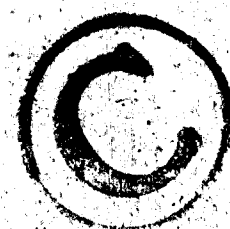
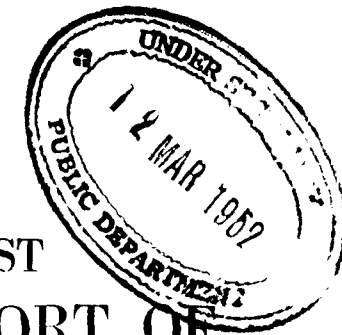
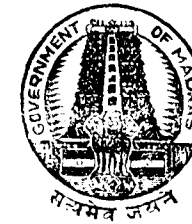


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SIXTY FIRST
ANNUAL REPORT OF
THE SANITARY ENGINEER
TO GOVERNMENT
OF MADRAS

1ST APRIL 1950
TO 31ST MARCH 1951





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SIXTY-FIRST ANNUAL REPORT OF THE SANITARY
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CHAPTER I.—INTRODUCTORY.

The Sanitary Engineer to Government the head of the reorganized Sanitary Engineering Branch is working under the control of the Chief Engineer (Public Health). The reorganization of the branch was ordered in G.O. No. 2616, P.W., dated 21st June 1949. Before reorganization the activities of the Sanitary Engineering Branch were confined to the investigation and design of water-supply and drainage schemes and to supervisory control over the maintenance of those schemes by local bodies. In order to unify all the functions relating to water-supply and drainage schemes under one agency, the function of executing water-supply and drainage schemes was also entrusted to the Sanitary Engineering Branch, after reorganization. The Sanitary Engineer under the reorganized set up, functions as a Superintending Engineer of State Wide Circle under the administrative control of the Chief Engineer, Public Works Department. The reorganized Sanitary Engineering Branch attends to the entire work of planning, investigation, design and execution of all water-supply and drainage schemes and also exercises supervisory control over the maintenance of these schemes by local bodies.

* For investigating new schemes in the field and for executing sanctioned schemes and also for inspecting schemes in operation five public health divisions each division having an Executive Engineer (Public Health) as its head functioned during the year.

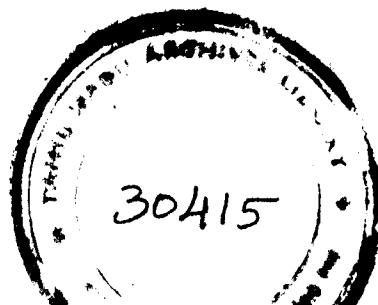
These divisions are spread over the entire province each having territorial jurisdictions over a few districts. Besides a special division for Madurai has been in existence for some time past. Its sole function is to investigate schemes of improvements to the existing water-supply and drainage systems of Madurai. There are 17 Assistant Engineers (Public Health) and 56 supervisors in all these five divisions put together.

The technical section of the Sanitary Engineer's office is attending to the design of schemes. This technical section consists of 2 Assistant Engineers (Public Health), 5 supervisors, 26 draftsmen and 7 tracers.

Two mechanical experts, one styled mechanical expert and the other additional mechanical expert are working under the Sanitary Engineer. They are to conduct inspection of pumping plants installed in water-supply and drainage schemes in operation and to offer advice whenever necessary to local bodies on the proper upkeep and maintenance of the water-supply and drainage schemes. They have also to offer their advice on the proposals relating to installation of pumping machinery in new schemes.

Five-year plan for municipal schemes.—The execution of water-supply and drainage schemes is proceeded with according to the five-year plan (1949-54) sanctioned in G.O. No. 2503, P.H., dated 13th June 1949. This plan is based on the rank assigned to each municipality in the order of priority fixed by water-supply and drainage committee, having regard to the importance of

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each place from the public health point of view. Under this plan the Government have accepted commitments by way of Government grant to the tune of Rs. 20 lakhs for the first year, Rs. 40 lakhs each for the next two years and Rs. 80 lakhs each for the two subsequent years subject of course to the availability of funds.

Plan for non-municipal urban schemes.—Pending the drawing up of a similar plan for this class of schemes the Government have approved a tentative plan in G.O. No. 128, P.H., dated 10th January 1950, whereby some of the urgent and important schemes should be taken up for execution immediately side by side with municipal schemes.

Financial policy liberalized.—Hitherto the schemes were generally executed on half grant basis. That is to say half the cost of a scheme was being borne by the local body concerned and the other half by the Government. Under the present financial policy any portion of the cost of a scheme which is really beyond the financial capacity of the local body to meet will be met by the Government.

Reserve stock of cast iron pipes.—As large quantities of cast-iron pipes are required for the execution of water-supply and drainage schemes and as it is at times difficult to procure them in view of the uncertain conditions of the present day market a reserve stock pipe is being maintained by the Sanitary Engineer so that the execution of these schemes may not be held up for want of pipes. A detailed account of the reserve stock is given in Chapter VIII of this Report.

Rural Water-supply Schemes.—These schemes are being executed by the Revenue department through the Collectors of district with the help of the Minor Irrigation staff. However big and important rural water-supply schemes like the composite water-supply scheme for Kayalpatnam, etc., villages for instance are taken up by the Sanitary Engineer himself. The Sanitary Engineer also offers advice to the Revenue Department whenever sought for on some of the schemes executed by that department. A detailed account of the part played by the Sanitary Engineering Branch in respect of rural water-supply schemes is given in Chapter VII of this Report.

CHAPTER II.—STATISTICAL PARTICULARS.

