	1st Jan. ...	28th Dec....	86	15·8	January ...	1	1	...
	210	Kumbakónam...	M.T.C.	54,254	1st Jan. ...	26th Dec....	256	47·6	January ...	1	1	...
	211	Máyavaram ...	M.T.C.	23,754	3rd Jan. ...	31st Dec....	119	50·1	February ...	1	1	...
	212	Negapatam ...	M.T.C.	58,573	20th Jan. ...	31st Dec. ...	83	14·2	August ...	1	1	...
	213	Mannárgudi ...	M.T.C.	20,392	30th Jan. ...	28th Dec....	25	12·0	August ...	1	1	...
	214	Tiruválúr ...	T.C.	12,934	5th Jan. ...	31st Dec. ...	76	58·6	December...	1	1	...
	215	Tanjore ...	R.C.	356,021	1st Jan	31st Dec. ...	773	21·7	January ...	426	117	309
	216	Kumbakónam...	R.C.	323,350	1st Jan. ...	13th Oct. ...	1,648	51·0	January ...	519	199	320
	217	Máyavaram ...	R.C.	220,977	1st Jan. ...	31st Dec....	672	30·4	January ...	338	105	233
	218	Shiyali ...	R.C.	119,801	1st Jan. ...	31st Dec....	213	17·8	March ...	191	46	145
	219	Nannilam ...	R.C.	215,905	1st Jan. ...	31st Dec. ...	749	34·7	January ...	388	143	245
	220	Negapatam ...	R.C.	148,177	4th Jan. ...	31st Dec. ...	360	24·3	December...	317	65	252
	221	Mannárgudi ...	R.C.	167,033	1st Jan. ...	29th Dec. ...	428	25·6	January ...	368	97	271
	222	Tirutturaippúndi	R.C.	180,293	1st Jan. ...	28th Dec. ...	286	15·8	January ...	226	50	176
	223	Pattukkóttai ...	R.C.	271,359	3rd Jan....	11th Dec. ...	88	3·2	February ...	831	29	802
	15	Total, District ...		2,227,081	1st Jan. ...	31st Dec. ...	5,864	26·3	January ...	3,550	857	2,693

Statement illustrating the distribution, &c., of Cholera in the Madras Presidency during the year 1899, *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	12th Mar. ...	24th May ...	128	51·7	April ...	1	1	...
	225	Palamcottah ...	M.T.C.	18,612	15th Feb. ...	26th April...	36	19·3	February ...	1	1	...
	226	Tuticorin ...	M.T.C.	24,968	6th Mar. ...	18th May ...	14	5·6	May ...	1	1	...
	227	Srívilliputtúr ...	M.T.C.	29,541	...	...	...	...	...	1	...	1
	228	Kulasékarapatnam ...	T.C.	15,910	...	...	...	...	...	1	...	1
	229	Virudapatti ...	T.C.	14,075	14th Jan. ...	14th Jan. ...	1	0·7	...	1	1	...
	230	Viravanallúr ...	T.C.	13,951	11th Mar....	31st May ...	10	7·2	April ...	1	1	...
	231	Rajahpalaiyam.	T.C.	13,301	...	...	...	...	...	1	...	1
	232	Tenkási ...	T.C.	12,861	...	...	...	...	...	1	...	1
	233	Sivakási ...	T.C.	12,184	1st May ...	31st May ...	7	5·7	May ...	1	1	...
	234	Káyalpatnam...	T.C.	11,464	31st Jan. ...	31st May ...	22	19·2	January ...	1	1	...
	235	Kalladakurchi.	T.C.	11,096	...	...	...	...	...	1	...	1
	236	Ottappidáram.	R.C.	316,990	4th Jan. ...	20th July ...	79	2·5	May ...	385	27	358
	237	Srívaikuntam ...	R.C.	260,196	1st Jan. ...	25th Sept....	420	16·1	May ...	146	62	84
	238	Tinnevelly ...	R.C.	141,252	8th Feb. ...	13th July ...	168	11·8	February ...	120	36	84
	239	Srívilliputtúr...	R.C.	152,253	2nd Jan. ...	21st Mar. ...	14	0·9	January ...	98	5	93
	240	Sankaranayinárkóyil ...	R.C.	209,213	2nd Mar. ...	20th May ...	5	0·2	May ...	127	3	124
	241	Nánguméri ...	R.C.	174,410	1st Jan. ...	26th June ...	166	9·6	April ...	236	42	194
	242	Ambásamudram ...	R.C.	158,552	3rd Feb. ...	6th June ...	121	7·6	April ...	94	24	70
	243	Sáttúr ...	R.C.	158,016	2nd Jan. ...	14th May ...	64	4·0	January ...	209	17	192
	244	Tenkási ...	R.C.	142,075	16th Jan. ...	22nd April...	8	0·6	March ...	101	3	98
	21	Total, District ...		1,915,702	1st Jan. ...	25th Sept....	1,265	6·6	April ...	1,538	226	1,312
Trichinopoly.	245	Trichinopoly ...	M.T.C.	80,666	1st Jan. ...	6th April ...	366	49·8	January ...	1	1	...
	246	Srírangam ...	M.T.C.	21,632	1st Jan. ...	8th April...	75	34·7	January ...	1	1	...
	247	Trichinopoly ...	R.C.	248,561	1st Jan. ...	26th Dec. ...	780	31·4	January ...	364	117	247
	248	Musiri ...	R.C.	282,615	1st Jan. ...	29th Dec. ...	1,026	36·3	January ...	223	121	102
	249	Kulittalai ...	R.C.	253,685	1st Jan. ...	31st Dec. ...	569	23·3	January ...	246	109	137
	250	Perumbalúr ...	R.C.	195,004	14th Jan. ...	30th Dec. ...	265	13·6	December...	219	89	130
	251	Udaiyárpálaiyam.	R.C.	201,580	9th Jan. ...	27th April...	179	8·9	January ...	335	101	234
	252	Zamindaries ...	...	89,033	15th Jan. ...	31st Dec. ...	28	3·1	March ...	113	112	1
	8	Total, District ...		1,371,726	1st Jan. ...	31st Dec. ...	3,287	24·0	January ...	1,502	651	851
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	...	...	...	...	...	1	...	1
	256	Anakápalle ...	M.T.C.	17,091	...	...	...	...	...	1	...	1
	257	Bobbili ...	T.C.	14,448	...	...	...	...	...	1	...	1
	258	Sálúru ...	T.C.	12,910	...	...	...	...	...	1	...	1
	259	Palkonda ...	T.C.	10,364	...	...	...	...	...	1	...	1
	260	Párvatípuram...	T.C.	10,053	...	...	...	...	...	1	...	1
	261	Sarvasiddhi ...	R.C.	137,042	6th Sept. ...	31st Dec. ...	23	1·7	September.	145	5	140
	262	Narasapatnam or Golgonda ...	R.C.	106,553	...	...	...	...	...	176	...	176
	263	Anakápalle ...	R.C.	131,823	...	...	...	...	...	142	...	142
	264	Vizagapatam ...	R.C.	52,905	...	...	...	...	...	74	...	74
	265	Viravilli ...	R.C.	170,367	...	...	...	...	...	240	...	240
	266	Bimlipatam ...	R.C.	93,899	27th Oct. ...	27th Oct. ...	2	0·2	...	117	1	116
	267	Srungavarapukota ...	R.C.	124,589	...	...	...	...	...	181	...	181
	268	Vizianagram ...	R.C.	98,835	19th July ...	19th July ...	1	0·1	...	193	1	192
	269	Gajapatinagaram	R.C.	107,809	...	...	...	...	...	222	...	222
	270	Chipurupalle ...	R.C.	129,048	...	...	...	...	...	268	...	268
	271	Sálúru ...	R.C.	61,156	...	...	...	...	...	159	...	159
	272	Bobbili ...	R.C.	56,018	...	...	...	...	...	169	...	169
	273	Palkonda ...	R.C.	146,603	...	...	...	...	...	371	...	371
	274	Párvatípuram	R.C.	73,130	...	...	...	...	...	203	...	203
	22	Total, District ...		1,622,945	19th July ..	31st Dec. ...	26	0·2	September.	2,668	7	2,661

SMALL-POX.

33. There were 16,991 deaths from small-pox. Of these, the largest numbers occurred in South Arcot (2,540, or 1·2 per mille of the population), Madura (1,947, or 0·9 per mille of the population), Gódávari (1,829, or 0·9 per mille of the population), Tanjore (1,825, or 0·8 per mille of the population), North Arcot (1,550, or 0·7 per mille of the population). In regard to these figures it must be remembered that vaccination is not compulsory in rural areas, and although a large section of the population appreciates its benefits, there is still some repugnance in submitting to the operation. Even where the mothers have no objection to the operation, it is difficult to convince them that infants under one year of age can successfully bear the operation. Hence, the risk to infantile life is considerable—more especially as a Hindu mother considers it necessary to show respect to the goddess of small-pox by joining in assemblies in crowded rooms where, in the presence of the small-pox patient, ceremonies are performed to the deity. Re-vaccination, which, as the population emerges from being but a partially protected to being a fairly protected population, must become of greater importance, is rendered difficult in advance by it being conceived that small-pox is a disease of infancy, from which the adult has little real cause to protect himself—a conviction obviously of the same origin as the European estimate of measles, namely, that infection spares not the child but passes over the adult, who it is apt to be forgotten has usually acquired immunity consequent upon an attack of the disease in infancy.

34. The appearance of small-pox in a locality is at once followed by special vaccinators being deputed to the spot, but, unfortunately, it does not follow in certain areas that their services will be utilized by the people, as a distinct prejudice against vaccination being conducted in epidemics is often met with. Disinfection of infected houses and clothing is also employed. Much prejudice was encountered in the preceding year against vaccination—the people having hopelessly confused the operation of inoculation against plague with that against small-pox; or, put in other words, an opinion existed that plague was being spread amongst the people by inoculation under the guise of vaccination. Happily, what at one time threatened to be a serious cause of retardation of vaccination has now subsided, as a result of common sense prevailing over the hysteria of panic.

35. On the total municipal population, the incidence of small-pox was 0·2 per mille against 0·5 in rural areas—a difference which must, in consideration of the more crowded state of the urban areas, be ascribed to the better conduct of vaccination within them. In no instance did the total number of cases in any town exceed 45, except in Madura where the number was 73. Madura, Dindigul, Cuddalore, Chidambaram, and Tanjore, were those which chiefly suffered.

FEVERS.

36. The total deaths from fevers were 945,349, or at the rate of 7·3 per mille of the total population. This is the smallest rate recorded since 1883. It unfortunately cannot be assumed that this is due to any striking measures taken for the reduction of malaria. Quinine has been successfully issued at post offices, and there have not been wanting those who have hunted the *anopheles*;* but no great measures that would effect removal of superfluous mosquitoes, or moisture that would encourage their existence, from large areas have yet been carried out. Rather, must the reduction be regarded as due to the imperfect character of the north-east monsoon failing to bring with it the essential presence of moisture in the soil, and to the not insignificant influence of a desire on the part of those registering deaths to escape suspicion of a disease whose prominent symptom is fever, namely, plague. Although it is well known that the majority of these "fevers" are of malarial origin, doubtless phthisis, pneumonia, pleurisy, affections of the liver, and diseases generally where fever is the prominent symptom, are included under this rough head. Until more medical men of Western education can find it profitable to compete for

* I have recently issued a circular calling the attention of Local bodies to the importance of concerting measures to circumvent the *anopheles* genus of mosquitoes.

private practice against hakims and vaithiyans, or all existing subordinate members of the Medical Service are utilized in some measure for supervision of registration results, it would be impossible to attempt to differentiate malaria and specific affections included under the widely general term "fevers." In the meantime, some effort is being made to secure a better approach to accuracy in municipalities. I have advised all municipalities as to the advantages that would accrue by causing their Registrars to undergo training at the hands of local medical officers, sufficient to enable them to understand the more prominent symptoms of common diseases, so that, where no medical certificate accompanies a declaration of death, it shall be possible to elicit from the person making it the probable nature of the disease.

37. There is no lack of instances in this Presidency where a locality in which mild fever has existed has been converted into a deadly malarious place, by introduction of superfluous water for irrigation purposes, and there are instances where limitation of irrigation has been followed with beneficial results, but none where extensive works of drainage have secured the admirable curative influence obtained in other countries. Hence, it was hoped that the proposal to introduce a sewerage system and sub-soil drainage in the notoriously malarious town of Cuddapah would have afforded an object lesson. Unfortunately, up to date, the whole question has been under intermittent consideration. It has at last been decided by the Sanitary Board to deal with one of the factors concerned in the obstruction to the sub-soil water flow, namely, the Patha-Cuddapah tank. It was proposed that this should be completely breached. In lieu of this procedure, it has lately been suggested to cut a channel to tap the sub-soil water layer between the town and the tank. This will, in all probability, have considerable influence if properly conducted, but unfortunately it has been determined to make all further action depend upon results so acquired. As this mode but deals with one of the factors, it is improbable that any marked results will be secured, and thus will be lost an opportunity of demonstrating what can be effected in a malarious area by whole-hearted efforts.

38. During the year, Major Grant, I.M.S., Professor of Hygiene, invited attention in his report as Assistant Physician, General Hospital, Madras, to the severe nature of malarious fevers found in Madras town. His opinion was combated by certain medical officers, who apparently would not even admit the malarious origin of Madras fevers. Unknown to Major Grant, I had drawn attention to the same facts in 1894, and in subsequent years, in reference to sub-soil water fluctuation in Madras. I relied not only upon the clinical symptoms, but upon the careful microscopical diagnosis made in indubitably Madras-bred cases by Lieutenant-Colonel Sturmer, I.M.S. Not only does malaria exist in Madras itself, but intense forms are to be found within seven miles of it at Ennore—a once favoured health resort in which disturbance of sub-soil and surface water was brought about by railway and canal configuration. In 1896, I spent several days here, and obtained ample microscopical evidence of the presence of the *plasmodium malariæ* in its various forms, in subjects who had indubitably acquired the disease locally. It must not, however, be considered that malaria is the sole cause of fever in Madras town. Typhoid fever is by no means uncommon. Phthisis and low forms of pneumonia are prevalent amongst the poorer classes. There are doubtless also hitherto unclassified fevers to be demonstrated by the observer of the future.

DYSENTERY AND DIARRHŒA.

39. The term "dysentery and diarrhœa" necessarily includes all catarrhal affections of the intestines; it is impossible to say to what extent true dysentery is really in evidence. The death-rate in the Presidency from this cause was the same as in the preceding year, namely, 0·9 per mille. The highest proportion of mortality for districts from this cause was, as usual (if the town of Madras be excluded), in Chingleput. It is presumed that, in addition to the usual causative agents of dysentery and diarrhœa, there exists in that district a favouring cause in the brackish water used by a considerable proportion of the population. December and January were the months that exhibited the greatest mortality under these heads.

40. The proportion of deaths from dysentery and diarrhœa in municipal towns greatly exceeds that reported in rural areas, the total average being 4·3 per mille

in the former against 0·7 per mille in the latter case. The following shows in descending order the towns which have returned the largest mortality under this head:—Gudiyáttam (8·6), Vizianagram (8·4), Madras (7·9), Walajapet (7·7), Vizagapatam (7·6), Tuticorin (7·4), Chingleput (7·1), Coonoor (6·6), Máyavaram (6·1), Vániyambádi (5·9), Parlákimedi (5·7), Conjeeveram (5·5), Tiruvannámalai (5·3), and Periyakulam (5·2).

41. These are towns either where conservancy is defective, or in which the water-supply is open to contamination; frequently, these two defects are conjoined with a brackish condition of the water. Variations in the registered amount of dysentery and diarrhœa from year to year are brought about by the occurrence of cholera, when doubtless attempts are made to conceal the existence of this disease or, more especially at the beginning and end of such epidemics, mistakes in diagnosis occur; but, on the whole, from year to year there is, broadly speaking, little material change of the death-rates from dysentery and diarrhœa in any special town. There is little tendency to epidemic outbreak. On the contrary, where bowel affections have established themselves, they seem to claim their victims at fairly regular rates from year to year, proving that permanent not passing sanitary defects are at work. For example, the following have been the rates in certain towns during the last five years:—

Towns.	1895.	1896.	1897.	1898.	1899.
Chingleput	...	...	4·4	6·8	7·1
Coonoor	3·9	7·9	7·2	6·3	6·6
Madras	4·9	5·3	4·5	7·5	7·9
Periyakulam	5·1	5·9	6·3	6·1	5·2
Tuticorin	6·3	6·1	4·0	9·3	7·4

INJURIES.

42. The deaths from injuries in towns was in the same proportion as in rural areas, namely, 0·4 per mille. When the figures are calculated upon the estimated population, the rate is reduced to 0·3, which has for nine years past been the invariable resultant under this head. For every 100 females that died of injuries, there were 112·4 deaths in males under this head. For every 100 suicides by females, there were 82·2 by males. 2,036 deaths occurred from snakebite.

ALL OTHER CAUSES.

43. In districts, the proportion of deaths under "all other causes" was 10·1 per mille against 18·4 in municipalities. It is possible that this increase in municipalities implies a certain amount of extra care in differentiating death causation. But this is unlikely to have been the case in districts. In rural registration, the village officer has no longer before him the various headings from which he can make a choice under which head the deaths should be registered. The form issued last year, with the object of saving stationery, no longer gives headings; it supplies a single column in which death causation is to be entered. My inspection of these registers goes to show that there is a tendency to save the trouble of making new entries, by simply repeating that which happens to have been the last entry. For example, fever would have a share of attention given to it for a certain time, when, for another series of events, with equal impartiality, "all other causes" would be mechanically repeated. Last year, it was pointed out that to avoid registration under "fevers" in localities where the advent of plague was feared, there had arisen the custom of giving preference to this heading in accounting for deaths. This tendency is still exhibited in certain areas; hence, the increase under this head in 1899, when contrasted with results during the last three years—

Years.	Rate per mille under all other causes.
1896	9·8
1897	9·8
1898	9·7
1899	10·1

SECTION IX.

SANITARY WORKS—CIVIL.

MUNICIPALITIES.

44. As foreseen when writing my last Report, sanitary advance, as indicated by permanent engineering works capable of favourably influencing the health of municipal populations, has been greatly trammelled by the conditions of uncertainty attending plague prevalence. No public body knew whether its ordinary resources, and even its borrowing powers, would not be strained to the utmost on being called upon to repel attacks by plague. Hence, the policy of Municipal Councils has been to retain a considerable balance in hand, which should be available to meet the exigencies of a plague epidemic. Consequently, in 1899, no sanitary engineering work of great importance was commenced. The water-supply system of Tirupati was completed in time for the great annual festival of the Brahma utchavam at Tirupati. Water-supply extensions in Tanjore and Conjeeveram were also completed during the year. The small results secured are necessarily very disappointing, but were inevitable. Even where for routine purposes allotments had been made, the general unwillingness to part with funds is exhibited in the small expenditure during the nine months of the official year. Thus, whilst in 1898 by the end of December, 53·8 per cent. of the total allotment had been spent, in 1899 it amounted to but 47·0 per cent. On the other hand, the total allotment was somewhat larger during 1899 than in 1898, this being Rs. 19,43,601 against Rs. 15,71,540.

45. Consultation of the following table will show that the 136,375 inhabitants of Madras city had devoted to their sanitary interests a sum not differing largely from that for the 1,687,563 inhabitants of the united mofussil municipalities. Yet, for its conservancy, Madras spends but half the amount of the united municipalities. There is no reason to believe that its system is complete.

46. The comparison between mofussil municipalities exhibits a curious want of proportion of allotments and expenditure to total population. Granted that in the matter of conservancy the price of labour differs much in different localities, it is probable that there is little proportion between the amount of work performed, and the actual duty required in most of the municipalities. The system hitherto of night-soil transport is entirely by bullock carts, except in certain municipalities in the north of the Presidency where the disgusting method exists, in spite of the remonstrances by this office, of removal of fœcal matter in baskets carried by human beings. The use of bullock power involves careful calculation as to the amount of material to be removed, on behalf of a definite population; yet, in many municipalities the night-soil transport system is founded on haphazard guesses and chance suggestions of Councillors upon whom the necessity for additions has been forced by experience. I have attempted to represent the advantage that would be gained by municipalities adopting the "Shone system," modified for transport of fœcal matter from pail depots—thereby abolishing animal transport, and meeting expenditure by this economy. Such a system would normally receive sewage only in areas adjacent to the main but, in this respect, would be capable of extension as funds became available. It would be peculiarly well fitted for towns where on account of debt for water-supply, for many years to come, it would be impossible to introduce a complete sewerage system. Neither the actual working of a system solely for transport of fœces at Warrington, England, and for sludge at Southampton, nor the specially obtained assurance of the patentee (Mr. Ault) that this modification can be adopted with but a meagre supply of water, enabled me to persuade the Sanitary Board to encourage its adoption. I, nevertheless, feel convinced that this modification of the "Shone system" is peculiarly well adapted for conditions under which night-soil conservancy is conducted in India. In the meantime, the proportionate requirements of conservancy are being gradually forced upon the attention of mofussil Municipalities by their Certificated Sanitary Inspectors, and by inspection reports of individual municipalities by this office.

Statement showing the estimated income, allotment, and expenditure for sanitary purposes in each Municipality during the year 1899–1900.

Districts.	Municipalities.	Population as per census of 1891.	Estimated income, 1899–1900.	Rate per cent. of sanitary allotment to estimated income.	Rate per cent. of sanitary expenditure to amount sanctioned.	1899–1900. Sanitary allotment. Allotment.	Sanitary allotment. Expenditure during the 9 months ending December 1899.	Conservancy. Allotment.	Conservancy. Expenditure.	Improvement of village sites. Allotment.	Improvement of village sites. Expenditure.	Improvement of water-supply, including cleansing, repairing tanks, wells, &c. Allotment.	Improvement of water-supply, including cleansing, repairing tanks, wells, &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	6,573	22,950	17·6	85·6	4,030	3,451	3,080	2,576	750	697	100	74	...	...	10	10	90	94
Bellary	Ádóni	26,216	34,490	50·9	68·0	17,580	11,959	14,080	8,784	1,500	1,964	500	1,205	...	...	...	...	500	6
	Bellary	57,780	1,17,300	33·1	73·9	38,840	28,735	31,340	23,707	6,000	4,167	700	834	...	...	100	4	200	22
Chingleput.	Chingleput	9,763	17,340	28·9	70·0	5,010	3,510	5,770	2,704	1,000	651	240	155	...	...	...	...	...	...
	Conjeeveram	42,543	58,160	48·6	79·2	28,250	22,387	13,350	11,166	2,600	591	9,240	7,499	2,610	2,147	450	447	600	537
Coimbatore.	Coimbatore	46,007	54,900	41·9	87·3	23,055	20,121	15,880	12,503	5,600	4,210	350	339	...	...	125	249	1,100	2,820
	Erode	12,238	18,160	30·4	77·9	5,520	4,298	3,440	2,609	1,450	1,287	460	354	...	...	120	...	110	48
	Kurúr	10,740	20,970	37·0	58·6	7,760	4,550	6,460	3,722	1,200	664	60	93	...	...	...	37	160	34
Cuddapah	Cuddapah	17,211	50,160	39·6	64·4	19,860	12,800	11,580	7,960	2,500	2,080	5,460	2,554	...	...	280	239	150	87
Ganjám	Berhampur	25,493	39,020	59·9	33·5	23,375	7,825	29,880	5,651	1,980	1,688	120	102	...	...	15	128	380	256
	Chicacole	18,204	40,550	49·6	24·9	20,130	5,026	17,560	3,270	2,240	1,489	230	200	...	...	100	22	...	36
	Parlákimedi	16,379	19,020	18·1	57·0	3,450	1,967	2,700	1,919	...	...	10	6	...	...	40	42	700	...
Gódávari	Cocanada	40,068	2,16,460	80·0	10·8	1,73,240	18,642	22,480	10,364	7,990	5,280	1,41,200	2,192	...	...	320	192	1,240	614
	Ellore	29,296	41,190	54·6	65·0	22,500	14,635	16,170	7,506	4,600	4,762	380	108	...	...	1,000	511	350	1,748
	Rajahmundry	28,279	50,790	49·9	66·5	20,767	13,822	14,070	9,748	5,000	2,605	356	211	...	...	1,109	1,117	142	141
Kistna	Bezwada	20,611	43,980	48·6	48·3	21,380	10,330	11,930	8,510	8,500	750	200	140	100	...	300	...	1,250	930
	Guntúr	23,267	51,180	55·4	61·3	28,360	17,406	17,930	10,169	6,670	4,853	2,560	1,851	...	...	100	189	1,100	344
	Masulipatam	38,667	60,810	60·4	52·6	36,710	19,297	21,020	11,800	10,660	5,424	4,130	1,589	...	...	100	24	800	460
Kurnool	Kurnool	24,306	55,620	43·7	40·9	24,290	9,944	15,770	7,939	2,000	1,397	6,120	275	...	...	100	58	300	275
	Nandyal	11,545	* 7,930	20·7	30·4	† 1,645	501	1,195	441	...	...	...	...	...	...	...	...	450	60
	Dindigul	29,115	36,310	54·2	49·1	19,690	9,669	11,450	4,940	3,590	1,826	2,950	1,788	...	15	250	400	1,450	700
Madura	Kodaikanal	1,700	* 4,630	27·8	17·1	† 1,290	221	1,290	221	...	...	...	...	...	...	...	...	...	...
	Madura	87,121	1,70,250	48·9	52·1	83,350	43,443	63,210	24,902	12,340	12,011	2,000	5,425	2,500	1,105	1,300	...	2,000	...
	Palni	16,940	14,500	42·0	64·9	6,090	3,956	3,310	2,332	2,550	1,496	90	968	140	60	...	...	...	...
Malabar	Periyakulam	16,363	16,760	47·4	69·5	7,940	5,523	4,750	3,254	2,760	2,054	230	89	...	...	100	13	100	113
	Calicut	64,798	67,920	32·9	25·4	22,330	19,081	15,730	10,607	6,300	8,045	100	80	...	...	150	202	50	67
	Cannanore	26,653	31,250	38·5	68·6	12,045	8,261	9,730	6,799	1,330	1,071	420	270	...	...	15	8	550	113
	Cochin	16,147	22,850*	40·2	74·0	9,186	6,795	6,500	4,053	1,100	1,123	50	79	...	...	1,000	1,047	630	483
	Palghat	39,367	78,530	22·8	61·0	17,940	10,949	10,050	5,381	6,200	5,280	1,360	262	100	26	80	...	150	...
	Tellicherry	26,631	46,560	24·9	62·9	11,635	7,315	9,370	5,650	1,560	1,492	20	...	...	...	40	24	205	149
Nellore	Nellore	29,128	45,500	58·7	40·2	26,707	10,726	22,415	7,867	4,000	2,618	172	174	...	...	...	...	120	67
	Ongole	10,832	15,910	60·3	41·9	9,599	4,030	7,450	2,512	936	472	289	146	...	...	474	464	450	436

* Estimate for the second half of 1899–1900.

† The figures given for Nandyal and Kodaikanal are for 3 months only.

Statement showing the estimated income, allotment, and expenditure for sanitary purposes in each Municipality during the year 1899–1900—*cont.*

Districts.	Municipalities.	Population as per census of 1891.	Estimated income, 1899–1900.	Rate per cent. of sanitary allotment to estimated income.	Rate per cent. of sanitary expenditure to amount sanctioned.	1899–1900. Sanitary allotment. Allotment.	Sanitary allotment. Expenditure during the 9 months ending December 1899.	Conservancy. Allotment.	Conservancy. Expenditure.	Improvement of village sites. Allotment.	Improvement of village sites. Expenditure.	Improvement of water-supply, including cleansing, repairing tanks, wells, &c. Allotment.	Improvement of water-supply, including cleansing, repairing tanks, wells, &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.
Nilgiris	Coonoor	5,586	99,500	76·9	22·1	76,530	16,890	17,100	7,378	7,000	7,515	51,180	856	...	...	450	896	800	275
	Ootacamund	13,991	1,55,940	132·6	74·6	2,06,773	1,54,160	30,480	21,626	20,690	18,952	1,41,930	1,03,790	...	...	1,260	716	12,113	9,076
North Arcot.	Gudiyáttam	18,745	18,120	54·7	43·4	9,920	4,308	8,440	3,829	1,200	495	280	192	...	1	...	284	...	10
	Tirupati	14,238	2,59,500	2·6	67·8	6,640	4,401	4,930	3,633	720	314	790	316	200	138	...	...	...	...
	Vellore	44,724	66,610	48·8	73·9	32,490	24,005	22,720	20,614	6,200	1,378	610	224	...	...	...	212	2,060	1,577
	Wállájapet	10,485	17,630	38·5	72·4	6,780	4,911	5,150	3,962	1,100	827	360	80	...	...	170	42	...	...
Salem	Salem	67,640	83,080	46·3	56·7	38,470	21,820	24,860	16,804	4,000	1,000	5,480	180	...	...	3,080	3,679	450	166
	Tiruppattúr	16,163	27,340	43·8	62·9	11,970	7,535	8,770	6,094	2,860	1,315	300	75	...	...	...	...	100	51
	Vániyambádi	15,838	21,010	42·0	68·7	10,090	6,924	9,200	5,373	1,560	1,270	280	181	...	...	...	...	100	100
South Arcot.	Chidambaram	18,634	26,880	63·6	51·3	7,990	8,775	6,620	4,579	2,850	2,511	850	450	6,570	997	100	70	100	158
	Cuddalore	47,025	60,390	53·0	44·0	31,980	14,085	11,430	8,530	5,050	4,344	450	167	14,360	532	...	...	690	512
	Tiruvannámalai	13,643	23,370	67·7	54·4	15,830	8,616	9,260	4,228	3,060	2,265	310	184	3,000	1,598	...	...	200	41
South Canara.	Mangalore	40,620	51,680	38·7	51·3	20,010	10,261	10,410	6,698	6,000	3,861	100	...	...	...	500	254	3,000	548
	Kumbakónam	54,254	87,950	44·5	74·5	39,170	29,185	28,650	19,681	8,000	7,600	1,920	1,205	100	...	100	...	460	499
Tanjore	Mannárgudi	20,392	24,850	48·0	45·6	11,960	5,709	6,530	3,206	3,000	1,481	700	437	300	89	800	496	...	...
	Máyavaram	23,754	36,810	39·6	65·0	14,590	9,826	11,020	5,787	2,700	3,081	320	321	150	140	...	8	400	289
	Negapatam	58,573	77,050	48·1	71·7	37,045	25,982	24,510	17,131	8,700	6,258	2,280	1,747	300	98	780	491	466	257
	Tanjore	54,258	1,38,010	37·7	103·1	52,050	52,670	25,100	18,170	6,000	3,550	18,000	36,420	...	...	500	200	1,400	380
Tinnevelly.	Palamcottah	18,612	28,530	46·5	44·6	13,270	5,921	11,640	5,272	1,200	503	100	65	...	...	230	23	100	58
	Srívilliputtúr	20,541	34,010	20·7	61·2	7,235	4,642	5,180	3,148	1,530	1,021	260	317	50	12	...	...	800	144
	Tinnevelly	24,756	30,070	60·4	51·8	18,150	9,466	14,030	7,120	3,000	1,959	500	258	20	2	160	152	215	209
	Tuticorin	24,961	1,22,000	104·6	11·3	1,27,580	14,386	19,210	7,540	6,630	4,364	1,01,300	1,481	...	...	20	30	600	971
Trichinopoly.	Srírangam	21,632	29,180	58·0	46·0	16,930	7,793	12,380	5,281	3,190	1,673	250	146	1,050	290	60	68	420	25
	Trichinopoly	89,666	3,78,520	82·4	29·1	3,07,770	61,256	65,460	33,962	8,000	6,595	2,31,760	18,844	...	...	...	...	...	...
	Anakáppalle	17,001	22,020	44·3	49·1	9,750	4,788	7,300	3,700	2,000	1,066	120	2	...	...	1,380	1,388	1,200	1,089
Vizagapatam.	Bimlipatam	9,696	14,430	41·9	46·6	6,050	2,821	5,320	2,295	500	473	...	...	...	...	...	...	220	56
	Vizagapatam	33,961	1,26,440	10·9	79·6	21,330	16,983	15,000	10,974	5,330	5,325	240	148	...	...	100	99	230	140
	Vizianagram	30,735	36,310	62·1	56·6	22,540	12,752	14,660	7,445	5,100	2,100	920	490	...	...	...	...	600	340
	Total for 1899	1,087,563	34,03,110	55·6	47·0	19,46,901	9,13,559	8,65,410	4,69,766	2,41,896	1,74,487	7,42,657	1,90,227	31,550	7,556	17,927	14,528	44,161	30,905
	Total for 1898	1,087,563	20,56,220	53·2	53·8	15,71,540	8,44,931	7,19,095	4,08,175	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
Madras	Madras City	436,375	14,47,510	132·7	31·0	19,20,677	5,95,679	4,27,030	3,38,986	86,300	60,269	53,864	42,270	...	...	1,81,374	75,321	11,72,109	60,839

—	1898-99. Amount sanctioned.	1898-99. Amount expended.	Rate per cent. of expenditure to total allotment.	1899-1900. Amount sanctioned.	1899-1900. Amount expended during the nine months ending December 1899.	Rate per cent. of expenditure to total allotment.
	Rs.	Rs.		Rs.	Rs.	
For conservancy	7,08,233	6,79,651	95·9	8,65,410	4,89,766	56·6
For improvement of village or town sites	2,50,844	2,22,916	88·8	2,41,896	1,74,487	72·1
For improvement of water-supply, cleansing, repairing, and construction of tanks and wells	1,55,844	1,54,617	99·2	7,42,657	1,96,227	26·4
For sanitary arrangements during fairs and festivals ..	14,540	14,055	96·6	31,550	7,556	23·0
For construction and repair of markets and slaughter-houses	19,289	12,651	65·6	17,927	14,628	80·7
For other sanitary outlay ..	1,20,181	71,913	59·9	44,161	30,925	70·1
Total ..	12,68,931	11,55,803	91·08	19,43,601	9,13,559	47·0

Table showing the conservancy establishment and plant available in each Municipality during 1899.

Districts.	Municipalities.	Population as per census of 1891.	Sanitary inspectors.	Sanitary overseers.	Sanitary assistants.	Sanitary peons.	Sweepers for cleaning roads, streets, &c.	Totties for cleaning public latrines.	Private latrines. Total number in town.	Private latrines. Number cleaned by the municipal totties.	Totties for private scavenging.	Carts. Night-soil.	Carts. Rubbish.	Carts. Sewage.	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.	Tank watchers.
Anántapur	Anantapur	6,973	1	...	...	2	14	8	156	152	3	1	3	...	1	5	3	...	...	17	58	...
Bellary ...	Adóni	26,216	1	...	1	6	30	24	1,500	879	16	2	12	...	6	10	...	...	...	74	51	2
	Bellary	57,780	1	...	...	23	66	29	2,500	1,468	26	32	31	...	23	3	...	...	...	285	95	3
Chingleput ...	Chingleput	9,763	1	...	...	1	12	6	500	296	5	2	6	...	5	9	...	...	...	24	26	...
	Conjeveram	22,543	5	...	...	1	48	15	2,500	1,174	19	3	24	...	23	4	...	...	...	376	153	...
Coimbatore. ...	Coimbatore	46,007	4	1	1	7	75	26	900	551	27	15	31	3	34	3	10	2	...	42	83	1
	Erode	12,238	4	...	...	5	25	16	...	465	7	12	12	3	3	4	9	2	...	25	118	...
	Karúr	10,740	2	...	1	3	30	12	520	264	4	2	7	1	4	6	11	3	...	183	69	...
Cuddapah ...	Cuddapah	17,211	2	...	1	6	30	24	...	955	17	4	12	...	27	2	7	1	...	...	12	...
Ganjám ...	Berhampur	25,423	5	...	4	4	23	5	...	603	27	1	12	...	2	3	1	...	...	...	40	...
	Chicacole	18,204	1	...	1	4	39	7	400	319	18	2	10	...	6	8	4	...	...	46	63	2
	Parlákimedi	16,379	1	...	1	3	30	7	400	181	21	1	7	...	4	10	1	...	...	66	125	3
	Cocanada	40,668	2	...	1	6	49	11	...	664	35	6	12	3	8	6	11	7	...	96	50	4
Gódávari ...	Ellore	29,296	5	...	...	5	63	25	600	851	16	3	19	2	6	9	4	2	...	...	70	...
	Rajahmundry	28,279	2	...	...	7	49	17	...	1,161	35	2	16	...	16	4	1	15	...	1	179	...
	Bezwada	20,611	1	...	3	6	56	14	700	550	14	6	25	7	2	4	1	2	...	...	94	...
Kistna ...	Guntúr	23,267	3	...	...	6	44	23	1,194	1,102	23	6	31	4	6	10	1	2	...	255	143	...
	Masulipatam	38,657	3	3	...	6	69	17	339	339	13	5	5	1	40	16	1	5	...	48	...	...
Kurnool ...	Kurnool	24,806	1	...	1	2	50	7	1,703	1,020	21	5	3	...	4	8	1	...	...	23	17	...
	Nandyal	11,545	1	...	3	8	16	10	150	150	3	7	15	...	2	3	1	...	...	54	8	...
	Dhóndgeri	20,115	1	...	2	...	12	30	582	374	10	6	...	...	1	6	1	...	...	23	75	1
	Kodumúr	1,700	1	...	...	...	4	3	12	...	...	...	...	...	...	...	...	...	...	13	20	...
Madura ...	Madura	87,121	10	...	...	12	99	76	12,500	1,969	29	30	44	1	12	2	8	1	...	3	115	2
	Palni	16,940	1	...	...	3	10	6	1,272	877	10	8	8	...	4	1	1	...	...	24	14	1
	Periyakulam	16,303	1	...	2	...	9	9	720	720	9	3	10	...	4	1	1	...	...	...	24	...
	Calicut	64,798	4	...	3	2	79	14	...	683	45	19	20	2	12	6	8	...	...	1	151	...
	Cannanore	26,653	1	...	2	...	48	20	...	677	16	10	8	...	8	1	1	...	...	23	6	...
Malabar ...	Cochin	16,147	1	...	1	2	29	21	1,000	344	17	13	23	...	2	4	1	...	...	66	189	1
	Pelghat	39,307	2	...	9	...	48	20	...	620	20	7	27	...	6	4	1	...	...	42	39	1
	Tellicherry	26,631	1	...	4	...	23	15	1,276	594	27	4	4	1	14	7	2	...	...	...	...	...
Nellore ...	Nellore	29,125	2	...	10	...	54	28	...	1,286	8	2	11	1	...	...	...	...	...	...	67	...
	Ongole	10,582	1	...	1	1	20	3	...	305	10	2	3	...	1	...	...	...	...	...	27	...
Nilgiris ...	Coonoor	5,586	1	...	2	2	16	7	161	160	10	8	8	...	12	...	...	...	...	...	...	...
	Ootacamund	13,991	4	...	6	...	87	30	520	322	25	21	15	...	54	...	...	...	...	...	...	...

* Includes 4 Nuisance Inspectors.
† Includes 1 Market Inspector.
‡ Includes 1 Nuisance Inspector and 1 private Scavenging Inspector.
§ Corrugated iron.
‖ Includes 1 Sanitary Assistant.
¶ Includes 1 Sanitary Sub-Inspectors.
†† Tank watchers.
‡‡ Includes 2 water-works driver, plumber, &c.
§§ Sentry Box.
‖‖ Includes 1 totties employed for removing night-soil.
¶¶ Includes 1 urinal and 8 crawford pattern.
** Includes 2 private scavenging ministries.
††† Private Conservancy Overseer.

Table showing the conservancy establishment and plant available in each Municipality during 1899—cont.

Districts.	Municipalities.	Population as per census of 1891.	Sanitary Inspectors.	Sanitary Overseers.	Sanitary Maistries.	Sanitary peons.	Sanitary sweepers.	Public latrines.					Carts.			Dust-bins.		
								Pucka built.	Brick-wall enclosures.	Mud-wall enclosures.	Tatty.	Pulic latrines.	Night soil.	Rubbish.	Sewage.	Masonry.	Iron.	Tank watchers.
North Arcot	Gudiyáttam	18,745	1	...	...	6	...	4	1	...	...	5	6	12	...	100	124	6
	Tirupati	11,238	1	1	...	2	...	...	...	...	11	11	3	8	...	145	25	2
	Vellore	44,724	3	3	...	8	...	28	6	...	...	34	8	30	21	191	354	8
	Wallájapet	10,185	1	...	1	1	...	...	...	...	...	...	3	6	1	658	...	2
Salem	Salem	67,640	3	1	1	9	15	10	27	...	...	37	17	30	2	...	248	2
	Tirupattúr	18,493	1	1	1	2	1	6	...	1	2	10	20	8	...	...	161	2
	Vaniyambádi	19,828	2	1	1	...	1	6	...	...	6	12	23	18	3	...	162	6
South Arcot	Chidambaram	18,634	1	1	...	3	13	3	...	1	2	11	14	12	3	4	368	6
	Cuddalore	47,025	1	1	6	6	...	...	...	...	...	...	23	20	5	29	72	2
	Tiruvannámalai	13,643	1	...	...	3	2	...	...	...	...	...	...	26	2	180	30	4
South Canara	Mangalore	40,020	2	...	4	1	8	1	1	...	...	2	5	5	1	11	78	2
Tanjore	Kumbakónam	54,254	3	1	...	15	...	...	21	...	4	25	29	25	1	72	151	6
	Mannárgudi	20,892	1	...	1	...	...	...	9	...	...	10	3	10	2	...	72	2
	Mayavaram	23,751	2	1	...	6	3	4	...	...	3	17	11	17	2	4	30	4
	Negapatam	38,573	2	1	...	15	15	9	18	...	...	17	5	17	2	178	151	2
	Tanjore	54,258	2	...	4	18	18	20	30	...	2	21	11	24	2	498	173	13
Tinnevelly	Palamcottah	15,012	1	...	2	3	...	3	2	1	...	6	16	9	6	173	74	1
	Sevalliputtúr	20,541	1	1	...	2	6	4	4	4	...	7	5	3	3	70	74	1
	Tinnevelly	24,756	2	...	...	5	12	5	...	1	7	14	12	7	12	38	26	2
	Tuticorin	24,961	3	...	...	7	5	7	6	...	3	3	5	12	2	14	159	...
Trichinopoly	Srirangam	21,632	4	...	4	7	...	...	14	4	6	6	4	16	1	180	193	2
	Trichinopoly	80,066	5	1	3	19	7	8	4	1	1	...	6	62	1	11	316	11
Vizagapatam	Anakápalle	17,901	1	...	...	2	...	...	4	3	4	11	5	6	2	59	116	3
	Bimlipatam	9,695	1	...	...	...	...	...	...	...	...	...	...	3	...	153	1	12
	Vizagapatam	49,991	3	1	1	3	6	5	18	...	...	23	21	21	2	4	191	...
	Vizianagram	39,735	1	...	...	4	3	5	37	...	...	38	30	30	2	29	316	1
	Total for 1899	...	122	60	135	296	127	468	333	240	265	1,361	614	946	136	4,657	6,144	148
	Total for 1898	1,687,568	122	60	127	294	127	477	250	265	388	1,365	680	947	134	4,776	5,918	154
Madras	Madras City	436,375	7	20	48	193	1,858	126	94	5	...	278	305	311	231	717	3,810	...

Districts.	Municipalities.	Total number in town.	Number cleaned by the Municipal Cooties.	Tolls for private scavenging.	Tolls for cleaning public latrines.	Sweepers for cleaning roads, streets, &c.	Sanitary peons.	Sanitary Maistries.	Sanitary Overseers.	Sanitary Inspectors.	Wooden.	Masonry.	Iron.	Tatty.	Mud-wall enclosures.	Brick-wall enclosures.	Pulic latrines.	Sewage.	Rubbish.	Night-soil.
North Arcot	Gudiyáttam	430	...	...	...	10	6	2	...	1	...	...	...	...	...	4	...	1	12	6
	Tirupati	510	...	...	...	36	11	1	...	1	...	...	...	...	...	1	...	...	8	3
	Vellore	2,731	...	...	...	40	...	3	1	1	...	...	...	...	...	28	...	1	30	8
	Wallájapet	1,050	...	...	...	10	1	1	...	1	...	...	...	...	...	...	...	...	6	3
Salem	Salem	1,287	...	...	...	146	4	11	3	3	...	...	...	...	...	10	27	...	20	17
	Tirupattúr	3,504	...	...	...	40	...	3	1	1	...	...	...	...	...	6	...	...	8	20
	Vaniyambádi	3,599	...	...	...	46	...	5	2	2	...	...	...	...	...	6	...	...	18	23
South Arcot	Chidambaram	1,080	18	163	4	24	...	6	1	1	...	...	...	...	1	...	2	...	12	14
	Cuddalore	1,570	163	163	28	61	...	...	...	1	...	...	...	...	...	...	...	...	25	16
	Tiruvannámalai	3,660	3	3	1	23	3	...	6	1	...	...	...	...	...	...	...	...	3	11
South Canara	Mangalore	4,569	29	29	11	42	1	4	...	2	...	...	...	...	...	...	...	...	6	6
Tanjore	Kumbakónam	2,578	65	65	12	25	15	...	3	1	...	...	...	...	...	...	...	...	5	6
	Mannárgudi	1,878	...	...	...	6	1	...	...	...	...	...	...	...	...	...	...	...	2	3
	Mayavaram	430	...	...	...	9	6	...	...	...	...	...	...	...	...	...	...	...	2	5
	Negapatam	826	18	18	4	17	15	...	...	...	...	...	...	...	...	...	...	...	11	11
	Tanjore	2,557	163	163	28	103	15	1	...	...	...	...	...	...	...	...	...	...	17	11
Tinnevelly	Palamcottah	1,105	29	29	1	70	18	...	...	...	...	...	...	...	...	...	...	...	21	16
	Sevalliputtúr	2,500	...	...	...	6	3	3	...	...	...	...	...	...	...	...	...	...	9	34
	Tinnevelly	1,460	36	36	10	19	6	4	2	...	...	...	...	...	...	...	...	...	3	6
	Tuticorin	4,430	6	6	14	48	7	7	...	...	...	...	...	...	...	...	...	...	7	4
Trichinopoly	Srirangam	1,292	27	27	19	30	5	5	...	...	...	...	...	...	...	...	...	...	12	10
	Trichinopoly	2,006	20	20	24	14	7	4	...	1	...	...	...	...	...	...	...	...	16	9
Vizagapatam	Anakápalle	1,248	104	104	54	71	19	13	3	1	...	...	...	...	...	...	...	...	62	22
	Bimlipatam	5,042	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	Vizagapatam	1,599	10	10	28	29	3	2	1	1	...	...	...	...	...	...	...	...	10	13
	Vizianagram	1,320	54	54	6	42	3	...	...	...	...	...	...	...	...	...	...	...	21	14
	Total for 1899	54,227	1,361	1,361	328	978	296	127	60	122	...	...	...	...	...	...	...	...	346	314
	Total for 1898	74,218	1,264	...	278	1,365	294	127	60	122	...	...	...	...	...	...	...	...	947	680
Madras	Madras City	...	21	...	...	1,858	193	48	20	7	...	...	...	...	...	...	...	...	311	305

* Urine carts. † Includes 1 urinal. ‡ Iron latrines. § Includes 1 urinal. ‖ Private Scavenging Overseers. ¶ Slaughter-house Superintendents.
** Includes 10 urine and slaughter-house carts. †† Conservancy Inspectors. ‡‡ Plague shed watchers.

47. The following tables give some idea of the tendency to advance in respect to night-soil and rubbish conservancy :—

Years.	Sanitary Inspectors.	Sanitary Overseers.	Sanitary Maistries.	Sanitary peons.	Sweepers for cleaning roads, streets, &c.	Tolls for cleaning public latrines.	Tolls for private scavenging.	Private latrines.	
								Total number in town.	Number cleaned by the Municipal Cooties.
1	2	3	4	5	6	7	8	9	10
1895	166	47	116	303	2,300	1,104	982	50,650	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	291	2,534	1,265	1,264	74,238	51,261
1899	132	60	135	296	2,663	1,218	1,361	78,748	54,835

Years.	Carts.			Public latrines.				Dust-bins.		
	Night soil.	Rubbish.	Sewage.	Pucka built.	Brick-wall enclosures.	Mud-wall enclosures.	Tatty.	Wooden.	Masonry.	Iron.
	11	12	13	14	15	16	17	18	19	20
1895	467	856	105	481	273	211	272	410	4,757	4,926
1896	509	875	123	451	288	233	199	709	4,744	4,977
1897	566	931	130	463	305	215	197	569	4,524	5,362
1898	580	917	134	477	280	265	183	83	4,776	5,918
1899	614	946	136	468	333	240	187	56	4,657	6,144

48. It will be noticed that the valuable method of "private scavenging", that is, the undertaking by municipalities of the conservancy of private dwellings at contract sums, has undergone since 1895 very considerable strides. Thus, there have been added in the period 16,525 latrines so attended to, entailing the entertainment of 366 extra scavengers. Solid additions have also been made to the number of scavengers employed for public latrines, of sweepers for removal of rubbish, and of night-soil and rubbish carts. In the supervising staff, the number of peons has been decreased, while Sanitary Inspectors have fallen in numbers from 166 to 132, there being at the same time an increase in the inferior grades of Sanitary Overseers and Sanitary Maistries. These changes in staff have been due to the effort to supplant quantity by quality. The former class of uneducated Sanitary Inspectors employed has been made to gradually disappear, in favour of a less number of Sanitary Inspectors who have earned their certificates of efficiency after special education. These changes have been chiefly brought about by the steady support given by Government from year to year to my recommendations offered it, in reviewing the budget estimates of municipalities.

49. In Municipalities, the amount realized by the sale of night-soil and rubbish was Rs. 31,936. The utilization of night-soil by cultivators is undergoing an extension that must necessarily be gradual. For a certain period, caste prejudices stand in the way of night-soil being utilized even when presented in the form of inodourous poudrette. But, it is evident that when the ryot has an "object lesson" showing the excellent results on crops, these prejudices disappear. Hence, the price of night-soil in certain Municipalities is undergoing from year to year increase. Curiously enough, when the ryot has really made up his mind to use night-soil, in certain localities, he insists upon having the raw material or nothing at all; he regards poudrette as a weakly manure. "Trenching" followed by the sowing of crops by the Municipality concerned with the hope of affording ryots object lessons was conducted at Bellary, Erode, Anakápalle and Nagore. At Rajahmundry, splendid crops of Batavia oranges are raised in sandy soil that has

been richly trenched. At Karur, Rajahmundry, T[illegible] Negapatam sewage farming was conducted with profit. At Kumbakonam, Bezwada, Vizagepatam, Vizianagram, biological purification (filtration) of sewage was employed so as to intercept crude sewage passing to unsuitable outlets, such as streams liable to be used for drinking water and tanks. At Guntúr and Vizagapatam, arrangements are in progress which will enable sewage farming to be conducted next year. At Tanjore, sewage farming continues under unsatisfactory conditions, that is, a large portion of the total amount available is allowed to flow to waste. The sanctioned scheme for its full utilization was in abeyance during the year, owing to the loan of Rs. 33,000 required by the Municipality not being accepted in the open market. In Madras, farming with sewage continued to be financially successful; but the farms fail to use the total sewage diverted to them. I advised, in 1894, unsuccessfully, that this surplus sewage should be received on filter beds rather than be allowed to be discharged at undesirable points.

50. The question of the licensing of dhobies in Municipalities, so as to place clothes-washing under better sanitary conditions, secured more attention than hitherto, owing to public attention being aroused as to dangers of plague spread. Section 188 of the District Municipalities Act duly demands that dhobies shall possess a license, but, owing to the ease with which "strikes" can be organized by these men, Mofussil Municipalities, with the exception of Ootacamund, have never had the courage to put the law into force. No Chairman can safely reckon upon a community being sufficiently sympathetic to see him safely through all the troubles a "strike" amongst dhobies would imply. It has hitherto sufficed for a community to find itself confronted with domestic difficulties as to clothes-washing not only to forget to support the Chairman, but to bring pressure upon him to return to the old state of affairs. To this, there has been one honourable exception in the case of Ootacamund, where Mr. Hamnett, C.I.E., the late Chairman, secured during several years past, in the face of opposition, very considerable, although not complete, improvement as to storage of clothing. In 1882, when Special Sanitary Officer for Madras during a cholera epidemic, and, again, in 1891, when sitting on a Committee concerning Madras sanitation, I specially drew attention to the very evil conditions under which clothes-washing was conducted in Madras, and advised the careful licensing of dhobies and the use of special "dhobie-khanas" or public laundries. Although the Madras Municipality subsequently put licensing in force, it has never seemed to me of a complete nature, and, as a result, much of the washing of the people, and even of the better class of the community, is effected under very filthy conditions. This Municipality has, however, of late taken more interest in the subject, and will shortly carry into effect proposals which are now before it at the instance of one of the Commissioners. I had hoped to have secured another partial success in Guntúr, but after undertaking the necessary work, I understand that, in accordance with the general rule, that Municipality yielded in fear of the town being subjected to a strike. In this town, the water-supply is scanty, with the result that perforce the water in a certain tank is employed for washing direct. Any scheme for using the water for washing purposes, and then disposing of it for irrigation, or otherwise, finally, cannot be accepted. It was, therefore, proposed to retain the water in the tank in as safe a condition as possible, and yet permit of its being used repeatedly. This difficulty it was attempted to solve, by erecting a series of platforms at the side of the tank, on which the dhobies were required to wash. The platforms consisted of under-drained gravel beds, which would have accomplished the filtration of all water falling upon their surfaces before its return to the tank. Having regard to the excellent results obtained in this Presidency and elsewhere by the use of sewage filters, I have no doubt this simple method would have secured a very fair grade of purification.

DISTRICT BOARDS.

51. I have, in my successive Annual Reports, expressed the hope that each following year would see issued the revised District Boards Act that would enable the sanitary requirements of District Board areas to be considered more seriously than at present. But it has not yet been possible for Government to finally deal with this Act. It is, however, before a Committee at the present time. I trust the revised Act will give more power for sanitary administration, otherwise efforts towards advance must be slow in character and far from abiding. At the present time, the ambition of District Boards rises little above the maintenance of roads, and this they usually perform unsatisfactorily and therefore with bad economy.

52. Last year, the sanitary allotment for all District Boards under all heads amounted to the very poor contribution of 8·3 per cent. of their total income; in 1899, it decreased to 7·2 per cent. This implies an allotment per head of the population of 5·6 pies. The number of villages conserved fell from 444 to 256. Much of the economy effected in respect to these villages was due to the non-employment of sweepers who simply remove rubbish from the streets of the village, but, on account of caste prejudices, refuse to deal with fœcal matter. There can be no doubt that the collection of rubbish to the neglect of night-soil was incongruous, and employment of these men was in this sense not justifiable. But in no case have District Boards, in making these sweeping economies, endeavoured to replace the sweeper by the more useful scavenger, or to concentrate upon certain of the larger villages correctly organized staffs, so as to render both rubbish and night-soil conservancy effective. On the contrary, the change has been carried out solely with a view to economy. At the same time, it must be confessed that difficulty in obtaining a reserve for possible plague epidemic charges justified efforts as to economy, although sanitation seems to have fallen an easy prey. It can but be hoped that, with the advent of better times, District Boards will in the future again expand the number of conserved villages.

53. During the year, 4 new Unions were created and 2 were abolished. The system of formation of Unions is one more theoretically than practically commendable. It has resulted in having available at one spot as little funds—the "sinews of war"—as possible. These Unions become the proud possessors of a number of lamps which lighten the darkness in the richer neighbourhoods, but when the question of solid improvements in the shape of engineering works is considered, it is found that Rs. 25 here, Rs. 50 there, represent the funds with which sanitary improvements are to be effected. To collect and spend an income of 1,000 rupees per annum, a Union finds it necessary to employ a clerk on from Rs. 10 to Rs. 15 and a bill collector on from Rs. 7 to Rs. 9 a month. Under such a system, swayed by demands of this Taluk Board and that Taluk Board and these again by petty Unions dealing with petty sums, it is impossible for a District Board to concentrate money upon sanitary works of a nature and importance that would prove of permanent benefit to the people. It ought to be possible for District Boards yearly to select villages where important permanent sanitary works could be carried out and, if necessary, to raise loans for improvement of water-supply and sewerage. Under present circumstances, however, it may be a century before any sanitary improvement on a large scale in a single rural town is effected. In the course of my service, I have known but two instances in which a proposal—not ultimately put into effect—was made for radical improvement of the water-supply or sewerage of a rural town. Yet, there are no less than 92 towns having a population of 7,000 and upwards in this Presidency. The system under which Unions are administered certainly does not contribute to the strengthening of sanitation.

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 1899-1900.	Rate per cent. of allotment to estimated income.	Rate per cent. of sanitary expenditure to allotment.	1899-1900.			
				Number of unions.	Number of other villages.				Sanitary allotment.		Conservancy.	
									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	1,85,120	8·0	81·4	14,880	12,126	10,005	7,499
Bellary ...	895,480	6,136	795	16	...	3,73,040	4·8	75·6	18,040	13,277	14,900	11,368
Chingleput ...	1,147,595	2,842	2,134	18	1	2,59,550	7·8	61·5	20,358	12,520	12,164	8,821
Coimbatore ...	1,931,926	7,809	1,478	20	17	4,13,290	7·5	80·1	33,406	20,687	17,594	13,844
Cuddapah ...	1,264,510	8,722	1,276	17	...	2,66,120	6·6	81·2	17,540	10,738	13,345	8,909
Ganjám ...	1,836,244	8,370	6,087	15	8	3,05,120	4·8	93·5	14,650	13,698	10,000	9,146
Gódávari ...	1,950,215	7,857	2,603	27	51	7,63,040	9·3	85·9	70,880	63,037	25,050	26,533
Kistna ...	1,772,179	8,397	1,848	27	14	6,31,520	5·9	63·1	37,810	23,830	21,700	18,850
Kurnool ...	703,354	7,514	892	18	7	2,20,480	8·8	52·6	19,350	10,185	10,040	2,612
Madura ...	2,167,226	5,624	4,103	37	23	5,47,990	13·9	45·2	76,259	34,514	35,783	20,406
Malabar ...	2,463,678	5,585	2,245	...	...	5,00,100	1·1	69·8	5,730	3,995	200	154
Nellore ...	1,423,397	8,765	1,793	16	19	2,98,540	5·4	62·2	16,238	10,113	6,005	4,879
Nilgiris ...	77,188	957	52	...	6	1,63,470	2·3	52·8	3,726	1,966	1,920	1,560
North Arcot.	2,025,393	7,616	4,328	21	4	4,42,560	5·8	69·3	25,607	17,684	18,440	13,504
Salem ...	1,861,843	7,529	3,811	34	22	4,89,930	9·6	57·9	46,814	27,103	27,142	19,100
South Arcot ...	2,053,034	5,217	2,897	21	8	4,24,510	9·1	62·7	38,821	24,346	22,842	16,678
South Canara.	1,011,382	3,992	1,377	...	21	2,43,130	4·5	35·9	11,022	3,961	2,780	2,493
Tanjore ...	2,015,850	3,709	3,550	19	20	8,67,720	4·2	62·1	36,054	22,431	21,382	18,018
Tinnevelly ...	1,817,829	5,387	1,538	36	...	5,84,220	13·7	45·7	79,750	36,382	39,745	28,204
Trichinopoly.	1,260,128	3,631	1,502	13	15	2,78,880	7·7	65·9	21,417	14,152	11,066	8,016
Vizagapatam.	1,850,802	4,619	2,668	15	8	3,75,550	5·9	55·9	19,101	10,676	11,015	8,039
Total for 1899 ...	32,603,685	124,914	47,703	381	256	86,14,810	7·2	62·3	6,21,039	3,86,945	3,37,995	2,58,905
Total for 1898 ...	32,603,685	124,914	47,703	382	444	73,62,700	8·3	56·2	5,57,396	3,09,832	3,48,870	2,49,164

District Boards.	1899-1900—*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	665	414	1,315	3,682	290	121	1,500	...	1,105	410
Bellary	320	70	1,290	1,162	940	136	...	...	590	541
Chingleput	3,311	1,446	2,034	1,258	1,302	773	81	...	1,466	722
Coimbatore	2,603	959	6,172	2,069	940	587	4,341	2,205	1,756	422
Cuddapah	470	188	2,732	1,074	335	97	...	...	658	475
Ganjám	1,206	2,233	1,420	1,487	973	397	470	...	1,100	335
Gódávari	8,090	21,460	19,810	11,126	1,650	1,017	12,000	1,810	3,380	1,061
Kistna	4,250	1,590	10,010	3,117	1,210	176	...	...	550	147
Kurnool	910	200	6,330	2,012	890	— 177	390	...	910	352
Madura	9,480	2,750	5,535	1,997	580	203	20,655	9,387	3,270	...
Malabar	10	12	1,100	238	358	307	3,676	3,281	293	...
Nellore	1,615	731	6,361	4,009	232	21	...	...	1,195	476
Nilgiris	820	291	800	140	...	...	...	...	200	125
North Arcot	220	1,068	2,757	1,703	1,914	977	1,100	26	1,076	388
Salem	9,491	3,479	4,104	2,068	615	145	3,290	994	2,053	1,337
South Arcot	934	228	13,475	7,150	1,010	221	...	...	590	74
South Canara	...	...	627	86	1,328	371	5,722	786	561	225
Tanjore	2,810	762	5,302	2,113	2,549	1,488	...	...	1,640	50
Tinnevelly	14,217	3,362	8,403	1,514	1,997	1,091	2,786	1,020	6,148	1,255
Trichinopoly	1,655	331	3,056	1,130	529	1,006	4,661	3,556	450	20
Vizagapatam	2,006	21	3,063	1,484	460	200	1,580	823	968	136
Total for 1899 ...	61,626	41,447	1,02,975	50,579	19,510	9,454	62,961	17,888	29,942	8,672
Total for 1898 ...	75,110	20,956	1,32,211	55,517	16,788	8,988	82,950	19,120	31,457	10,057

—	1898-99.		Rate per cent. of expenditure to total allotment.	1899-1900.		Rate per cent. of expenditure to total allotment.
	Amount sanctioned.	Amount expended.		Amount sanctioned.	Amount expended during the nine months ending December 1899.	
	Rs.	Rs.		Rs.	Rs.	
For conservancy	3,48,415	3,07,552	88·3	3,37,995	2,58,905	76·6
For improvement of village or town sites	70,756	42,796	60·5	64,626	41,447	64·1
For improvement of water-supply, cleansing, repairing, and construction of tanks and wells	1,31,119	85,925	65·5	1,05,975	50,579	47·7
For sanitary arrangements during fairs and festivals ..	16,799	13,525	80·5	19,510	9,454	48·4
For construction and repair of markets and slaughter-houses	58,990	46,334	78·5	62,991	17,888	28·4
For other sanitary outlay ..	33,676	17,108	50·8	29,942	8,667	28·9
Total ..	6,59,755	5,13,240	77·8	6,21,039	3,86,940	62·3

54. Fifteen Certificated Sanitary Inspectors were permanently employed by District Boards for routine sanitary duty, being an increase of three over last year. Having regard to the fact, that District Boards have charge of a united area of 124,914 square miles containing a population of 32,603,685, and collect yearly an income of * Rs. 78,72,390, it must be said that their efforts towards organizing efficient sanitary staffs are exceedingly feeble. In the majority of districts, the early recognition of epidemic diseases and their prompt eradication are not matters that receive much attention. It is recognized that when an epidemic becomes obstrusive, it is necessary to do something. This is usually confined to temporarily detaching a solitary Hospital Assistant for charge of an area larger than an English county, and expecting him to divide his attention successfully between preventive and curative medicine. At the very least, there should be permanently appointed for one taluk—usually representing an average of 762 square miles—a single Certificated Sanitary Inspector, and there cannot be the slightest doubt that this could be easily afforded by every District Board in the Presidency. It also seems to me that there are important functions that require fulfilment, and sufficient funds available to enable *Assistant* Certificated Sanitary Inspectors to be employed in many of the unions.

55. The following statement shows how far the requirements of G.O., No. 827-L., dated 6th May 1896, as to maintenance of Village Inspection Books, have been attended to:—

Districts.	Remarks.
Anantapur	Printed books have been supplied to all the unions for filling in. Some of the Union Chairmen have answered some of the questions, and in others it is not known what has been done as the unions were not inspected. Steps will be taken for the proper maintenance of the books during the year 1900.
Bellary	The Village Sanitary Inspection Book is maintained in each union.
Chingleput	Village Sanitary Inspection Books have been maintained in all unions.
Coimbatore	All the village unions continued to maintain the Village Sanitary Inspection Book, and entries are invariably being made in each of the books so maintained by the unions.

* This is the actual annual average of the receipts for the five years ending 1898-99.

Districts.	Remarks.
Cuddapah	In accordance with G.O., No. 25 L., dated 7th January 1896, 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 Village Sanitary Inspection Book was edited and maintained during the year in all union villages except in Battilo which is expected to be visited before the end of the current official year.
Gódávari	Village Sanitary Inspection Books were supplied to all Chairmen of the unions in the district.
Kistna	Thirteen books were compiled by the District Medical and Sanitary Officer during 1899.
Kurnool	The Village Sanitary Inspection Book is maintained in the unions.
Madura	In all the union villages Sanitary Inspection Books have been maintained.
Malabar	There are no unions in the district and Sanitary Inspection Books have therefore not been maintained.
Nellore	There were fifteen unions at the commencement of 1899, of which the one at Rapur was abolished during the year. The union at Tangatur was newly established during the year. The unions of Tangatur and Kovur have not been inspected by my predecessors. I hope to inspect them soon.
North Arcot ..	Village Sanitary Inspection Books have been prepared and maintained for all the unions in the district with the exception of two stations, and the Books for these latter will be edited as soon as these towns are inspected.
Nilgiris	Progress made in the Village Sanitary Inspection Book is satisfactory.
Salem	After the information required by the headings has once been entered, very little care is taken to record any further particulars.
South Arcot ..	Village Sanitary Inspection Books are maintained in all the unions of the district. Very few remarks have been made by Sanitary Inspecting officers in Part II. Whenever they pass any remarks they are incorporated in the Standing Sanitary Inspection Book in accordance with the printed instructions.
Tanjore	Eight unions have been supplied with Village Sanitary Inspection Books during the year. All the questions in the other books have been answered with the exception of a few which will be completed in the course of the current year.
Tinnevelly	All the unions in the district with the exception of four, which are to be shortly amalgamated with the Tinnevelly and Palamcottah Municipalities have been provided with the Village Sanitary Inspection Book.
Trichinopoly ..	Sanitary Inspection Books have been supplied to all the union villages and the results were satisfactory.
Vizagapatam ..	Village Sanitary Inspection Books have been prepared for all the unions in the district.

56. 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—325, dated 8th December 1894, Home Department (Sanitary), communicated with G.O., No. 2534 L., Mis., dated 20th December 1894.

1	2		3			4						5			6						
Name of municipality.	Date of completion of works of		Average annual death-rate since the introduction of drainage system or water-supply.			Percentage of deaths to total mortality under each head of death causation.						Average annual death-rate for the five-year period preceding the introduction of drainage system or water-supply.			Percentage of deaths to total mortality under each head of death causation.						
	Drainage.	Water-supply.	Years.	Rate calculated on the		Cholera.	Small-pox.	Fevers.	Dysentery and Diarrhœa.	Injuries.	All other causes.	Years.	Rate calculated on the		Cholera.	Small-pox.	Fevers.	Dysentery and Diarrhœa.	Injuries.	All other causes.
				Estimated population.	Census population.								Estimated population.	Census population.						
Adoni	...	September 1895.	1895	21·9	23·6	0·1	0·4	38·1	0·3	0·8	60·5	1890	16·5	19·2	...	...	51·6	...	2·7	46·3
			1896	23·2	25·4	1·0	0·3	31·2	0·9	0·5	66·2	1891	27·6	† 23·1	...	...	31·0	0·4	0·8	67·8
			1897	34·1	37·9	0·3	0·3	59·7	2·3	0·7	57·4	1892	33·7	34·7	4·5	...	38·1	3·0	1·0	53·4
			1898	23·5	23·5	...	...	21·3	0·4	0·4	78·0	1893	21·3	22·2	1·1	...	51·7	0·3	1·4	46·6
			1899	21·9	24·1	0·1	0·4	21·3	0·4	0·4	77·8	1894	22·9	22·8	0·3	...	37·0	1·4	1·4	61·3
Conjeveram	...	July 1897.	1897	25·9	29·3	0·6	0·6	19·5	0·3	0·6	79·0	1892	32·5	32·5	2·7	...	24·1	12·2	1·0	58·5
			1898	28·5	29·4	1·3	1·3	25·4	0·6	1·4	70·4	1893	31·8	33·0	1·3	2·2	26·0	13·0	1·8	55·7
			1899	26·3	29·8	1·9	0·7	27·1	0·7	1·7	67·9	1894	29·0	30·6	0·5	0·8	26·8	10·5	1·5	56·2
			...	...	...	...	...	...	...	...	...	1895	23·6	23·6	4·5	0·8	25·2	11·7	0·3	56·7
			1892	30·8	31·9	1·6	...	39·6	0·3	1·2	55·6	1896	33·3	33·3	3·6	0·1	23·8	10·6	1·1	54·8
			1894	30·5	31·9	2·6	...	39·6	0·3	1·2	55·6	1897	28·4	...	...	1·5	34·6	17·6	2·9	43·4
			1895	26·4	27·9	...	...	30·7	0·3	1·2	67·8	1898	25·9	27·1	5·4	...	27·1	14·7	...	52·8
Coonoor	Jan. 1893 ...	...	1896	28·6	41·3	2·8	0·4	39·2	0·3	1·5	55·6	1899	23·6	24·7	1·5	2·2	39·2	13·7	0·5	43·6
			1897	45·8	45·8	5·6	0·4	50·8	0·4	1·4	41·4	1900	29·4	† 29·4	5·6	0·4	22·5	14·1	1·1	54·5
			1898	34·6	34·6	...	...	...	...	...	...	1901	29·1	37·0	0·5	1·3	44·2	16·2	0·4	38·4
			1899	29·6	31·5	1·9	0·7	26·9	0·3	1·2	69·0	1902	58·2	...	...	...	...	...	...	...
			1893	30·8	31·9	1·6	...	39·6	0·3	1·2	55·6	1903	31·7	32·5	2·7	1·5	34·6	17·6	2·9	43·4
			1894	30·5	31·9	2·6	...	39·6	0·3	1·2	55·6	1904	29·6	30·6	0·5	0·8	26·8	10·5	1·5	56·2
			1895	26·4	27·9	...	...	30·7	0·3	1·2	67·8	1905	23·6	23·6	4·5	0·8	25·2	11·7	0·3	56·7
Cuddapah	July 1893.	...	1896	28·6	41·3	2·8	0·4	39·2	0·3	1·5	55·6	1906	33·3	33·3	3·6	0·1	23·8	10·6	1·1	54·8
			1897	45·8	45·8	5·6	0·4	50·8	0·4	1·4	41·4	1907	28·4	...	...	1·5	34·6	17·6	2·9	43·4
			1898	34·6	34·6	...	...	...	...	...	...	1908	25·9	27·1	5·4	...	27·1	14·7	...	52·8
			1899	29·6	31·5	1·9	0·7	26·9	0·3	1·2	69·0	1909	23·6	24·7	1·5	1·5	39·2	13·7	0·5	43·6
			1893	30·8	31·9	1·6	...	39·6	0·3	1·2	55·6	1910	29·4	† 29·4	5·6	2·2	22·5	14·1	1·1	54·5
			1894	30·5	31·9	2·6	...	39·6	0·3	1·2	55·6	1911	29·1	37·0	0·5	1·3	44·2	16·2	0·4	38·4
Dindigul	...	Aug. 1896.	1895	26·4	27·9	...	...	30·7	0·3	1·2	67·8	1912	58·2	...	...	...	...	...	...	...
			1896	28·6	41·3	2·8	0·4	39·2	0·3	1·5	55·6	1913	31·7	32·5	2·7	1·5	34·6	17·6	2·9	43·4
			1897	45·8	45·8	5·6	0·4	50·8	0·4	1·4	41·4	1914	29·6	30·6	0·5	0·8	26·8	10·5	1·5	56·2
			1898	34·6	34·6	...	...	...	...	...	...	1915	23·6	23·6	4·5	0·8	25·2	11·7	0·3	56·7
			1899	29·6	31·5	1·9	0·7	26·9	0·3	1·2	69·0	1916	29·4	† 29·4	5·6	2·2	22·5	14·1	1·1	54·5
			1893	30·8	31·9	1·6	...	39·6	0·3	1·2	55·6	1917	29·1	37·0	0·5	1·3	44·2	16·2	0·4	38·4
			1894	30·5	31·9	2·6	...	39·6	0·3	1·2	55·6	1918	58·2	...	...	...	...	...	...	...
			1895	26·4	27·9	...	...	30·7	0·3	1·2	67·8	1919	31·7	32·5	2·7	1·5	34·6	17·6	2·9	43·4
			1896	28·6	41·3	2·8	0·4	39·2	0·3	1·5	55·6	1920	29·6	30·6	0·5	0·8	26·8	10·5	1·5	56·2
			1897	45·8	45·8	5·6	0·4	50·8	0·4	1·4	41·4	1921	23·6	23·6	4·5	0·8	25·2	11·7	0·3	56·7
			1898	34·6	34·6	...	...	...	...	...	...	1922	33·3	33·3	3·6	0·1	23·8	10·6	1·1	54·8
			1899	29·6	31·5	1·9	0·7	26·9	0·3	1·2	69·0	1923	28·4	...	...	1·5	34·6	17·6	2·9	43·4
			1893	30·8	31·9	1·6	...	39·6	0·3	1·2	55·6	1924	25·9	27·1	5·4	...	27·1	14·7	...	52·8
			1894	30·5	31·9	2·6	...	39·6	0·3	1·2	55·6	1925	23·6	24·7	1·5	1·5	39·2	13·7	0·5	43·6
			1895	26·4	27·9	...	...	30·7	0·3	1·2	67·8	1926	29·4	† 29·4	5·6	2·2	22·5	14·1	1·1	54·5
			1896	28·6	41·3	2·8	0·4	39·2	0·3	1·5	55·6	1927	29·1	37·0	0·5	1·3	44·2	16·2	0·4	38·4
			1897	45·8	45·8	5·6	0·4	50·8	0·4	1·4	41·4	1928	58·2	...	...	...	...	...	...	...
			1898	34·6	34·6	...	...	...	...	...	...	1929	31·7	32·5	2·7	1·5	34·6	17·6	2·9	43·4
			1899	29·6	31·5	1·9	0·7	26·9	0·3	1·2	69·0	1930	29·6	30·6	0·5	0·8	26·8	10·5	1·5	56·2
			1893	30·8	31·9	1·6	...	39·6	0·3	1·2	55·6	1931	23·6	23·6	4·5	0·8	25·2	11·7	0·3	56·7
			1894	30·5	31·9	2·6	...	39·6	0·3	1·2	55·6	1932	33·3	33·3	3·6	0·1	23·8	10·6	1·1	54·8
			1895	26·4	27·9	...	...	30·7	0·3	1·2	67·8	1933	28·4	...	...	1·5	34·6	17·6	2·9	43·4
			1896	28·6	41·3	2·8	0·4	39·2	0·3	1·5	55·6	1934	25·9	27·1	5·4	...	27·1	14·7	...	52·8
			1897	45·8	45·8	5·6	0·4	50·8	0·4	1·4	41·4	1935	23·6	24·7	1·5	1·5	39·2	13·7	0·5	43·6
			1898	34·6	34·6	...	...	...	...	...	...	1936	29·4	† 29·4	5·6	2·2	22·5	14·1	1·1	54·5
			1899	29·6	31·5	1·9	0·7	26·9	0·3	1·2	69·0	1937	29·1	37·0	0·5	1·3	44·2	16·2	0·4	38·4
			1893	30·8	31·9	1·6	...	39·6	0·3	1·2	55·6	1938	58·2	...	...	...	...	...	...	...
			1894	30·5	31·9	2·6	...	39·6	0·3	1·2	55·6	1939	31·7	32·5	2·7	1·5	34·6	17·6	2·9	43·4
			1895	26·4	27·9	...	...	30·7	0·3	1·2	67·8	1940	29·6	30·6	0·5	0·8	26·8	10·5	1·5	56·2
			1896	28·6	41·3	2·8	0·4	39·2	0·3	1·5	55·6	1941	23·6	23·6	4·5	0·8	25·2	11·7	0·3	56·7
			1897	45·8	45·8	5·6	0·4	50·8	0·4	1·4	41·4	1942	33·3	33·3	3·6	0·1	23·8	10·6	1·1	54·8
			1898	34·6	34·6	...	...	...	...	...	...	1943	28·4	...	...	1·5	34·6	17·6	2·9	43·4
			1899	29·6	31·5	1·9	0·7	26·9	0·3	1·2	69·0	1944	25·9	27·1	5·4	...	27·1	14·7	...	52·8
			1893	30·8	31·9	1·6	...	39·6	0·3	1·2	55·6	1945	23·6	24·7	1·5	1·5	39·2	13·7	0·5	43·6
			1894	30·5	31·9	2·6	...	39·6	0·3	1·2	55·6	1946	29·4	† 29·4	5·6	2·2	22·5	14·1	1·1	54·5
			1895	26·4	27·9	...	...	30·7	0·3	1·2	67·8	1947	29·1	37·0	0·5	1·3	44·2	16·2	0·4	38·4
			1896	28·6	41·3	2·8	0·4	39·2	0·3	1·5	55·6	1948	58·2	...	...	...	...	...	...	...
			1897	45·8	45·8	5·6	0·4	50·8	0·4	1·4	41·4	1949	31·7	32·5	2·7	1·5	34·6	17·6	2·9	43·4
			1898	34·6	34·6	...	...	...	...	...	...	1950	29·6	30·6	0·5	0·8	26·8	10·5	1·5	56·2
			1899	29·6	31·5	1·9	0·7	26·9	0·3	1·2	69·0	1951	23·6	23·6	4·5	0·8	25·2	11·7	0·3	56·7

* On account of the decrease of population in the decade (1891–97), the rates on the estimated population have been omitted.

† Since corrected.

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—cont.