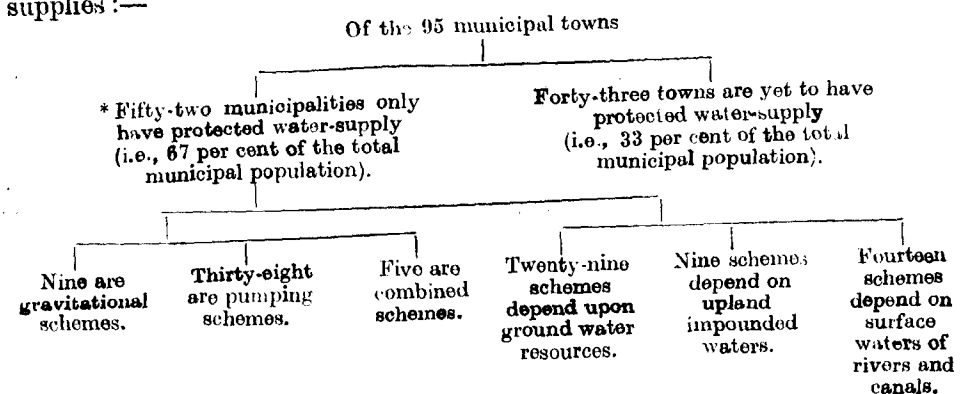
The following statistical particulars are furnished to give an idea of the situation in regard to municipal and panchayat water-supply and drainage schemes:—

(i) *Population.*—The official figures of 1951 census were not available during the year. The following are the urban and rural populations in the State (based on 1941 census figures):—

	Number.	Population.	Percentage of the total.
Madras City	1	856,453	1.72
Municipal towns	95	3,994,610	8.01
Other Urban areas	..	7,482,263	5.02
Rural areas	..	37,507,238	75.25
	96	49,840,564	100.00

(ii) *District municipalities.*—During the year, two more panchayats were constituted into municipalities, thus increasing the number of district municipalities from 93 to 95 (excluding the City of Madras).

(iii) *Water-supply Schemes.*—(a) *Municipal.*—The following will convey a ready picture of the existing situation in regard to municipal water-supplies:—



* Many of the 52 schemes in operation are in need of improvements so as to expand the scope of the schemes which were installed years ago to suit present needs of the towns concerned.

(b) *Panchayat.*—Only the eleven panchayats mentioned below have protected water-supplies in operation; many of them are in need of expansion to suit the increased population and extended areas of the panchayats.

The last one, viz., Arantangi water-supply scheme was completed and brought into commission during the year under report.

- | | |
|----------------|---------------------|
| 1 Arkonam. | 7 Ramachandrapuram. |
| 2 Batlagundu. | 8 Rameswaram. |
| 3 Dharmavaram. | 9 Tiruthani. |
| 4 Gudur. | 10 Yemmiganur. |
| 5 Kosgi. | 11 Arantangi. |
| 6 Manapparai. | |

(iv) *Drainage schemes.*—(a) *Municipal.*—Only 13 municipal towns may be said to have the benefit of a drainage scheme; but all these 13 schemes are partial schemes only, serving but portions of the municipal towns concerned. Of the 13 schemes, 3 are underground and the rest are all open drainage systems.

(b) *Panchayat.*—No drainage scheme is in operation in any of the panchayats.

(v) *The work ahead.*—Forty-three new municipal water-supply schemes and 82 municipal drainage schemes are yet to be provided. In addition, most of the 52 existing municipal water-supply schemes, and the 13 municipal drainage schemes have to be improved and expanded, to serve the present and future requirements of the municipal towns concerned.

As for non-municipal urban towns, work in regard to water-supply and drainage schemes has to be begun almost from the start.

The approximate cost of the work ahead in regard to municipal and panchayat water-supply and drainage schemes was forecast at about Rs. 32 crores, based on pre-war rates, by the Water-supply and Drainage Committee in its report in 1947. This figure is very much of an underestimate and will probably be exceeded thrice over if current rates were to be considered.

CHAPTER III.—PROGRESS MADE IN THE YEAR.

Execution of schemes.—(i) Although the five new public health divisions were formed between December 1949 and February 1950 the full complement of subordinate staff sanctioned under all the public health divisions did not become available even during the year under review. A few posts of Supervisors could not be filled in at all for want of hands; emergency hands had to be employed against vacancies in the posts of draftsmen and clerks and work got done as best as was possible. The dearth of qualified and suitable technical personnel to fill sanctioned posts, seems to be likely to continue for some more time. Even if hands become available they have to be given training in the special work of this Branch before they become fully useful.

However work in the public health divisions on the execution of sanctioned schemes was in good progress during the year.

(ii) As many as 29 municipal water-supply schemes (including improvements schemes), and 8 panchayat water-supply schemes were under execution during the year. The estimated cost of these schemes was Rs. 312.90 lakhs. The outlay of expenditure during the year was Rs. 55.20 lakhs and the total expenditure on these schemes up to the end of the year was Rs. 179.50 lakhs.

(iii) By a special order of the Government improvements to the existing water-supply at Tuberculosis Sanatorium, Perundurai, at an estimated cost of Rs. 40,200 was taken up and completed during the year as a special case.

(iv) As for drainage, 9 municipal and 1 panchayat drainage schemes were under execution during the year. Their total estimated cost was Rs. 47.13 lakhs; expenditure during the year Rs. 9.23 lakhs and outlay up to the end of the year on the schemes was Rs. 41.63 lakhs.

(v) Only five of these above schemes (water-supply and drainage) were under execution by the local bodies concerned under the supervision of the Public Health Department the expenditure on such schemes during the year being Rs. 1.01 lakhs.

(vi) It will be seen that the total expenditure on the water-supply and drainage schemes (including improvements schemes) during the year under report was Rs. 64.44 lakhs as against Rs. 37.4 lakhs of the previous year.

The following notes will indicate the progress made on the different schemes during the year as well as their stages at the end of the year.

NOTES ON SCHEMES IN PROGRESS.

WATER-SUPPLY SCHEMES.

1. *Arantangi Panchayat Water-supply Scheme.*—The scheme was completed and put to beneficial use during the year. The construction of watchman's quarters remains to be done. An extension of the distribution system to serve new areas has also been taken up as a special case.

2. *Chodavaram (Panchayat) Water-supply Scheme.*—The infiltration works were almost completed. The distribution system was completed. The work on the R.C.C. reservoir is almost completed, and the pump house is in progress.

Almost the entire scheme was completed during the year, with signal progress in execution of the scheme, after a hang over of 30 years.

3. *Cochin Water-supply Scheme.*—The provision of 25 additional public fountains is being completed. All the pipes required for the work have been received, but specials required are still awaited.

4. *Caimbatore Water-supply Scheme.*—About 40,000 r.ft. of 18" diameter duplicate gravitation main have been laid and connected to the old main so as to bring even the part work completed to beneficial use. This has increased the supply brought into the town by a good percentage. The construction of the masonry service reservoir at R.S. Puram was in good progress.

An order for importing from the United Kingdom of 40,000 r.ft. of 18" diameter 'C' class spun iron pipes required for the completion of the part duplicate gravitation main was placed, and a part consignment of pipes against this order has also been since received.

5. *Cuddapah Water-supply Scheme.*—Work has been completed in all respects and accounts are being finalized.

6. *Dharmavaram (Panchayat) Water-supply improvements.*—Pressed steel tank has just been received and arrangements are being made to erect the tank after dismantling the existing overhead tank.

7. *Erode Water-supply improvements.*—All work completed except the improvements to the existing rake wash filter. The supply of 3" G.I. pipe for supplying compressed air to the new filter is awaited for completing the work.

8. *Guntakal Water-supply Scheme.*—The excavation of the tank is almost completed. Digging of the central trench, revetting of the side slopes and removal of spoil banks are in progress.

9. *Guntur Water-supply Scheme.*—Construction of the summer storage tank saw some good progress during the year. The balance of work is likely to be completed in another season.

Masonry cross drainage works in the approach road for the pumping main from the headworks to Guntur town was in progress. The work on the low-level and the high-level elevated reinforced cement concrete service reservoirs was also in good progress. There are seven reinforced cement concrete reservoirs for an aggregate capacity of 18 lakhs of gallons in progress, the tendered value being about Rs. 10.32 lakhs. Pipes and specials required for the distribution system and the 27" pumping main were coming in from the suppliers. With the arrival of some more specials, laying and jointing of the pipes could be taken up.

10. *Hindupur Water-supply Scheme (I stage).*—The two infiltration wells have been sunk and the land for the headworks and pumping main has been acquired. Yield tests for the two wells were also completed, so that plans and estimates for the second stage could be pursued.

11. *Kakinada Water-supply Improvements (Part II) Scheme.*—The work has been completed excepting filling in one of the filter-beds with screened and washed sand. The bulk of this scheme was got completed during the year.

12. *Karaiikudi Water-supply Scheme (Limited distribution system).*—The laying of the distribution mains in the Part I work was in good progress. The work is being executed by the municipality under Public Works Department supervision.

13. *Karamadai Water-supply Scheme (Panchayat).*—The construction of the pump-house and store-room underneath the service reservoir was completed. Deepening of well is under execution. Laying of pipe-lines and erection of public fountains remain to be done.

14. *Kayalpatnam, etc., Villages Composite Water-supply Scheme.*—The delay in the acquisition of the land for the headworks was a severe handicap to progress of the scheme during the year. Cast-iron pipes required for the pumping main were, however, procured and work on laying and jointing the pipe-line also commenced.

15. *Kodaikanal Water-supply Scheme (extension to Observatory area).*—The construction of watchman's and electrician's quarters and putting up veranda for the new pump-house alone remain to be done. The work was completed and handed over for running and maintenance by the municipality.

16. *Kozhikode Water-supply Scheme.*—The work was fairly completed but for the erection of the pumping machinery which is being delayed for want of certain cast-iron specials. Urgent steps were being taken to procure them and complete the work and start pumping soon.

17. *Kumbakonam Water-supply Scheme (II stage).*—Mostly the pipes and specials required for the distribution system had been received and the pipe-laying work on the distribution system was in good progress. Pipe quantities from the reserve stock were also diverted to the work to expedite the execution of the scheme. Construction of the reinforced cement concrete reservoirs at Mela Cauvery and Valayapettai was also in good progress.

18. *Kurnool Water-supply improvements (construction of additional filter-beds).*—The masonry construction has been completed. The provision of 12" duplicate gravitation main from the settling tank to the additional filter-beds and pipe connexions to the additional filter-beds and sand filling remain to be done. The pipes were being received.

19. *Madurai Water-supply improvements.* This is a work executed by the municipality under the supervision of the department. The work was completed during the year except for the fixing of the gauges, etc., in the well and the fixing of the 20" sluice valve in the collecting well.

20. *Manapparai (Panchayat) Water-supply Scheme improvements.*—The investigation of further sources for developing a satisfactory water-supply, to supplement the present source at Manapparai, remains to be taken up. The field work has to be pursued in this behalf.

21. *Mangalore Water-supply Scheme.*—The construction of the infiltration well was in progress.

22. *Mettupalayam Water-supply Scheme (improvements).*—Erection of additional public fountains in the extended distribution system remains to be completed.

23. *Palayanikottai Water-supply Scheme.*—The cast-iron pipes required for the pumping main and distribution system of the scheme are being received. The infiltration well has been sunk to the required level. The excavation for the suction well work was completed and the steining of suction well was in progress. The work on the syphon pipe-line was also in progress.

24. *Perundurai T.B. Sanatorium Water-supply improvements.*—The work was completed and brought into use.

25. *Pollachi Water-supply Scheme.*—The work was completed and brought into use.

26. *Rajahmundry Water-supply improvements.*—Masonry works for the extension of the filter-house were nearing completion. Roof trusses were under erection. Mechanical filters from Messrs. Paterson Engineering Co. were awaited.

27. *Salem (Mettur) Water-supply Scheme.*—The erection of pumping machinery at intake tower and booster station was in progress. There was a long delay in getting the cast-iron specials from the manufacturers, and then again in getting wagon transport from the works to Salem. The programme of execution was thereby upset. The work on the Ammapet reinforced cement concrete reservoir has been completed.

28. *Salur Water-supply Scheme.*—The scheme requires to be examined *de novo*, as revealed by check borings at sites.

29. *Sivaganga (Panchayat) water-supply Scheme.*—All works were completed except for the revetment for the bund, which will be taken up after the bund settles.

30. *Srivilliputhur Water-supply Scheme.*—Cast-iron pipes and specials for this scheme were being received from the Indian manufacturers. Acquisition proposals for the gravity main and service reservoir were sent up to the Revenue department for action. Arrangements were also made to import the larger diameter pipes from the United Kingdom and the Continent, against the requirements of this scheme.

31. *Tiruchirappalli water-supply Scheme (improvements)*—(a) *Rectification of defects and improvements to connecting pipe-line of the infiltration system.*—All the work was completed except for the rectification of a minor defect.

(b) *Second instalment of the first-year programme—Replacing the existing 18" mains by 24" mains from headworks to Kodamurutti bridge.*—The work was almost completed; laying and jointing of about 120 feet of 24" main and about 2000 r.ft. of 18" main remain to be done.

(c) *Second instalment of the second-year programme.*—Work was completed except for the plugging of new wells 3 and 4 which is in progress.