1	2		3			4						5			6					
Name of municipality.	Date of completion of works of		Average annual death-rate since the introduction of drainage system or water-supply.			Percentage of deaths to total mortality under each head of death causation.						Average annual death-rate for the five-year period preceding the introduction of drainage system or water-supply.			Percentage of deaths to total mortality under each head of death causation.					
	Drainage.	Water-supply.	Years.	Rate calculated on the		Cholera.	Small-pox.	Fevers.	Dysentery and Diarrhœa.	Injuries.	All other causes.	Years.	Rate calculated on the		Cholera.	Small-pox.	Fevers.	Dysentery and Diarrhœa.	Injuries.	All other causes.
				Estimated population.	Census population.								Estimated population.	Census population.						
Kumbakónam ...	Oct. 1894 ...	...	1894	36·3	37·5	...	...	...	...	...	...	1889	32·4	34·8	...	...	...	...	...	...
			1895	30·0	31·2	...	...	...	...	...	...	1890	29·2	31·6	...	...	...	...	...	...
			1896	32·6	34·2	...	...	...	...	...	...	1891	30·3	†30·5	...	...	...	...	...	...
			1897	37·7	39·9	...	...	...	...	...	...	1892	28·6	29·1	...	...	...	...	...	...
			1898	28·2	30·0	...	...	...	...	...	...	1893	35·4	36·2	...	...	...	...	...	...
			1899	33·9	36·4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Kurnool	...	October 1897.	1897	47·0	53·2	11·3	3·2	40·6	12·7	0·2	32·0	1892	53·4	55·2	10·0	...	56·7	3·3	1·5	28·5
			1898	21·3	24·6	...	...	50·3	6·0	1·0	42·2	1893	28·7	30·2	...	...	57·9	4·2	3·0	34·9
			1899	22·9	27·0	...	...	48·2	15·7	2·3	33·8	1894	29·2	31·3	3·1	0·1	47·0	4·6	2·1	43·1
			...	...	...	...	...	...	...	...	...	1895	28·0	30·5	6·2	0·4	44·0	3·4	0·5	45·5
			...	...	...	...	...	...	...	...	...	1896	27·4	30·4	4·0	1·9	44·1	3·6	0·7	45·7
Madras	...	April 1872	1872	35·1	35·2	...	...	...	...	...	...	1867	...	27·2	...	...	...	...	...	...
			1873	36·5	36·7	...	...	...	...	...	...	1868	...	23·7	...	...	...	...	...	...
			1874	36·1	36·6	...	...	...	...	...	...	1869	...	17·5	...	...	...	...	...	...
			1875	35·3	35·6	...	...	...	...	...	...	1870	...	26·4	...	...	...	...	...	...
			1876	39·2	39·6	...	...	...	...	...	...	1871	...	28·9	...	...	...	...	...	...
			1877	(Famine year.)		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
			1878	46·8	47·1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
			1879	34·1	34·7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
			1880	36·7	37·4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
			1881	37·8	38·9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
			1882	34·2	35·6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
			1883	38·0	39·1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
			1884	47·5	49·5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
			1885	34·9	36·8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
			1886	34·0	36·2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
			1887	37·0	39·8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
			1888	34·3	37·4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
			1889	38·2	42·0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
			1890	38·1	42·4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
			1891	52·1	†52·6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
			1892	45·2	46·0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
			1893	39·8	41·1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
			1894	35·1	36·0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
			1895	35·8	37·7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
			1896	35·5	37·8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
			1897	33·0	35·5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
			1898	41·2	44·8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
			1899	34·6	38·5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Madura	...	April 1894	1894	31·0	32·6	13·5	0·6	15·8	11·7	1·0	57·1	1889	27·8	31·2	6·0	3·0	15·1	19·4	1·8	51·7
			1895	24·5	26·1	1·2	0·6	17·6	9·3	1·3	70·0	1890	28·8	32·7	3·0	11·9	18·0	14·2	1·6	51·3
			1896	21·5	23·2	0·4	0·6	22·3	19·6	1·6	64·5	1891	31·1	†31·4	16·8	7·3	12·8	13·0	1·9	48·2
			1897	23·5	25·6	11·3	0·7	18·7	12·5	1·2	55·6	1892	28·6	29·3	0·8	9·9	16·9	9·6	1·5	61·9
			1898	22·7	25·1	4·5	0·5	13·7	15·3	1·6	64·3	1893	28·9	29·9	4·8	7·6	14·6	7·3	1·6	59·1
			1899	21·8	24·5	3·0	3·4	18·8	10·9	0·9	63·0	...	...	...	...	...	...	...	...	...
Tanjore	...	Oct. 1895.	1895	*	25·5	5·8	0·8	22·1	21·2	0·8	49·3	1890	*	28·2	11·1	0·3	22·6	20·0	0·9	39·1
			1896	*	27·0	3·7	2·0	23·5	25·4	0·9	44·5	1891	*	29·1†	3·8	4·4	21·2	23·3	0·6	46·7
			1897	*	25·2	12·3	0·6	20·4	22·4	0·7	43·6	1892	*	29·2	12·7	0·9	19·1	28·4	0·8	38·1
			1898	*	25·5	10·3	0·3	13·1	18·2	0·1	52·0	1893	*	35·7	28·8	2·2	17·6	22·0	0·3	29·1
			1899	*	26·0	6·2	3·1	19·3	16·4	1·1	54·0	1894	*	26·9	15·2	0·9	16·5	26·3	1·2	39·9
Trichinopoly	...	December 1896, but water supplied from April 1896.	1896	29·2	30·4	19·2	0·8	22·4	11·0	1·1	44·6	1891	29·3	29·5†	17·1	3·8	19·9	11·4	0·6	47·2
			1897	22·0	23·1	10·6	1·4	19·6	9·2	1·0	58·2	1892	25·4	25·6	15·0	5·9	26·6	12·7	1·3	39·5
			1898	28·8	30·4	24·1	1·4	14·1	6·7	0·9	52·8	1893	35·9	36·6	36·8	3·9	20·8	9·9	0·8	27·8
			1899	24·9	26·6	15·3	0·6	5·9	9·0	1·1	68·1	1894	23·7	24·4	12·6	1·6	29·4	14·0	1·1	41·3
			...	...	...	...	...	...	...	...	...	1895	22·8	23·6	14·0	0·4	31·2	15·7	1·5	37·2

* On account of the decrease of population in the decade (1881–91), the rates on the estimated population have been omitted.
† Since corrected.

NOTE.—The columns added to the form prescribed by the Government of India are thought desirable for the elucidation of the influence of the sanitary works on various diseases as contrasted with the total death-rate.

Coonoor.—As a result of the sewerage system, a satisfactory and steady decrease of fever is exhibited—doubtless primarily due to the removal of moisture from the neighbourhood of dwellings. Notwithstanding the fact that the system is still incomplete in certain parts of the town, whilst house connections are imperfect, a favourable influence is evident. Dysentery and diarrhœa continue to cause a very high rate of mortality—a result probably due to the highly contaminated sources of water supplied to the native population. I am glad to say that a water-supply scheme, which is obviously urgently required for this town, has been sanctioned.

Cuddapah.—The introduction of the water-supply into this town has been followed by an increase in the proportion of total deaths from "fevers"—a result probably due to the further introduction of unremoved moisture from the soil. The tendency in the present day is to disregard water as a medium of conveyance of malaria. Personally, I think the evidence against this is far from convincing, and even when the mosquito is looked to as the great conveyor, I do not see that it is improbable the remains of infected mosquitoes may not infect water. In this opinion, at any rate, I am in the good company of Dr. Manson. At a period long anterior to the discovery of the rôle of the mosquito, I was required to advise as to a "complete and thorough scheme" for the eradication of malaria in Cuddapah. I advocated as prime points removal of obvious obstructions to sub-soil and surface waterflow, and the complete sewerage and sub-soil drainage of the town. Having regard to the unsettled position of water in malaria production, I held that if the scheme was to be "complete and thorough," it would be well to meet this doubtful point by employing filtration of the public water-supply, which proceeds from a malarious and sparsely populated area. The Sanitary Board, however, held water filtration to be useless, and would not so much as protect the water at the site of collection from the mosquito. Whilst simply holding that the matter is open to doubt, I would point to the fact that although introduction of more moisture into Cuddapah is probably the true cause of increase of fever with reference to mosquito propagation, yet it is a curious fact that the introduction of water-supply into Adóni—also with increase of moisture without removal by drainage,—has been followed by decrease of the fever rate. I may add that there can be no doubt that the fever of Adóni is chiefly malarial. Similarly, a decrease of the fever rate is exhibited in Conjeeveram, Trichinopoly and Tanjore; although, unfortunately the registered decrease in the latter towns may not be in accordance with truth, owing to the late "plague scare." There is, however, no reason to doubt the Adóni figures. There is nothing here to be dogmatic about; but, until further evidence is forthcoming as to the mosquito, I should certainly be prepared to find it may yet be proved that water derived from malarious tracts is capable of conveying malaria, and that a change of water-supply to a town may involve also the getting rid of one of the possibly several methods of malarial conveyance.

Madras.—The water-supply of this town is incompletely protected at the catchment area, and during its conveyance to the town. It is delivered unfiltered, and at a pressure that is far below requirements. One part of the town is supplied with an imperfect "open" drainage system. In other parts of the town an underground sewerage system (which for some mistaken reason excludes night-soil) is under construction. As might be expected, no marked benefit is traceable to these imperfect works.

Madura.—Following the introduction of the water-supply in this town, there has been diminution of the cholera-rate, increase of the fever rate, and of the dysentery and diarrhœa rate—the latter but trivial. The total death-rate has also shown a decrease; but it is doubtful whether this has not been due to careless registration, as the birth-rate also has declined. The water-supply is very defective, in that it is imperfectly distributed over the town and the quantity available is subject to serious fluctuation. Nothing much in the way of beneficial influence can, therefore, be expected from it. On the other hand, the increase of moisture without removal is to the disadvantage of the town. A sewerage scheme is under discussion.

Adóni.—Diminution of the fever rate in this town has already been alluded to under the heading "Cuddapah." Cholera exhibits a marked decrease,

Dysentery and diarrhœa have not been favourably affected. In the latter connection, it may be noted that the whole of the town is undermined with cesspools.

Tanjore.—This town has a declining population. As the rate of this decline is uncertain, it is not possible to make any calculation upon the "estimated population." Against this fact must be placed the consideration that the birth-rate has not declined. Consequently, it is fair to assume that the introduction of water-works has had a marked influence in the saving of life, as shown by the total death-rate. There has been a diminution in the proportion of deaths from cholera. The use of water supplied from the water-works is increasing yearly, but there is still a considerable proportion of the population that uses various undesirable sources.

Dindigul.—The water-supply of this town is very partial, and has, consequently, exhibited no influence upon any disease. The decline of the total death-rate is misleading, as it is accompanied by a decline of the birth-rate pointing to careless registration.

Trichinopoly.—The water-works of this town have delivered water very irregularly, owing to accidents to the wells, &c. At the present time, unfiltered surface water instead of sub-stream water is being delivered to the people. Apparently, a favourable influence has been exercised upon the fever, dysentery and diarrhœa rates.

Conjeeveram.—It is somewhat too early to pronounce an opinion upon the results in this town, but, so far, there appears to be exercised a favourable influence upon the fever and cholera rates.

Kurnool.—It is too early to state what influence the water-works have produced. So far as the statistics go, there would seem to have occurred a decided fall in the total death-rate.

MECCA PILGRIMAGE.

57. No pilgrims embarked from any of the ports of this Presidency for the Haj at Mecca in 1899.

SECTION X.

PERSONAL PROCEEDINGS AND GENERAL REMARKS.

58. I returned on the 3rd January 1899, from inspecting the plague-infected localities in the Alúr and Gooty taluks, on which duty I had been engaged during December of the preceding year. On the 7th of the same month, I proceeded to Bellary, with the object of opening a class for Temporary Sanitary Inspectors. This was an urgent necessity, owing to the impossibility of keeping pace with the demand for Certificated Sanitary Inspectors. Bellary was selected as the centre for training, with the hope of securing a preponderance of Telugu-speaking candidates—the plague-infected tracts being at that time chiefly where Telugu is the vernacular. The endeavour was to train well-educated men so as to be capable of recognizing the disease, of taking necessary preliminary action, and of understanding the methods and reasons for disinfection. The course of theoretical and practical instruction and examination extended from the 9th to the 27th January. Sixty extra Sanitary Inspectors were thus rendered available to meet possible urgent demands. Whilst in Bellary, the measures undertaken by the Municipality against invasion were carefully entered into—especially with reference to the danger of importation from Hospet. In company with the Collector, plague arrangements at Hospet were duly inspected. During February, I inspected the Railway Inspection plague camp at Jalarpet. As the disease had appeared in Vellore, I made a complete inspection of arrangements and advised thereon. From thence, I proceeded to Arcot, and ascertained and advised as to methods there being adopted against plague. This tour occupied ten days. On the 21st February, I started for Tirupati. As a pilgrim centre, it was imminently liable to infection, and, indeed, imported cases had already appeared. The town was inspected. The plague-infected villages of Walajah, Pinji, and Ránipéttai, were then examined in company with the officers locally responsible. This tour occupied from 21st February to 5th March. During April, the town of Cuddapah was inspected more especially with reference to the condition of the water-supply. By this time, plague had markedly declined. During the remainder of April and May, I remained at head-quarters for the teaching of practical hygiene to candidates for the post of Certificated Sanitary Inspectors, and subsequently, as Chairman of the Government Technical examinations in Sanitary Science, undertook my part in their examinations. This is no part of my official duties, but the period spent consorts well with the fact that it is desirable to remain at head-quarters for the compilation of the Annual Administration Report. On the 7th June, I proceeded to Guntúr, and inspected the site for the proposed water-works. From thence, I went to Masulipatam and conducted an inspection of the town. The Municipality of Rajahmundry and the Union of Amalapuram were then inspected. In these places, which are notorious for beri-beri, the question of the existence of the disease amongst the populations was entered into, and numerous cases were examined clinically and microscopically. I returned to head-quarters on the 6th July. On the 18th July, I proceeded to Kurnool to undertake inspection of that town. With reference to the sanitary protection of the water-supply of this place, it was also necessary for me to examine certain villages along the Kurnool-Cuddapah canal. I returned to head-quarters on the 6th of August. On the 9th of August, I was required to meet the Sanitary Board, which was convened to discuss on the spot the water-supply scheme of Coonoor. I took the opportunity of making an inspection of the town. In response to a request by the Ootacamund Municipality, I consulted with its Committee as to the proposed drainage scheme. The opportunity was also taken of inspecting Ootacamund, and special care was exercised in attempting to ascertain the ordinary methods of spread of typhoid fever in that health-resort. I remained at head-quarters till the 3rd of October. On the 5th October, I journeyed to Vizianagram, where the District Medical and Sanitary Officer (Captain Giffard, I.M.S.) had reported an interesting outbreak of beri-beri amongst the Native Infantry. A number of cases were examined by me with the aid of the District Medical and Sanitary Officer and the officer in charge of the Regiment. The Municipal town of Vizianagram was now inspected. I returned to Madras on the 13th October. I then proceeded to Tiruvannámalai, with special reference to the then approaching great annual festival. I returned to Madras on the 20th October. From the 4th to 27th November, I was absent from head-quarters, and during this period I inspected Trichinopoly, Srírangam, Madura, and Tanjore. Dindigul was visited with special reference to the water-supply scheme. I again left Madras on the 9th December, with the intention of making a tour throughout the West Coast municipalities. I arrived at Calicut and inspected a portion of the town on the 10th. On the 11th, I received a telegram reporting an alarming outbreak of plague at Tiruppattúr in the Salem district. I at once proceeded there, and, having consulted with the Collector, returned to Calicut on the 15th. I was on that date attacked with an illness that incapacitated me from conducting any further out-door work, although my office work continued to receive my full attention. Written reports of the above inspections were forwarded in each case to the authorities concerned and to Government. During the year, a distance of 6,749 miles was travelled by road, rail, and canal.

59. The total attacks of plague in the Presidency for the whole year amounted to 2,385, followed by 1,843 deaths. By the middle of May, the plague epidemic which had commenced in the last quarter of the previous year in the Deccan districts of Anantapur, Bellary and Kurnool showed marked symptoms of diminution in March, and had completely disappeared within the first three weeks of May. In these districts, there had occurred a total of 70 imported and 716 indigenous cases followed by 56 and 588 deaths, respectively. In the North Arcot district, plague lingered up to a later date; indigenous cases did not cease till the end of June. In this district, there were 67 imported and 647 indigenous cases, followed by 55 and 501 deaths, respectively. In the Hosúr taluk of the Salem district, however, although from May to June there was exhibited a decrease of indigenous cases, plague manifested a continued, though not severe, prevalence throughout the year. In December, a second taluk in the Salem district was attacked. This followed a severe outbreak in the Municipal town of Tiruppattúr, owing to a lamentable want of discretion by the Municipal authorities. The total imported cases in this district were 141 and indigenous cases 682, followed by 88 and 508 deaths, respectively. Kollegal taluk of Coimbatore was subjected to a short epidemic outbreak extending from October 7th to December 16th. In this district, there were 1 imported and 47 indigenous cases, followed by 37 deaths. Imported cases were also reported in Chingleput, Nilgiris, Trichinopoly, Nellore and Madras town. In none of these instances was importation followed by indigenous plague.

60. Having regard to the usual behaviour of plague, as reported by various authorities, affecting recrudescence of the disease in villages where it had appeared in its indigenous form, it was felt the chances were considerable that, either following the moisture incident to the south-west monsoon, the decreased incidence shown in April and May would give way to fresh outbreaks, or that at least on the expiration of a year, which would repeat the same meteorological influences under which it had flourished, a recurrence would take place. I am glad to say, however, that so far in this Presidency not a single instance has been recorded of what would be correctly understood as recrudescence. Indeed, were it not for the continued presence of plague in the Hosúr taluk of the Salem district—a condition that may well be ascribed to the free intercourse which exists with the neighbouring infected Mysorean villages—it might be said that villages that have been once affected have escaped fully any recurrence. The deduction might be drawn that sources of infection had been so carefully sought for and destroyed that no recrudescence was possible. It seems to me, however, that the chances are that when it is implied by recrudescence that the disease had completely disappeared from human beings and that the germ, with decreased vitality, but awaited favouring conditions in some suitable medium for a return to virulence and spread to human beings, there is assumed more than were it be held that it was due to the continued propagation

of the disease by its slight and, therefore, unrecognized existence amongst the population.

61. It cannot be said that additional information as to transmission of plague has been gained. The opportunities for observation have been chiefly in the hands of non-professional persons, owing to the peculiar constitution of plague staffs incident to the policy pursued throughout India. Where medical men have been employed, it is rarely they have had sufficient time at their disposal to correctly elucidate occurrences. In my last year's report, I held that the great importer of plague was the human being, and that, subsequently, in the affected areas its spread was facilitated by rats, and particularly drew attention to the absence of evidence implicating inanimate articles imported from a plague-infected area as the original cause of plague in a hitherto unaffected locality. The experience of both lay and medical officers in the Hosúr taluk of the Salem district, however, dictates that not only rats but grain infected by them is an important mode of spread. Indeed, the District Medical and Sanitary Officer considers infection by mouth by medium of infected food to be indubitably the chief mode of spread. Unfortunately, the evidence which he brings forward, although giving colour to his assertion, does not seem to be of a nature that could be accepted with the certainty necessary in dealing with so important a statement. It is, however, necessary to collect all facts bearing on the question of mode of transmission with care, and with the object of inducing officers to collect further data, I draw attention to this officer's opinion. With a hope that in each district invaded it would be possible gradually to collect a store of facts that would illustrate the truth in such matters, the Plague Commissioner under my advice, in his Proceedings No. 951, dated 12th April 1899, required that Collectors of Districts should maintain a special record in diary form, to which all persons under their orders dealing with plague should be requested to contribute facts coming under their own observation of a sanitary nature. Unfortunately, no Collector has maintained the record suggested.

62. There was no change of policy with which Government met the requirements of plague administration during the year. The method of detection trusted to has been that of inspecting travellers by road, rail and sea on routes communicating with infected areas, isolation of the sick, and requiring the healthy during the periods of possible incubation to be subject to surveillance whilst in no way restricting their movements. The District Board, Municipal and village organizations lend themselves to the successful effecting of this scheme. In one respect a flaw existed in the arrangements, in that it was possible for persons from affected villages to scatter hither and thither before coming under the influence of the passport regulations. Hence a new regulation was required. It has been arranged that *before* starting from an infected village the inhabitant should obtain a passport which, under the usual rules, will secure his surveillance whilst travelling beyond its limits. It is also required that inhabitants of an infected village proceeding to camp in its neighbourhood should receive the approval of the plague officer of the site selected by them, in token of which "passes" were to be issued. A system which demands that at certain points an uneducated native should be given a piece of paper, by which it is required he should present himself for a period of ten days to the Plague Authority at any village or town at which he may halt, may seem well-nigh visionary; yet, experience shows that, under this simple method, the free population can be allowed to pass from one end of the Presidency to the other, with fair assurance that both the passport bearer and the local officer responsible for the examination of his health will fulfil their duties. By means of this system, a large number of the imported cases have been detected at the very onset of the disease, and thus the possibility of spread has been enormously minimized. Of course, it has not been possible to ensure that all passport-holders should have been put under surveillance; still, the amount of success which has attended the endeavour suffices to prove its great utility—more especially when contrasted with the inconvenience and indifferent results brought about in at least one other Presidency, by the adoption for a considerable period of the principle of "detention camps"—land quarantine. In my last year's report, I quoted the percentages of failure to trace the passport-holders as ascertained in the districts. As I have no doubt, vigilance has not been relaxed, I have not thought it necessary to

put Collectors to the trouble of furnishing me again with statistics. A fair example, however, of what can be done, even in large towns, is illustrated by results obtained in the Municipality of Madras where, failure to trace passport-holders occurred only in 3·4 per cent. of 55,407 cases. Discipline, therefore, in a free population cannot be absolutely complete, and it must be admitted that introduction of plague is possible by cases that have eluded surveillance; yet, the figures are so enormously in favour of successful surveillance that no one can feel otherwise than that the system is of distinct practical value.

63. In towns, much passive opposition to evacuation of infected houses has been exhibited: but, in rural areas, the benefit of rapid evacuation is often so well recognized that on the occurrence of plague there is a general exodus to encampment on clean sites outside the town. Lieutenant-Colonel Lawrie, I.M.S., having adversely criticized the bacterial purity of haffkinine before the Plague Commission, the educated native public lost faith in anti-plague inoculation. As a result only 5,955 persons were inoculated during the year. It will take sometime before the prejudice thus caused can be eradicated.

64. The use of Chinese pumps was found in practice arduous to the men employed; hence, I designed a so-called "gravitation disinfector," which has been favourably reported upon by medical officers who have seen it in use. This consists of a twenty-four-gallon bucket mounted on a platform on wheels fitted with guiding rods, which permit of the bucket being elevated to a height of 20 feet. To the bucket is attached a canvas hose pipe 120 feet long having a suitable spray at the end. Two men can transport and place the machine in a position outside the house to be disinfected. A powerful spray of about 18 feet in height can then be secured, and be conducted to any part of the interior with ease. With the aid of Mr. Phipps, of the Madras Railway Company, in carrying the idea into practice, I also initiated a disinfecting machine that would apply a hot gas blast to any part of indestructible floors and walls—much on the principle of the painter's lamp. On comparing bacteriologically results of disinfection of floors by this machine with those secured by other observers with the acid solution of the perchloride of mercury, I came to the conclusion that, so far as superficial layers of earth are concerned, the use of heat presents no advantage over that of the disinfectant named, whilst the consumption of time in securing the necessary temperature in so badly conducting a medium as earth, inevitably charged with more or less moisture, was to its disadvantage, unless it be proved that the plague microbe could exist at greater depths than readily reached by soakage of a fluid disinfectant, say, one-sixth of an inch—as to which, Yersin notwithstanding, information is incomplete.

65. In paragraph 58 *supra*, I have stated the area of the Presidency examined by me with reference to beri-beri. This interesting work I undertook more especially with the object of ascertaining how far it is possible to accept the contention by Captain Fearnside, I.M.S., in a pamphlet which was communicated to a professional journal and to the Government of India, that the symptoms usually recognized in this Presidency as beri-beri are due to a malignant infective form of the *plasmodium malariae*. I made no further advance than dozens of observers better fitted for the task in ascertaining what is precisely the nature of the specific germ of beri-beri, but of this I feel absolutely convinced, after examining microscopically the blood of a large number of cases, that the disease known as beri-beri in the Madras Presidency is not due to the presence of the *plasmodium malariae*. That beri-beri and malarial cachexia may co-exist there can, of course, be not the slightest doubt; and, when they do co-exist, the condition of the patient is greatly aggravated. But, this is a very different matter to malaria being regarded as the *fons et origo* of the disease.

66. Members of public bodies are rarely open to conviction as to contamination of the sub-soil in connection with water-supplies. The great distances from possible sources of contamination and the actual points of withdrawal of water-supplies tend to make them believe in safety from any form of contamination, when guarded by the well-known purifying influence of filtration through the sub-soil. To be able to easily demonstrate to unbelievers the source of contamination is important. The use of common salt or salts of lithium renders necessary a preliminary as well

as subsequent analysis of water, involving expenditure of time and trouble. Hence, it is worthwhile placing on record how readily a demonstration is procurable by utilizing "fluorescence." In an experiment conducted by me at the Cuddapah water-works, it was easily proved that when the line of saturation in the infiltration bed was lowered by pumping, there occurred an inrush of possibly contaminated water from a neighbouring road ditch, and, further, that contamination so acquired passed through the sub-soil so as to reach wells 303 yards distant. When it is remembered that this is a mere visual test, its advantages over older methods are obvious. It has been employed in America for the purpose indicated for sometime past.

67. In paragraph 49, I have referred to the increasing interest which is taken in the subject of sewage filtration. The principles followed by me were such as advocated by the Massachusetts State Board of Health. These, in my opinion, serve admirably when applied to designs of filters where supervision is likely to be of the smallest. At any rate, these principles suffice for what I term "makeshift filters," that is, filters devoid of valves and other arrangements which would be necessary adjuncts of Dibdin's mode. A clay lined earthen reservoir with sand, washed gravel, and road metal underdrained by tile drains offer cheap and efficient media.

68. When such filters are worked intermittently so as to secure aeration, I think it will be rarely that any more elaborate modes need be adopted in this country. The utility of the "septic tank" is a matter which has apparently "caught on" to the mind of the educated public of India. Very little consideration will, however, show that the reasons for the success of this and of Dibdin's method in Great Britain depend upon conditions that are not likely to occur frequently in India. The bugbear of a Municipal body in disposing of its sewage in England is the great cost of land, prohibiting disposal of sludge and fluid sewage. In India, however, it can be but rarely that the municipality need fear cost of land for what is proved to be in Madras, at least, the profitable investment of sewage farming. Where a town has a correctly designed system of sewerage, then I hold that usually disposal by sewage farming, or highly under-drained beds, will prove ample for requirements in India, and I foresee that the great utility of sewage filtration is where but imperfect systems of sewerage exist. Judiciously placed sewage filters will then prove of the utmost value in preventing reckless contamination of water sources. Similarly, in the absence of sewerage systems, filtration of sewage at the household—permitting the filtrate to flow on the surface—will prove an infinitely safer method than consigning it to the sub-soil by medium of leaky cesspools. Both public and private sewage filters have been in use since 1895 in this Presidency.

69. Since 1891, when I was placed on "special duty" by the Madras Government with reference to ascertaining the best mode of supplying preserved animal lymph, I have from time to time urged the importance of this Presidency possessing a Central Vaccine Institute, where animal lymph should undergo cultivation and preservation under conditions that would guarantee the requisite absolute cleanliness and high grade of activity. I have also advocated the advisability of uniting a bacteriological laboratory with this Institute, with the object of placing at the disposal of the bacteriologist the splendid opportunities of studying serum therapeutics, which the possession of a large number of animals and facilities for their handling and care would afford. It is with no small pleasure, therefore, that I find myself able to record that Government has now consented to the establishment of such an Institute.

70. The post of Certificated Sanitary Inspector continues to attract a well educated and respectable class of young men. Ninety-six candidates passed through the educational course last year, of whom 49 passed. One hundred Certificated Sanitary Inspectors are now in the employ of 56 municipalities and 15 in that of a few of the District Boards. The scheme to which I referred in my last report for securing candidates who are solely graduates of the Madras University, and requiring them to undergo a still more advanced course of training in Sanitary Science, is held in abeyance, pending its being ascertained to what extent sanitary requirements of rural areas have received attention in the forthcoming Amended District Boards Act. It will be hopeless to make the venture, unless it has been arranged

that there be sufficient power to at least secure one highly trained Sanitary Inspector for each taluk. There is, however, a position which in my opinion could at once be usefully assumed by Certificated Sanitary Inspectors, or at least those who take inferior places in the "passed list" and are, therefore, entitled to only the position of Assistant Certificated Sanitary Inspector. At the present time, unions fritter away money on appointments of unqualified Sanitary Inspectors, Sanitary Overseers and clerks. By abolishing these useless appointments, sufficient funds would be at disposal for the entertainment in each of the larger unions of a single Assistant Certificated Sanitary Inspector, who could easily fulfil the whole of the duties required of these various subordinates. This course would undoubtedly aid sanitary advance generally in rural tracts, and would be of special value during the presence of epidemic diseases; but there would also be served the important desideratum of providing a functionary who could efficiently serve as Registrar, under the lately passed Registration of Births and Deaths Act. Indeed, it seems to me that, unless either by this means or some other scheme, it be possible to provide Registrars who are not Village Officers and therefore, by reason of multifarious duties, incapable of attending to registration requirements of the large population of unions, the Act in question will prove practically abortive. I have laid the suggestion before Government.

71. Twenty-two Certificated Sanitary Inspectors were employed on plague duty. In no instance was any complaint of a serious nature made against them, and they undoubtedly effected good work within their charges. Such complaints of moment as were received were confined to Temporary Sanitary Inspectors, of whom a few were still employed up to the end of the year.

72. During the months of January and February the post of Deputy Sanitary Commissioner was held by the incumbent, Major Bannerman, I.M.S. He performed much useful work in attempting to popularize anti-plague inoculation in the North Arcot District. He performed personally a large number of operations. In the month of March, he was deputed to act for Mons. Haffkine in charge of the plague Research Laboratory, Bombay. In the same month Captain Vickers, I.M.S., was appointed as Acting Deputy Sanitary Commissioner. Since joining his appointment, he has been energetic and painstaking in inspecting vaccination work, and in combating the many irregularities which are apt to arise in a Department having so defective an organization as that by which vaccination is accomplished in this Presidency. On vaccination duty, he inspected parts of the districts of Tinnevelly, Chingleput, Gódávari, Coimbatore, Kistna and Madura. He was also deputed by me for the conduct of sanitary inspection of the following towns:—Bezwada, Guntúr, Ellore, Cocanada, Coimbatore, Erode, Karúr, Tinnevelly, Tuticorin, Srívilliputtúr, Palamcottah, Palni and Periyakulum.

73. Two hundred and forty Inspection Reports by District Medical and Sanitary Officers were received, showing a falling off of 16 as compared with the previous year. The attention of Government was duly invited to the influence of certain rulings in curtailing the interest of these officers in sanitary and vaccination duties.

74. The Sanitary Board was advised as to the sanitary aspects of major and minor sanitary engineering works in a total of 140 references made to it, through this office by local authorities.

75. My office staff, under the supervision of my energetic Manager and Assistant M.R.Ry. S. Balasundara Mudaliyar Avergal, B.A., fulfilled its duties satisfactorily.

76. All service books were correctly maintained.

77. The stock of instruments, &c., have been inspected in accordance with G.O., No. 920, Financial, dated 18th September 1893.

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

MADRAS,
19th May 1900.

APPENDICES

TO

GENERAL SANITATION REPORT.

APPENDIX A.

Tables showing places visited by Sanitary Commissioner and Deputy Sanitary Commissioner during 1899.

MUNICIPAL TOWNS INSPECTED BY

Sanitary Commissioner.

Districts.	Municipalities.	Date of inspection.	Date of report.	G.O. on report.
North Arcot ...	Tirupati ...	22nd Feb. to 1st March 1899.	24th Mar. 1899.	No. 986-M., dated 12th July 1899.
South Arcot ...	Tiruvannámalai.	18th and 19th October 1899.	11th Dec. 1899.	No. 312-M., dated 6th March 1900.
Gódávari ...	Rajahmundry ...	21st to 23rd June and 3rd July 1899.	10th Nov. 1899.	No. 392-M., dated 17th March 1900.
Vizagapatam ..	Vizianagram ...	8th to 11th October 1899.	20th Nov. 1899.	No. 393-M., dated 17th March 1900.
Kistna	Masulipatam ...	14th to 16th June 1899.	31st Oct. 1899.	No. 445-M., dated 26th March 1900.
Kurnool ...	Kurnool ...	21st, 22nd and 24th July 1899.	21st Oct. 1899.	No. 521-M., dated 5th April 1900.
Nilgiris ...	Ootacamund ...	22nd August to 1st September 1899.	4th April 1900.	.....
Madura ...	Madura	14th to 21st November 1899.	30th Mar. 1900.	.....
Trichinopoly ...	Trichinopoly ...	6th to 11th November 1899.	13th Feb. 1900.	.....
Tanjore ...	Tanjore	22nd to 27th November 1899.	7th April 1900	.....

Deputy Sanitary Commissioner.

Districts.	Municipalities.	Date of inspection.	Date of report.	G.O. on report.
Kistna ...	Bezwada ...	21st and 22nd April 1899.	17th May 1899.	No. 1174-M., dated 17th August 1899.
	Guntúr ...	18th and 19th April 1899.	11th May 1899.	No. 1216-M., dated 22nd August 1899.
Gódávari ...	Ellore	25th and 26th July 1899.	Do. ...	No. 1884-M., dated 18th December 1899.
	Cocanada ...	21st, 22nd and 24th July 1899.	Do. ...	No. 1902-M., dated 21st December 1899.
Coimbatore ...	Erode	15th and 16th September 1899.	23rd Nov. 1899.	No. 284-M., dated 2nd March 1900.
	Coimbatore ...	25th, 26th and 28th August 1899.	2nd Dec. 1899.	No. 311-M., dated 6th March 1900.
	Karúr	21st to 23rd September 1899.	16th Nov. 1899.	No. 380-M., dated 16th March 1900.
Tinnevelly ...	Srivilliputtúr ...	17th to 19th September 1899.	26th Dec. 1899.	.....
	Palamcottah ...	25th, 26th and 30th September 1899.	22nd Jan. 1900.	.....
	Tinnevelly ...	26th to 28th October 1899.	Do.	.....
	Tuticorin ...	4th to 6th November 1899.	3rd March 1900.	.....
Madura ...	Periyakulam ...	16th and 17th November 1899.	Do.	.....
	Pabal	21st and 22nd November 1899.	Do.	.....

MUNICIPAL TOWNS INSPECTED.

APPENDIX A—*continued.*

Tables showing places visited by Sanitary Commissioner and Deputy Sanitary Commissioner during 1899—*continued.*

RURAL TOWNS INSPECTED BY

Deputy Sanitary Commissioner.					
District.	Names of places.	Date of inspection.	Date of report.	G.O. on report.	
Chingleput ...	Tiruvallúr ...	18th and 19th March 1899	15th April 1899.	No. 1317-L., dated 5th July 1899.	
	Nagalapuram ...	21st March 1899			
	Uttukótai ...	20th "			
	Kanani ...	22nd "			
	Penalurpet ...	23rd "			
	Kanniputhúr ...	24th "			
	Polúl ...	25th "			
Coimbatore ...	Mettupáliyam ...	23rd August 1899	19th Sept. 1899.	No. 2958-L., dated 12th October 1899.	
	Polláchi ...	30th "			
	Udumalpet ...	30th "			
Gódávari ...	Rájamagaram ...	3rd July 1899	24th August 1899.	No. 2106 L., dated 18th October 1899.	
	Yelavaram ...	6th "			
	Kottapalli ...	8th "			
	Jaguripad ...	12th "			
	Gagavaravpalem ...	16th "			
	Yethukóta ...	18th "			
	Polavaram ...	19th "			

Sanitary Commissioner.				
Districts.	Names of places.	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 1899.

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	6	2	8
Bellary	9	5	14
Chinglepat	9	23	32
Coimbatore	15	9	24
Cuddapah	11	5	16
Ganjám	14	...	14
Gódávari	13	6	19
Kistna	15	20	35
Kurnool	4	11	15
Madura	33	8	41
Malabar	7	...	7
Nellore	15	7	22
Nilgiris	5	...	5
North Arcot	12	8	20
Salem	17	...	17
South Arcot	9	3	12
South Canara	...	3	3
Tanjore	8	21	29
Tinnevelly	27	...	27
Trichinopoly	11	10	21
Vizagapatam	...	22	22
Total ...	240	163	403

APPENDIX C.

Statement showing Statistics of Sickness and Mortality in the Lawrence Asylum, Ootacamund, during the year 1899, *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)	
	1898.	1899.	1898.	1899.	1898.	1899.	1898.	1899.	1898.	1899.
Lawrence Asylum ...	380	360	227	217	1	...	59·7	60·27	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* 1899.

Number.	2			3	4			5			6			7	8	9	10		
	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	11,409	11,395	22,804	15·7	15·6	31·3	100·1	12·4	...	14·3	14·0	28·3
2	453,537	436,948	890,485	Bellary	453,537	436,948	890,485	15,556	15,404	30,960	17·3	17·3	34·8	101·0	10·2	...	16·6	16·2	32·8
3	604,816	595,085	1,199,901	Chingleput	604,816	595,085	1,199,901	22,001	21,365	43,366	18·3	17·8	36·1	100·3	12·4	...	18·8	18·1	36·9
4	981,233	1,022,678	2,003,911	Coimbatore	981,233	1,022,678	2,003,911	30,957	30,217	61,174	15·4	15·1	30·5	102·4	14·0	...	14·2	13·7	27·9
5	646,132	625,589	1,271,721	Cuddapah	646,132	625,589	1,271,721	17,967	17,454	35,421	14·1	13·8	27·9	102·9	8·7	...	13·9	13·4	27·3
6	923,800	972,400	1,896,200	Ganjam	923,120	744,112	1,437,232	23,604	21,982	45,586	16·4	15·3	31·7	107·4	17·3	...	11·4	10·5	21·9
7	1,026,632	1,051,226	2,077,858	Gódávari	1,026,632	1,051,226	2,077,858	39,091	37,510	76,601	18·8	18·1	36·9	104·2	17·0	...	12·8	12·2	25·0
8	938,057	916,967	1,855,024	Kistna	938,057	916,967	1,855,024	38,052	37,162	75,214	20·5	20·0	40·5	102·4	17·4	...	17·2	16·7	33·9
9	414,035	403,625	817,660	Kurnool	414,035	403,625	817,660	12,623	12,127	24,750	15·4	14·8	30·2	104·1	13·7	...	15·2	14·7	29·9
10	217,690	218,685	436,375	Madras	217,690	218,685	436,375	9,041	8,008	17,049	20·7	19·7	40·4	105·0	1·9	...	20·9	20·0	40·9
11	1,251,217	1,350,515	2,601,732	Madura	1,053,570	1,130,781	2,184,351	24,887	23,876	48,763	11·4	10·9	22·3	104·2	8·2	...	14·4	13·7	28·1
12	1,304,782	1,329,892	2,636,674	Malabar	1,306,782	1,329,892	2,636,674	35,261	33,241	68,502	13·4	12·6	26·0	106·1	10·5	...	11·2	10·4	21·6
13	736,394	726,963	1,463,357	Nellore	736,394	726,963	1,463,357	19,541	19,124	38,665	13·3	13·1	26·4	102·2	8·4	...	13·3	12·8	26·1
14	54,485	42,280	96,765	Nilgiris	54,485	42,280	96,765	2,826	2,600	5,426	15·1	14·1	29·2	107·6	8·4	...	14·7	14·1	28·8
15	1,060,273	1,053,312	2,113,585	North Arcot	1,060,273	1,053,312	2,113,585	30,470	29,504	59,974	14·4	13·9	28·3	103·3	9·1	...	14·2	13·7	27·9
16	961,199	1,000,585	1,961,784	Salem	961,199	1,000,585	1,961,784	32,751	31,455	64,206	16·7	16·0	32·7	104·1	9·4	...	16·5	15·8	32·3
17	1,078,855	1,083,481	2,162,336	South Arcot	1,078,855	1,083,481	2,162,336	31,531	30,321	61,852	14·6	14·0	28·6	104·0	7·3	...	15·6	15·0	30·6
18	508,970	543,032	1,052,002	South Canara	508,970	543,032	1,052,002	16,663	16,358	33,021	15·8	15·6	31·4	101·9	1·5	...	16·2	15·2	31·4
19	1,065,450	1,161,631	2,227,081	Tanjore	1,065,450	1,161,631	2,227,081	36,137	34,396	70,533	16·2	15·4	31·6	105·1	6·8	...	14·7	14·0	28·7
20	933,222	982,480	1,915,702	Tinnevelly	933,222	982,480	1,915,702	33,852	32,183	66,035	17·7	16·8	34·5	105·2	13·5	...	15·4	14·6	30·0
21	663,035	708,691	1,371,726	Trichinopoly	663,035	708,691	1,371,726	20,476	19,597	40,073	14·9	14·3	29·2	104·5	8·1	...	14·4	14·0	28·4
22	809,175	813,770	1,622,945	Vizagapatam	809,175	813,770	1,622,945	30,756	29,598	60,354	19·0	18·2	37·2	103·9	18·7	...	13·9	13·5	27·4
22	17,156,960	17,570,663	34,727,623	Grand Total for the Presidency.	16,578,696	16,947,098	33,525,794	534,091	514,241	1,048,335	15·9	15·4	31·3	103·9	11·2	...	14·6	14·0	28·6
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	46,202	44,366	90,568	18·2	17·5	35·7	104·1	6·6	...	16·9	16·2	33·1
181	15,915,566	16,274,024	32,189,590	Total of Rural circles in the Presidency.	15,337,302	15,650,459	30,987,761	487,892	469,875	957,767	15·7	15·2	30·9	103·8	11·5	...	14·4	13·8	28·2

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* 1899.