(d) *Second instalment of the second-year programme—Laying of distribution system.*—The work was taken up during the year and cast-iron pipes and specials lead and hemp yarn were being collected.

(e) *Fourth instalment of first-year programme—Replacing the main from Madurai road to Central Jail.*—Laying 10" main over trestles erected near the three overbridges in Pudukkottai road by the Railway authorities, and laying of the 10" main on the slope of the embankment by the department for a length of 800 feet was completed. Further laying work of 10" main was in progress.

32. *Tiruppur (Partial) Water-supply Scheme (improvements).*—Further extension of main and construction of additional public fountains were in progress.

33. *Valparai (Panchayat) Water-supply Scheme.*—Improvements to suction well and part-laying of pumping main have been completed. Laying of pumping main and construction of masonry pillars for taking the pipe-line across the stream were in progress.

34. *Vayalpad Panchayat Water-supply Scheme.*—Laying of pumping main and distribution system and the construction of service reservoir remained to be done. The construction of the pump-house and watchman's quarters was completed and orders placed for the pumping plant.

35. *Vellore Water-supply Scheme (improvements).*—The work has been fully completed. The accounts are to be settled. The work is being executed by the municipality under supervision.

36. *Vijayavada Water-supply Scheme—Re-arrangement of distribution system.*—The work was completed except for laying of a portion of the pipeline on Dornakal Mission road which could not be taken up as the road has not yet been formed and handed over to the municipality. The work is being executed by the municipality under Public Works Department supervision.

37. *Visakhapatnam Water-supply Scheme (improvements).*—The work on the duplicate pumping main was over. Inlet connexion to the high-level reservoir was also completed. The work on the distribution system was in good progress in the Daba Gardens and Donduparthi areas and completed in the Lalitha Gardens area.

A. DRAINAGE SCHEMES.

1. *Coimbatore Drainage Scheme.*—The work in A, B, C, D and E blocks and sewage farm was completed and handed over to the municipality.

For the treatment works, the leading channels, grit chambers, screen chambers and sludge drying beds were completed in every respect. Settling tanks and sludge digestion chambers were partly completed and are in progress.

A number of house connexions were given in the sewered areas, but procedural handicaps prevented a much larger number being connected to the sewers.

2. *Madurai storm-water drains.*—The works in all the four proposals were completed in all respects.

3. *Nagapattinam Drainage Scheme.*—There was no progress this year also on this work, the only work still to be done, viz., the laying of the pumping main at Kaduvayar crossing being held up pending the decision of the Highways department to construct a bridge at this point.

4. *Paramakudi (Panchayat) Drainage Scheme.* All the work (except the construction of 200 feet of 12" drain and rograding of drains) was completed during the year.

5. *Salem Drainage Scheme—Seventh instalment (Part I).*—Construction of open drains was in progress. The work is being executed by the municipality under Public Works Department supervision.

6. *Srirangam Drainage Scheme.*—All the works in the first stage except the construction of No. 10 drain were completed. In the second stage, cast-iron pipes for about Rs. 19,000 have been received.

7. *Tiruchirappalli Drainage Scheme.*—Diversion of sullage from Boulevard road.—Cast-iron-pipes and stoneware pipes required for the work were received. The tenders for intercepting sewers were settled and the work was put on hand.

8. *Tirupathi Drainage Scheme—Seventh instalment.*—Nearly 90 per cent of the open drains have been executed.

9. *Virudunagar (Restricted) Drainage Scheme.*—Regrading of 24" drain and laying of Cast-iron pipes in the last reach and the balance of work regarding the pumping plants remained yet to be done.

10. *Visakhapatnam swamp area.*—Construction of outfall drain No. 1 and culvert on 75' road was completed. Cast-iron pipes for sewers and specials for pump-house were being received.

B. DESIGN OF SCHEMES.

(i) Detailed plans and estimates for the following schemes were prepared and submitted to the higher authorities during the year :—

(1) Guntur Water-supply Improvements Scheme—

(a) Outlet arrangements from storage reservoir, bypass main from inlet to suction well; and

(b) purification plant (plans only).

(2) Peddapuram Water-supply Scheme.

(3) Srikakulam Water-supply Scheme.

(4) Nandyal Water-supply Scheme (first stage).

(5) Tirupathi Water-supply Improvements Scheme (confluence source).

(6) Composite Water-supply Scheme for Kayalpatnam and ten other villages in Tirunelveli district II stage (pumping main).

(7) Araku Colony Water supply Scheme.

(8) Chittoor Drainage Scheme (remaining part of first instalment).

(9) Madurai Water-supply Improvements—

(i) Augmentation of existing source comprising the gallery, pumping main to Kochadai pumping plant (proposals only).

(ii) Pumping main from Kochadai Service Reservoirs at Railway colony site (proposals only).

(iii) Improvements to the existing distribution system (general proposals only).

Madurai drainage improvements—

(i) Sewerage Scheme for Block No. 7.

(ii) Sewerage Scheme for Block No. 8.

(iii) Electrification of the main drainage pumping station.

The total cost of the above schemes based on the estimates submitted for approval amounted to Rs. 172 lakhs nearly.

(ii) Detailed plans and estimates for the following schemes were under preparation :—

(1) Guntur Water-supply Improvements Scheme—

(a) Purification works, C. W. R. and Pumping Station.

(b) Offtake arrangements from the canal and raw water pumping station.

(2) Mangalore Water-supply Scheme, II Stage (pumping main).

(3) Mannargudi Water-supply Scheme (partial).

(4) Salem (Mettur) Water-supply Scheme—Re-designing of the distribution system.

(5) Hindupur Water-supply Scheme, II Stage.

(6) Chittoor Water-supply Scheme.

(7) Cuddalore Water-supply Improvements.

(8) Composite Water-supply Scheme for Kayalpatnam and ten other villages in Tirunelveli district, III Stage (service reservoirs).

(9) Uravakonda Water-supply Scheme.

(10) Kumbakonam Drainage Scheme.

(11) Eluru Drainage Scheme.

(12) Madurai Water-supply Improvements (detailed proposals for the distribution system).

- (13) Madurai Drainage Scheme Improvements—
 (i) Sewerage Scheme for Block No. 9.
 (ii) Improvements to the sub-pumping stations 4 and 5.
 (14) Vijayavada Water-supply Improvements.
 (15) Vijayavada Drainage Improvements.
 (16) Visakhapatnam Water-supply Improvements (Gosthani source).
 (17) Tiruchirappalli Partial Drainage Scheme (revised design for the pumping station).
 (iii) The design work on the following scheme was suspended during the year to give priority for schemes included in the Five-year Plan :—
 Anakapalle Water-supply Scheme.

C. INVESTIGATION OF SCHEMES.

- (i) The following field investigations were completed during the year :—
 (1) Melapalayam Water-supply Scheme.
 (2) Tirunelveli Water-supply Scheme including the supplemental field work carried out.
 (3) Tindivanam Water-supply Scheme.
 (4) Supplemental investigation for the Cuddalore Water-supply Scheme (improvements).
 (5) Anantapur Water-supply Improvements Scheme.
 (6) Madurai Water-supply Improvements Scheme (supplemental source at Melakkal).
 (7) Tiruvettipuram Water-supply Scheme.
 (8) Coonoor Drainage Scheme.
 (ii) The following investigations were in progress during the year :—
 (1) Madurai Water-supply Improvements.
 (2) Madurai Drainage Improvements.
 (3) Vijayavada Water-supply Improvements.
 (4) Vijayavada Drainage Improvements.
 (5) Arni Water-supply Scheme, II Stage.
 (6) Chittoor Drainage Scheme (disposal work).

D. TECHNICAL SANCTION ACCORDED FOR IMPROVEMENTS TO EXISTING SCHEMES AND OTHER SANITARY WORKS.

Apart from the sanction of estimates for investigations in progress, technical sanction for the following works, for which plans and estimates were received from local bodies concerned for a total estimated value of Rs. 6.08 lakhs was accorded during the year under review :—

- (1) Perundurai Tuberculosis Sanatorium, Coimbatore district—Laying a pumping main and installing a pumping plant, Rs. 40,200.
 (2) Coimbatore Municipality Water-supply—Installation of a booster plant in R.S. Puram area, Rs. 20,000.
 (3) Karur Municipality Water-supply—Extension of mains, Rs. 23,600.
 (4) Karamadai Panchayat Board, Coimbatore district—Revised estimate, Rs. 50,000.
 (5) Mettupalayam Municipality Water-supply—Extension of mains and erection of additional public fountains, Rs. 43,460.
 (6) Erode Municipality Water-supply—Installation of a third unit Rs. 56,500.
 (7) Virudunagar Municipality—Erection of three additional public fountains, Rs. 3,810.

- (8) Tuticorin Municipality Water-supply—Improvements to the distribution system in northern area by laying bigger mains, Rs. 64,000.
 (9) Salem Municipality—Vellakuttai eri surplus channel—Regarding the higher reach, Rs. 14,600.
 (10) Rajahmundry Municipality—Construction of 47 additional public fountains and fixing air valves in the distribution system, Rs. 65,940.
 (11) Madurai Municipality Water-supply—Improvements to the eastern and southern ill-served areas—Booster proposals, Rs. 99,000.
 (12) Periyakulam Municipality Water-supply—Filter Beds—Replenishing fresh sand in filter beds, Rs. 7,850.
 (13) Salem Municipality—Laying a 4" cast iron main for a length of 1,750 feet and erection of public fountain, Rs. 7,000.
 (14) Kodaikanal Municipality Water-supply—Extension to Gorapur area, Rs. 17,870.
 (15) Arni Water-supply—Construction of an experimental well, Rs. 7,500.
 (16) Palacole Water-supply—Extension of the distribution system, Rs. 45,100.
 (17) Nellore Municipality—Construction of open drain in Narukur Road on the southern side from G.N.T. Road to Vuyyala Kalvai crossing, Rs. 12,200.
 (18) Paramakudi Drainage—Construction of drains, Rs. 29,200.

NOTE.—The Executive Engineers (Public Health) of the several divisions also accorded technical sanction to schemes of improvements and repairs to existing Water-supply and Drainage Schemes and other sanitary works submitted by local authorities and falling within the powers of sanction of the Executive Engineers.

E. PREPARATION OF TYPE-DESIGNS.

The following type-designs were prepared during the year under report :—

- (1) Type-design for a fire hydrant—San. No. 7/50.
 (2) Type-design for a scour pipe arrangement—San. No. 78/50.
 (3) Type-design for a ferrule tap connection to the main and related pipe connections to a public fountain (single and double tap)—San. No. 86/50.
 (4) Type-design for Electrician's quarters—San. No. 105/50.
 (5) Type-design for Superintendent's quarters—San. No. 106/50.
 (6) Type-design for a drawoff outlet with screen—San. No. 4/51.

CHAPTER IV.—CORPORATION OF MADRAS GRANT-IN-AID WORKS—WATER-SUPPLY AND DRAINAGE SCHEMES.

During the year under review, the Sanitary Engineer to Government continued to be the Inspecting Officer for the Water-supply and Drainage Works of the Corporation in terms of G.O. No. 2164, Public Health, dated 23rd May 1941, revised in G.O. No. 3386, Public Health, dated 5th December 1944. In addition to inspecting Grant-in-aid Works (other than Road and Electrical Works) of the Corporation of Madras and carrying out check measurements, the functions of the Sanitary Engineer included also the following :—

- (i) Scrutiny and remarks on schemes for which detailed plans and estimates are prepared by the Corporation and sent to the Chief Engineer for scrutiny before Government sanction is accorded.

(ii) Scrutiny and remarks on the annual budget provisions made by the Corporation with regard to Water-supply and Drainage Schemes, and recommendations on the allotment of grants and loans by the Government for such works;

(iii) Review of the Administration Report and the Annual Progress report on Water-supply and Drainage Works of the Corporation.

(iv) Scrutiny and remarks on tenders received for Water-supply and Drainage Grant-in-aid Works estimated to cost more than Rs. 25,000.

(v) Dealing with the references on audit and account matters and on administrative references, schedule of rates for items of work, indents for galvanized iron pipes and fittings, etc.

(vi) Review of half-yearly progress report of the Corporation on the measures adopted to remedy the pollution of waterways in the city.

(vii) Inspection and report on the working of the Kilpauk Water-works and other water-works of the Corporation.

2. Plans and estimates in regard to the following schemes were dealt with during the year:—

Water-supply—(i) *City Distribution System—Improvements*.—Revised estimate for Rs. 10.86 lakhs.