Serial number.	2	3	4	5			6		7			8	9										10		11	12
	Districts.	Area in square miles.	Average population per square mile.	Population (exclusive of Europeans and Eurasians) for which returns were received.			Births.		Number of deaths registered (exclusive of Europeans and Eurasians and born dead).			Number of deaths of males to every 100 deaths of females.	Deaths per 1,000 of population from										Mean ratio of deaths per 1,000 during previous five years.			Net receipt of each district under conservancy.	Net expenditure of each district under conservancy.
																		All causes.								
				Males.	Females.	Total.	Total number.	Birth-rate per 1,000 of population.	Males.	Females.	Total.		Cholera.	Small-pox.	Fevers.	Dysentery and diarrhœa.	Injuries.	All other causes.	Males.	Females.	Total.	Males.	Females.	Total.				Rs.	Rs.
1	Anantapur ...	5,275	134·2	372,034	355,285	727,319	22,804	31·3	7,003	6,741	13,744	101·0	0·01	0·5	2·7	0·7	0·4	14·6	18·8	19·0	18·9	19·9	20·0	19·9		731	15,681
2	Bellary ...	6,196	148·2	453,537	436,948	890,485	30,960	34·8	11,339	10,572	21,911	107·3	1·9	0·6	4·6	1·9	0·4	15·2	25·0	24·2	24·6	24·8	24·1	24·6		755	15,523
3	Chingleput ...	2,842	399·0	604,816	595,085	1,199,901	43,366	36·1	14,407	13,975	28,382	103·1	0·6	0·4	2·0	2·0	0·5	16·6	23·8	23·5	23·7	23·0	22·8	22·9	1,336	11,122
4	Coimbatore ...	7,860	254·9	981,233	1,022,678	2,003,911	61,174	30·5	16,850	16,247	33,097	103·7	0·3	0·3	6·4	0·6	0·4	8·5	17·2	15·9	16·5	20·6	18·5	19·5	1,836	18,544
5	Cuddapah ...	8,722	145·8	646,132	625,589	1,271,721	35,421	27·9	12,519	11,935	24,504	104·5	0·2	0·8	12·7	0·4	0·5	3·8	15·4	13·1	14·3	21·4	21·4	21·4	716	8,045
6	Ganjam ...	8,370	226·6	923,800	972,400	1,896,200	45,586	31·7	19,747	9,013	28,760	108·4	0·04	0·3	10·4	0·6	0·3	2·8	15·5	13·3	14·4	26·0	22·0	23·9	371	8,021
7	Gódávari ...	7,857	264·4	1,026,632	1,051,226	2,077,858	76,601	36·9	21,035	20,462	41,497	103·1	0·2	0·3	8·5	0·4	0·2	9·7	20·5	19·4	19·9	19·7	17·6	18·6	591	26,531
8	Kistna ...	8,307	229·0	938,057	916,967	1,855,024	75,214	40·5	21,785	21,015	42,839	103·5	0·1	0·3	10·5	1·0	0·1	10·8	23·2	23·0	23·1	21·0	20·0	20·5	322	25,358
9	Kurnool ...	7,514	109·9	414,035	403,625	817,660	24,750	30·2	7,020	6,483	13,503	108·3	...	0·5	11·6	0·2	0·3	3·9	16·9	16·1	16·5	24·3	23·5	23·9	560	15,571
10	Madras ...	29	15,078·8	217,690	218,685	436,375	17,349	40·4	8,303	8,405	16,708	98·8	0·05	0·1	7·5	7·9	0·4	22·6	38·6	38·4	38·5	38·1	39·1	38·6	...	...
11	Madura ...	8,803	296·1	1,053,570	1,130,781	2,184,351	48,763	22·3	15,823	15,001	30,824	105·5	0·2	0·9	4·8	0·3	0·3	7·6	15·0	13·3	14·1	21·2	18·7	19·9	492	31,379
12	Malabar ...	5,585	472·1	1,306,782	1,329,892	2,636,674	68,502	26·0	21,531	19,593	40,924	111·0	0·01	0·05	7·9	1·1	0·3	6·2	16·5	14·6	15·5	20·4	17·8	19·1	175	154
13	Nellore ...	8,765	166·9	736,394	726,963	1,463,357	38,665	26·4	13,465	12,802	26,267	105·2	0·4	0·3	8·3	0·4	0·4	8·3	18·3	17·6	18·0	17·9	17·7	17·9	126	6,686
14	Nilgiris ...	957	101·1	54,485	42,280	96,765	2,826	29·2	1,091	919	2,010	118·4	...	0·5	13·0	1·3	0·3	4·3	20·0	21·7	20·8	25·4	27·6	26·4	5	1,087
15	North Arcot ...	7,616	280·2	1,060,273	1,053,312	2,113,585	59,974	28·3	20,454	20,046	40,500	102·0	1·3	0·7	5·9	1·4	0·7	8·7	19·3	19·0	19·2	18·0	17·7	17·9	686	18,065
16	Salem ...	7,529	260·6	961,199	1,000,585	1,961,784	64,206	32·7	23,215	22,372	45,587	103·8	2·8	0·3	8·9	1·0	0·6	10·6	24·2	22·3	23·3	19·8	18·4	19·1	2,850	25,473
17	South Arcot ...	5,217	413·5	1,078,855	1,083,481	2,162,336	61,858	28·6	23,559	22,570	46,129	104·3	1·9	1·2	4·9	0·6	0·4	12·3	21·8	20·8	21·3	23·5	22·0	22·8	797	22,336
18	South Canara ...	3,902	269·6	508,970	543,032	1,052,002	33,021	31·4	15,547	15,023	31,470	97·6	0·002	0·3	18·1	1·6	0·5	9·4	30·5	29·3	29·9	23·9	20·7	22·3	273	3,367
19	Tanjore ...	3,709	600·1	1,065,450	1,161,631	2,227,081	70,533	31·6	27,255	23,057	55,312	97·1	2·6	0·8	1·9	0·7	0·4	18·4	25·6	24·1	24·8	20·6	21·6	25·5	546	25,061
20	Tinnevelly ...	5,387	355·1	933,222	982,480	1,915,702	66,035	34·5	20,260	19,976	40,236	101·7	0·7	0·3	2·5	0·4	0·4	16·7	21·7	20·3	21·0	25·3	23·0	24·1	1,045	39,091
21	Trichinopoly ...	3,631	377·8	663,035	708,691	1,371,726	40,073	29·2	14,494	14,493	28,987	100·0	2·1	0·1	3·7	0·5	0·5	13·9	21·0	20·5	21·1	23·6	22·0	22·8	1,066	8,016
22	Vizagapatam ...	4,619	420·5	809,175	813,770	1,622,945	60,354	37·2	15,353	14,644	29,997	104·8	0·02	0·4	15·4	0·7	0·3	1·7	19·0	18·0	18·5	22·5	19·9	23·2	...	10,714
	Grand total for the Presidency.	128,727	269·8	16,578,696	16,947,098	33,525,794	1,048,335	31·3	342,163	331,931	675,094	103·4	0·9	0·5	7·3	0·9	0·4	10·1	20·7	19·5	20·1	21·0	20·5	21·3	...	...
	Total of Town circles in the Presidency.	...	...	1,241,394	1,296,639	2,538,033	90,568	35·7	37,469	36,463	73,932	102·8	1·5	0·3	5·8	3·7	0·4	17·4	30·2	28·1	29·1	30·4	28·2	29·3	...	...
	Total of Rural circles in the Presidency.	...	...	15,337,302	15,650,459	30,987,761	957,767	30·9	305,694	295,468	601,162	103·5	0·8	0·5	7·5	0·7	0·4	9·5	19·9	18·9	19·4	21·4	19·9	20·6	...	...

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

No. III.—*Deaths registered in the districts of the Madras Presidency during each month of the year* 1899.

1	2	3												4
Number.	Districts.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total deaths registered during the year.
1	Anantapur	1,112	1,229	1,236	1,069	1,146	1,045	1,009	1,042	948	895	1,131	1,222	13,74
2	Bellary	1,756	1,900	2,255	2,285	2,178	1,981	1,783	1,723	1,641	1,750	1,988	1,703	21,0
3	Chingleput	3,457	2,486	2,254	1,892	2,151	1,912	1,874	1,962	1,911	2,282	2,074	3,093	25,3
4	Coimbatore	3,090	2,452	2,551	2,356	2,780	2,622	2,597	2,410	2,723	2,855	3,324	3,008	33,0
5	Cuddapah	2,083	1,966	1,969	1,615	1,838	1,720	1,621	1,743	1,768	2,151	2,064	2,701	24,3
6	Ganjam	1,611	1,561	1,495	1,628	1,663	1,760	1,920	2,036	1,791	1,625	1,893	1,716	20,6
7	Godavari	2,572	3,318	3,519	2,490	3,389	3,617	3,390	3,158	3,077	4,092	4,207	3,552	41,4
8	Kistna	2,884	2,074	2,287	2,547	2,676	3,516	4,136	4,411	5,180	4,080	3,078	3,461	42,8
9	Kurnool	1,221	1,072	1,612	1,050	1,340	1,130	1,054	1,124	1,120	1,134	1,109	1,108	13,5
10	Madras	1,719	1,271	1,346	1,271	1,317	1,227	1,297	1,295	1,308	1,501	1,328	1,665	15,7
11	Madura	2,711	2,060	2,828	2,257	2,506	2,197	2,229	2,057	2,217	3,291	2,783	3,731	30,8
12	Malabar	3,183	3,307	3,103	3,180	3,475	3,674	3,939	3,879	3,185	3,103	2,902	3,328	41,6
13	Nellore	2,075	2,108	1,837	1,825	2,019	2,023	2,231	2,048	2,001	2,196	2,619	2,775	26,2
14	Nilgiris	110	135	155	163	205	218	196	175	167	168	151	169	2,0
15	North Arcot	6,423	4,006	3,158	2,588	2,641	2,537	2,537	2,365	2,580	3,270	4,201	4,218	43,5
16	Salem	4,423	4,175	3,884	3,525	3,915	3,473	3,141	3,031	2,823	3,519	3,817	4,858	45,5
17	South Arcot	5,654	4,054	3,439	2,827	2,956	2,902	3,014	3,030	3,177	3,893	4,850	5,272	45,1
18	South Canara	2,908	2,615	2,584	2,797	3,050	3,405	3,482	2,534	2,218	1,839	1,895	2,173	31,4
19	Tanjore	7,033	5,410	3,889	3,490	3,575	3,402	4,042	4,078	4,023	4,146	5,142	5,581	55,3
20	Tinnevelly	4,804	3,438	3,362	3,044	2,904	2,812	2,849	2,762	2,647	2,947	3,838	4,320	40,9
21	Trichinopoly	4,069	3,054	2,121	1,825	2,062	1,817	2,023	1,862	1,826	2,081	2,419	2,822	28,0
22	Vizagapatam	2,500	2,114	2,015	2,102	2,120	2,597	2,629	2,619	2,602	2,602	2,770	3,177	29,5
	Total, Madras Presidency ...	72,315	66,330	61,604	47,575	53,376	50,800	52,779	51,859	51,074	57,113	62,745	69,971	675,0
	Ratio of deaths per 1,000 in each month ...	2·2	1·7	1·5	1·4	1·6	1·5	1·6	1·5	1·5	1·7	1·9	2·0	20

No. IV.—*Deaths registered according to age in the districts of the Madras Presidency during the year* 1899.

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	1,504	1,353	823	823	421	382	213	209	126	127	406	709	636	659	722	511	305	256	1,156	1,17
2	Bellary	2,525	2,173	1,118	1,178	624	570	315	293	305	474	1,018	1,264	1,255	989	1,189	827	1,009	791	1,165	1,33
3	Chingleput	1,490	1,324	1,097	1,051	671	717	533	503	313	504	792	1,115	918	697	1,118	881	1,074	1,152	2,401	2,42
4	Coimbatore	3,016	2,850	1,362	1,313	885	883	629	595	478	587	1,208	1,472	1,370	1,385	1,419	1,193	1,625	1,515	2,254	2,21
5	Cuddapah	2,025	2,021	1,291	1,242	597	571	391	392	270	418	998	1,810	1,197	1,158	1,231	1,216	1,216	1,276	1,665	1,87
6	Ganjam	3,540	2,116	1,125	971	439	493	321	318	317	486	748	967	851	791	1,013	873	1,074	915	1,132	1,20
7	Godavari	6,067	5,187	2,230	2,205	1,467	1,413	830	794	898	1,146	1,611	1,970	1,675	1,427	1,583	1,302	1,371	1,351	2,093	2,08
8	Kistna	6,905	5,819	4,147	4,018	1,525	1,361	918	674	695	1,075	1,574	2,590	1,812	1,504	1,253	943	1,215	1,088	3,152	3,17
9	Kurnool	1,620	1,363	811	765	308	316	179	207	170	252	579	715	751	645	777	591	756	683	945	963
10	Madras	1,033	1,225	1,185	1,278	317	348	193	203	154	208	381	634	551	551	627	541	477	615	1,541	1,57
11	Madura	4,018	3,731	2,328	2,480	1,021	825	513	456	395	433	1,151	1,189	1,313	1,321	1,415	1,179	1,615	1,165	2,073	2,19
12	Malabar	3,653	3,451	2,916	2,807	1,127	1,033	854	797	876	890	1,324	1,507	1,237	1,044	2,123	1,672	1,750	1,305	3,188	3,25
13	Nellore	2,759	2,499	1,859	1,721	1,042	1,019	851	823	732	747	792	835	820	772	1,025	871	1,016	1,021	2,205	2,09
14	Nilgiris	217	201	191	194	81	80	54	56	54	82	138	169	126	91	89	93	93	69	82	75
15	North Arcot	8,008	7,775	3,541	3,588	1,229	1,218	774	713	683	958	1,358	1,871	1,615	1,608	1,817	1,749	2,117	1,987	3,007	3,20
16	Salem	5,049	5,247	2,628	2,615	1,075	1,051	692	706	521	1,023	2,181	2,158	2,088	2,104	1,952	2,112	1,918	2,570	2,850	
17	South Arcot	5,132	5,332	1,979	1,973	1,135	1,103	707	675	651	852	1,576	1,701	1,623	1,475	1,854	1,760	2,112	1,904	3,510	3,42
18	South Canara	3,119	2,916	2,053	2,218	959	1,032	559	539	547	640	1,304	1,683	1,385	1,362	1,778	1,810	1,775	1,722	3,088	3,05
19	Tanjore	7,388	6,923	3,175	3,130	1,350	1,205	801	721	762	1,075	1,876	2,710	2,257	2,222	2,250	1,943	2,470	2,186	4,540	5,24
20	Tinnevelly	6,237	5,307	3,005	3,172	937	911	512	551	513	667	1,129	1,584	1,337	1,338	1,012	1,323	1,511	1,622	2,764	3,24
21	Trichinopoly	3,705	3,561	1,974	1,841	825	802	471	453	433	537	905	1,571	1,127	1,116	1,215	1,061	1,195	1,491	2,219	2,49
22	Vizagapatam	3,702	3,324	2,526	2,284	1,057	1,128	683	625	491	599	1,159	1,297	1,261	1,120	1,117	1,150	1,310	1,324	1,918	2,29
	Total, Madras Presidency ...	80,052	77,131	47,571	47,317	26,068	25,031	16,122	14,131	13,054	18,106	31,137	39,852	37,359	33,127	34,078	28,115	30,815	28,705	58,859	64,17
	* Ratio per mille of population ...	15·9	15·1	3·2	3·2	8·4	8·0	5·5	6·1	7·5	13·3	8·9	9·4	11·5	10·7	10·2	12·7	9·5	3·0	5·3	11·6

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

No. V.—*Deaths registered according to Classes in the districts of the Madras Presidency during the year* 1899.

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.
	Anantapur	1,078	51,946	673,667	323	727,013	22	755	12,846	26	13,749	1·79	14·5	19·2	7·3	18·9
	Bellary	3,468	87,625	708,516	1,426	800,435	90	1,634	19,887	...	21,611	25·9	22·2	24·9	...	24·6
	Chingleput	13,941	27,295	1,150,375	357	1,189,901	294	556	27,490	42	28,382	18·4	20·4	23·8	117·6	23·7
	Coimbatore	14,078	43,917	1,915,010	316	2,003,911	210	614	32,202	5	33,031	14·7	14·7	16·8	15·8	16·5
	Cuddapah	9,576	119,534	1,142,727	56	1,271,721	194	2,182	22,328	...	24,704	20·7	18·2	19·5	...	19·2
	Ganjam	1,773	5,353	1,433,065	52	1,437,232	21	121	20,519	...	20,940	11·9	22·6	14·3	...	14·4
	Godavari	8,110	41,012	2,028,605	71	2,077,858	135	682	40,630	...	41,447	16·6	16·2	20·0	...	19·9
	Kistna	67,960	108,567	1,678,388	153	1,855,024	1,683	2,411	39,353	3	43,450	25·0	22·2	23·4	19·6	23·1
	Kurnool	23,585	97,416	697,016	41	817,699	258	1,720	11,716	...	13,693	11·1	13·7	16·8	...	16·5
	Madras	33,530	53,184	754,997	126	836,375	760	2,151	13,878	4	16,793	22·3	40·5	18·7	6·7	20·7
	Madura	76,151	124,679	1,944,060	117	2,184,951	902	1,442	28,519	1	30,824	8·7	15·2	14·4	8·8	14·1
	Malabar	62,372	769,242	1,371,451	775	2,203,671	857	12,318	27,656	63	41,024	20·2	16·0	15·1	81·2	15·5
	Nellore	40,797	78,185	1,357,073	366	1,476,357	216	823	25,728	...	26,767	17·6	19·5	18·4	...	18·0
	Nilgiris	8,504	4,630	81,551	49	96,765	150	131	1,729	...	2,010	17·8	28·5	20·7	...	20·8
	North Arcot	14,101	65,220	1,996,116	5,120	2,113,585	112	1,963	38,502	83	40,590	7·9	18·9	19·3	16·2	19·2
	Salem	17,061	61,595	1,882,409	229	1,961,784	357	1,789	43,240	1	45,387	20·9	32·3	22·9	4·3	23·1
	South Arcot	54,926	38,661	2,043,679	5,670	2,152,936	520	851	44,586	102	46,109	10·9	14·5	21·9	18·0	21·5
	South Canara	70,902	108,261	862,573	10,203	1,052,692	1,549	2,201	27,305	325	31,470	21·8	20·3	31·8	31·8	29·9
	Tanjore	84,338	119,851	2,022,399	573	2,227,061	1,760	2,520	50,080	42	55,402	20·9	21·0	25·1	72·5	24·8
	Tinnevelly	145,589	95,951	1,674,159	52	1,915,702	2,459	2,275	35,505	5	40,236	16·8	23·7	21·2	96·1	21·0
	Trichinopoly	60,410	38,271	1,261,037	8	1,371,726	1,286	785	26,016	...	28,087	18·5	20·5	21·3	...	21·1
	Vizagapatam	1,806	17,012	1,603,158	69	1,622,045	29	288	29,057	2	29,376	11·1	16·1	18·5	29·0	18·5
	Total, Madras Presidency.	830,885	2,197,049	30,498,116	29,744	33,625,794	13,682	40,980	620,371	762	675,694	16·3	18·6	20·3	25·6	20·1

No. VI.—*Deaths registered from different causes in the districts and towns of the Madras Presidency during the year* 1899.

1	2	3	4	5	6	7	8					9	10	11						
							Injuries.							Ratio of deaths per 1,000 of population.						
Number.	Districts and towns.	Population for which returns were received.	Cholera.	Small-pox.	Fevers.	Dysentery and diarrhœa.	Suicides		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.	From all causes	
							Males.	Females.												Per the year.	Mean of previous 5 years.
	*A.—Districts.**																				
1	Anantapur	710,071	5	383	1,891	457	13	19	247	35	274	10,413	13,423	0·01	0·5	2·7	0·7	0·4	14·7	19·0	20·0
2	Bellary	772,714	1,512	856	3,499	1,586	23	39	242	36	339	11,506	19,706	2·0	0·7	4·5	1·8	0·4	14·9	24·3	24·2
3	Chingleput	1,135,455	697	469	2,659	3,317	26	32	384	107	549	18,501	26,692	0·6	0·4	2·7	2·9	0·5	16·3	23·4	22·6
4	Coimbatore	1,954,825	477	339	12,256	1,068	41	45	586	157	829	15,832	31,070	0·2	0·3	6·1	0·6	0·4	8·2	16·1	16·1
5	Cuddapah	1,254,510	209	718	17,197	482	36	71	487	93	687	4,582	24,005	0·2	0·6	13·7	0·4	0·5	3·7	19·1	21·3
6	Ganjam	1,377,191	51	478	14,456	681	28	36	169	76	309	3,211	19,249	0·04	0·3	10·5	0·5	0·3	2·3	13·9	15·8
7	Godavari	1,928,963	418	1,702	26,750	676	50	50	220	105	463	17,375	38,018	0·2	0·9	8·7	0·4	0·2	9·3	19·7	18·5
8	Kistna	1,761,898	216	554	18,011	1,635	49	58	467	97	671	18,045	39,070	0·1	0·3	10·2	0·9	0·4	10·3	22·2	20·0
9	Kurnool	782,650	...	414	9,691	84	17	21	187	33	258	2,980	12,717	...	0·5	11·5	0·1	0·3	3·8	16·2	23·7
10	Madura	1,935,162	287	1,677	9,560	338	16	31	435	157	643	14,006	26,571	0·1	0·8	4·8	0·2	0·3	7·1	13·5	13·5
11	Malabar	2,469,078	12	151	19,695	2,274	82	56	442	147	727	13,355	36,134	0·004	0·1	8·0	0·9	0·3	5·4	14·7	18·1
12	Nellore	1,423,397	824	441	11,801	515	14	16	456	29	529	11,354	25,171	0·4	0·3	8·2	0·4	0·4	8·0	17·7	17·6
13	Nilgiris	77,168	...	53	1,207	32	2	1	12	...	15	92	1,479	...	0·7	16·4	0·7	0·2	1·2	19·2	23·1
14	North Arcot	1,992,167	5,897	1,493	12,162	2,491	49	51	1,017	175	1,322	16,293	36,821	1·5	0·7	6·1	1·2	0·7	8·2	18·4	17·5
15	Salem	1,807,050	4,457	659	14,959	1,671	67	77	769	195	1,101	18,519	41,430	2·4	0·4	8·1	0·9	0·6	10·1	22·5	18·7
16	South Arcot	2,054,989	4,105	2,476	10,056	996	50	58	641	155	870	24,997	43,330	2·0	1·2	4·8	0·5	0·4	12·1	21·0	22·7
17	South Canara	1,021,382	2	303	18,598	1,609	33	28	353	70	524	9,446	30,452	0·002	0·3	18·1	1·6	0·5	9·3	30·1	29·1
18	Tanjore	2,002,916	3,217	1,737	8,243	879	38	16	529	171	754	26,554	43,305	2·6	0·9	1·6	0·4	0·4	13·2	24·1	23·0
19	Tinnevelly	1,712,647	1,347	475	3,056	495	34	70	572	106	782	28,419	34,079	0·6	0·2	2·3	0·3	0·3	16·6	20·4	23·7
20	Trichinopoly	1,201,428	2,816	130	4,857	295	25	15	420	145	641	17,068	25,013	2·3	0·1	3·9	0·3	0·5	13·5	20·6	22·4
21	Vizagapatam	1,448,777	26	557	23,724	436	10	17	282	90	418	1,467	26,628	0·02	0·4	15·9	0·3	0·3	1·0	17·9	20·8
	Total, Rural districts ...	34,957,761	25,295	16,135	230,395	21,521	707	872	8,710	2,189	12,479	291,388	401,162	0·8	0·5	7·5	0·7	0·4	9·5	19·4	20·6

* Exclusive of the Towns.

No. VI.—*Deaths registered from different causes in the districts and towns of the Madras Presidency during the year* 1899—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	...	4	19	13	...	1	2	1	4	72	115	...	0·6	2·7	2·3	0·6	10·3	16·5	21·0
2	T.C. Tadpatri ...	10,275	...	...	...	3	...	...	3	...	3	165	171	...	...	...	0·3	0·3	16·0	16·6	17·8
3	Bellary. M.T.C. Bellary ...	57,789	12	2	93	103	1	1	24	...	26	1,588	1,691	0·2	0·03	1·7	2·0	0·5	24·6	29·3	31·7
4	M.T.C. Adoni ...	23,216	1	...	143	15	...	...	8	...	8	338	361	10·8	...	15·2	...	...	1·6	27·6	15·8
5	T.C. Hospet ...	12,889	139	...	126	...	...	...	...	...	...	158	310	17	...	5·6	7·6	...	15·0	32·3	26·4
6	T.C. Kampli ...	13,524	12	...	10	10	...	...	1	...	1	82	183	0·1	...	11·5	...	0·1	5·2	17·6	17·2
7	T.C. Rayadrug ...	10,378	1	...	119	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
8	Chingleput. M.T.C. Conjeveram.	42,543	25	9	2	224	...	...	20	1	21	976	1,246	0·6	0·2	0·05	5·3	0·5	23·0	29·8	31·0
9	M.T.C. Chingleput.	9,763	3	...	14	32	1	2	11	...	14	102	152	0·3	...	1·4	7·1	1·4	10·7	20·9	...
10	T.C. St. Thomas' Mount.	12,150	...	...	48	12	...	...	...	...	...	152	152	...	...	4·0	4·8	...	12·5	16·3	20·1
11	Coimbatore. M.T.C. Coimbatore.	47,007	...	1	323	104	...	3	5	2	10	359	1,537	...	0·02	7·0	2·6	0·2	7·8	28·4	32·2
12	M.T.C. Erode ...	12,218	25	...	51	48	1	...	5	...	6	247	339	2·0	...	4·3	3·9	0·4	16·9	28·5	26·6
13	M.T.C. Karur ...	10,740	33	4	74	16	1	...	2	...	3	191	311	2·9	0·4	6·9	1·5	0·3	17·8	31·8	32·4
14	Cuddapah. M.T.C. Cuddapah.	17,211	...	6	236	27	...	...	2	3	5	225	499	...	0·3	13·7	1·6	0·3	13·1	29·0	29·6
15	Ganjam. M.T.C. Chicacole ...	18,204	...	10	167	37	...	...	3	...	3	239	452	...	0·5	9·2	2·0	0·2	13·1	25·0	25·6
16	M.T.C. Berhampur.	23,493	...	...	152	67	...	2	4	1	7	375	581	...	...	6·2	2·6	0·3	14·7	23·8	27·7
17	M.T.C. Parlakimedi	16,379	...	1	177	31	...	...	2	2	4	197	383	...	0·1	10·8	5·7	0·2	6·3	23·4	23·5
18	Godavari. M.T.C. Cocanada ...	49,398	...	12	177	93	...	2	7	10	19	629	925	...	0·3	4·4	2·1	0·2	16·0	23·0	21·6
19	M.T.C. Rajahmundry.	28,279	7	17	253	82	...	7	2	9	425	793	0·2	0·6	8·9	2·9	0·3	15·1	28·1	25·6	
20	M.T.C. Ellore ...	23,956	...	...	122	30	...	...	2	8	10	534	847	...	...	7·6	2·0	0·4	18·9	28·9	32·0
21	T.C. Palkollu ...	13,781	...	...	7	1	...	...	...	3	3	91	102	...	...	0·5	0·1	0·2	6·6	7·4	12·0
22	T.C. Pedapuram ...	13,452	...	3	120	...	...	1	4	2	7	212	372	...	0·2	8·9	...	0·5	15·7	27·2	20·0
23	T.C. Samalkot ...	11,429	...	...	141	1	...	...	...	...	...	99	171	...	...	10·6	0·1	...	7·2	18·3	7·0
24	T.C. Bhimlikshwaram.	10,124	...	5	5	1	1	2	7	1	11	189	211	...	0·5	0·5	0·1	1·0	18·1	20·2	23·7
25	Kistna. M.T.C. Masulipatam.	38,007	...	8	313	45	...	1	7	...	8	611	1,015	...	0·2	8·1	1·2	0·2	16·6	26·5	26·0
26	M.T.C. Guntur ...	23,207	...	4	74	33	...	3	30	...	33	638	838	...	...	3·2	3·8	1·4	27·4	36·0	34·3
27	M.T.C. Bezwada ...	20,011	2	...	82	30	1	2	8	4	14	382	559	0·1	...	4·0	3·0	0·7	33·3	32·0	32·5
28	T.C. Chirala ...	10,511	...	...	79	12	...	...	2	...	2	147	247	...	...	6·5	1·7	0·2	13·9	23·5	23·7
29	Kurnool. M.T.C. Kurnool ...	21,306	...	...	316	105	...	2	13	...	15	222	636	...	...	13·0	4·2	0·6	9·2	27·0	34·0
30	T.C. Nandyal ...	10,704	...	4	111	4	1	...	...	...	1	10	130	...	0·3	10·4	0·4	0·1	0·9	12·2	15·6
31	M.T.C. Madras	426,575	23	31	3,293	3,436	11	9	145	2	167	9,561	10,778	0·05	0·1	7·7	7·9	0·4	22·6	38·8	38·8
32	Madura. M.T.C. Madura ...	87,121	61	73	491	276	2	1	15	1	19	1,541	2,121	0·7	0·8	4·6	3·7	0·2	16·5	34·8	34·5
33	M.T.C. Dindigul ...	20,115	...	41	84	44	...	...	10	...	10	202	281	...	2·0	4·2	2·2	0·5	10·0	18·9	17·8
34	M.T.C. Periyakulam.	16,363	...	...	142	25	...	1	1	...	2	236	425	...	...	6·2	1·5	0·1	14·5	26·0	36·9
35	M.T.C. Palni ...	16,940	1	...	28	9	...	...	9	3	12	257	327	0·1	...	2·2	0·5	0·7	14·6	17·5	20·8
36	T.C. Ramnad ...	15,589	26	34	23	...	...	...	6	1	7	128	215	1·9	2·5	1·5	...	0·5	9·4	15·8	21·5
37	T.C. Aruppukottai.	12,072	57	34	153	7	1	...	12	1	14	100	432	4·5	2·4	11·8	0·5	0·1	7·9	33·8	29·6
38	T.C. Khalvasal ...	12,706	3	2	110	...	...	...	1	...	1	115	253	0·2	0·2	5·4	...	0·1	9·2	18·6	25·5
39	T.C. Paramangudi ...	10,001	45	20	45	9	...	...	...	...	...	82	151	4·5	2·0	4·5	0·3	...	8·2	19·1	17·5
40	Malabar. M.T.C. Tellicherry.	26,031	...	...	140	41	...	...	5	...	5	383	572	...	...	5·3	1·6	0·2	14·6	21·5	19·7
41	M.T.C. Calicut ...	64,708	...	...	513	236	2	1	3	1	7	1,205	1,991	...	...	7·9	4·2	0·1	16·9	29·3	31·3
42	M.T.C. Palghat ...	30,367	...	...	231	165	...	...	10	2	12	814	1,220	...	...	5·3	3·6	0·3	19·7	38·5	37·0
43	M.T.C. Ootacamund.	16,147	...	...	192	70	...	...	4	1	5	230	465	...	...	5·7	4·3	0·3	27·9	28·8	37·1
44	M.T.C. Cannanore.	25,053	...	...	152	46	1	...	...	...	1	413	612	...	...	7·2	1·7	0·04	15·5	21·4	27·8
45	Nellore. M.T.C. Nellore ...	23,128	20	13	176	31	1	...	2	3	13	273	731	0·7	0·4	6·1	1·1	0·4	16·4	22·1	25·5
46	M.T.C. Ongole ...	10,852	...	...	104	33	...	...	5	2	7	216	362	...	...	9·6	3·2	0·5	20·6	32·1	27·1
47	Nilgiris. M.T.C. Ootacamund.	12,931	...	...	59	41	...	...	6	...	6	265	371	...	...	4·6	2·9	0·4	15·9	20·5	29·9
48	M.T.C. Coonoor ...	5,586	...	...	16	37	...	...	2	1	3	154	210	...	...	2·0	6·6	0·5	15·6	28·6	26·8
49	North Arcot. M.T.C. Vellore ...	44,721	170	9	21	230	...	1	15	...	20	778	1,416	0·2	0·2	0·5	5·1	0·5	17·4	24·3	24·0
50	M.T.C. Wallajanagar.	10,487	67	...	16	31	...	2	5	4	11	273	330	0·6	...	1·5	2·9	1·5	26·0	32·6	27·0
51	M.T.C. Conjeveram.	18,715	103	7	73	172	...	...	1	...	1	323	702	5·4·2	0·4	3·9	9·2	0·5	17·3	30·6	29·1
52	M.T.C. Tirupati ...	11,254	45	...	159	85	1	...	6	2	9	318	452	3·9	...	14·1	7·5	0·8	28·2	51·7	50·8
53	T.C. Kalahasti ...	11,715	28	1	42	4	2	...	2	...	4	151	232	1·6	0·3	3·6	0·3	0·5	11·0	18·1	19·1
54	T.C. Arcot ...	10,228	42	17	5	23	...	...	6	...	6	853	936	2·0	1·6	0·4	2·3	0·5	30·2	36·0	29·1
55	T.C. Amboor ...	10,583	114	25	93	15	...	2	3	...	5	74	324	10·8	2·2	8·8	1·4	0·5	6·0	30·7	19·2
56	Salem. M.T.C. Salem ...	67,611	805	...	302	91	1	1	...	2	5	1,650	2,067	12·8	...	4·5	1·3	0·1	12·0	30·5	31·0
57	M.T.C. Vaniyambadi.	15,858	247	5	173	94	...	...	3	1	4	818	968	18·7	0·3	11·0	5·9	0·3	22·0	58·2	55·8
58	M.T.C. Tiruppattur.	16,103	153	...	175	35	1	1	3	...	5	287	725	11·2	...	10·5	2·1	0·3	20·3	47·7	39·0
59	T.C. Shendamangalam.	13,551	45	3	17	3	...	...	5	1	6	182	256	3·1	0·2	1·3	0·2	0·4	13·7	18·9	9·5
60	T.C. Rasipuram ...	10,510	3	1	6	4	2	5	2	...	9	142	168	0·3	0·1	0·6	0·4	0·5	13·5	15·0	15·9
61	South Arcot. M.T.C. Cuddalore.	47,625	51	42	265	134	...	...	11	7	18	1,178	1,478	0·7	0·9	5·5	2·7	0·4	11·5	20·1	27·1
62	M.T.C. Chidambaram.	18,071	26	18	93	69	1	...	9	3	13	382	613	1·9	1·0	4·3	3·7	0·7	20·8	32·9	32·4
63	M.T.C. Tiruvannamalai.	13,645	11	...	65	72	...	...	7	2	9	223	385	0·8	...	5·0	5·3	0·7	16·7	28·5	19·8
64	T.C. Porto Novo ...	11,045	14	5	27	...	...	...	...	...	3	3	102	149	1·0	0·2	1·8	...	0·2	7·3	10·5	14·1

No. VI.—*Deaths registered from different causes in the districts and towns of the Madras Presidency during the year* 1899—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	...	...	337	103	1	...	5	2	8	505	1,018	...	...	9·8	2·7	0·2	12·4	25·1	26·3
66	Tanjore. M.T.C. Tanjore	54,255	80	54	271	251	...	...	13	3	16	760	1,188	1·6	0·3	5·0	4·3	0·3	14·0	25·0	24·0
67	M.T.C. Kumbakonam.	54,254	258	...	280	183	...	...	18	3	21	1,225	1,927	4·7	...	5·3	3·4	0·4	22·6	35·4	34·5
68	M.T.C. Mayavaram.	23,751	119	18	105	146	2	...	7	3	12	445	849	5·0	0·8	4·4	6·1	0·5	18·8	35·5	33·3
69	M.T.C. Negapatam.	24,573	63	...	229	208	...	1	6	4	11	1,297	1,808	2·4	...	9·3	8·4	0·4	52·7	73·6	33·3
70	M.T.C. Mannárgudi.	20,592	25	11	101	77	...	...	6	4	10	338	562	1·2	0·5	5·0	3·7	0·5	16·6	27·5	28·6
71	T.C. Tiruvalúr ...	12,034	76	20	15	7	...	...	5	...	5	278	402	5·9	1·6	1·0	0·6	0·2	21·1	30·3	31·0
72	Tinnevelly. M.T.C. Tinnevelly.	21,736	123	6	55	35	7	1	...	...	8	612	844	5·2	0·5	2·2	1·4	0·3	24·7	33·1	30·4
73	M.T.C. Palamcottah.	18,612	36	11	93	45	...	...	4	...	4	256	404	1·9	0·6	4·8	2·4	0·2	13·8	24·7	27·0
74	M.T.C. Tuticorin ...	21,964	14	2	215	185	...	1	4	...	5	380	801	0·6	0·1	8·6	7·4	0·2	15·2	32·1	33·2
75	M.T.C. Srivilliputtur.	20,741	...	15	183	40	1	5	7	3	16	411	670	...	0·5	6·4	1·4	0·5	13·9	22·7	19·6
76	T.C. Kulasekaramanjcara.	15,910	...	2	49	1	...	...	8	...	8	239	299	...	0·1	3·1	0·1	0·5	15·0	18·8	23·3
77	T.C. Virudupatti ...	14,075	1	128	101	14	...	...	6	2	8	273	528	0·1	9·1	7·4	1·0	0·6	19·3	37·5	11·8
78	T.C. Viravanallur ...	13,951	10	...	25	...	...	2	4	...	6	265	306	0·7	...	1·8	...	0·4	19·0	21·9	19·6
79	T.C. Rajapalayam ...	13,301	...	...	...	...	...	...	...	...	...	255	255	...	...	...	...	...	19·2	19·2	14·5
80	T.C. Tenkási ...	12,861	7	1	37	2	...	1	5	...	6	302	313	...	...	...	...	...	23·5	24·3	30·6
81	T.C. Sivakási ...	12,184	...	...	94	3	...	1	26	1	27	199	301	0·6	0·1	5·3	0·2	2·2	16·3	24·7	32·1
82	T.C. Kovilpatnam.	11,464	22	...	59	4	...	...	2	...	2	249	334	1·9	...	5·1	0·4	...	21·7	33·0	37·1
83	T.C. Kallidaikurichi.	11,066	...	...	5	...	...	...	...	...	...	200	207	...	...	0·4	...	0·2	18·0	20·4	30·4
84	Trichinopoly. M.T.C. Trichinopoly.	80,066	356	21	140	202	4	2	10	4	23	1,628	2,386	4·1	0·2	1·6	2·3	0·3	18·1	26·6	29·4
85	M.T.C. Srirangam.	21,632	73	2	100	35	...	...	5	...	5	433	653	3·5	0·1	4·6	1·6	0·2	20·0	32·2	32·4
86	Vizagapatam. M.T.C. Vizagapatam.	33,961	...	19	287	255	2	...	14	2	18	493	1,067	...	...	8·5	7·6	0·5	14·5	31·1	28·5
87	M.T.C. Bimlipatam.	9,696	...	...	46	45	1	...	1	...	2	130	223	...	...	4·8	4·6	0·2	13·4	23·0	25·3
88	M.T.C. Vizianagram.	30,735	...	11	237	259	...	...	3	1	4	356	907	...	0·6	0·7	8·4	0·1	12·3	31·1	27·7
89	M.T.C. Anakápalle.	17,001	...	1	124	76	1	...	6	1	8	195	400	...	0·1	7·3	4·5	0·5	11·4	23·9	21·6
90	T.C. Bobbili ...	14,418	...	2	116	3	1	1	6	...	8	47	181	...	0·6	8·0	0·1	0·5	3·3	12·5	19·7
91	T.C. Sálúru ...	12,910	...	10	121	45	...	...	1	...	1	2	179	...	0·8	9·3	3·5	0·1	0·1	13·8	16·4
92	T.C. Palkonda ...	10,361	...	...	127	...	...	...	...	...	...	56	177	...	...	12·3	...	...	4·8	17·1	23·1
93	T.C. Parvatipuram.	10,653	...	...	78	6	...	...	1	1	2	67	153	...	...	7·2	0·6	0·2	6·7	14·5	29·2
93	Total, Town Circles ..	2,538,023	3,787	856	14,726	9,481	59	60	701	92	912	44,103	76,009	1·5	0·3	5·8	3·7	0·4	17·4	29·1	29·3
181	Total, Rural districts ...	30,987,701	25,205	16,185	230,823	21,824	707	872	5,740	2,180	12,499	204,580	601,102	0·8	0·5	7·5	0·7	0·4	9·5	19·4	20·6
274	Total, Madras Presidency.	33,525,724	29,032	16,991	245,549	31,305	766	932	6,441	2,272	13,411	238,754	675,094	0·9	0·5	7·3	0·9	0·4	10·1	20·1	21·3

No. VII.—*Deaths registered from Cholera in the districts of the Madras Presidency during each month of the year* 1899.