(ii) *Water-supply Scheme for Gandhinagar*.—Scrutiny of plans and designs received in tenders for the R.C.C. Service Reservoir.

Drainage.—(i) Revised estimate for the Drainage Scheme for Perambur and Vyasarpady.

(ii) Layout of sewers in Lakshmipuram colony—Estimate for Rs. 1.9 lakhs.

(iii) Drainage Scheme for Cockrane Basin Area—Estimate for Rs. 8.5 lakhs.

(iv) Drainage Scheme for T'Nagar—Disposal Works—Estimate for Rs. 3.5 lakhs.

3. The following works in progress were inspected during the year and passed for Government grant:—

Water-supply.—(i) *City Water-supply Distribution System—Improvements*—Estimate, Rs. 10.89 lakhs.

(ii) Laying of separate trunk main No. 8 for South Madras—Estimate, Rs. 4.36 lakhs.

(iii) Further improvements to City Water-supply Distribution System—Estimate, Rs. 4.76 lakhs.

(iv) Water-supply Scheme for Gandhinagar Distribution System—Estimate, Rs. 4.36 lakhs.

Drainage.—(i) Drainage Scheme for T'Nagar under contracts T1, T2 and T3 and Pumping Main from T'Nagar Pumping Station to the site of Disposal Works.

(ii) Drainage Scheme for Perambur and Vyasarpady.

4. *Grants recommended*.—During the year under review, the expenditure on both Water-supply and Drainage Works of the Corporation which are eligible for Government grant was about Rs. 13 lakhs as against Rs. 16 lakhs in 1949-50. The total amount of grants sanctioned during the year was Rs. 6.05 lakhs.

5. *Staff*.—(i) The Sanitary Engineer to Government was assisted by a Junior Engineer and a Supervisor in discharging his duties as Inspecting Officer till 19th December 1950. In pursuance of G.O. Ms. No. 1536, Health, dated 29th April 1951, sanctioning the post of an Assistant Engineer (Public

Health), the post of the Junior Engineer was abolished with effect from 9—12—1950, and the Assistant Engineer (Public Health) assisted the Sanitary Engineer in discharging these duties till the end of the year.

The orders of Government declaring the Sanitary Engineer as the authority to advise the Corporation on tenders received for execution of water-supply and drainage grant-in-aid works were issued in G.O. Ms. No. 2384, P.H., dated 3—7—1950 and the Sanitary Engineer has since been attending to this, additional duty also, in respect of grant-in-aid works costing over Rs. 25,000.

(ii) The control of the Experimental Filter Station, Kilpauk, was transferred from the Director of King Institute to the Sanitary Engineer to Government, in G.O. Ms. No. 1536, Health, dated 29th April 1950, and the Experimental Station was taken over by the Sanitary Engineer with effect from the afternoon of 31st December 1950. The Assistant Engineer (Corporation Works) is in charge of the Experimental Filter Station assisted by a Technical Assistant. A Research unit is to be started at the Experimental Filter Station, as part of the Re-organisation of the Sanitary Engineering Branch, and proposals in this behalf are underway.

CHAPTER V.—THE MUNICIPAL ENGINEERING SERVICE.

The Sanitary Engineer to Government continued to exercise control over the Municipal Engineering Service during the year, and also to administer the Central Fund for leave salary and Provident Fund contributions of Municipal Engineers in service.

2. The need for placing the Municipal Engineering service on a better footing was being increasingly felt. When the Municipal Engineering service was last constituted in 1941, recruitment to that service was made at a time when larger opportunities were available to technical men outside this service because of the War. As a result, the manning of the posts in the different grades of Municipal Engineers, and running the service on efficient lines through the succeeding years became more and more difficult. Vacancies could not be filled in when they arose because of lack of suitable men. As a result a number of Municipal Supervisors had to be promoted temporarily as Municipal Engineers, under emergency provisions and the service run under such temporary expedients year after year.

3. After the close of the War, municipalities have become impatient to provide several amenities within their towns, in order to make up for the forced inaction during the years of the War. Although Municipal Councils could find necessary funds for such improvement works, it was found that the absence of a properly constituted Municipal Engineering service with suitable men, and the acute shortage of technical personnel to fill the several posts in the Municipal Subordinate Engineering cadres, proved to be a standing handicap to progress in this direction. Municipalities were getting clamant that suitable Municipal Engineering personnel should be provided for their stations in order to enable the Municipal Councils to prosecute their long delayed improvement schemes. Some radical measures of improving the service in order to overcome the previous handicaps were therefore called for.

4. As a first stage, the Sanitary Engineer to Government advertised the vacancies in the Municipal Engineering service and called for applications from B. E. qualified candidates to fill them. Because of the lack of opportunities in the service as at present constituted, the response to the advertisement was poor. A number of longstanding vacancies in IV grade of the Municipal Engineers was thereupon filled by regularising the promotion of experienced Municipal supervisors who had been serving as temporary Municipal Engineers under emergency provisions. A few of the war-reserved vacancies were also filled by the appointment of men with war service. Proposals for filling some more vacancies with B. E. qualified men in the IV and III grades were also submitted.

5. As a second measure of reform, the Sanitary Engineer to Government also submitted proposals for the reclassification of several municipalities, suitable to the present work load and expenditure programmes in many of the municipalities. The re-classification as proposed would result in the number of posts in the first grade being increased from 5 to 10; in the second grade 8 to 9; in the third grade from 14 to 15 while the number of posts in the fourth grade would be reduced from 24 to 17.

6. The promotion of existing Municipal Engineers in the various grades consequent on the reclassification of the municipalities, and the full scale provincialisation of the Municipal Engineering service are to be effected in the year 1951-52. The provincialisation as envisaged would place the service on a better footing, and facilitate better progress in all directions hereafter.