1	2	3		4		5												6			7		8
Number.	Districts.	Circles of registration.		Villages.														Total.			Ratio of deaths per 1,000 of population.		
		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.	Mean ratio per 1,000 for previous 5 years.
1	Anantapur ...	10	2	965	3	4	...	...	...	...	1	...	...	...	...	...	...	2	3	5	0·01	0·01	0·01
2	Bellary ...	11	11	795	127	61	69	329	513	331	101	183	70	118	35	7	...	998	729	1,727	2·1	1·7	1·9
3	Chingleput ...	9	8	2,134	135	267	183	32	2	...	...	...	...	...	...	...	...	411	313	724	0·7	0·5	0·6
4	Coimbatore ...	13	10	1,478	40	42	120	164	102	27	75	1	...	...	...	...	...	247	152	399	0·2	0·2	0·2
5	Cuddapah ...	12	8	1,276	83	258	26	15	...	...	...	21	17	5	1	...	...	21	30	51	0·03	0·04	0·04
6	Ganjam ...	8	4	6,067	27	...	...	1	2	...	8	24	17	8	...	...	...	29	25	54	0·2	0·2	0·2
7	Godavari ...	18	16	2,603	151	...	4	...	...	...	1	...	32	63	143	181	17	220	225	445	0·2	0·2	0·2
8	Kistna ...	16	9	1,818	43	1	...	...	...	...	...	...	3	97	105	11	...	104	114	218	0·1	0·1	0·1
9	Kurnool ...	10	...	892	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
10	Madras ...	1	1	1	1	2	2	...	...	10	1	...	1	...	...	...	...	18	5	23	0·03	0·02	0·03
11	Madura ...	17	11	4,103	113	127	59	108	98	95	57	8	1	...	...	...	...	263	217	480	0·2	0·2	0·2
12	Malabar ...	15	3	2,245	5	...	...	...	...	8	...	1	...	...	1	2	...	8	5	13	0·005	0·005	0·005
13	Nellore ...	12	9	1,793	85	781	330	7	...	4	...	...	...	...	...	...	...	155	250	405	0·4	0·4	0·4
14	Nilgiris ...	4	...	52	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
15	North Arcot ...	17	16	4,928	997	2,816	760	570	98	127	13	55	...	...	...	5	...	1,149	1,785	2,934	1·0	1·7	1·3
16	Salem ...	11	11	2,811	466	554	1,423	715	207	283	249	159	160	61	218	473	378	2,169	2,579	4,748	2·1	2·5	2·3
17	South Arcot ...	12	12	2,807	6·6	2,057	311	215	123	30	23	11	22	18	74	156	56	1,028	1,062	2,090	0·9	1·0	0·9
18	South Canara ...	6	1	1,277	2	...	...	...	...	...	...	...	...	...	...	...	...	1	...	1	0·001	0·001	0·001
19	Tanjore ...	17	15	3,570	857	3,119	561	559	143	18	53	60	71	1,568	60	52	457	3,018	2,846	5,864	2·5	2·4	2·5
20	Tinnevelly ...	21	16	1,838	223	111	134	132	440	271	84	32	35	9	...	...	...	677	588	1,265	0·7	0·6	0·7
21	Trichinopoly ...	8	8	1,502	651	1,945	592	172	23	14	17	12	...	...	...	...	112	1,689	1,691	3,380	2·4	2·3	2·4
22	Vizagapatam. ...	22	3	2,603	7	...	...	...	...	...	...	1	...	...	11	4	6	14	12	26	0·02	0·01	0·02
	Total, Madras Presidency...	274	172	47,703	3,731	11,907	5,876	3,820	2,031	1,005	882	633	422	477	671	893	1,455	15,430	13,857	29,287	0·9	0·8	0·9

No. VIII.—*Deaths registered from small-pox in the districts of the Madras Presidency during each month of the year* 1899.

1	2	3		4		5												6			7		8	9
Number.	Districts.	Circles of Registration.		Villages.														Total.			Number of deaths under 1 year and under 5 years.		Ratio of death per 1,000 of population.		
		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 5 years.	Males.	Females.	Total.	Mean ratio per 1,000 for previous 5 years.
1	Anantapur ...	10	9	965	125	13	29	36	38	26	24	22	32	42	41	47	104	103	207	168	137	0·3	0·3	0·3	0·7
2	Bellary ...	11	11	795	117	8	18	34	27	25	20	24	23	32	30	25	25	254	238	492	124	276	0·5	0·5	0·5	0·7
3	Chingleput ...	9	8	2,134	52	21	21	14	2	2	2	2	2	2	2	2	2	241	237	478	74	178	0·3	0·3	0·3	0·7
4	Coimbatore ...	13	10	1,478	67	8	7	14	8	2	2	2	2	2	2	2	2	254	246	500	141	316	0·3	0·3	0·3	0·6
5	Cuddapah ...	12	12	1,276	214	34	19	86	52	21	23	21	23	23	23	23	23	291	303	594	178	378	0·6	0·6	0·6	0·7
6	Ganjam ...	8	7	6,067	333	30	35	78	34	27	27	27	27	27	27	27	27	354	332	686	167	353	0·3	0·3	0·3	0·4
7	Godavari ...	18	11	2,603	174	60	101	76	26	26	26	26	26	26	26	26	26	224	205	429	107	230	0·3	0·3	0·3	0·4
8	Kistna ...	16	11	1,818	192	33	51	76	26	26	26	26	26	26	26	26	26	276	267	543	140	302	0·3	0·3	0·3	0·4
9	Kurnool ...	10	8	892	147	18	1	17	6	12	15	17	15	17	15	17	17	210	198	408	184	414	0·5	0·5	0·5	0·7
10	Madras ...	1	1	1	1	2	2	...	...	1	1	...	1	...	...	...	...	16	15	31	9	17	0·1	0·1	0·1	0·1
11	Madura ...	17	14	4,103	351	247	74	126	173	87	117	126	205	247	158	335	270	527	1,047	860	771	1·9	1·9	1·9	0·7
12	Malabar ...	15	5	2,245	15	2	1	1	...	...	...	...	...	...	...	...	...	9	8	17	1	11	0·005	0·004	0·005	0·1
13	Nellore ...	12	9	1,793	53	1	2	1	1	1	1	1	1	1	1	1	1	13	14	27	8	16	0·1	0·1	0·1	0·2
14	Nilgiris ...	4	3	52	10	1	2	1	...	1	...	...	...	...	...	...	...	3	2	5	1	2	0·1	0·1	0·1	0·1
15	North Arcot ...	17	11	4,928	172	16	14	20	18	11	11	10	10	8	8	14	11	127	131	258	70	161	0·3	0·3	0·3	0·2
16	Salem ...	11	10	2,811	151	15	31	73	23	31	13	9	10	9	22	16	19	325	323	648	356	1,029	0·3	0·3	0·3	0·2
17	South Arcot ...	12	12	2,807	618	214	221	231	206	157	122	120	105	69	215	251	316	1,230	1,250	2,480	927	1,102	1·2	1·2	1·2	0·2
18	South Canara ...	6	1	1,277	2	...	...	...	...	...	...	...	...	...	...	...	...	1	...	1	...	...	0·001	0·001	0·001	0·1
19	Tanjore ...	17	15	3,570	857	3,119	561	559	143	18	53	60	71	1,568	60	52	457	3,018	2,846	5,864	2·5	2·4	2·5	0·2
20	Tinnevelly ...	21	16	1,838	223	111	134	132	440	271	84	32	35	9	205	211	202	902	863	1,765	178	417	0·8	0·8	0·8	0·2
21	Trichinopoly ...	8	8	1,502	651	1,945	592	172	23	14	17	12	...	...	72	120	85	367	351	691	141	355	0·3	0·3	0·3	0·1
22	Vizagapatam. ...	22	17	2,603	115	32	62	92	74	53	33	24	57	6	5	19	369	294	663	175	59	0·2	0·2	0·2	0·1
	Total, Madras Presidency...	274	216	47,703	5,177	949	1,065	1,156	1,405	1,270	1,208	1,270	1,148	1,195	1,457	1,758	2,126	8,528	8,483	16,991	5,701	5,250	0·5	0·5	0·5	0·4

No. IX.—*Deaths registered from Fevers in the Districts of the Madras Presidency during each month of the year* 1899.

1	2	3		4		5												6			7		8
Number.	Districts.	Circles of registration.		Villages.														Total.			Ratio of deaths per 1,000 of population.		
		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.	Mean ratio per 1,000 for previous 5 years.
1	Anantapur ...	10	9	965	207	142	126	168	151	159	182	159	185	131	163	200	289	1,953	917	1,870	2·8	2·6	2·7
2	Bellary ...	11	11	795	240	326	340	351	405	352	347	353	370	371	316	329	373	2,158	1,895	4,053	2·3	2·1	2·2
3	Chingleput ...	9	8	2,134	850	203	214	259	224	252	255	226	229	278	262	227	273	1,514	1,619	3,133	1·7	1·7	1·7
4	Coimbatore ...	13	13	1,478	403	3,146	998	1,105	959	1,235	1,013	957	898	975	985	1,091	1,204	8,378	6,520	14,898	9·2	7·2	8·2
5	Cuddapah ...	12	12	1,276	297	1,196	1,227	1,358	867	1,076	1,547	1,321	1,361	1,090	1,056	1,738	1,472	8,021	8,702	17,053	8·7	8·3	8·5
6	Ganjam ...	8	8	6,067	339	1,795	1,727	1,358	857	1,016	1,480	1,487	1,880	2,104	2,424	2,285	2,077	1,918	8,732	9,717	10,440	10·1	10·3	10·2
7	Godavari ...	18	14	2,603	161	1,477	1,462	1,153	1,385	1,214	1,214	1,321	1,381	1,080	1,056	1,738	1,472	8,021	8,702	17,053	8·7	8·3	8·5
8	Kistna ...	16	15	1,818	392	37	17	15	20	48	108	149	281	459	531	184	124	670	820	1,490	1·0	1·0	1·0
9	Kurnool ...	10	8	892	73	29	13	12	14	17	17	12	5	13	11	21	15	97	91	188	0·9	0·8	0·9
10	Madras ...	1	1	1	1	451	242	287	279	284	242	227	216	259	240	252	156	1,724	1,733	3,457	7·2	7·2	7·2
11	Madura ...	17	14	4,103	784	81	65	67	58	68	54	41	48	72	71	82	108	374	337	711	0·3	0·3	0·3
12	Malabar ...	15	15	2,245	253	241	229	176	261	259	366	332	504	254	296	357	246	1,846	1,486	3,332	1·4	1·1	1·3
13	Nellore ...	12	12	1,793	153	79	53	49	46	57	36	41	30	47	51	62	61	360	275	635	0·3	0·3	0·3
14	Nilgiris ...	4	4	52	13	2	1	2	2	3	17	12	9	10	17	10	4	83	47	130	1·3	1·1	1·2
15	North Arcot ...	17	15	4,928	439	335	324	309	304	185	223	164	151	135	231	173	228	1,563	1,444	3,007	1·3	1·3	1·3
16	Salem ...	11	11	2,811	621	159	159	145	158	157	178	112	102	92	174	332	255	1,009	892	1,901	0·9	0·8	0·9
17	South Arcot ...	12	12	2,807	491	175	170	91	51	87	105	70	73	58	121	161	155	847	721	1,568	0·6	0·6	0·6
18	South Canara ...	6	1	1,277	612	254	182	134	151	121	113	136	117	126	121	127	123	955	783	1,738	1·3	1·1	1·2
19	Tanjore ...	15	14	3,570	358	281	151	84	57	45	91	109	139	132	138	141	152	854	717	1,571	0·6	0·6	0·6
20	Tinnevelly ...	21	15	1,838	161	106	91	58	83	91	91	47	45	42	75	76	63	447	421	868	0·6	0·6	0·6
21	Trichinopoly ...	8	8	1,502	191	148	61	41	57	38	115	127	93	136	92	64	90	632	583	1,215	0·7	0·7	0·7
22	Vizagapatam. ...	22	18	2,603	93	93	84	82	87	93	115	127	93	136	92	64	90	632	583	1,215	0·7	0·7	0·7
	Total, Madras Presidency...	274	242	47,703	21,936	21,015	17,778	17,889	17,632	20,071	21,926	20,744	20,189	20,204	21,100	23,834	24,242	124,817	120,732	245,549	1·6	1·4	1·5

No. X.—*Deaths registered from Dysentery and Diarrhœa in the Districts of the Madras Presidency during each month of the year* 1899.

1	2	3		4		5												6			7		8
Number.	Districts.	Circles of registration.		Villages.														Total.			Ratio of deaths per 1,000 of population.		
		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.	Mean ratio per 1,000 for previous 5 years.
1	Anantapur ...	10	9	965	181	62	41	39	22	24	51	36	36	29	27	53	32	247	229	476	0·7	0·6	0·7
2	Bellary ...	11	11	795	241	206	175	104	164	148	243	94	117	115	134	168	129	855	705	1,560	1·0	1·0	1·0
3	Chingleput ...	9	8	2,134	956	447	324	259	258	214	243	284	231	293	367	403	330	1,366	1,302	2,668	1·3	1·3	1·3
4	Coimbatore ...	13	13	1,478	102	38	61	82	70	103	138	109	111	127	151	161	133	656	610	1,266	0·7	0·6	0·6
5	Cuddapah ...	12	12	1,276	207	53	51	42	27	47	55	28	37	28	64	64	63	236	238	474	0·3	0·3	0·3
6	Ganjam ...	8	8	6,067	339	67	53	51	120	57	67	75	48	64	77	80	57	515	358	873	0·4	0·3	0·3
7	Godavari ...	18	14	2,603	161	38	47	30	75	58	59	101	88	135	90	69	53	517	388	905	0·4	0·3	0·3
8	Kistna ...	16	15	1,818	392	37	17	15	20	48	108	149	281	459	531	184	124	670	820	1,490	1·0	1·0	1·0
9	Kurnool ...	10	8	892	73	29	13	12	14	17	17	12	5	13	11	21	15	97	91	188	0·9	0·8	0·9
10	Madras ...	1	1	1	1	451	242	287	279	284	242	227	216	259	240	252	156	1,724	1,733	3,457	7·2	7·2	7·2
11	Madura ...	17	14	4,103	784	81	65	67	58	68	54	41	48	72	71	82	108	374	337	711	0·3	0·3	0·3
12	Malabar ...	15	15	2,245	253	241	229	176	261	259	366	332	504	254	296	357	246	1,846	1,486	3,332	1·4	1·1	1·3
13	Nellore ...	12	12	1,793	153	79	53	49	46	57	36	41	30	47	51	62	61	360	275	635	0·3	0·3	0·3
14	Nilgiris ...	4	4	52	13	2	1	2	2	3	17	12	9	10	17	10	4	83	47	130	1·3	1·1	1·2
15	North Arcot ...	17	15	4,928	439	335	324	309	304	185	223	164	151	135	231	173	228	1,563	1,444	3,007	1·3	1·3	1·3
16	Salem ...	11	11	2,811	621	159	159	145	158	157	178	112	102	92	174	332	255	1,009	892	1,901	0·9	0·8	0·9
17	South Arcot ...	12	12	2,807	491	175	170	91	51	87	105	70	73	58	121	161	155	847	721	1,568	0·6	0·6	0·6
18	South Canara ...	6	1	1,277	612	254	182	134	151	121	113	136	117	126	121	127	123	955	783	1,738	1·3	1·1	1·2
19	Tanjore ...	15	14	3,570	358	281	151	84	57	45	91	109	139	132	138	141	152	854	717	1,571	0·6	0·6	0·6
20	Tinnevelly ...	21	15	1,838	161	106	91	58	83	91	91	47	45	42	75	76	63	447	421	868	0·6	0·6	0·6
21	Trichinopoly ...	8	8	1,502	191	148	61	41	57	38	115	127	93	136	92	64	90	632	583	1,215	0·7	0·7	0·7
22	Vizagapatam. ...	22	18	2,603	93	93	84	82	87	93	115	127	93	136	92	64	90	632	583	1,215	0·7	0·7	0·7
	Total, Madras Presidency...	274	230	47,703	6,606	3,603	2,572	2,291	2,113	2,232	2,823	2,423	2,603	2,903	3,302	3,455	3,037	16,355	14,257	31,397	0·3	0·3	0·3

No. XI.—*Statement showing the chief Sanitary defects in the Municipalities of the Madras Presidency during the year* 1899.

District.	Name of Municipality.	Population according to the census of 1891.	Total death-rate per 1,000 of population.	Chief sanitary defects.	Remedial measures adopted.
Anantapur.	Anantapur.	6,973	16·5	*Drainage.* No system; same as last report. *Water-supply.* No watchman has been appointed to prevent contamination of the drinking-water tank. *Conservancy.* Street sweepings and rubbish are deposited in the rubbish depot very near the town. The existing latrines are not much used by the people, fields and road sides being used as such.	*Nil.*
Bellary ...	Ádóni ...	26,216	24·1	*Drainage.* No system of drainage ...	Steps will be taken to improve the present condition of the town when funds permit.
Do. ...	Bellary ...	57,780	29·3	*Drainage.* No system of drainage. Drainage of houses is very defective. Cess-pools abound which are periodically cleaned by the Municipality.	.....
Chingleput.	Chingleput.	9,763	29·9	*Drainage.* Streets have side channels. Sewage from houses empties into these channels which are mostly in a ruinous condition. A few cess-pools exist which are seldom cleaned. *Water-supply.* One of the tanks set apart for drinking purposes receives the drainage of the hill and jungle mostly used as a latrine. The drinking-water tanks are said to be guarded, but only in name. *Conservancy.* The refuse of the town is stored within municipal limits and sold periodically by auction. The masonry latrines which are mostly used are generally very dirty. Backyards of houses are kept in a filthy condition.	.....
Do.	Conjeveram.	42,543	29·8	*Drainage.* Natural and very defective. Sewage from some of the houses flows into backyards where it is allowed to soak. Cess-pools exist which are more or less filthy and not systematically cleaned.	Some drains were made (Rs. 83) and two public latrines constructed (Rs. 354).
Coimbatore.	Coimbatore.	46,307	29·1	*Drainage.* No system. In the lanes and narrow streets the sewage water is allowed to stagnate in front of houses. *Water-supply.* Sufficient in quantity but not good in quality.	Rs. 164 and Rs. 2,656 were spent on the repair of latrines and drains. Estimates for drainage and water works have been sanctioned, but the works could not be put in hand for want of funds.
Do.	Erode ...	12,236	28·5	*Drainage.* Very defective and requires improvement.	.....
Do.	Karúr ...	10,749	31·8	*Drainage.* No system. The sewage farm is within the town and is too small.	A drainage scheme has been prepared, but it will not be carried out before the introduction of a good water-supply scheme.
Cuddapah ...	Cuddapah ...	17,215	29·0	*Drainage.* Side channels are cut on either side of the roads to carry off rain water. House drains empty into cess-pools which are mere pits filled with shingles and closed with stone slabs.	.....

No. XI.—*Statement showing the chief Sanitary defects in the Municipalities of the Madras Presidency during the year* 1899—cont.

District.	Name of Municipality.	Population according to the census of 1891.	Total death-rate per 1,000 of population.	Chief sanitary defects.	Remedial measures adopted.
Ganjám ...	Berhampur.	25,493	22·8	*Drainage.* V and U shaped stone drains exist in various parts of the town, but as they are not jointed they are choked with earth. The majority of houses have cess-pools, the condition of which is not satisfactory. *Water-supply.* The open channel, which feeds some of the drinking-water tanks, is rendered impure during its course. Human excreta is also found occasionally along its banks. *Conservancy.* The brick and mud walled latrines are mere enclosures with neither drains nor trenches and as a result the liquid portion of the excreta soaks into the ground and emits a very foul smell. Night-soil is being removed in baskets.	The council intends to have a perfect drainage scheme after the water-supply scheme is completed. A most elaborate scheme of water-supply is being designed by the Sanitary Engineer. The feeder channel is repaired once a year and watchmen are placed over it to prevent pollution when water is let into municipal tanks.
Do. ...	Chicacole ...	13,204	25·0	*Drainage.* Most of the streets are provided with V and U shaped stone drains which are always silted and clogged and consequently render thorough cleansing impracticable. Drainage of houses either soaks in the backyards of houses or in streets. The existing cess-pools are primitive and the contents of some of them overflow and defile their surroundings. *Water-supply.* The Langulia river which is the chief source of supply is open to contamination of a very disgusting and revolting nature. *Conservancy.* The contents of latrines, public and private, are carried by sweepers in baskets on their heads through the town.	The reconstruction of drains is very necessary which will be done if funds permit. Steps are being taken to conserve the river water. Provision has also been made in the ensuing year's budget for the entertainment of two watchmen to guard the river.
Do. ...	Parlákimedi.	16,379	23·4	*Drainage.* No system. Side ditches in streets serve only to carry off rain water. Sewage water from houses either soaks in backyards of houses or runs into side ditches. *Water-supply.* None of the existing tanks are set apart solely for drinking. *Conservancy.* The number of existing latrines is not equal to actual requirements.	.....
Gódávari ...	Cocanada ...	40,068	23·0	*Drainage.* With the exception of a sewer which extends from the market to the Salt creek and another on the Ramesam road, there is practically no drainage. *Water-supply.* Drinking water is obtained from tanks fed by canals through two channels which are partly covered and partly open. They are subject to pollution.	Some drains were repaired (Rs. 158) and a latrine was constructed (Rs. 456). The open supply channels are watched and kept free as far as possible from pollution.
Do. ...	Ellore ...	29,296	28·9	*Drainage.* No regular system. *Water-supply.* Generally brackish and impure. All the samples contain lime and sulphates. *Conservancy.* The existing number of latrines is short of requirements. With the exception of two corrugated iron latrines, the rest are not provided with receptacles. Basket and broom method is still in use.	The town was surveyed by the Sanitary Engineering Department in view to introduce a proper drainage system; but for want of funds the scheme was postponed. Some latrines were constructed and others repaired (Rs. 103 and Rs. 56), respectively.

No. XI.—*Statement showing the chief Sanitary defects in the Municipalities of the Madras Presidency during the year* 1899—cont.

District.	Name of Municipality.	Population according to the census of 1891.	Total death-rate per 1,000 of population.	Chief sanitary defects.	Remedial measures adopted.
Gódávari ...	Rajahmundry.	28,279	28·0	*Drainage.* With the exception of side cuttings, no system of drainage exists. *Water-supply.* The principal source of supply is the river Gódávari, the upper portion of which is contaminated by dhobies being allowed to wash clothes. *Conservancy.* Night-soil conservancy requires improvement.	Steps will be taken to prevent dhobies from washing clothes up-stream. The system of removing night-soil in open cavadies and baskets will soon be discontinued. Two sample night-soil carts have been made and a sum of Rs. 1,000 is provided in the Budget estimate for the purchase of night-soil carts.
Kistna ...	Bezwada ...	20,611	32·0	*Drainage. Nil.* Cess-pools exist which are kept as clean as possible, but none the less offensive. In some of the houses the sewage is allowed to soak into the ground in backyards. *Water-supply* is obtained chiefly from the river Kistna and its canals as usual.	Drainage and water-supply schemes were shelved by the council for want of funds. A latrine was constructed and some others were repaired (Rs. 720 and 210), respectively. Rs. 140 were spent in repairing some wells.
Do. ...	Guntúr ...	23,267	36·0	*Drainage.* Of streets natural; sewage from houses as a rule soaks into the ground. *Water-supply.* Scarcity is felt in some parts of the year. *Conservancy.* The masonry latrines are not provided with impermeable basement and consequently liquid and semi liquid excreta find their way into the soil.	A scheme for supplying the town with good water is now before Government. Some improvements to water-supply were effected at a cost of about Rs. 1,600. Four public latrines were repaired (Rs. 256).
Do. ...	Masulipatam.	38,667	26·3	*Drainage.* No regular system of drainage exists beyond ordinary side cuttings. Refuse water from most of the houses is allowed to soak into the ground. *Water-supply.* All the available sources are subject to pollution. *Conservancy.* The number of toties is not equal to requirements. The existing latrines are not provided with receptacles outside for the temporary storage of night-soil. The two cinerators are not in working order.	Some drains were repaired (Rs. 460) and certain improvements were effected to drinking-water sources (Rs. 1,400).
Kurnool ...	Kurnool ...	24,306	27·0	*Drainage.* No regular system. The contents of cess-pools are thrown on the roads. *Conservancy.* A portion of the house and street sweepings of the town is stored near human habitations.	.....
Do. ...	Nandyal ..	11,545	*	*Drainage.* Defective. *Water-supply.* Unsatisfactory. *Conservancy.* Spaces of ground surrounded by walls or tatties or prickly-pear serve the place of latrins. No place is set apart for the deposit of night-soil.	.....
Madura ...	Dindigul ...	20,115	18·9	*Drainage.* Unsatisfactory	Rs. 692 were spent in making a drain and repairing others.
Do. ...	Kodaikánal.	1,700	*	*Drainage.* Natural. *Water-supply.* Well water is subject to pollution.	.....

* Figures not available.

No. XI.—*Statement showing the chief Sanitary defects in the Municipalities of the Madras Presidency during the year* 1899—cont.

District.	Name of Municipality.	Population according to the census of 1891.	Total death-rate per 1,000 of population.	Chief sanitary defects.	Remedial measures adopted.
Madura ...	Madura ...	87,121	24·5	*Drainage.* Very defective	A drainage scheme is under preparation, and the necessary surveys are being taken.
Do. ...	Palni ...	16,940	17·5	*Drainage.* No regular system. *Water-supply.* Not free from pollution.	A scheme for supplying the town with good water is under preparation.
Do. ...	Periyakulam.	16,363	28·0	*Drainage.* Very defective. During rains the surface water of the town finds its way into the river—a drinking-water source. House drains empty into mud pots or pits sunk in front of houses. Some of these are in bad condition, not being regularly cleaned. *Water-supply.* River Varahanathy which is the chief source of supply is contaminated in every possible way. *Conservancy.* The sanitary condition of lanes and backyards is bad. One of the latrines is in an out-of-the-way place, and hence not used.	Surveys for a water-supply scheme were taken. A masonry latrine was constructed (Rs 99).
Malabar ...	Calicut ...	64,798	29·3	*Drainage.* A regular system of drainage is not practicable owing to the scattered condition of houses. House drains empty into cess-pools in backyards and there the sullage water soaks. *Water-supply.* The quality of water obtained in the Mappilla quarters of the town is exceedingly bad. *Conservancy.* The existing number of latrines is not equal to requirements.	Two public latrines were constructed and six others repaired.
Do. ...	Cannanore.	26,653	24·4	*Drainage.* In the old town there is no proper system. Cess-pools here are not kept clean.	The streets here being narrow and winding, it is not possible to lay out drains at a moderate cost.
Do. ...	Cochin ...	16,147	28·8	*Drainage* is still very defective. It is specially bad in Kalvetty where, owing to an imperfect fall in the drains, sewage does not freely escape. The drains in the fort serve only to carry off rain water. *Water-supply.* Wells and tanks yield water of a bad quality, their surroundings being insanitary and consequently subject to pollution. *Conservancy.* The Kalvetty latrines require a drain in front to carry away urine which at present largely soaks. More latrines are required.	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.
Do. ...	Palghat ...	39,367	30·5	*Drainage.* Except in the Big Bazaar and Sultanpet streets where there are masonry drains, elsewhere drainage is very defective. Sewage of houses flows into backyards generally.	.....
Do. ...	Tellicherry.	26,631	21·5	*Drainage.* No system. In a portion of the town a few stone-built drains exist but being constructed without any principle they are more a source of nuisance than of advantage to the locality. Drainage of private houses is also defective. *Water-supply.* Except in the elevated and less crowded parts of the town it is subject to pollution in all other places.	Rs. 111 were spent in repairing drains.

No. XI.—*Statement showing the chief Sanitary defects in the Municipalities of the Madras Presidency during the year* 1899—cont.

District.	Name of Municipality.	Population according to the census of 1891.	Total death-rate per 1,000 of population.	Chief sanitary defects.	Remedial measures adopted.
Nellore ...	Nellore ...	29,128	25·1	*Drainage.* Very defective. Everywhere huge quantities of sewage are seen from which a most offensive odour emanates. *Conservancy.* Want of latrines is greatly felt in parts where Yenadies live. The number of toties is not equal to requirements.	.....
Do. ...	Ongole ...	10,532	33·4	*Drainage.* The existing drains are unsatisfactory, as they are intended to carry only rain water. *Water-supply* is not bad.	
Nilgiris ...	Coonoor ...	5,586	28·6	*Drainage.* The drains are blocked up with rubbish by the people. *Water-supply* is much open to contamination.	A water-supply scheme has been prepared by the Sanitary Engineer and sanctioned by Government.
Do. ...	Ootacamund.	13,991	26·5	*Drainage.* The present open drains are constantly getting blocked up by rubbish of all sorts which accumulates at the gratings and when heavy rain falls, the overflow is carried over by lower bazaar road. *Conservancy.* The number of existing dust-bins falls short of requirements.	Two latrines were constructed (Rs. 878) and twelve others repaired (Rs. 300). Forty-five dust-bins were put up (Rs. 238).
North Arcot.	Gudiyáttam.	18,745	40·6	*Drainage.* No regular system. *Water-supply* is obtained partly from springs in the bed of the river; the surroundings are said to be kept fairly clean.	.....
Do.	Tirupati ...	14,238	31·5	*Drainage.* No regular system ...	.....
Do.	Vellore ...	44,724	29·5	*Drainage.* The existing drains being faulty in construction, sewage water stagnates. House drains flow into streets in some places and form filthy stagnant pools. *Water-supply.* The chief drinking-water source receives its supply from a channel which is open to contamination.	Efforts are being made to prevent pollution of drinking water as far as practicable.
Do.	Wallajapet.	10,485	37·2	*Drainage.* No regular system. *Water-supply* is obtained from ponds and wells which are subject to pollution.	.....
Salem ...	Salem ...	67,640	30·5	*Drainage* is very bad. All sewage escaping from house drains stagnates in the street side drains and soaks into the soil. 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.	The water-supply scheme is under the investigation of the Public Works Department. Some latrines were repaired (Rs. 166).
Do. ...	Tiruppattúr.	16,463	47·7	*Drainage.* Sewage water from houses escapes into street drains which are mere side ditches and there stagnates. *Water-supply.* Chetti tank which chiefly supplies drinking water is fed partly by surface and sub-soil drainage and partly by overflow from Reid's tanks by an open channel many miles in length.	Levels were taken for the introduction of drainage and water-supply schemes.
Do. ...	Vániyambádi.	15,858	58·2	*Drainage.* No regular system. Sewage from houses empties into side cuttings in streets and there soaks. *Water-supply.* Drinking water is obtained from private wells which are not protected either by parapet walls or platforms. The river water, which is largely used for drinking, is subject to pollution.	.....

No. XI.—*Statement showing the chief Sanitary defects in the Municipalities of the Madras Presidency during the year* 1899—cont.

District.	Name of Municipality.	Population according to the census of 1891.	Total death-rate per 1,000 of population.	Chief sanitary defects.	Remedial measures adopted.
South Arcot.	Chidambaram.	18,634	32·9	*Drainage.* No system. House drains empty into cess-pools which are mere ditches holding dirty earthen tubs. *Water-supply* unsatisfactory.	.....
Do.	Cuddalore ...	47,025	30·4	*Drainage.* No regular system. In old town there are badly-constructed drains with no regular outlet. House drains empty into either cess-pools or street drains, and are mostly in an insanitary condition. *Water-supply* is subject to pollution. *Conservancy.* The surroundings of latrines are defiled.	.....
Do.	Tiruvannámalai.	13,643	28·5	*Drainage.* No system	.....
South Canara.	Mangalore.	40,620	29·1	*Drainage.* No system. House drains empty into side cuttings in streets and there the sewage stagnates. These drains are not properly cleaned for want of sufficient sweepers. The drains are, in some cases, used as latrines. *Water-supply.* Most of the private wells are neither provided with parapet walls nor platforms. Some of these wells are very close to nullahs which are resorted to for purposes of nature. *Conservancy.* The parts occupied by Mappillas need attention.	.....
Tanjore ...	Kumbakónam.	54,254	36·4	*Drainage.* No system. Some of the pucca-built houses have masonry drains, the contents of which empty either into cess-pools in backyards or flow into streets, or are allowed to soak in backyards, thus rendering the majority of the houses highly insanitary. *Water-supply.* The town is surely in need of a proper water-supply. *Conservancy.* The existing latrines are merely enclosed spaces, and their number is not equal to requirements.	Drains made and filters constructed (Rs. 389). A well was sunk (Rs. 147).
Do. ...	Mannárgudi.	20,392	27·5	*Drainage.* Natural. House drains either flow into the backyards of houses or empty into cess-pools in streets. *Water-supply.* With the exception of wells, all the other sources are subject to contamination.	.....
Do. ...	Máyavaram.	23,754	35·3	*Drainage.* No system. During the rains the town gets water-logged. All the sewage water soaks into the soil. The existing cess-pools are not protected by masonry. *Water-supply* very unsatisfactory and is subject to pollution. *Conservancy.* The existing latrines are not freely resorted to.	.....
Do. ...	Negapatam.	58,573	31·2	*Drainage.* No system of drainage exists. Want of cess-pools causes sewage from houses to run into streets. *Water-supply.* The existing sources except the Jubilee well are subject to pollution.	Nine public latrines were repaired (Rs. 257).
Do. ...	Tanjore ...	54,258	26·0	*Drainage.* Very defective in some parts of the town. The main drains are in bad repair. *Water-supply.* Shivaganga, one of the drinking-water tanks, is fed by an open channel.	A drain was made (Rs. 50) and a dust-bin constructed (Rs. 20); a well was sunk (Rs. 110), and some public latrines were constructed (Rs. 260).

No. XI.—*Statement showing the chief Sanitary defects in the Municipalities of the Madras Presidency during the year* 1899—cont.

District.	Name of Municipality.	Population according to the census of 1891.	Total death-rate per 1,000 of population.	Chief sanitary defects.	Remedial measures adopted.
Tinnevelly...	Palamcottah.	18,612	21·7	*Drainage.* No regular system exists. House drains empty into side cuttings in streets or are allowed to run into streets. *Water-supply.* River Tamparaparani, the chief source, is subject to much pollution throughout its course, dirty clothes, mats, and cattle being washed in it.	Preliminary survey of a joint water-supply scheme has already been completed, and the scheme will be prepared by the Sanitary Engineer in due course.
Do. ...	Srivilliputtúr.	29,541	22·7	*Drainage.* Natural and defective. (A good deal of sewage soaks into the soil.) *Water-supply.* No tank is set apart for drinking purposes. The Teppakulam water is unfit for drinking purposes, as it is contaminated in several ways. Most of the public and private wells have no platforms or drains. *Conservancy.* The practice of storing rubbish in the backyards of houses still obtains.	The public wells are being provided with platforms and drains gradually as funds permit. The owners of private wells have been asked to keep them in proper order. People are advised every now and then to keep their backyards clean and to construct cess pools on standard plan.
Do. ...	Tinnevelly.	24,756	34·2	*Drainage* of streets and houses defective. Some of the drains empty their contents into drinking-water sources. *Water-supply.* Very unsatisfactory and needs early attention, as all the available sources of supply are polluted with drainage and by the filth of men and cattle.	Some drains were made (Rs. 189) and others repaired (Rs. 226). Five public latrines were repaired (Rs. 98).
Do. ...	Tuticorin ...	24,964	32·1	*Drainage.* No system. *Water-supply.* Scarcity is felt during the hot weather, as the tank from which water is brought into the town through an open channel fails.	Two public latrines were constructed at a cost of Rs. 465.
Trichinopoly	Srirangam...	21,032	20·2	*Drainage.* No regular system. Cesspools exist which are not cleaned systematically. *Water-supply.* No tanks or wells are set apart for drinking. *Conservancy.* The latrines have no seats and require to be covered over.	.....
Do.	Trichinopoly.	89,666	26·6	*Drainage.* The main roads and streets are provided with masonry side drains for carriage of storm water; these are also used for the reception of refuse water from houses and rubbish.	The question of draining the town properly has to be postponed for want of funds.
Vizagapatam.	Anakápalle.	17,601	23·9	*Drainage.* The existing drains are constructed on faulty levels. *Water-supply.* Unsatisfactory.	.....
Do.	Bimlipatam.	9,696	23·0	*Nil.*	.....
Do.	Vizagapatam.	32,361	31·4	*Conservancy.* The number of latrines and carts is insufficient for requirements.	The Hanumanthawaka water Project has been undertaken to supply water to the town. The Public Works Department is in charge of the extension of the work. Some latrines were constructed and others repaired (Rs. 202). Rs. 238 and Rs. 121 were spent in repairing drains and wells, respectively.

No. XI.—*Statement showing the chief Sanitary defects in the Municipalities of the Madras Presidency during the year* 1899—cont.

District.	Name of Municipality.	Population according to the census of 1891.	Total death-rate per 1,000 of population.	Chief sanitary defects.	Remedial measures adopted.
Vizagapatam.	Vizianagram.	30,735	31·1	*Drainage.* No system. *Water-supply.* Indifferent. Scarcity of water was felt during the year. *Conservancy.* The rubbish carts are unfit for the purpose, and the drivers are as worn out as the carts and bullocks which are fed on refuse. Night-soil is buried without any system.	Some drains were made and others repaired (Rs. 99). Three wells were sunk (Rs. 169). Two public latrines were constructed (Rs. 371).