7. *Municipal subordinate engineering service.*—It is to be noted that out of a total number of 95 municipalities in the State, the number of Municipal stations for which Municipal Engineers have been sanctioned by Government is but 51. The remaining 44 municipalities have to manage the engineering activities in the stations by employing Municipal Supervisors and/or Overseers. Subordinate engineering staff are also sanctioned to work under the Municipal Engineers in their respective stations. But all these Municipal Supervisors and Overseers do not belong to a common class of service as such. Under the existing rules there is no provision for either promotion or for transfer of a Municipal subordinate to any other municipal station. He enters as a Supervisor or Overseer, continues in the same post in the same station, and retires from the same post. There is no provision for any promotion to higher posts, except the offchance of being admitted to the Municipal Engineering service by direct recruitment when there is an opportunity. Such a system, as could be readily imagined, is hardly conducive to either an efficient or contented performance of one's duties as a Municipal Engineering subordinate. The Supervisor or Overseer has no opportunities to widen his knowledge or expand his usefulness in service. He develops local moorings and falls a prey to temptations which must assail a service of stagnation in a subordinate post in the same station. With the provincialisation of the Municipal Engineering service in 1951-52, it would be necessary to institute measures to place the Municipal subordinate engineering service in a better footing than hitherto.

CHAPTER VI.—MAINTENANCE OF SCHEMES.

It is relevant in this report to dwell on the maintenance aspects of water-supply and drainage schemes. The maintenance of completed schemes is vested with the local body concerned, under the supervisory control of the Sanitary Engineer to Government. Municipal Engineers are not stationed

in all municipalities which have a protected water-supply or drainage system in operation. Periyakulam, Mettupalayam, Prodattur, Cochin and Gudiattam municipalities are instances which have only municipal Supervisors. Even where a Municipal Engineer is stationed in a Municipality he finds it difficult to exercise any effective control over his subordinate engineering staff, as such staff are not subject to any central control by a higher authority, but work under the control and the influence of the Local Municipal Council and the Executive Authority only. So much so, the features of normal maintenance of water-supply and drainage schemes in operation in many of these municipalities have been subject to the vagaries of the subordinate engineering staff. The Inspecting Officers of the Sanitary Engineering Branch had not found it possible in the past to exercise any effective check over the features of bad maintenance noticed by them during their infrequent inspections.

2. The Director of King Institute arranges for the examination of samples from water-supply and drainage systems in operation, by sending out field units to collect samples, for their analysis at the Institute. Supplies from schemes in operation are sampled twice a year normally. The long interval in between however, makes it difficult to ensure that the installation is being run on proper lines during the interval. As the control of the schemes is vested in the local bodies, any proposals for repairs, renewals or improvement measures based on the reports of the Inspecting Officers or the King Institute analysis reports, have to be pursued only with the local body concerned, with its concurrence and its own funds. Very often there is delay, and a lack of appreciation of the needs of the situation. This handicaps expeditious action. However, with the Public Health divisions exercising more intimate control over the schemes than was possible hitherto, and with the adoption in future of measures to examine water samples at greater frequencies and by giving Municipal Engineers and subordinate staff special training at the proposed Research Unit at Kilpauk Experimental Filter Station, it is hoped that tangible improvements allround could be realised in the future years.

3. The common defects noticed in the maintenance of water-supply schemes in operation in many of the municipalities where inadequate attention paid to the proper running of the Infiltration Systems of the filter plants, arbitrary control exercised in the regulation of water-supply in the distribution system to different areas of the town, the indiscriminate grant of house service connections through the past years, and the absence of a properly maintained register of such connections, the almost universal failure to put defective meter in working order, and absence of control measures to check and prevent wastage of supply in the Distribution system. Many a municipality is losing good water revenue by lack of attention to defective meters and by failure to set them right or to replace them by tap rate. Some of the municipalities were reluctant even to enhancing the water rates to suit current increases in the running and maintenance costs of their installation.

4. The local officers of the Public Health Department are now entrusted with the responsibility for chlorination of the local water supplies. This responsibility is to be taken over shortly by the Municipal Engineers staff themselves under the control of the Public Health Engineering Officers. Attempts were also being pursued to install automatic chlorination plant, using gaseous chlorine, in all major water-supply systems in operation.

5. Due to paucity of qualified and experienced men, some of the pumping stations were being manned by temporary hand with exemption from prescribed qualifications. The need is being increasingly felt for the standardisation of all pumping station staff and for more effective control over them.

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by the Public Health Engineering Branch, so that the running and upkeep of pumping installations and the maintenance of log books could be placed on a more efficient and fool proof footing.

6. The year under review was a period of severe test for many of the water-supply schemes in operation. Due to the successive droughts during the past four years, the mid-summer of 1950, and more so the following summer of 1951 brought about unprecedentedly low levels of the subsoil water in almost all the infiltration systems of water-supply schemes in operation. As a result the rate of yield from all these sources registered a sharp decline, and necessitated severe curtailments of the hours of pumping and distribution and a reduced rate of supply. Emergent measures of augmentation to the supply had also to be pursued in one or two acute cases.

7. Under the existing rules, the Municipal Commissioner is the authority to grant service connections for water-supply to houses and other premises in municipalities, up to the numerical limit permitted by the Sanitary Engineer to Government. In many of the old Municipal water-supply schemes in operation, the present requirements of the population have far outgrown the scope of the old schemes as installed, and in the absence of any expansions to the old schemes, portions of the towns are either ill-served or not served at all. Any large additions to the existing number of house service connections in these schemes is not possible until the schemes are improved and expanded. As a result, only a limited number of new house service connections are being permitted, which places the Executive Authority in a difficult position in the matter of allotment of such new house service connections. Several applications and appeals in regard to house service connections in a number of such stations had to be dealt with in the face of the practical limitations imposed by old schemes in operation.

8. In certain municipalities again, pit taps were being resorted to to overcome the handicaps of low pressures in the distribution systems installed years ago. This unhealthy procedure can be effectively countered only by improving the distribution systems to suit present demands of supply. The question of finance and the availability of pipes bar progress in this direction. The provision of boosters in the distribution system, to improve the supply conditions in particularly bad zones of the distribution system was being considered in a few cases as a temporary expedient.

9. In regard to the maintenance of drainage schemes, the Madurai Municipality continued to make good use of the sewage by successful and lucrative farming, the effluent from this farm showing uniformly good results. Even so, a substantial portion of the town's sewage is being surplussed as the old sewerage system is inadequate to meet the needs of the present population. The sewage farm at Avaniapuram was being added to, to deal with an increased quantity of sewage. Improvements to the Drainage scheme, and the provision of yet another supplemental sewage farm were under consideration.

Treatment works for the Coimbatore Sewerage Scheme were under execution. In Ootacamund, measures were under consideration to avoid the surplussing of the sewage into the lake, from the overloaded main sewer. The disposal works were also in need of improvement.