No. XII.—*Births registered according to months and classes in the districts of the Madras Presidency during the year 1899.*

1	2	3												4	5					6				
															Births registered according to classes.					Ratio of births per mille of population.				
Number.	Districts.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total births.	Native Christians.	Muhammadans.	Hindus.	Other classes.	Total.	Native Christians.	Muhammadans.	Hindus.	Other classes.	Total.
1	Anantapur ...	1,737	1,647	1,938	1,652	1,704	1,805	1,914	1,996	1,952	2,229	2,185	2,104	22,804	43	1,655	21,048	39	22,804	31·2	32·4	31·2	91·5	31·3
2	Bellary ...	2,234	2,134	2,572	2,629	2,823	2,734	2,822	2,660	2,721	2,750	2,594	2,311	30,960	118	3,257	27,585	...	30,960	34·0	37·1	34·5	...	34·8
3	Chingleput ...	2,788	2,255	2,396	2,160	2,739	3,174	3,905	4,713	4,833	5,112	4,816	4,305	43,366	481	840	41,979	67	43,366	30·1	59·8	36·3	187·7	36·1
4	Coimbatore ...	4,397	4,030	4,140	4,737	5,183	5,509	5,457	5,303	5,597	5,624	5,657	5,250	61,174	372	1,234	59,565	3	61,174	22·4	28·2	30·6	9·4	30·3
5	Cuddapah ...	2,631	2,296	2,656	2,312	2,732	2,649	2,699	3,234	3,274	3,480	3,580	3,395	35,421	359	3,741	31,321	...	35,421	33·3	51·3	27·4	...	27·9
6	Ganjam ...	3,935	3,049	3,357	3,102	3,471	3,623	4,616	4,043	4,305	4,342	3,769	3,936	45,386	47	131	45,208	...	45,386	26·3	25·1	31·7	...	31·7
7	Godávari ...	4,563	6,262	6,247	4,925	6,767	6,693	6,504	6,296	6,834	8,746	7,365	6,286	76,601	165	775	75,661	...	76,601	20·3	18·9	37·3	...	36·9
8	Kistna ...	5,269	3,529	4,057	4,779	6,076	6,224	7,835	8,338	8,003	7,888	7,440	6,237	75,214	1,875	4,753	68,584	2	75,214	27·8	43·8	40·9	12·7	40·5
9	Kurnool ...	1,511	1,532	1,845	1,928	2,189	1,724	2,181	2,333	2,509	2,355	2,400	2,164	24,750	509	3,336	20,905	...	24,750	27·5	34·2	30·0	...	30·2
10	Madras ...	1,274	1,694	1,382	1,528	1,479	1,343	1,463	1,697	1,857	1,623	1,661	1,614	17,619	924	2,302	14,391	2	17,619	39·2	43·3	40·2	3·4	40·4
11	Madura ...	5,318	3,060	3,519	3,087	4,146	4,231	4,219	4,958	3,905	5,147	4,062	4,284	48,703	1,380	2,208	45,115	...	48,703	17·7	13·2	22·7	...	22·8
12	Malabar ...	4,426	4,520	5,070	5,331	6,217	6,711	7,088	6,333	6,103	6,042	5,500	5,132	68,502	1,157	21,124	46,178	43	68,502	27·1	27·8	25·2	55·4	26·0
13	Nellore ...	2,017	2,536	2,560	2,879	2,811	3,041	3,436	3,133	3,026	3,774	4,051	3,946	38,665	451	1,488	36,725	1	38,665	9·6	19·3	27·4	2·5	26·4
14	Nilgiris ...	177	212	218	234	207	225	259	252	253	287	230	202	2,826	260	103	2,458	...	2,826	31·0	22·2	29·4	...	29·2
15	North Arcot ...	4,178	3,344	3,507	3,521	4,226	4,735	5,427	5,920	6,012	6,401	6,590	6,048	59,074	180	2,479	57,103	168	59,074	11·3	26·6	28·6	26·6	28·5
16	Salem ...	4,296	4,606	4,774	1,809	5,012	5,118	5,288	5,568	6,172	6,520	6,432	5,760	64,206	501	2,225	61,479	1	64,206	28·4	36·2	32·7	4·8	32·7
17	South Arcot ...	3,541	2,741	3,046	3,012	3,812	4,790	5,290	6,805	6,819	7,614	7,095	6,030	61,858	563	1,405	59,747	144	61,858	17·7	24·0	26·0	25·4	25·6
18	South Canara ...	3,602	2,952	2,758	2,227	2,756	2,774	3,177	2,802	2,460	2,275	2,321	2,537	33,021	2,452	3,631	26,613	275	33,021	34·6	34·6	30·9	26·8	31·4
19	Tanjore ...	5,231	4,452	5,519	5,295	5,513	5,249	6,253	7,203	7,348	6,971	5,929	5,477	70,533	2,277	3,570	64,649	37	70,533	27·0	29·1	31·9	63·9	31·6
20	Tinnevelly ...	5,311	4,415	5,211	4,932	4,988	5,474	5,935	5,681	5,616	5,960	6,133	6,369	66,035	4,655	3,594	57,685	1	66,035	31·9	35·5	34·5	31·2	34·5
21	Trichinopoly ...	2,522	2,522	3,111	2,102	3,082	3,079	3,502	3,900	3,721	3,839	3,705	3,477	40,073	2,105	1,250	36,718	...	40,073	30·5	32·7	29·0	...	29·2
22	Vizagapatam ...	3,918	2,926	3,228	3,647	4,552	5,159	6,256	7,630	6,647	5,895	5,901	5,115	60,354	38	390	59,918	8	60,354	21·0	20·1	37·4	115·0	37·2
	Total, Madras Presidency ...	74,254	65,616	75,122	72,669	82,591	88,074	96,412	101,499	100,358	104,895	99,476	91,349	1,048,355	21,267	65,733	900,555	782	1,048,355	26·3	29·9	31·5	26·3	31·3
	Ratio per mille of population ...	2·2	1·9	2·2	2·2	2·5	2·6	2·9	3·0	3·0	3·1	3·0	2·7	31·3										

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 1899.*

1	2		3			4			5			6			7		
			Population for which returns were received.			Cholera.			Small-pox.			Fevers.			Dysentery and Diarrhœa.		
Number.	Districts.		Males.	Females.	Total.	Males.	Females.	Total.	Males.	Females.	Total.	Males.	Females.	Total.	Males.	Females.	Total.
1	Anantapur.	Europeans.	75	26	101	...	...	...	...	...	...	...	...	...	...	...	...
		Eurasians.	163	140	303	...	...	...	...	...	...	...	2	2	...	...	...
2	Bellary ...	Europeans.	877	252	1,129	...	...	...	...	...	...	4	1	5	1	...	1
		Eurasians.	355	369	724	...	...	...	...	...	...	...	...	...	1	1	2
3	Chingleput.	Europeans.	1,001	499	1,500	...	...	...	...	...	...	...	1	1	1	...	1
		Eurasians.	770	757	1,527	...	...	...	...	...	...	...	1	1	1	4	5
4	Coimbatore.	Europeans.	117	117	234	...	...	...	...	...	...	...	...	...	...	...	...
		Eurasians.	350	344	694	...	...	...	...	...	...	...	...	...	...	...	...
5	Cuddapah.	Europeans.	78	49	127	...	...	...	...	...	...	...	...	...	...	...	...
		Eurasians.	130	94	224	...	...	...	...	...	...	...	...	...	...	...	...
6	Ganjam ...	Europeans.	151	53	204	...	...	...	...	...	...	...	...	...	1	...	1
		Eurasians.	105	94	199	...	...	...	...	...	...	2	1	3	...	1	1
7	Godávari ...	Europeans.	233	128	361	...	1	1	...	...	...	...	...	...	...	...	...
		Eurasians.	272	291	563	...	...	...	...	...	...	1	6	7	...	...	...
8	Kistna ...	Europeans.	137	109	246	...	...	...	...	...	...	...	...	...	...	...	...
		Eurasians.	158	154	312	...	...	...	...	...	...	...	...	...	...	...	...
9	Kurnool ...	Europeans.	51	18	69	...	...	...	...	...	...	...	...	...	...	...	...
		Eurasians.	50	32	82	...	...	...	...	...	...	...	...	...	...	...	...
10	Madras ...	Europeans.	2,448	1,752	4,200	...	...	...	...	...	...	4	3	7	4	5	9
		Eurasians.	5,679	6,294	11,973	...	...	...	2	1	3	22	28	50	30	25	55
11	Madura ...	Europeans.	152	116	268	...	...	...	...	...	...	...	...	...	...	...	...
		Eurasians.	201	173	374	...	...	...	...	...	...	...	...	...	...	...	...
12	Malabar ...	Europeans.	828	235	1,063	...	...	...	...	...	...	1	1	2	...	...	...
		Eurasians.	1,894	2,297	4,191	...	...	...	...	...	...	8	8	16	2	...	2
13	Nellore ...	Europeans.	82	53	135	...	...	...	...	...	...	...	...	...	...	...	...
		Eurasians.	132	112	244	...	...	...	...	...	...	...	...	...	...	...	...
14	Nilgiris ...	Europeans.	922	873	1,795	...	...	...	1	...	1	2	...	2	...	2	2
		Eurasians.	748	489	1,237	...	...	...	...	...	...	...	...	...	...	...	...
15	North Arcot.	Europeans.	127	100	227	...	...	...	...	...	...	...	...	...	...	...	...
		Eurasians.	328	347	675	...	1	1	...	...	...	...	...	...	...	...	...
16	Salem ...	Europeans.	161	158	319	...	...	...	...	...	...	...	...	...	...	...	...
		Eurasians.	261	227	488	...	...	...	...	...	...	...	...	...	...	...	...
17	South Arcot	Europeans.	102	57	159	...	...	...	...	...	...	...	1	1	...	...	...
		Eurasians.	177	179	356	...	...	...	...	...	...	...	1	1	...	1	1
18	South Canara.	Europeans.	107	46	153	...	...	...	...	...	...	...	...	...	...	...	...
		Eurasians.	122	82	204	...	...	...	...	...	...	...	...	...	...	...	...
19	Tanjore ...	Europeans.	181	117	298	...	...	...	...	...	...	1	...	1	...	...	...
		Eurasians.	414	327	741	3	3	6	...	...	...	1	2	3	5	3	8
20	Tinnevelly.	Europeans.	131	76	207	...	...	...	...	...	...	...	...	...	...	...	...
		Eurasians.	94	72	166	...	...	...	...	...	...	...	...	...	...	...	...
21	Trichinopoly.	Europeans.	173	92	265	...	...	...	...	...	...	1	...	1	2	...	2
		Eurasians.	390	336	726	1	...	1	...	...	...	...	3	3	...	...	...
22	Vizagapatam.	Europeans.	192	145	337	...	...	...	...	...	...	1	...	1	2	...	2
		Eurasians.	310	369	679	...	...	...	...	...	...	4	2	6	2	...	2
	Total ...	Europeans.	8,346	5,067	13,413	...	1	1	1	...	1	14	7	21	11	7	18
		Eurasians.	13,141	13,511	26,652	4	4	8	2	1	3	38	54	92	39	35	74

Number.	Districts.		8. Injuries. Suicides. Males.	Females.	Total.	Wounds and accidents. Males.	Females.	Total.	Snake-bite. Males.	Females.	Total.	Killed by wild beasts. Males.	Females.	Total.
1	Anantapur.	Europeans.	...	...	...	...	...	...	...	...	...	...	...	...
		Eurasians.	...	...	...	...	...	...	...	...	...	...	...	...
2	Bellary ...	Europeans.	...	...	...	2	...	2	...	...	...	...	...	...
		Eurasians.	...	...	...	...	...	...	...	...	...	...	...	...
3	Chingleput.	Europeans.	...	...	...	...	...	...	...	...	...	...	...	...
		Eurasians.	...	...	...	...	...	...	...	...	...	...	...	...
4	Coimbatore.	Europeans.	...	...	...	...	...	...	...	...	...	...	...	...
		Eurasians.	...	...	...	...	...	...	...	...	...	...	...	...
5	Cuddapah.	Europeans.	...	...	...	...	...	...	...	...	...	...	...	...
		Eurasians.	...	...	...	...	...	...	...	...	...	...	...	...
6	Ganjam ...	Europeans.	...	...	...	...	...	...	...	...	...	...	...	...
		Eurasians.	...	...	...	...	...	...	...	...	...	...	...	...
7	Godávari ...	Europeans.	...	...	...	...	...	...	...	...	...	...	...	...
		Eurasians.	...	...	...	1	...	1	...	...	...	...	...	...
8	Kistna ...	Europeans.	...	...	...	...	...	...	...	...	...	...	...	...
		Eurasians.	...	...	...	...	...	...	...	...	...	...	...	...
9	Kurnool ...	Europeans.	...	...	...	...	...	...	...	...	...	...	...	...
		Eurasians.	...	...	...	...	...	...	...	...	...	...	...	...
10	Madras ...	Europeans.	...	...	...	3	...	3	...	...	...	...	...	...
		Eurasians.	...	...	...	3	1	4	...	...	...	...	...	...
11	Madura ...	Europeans.	...	...	...	...	...	...	...	...	...	...	...	...
		Eurasians.	...	...	...	...	...	...	...	...	...	...	...	...
12	Malabar ...	Europeans.	...	...	...	...	...	...	...	...	...	...	...	...
		Eurasians.	...	...	...	...	...	...	...	...	...	...	...	...
13	Nellore ...	Europeans.	...	...	...	...	...	...	...	...	...	...	...	...
		Eurasians.	...	...	...	1	...	1	...	...	...	...	...	...
14	Nilgiris ...	Europeans.	...	...	...	...	...	...	...	...	...	...	...	...
		Eurasians.	1	...	1	...	...	...	...	...	...	...	...	...
15	North Arcot.	Europeans.	...	...	...	...	...	...	...	...	...	...	...	...
		Eurasians.	...	...	...	...	...	...	...	...	...	...	...	...
16	Salem ...	Europeans.	...	...	...	...	...	...	...	...	...	...	...	...
		Eurasians.	...	...	...	...	...	...	...	...	...	...	...	...
17	South Arcot	Europeans.	...	...	...	...	...	...	...	...	...	...	...	...
		Eurasians.	...	...	...	...	...	...	...	...	...	...	...	...
18	South Canara.	Europeans.	1	...	1	1	...	1	...	...	...	...	...	...
		Eurasians.	...	...	...	...	...	...	...	...	...	...	...	...
19	Tanjore ...	Europeans.	...	...	...	...	...	...	...	...	...	...	...	...
		Eurasians.	...	...	...	...	...	...	...	...	...	...	...	...
20	Tinnevelly.	Europeans.	...	...	...	...	...	...	...	...	...	...	...	...
		Eurasians.	...	...	...	...	...	...	...	...	...	...	...	...
21	Trichinopoly.	Europeans.	...	...	...	...	...	...	...	...	...	...	...	...
		Eurasians.	...	...	...	...	...	...	...	...	...	...	...	...
22	Vizagapatam.	Europeans.	...	...	...	...	...	...	...	...	...	...	...	...
		Eurasians.	...	...	...	...	...	...	...	...	...	...	...	...
	Total ...	Europeans.	1	...	1	6	...	6	...	...	...	...	...	...
		Eurasians.	1	...	1	5	1	6	...	...	...	...	...	...

Number.	Districts.		9. All other causes. Males.	Females.	Total.	10. Total Deaths from all causes. Males.	Females.	Total.	11. Total Births. Males.	Females.	Total.
1	Anantapur.	Europeans.	...	...	...	...	2	2	1	1	2
		Eurasians.	...	...	...	...	...	...	3	5	8
2	Bellary ...	Europeans.	11	3	14	18	4	22	9	4	13
		Eurasians.	1	6	7	2	7	9	9	2	11
3	Chingleput.	Europeans.	11	4	15	12	5	17	16	8	24
		Eurasians.	4	4	8	5	9	14	5	8	13
4	Coimbatore.	Europeans.	1	1	2	1	1	2	5	...	5
		Eurasians.	6	2	8	6	2	8	5	3	8
5	Cuddapah.	Europeans.	...	...	...	...	...	...	1	1	2
		Eurasians.	...	...	...	...	...	...	...	...	...
6	Ganjam ...	Europeans.	...	...	...	1	...	1	1	4	5
		Eurasians.	1	...	1	3	2	5	2	1	3
7	Godávari ...	Europeans.	1	1	2	1	2	3	2	1	3
		Eurasians.	6	4	10	7	11	18	7	10	17
8	Kistna ...	Europeans.	1	...	1	1	...	1	3	1	4
		Eurasians.	4	...	4	4	...	4	5	...	5
9	Kurnool ...	Europeans.	...	...	...	...	...	...	...	...	...
		Eurasians.	...	...	...	...	...	...	...	...	...
10	Madras ...	Europeans.	34	22	56	45	30	75	47	63	110
		Eurasians.	126	127	253	194	182	376	253	211	464
11	Madura ...	Europeans.	3	2	5	3	2	5	3	6	9
		Eurasians.	2	2	4	2	2	4	5	7	12
12	Malabar ...	Europeans.	5	4	9	6	6	12	12	3	15
		Eurasians.	21	19	40	31	27	58	47	38	85
13	Nellore ...	Europeans.	1	...	1	1	...	1	...	2	2
		Eurasians.	4	...	4	5	...	5	7	2	9
14	Nilgiris ...	Europeans.	11	14	25	14	16	30	27	24	51
		Eurasians.	2	1	3	4	1	5	8	5	13
15	North Arcot.	Europeans.	2	1	3	2	1	3	2	5	7
		Eurasians.	3	2	5	3	3	6	2	2	4
16	Salem ...	Europeans.	6	4	10	8	2	10	3	4	7
		Eurasians.	2	1	3	2	1	3	5	4	9
17	South Arcot	Europeans.	...	...	...	1	1	2	4	1	5
		Eurasians.	2	...	2	2	2	4	5	1	6
18	South Canara.	Europeans.	...	...	...	1	1	2	...	1	1
		Eurasians.	...	...	...	...	...	...	1	1	2
19	Tanjore ...	Europeans.	3	...	3	4	...	4	1	1	2
		Eurasians.	7	4	11	8	12	20	10	14	24
20	Tinnevelly.	Europeans.	2	2	4	2	2	4	1	...	1
		Eurasians.	...	4	4	...	4	4	5	4	9
21	Trichinopoly.	Europeans.	1	...	1	4	...	4	6	4	10
		Eurasians.	6	3	9	7	6	13	12	14	26
22	Vizagapatam.	Europeans.	5	2	7	8	2	10	3	4	7
		Eurasians.	8	4	12	14	6	20	12	15	27
	Total ...	Europeans.	58	61	119	131	76	207	143	146	289
		Eurasians.	215	164	379	304	279	583	297	462	759

Number.	Districts.		12. Ratio per 1,000 of population. Cholera.	Small-pox.	Fevers.	Dysentery and Diarrhœa.	Injuries.	Total Deaths. Males.	Females.	Total.	Total Births. Males.	Females.	Total.
1	Anantapur.	Europeans.	...	...	...	...	...	...	...	...	9·7	9·7	19·4
		Eurasians.	...	...	...	...	...	...	14·3	6·6	9·9	16·5	26·4
2	Bellary ...	Europeans.	...	...	4·4	0·9	1·8	20·5	15·9	16·5	5·3	3·5	8·8
		Eurasians.	...	...	...	2·8	...	6·0	18·0	12·4	2·8	12·4	15·2
3	Chingleput.	Europeans.	...	...	9·7	0·7	...	12·0	10·0	11·3	10·7	5·3	16·0
		Eurasians.	...	...	9·7	8·5	...	6·5	11·9	9·2	3·3	5·2	8·5
4	Coimbatore.	Europeans.	...	...	...	...	...	8·5	8·5	8·5	12·8	...	12·8
		Eurasians.	...	...	...	...	...	17·1	5·8	11·5	4·3	7·2	11·5
5	Cuddapah.	Europeans.	...	...	...	...	...	...	...	...	7·9	7·9	15·8
		Eurasians.	...	...	...	...	...	...	...	...	...	...	...
6	Ganjam ...	Europeans.	...	...	...	4·9	[illegible]	6·6	...	4·9	4·9	19·6	24·5
		Eurasians.	...	...	12·1	15·0	[illegible]	28·8	21·3	25·1	10·1	5·0	15·1
7	Godávari ...	Europeans.	2·8	...	...	...	...	4·3	15·6	8·3	5·5	2·8	8·3
		Eurasians.	...	...	12·4	...	1·8	2·6	3·8	3·2	12·4	17·8	30·2
8	Kistna ...	Europeans.	...	...	...	...	...	7·3	...	4·1	32·5	4·1	36·6
		Eurasians.	...	...	...	...	...	25·3	...	12·8	9·6	1·6	11·2
9	Kurnool ...	Europeans.	...	...	...	...	[illegible]	...	...	...	...	...	...
		Eurasians.	...	...	...	...	[illegible]	...	...	...	...	...	...
10	Madras ...	Europeans.	...	...	1·7	2·1	0·7	18·4	17·1	17·9	10·8	18·8	26·0
		Eurasians.	...	0·3	4·2	4·0	0·3	34·0	29·1	31·4	21·0	17·7	38·7
11	Madura ...	Europeans.	...	...	...	...	...	19·7	17·2	18·7	11·2	22·4	33·6
		Eurasians.	...	...	...	...	...	10·1	11·4	10·7	13·4	18·7	32·1
12	Malabar ...	Europeans.	...	...	1·9	...	...	7·2	21·3	10·3	11·3	2·8	14·1
		Eurasians.	...	...	3·8	0·5	...	15·8	12·2	13·8	11·2	9·1	20·3
13	Nellore ...	Europeans.	...	...	...	...	...	12·2	...	7·4	...	...	...
		Eurasians.	...	...	...	...	4·1	37·9	...	20·5	28·7	8·2	36·9
14	Nilgiris ...	Europeans.	...	0·6	1·1	1·1	...	15·2	18·3	16·7	15·0	13·4	28·4
		Eurasians.	...	...	...	...	0·8	5·3	2·0	4·0	7·3	5·6	12·9
15	North Arcot.	Europeans.	...	...	...	...	...	15·7	10·0	13·2	8·8	22·0	30·8
		Eurasians.	1·5	...	...	...	...	9·1	8·6	8·9	3·0	3·0	6·0
16	Salem ...	Europeans.	...	...	...	...	...	37·3	25·3	31·3	9·4	12·5	21·9
		Eurasians.	...	...	...	...	...	7·7	4·4	6·1	10·2	8·2	18·4
17	South Arcot	Europeans.	...	...	6·3	...	...	...	35·1	12·6	25·1	6·3	31·4
		Eurasians.	...	...	2·8	2·8	...	11·3	11·2	11·2	19·7	2·8	22·5
18	South Canara.	Europeans.	...	...	...	...	13·1	18·7	...	13·1	...	58·8	58·8
		Eurasians.	...	...	...	...	...	...	...	...	...	4·0	4·0
19	Tanjore ...	Europeans.	...	...	5·4	...	...	22·1	...	13·7	3·4	3·4	6·8
		Eurasians.	8·1	...	4·6	8·1	...	33·8	36·7	35·1	13·5	18·9	32·4
20	Tinnevelly.	Europeans.	...	...	...	...	...	15·2	26·3	17·6	4·4	...	4·4
		Eurasians.	...	...	...	...	...	...	55·6	24·1	30·1	18·1	48·2
21	Trichinopoly.	Europeans.	...	...	2·5	7·5	...	23·1	...	15·1	22·6	15·1	37·7
		Eurasians.	1·3	...	4·1	...	...	18·4	16·4	17·9	16·5	18·3	35·8
22	Vizagapatam.	Europeans.	...	...	5·0	5·9	...	41·7	13·8	29·7	5·9	11·9	17·8
		Eurasians.	...	...	9·8	2·9	...	45·2	16·3	29·5	17·7	22·1	39·8
	Total ...	Europeans.	0·1	0·1	1·6	1·3	0·5	15·7	15·0	15·4	10·6	10·9	21·5
		Eurasians.	0·3	0·1	3·5	2·8	0·3	23·1	20·7	21·9	14·9	13·6	28·5

Number.	Districts.		13. Born dead among Europeans and Eurasians. Males.	Females.	Total.	14. Born dead among all other classes. Males.	Females.	Total.
1	Anantapur.	Europeans.	...	...	...	187	156	343
		Eurasians.	...	...	...			
2	Bellary ...	Europeans.	...	...	...	...	...	...
		Eurasians.	...	...	...			
3	Chingleput.	Europeans.	...	...	...	444	395	839
		Eurasians.	...	1	1			
4	Coimbatore.	Europeans.	...	...	...	249	178	427
		Eurasians.	...	...	...			
5	Cuddapah.	Europeans.	...	...	...	246	232	478
		Eurasians.	...	...	...			
6	Ganjam ...	Europeans.	...	...	...	121	101	222
		Eurasians.	...	...	...			
7	Godávari ...	Europeans.	...	...	...	257	242	499
		Eurasians.	...	...	...			
8	Kistna ...	Europeans.	...	...	...	364	322	686
		Eurasians.	...	...	...			
9	Kurnool ...	Europeans.	...	...	...	27	77	104
		Eurasians.	...	...	...			
10	Madras ...	Europeans.	1	...	1	152	101	253
		Eurasians.	4	2	6			
11	Madura ...	Europeans.	...	...	...	202	188	390
		Eurasians.	...	...	...			
12	Malabar ...	Europeans.	...	...	...	358	277	635
		Eurasians.	...	...	...			
13	Nellore ...	Europeans.	...	...	...	164	128	292
		Eurasians.	...	...	...			
14	Nilgiris ...	Europeans.	...	...	...	36	23	59
		Eurasians.	...	...	...			
15	North Arcot.	Europeans.	...	...	...	425	387	812
		Eurasians.	...	...	...			
16	Salem ...	Europeans.	...	...	...	413	355	768
		Eurasians.	...	...	...			
17	South Arcot	Europeans.	...	...	...	257	237	494
		Eurasians.	...	...	...			
18	South Canara.	Europeans.	...	...	...	582	489	1,071
		Eurasians.	...	...	...			
19	Tanjore ...	Europeans.	...	...	...	950	897	1,847
		Eurasians.	...	...	...			
20	Tinnevelly.	Europeans.	...	...	...	251	227	478
		Eurasians.	...	...	...			
21	Trichinopoly.	Europeans.	...	...	...	270	220	490
		Eurasians.	...	...	...			
22	Vizagapatam.	Europeans.	...	...	...	164	156	320
		Eurasians.	...	...	...			
	Total ...	Europeans.	1	1	2	6,198	5,358	11,556
		Eurasians.	4	2	6			

* *Return showing the Births and Deaths registered in the*

Municipalities of the Madras Presidency during the year 1899.

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.
Ganjam	Chicacole	18,231	...	...	5	577	24	...	294	312	606	...	...	3	410	29	...	395	213	451
	Berhampur	25,655	2	3	22	894	64	7	483	505	988	2	4	5	527	47	2	236	291	527
	Parlakimedi	16,320	...	...	1	707	9	...	363	354	717	...	...	...	372	2	...	189	185	374
Vizagapatam	Vizagapatam	35,487	6	20	17	1,179	101	1	747	637	1,324	3	16	10	975	82	...	513	498	1,011
	Bimlipatam	9,827	...	6	2	293	3	...	150	156	306	2	3	2	244	6	...	110	117	227
	Vizianagram	30,881	...	2	...	662	85	...	540	548	1,088	...	...	...	909	49	...	455	502	957
	Anakapalle	17,009	...	...	...	694	7	...	337	344	701	...	...	...	402	4	...	209	197	406
Godávari	Cocanada	49,753	1	8	3	1,311	71	2	720	709	1,429	1	10	7	687	51	...	497	459	956
	Rajahmundry	28,897	2	4	6	1,041	78	...	581	550	1,131	1	5	6	729	57	1	416	389	790
	Ellore	20,982	...	...	14	1,085	134	...	610	591	1,201	...	1	14	710	123	...	434	394	828
Kistna	Masulipatam	38,869	2	2	21	1,091	172	...	668	618	1,286	...	3	19	857	116	1	525	488	1,016
	Guntur	25,333	...	1	22	773	317	...	550	560	1,110	1	1	21	668	209	...	418	421	839
	Bezwada ...	20,711	3	2	16	740	115	...	420	459	876	2	2	15	605	80	...	330	324	654
Nellore	Nellore ...	20,276	...	7	16	766	167	1	506	448	954	...	5	10	590	122	...	414	322	736
	Ongole ...	10,963	...	...	31	369	47	...	223	218	441	1	...	25	279	38	...	187	176	363
Madras	Madras	452,518	104	462	926	14,419	2,292	2	9,356	8,864	18,220	75	375	760	13,878	2,156	4	8,661	8,617	17,248
Chingleput	Conjeeveram	42,518	...	...	93	1,331	38	...	760	754	1,514	...	...	...	1,230	26	...	691	630	1,321
	Chingleput	9,783	...	3	11	275	32	67	182	196	388	...	...	1	217	19	42	137	126	263
South Arcot	Cuddalore	47,335	...	4	29	1,077	74	...	504	505	1,009	2	4	24	1,020	35	...	751	680	1,431
	Chidambaram	14,611	...	...	...	646	47	54	365	362	727	...	...	...	454	32	28	311	316	627
	Tiruvannamalai	13,650	...	...	7	550	88	...	320	315	635	...	...	1	546	42	...	218	171	389
Trichinopoly	Trichinopoly	90,099	6	32	46	2,264	147	...	1,078	1,177	2,255	4	13	215	1,844	207	...	1,257	1,163	2,420
	Srirangam	21,632	...	...	...	720	1	...	368	375	721	...	...	1	651	1	...	346	315	661
Tanjore	Tanjore	54,790	...	...	134	1,502	98	...	852	800	1,652	...	2	76	1,254	77	1	803	727	1,530
	Kumbakonam	54,807	...	...	61	1,750	83	...	954	940	1,894	...	...	47	1,865	62	...	961	1,016	1,977
	Mávavaram	23,765	...	...	16	854	17	...	443	424	867	...	...	11	807	31	...	452	394	846
	Negapatam	53,231	1	33	183	1,211	402	...	804	829	1,633	3	21	179	1,215	483	...	1002	951	1,953
	Mannargudi	20,253	...	...	11	577	21	...	323	284	607	...	...	4	556	22	...	291	271	562
Madura	Madura	87,458	6	8	104	2,407	51	...	1,324	1,277	2,601	2	5	35	1,590	97	...	1,102	1,054	2,156
	Periyakulam	16,763	...	...	45	586	58	...	362	329	691	...	...	19	385	41	...	217	214	431
	Dindigul	20,206	...	1	131	617	72	...	423	415	838	...	2	26	525	30	...	193	184	377
	Palni	10,040	...	...	11	489	34	...	257	274	531	...	...	5	293	22	1	163	139	302
Tinnevelly	Tuticorin	21,765	...	...	12	853	33	...	451	454	905	...	...	8	801	46	1	411	403	814
	Palamcottah	15,406	1	...	12	406	18	...	224	213	437	1	1	46	356	6	...	217	189	406
	Tinnevelly	27,167	...	5	259	539	68	1	484	487	971	2	2	218	614	33	5	427	435	862
	Sawyerpuram	20,581	...	...	42	1,028	21	...	559	532	1,091	...	...	15	655	12	...	330	316	646
Kurnool	Kurnool	21,370	...	...	8	442	315	...	462	473	935	...	2	4	519	306	...	329	327	656
Cuddapah	Cuddapah	17,979	...	1	2	97	148	...	131	117	248	...	1	5	370	211	4	272	226	498
Bellary	Bellary	30,462	12	7	80	1,182	748	...	1,056	993	2,049	22	9	75	1,043	575	...	846	878	1,724
	Adoni	23,235	...	3	3	741	528	...	620	625	1,245	...	...	...	899	234	...	510	522	1,032
Anantapur	Anantapur	9,804	1	...	4	139	74	...	154	164	318	...	...	1	99	24	...	58	57	115
North Arcot	Vellore	46,935	1	2	29	858	291	...	581	580	1,161	1	3	14	914	288	...	673	641	1,314
	Gudiyattam	18,747	...	...	...	591	126	...	375	341	717	...	...	7	629	141	...	389	352	741
	Wallajanet	14,182	...	...	1	317	53	...	147	124	271	...	...	...	357	33	...	134	125	259
	Tirupati	14,242	...	...	2	371	23	...	203	192	395	...	...	...	438	11	...	243	238	481
Salem	Salem	67,710	1	...	45	2,319	130	1	1,352	1,304	2,656	2	...	32	1,776	253	1	1,066	974	2,040
	Vaniyambadi	14,628	...	...	3	572	500	3	453	427	880	...	...	3	447	408	7	475	470	945
	Tirupattur	16,209	...	...	5	727	513	...	389	356	745	...	...	3	403	373	...	417	368	785
Coimbatore	Coimbatore	46,353	1	5	71	1,732	136	...	979	983	1,962	2	4	71	1,177	88	...	697	645	1,342
	Erode	12,250	1	1	15	415	44	...	246	230	476	...	...	12	368	23	...	116	127	243
	Karur	10,756	1	...	13	377	42	...	228	205	433	...	...	3	305	26	...	109	181	341
Nilgiris	Ootacamund	15,063	31	4	159	428	69	36	347	380	727	22	...	73	218	54	21	219	174	393
	Coonoor	6,939	17	8	64	150	27	...	117	120	237	4	4	20	103	30	...	80	81	170
South Canara	Mangalore	40,822	7	...	324	668	172	45	598	627	1,225	1	...	255	512	109	52	454	525	1,049
Malabar	Tellicherry	27,191	...	7	33	416	115	...	454	450	904	...	4	28	950	255	...	284	312	576
	Calicut	65,078	6	20	141	1,201	1,216	...	1,391	1,393	2,784	5	26	108	879	913	1	917	945	1,862
	Palghat	23,481	1	...	19	1,169	269	...	870	852	1,722	...	2	30	1,040	170	...	613	589	1,202
	Goshin	17,610	1	45	215	340	124	...	368	281	594	...	18	267	330	108	...	248	235	483
	Cannanore	27,428	2	5	83	781	277	58	588	489	1,027	2	4	55	249	162	24	321	329	650
	Total ..	2,159,921	227	650	4,728	62,591	17,588	284	40,753	38,120	79,053	167	551	2,067	52,195	9,738	196	33,449	32,625	66,074

* 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 four years.

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

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-birth 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 1898. Births.	Deaths.
Ganjam	Chicacole	...	...	4	6	84	83	17	20	...	...	2	2	1	...	...	...	102	136	3	2	...	0·5	0·2	2·0	0·2	12·8	33·2	24·7	21·7	27·0
	Berhampur	...	...	...	...	73	62	34	35	...	2	3	2	...	...	...	...	186	190	16	...	...	5·3	2·7	0·3	14·6	38·5	22·9	21·3	28·2
	Parlakimedi	...	...	1	1	77	100	37	37	...	...	1	1	...	1	1	...	53	45	11	8	...	0·1	10·8	5·7	0·2	6·0	43·7	22·8	33·3	26·5
Vizagapatam	Vizagapatam	...	...	1	...	126	156	152	110	2	...	12	9	1	1	...	...	289	229	4	...	...	0·03	8·5	7·6	0·5	15·0	38·4	31·6	34·5	28·8
	Bimlipatam	...	...	...	...	20	25	24	23	1	...	1	...	...	...	...	...	61	71	2	3	...	...	4·7	4·3	0·2	13·4	31·1	25·1	39·4	29·5
	Vizianagram	...	...	7	10	143	150	126	103	...	...	1	1	...	...	...	...	177	202	1	1	...	0·6	9·7	8·4	0·1	12·2	34·3	31·0	30·6	27·6
	Anakapalle	...	...	2	...	61	64	44	34	1	...	4	2	1	...	...	...	96	97	16	10	...	0·1	7·3	4·6	0·5	11·4	41·2	25·9	32·7	23·0
Godávari	Cocanada	...	...	7	5	99	81	46	30	...	...	7	4	...	...	...	...	338	310	17	21	...	0·3	4·1	2·1	0·3	16·0	35·2	25·1	26·5	21·6
	Rajahmundry	3	5	2	8	118	135	42	40	...	...	4	6	1	...	...	...	263	195	7	11	0·3	0·5	3·9	2·9	0·4	15·0	30·8	28·1	33·8	32·5
	Ellore	...	...	...	...	111	111	58	21	...	2	5	3	2	...	...	...	208	207	8	7	...	...	7·6	7·0	0·4	18·9	41·9	28·9	26·5	22·9
Kistna	Masulipatam	...	...	4	4	164	149	20	25	...	1	4	3	...	...	...	...	336	306	56	31	...	0·2	8·1	1·2	0·2	18·5	33·2	26·2	30·3	25·9
	Guntur	...	...	1	3	30	44	60	39	...	3	16	14	...	...	...	...	321	318	24	15	...	0·2	3·2	3·3	1·4	27·8	47·3	35·9	40·6	34·2
	Bezwada ...	1	1	...	...	41	41	48	33	1	...	3	1	...	1	...	...	241	244	4	1	0·1	...	4·0	3·9	0·7	23·8	42·2	32·0	31·6	29·7
Nellore	Nellore ...	7	13	8	5	96	89	16	15	1	...	7	2	2	...	...	...	277	267	35	25	0·7	0·4	6·0	1·1	0·4	16·5	32·6	25·1	28·9	25·1
	Ongole ...	...	...	...	...	53	51	16	14	...	...	2	3	...	2	...	...	116	116	11	12	...	...	9·6	2·8	0·6	20·7	41·2	33·4	34·4	27·2
Madras	Madras	18	5	18	16	1,621	1,696	1,757	1,763	11	9	62	55	...	2	...	...	5,197	5,073	152	101	0·05	0·1	7·3	7·5	0·4	22·5	40·0	38·1	40·8	38·5
Chingleput	Conjeeveram	15	9	4	5	8	10	94	115	...	...	7	15	1	...	...	...	477	462	58	59	0·6	0·2	0·7	4·3	0·5	22·9	29·8	27·7	31·0	‡ ...
	Chingleput	1	2	...	...	9	5	34	30	...	...	...	5	...	...	...	...	87	105	13	13	0·3	...	1·4	7·5	1·1	19·7	33·7	30·0	‡ ...	‡ ...
South Arcot	Cuddalore	17	17	20	22	132	134	76	57	...	...	8	3	7	2	...	...	493	445	22	14	0·7	0·9	5·6	2·9	0·4	19·8	37·2	26·3	38·2	27·1
	Chidambaram	23	13	13	6	43	46	30	38	...	...	3	6	2	...	...	...	193	196	17	18	1·9	1·3	4·8	3·7	0·6	20·9	33·0	32·9	28·3	32·5
	Tiruvannamalai	6	5	...	...	35	53	33	34	...	...	3	4	2	...	...	...	134	85	6	2	0·8	...	5·0	5·3	0·7	16·7	47·3	28·5	‡ ...	‡ ...
Trichinopoly	Trichinopoly	130	177	7	7	76	65	107	108	1	2	10	10	...	3	1	...	845	703	24	10	4·0	0·2	1·6	2·1	0·3	18·0	34·0	26·5	29·7	26·4
	Srirangam	38	37	2	...	57	45	25	13	...	...	4	1	...	...	...	...	214	219	13	15	3·5	0·1	4·6	1·8	0·2	20·0	33·5	30·2	30·6	27·5
Tanjore	Tanjore	47	40	22	22	103	103	119	113	...	...	8	5	2	1	...	...	582	378	26	33	1·6	0·8	5·0	1·3	0·3	13·3	33·0	25·9	29·8	25·0
	Kumbakonam	127	131	...	...	152	158	98	85	...	1	11	7	1	1	...	...	590	634	84	65	4·8	...	5·4	3·4	0·4	12·4	33·3	30·4	31·8	31·6
	Mávavaram	58	60	9	4	47	58	73	73	2	...	3	4	1	...	...	...	236	240	26	21	5·0	0·5	4·4	6·1	0·5	16·8	36·5	35·3	39·8	30·3
	Negapatam	48	49	...	...	50	103	103	103	...	1	4	4	1	1	...	...	612	608	59	36	1·5	...	3·9	3·6	0·2	22·1	32·3	31·3	30·4	33·3
	Mannargudi	14	11	5	6	38	43	38	32	...	1	6	...	2	1	...	1	168	170	12	15	1·2	0·5	3·0	3·8	0·5	16·6	29·9	27·0	32·3	28·5
Madura	Madura	98	26	33	40	197	204	125	104	2	1	5	10	...	1	...	...	630	618	29	21	0·7	0·5	4·6	2·7	0·2	15·4	29·0	24·3	31·8	26·5
	Periyakulam	...	...	...	...	55	47	45	40	...	...	1	1	...	...	...	...	119	126	13	7	...	...	6·2	5·4	0·4	12·4	33·3	30·4	45·8	30·0
	Dindigul	...	...	21	20	48	36	21	20	...	...	3	7	...	...	...	...	102	101	...	...	...	2·0	4·2	2·2	0·5	10·0	40·1	18·9	37·3	21·0
	Palni	1	...	...	...	17	21	5	8	...	...	4	5	2	1	...	...	129	108	...	...	0·1	...	2·2	0·6	0·7	14·0	31·9	17·0	30·1	26·2
Tinnevelly	Tuticorin	75	63	4	2	34	21	10	25	7	1	...	...	...	...	...	...	316	266	2	2	5·6	0·2	2·2	1·4	0·3	24·8	37·6	34·3	34·6	28·4
	Palamcottah	28	8	6	3	21	33	26	19	...	...	3	2	...	...	...	...	134	124	1	3	1·9	0·5	2·9	2·1	0·2	19·8	29·1	24·7	30·9	27·0
	Tinnevelly	15	8	1	...	116	115	97	107	...	...	3	1	...	...	...	...	189	214	...	...	0·9	0·04	3·2	3·1	0·2	16·1	36·9	34·5	31·2	33·2
	Sawyerpuram	...	...	3	3	92	92	27	20	1	5	3	4	2	...	1	...	210	196	3	3	...	0·4	5·9	1·5	0·6	13·7	36·9	32·2	†29·8	†19·2
Kurnool	Kurnool	...	...	...	...	146	179	51	62	...	2	9	4	...	...	...	...	123	99	1	5	...	...	13·0	4·2	0·6	9·1	30·5	26·9	32·2	34·0
Cuddapah	Cuddapah	...	...	3	3	126	110	12	15	...	...	1	...	1	1	...	...	129	99	9	12	...	0·3	13·0	1·6	0·2	13·1	14·3	26·8	21·4	29·3
Bellary	Bellary	3	2	1	1	85	45	95	73	3	3	15	11	...	...	...	...	671	741	29	28	0·2	0·03	1·7	2·3	0·5	23·3	34·1	29·0	32·1	31·2
	Adoni	1	...	...	...	67	73	10	5	...	...	6	2	...	...	...	...	227	242	...	1	0·04	...	5·3	5·6	0·3	17·9	36·1	24·1	40·0	37·5
Anantapur	Anantapur	...	...	3	1	11	6	9	9	...	1	2	...	1	...	...	...	32	40	...	...	...	0·6	2·4	2·6	0·6	10·2	34·0	16·4	35·1	21·1
North Arcot	Vellore	140	140	3	6	15	7	84	54	...	1	5	10	...	...	...	...	428	410	6	3	0·2	0·2	0·3	0·3	0·4	18·5	27·9	29·4	31·9	24·9
	Gudiyattam	153	132	3	4	57	62	35	28	...	...	3	1	...	...	...	...	170	170	2	6	14·2	0·4	3·9	3·8	0·2	16·1	29·3	30·6	35·7	28·1
	Wallajanet	3	3	...	...	18	35	45	37	2	3	2	...	1	...	...	...	134	141	6	5	0·6	...	1·3	1·7	1·1	27·4	29·3	37·2	34·7	27·6
	Tirupati	59	52	...	...	65	67	21	17	...	...	3	1	...	...	...	...	105	111	8	12	2·0	...	6·5	2·2	0·5	18·2	27·8	21·3	29·4	30·4
Salem	Salem	322	288	...	...	100	142	51	40	1	1	...	2	...	1	...	...	552	493	18	25	0·5	...	4·3	1·3	0·1	15·6	36·3	30·5	33·6	31·1
	Vaniyambadi	139	158	2	3	87	89	41	50	...	...	1	...	1	...	...	...	184	165	10	10	1·8	0·3	1·1	5·0	0·3	22·0	35·0	35·4	35·6	30·8
	Tirupattur	103	77	...	...	85	88	17	18	1	1	3	...	...	...	...	...	203	184	8	8	1·1·2	...	10·5	2·1	0·3	23·5	35·2	47·6	43·8	39·3
Coimbatore	Coimbatore	...	...	1	...	157	101	85	70	...	3	4	1	1	1	...	...	449	395	4	5	...	0·02	7·0	3·2	0·2	19·2	42·2	28·9	39·3	32·0
	Erode	91	14	...	...	28	26	28	24	...	...	5	...	...	...	...	...	114	92	5	...	2·5	...	4·4	7·9	0·4	17·1	28·6	28·6	38·7	16·7
	Karur	20	33	1	3	38	26	4	12	1	...	1	2	...	...	...	...	96	95	10	6	4·9	0·4	5·9	1·5	0·3	17·7	40·3	31·7	38·4	32·4
Nilgiris	Ootacamund	...	...	1	...	52	28	22	19	...	...	3	3	...	...	...	...	158	26	...	...	0·1	4·0	2·0	0·4	18·7	41·0	20·1	35·0	33·6
	Coonoor	...	...	...	...	9	11	19	19	...	...	1	2	...	...	...	...	64	48	1	1	...	...	2·6	0·4	0·5	18·6	40·7	28·1	39·3	35·9
South Canara	Mangalore	...	...	...	...	175	222	40	50	2	...	4	1	1	1	...	...	283	242	28	28	...	...	0·7	2·8	0·2	12·1	39·9	24·9	30·9	26·2
Malabar	Tellicherry	...	...	...	...	74	67	29	24	...	...	2	3	...	...	...	...	188	195	37	21	...	...	5·2	1·6	0·2	13·2	33·2	21·3	31·3	28·6
	Calicut	...	...	...	...	258	262	140	140	2	1	3	...	...	...	...	...	511	529	76	42	...	...	7·1	4·3	0·1	16·5	39·1	25·2	35·0	31·6
	Palghat	...	...	...	...	117	114	63	79	...	...	5	5	1	1	...	...	427	390	...	...	...	...	5·3	3·6	0·3	20·6	43·6	30·4	39·3	34·8
	Goshin	...	...	...	...	39	55	32	42	1	...	4	...	...	1	...	...	165	155	15	18	...	...	8·5	5·0	0·3	17·0	35·7	27·4	35·5	35·2
	Cannanore	...	...	...	...	98	96	18	23	1	...	...	...	...	...	...	...	234	205	11	12	...	...	7·1	1·7	0·04	15·3	37·8	24·8	38·0	32·6
	Total ..	1,057	1,543	229	224	8,181	8,453	4,702	4,520	45	44	355	242	38	28	4	2	20,201	19,572	1,078	817	1·6	0·2	5·9	4·1	0·4	18·4	37·0	30·7	34·8	30·1

PART II.

SANITARY ENGINEERING.

SANITARY ENGINEERING DEPARTMENT.

A. A. G. MALET, A.M.I.C.E.,
Acting Sanitary Engineer to Government.

59

THE TENTH ANNUAL REPORT

OF THE

SANITARY ENGINEER TO THE GOVERNMENT OF MADRAS,

1899.

The Sanitary Engineer to Government was granted furlough for 15 months from 23rd October 1899, and on the 30th October 1899 the undersigned assumed charge of the office as Acting Sanitary Engineer to Government. Mr. Hormusji Nowroji, Assistant Sanitary Engineer to Government, availed himself of privilege leave for one month from 1st August 1899.

2. The programme for the year 1899 comprised the preparation of the following schemes :—

(1) Kumbakónam water-supply.	(3) Chidambaram water-supply.
(2) Periyakulam do.	(4) Calicut do.

It was subsequently modified by G.O., Mis. No. 743 M., dated 25th May 1899, and finally stood thus—

(1) Kumbakónam water-supply.	(3) Madura drainage.
(2) Periyakulam do.	

The reasons for the modification of the programme will be found stated against the towns concerned further on in the report.

The above programme is, however, no index of the work undertaken by this department. Every year a great amount of work extraneous to the programme devolves on this office as will be indicated presently.

3. The following schemes were prepared and submitted during the year :—

No.	Towns.	Water-supply or drainage.	Date of submission.	To whom sent.	Estimated cost.	Remarks.
1	Calicut*	Water-supply (Mananchera tank scheme).	2nd Feb. 1899 ...	Sanitary Board.	22, 1,00,000	For a part of Calicut only.
2	Kumbakónam ...	Drainage (Putnoolgar Block).	16th Feb. 1899.	Government ...	49,180	For a part of Kumbakónam only ; a revised scheme.
3	Guntúr	Water-supply ...	23rd Mar. 1899.	Sanitary Board.	5,13,460	
4	Ootacamund ...	Drainage (Bazaar section).	30th May 1899	Do.	1,50,000	For a part of Ootacamund only.
5	Periyakulam ...	Water-supply ...	2nd Aug. 1899.	Do.	1,43,736 1,08,320 93,620	The highest amount is for a complete scheme.
6	Dindigul	Do. (Extension).	7th Aug. 1899.	Do.	22,540	
7	Tuticorin	Water-supply ...	8th Sept. 1899.	Chief Engr., P.W.D.	1,15,600	A partial scheme.
8	Kumbakónam ...	Do. ...	16th Oct. 1899.	Sanitary Board.	3,65,000	
9	Bezwada	Do. ...	18th Oct. 1899.	Do.	3,16,100	A revised scheme.

* Preliminary report and estimate.

4. Of the above schemes, Nos. (5) and (8) were included in the programme for 1899, and the rest were extra works which had to be taken up under the orders of Government or for other special reasons. No. (1) was originally entered as one of the schemes in the programme for 1899. It was subsequently cancelled, but in the meantime a preliminary report with rough estimate of cost had been submitted;

No. (2) was due to the requisition of the Sanitary Board to substitute a sewage farm for the filter bed proposed; No. (3) was one of the schemes in the programme for 1897 and 1898, but owing to the extensive surveys and investigation required in connection with this scheme, it was not completed until the year under report; No. (4) was a revision of a scheme for the drainage of the Ootacamund Bazaar prepared by an Executive Engineer placed on special duty for this purpose in the Public Works Department. The criticisms of the Sanitary Commissioner and the Sanitary Engineer, to whom the scheme was referred, showed that it required extensive revision, and the Sanitary Engineer was instructed by Government to revise it; this practically necessitated the preparation of a completely new scheme. This work occupied the time of the office staff from the middle of January to 30th May 1899, and of course thus time was lost as regards the schemes included in the annual programme; No. (6) The yield from the existing gallery proving insufficient, a new source was investigated and estimates were prepared and submitted. No. (7) As funds for the complete scheme submitted in 1893 were not available, it was revised under the orders of Government and a partial scheme omitting some important works was submitted. No. (9) was a revised scheme called for by Government with reference to the remarks of the Sanitary Board on the scheme originally submitted by the Sanitary Engineer.

5. The following statement shows the surveys in regard to the water-supply of municipal towns and taluk boards undertaken during 1899 :—

No.	Towns.	For what purpose.	Completed or in progress.	Remarks.
	Municipal Towns.			
1	Berhampur	Water-supply	Completed.	
2	Chidambaram	Do.	Do.	
3	Negapatam	Do.	In progress.	
4	Periyakulam	Do.	Completed.	
5	Madura	Drainage	In progress.	
	Taluk Boards.			
6	Chatrapur	Water-supply	In progress.	
7	Saidapet	Do.	Do.	

6. The following schemes were sanctioned for execution during the year :—

No.	Towns.	Description of works.	Sanctioned estimate.	G.O. sanctioning the works.		Remarks.
				No.	Date.	
			Rs.			
1	Trichinopoly ...	Water-supply (Extension).	2,08,200	51 M. ...	11th Jan. 1899 ...	Improvement of source of supply and new pipe lines.
2	Kurnool ...	Do.	5,820	564 M., Mis.	27th April 1899 ...	Extension of pipe lines.
3	Tuticorin ...	Water-supply ...	1,60,000	905 M. ...	28th June 1899 ...	Is still under correspondence with the Chief Engineer, P.W.D.
4	Cuddapah ...	Extension of gallery at Bugga.	*2,090	1459 M., Mis.	6th Oct. 1899 ...	* Includes cost of establishment.
				1708 M., Mis.	18th Nov. 1899 ...	
5	Coonoor ...	Water-supply ...	99,200	1640 M. ...	6th Nov. 1899.	

Of these Nos. (1) and (4) were ordered to be executed by the Sanitary Engineer and Nos. (3) and (5) by the Public Works Department. The execution of No. 2 was not insisted upon owing to the straitened condition of the municipal finances.

7. The schemes for the extension of water-supply pipes in Conjeeveram and Tanjore were executed by this department in the year under report.

8. 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 1899 :—

	Water-supply.	Drainage.
Number of municipalities	60	60
Deduct—		
Towns not surveyed	22	35
	— 22	— 35
Towns surveyed up to 1898	37	...
Towns surveyed in 1899	1	...
	— 38	— 25
(Neglecting, for purposes of this statement, the towns of Berhampur and Chidambaram for which additional surveys have been found necessary.)		
Schemes abandoned or still in abeyance.	6	4
Schemes under consideration or revision.	6	1
Surveys made, but schemes not prepared.	12	16
	24	21
Balance—		
Schemes sanctioned, works for which have been completed	10	3
Schemes sanctioned, works for which are in progress	4	1
	14	4

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

Town.	District.	Population, 1891.
ADÓNI.	BELLARY.	26,243.

10. About July in the year under report the supply to the town became very limited, and, as everything foreshadowed a bad monsoon, the Council was advised to sink wells in the bed of the Nullacheruvu tank and to resort to pumping; but fortunately rain having fallen, the necessity for carrying out the above measures was obviated.

The works were inspected by the Sanitary Engineer in August 1899 and were found to be in a satisfactory condition. The filters worked throughout the year with satisfactory results.

Town.	District.	Population, 1891.
BELLARY.	BELLARY.	59,467.

11. The Sanitary Commissioner proposed to introduce a small instalment of Shone's pneumatic sewerage system with a view to deal primarily with the removal of night-soil and secondarily to receive the sewage of that portion of the town through which the discharge pipes passed.

After obtaining the views of the Sanitary Engineer on the proposal, the Sanitary Board arrived at the conclusion that Bellary is not a suitable place for the initiation of the Shone system, as the town has not yet obtained its water-supply and is not likely to do so for some years, and the Shone system requires a large supply of water for its efficient working; nor would it be expedient in the present financial state of the municipality to consider the water-supply scheme and the Shone system together. The Board regretted that it could not recommend to Government the proposals of the Sanitary Commissioner, but at the same time observed that it would like to see the Shone or some analogous system introduced as funds permit into the large towns of the Presidency.

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

12. Surveys and levels for the preparation of a water-supply scheme were completed during the year. The preparation of the scheme will be put in hand during 1900.

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

13. The scheme for the water-supply of this town, which was prepared by the Sanitary Engineer last year, was revised under instructions from the Sanitary Board. The scheme submitted was considered too expensive for a small town like Bezwada, and the revision was directed to the reduction of cost. The chief points of alteration were (1) the substitution of two twin wells in the place of three wells provided originally, (2) the removal of the site of the wells to a point nearer the engine-house and service reservoir thereby reducing the length of the pumping and hydraulic pressure main, and (3) the reduction of the capacity of the service reservoir from one day's supply to one-third of a day's supply.

The scheme as revised will cost Rs. 3,16,100 as against Rs. 3,75,400 for the original scheme. The following table shows what would be the cost of the scheme by omitting Buckinghampet and Wynchpet as compared with the whole scheme and their annual charges:—

Schemes.	Estimated initial cost.	Interest and sinking fund on half cost.	Staff at head works.	Fuel and oil, &c.	Repairs to machinery.	Out-door and workshop establishment.	Repairs to pipes and fountains.	Total annual charges.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Full scheme as estimated	3,16,100	9,120	2,400	3,600	1,000	2,400	1,170	19,990
Scheme omitting the distribution pipes for Buckinghampet	2,72,025	8,106	2,400	2,640	1,000	2,000	750	16,896
Scheme omitting distribution pipes for Buckinghampet and Wynchpet ...	2,60,963	7,777	2,400	2,540	1,000	2,000	610	16,327

The Sanitary Board also recommended that, before proceeding with the scheme, a twin well, each 12 feet inside diameter, should be sunk with the view of testing the quality and quantity of water, and the Sanitary Engineer was directed to undertake this work, which was estimated to cost Rs. 10,355 on funds being provided by the Municipal Council, but up to the end of the year the necessary funds were not provided.

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

14. With a view to prepare a water-supply scheme for the Moplah quarters of the town by means of a series of infiltration wells adjacent to the Mananchera tank, as recommended by the Sanitary Board, trial wells were sunk to test both the quantity and quality of water and the result showed that no adequate supply could be got from infiltration wells of which there is room only for two. Moreover, the water of the trial well contained an excess of mineral impurities and was found to be inferior generally to that of the tank. Therefore the Assistant Sanitary Engineer considered that, unless the Sanitary Board accorded its approval to taking the supply direct from the tank, the present scheme should be abandoned and the question of the water-supply of Calicut be deferred until the municipality is in a position to carry out the Poloor Hill Scheme, which is roughly estimated to cost 4 lakhs of rupees. The scheme for pumping water from the Mananchera tank was put forward purely as a temporary measure as the water of the tank was classed as 'usable' and was much superior to that at present used by the people who would be benefited by the scheme. The scheme was estimated to cost Rs. 1,00,000 and the population served was to be about 20,000 mostly Moplahs. It was also pointed out that much of the expenditure would not be lost as the pipes laid

would eventually form a portion of the larger scheme. The Sanitary Commissioner and the Sanitary Board, however, considered that this proposal was undesirable as both the sanitary survey and the chemical analysis proved that the water of the tank is not derived from a cleanly area and that for so important a town as Calicut exploration should be made for a purer source of water outside the town. Government, in G.O., Mis. No. 879 M., dated 22nd June 1899, accepting these views, requested the Sanitary Engineer to make further investigations in the direction indicated by the Sanitary Board and the Municipal Council was requested to provide the necessary funds.

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

15. The investigation of a water-supply scheme for this town was carried out during the year. The scheme is under preparation and will be submitted early in 1900.

Town.	District.	Population, 1891.
COCANADA.	GÓDÁVARI.	40,553.

16. The plans and estimates for the water-supply scheme of this town were revised in the Public Works Department. The revised estimate amounts to Rs. 4,19,950 as against the original estimate of Rs. 3,74,396. The excess is caused by the increased depths of foundations required for the filter beds and clear water reservoir, and the revision of rates and provision for compensation which in the original estimate were too low. The figures under contingencies, petty supervision and tools and plant were also correspondingly raised. The revised estimate was sanctioned in G.O., No. 3049 W., dated 21st November 1899, and the works are under construction by the Public Works Department.

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

17. Of the additional works sanctioned in connection with the water works of this town, the only work reported last year to be incomplete was the service reservoir, this was completed during the year, and the works, as completed, were handed over to the municipality towards the end of February 1899. Appendix table No. 2 gives the cost of the work done during the year.

Town.	District.	Population, 1891.
COONOOR.	THE NILGIRIS.	6,019.

18. During the year the Municipal Council of Coonoor submitted to Government its views with regard to the water-supply of the town, with special reference to the Wellington Valley Scheme which was prepared by the Sanitary Engineer and approved by Government (*vide* Sanitary Engineer's Annual Report for 1897). The Council considered the cost of the Wellington Valley Scheme prohibitive and requested permission to gradually improve the existing supplies. In these views the Council was fully supported by the Collector of the Nilgiris. The views of the Council and the Collector having been referred by Government to the Sanitary Board for its opinion, the latter assembled at Coonoor on the 16th August 1899 and, after inspecting the various sources of supply in company with the Collector, the Chairman of the Municipality, the Sanitary Commissioner and the Sanitary Engineer, unanimously arrived at the following conclusions:—

(1) The Board is in favour of the Wellington Valley Scheme as it is less liable to contamination than any other proposed supply.

(2) The Wellington Valley Scheme is estimated to cost Rs. 1,13,800 and the Board recommends its adoption in its entirety with the exception of that portion of the distributary piping (proposed to be omitted by the Sanitary Engineer) which is estimated to cost Rs. 14,600, thus reducing the estimate to Rs. 99,200 or say one lakh.

(3) The Board strongly recommends that, in view of the special circumstances of Coonoor, and of the fact that similar assistance had been given to Ootacamund, Government should grant a sum of Rs. 50,000 as a free gift to the town and authorise the Coonoor Municipality to raise a loan in the open market for the remaining Rs. 50,000 or lend it on the usual terms.

Government, in G.O., No. 1640 M., dated 6th November 1899, approved the Board's proposals and sanctioned the Wellington Valley Scheme, as modified by the Sanitary Board, to be executed by the Public Works Department as soon as possible. Government has promised a grant of the moiety of cost, viz., Rs. 50,000, and the Council was asked to raise the balance by a loan in the open market.

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

19. Proposals for extending the infiltration gallery at Bugga at an estimated cost of Rs. 1,600 made in 1897 were sanctioned in G.O., Mis. No. 1469 M., dated 6th October 1899, as an urgent measure to improve the water-supply of the town which had run very low during the year owing to the failure of the monsoon. The estimate was subsequently increased to Rs. 2,030, and sanctioned in G.O., Mis. No. 1708 M., dated 18th November 1899. Funds are expected soon and when allotted the work will be put in hand and completed before June 1900.

Town.	District.	Population, 1891.
CUDDALORE.	SOUTH ARCOT.	47,355.

20. Government, in G.O., Mis. No. 63 M., dated 12th January 1899, recorded a resolution of the Council stating that the water-supply scheme for this town must be deferred for the present owing to its inability to finance it.

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

21. The results of several trials and tests as to quality and quantity of water being favourable, the Oodukam valley has been selected as the source of supply for augmenting the water-supply of Dindigul, and plans and estimates for this proposal were prepared during the year and submitted to the Sanitary Board. The project briefly is to cut a trench 750 feet long with its bottom about 21 feet below ground level having a depth similar to that of the trial well, but in ground 6 feet lower. Its bottom breadth will be 3 feet and eventually the trench will be arched over and filled in above arch level if the supply is found to be ample. This trench will end in a sump and the engine house will be built over a sump at one side of the trench and the water will be carried through by means of a 5-inch pipe from the engine house to the present reservoir.

The abstract of the estimate is as follows:—

	Rs.
Trench complete with arch and filling over it (750 feet)	5,300
Engine and boiler-house	1,750
Removing and erecting engine	200
Land compensation, &c.	2,000
Supply and delivery of pumping main	9,140
Laying of pumping main	1,300
Tools and plant	492
Contingencies	984
Establishment	1,474
Total ...	22,640

That is the full cost of the scheme as shown on the plans, but the immediate requirements will be:—

	Rs.
An open trench without arch, &c., and built sump	3,400
Engine-house shed, temporary	500
Land compensation, &c.	2,000
Removal and re-erection of engine and boiler	200
Supply and delivery of pumping main	9,140
Laying and jointing do.	1,300
Carried over ...	16,540

	Rs.
Brought forward ...	16,540
Tools and plant	413
Contingencies	827
Establishment	1,220
	19,000

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

22. Before finally adopting the Ellore Canal as the source of water-supply to this town, Government, in G.O., Mis. No. 14 M., dated 3rd January 1899, requested the Sanitary Engineer to report on the possibility of successfully sinking an artesian well at the place. The East Coast Railway authorities have successfully put down several borings in the Gódávari District and the Honourable Mr. Spring, Consulting Engineer for Railways, advised Government to drive a 12-inch bore down to a depth of 100 yards at Ellore. Thereupon Government called for an estimate of the cost of sinking an artesian well at Ellore. Two estimates were submitted to the Sanitary Board on 6th July 1899, one costing Rs. 5,450 for an 8-inch boring with an available old apparatus, and the other amounting to Rs. 16,450 for obtaining and using a new 12-inch boring apparatus. In the meantime the Engineer-in-Chief, East Coast Railway, stated that materials for an 8-inch boring had been received, and that the railway had undertaken a boring at Ellore which it is proposed to carry down to a depth of 300 feet. The Sanitary Board decided to await results of the railway boring before taking any further action.

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

23. Plans and estimates for a water-supply scheme were prepared and submitted to the Sanitary Board on 23rd March 1899. The scheme is a gravitation one and the source of supply is the rainfall on a portion of the Kondavidu Hill range which lies about 6 miles to the west of the town. It is proposed to form an impounding reservoir on the Yengalayapolam stream from which the water will be conveyed by iron pipes to filter beds situated about two-thirds of a mile distant from the reservoir, and the filtered water will be carried through 4½ miles of iron piping to a service reservoir in the highest portion of the town and will be distributed through the town in the usual way. The scheme provides for a population of 30,000 people at 15 gallons per head. The cost is estimated at Rs. 5,13,400. On the assumption that Government makes a free grant of a moiety of the cost, the annual working charges, including interest and sinking fund on the other half, will be Rs. 17,700. This scheme was investigated and designed by Mr. Hormusji Nowroji, Assistant Sanitary Engineer to Government. A proposal to obtain an under-ground supply of water by infiltration works at the foot of the Kondavidu Hills was rejected as the conditions were too uncertain to warrant the expenditure involved. The Sanitary Board accepted the scheme described and recommended it to Government. The plans and estimates were forwarded in G.O., Mis. No. 1615 M., dated 31st October 1899, to the Municipal Council for remarks and report as to how it could finance the scheme.

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

24. *Water-supply.*—Plans and estimates for a water-supply scheme were prepared and submitted to the Sanitary Board on 16th October 1899.

It is proposed to draw the water from infiltration works on a fairly clean area lying between the rivers Cauvery and the Arisilar to the north-west of Kumbakónam. The infiltration works will consist of four lines of pipes, 12" diameter, laid to a length of 1,613 feet. It is expected that the inflow will not be less than 833 gallons per minute which is the maximum or double the average demand for the town at the rate of 10 gallons per head daily for 60,000 people. The lift at the pumping station will be about 55 feet. There is no high ground on which to place a service reservoir, and although it might in the end prove economical to construct a small raised reservoir, no provision for one has been made as it would add considerably

the estimate. The pumping will therefore be direct into the main. The distribution will be as usual.

The scheme is estimated to cost Rs. 3,65,000 and the annual working charges, including interest and sinking fund on the supposition that Government will make a free grant of half the capital cost and that the loan for the other half will be obtained from Government at 4½ per cent. repayable in 30 years, will amount to Rs. 24,827.

25. *Drainage.*—Plans and estimates for the drainage scheme of the Putnoolgar block of Kumbakónam were revised during the year in accordance with the recommendation of the Sanitary Board to substitute a sewage farm for filter bed; the effect of this alteration was to raise the estimate from Rs. 43,800 to Rs. 49,480. The scheme as revised was forwarded by Government in G.O., Mis. No. 288 M., dated 2nd March 1899, to the Municipal Council for remarks.

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

26. *Water-supply.*—In the year under report the water in the Vaigai ran low on two occasions, once in the middle of March and again on the 1st June, and consequently the town supply became scanty. On both occasions a reference to the Executive Engineer and a request to let down, Periyár water by opening the sand sluices of the Chittanai anicut resulted in a sufficient flow in the river bed. This arrangement, it was thought, would always ensure a full supply to the town, and the Chief Engineer for Irrigation was, therefore, requested to issue orders for carrying it out. The Chief Engineer for Irrigation was, however, unable to guarantee a supply from this source for several reasons, and suggested instead the construction of a storage reservoir which could be drawn on when the river supply ran short. The Acting Sanitary Engineer reported to Government that there were two ways of improving the supply (1) from sub-soil sources other than the existing infiltration gallery in the river bed and (2) by storage; and that if investigation showed the former to be feasible, it would be a very much cheaper method than the latter. The Council was accordingly directed to provide funds for the necessary investigation.

27. *Drainage.*—The question of a drainage scheme for the town being again pressed by the Council, Government was addressed through the Sanitary Board, and orders were obtained to include this scheme in the programme for 1900. As the preparation of the scheme entailed a very large amount of preliminary work, the Council was asked to allot Rs. 1,850 for the entertainment of a special surveyor and staff; the investigation was commenced on the 30th November 1899 and is in fair progress. It is doubtful whether the scheme can be worked up and completed in 1900.

Town.	District.	Population, 1891.
NEGAPATAM.	TANJORE.	59,221.

28. The Chief Engineer raised certain objections, both on engineering and financial grounds, to the scheme prepared by the Sanitary Engineer in 1897 and estimated to cost Rs. 3,89,680, and supported the Superintending Engineer, V Circle, in his contention that the supply should be obtained nearer to the town from the river Vettar at a point about 2½ to 3 miles above Nagore bridge. Preference was to be given to a sub-soil supply from the river bed and if this was proved insufficient the balance was to be obtained by storing the flood discharge of the Vettar. Funds were obtained during the year, the necessary surveys and levels taken, wells sunk near the proposed site and samples of water from them were analysed. These investigations showed that there were most serious objections to the proposed source of supply and that further investigations were essential. The funds already allotted being insufficient, Government was addressed to allot a further amount of Rs. 3,065, but no orders were obtained up to the end of the year.

In connection with this scheme the Chief Engineer proposed to try aeromotors instead of steam pumps, and this matter received the careful attention of this department. A great deal of information and statistics relating to wind velocities were collected; but no definite conclusion was arrived at.

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

29. *Water-supply.*—The improvement of the water-supply of Ootacamund engaged the attention of the Government, the Sanitary Board and the Sanitary advisers to Government. The proposals ultimately formulated for improving the quality of the water were (1) to filter the supply from Marlimund lake with sand filters aided by Anderson's revolving purifiers, and (2) to acquire and properly conserve the whole catchment area of the above lake, which comprised a large tea plantation with a dwelling house, tea factory and cooly lines. The Sanitary Engineer estimated the cost of works relating to the filtration of the supply at Rs. 68,307 and at Rs. 1,000 for annual working expenses.

After a careful consideration of the above proposals, Government arrived at the conclusion that the acquirement of the catchment area was a measure of greater utility than any arrangement for the filtration of water, and that the latter will not be needed except in the event of the deterioration of the supply. This, however, is not likely to happen as conservancy and control which will ensue from the acquisition of the catchment area will eliminate all the grosser sources of contamination to which the supply was exposed. A major portion of the catchment area of the Marlimund lake was acquired at a cost of Rs. 2,00,000. The existing supply has been proved insufficient on several occasions since 1895. So what is now required for Ootacamund is not so much improvement in the quality as in the quantity of the water. The Municipal Council has therefore been advised by Government to take into consideration the advisability (1) of acquiring all private land within the catchment areas of the Dodabetta reservoir and the proposed Tiger Hill reservoir, and (2) of constructing the latter reservoir as soon as funds are available.

30. *Drainage.*—A scheme for the drainage of the Bazaar section of the town of Ootacamund prepared by a specially deputed Executive Engineer, Public Works Department, was completely revised by the Sanitary Engineer under the orders of Government. The revised scheme was submitted to Government through the Sanitary Board on 30th May 1899. The scheme is estimated to cost Rs. 1,56,600 as detailed below:—

	Rs.
Main Bazaar drainage	1,00,561
Drainage above lake road	11,550
Sewage farm	19,335
Night-soil depot	2,752
Flushing arrangements for latrines	1,950
	1,36,148
Supervision	10,224
Tools and plant	3,404
Contingencies	6,824
Total ...	1,56,600

The Sanitary Board in its Proceedings No. 314-S., dated 17th June 1899, forwarded the scheme to Government by whom it was referred to the Municipal Council for remarks and for report as to how the Council proposed to finance it. The Municipal Council has raised objections to the scheme, but no final decision was arrived at.

Town.	District.	Population, 1891.
PERIYAKULAM.	MADURA.	16,363.

31. Plans and estimates for a water-supply scheme to this town were prepared and submitted to the Sanitary Board on 2nd August 1899. The source of supply is the Varahanadi channel and the point of offtake selected is some 3 miles above Periyakulam, the levels allow of a pressure of some 10 to 12 feet being obtained at the highest points in the town.

Three schemes were prepared: the first was a complete scheme consisting of a regulator dam at the point of offtake with an inlet chamber; 2,400 feet of 9" stoneware delivery pipes; filter beds (four compartments); service reservoir and main and branch pipes in the town, estimated to cost Rs. 1,43,720. The other two schemes were derived from the complete scheme by cutting out some of the component works. All the schemes provide for a supply of 10 gallons per head for a population of 18,000. Owing to the limited resources of this small town, the Sanitary Board recommended the second scheme for sanction at an estimated cost of Rs. 1,08,320.

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

32. A pipe extension scheme estimated to cost Rs. 27,000 was sanctioned in G.O., Mis. No. 1365 M., dated 2nd August 1898. Work was started during the year and an outlay of Rs. 25,153 was incurred as detailed in Appendix Table No. 3. At the request of the Council two additional estimates amounting to Rs. 1,450 and Rs. 3,209 were prepared by this department. The Council decided to carry out the former from savings on the sanctioned estimate, but no action was taken during the year.

Town.	District.	Population, 1891.
TIRUPATI.	NORTH ARCOT.	14,242.

33. The water-works for this town were completed during the year by the Public Works Department. The Sanitary Engineer inspected the works, as completed, with the Executive Engineer, North Arcot Division, in June 1899 and advised the Council to take over the works which have since been opened for public use.

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

34. Towards the end of the year the Municipal Council stated that it hoped to be able to finance the Samoodram valley scheme for the water-supply of the town and allotted necessary funds for its complete investigation which will be commenced early in 1900.

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

35. The yield from the Trichinopoly infiltration wells proving insufficient, an investigation of the matter was ordered by Government who, after obtaining reports from the Sanitary Engineer, the Superintending Engineer, VI Circle, and the Chief Engineer, decided that the construction of three additional infiltration wells proposed by the Sanitary Engineer and approved of by the Chief Engineer were absolutely necessary. An estimate of Rs. 2,08,200 for constructing these wells and for erecting a fourth engine and boiler and extending the water-supply to the hamlets of Woraiyur and Puttur and a part of the cantonment was accordingly sanctioned in G.O., No. 54 M., dated 11th January 1899.

The construction of the above works was delayed as funds were not immediately available, and in the meantime three alternative proposals were put forward for augmenting the supply from the river bed, viz.:—

(1) The construction of an open spring channel, 500 feet long, by the Municipal Council of Trichinopoly.

(2) The laying of one line of infiltration pipes, 500 feet long, in the bed of the Cauvery, by the Acting Chief Engineer (Colonel Smart, R.E.).

(3) The laying of two lines of pipes, each 350 feet long, in the bed of the Cauvery, by the Superintending Engineer, VI Circle.

These proposals, together with estimates and remarks thereon by the Sanitary Engineer, were considered by the Sanitary Board in its Proceedings No. 219-S., dated 4th April 1899, who recommended the second alternative proposal for sanction. Government in G.O., Mis. No. 623 M., dated 6th May 1899, approved the above recommendation, and requested the Sanitary Engineer to put the work in hand without delay. Complete arrangements were made for starting the work in the river bed as soon as the water level permitted, and tenders were received for erecting a fourth engine and boiler and for pipes for the Puttur and Worraiyur extension. These tenders could not be accepted as up to the end of the year the Municipal Council had not succeeded in negotiating the required loan.

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

36. The scheme for the water-supply of the town estimated to cost Rs. 3,18,710 was described in the annual report of 1893. The Municipal Council of Tuticorin considered this scheme too expensive and repeatedly urged Government to request the Sanitary Engineer to evolve a "cheap" scheme. The Sanitary Engineer reported that the scheme already prepared was the cheapest possible, and that any other scheme would prove more expensive in the long run. Subsequently the President, Sanitary Board, visited Tuticorin and endorsed the Sanitary Engineer's conclusion that no cheaper scheme was possible, but considered that, with an expenditure of about one lakh of rupees (which sum could be made available for the purpose), a substantial portion of the scheme already prepared could be carried out with much benefit to the town. The works recommended by the President, Sanitary Board, were finally estimated to cost Rs. 1,15,600.

It was pointed out that, by carrying out the above works, although the town distribution system will not be improved, the following benefits will accrue :—

(1) The town will get an uninterrupted supply of water even during the hottest part of the year. Under the existing conditions the tank is usually dry for four months, and the people are deprived of the supply when the need for it is greatest.

(2) A more ample supply will be available to the town than is the case under existing conditions.

(3) The supply delivered will be very much purer as the 4 miles of open delivery channel will be replaced by a closed masonry conduit.

The recommendations of the Sanitary Board to the above effect were approved by Government in G.O., No. 905 M., dated 28th June 1899, and the work was entrusted to the Public Works Department for execution.

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

37. The water-supply scheme for Vizianagram has been held in abeyance owing to the inability of the Council to undertake it without external aid. There seem to be no hopes of carrying out the scheme unless the Mahárajah of Vizianagram, when he comes of age, is willing to give such assistance as may be needed for financing it.

38. *Chatrapur Water-supply.*—Surveys and levels for a water-supply scheme were completed during the year.

39. *Saidapet Water-supply.*—At the request of the President, District Board, Chingleput, the Sanitary Engineer was ordered to investigate the question of water-supply to the town of Saidapet. The necessary funds having been provided a surveyor was appointed and the necessary levels and surveys have been taken, but the tests with regard to the quality and quantity of water at the source of supply selected were deferred until the ensuing hot weather.

The most promising source of supply is some 2 miles from Saidapet, but is much nearer to the Mount Cantonment, and a combined scheme for these two places has been suggested. As yet no reply has been received from the Cantonment authorities.

40. *Execution of Major Sanitary Works.*—On a reference by the Sanitary Engineer, Government in its Order No. 1012 M., dated 17th July 1899, issued certain instructions with reference to the execution of major sanitary works by the Public

Works Department and by the Sanitary Engineer. The chief object of these orders was to enable the Sanitary Engineer, who designed the works to express his opinion on proposed alterations during the execution of the works and to fix the extent of the Sanitary Engineer's control in connection with works under execution in the Public Works Department. Government also laid down the accounts procedure to be adopted by the Sanitary Engineer on works entrusted to him for execution.

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

—	Municipalities.	District Boards.	Taluk Boards.
I.—Minor drainage works	1	..	1
II.—Minor water-supply works	3	2	14
III.—Hospitals	2	2	12
IV.—Markets	3	..	6
V.—Slaughter-houses	1	1	2
VI.—Latrines	1	1	4
VII.—Burial-grounds	1	..	..

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

80. Quarters for Civil Hospital Assistants.
81. Permanent dispensary for minor towns and villages.
82. Sheep slaughter-house.
83. Dispensary (semi-permanent) for minor towns and villages together with key plan for dispensary and hospital wards, kitchen and latrine.
84. Open street drains.
85. Sheep slaughter-house (suitable for small unions).

PERSONAL PROCEEDINGS.

43. Table No. 1 of the appendix shows the towns visited during 1899. The Sanitary Engineer visited the following towns:—

(1) Adóni,
(2) Conjeeveram (twice),
(3) Coonoor (twice),
(4) Madura (twice),
(5) Negapatam,
(6) Ootacamund (twice),
(7) Tanjore,
(8) Tirupati,
(9) Trichinopoly (twice).

The Acting Sanitary Engineer visited the following towns in addition to the town of Saidapet:—

(1) Dindigul,
(2) Madura,
(3) Negapatam,
(4) Tanjore,
(5) Tiruvannámalai,
(6) Trichinopoly.

And the Assistant Sanitary Engineer to Government visited the following towns in addition to the towns of Chatrapur and Saidapet (seven times):—

(1) Berhampur,
(2) Chidambaram (twice),
(3) Conjeeveram (twice),
(4) Kurnool,
(5) Negapatam,
(6) Periyakulam,
(7) Trichinopoly (twice).

44. 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	14	8	18
Number of miles by rail	4,738	1,123	4,734
Do. by road	136	51	275
Total miles ..	4,874	1,174	5,009
Number of days on tour ..	42	15	56

MAINTENANCE OF WATER WORKS.

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

46. The Assistant Sanitary Engineer held a special enquiry with reference to the increase in the maintenance charges and the abnormal consumption of water at Kurnool. The Sanitary Engineer submitted a report stating the points that required rectification and the steps that should be taken to remedy them. Government passed orders in G.O., Mis. No. 1466 M., dated 6th October 1899.

47. The Inspector of Steam-boilers and Prime-movers visited the undermentioned pumping stations during the year under report, and examined and submitted reports on the engines, boilers and pumps:—

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

48. Indicator diagrams were taken from all engines equipped with the necessary fittings and under ordinary working conditions. Fuel trials were conducted with each engine and boiler for an ordinary day's work. The quantity consumed per pump horse-power compares favourably with the results of previous inspections. The price of coal is at its normal rate, and its use has been adopted by two out of the six wood-burning stations. Kurnool has made a material saving by using coal instead of wood, and Conjeeveram has benefited generally by its use.

49. The condition of the pumping plants has much improved since their examination by the Inspector of Steam-boilers and Prime-movers commenced in 1897. The larger installations are in fair order, but some of the smaller ones are not in a satisfactory condition. When affairs are not satisfactory, it is partly due to the Council concerned not taking prompt action on recommendations made by the Inspecting officers, in not supplying sufficient and suitable tools and in not sufficiently supporting the head driver as regards the discipline and control of the subordinate staff, and partly because a driver capable of recognising and locating defects and carrying out the necessary repairs cannot be obtained for the salary offered. There is a considerable want of uniformity in the details of the staff employed at the different stations, and a general revision of the numbers and pay of the staff employed at each station seems to be desirable. A better class of men could be obtained and better work and results ensured if the drivers and assistant drivers at all stations were placed directly under the Sanitary Engineer as a temporary department for purposes of transfer and promotion.

Generally, the standard of efficiency at which the various works are maintained is not as high as it should be, and in some cases the condition of both the pumping machinery and the town distribution works is distinctly inferior.

CONCLUDING REMARKS.

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

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

52. The staff worked satisfactorily throughout the year.

A. A. G. MALET, A.M.I.C.E.,
Acting Sanitary Engineer to Government.

OFFICE OF SANITARY ENGINEER TO GOVERNMENT,
POONAMALLEE ROAD, (PARK TOWN),
Madras, 2nd April 1900.

APPENDIX

TABLES Nos. 1 TO 3.

TABLE No. 1.

Statement showing progress made in respect of Water-supply and Drainage of District Municipalities during 1899.

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.		Drainage.				Remarks.
						Under survey or not.	Estimate under preparation or not.	Under survey or not.	Estimate under preparation or not.	Date on which scheme was forwarded.	Amount of estimate sent in or anticipated cost.	
											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. 3108 M., Mis., dated 22nd December 1892.
2. Bellary ...	2	Adóni	S.E.—8/9-8-99	.....	...		Water works 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) 15-12-90 ...	Yes ...	Completed	Prepared.	...	...	29-7-96	8,00,000	The scheme for supplying the town with water from the river Hagri has been abandoned on financial grounds (G.O., No. 1463 M., dated 21st June 1897). The Sanitary Commissioner's proposal to introduce into the town a small instalment of the Shone's pneumatic sewerage system was not recommended to Government by the Sanitary Board on financial grounds.
3. Chingleput ...	4	Chingleput ...	.....	.....	... ...	...	...	...	...	...	...	Constituted into a municipality in October 1896.
	5	Conjeeveram ...	S.E.—4-2-99; 18-2-99. A.S.E.—17-1-99; 10-2-99.	(1) 19-12-90 ...	Yes ...		Water-works completed in 1897.	...	...	...	...	Extension of the water-works completed in February 1899.
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	The scheme has been allowed to lie over pending revision of the District Municipalities Act 4 of 1884. Though the Act has been revised and it provides for extended powers of taxation no steps have been taken to push the scheme forward.
	7	Erode	A.S.E.—16 to 19-12-91.	.....	Yes ...	...	...	Completed.	...	...	...	Scheme either for water-supply or for drainage not yet drawn up.
	8	Karúr	A.S.E.—11 to 13-6-93 ...	.....	Yes ...	...	...	Completed.	Prepared ...	23-11-93	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-works completed in 1893.	Completed.	Prepared ...	31-5-97	5,40,000	A scheme for drainage has been submitted and is under consideration by Government. Arrangements are being made to execute the project of extending the infiltration gallery at Booga estimated to cost Rs. 2,020, which was sanctioned in G.Os., Nos. 1429 M., Mis., and 1708 M., Mis., dated 6th October and 18th November 1899, respectively.
6. Ganjám ...	10	Berhampur ...	A.S.E.—18 to 21-11-93.	(1) & (2) 20-2-91...	Yes ...	Completed	...	...	...	...	...	Surveys and levels for a water-supply have been taken and a scheme will be presented in 1900.
	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	4,19,930	The estimate has been revised in the Public Works Department and sanctioned in G.O., No. 3039 W., dated 21st November 1899, and the works are under execution by that department.
	14	Ellore	A.S.E.—27/28-6-92 ...	(1) & (2) 7-2-91...	Yes ...	...	...	Completed.	...	15-2-97	(1) 1,70,000 (2) 1,28,000	Approximate estimates for water-supply. Before finally adopting the canal as a source of supply it has been decided to enquire into the possibility of success of an artisian well (G.O., No. 14 M., Mis., dated 3rd January 1899).
	15	Rajahmundry ...	A.S.E.—26/27-7-94 ...	(1) 9-2-91 ...	Yes ...	Completed	...	...	...	...	...	Preparation of a water-supply scheme has been delayed, owing to the proposed change of pumping station site which involves further investigation and survey.
	16	Bezwada	Ag. S.E.—23-3-98 ... A.S.E.—20/21-3-98.	.....	Yes ...	Completed	Prepared.	...	...	18-10-99	3,16,100	The estimate had been revised, but the Council resolved to shelve the project owing to its inability to provide the necessary funds.
8. Kistna ...	17	Guntúr	Ag. S.E.—16 to 21-2-98. A.S.E.—16 to 25-2-98; 22 to 24-3-98; 16/22-5-98; and 8/13-8-98.	(1) & (2) 15-2-91...	Yes ...	Completed by Local Fund Engineer.	Prepared.	Completed by Local Fund Engineer.	...	23-3-99	5,13,400	Water-supply scheme referred to the Council for financing (G.O., No. 1615 M., Mis., dated 31st October 1899). Surveys and levels have been taken for a 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	A.S.E.—8/12-9-99 ...	(1) 10-4-91 ...	...		Water works completed in 1897.	...	...	...	...	An estimate amounting to Rs. 5,820 for the extension of the water works has been approved, but its execution deferred on financial grounds (G.O., No. 564 M., Mis., dated 27th April 1899).
	20	Nandyal	.....	.....	...	...	...	...	...	...	...	Constituted into a municipality in October 1899.

TABLE

Statement showing progress made in respect of Water-supply

No. 1—*continued.*

and Drainage of District Municipalities during 1899—continued.

District.	Serial number of Municipality.	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.		Drainage.				Remarks.
						Under survey or not.	Estimate under preparation or not.	Under survey or not.	Estimate under preparation or not.	Date on which scheme was forwarded.	Amount of estimate sent in or anticipated cost.	
											Rs.	
	21	Dindigul	Ag. S.E.—6-12-99 ...	(1) 15-9-90 ...	...		Water works completed in 1896.	...	...	...	...	Proposals for an extension of infiltration gallery for augmenting the water-supply are under consideration of the Sanitary Board.
	22	Kodaikanal ...	.....	.....	...	...	...	...	...	...	...	Constituted into a municipality in October 1899.
10. Madura ...	23	Madura	S.E.—10-5-99; 25 to 28-9-99. Ag. S.E.—5-12-99; 11/13-12-99.	(1) 8-4-90 ...	...		Water works completed in 1894.	In progress.	...	...	...	A drainage scheme is under preparation. Proposals for augmenting the water-supply during summer will be investigated in 1900.
	24	Palni	S.E.—23/24-10-91 ...	(1) & (2) 27-10-91.	Yes ...	Completed	...	...	...	...	...	Schemes for water-supply and drainage not yet drawn up.
	25	Periyakulam ...	A.S.E.—12 to 14-4-99 ...	.....	Yes ...	Completed	Prepared.					
	26	Calicut	A.S.E.—17 to 21-10-98.	(1) & (2) 12-10-96.	Yes ...	Completed	...	Completed.	...	2-8-99	(a) 1,43,720 (b) 1,08,320 (c) 92,920	The Sanitary Board recommended to Government the adoption of scheme B estimated to cost Rs. 1,08,320.
	27	Cannanore	S.E.—26 to 28-7-91 ...	(1) & (2) 30-7-91...	...	...	...	...	...	2-2-99	1,00,000	Preliminary report on Manamchera tank water-supply scheme was submitted. Investigation as to the possibility of obtaining a supply from wells, artesian or otherwise, will be undertaken in 1900.
	28	Cochin	S.E.—6 to 14-9-95 ...	(1) & (2) 3-9-91.	...	...	Prepared.	...	...	...	...	Council has not taken any steps to improve its water-supply, which is urgently needed principally in the Moplah quarters.
11. Malabar ...								...	...	...	...	Deep well-boring has been abandoned. Other schemes proposed are, owing to their cost, impracticable and the question of water-supply is therefore postponed for the present (G.O., No. 69 M., Mis., dated 11th January 1899).
	29	Palghat	S.E.—18/19-9-97 ...	(1) & (2) 6-8-91 ...	Yes ...	...	...	Completed.	...	...	...	Drainage scheme not yet drawn up.
	30	Tellicherry ...	S.E.—29 to 31-7-91 ...	.....	...	...	...	...	...	...	...	Works of water-supply or drainage not urgent in this town.
12. Nellore ...	31	Nellore	A.S.E.—21 to 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. Though the Act has been revised, Council has not taken any steps to improve either of the schemes.
	32	Ongole	S.E.—17 to 20-3-91 ...	(1) 7-4-91 ...	...	Completed	Prepared.	...	...	22-4-99	(1) 1,20,000 (2) 49,780	The new Act recently passed may allow of one of the schemes already prepared being carried out.
	33	Conjeeveram	S.E.—15 & 16-8-99; 29/30-9-99.	.....	Yes ...	Completed	Prepared.	Drainage works completed in 1893.		13-3-99	99,200	Water-supply scheme has been sanctioned to be executed by the Public Works Department (G.O., No. 1040 M., dated 6th November 1899).
13. Nilgiris ...	34	Ootacamund ...	S.E.—28-2-99 to 7-3-99; 17 to 19-8-99.	(1) 3-9-90 ...	...	Completed	...	...	Prepared ...	30-5-99	1,56,000	Kandal drainage completed. A scheme for the drainage of the Bazaar sections prepared by the Sanitary Engineer and recommended by the Sanitary Board is before Government. Proposals for filtering the Maxlimaud Reservoir was given up, and the Council was advised to construct the proposed Tiger Hill Reservoir, with a view to improve the quantity of the water-supply (G.O., No. 1459 M., Mis., dated 3rd October 1899).
	35	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.	...	...	4-12-95	51,500	Water-supply scheme has been deferred owing to the Council not being able to finance it without aid from Government (G.O., No. 1772 M., Mis., dated 13th August 1897).
	36	Tirupati	S.E.—19/20-6-99 ...	(2) 1-7-90 ...	Yes ...	Completed	Prepared.	Completed.	Prepared ...	7-9-91	26,000	Water-works completed by the Public Works Department. Drainage scheme sanctioned but execution deferred.
14. North Arcot ...	37	Vellore	A.S.E.—6 to 8-12-95 ...	(1) & (2) 12-5-90.	Yes ...	Completed	Prepared.	Completed.	...	9-12-91	3,13,000	Water-supply scheme abandoned as being too costly. Drainage works executed piece-meal were ordered to be stopped (G.O., No. 1302 M., Mis., dated 5th August 1896).
	38	Wáljapet	.....	.....	...	...	...	...	...	...	...	No major scheme proposed.
	39	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.
15. Salem	40	Tiruppattúr ...	A.S.E.—20 to 22-7-93.	(1) & (2) 26-12-91.	Yes ...	...	...	Completed.	...	...	...	Scheme for drainage not yet drawn up.
	41	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.
	42	Chidambaram ...	A.S.E.—5 to 11-4-99; 15 to 20-5-99.	.....	Yes ...	Completed	...	...	...	...	...	Water-supply scheme is under preparation.
16. South Arcot ...	43	Cuddalore	A.S.E.—6 to 8-12-94, and 21 to 25-12-94.	(1) & (2) 17-11-91.	Yes ...	Completed	Prepared.	Completed.	...	6-1-95	3,71,200	Water-supply scheme must lie over, as the Council is not able to finance the scheme (G.O., No. 68 M., Mis., dated 12th January 1899).

TABLE No. 1—*concluded.*

Statement showing progress made in respect of Water-supply and Drainage of District Municipalities during 1899—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.		Drainage.				Remarks.
						Under survey or not.	Estimate under preparation or not.	Under survey or not.	Estimate under preparation or not.	Date on which scheme was forwarded.	Amount of estimate sent in or anticipated cost.	
											Rs.	
16. South Arcot—*cont.*	44	Tiruvannámalai ...	Ag. S.E.—15/16-12-99.	.....	...	...	...	...	...	...	...	A water-supply scheme will be investigated and presented in 1900.
17. South Canara ...	45	Mangalore ...	S.E.—20 to 28-5-97 ...	(1) & (2) 9-10-96 ...	Yes ...	Completed.	...	Completed.	...	...	...	Surveys and levels have been taken for water-supply and drainage schemes.
18. Tanjore ...	46	Kumbakónam ...	S.E.—19 to 21-6-98 ... A.S.E.—10 to 12-3-98.	.....	Yes ...	Completed.	Prepared.	Prepared ...	16-12-95 16-2-99	6,250 49,480		A water-supply scheme has been prepared and submitted to the Sanitary Board. Surface drainage scheme completed. Public Works Department was asked to execute the sewage works of Soliappa Mudali Street costing Rs. 6,250, when funds are available (G.O., No. 1253, M. Mis., dated 12th July 1898). Revised plans and estimates for the drainage of Putnoolgar block of Kumbakónam approved by the Sanitary Board have been forwarded to the Council for remarks (G.O., No. 288 M., Mis., dated 2nd March 1899).
	47	Mannárgudi ...	.....	.....	...	...	...	...	...	...	...	No major scheme proposed in regard to these towns.
	48	Máyavaram ...	.....	.....	...	...	...	...	...	...	...	
	49	Negapatam ...	S.E.—14 and 15-6-99 ... Ag. S.E.—9/10-12-99. A.S.E.—6 to 9-6-99.	(2) 16-12-99 ...	Yes ...	Completed.	Prepared.	Completed.	Prepared ...	11-2-97	(1)9,89,680 (2) 7,22,720	A new scheme for water-supply based on the suggestions made by the Chief Engineer, Public Works Department, is under investigation. Drainage scheme held in abeyance pending the preparation of a water-supply scheme.
	50	Tanjore	S.E.—11-5-99 ... Ag. S.E.—8-12-99.	(1) 2-6-90 ...	Yes ...	Water-works completed in 1895.		Completed.	Prepared ...	18-4-97	33,440	Extension of water works completed in July 1899. A scheme of drainage for the Tanjore Fort has been sanctioned for execution by the Public Works Department when the Council allots funds for the purpose (G.O., No. 2176 M., dated 16th December 1898).
19. Tinnevelly ...	51	Palamcottah ...	A.S.E.—27 to 29-1-96 ...	(1) 23-11-91 ...	Yes ...	Completed.	...	...	...	...	...	Surveys and levels for a joint water-supply scheme with the Municipality and the District Board of Tinnevelly have been completed.
	52	Srivilliputtúr ..	.....	.....	...	...	...	...	...	...	...	Constituted into a municipality in October 1894.
	53	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.
	54	Tuticorin	S.E.—8 to 12-8-92 ...	(1) 30-11-91 ...	Yes ...	Completed.	Prepared.	...	...	8-8-99	1,15,600	Public Works Department was asked to execute the work. Detailed plans and estimates were prepared and sent to Public Works Department (G.O., No. 906, M., dated 28th June 1899).
20. Trichinopoly ...	55	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).
	56	Trichinopoly ...	S.E.—8/9-5-93; 21-8-99. Ag. S.E.—7-12-99 A.S.E.—9 to 12-1-88; 14/15-2-98.	(1) 21-4-90 ...	...	Water-works completed in 1896.		...	...	...	...	A scheme for extending the head works and pipes to Woriyur and Puttur, estimated to cost Rs. 2,08,200, has been sanctioned in G.O., No. 54 M., dated 11th January 1899, and all arrangements have been made to commence the work in 1900.
	57	Anakápalle ...	.....	.....	...	...	...	...	...	...	...	No major scheme proposed in regard to these towns.
	58	Bimlipatam ...	.....	.....	...	...	...	...	...	...	...	
21. Vizagapatam ...	59	Vizagapatam ...	Ag. S.E.—14/17-3-98 ...	(1) & (2) 31-1-91.	Yes ...	Completed.	Prepared.	...	...	23-7-96	4,21,000	Water-works are under construction by the Public Works Department.
	60	Vizianagram ...	Ag. S.E.—18/19-3-98 ... A.S.E.—17/19-3-95.	.....	Yes ...	Completed.	Prepared.	...	...	30-3-98	2,82,000	Water-works must be postponed until the Maharajah comes of age to give the necessary aid for financing the scheme (G.O., No. 1052 M., Mis., dated 10th November 1899).

TABLE No. 2.

CONJEEVERAM WATER WORKS, INCLUDING EXTENSION.

Statement of work done during the year 1899.

1	2	3		4		5		6		7
No.	Main head.	Work done previously.		Work done during 1899.		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	13,588	
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.	100	3,765	...	...	...	...	100	3,765	
8	Engines, pumps and boilers	99·12	22,404	·88	187	...	...	100	22,405	
9	Supply and delivery of pipes, &c.	98·4	1,27,159	1·6	2,232	...	...	100	1,28,960	
10	Laying and jointing pipes, &c.	96·3	26,868	3·7	1,604	...	...	100	27,060	
11	Service reservoir ...	82·4	17,360	17·6	3,751	...	...	100	21,300	
12	Tools and plant ...	100	400	...	...	...	...	100	813	
13	Establishment and office contingencies ...	97·2	* 7,781	2·8	† 243	...	...	100	8,827	
	Total ...	97·1	2,42,057	2·9	7,417	...	...	100	2,57,000	

* This includes Rs. 3,674 met from Provincial Revenues on account of pay, &c., of the Supervisor in charge of the works.

† This includes Rs. 203 met from Provincial Revenues on account of pay, &c., of the Supervisor in charge of the works.

	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 1899.	...
	Total value of work done up to 31st December 1899 (as per table above columns 3 and 4 'work done').	2,57,374
(a)	Grand total	2,57,374
(b)	Total estimated cost	2,57,000
	‡ Percentage of work done (inclusive of materials at site, viz., items 1, 2, 3 and 4)	100 per cent.

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

TABLE No. 3.

TANJORE WATER WORKS EXTENSION.

Statement of work done during the year 1899.

1	2	3		4		5		6
No.	Main head.	Work done during 1899.		Work to be done.		Total estimated cost.		Remarks.
		Percentage.	Value.	Percentage.	Value.	Percentage.	Value.	
			Rs.		Rs.		Rs.	
1	Supply and delivery of pipes, &c.	100	20,533	...	...	100	20,534	
2	Laying and jointing pipes, &c. ...	100	3,817	...	...	100	5,213	
3	Contingencies, tools and plant, &c.	100	803	...	...	100	1,253	
	Total ...	100	25,153	...	...	100	27,000	

	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 1899.	...
	The value of work done up to 31st December 1899 (as per table above column 3 'work done').	25,153
(a)	Grand total	25,153
(b)	Total estimated cost	27,000
	* Percentage of work done (inclusive of materials at site, viz., items 1, 2, 3 and 4) ...	100 per cent.

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

No. 1201 L., 12TH JULY 1900.

71

GOVERNMENT OF MADRAS.

LOCAL AND MUNICIPAL DEPARTMENT.

READ—the following papers :—

Proceedings of the Sanitary Board, dated 8th June 1900, No. 265-S.

Read—the following papers :—

Report of the Sanitary Engineer to the Government of Madras for the year 1899.

Report of the Sanitary Commissioner for Madras for the year 1899.

Report of the Sanitary Board for the year 1899.

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

2. 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 28th May 1900.

(True Extract.)

(Signed) R. PARSONS,
Secretary.

To the Secretary to Government, Local and
Municipal department, with 3 enclosures and
8 spare copies of the annual report of the Sanitary Board.

From Lieutenant-Colonel W. G. KING, C.I.E., M.B., C.M., D.P.H., I.M.S., Sanitary Commissioner for Madras, to the Secretary to Government, Local and Municipal Department, dated Madras, 12th June 1900, No. 893-S.

In G.O., No. 1409 L., dated 15th July 1899, paragraph 1, Government stated that the delay that occurred in the submission of my annual report for 1898, "should have been explained". As it was not until the 23rd of May this year that I was in a position to forward my report, it is necessary for me to explain that in my opinion it is not possible to secure that this report should be despatched from my office

on the 15th May. The Government Orders noted in the margin will show my predecessors protested (with reason) against the 1st of June being made the latest possible date for submission. The information, statistical and otherwise, from which this report is compiled is secured from a large number of local authorities. It has hitherto been impossible to make certain that the whole of the information shall be at my disposal by a certain date, as the conception of punctuality varies considerably amongst those expected to supply it. Moreover, errors of omission and commission in the returns sent me are frequent, so that references have to be made from time to time as they become evident. For example, certain important statistical data did not reach me until the 30th of May, or fifteen days after the report was due with Government. I am aware that it is necessary Government should be supplied with this report as early as possible, so as to meet the requirements of the Government of India, and it is therefore my duty to do my best to forward it within the time demanded. I have no wish to trouble Government with the consideration as to the necessity for alteration of the date of submission, as it seems to me, within certain limits, it is impossible to fix the date with exactitude. I can only say that knowing Government's wishes in this matter, I have done my best to observe them, and trust therefore that the non-submission of my report on the required date will not be regarded by it as a failure on my part to fulfil my duty.

G.O., No. 1956, Public, dated 19th August 1885.
G.O., Mis. No. 2281, dated 26th September 1885.

ORDER—No. 1201 L., dated 12th July 1900.

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 for the year 1899 and a separate report concerning the work done by the Board itself during the same period. The delay of one month in the submission of these reports, which were due in the Government office on the 15th May last, was due to the late receipt in the Board's office of the report of the Sanitary Commissioner. Every endeavour should be made to submit the report punctually in future, as desired by the Government of India in its resolution communicated with G.O., No. 599 L., dated 28th March 1898.

GENERAL SANITATION.

2. *Rainfall.*—The total average rainfall of the Presidency was 35·70 inches against 51·32 in the previous year and an average of 45·72 for the ten years ending with 1896. The average quantity of rain registered during the south-west monsoon was 13·15 inches or 7·62 inches less than the ten years' average, the decrease which occurred in all the districts, except Bellary, being considerable in Madura, Tanjore, Cuddapah, Kistna, North Arcot, Kurnool, and Gódávari, where the difference was over 35 per cent. The rainfall during the north-east monsoon was also much below the average, being 9·79 inches against 15·17, the deficiency being most marked in Gódávari, Kistna, the Nilgiris, South Canara, Salem, Kurnool, Bellary and Anantapur, where the quantity registered was less than half the usual fall.

3. *Prices of Food-grains.*—The following statement shows the prices of the principal food-grains, as compared with those of the previous two years and with the average for the ten years ending with 1896 :—

	Number of seers for the rupee.			Average for the ten years ending with 1896.
	1899.	1898.	1897.	
Rice	12·8	10·1	9·9	12·8
Ragi	22·4	17·3	17·2	24·9
Cholam	22·5	16·1	14·5	23·6

Notwithstanding the scanty rainfall, there was a large decrease in the prices of all the principal food-grains, which is reported to have occurred chiefly during the earlier months of the year, when owing to the punctual setting in of the south-west monsoon and the consequent influx on the market of the north-east monsoon crops of the previous year, the merchants who had stored large quantities of grain during 1898 against the anticipated rise of prices were obliged to bring out their stocks. When, however, towards the close of the year, the north-east monsoon showed indubitable signs of failure and large purchases began to be made by other Presidencies in which famine was prevailing, there was a gradual rise in the prices. Thus, although on the average the chief dry grains, namely ragi and cholam, were cheaper as compared with the total average of the two previous years, yet during the last three months of 1899 their prices were 19·1 and 30·4 per cent., respectively, above it.

4. *Vital Statistics.**—The system of birth and death registration continued to be the same as in the preceding years. With a view, however, to the improvement of registration in rural areas, an Act entitled the "Madras Registration of Births and Deaths Act" was passed during the year. Under this law, it is not intended to bring at once the whole of the rural tracts within its scope, but only such portions as may from time to time be selected by Government. The population for which returns of births and deaths were received was 33,565,859 or 277,737 more than in 1898. The increase which occurred in Ganjám, Madura and Vizagapatam should have been explained.

5. *Births.*—The number of births registered during the year rose from 911,742 or 27·4 per mille of the census population to 1,048,335 or 31·3 per mille, the rates for urban and rural areas being 35·7 and 30·9 against 33·0 and 26·9, respectively, in the previous year. The increase in the total number of births is attributed partly to better attention paid to registration and partly to the natural tendency to an increase of birth-rate among the population inhabiting the districts which had suffered from famine during the preceding three years. The highest birth-rate was recorded in the Kistna district (40·5 per mille), the rate being ·1 per mille higher than even the results obtained in Madras. The rate in twelve other districts was also fair, being above 30 per mille. In Ganjám and Malabar, where the results recorded in the previous year were very low, there was a satisfactory improvement, the rates having risen from 22·9 to 31·7 per mille in the case of the former and from 18·6 to 26·0 per mille in that of the latter. The lowest rate was recorded in Madura, where there was a slight retrogression as compared with the previous year, the proportion having been 22·3 per mille against 22·7 in that year. The Government, however, trusts that the steps which from the Collector's letter No. 84, dated 6th October 1899 (recorded in G.O., No. 2136 L., dated 24th October 1899) appear to have been taken to effect an improvement in this direction will be productive of good results in the current year. Among municipalities Vániyambádi returned the highest birth-rate (55·4), as in the preceding five years. The rate was more than 40 per mille in Adóni, Coimbatore, Parlákimedi, Ellore, Bezwada, Guntúr, Dindigul, Periyakulam, Palghat, Ongole, Ootacamund, Tiruppattúr, Tiruvannámalai and Anakapalle. In 36 towns it was between 40 and 30 and in six others between 30 and 20, while in Cuddapah it was only 14·3 per mille against 17·6 in 1898 and 27·1 in 1897, and indicates gross neglect on the part of the Municipal Council to its duties in this matter. The compulsory provisions of the Madras District Municipalities Act in regard to the registration of births and deaths were worked in 45 out of the 60 municipalities in the Presidency. There is apparently no reason why they were not enforced in the case of the remaining municipal towns, in some of which the birth-rates were very low and testify to defective registration. The Government trusts that greater energy will in future be displayed by Municipal Councils in compelling obedience to the provisions of the law in this respect.

6. *Deaths.*—The number of deaths per mille of the population during the year under review as compared with the figures for the previous five years are shown in the following statement :—

* 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.

	1894.	1895.	1896.	1897.	1898.	1899.
Cholera	1·3	0·6	1·5	4·4	2·0	0·9
Small-pox	0·3	0·1	0·3	0·7	0·6	0·5
Fevers	8·0	8·3	6·0	9·0	7·5	7·3
Dysentery and diarrhœa	0·7	0·7	0·7	1·2	0·9	0·9
Injuries	0·4	0·3	0·3	0·3	0·3	0·4
Other causes	9·3	9·6	9·8	9·8	9·7	10·1
Total ..	20·0	19·6	20·6	25·4	21·0	20·1

7. The total number of deaths registered was 675,094 against 699,108 in the preceding year, the decrease appearing chiefly in Ganjám, where the mortality was only 14·4 per mille of the population against 22·7 in 1898. The Sanitary Commissioner states, that although evidently a satisfactory diminution in the number of deaths has occurred in this district, yet the very low rate of 14·4 per mille points to the fact that a large number of deaths are not brought under registration owing apparently to the tendency which is said to prevail among village officers of regarding the deaths of infants below one year of age as being unworthy of official recognition. The attention of all Collectors, however, is reported to have been drawn to this subject. The mortality among infants under one year of age in the rural tracts was 159 per mille of the registered births or 7·3 per mille less than in the preceding year, and in municipalities 223·9 per mille against 229·5. Infantile mortality was again very high in the city of Madras (275·6) and in the district of Tanjore (209·9) and exceeded 200 per mille in 31 municipalities, the highest rate being returned in Tinnevelly (313·3). The rates in Ellore, Bezwada, Madura, Kumbakónam, Negapatam and Tuticorin were also high, being more than 250 per mille, and are ascribed by the Sanitary Commissioner to the insanitary conditions prevailing in these towns in a more or less marked degree.

8. As usual, the death-rate of 38·5 per mille in the city of Madras, though less than that of the previous year by 6·7 per mille, was higher than any recorded in the districts—a result which may be attributed partly to the insanitary condition of the city and partly to the greater accuracy of the returns. On the other hand, the decline as compared with the previous year is, in the opinion of the Sanitary Commissioner, due to the greater amount of supervision exercised over the sanitary staff of the city on account of the necessity for keeping it prepared for the advent of plague. No substantial advance, however, was made during the year in the sanitary condition of the city, although several important steps were taken which may be expected to effect an improvement in future. The water pipes, which had been laid between the years 1870 and 1882, were taken out and cleaned, thus improving both the quantity and the quality of the water supplied to the houses concerned. A number of dirty and useless wells were closed and steps taken to prevent the excavation of new wells in populous quarters which are within easy reach of pipe water. The new general market continued to be under construction, while the rubbish incinerator was completed and brought into working order. A parachery was improved by the opening of a street, and the laying out of more streets was under contemplation. Until, however, a complete system of drainage and a better supply of water are provided, the health of the city cannot be expected to improve materially.

9. The average death-rate in rural villages was 19·4 per mille against 20·3 in 1898, the mortality being highest in South Canara (30·1). It was more than 20 per mille in Bellary, Chingleput, Kistna, Salem, South Arcot, Tanjore, Tinnevelly and Trichinopoly, while Madura returned the lowest death-rate (13·3). In rural towns, with a population of over 10,000 inhabitants, the rates were very high in some cases and very low in others as shown in the margin, —a fact which indicates the untrustworthy nature of the returns. The Collectors of Gódávari and South Arcot have, with reference to the remark in paragraph 9 of the Government order reviewing the Sanitary Commissioner's report for

Arcot	39·0
Virudupatti	37·5
Pithápuram	7·4
Porto Novo	10·6
Bobbili	12·5
Samalkot	12·8

1898, reported the steps which they have taken for the improvement of registration in the rural towns in their districts. The Collector of Vizagapatam is requested to report the measures which he proposes to adopt for improving registration in the town of Bobbili. It is observed that the report called for from this officer in paragraph 9 of G.O., No. 1409 L., dated 15th July 1899, regarding the low rate of deaths in the town of Sálúra, has not yet been submitted. This omission should be supplied without further delay.

10. Turning to municipalities, where more trustworthy figures are available, the average rate was 20·7 per mille against 31·9 in the previous year, while the individual rate ranged from 58·2 in Vániyambádi to 16·5 in Anantapur. It was high in Tiruppattúr (47·7) and Gudiyáttam (40·6); in 19 other towns it ranged from 30 to 40 and in 34 others from 20 to 30, while in the remaining two, namely Dindigul and Palni, it was 18·9 and 17·5, respectively.

11. *Principal Diseases—Cholera.*—The number of deaths under this head showed a further decline, being only 0·9 per mille of the population against 2·0 in the previous year. This epidemic was prevalent throughout the year, being most fatal in January and February and least so in August and September. It is satisfactory to note that Kurnool and the Nilgiris enjoyed perfect immunity from the disease, while in South Canara, Anantapur and Malabar there were no more than 2, 5 and 12 deaths, respectively. On the other hand, in Salem, Tanjore and Trichinopoly, it was felt severely, the death-rate being 2·8, 2·6 and 2·4 per mille, respectively,—a result which, in the Sanitary Commissioner's opinion, indicates that water contaminated with the specific germ is the chief means of local propagation of the disease. The average death-rate in municipal and other towns was 1·5 per mille against 2·1 in 1898, and that in rural tracts 0·8 against 2·0. Twenty-eight of the municipalities were free from this disease, while Vániyambádi headed the list with a death-rate of 18·7 per mille, followed by Gudiyáttam (14·2), Tiruppattúr (11·3), Salem (9·0), Vellore (6·2), Tinnevelly (5·2) and Máyavaram (5·0). Among rural towns, the rate exceeded 5 per mille in Hospet (10·8), Ambur (10·8) and Tiruvallúr (5·9). The remarks of the Sanitary Commissioner in paragraph 31 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, are commended to all Collectors for attention.

12. *Small-pox.*—The mortality under this head was 16,991 or 0·5 per mille of the population against 20,490 in 1898 and 21,678 in 1897. The rate for rural areas was 0·5 per mille and for municipalities 0·2 against 0·6 and 0·3, respectively, in the previous year. The largest number of deaths occurred in South Arcot (1·2), followed by Madura (0·9), Gódávari (0·9), Tanjore (0·8) and North Arcot (0·7), while in Malabar the lowest rate was again recorded, namely 0·05. It is gratifying to observe that in Ganjám there were only 489 deaths from this cause against 10,838 in the previous year. Among district municipalities, the death-rate was high in Dindigul (2·0) and Chidambaram (1·0), which shows that the provisions relating to compulsory vaccination are not strictly enforced in these towns. Twenty-six towns against 19 in the previous year enjoyed perfect immunity from this disease.

13. *Fevers.*—The number of deaths under this head was 245,549 or 7·3 per mille of the population against 248,638 or 7·5 per mille in the previous year and was the lowest recorded since 1883. The Sanitary Commissioner considers that this reduction may be due partly to the imperfect character of the north-east monsoon and the consequent absence of the usual degree of moisture in the soil and partly to a tendency on the part of those giving information regarding deaths to escape suspicion of a disease whose prominent symptom is fever, namely plague. In ten districts, however, there was an increase as compared with the previous year, and the proportion of deaths was large in South Canara (18·1) and Vizagapatam (15·4). The mortality in the Nilgiris (13·9) was also heavy, although, as compared with the previous year, there was a decline of 8·2. The death-rate for the city of Madras fell from 12·4 to 7·5 per mille. Among district municipalities, the rate was more than 10 per mille in

Cuddapah (13·7), Kurnool (13·6), Vániyambádi (11·6), Parlákimedi (10·8), Tirupati (10·5) and Tiruppattúr (10·5) and was low in Bellary (1·7), Trichinopoly (1·6), Walajapet (1·5), Chingleput (1·4), Vellore (0·5) and Conjeeveram (0·05).

14. *Dysentery and Diarrhœa.*—The death-rate from this cause was the same as in the preceding year, namely 0·9 per mille of the population. The mortality in municipal towns was, as usual, higher than that in rural areas, being 4·3 per mille against 0·7, this large difference being due to the fact that insanitary conditions are more operative in urban areas. The highest mortality was again recorded in the city of Madras, where it rose from 7·5 to 7·9 per mille. The district rate varied from 3·0 in Chingleput to 0·2 in Kurnool. The mortality in municipalities was high in Gudiyáttam (8·6), Vizianagram (8·4), Walajapet (7·7), Vizagapatam (7·6), Tuticorin (7·4) and Chingleput (7·1), where either the conservancy arrangements are defective or the water-supply is open to contamination, and low in Adóni (0·6) and Palni (0·5).

15. *Injuries, &c.*—The number of deaths from injuries, suicides, &c., rose from 11,047 to 13,411, and that due to unspecified causes from 323,835 to 338,754.

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

The system of observation of passengers arriving from plague-infected areas which commenced in 1897 continued to be in operation during the year under review. The total attacks of plague in the Presidency for the year were 2,385, and of these 1,843 proved fatal. Major Bannerman, I.M.S., the Deputy Sanitary Commissioner, remained at his post for only the first two months in the year, having been deputed thereafter to act for Mons. Haffkine in charge of the Plague Research Laboratory at Bombay. With the view of keeping pace with the demand for certificated sanitary inspectors for temporary plague duty, the Sanitary Commissioner organized a class at Bellary early in the year and rendered sixty men available to meet possible urgent demands.

17. *General Remarks.*—Being largely engaged in tours in connection with the arrangements for the prevention and suppression of plague, the Sanitary Commissioner was able to visit and report on the sanitary condition of only ten municipalities during the year. The Deputy Sanitary Commissioner, however, inspected thirteen municipalities and seventeen unions and other villages and visited parts of six districts on duty connected with vaccination. The District Medical and Sanitary Officers visited on an average nineteen places as in the previous year. The Sanitary Commissioner's report contains much useful information and the Government has read it with interest.

SANITARY ENGINEERING.

18. Mr. Jones, the Sanitary Engineer, was granted furlough for fifteen months from 23rd October 1899, and his place was filled by Mr. Malet, A.M.I.C.E., an officer of the Public Works Department. These officers visited altogether sixteen towns and the Assistant Sanitary Engineer nine towns, against fifteen and twelve, respectively, in the previous year.

19. The extension of the water-works at Conjeeveram, which was in progress in 1898, was completed in the year under review, as also the extension of the pipe lines in Tanjore. These two works were carried out under the supervision of the Sanitary Engineer. The scheme for the water-supply of Tirupati at an estimated cost of Rs. 2,31,000, which was undertaken by the Public Works Department, was also completed during the year.

20. Three municipal towns were surveyed in connection with water-supply and two drainage and seven water-supply schemes were prepared and submitted either to the Sanitary Board or to Government. The schemes for the water-supply of Tuticorin and Coonoor, and for the extension of the water-works at Trichinopoly and Cuddapah, were sanctioned by Government—the first two for execution by the Public Works Department and the remainder by the Sanitary Engineer. A scheme for the extension of the pipe lines in Kurnool was also sanctioned during the year, but

the execution of the work was not insisted upon, owing to the crippled state of the finances of the municipality. The Inspector of Steam-boilers and Prime-movers visited the pumping stations of the water-works at Kurnool, Conjeeveram, Cuddapah, Madura, Trichinopoly, Tanjore and Dindigul, and reported on the engines, boilers and pumps. The condition of the pumping plants is stated to have much improved since their examination by this officer in 1897. The Sanitary Engineer prepared six type designs for sanitary works and gave advice to the Sanitary Board in 57 cases.

SANITARY BOARD.

21. The constitution of the Sanitary Board continued to be the same as in the previous year; but the rules for the conduct of its business were slightly modified so as to permit a local board or municipal council or other authority to apply to Government for orders in the proper department when it objects for financial or other reasons to adopt a design or an estimate prescribed by the Sanitary Board. The Board scrutinised plans and estimates for one Provincial, thirty-four Municipal and seventy-nine Local Fund works of the estimated cost of Rs. 19,33,126. These comprised schemes for the water-supply of Tuticorin, Guntúr, Periyakulam and Bezwada, for the extension of the water-works at Trichinopoly and for the drainage of the Ootacamund bazaar, which were examined and laid before Government. Proposals for seventeen other schemes were also considered by the Board, although estimates for them had not been prepared. Six new type designs were approved for issue, but as many of the designs already issued have been found too expensive for the minor local bodies, the Board has taken steps for the preparation of cheaper designs.

(True Extract.)

H. TREMENHEERE,
Secretary to Government.