Open drainage schemes in operation in certain municipalities were in need of improvements for their better functioning.

10. Appendices A and B show salient details pertaining to the water-supply and drainage systems with special reference to the pumping plants in operation.

CHAPTER VII.—RURAL WATER-SUPPLY SCHEMES.

With the formation of the Public Health Divisions with territorial jurisdictions, proposals in regard to rural water supply schemes prepared by minor irrigation staff under the Revenue authorities, were being sent up to the Executive Engineer (Public Health) concerned by the Collectors for scrutiny and advice. The number of proposals thus received was on the increase, particularly in the Vijayawada and Coimbatore Divisions. The Executive Engineer (Public Health), Vijayawada, applied for special additional staff, to enable him to deal with these schemes without detriment to the normal work of his division.

2. In addition, the Board of Revenue was referring to the Sanitary Engineer to Government certain major and minor schemes of rural water supplies referred to them by the Collectors for sanction. It was observed that many of the proposals received in regard to Rural Water Supply Schemes in progress had not been got up in a complete manner and invariably further details had to be called for before the proposals could be scrutinised and advice given by the Sanitary Engineer to Government.

3. In order to speed up the investigation of certain urgent rural water supply schemes beyond the competence of the minor irrigation staff, the Executive Engineers (Public Health) concerned were requested to help in the conduct of these investigations by giving guidance and instructions to the minor irrigation staff who were asked to work under them for such purpose. Although this procedure was tried as an experiment during the year, it was found that the arrangement did not work satisfactorily. The exercise of dual control over the subordinate engineering staff resulted in difficulties and delays in the conduct of the field work. A suggestion was therefore made to the Board of Revenue that schemes, in respect of which investigations had to be conducted as an urgent measure, could be entrusted to the Sanitary Engineering Branch after obtaining orders of Government.

4. Under the existing procedure, water supplies for rural units up to a population of 10,000 has to be arranged for by the Revenue Board with the assistance of minor irrigation staff. From the proposals received hitherto for Rural Water Supply Schemes, it was seen that the minor irrigation staff were not proving equal to the task and did not have the technical competence or experience required to deal with major Rural Water Supply. The expansion of the Public Health Engineering Department to enable it to take up all rural water supply schemes, in addition to urban schemes, may have to be expedited if any tangible progress were to be achieved in this direction.

CHAPTER VIII.—RESERVE STOCK OF CAST IRON PIPES.

Cast iron pipes and specials, as also Galvanized Iron pipes and fittings continued to be as scarce as ever during the year under review. The output of the Indian manufacturers for Cast Iron pipes was far too inadequate to cope with the increasing demand for such pipes all over the country, so much so that for orders placed with the manufacturers, deliveries were not forthcoming except after a time lag of 2 to 3 years. To break this bottle neck which was a standing impediment to progress on Water Supply and Drainage Schemes, a start was made in 1949-50 to place bulk indents for large quantities of Cast Iron pipes under a special order. Further concerted measures were pursued in this behalf during the year under review in order

to build up a buffer stock of pipes and specials and valves, so that schemes under execution could be pushed through by diverting quantities from the reserve stock to the extent possible.

2. In addition to placing indents on the Indian manufacturers for supply of pipes and specials, special orders were placed for specific quantities of pipes to be imported from abroad to meet urgent requirements of schemes under execution. In respect of Coimbatore Water Supply Improvements duplication of the gravitation main although an indent had been placed about 5 years ago, for requirements in 18 inches diameter Cast Iron pipes, only a fraction of the total requirements had been delivered so far and incoming deliveries were slowing down to an alarming extent. This made the prospect of the completion of this important scheme recede further and further and the municipality was making desperate appeals for the early completion of the scheme. A special order to import 40,000 ft. of Spun iron pipes from the United Kingdom was thereupon placed on the suppliers, the whole quantity to be delivered within a period of one year. Part supply was received during the year under review, within 6 months of the placing of the order, and further shipments were also arriving regularly. Likewise a special indent for certain urgent quantities in 14" and 24" diameter pipes required for the Coimbatore Water Supply Improvements were also arranged for import from Germany. Bulk quantities for Srivilliputhur and Palayamcottai Water Supply Schemes in progress were also being imported from the United Kingdom and Germany. A proposal to import a tonnage of Spun iron pipes of French manufacture was also under active consideration.

3. This apart, a large quantity of the sluice valves of different sizes was being received during the year against orders placed earlier. Cast iron specials and pipes were also being procured side by side, to the extent that the manufacturers could supply them if the normal course, apart from the materials covered by special indents.

4. The building up of such reserve stock against general requirements of all schemes and the importing of pipes for specific requirements of major schemes enabled quick progress being achieved in the execution of several schemes in progress. The completion of the entire pumping main and distribution system of the Chodavaram Water Supply Scheme within one year, and quick progress in the Visakhapatnam Water Supply Improvements, Kumbakonam Water Supply Scheme, etc., was made possible as a result.

CHAPTER IX.—GENERAL.

The Sanitary Engineer to Government is a member of the Board of Public Health as well as the Water and Sewage Purification Committee. He is the Inspecting Officer of the Grant in aid Works (other than Road and Electrical works) and also a Special Councillor of the Corporation of Madras.

He also served as a member of the following Committees during the year :—

- (i) Advisory Committee for the Re-organization of Municipal Administration constituted in G.O. No. 2313, L.A., dated 11th November 1949.
- (ii) Hotel Sanitation Committee constituted in G.O. Ms. No. 3476, Health, dated 5th October 1950.

He also served as a member of the Technological Diploma Examination Board constituted by the Provincial Government.

2. The post of the Junior Engineer for assisting the Sanitary Engineer to Government in his work as Inspecting Officer of the Grant in aid Works of the Corporation of Madras was abolished and the post of an Assistant Engineer (Public Health) was created instead, in G.O. Ms. No. 1536, Health, dated 29th April 1950, and the Assistant Engineer (Public Health) for this work assumed charge on 19th December 1950.

3. The post of the Instructor in Elementary Sanitary Engineering at Madras Medical College continued to be under the Sanitary Engineer to Government. Proposals for the upgrading of the post and the employment of an Assistant Engineer (Public Health) were approved by Government in G.O. No. 3818, Health, dated 10th November 1950. The proposed Assistant Engineer is to be under the administrative control of the Director of Public Health. But pending the appointment of an Assistant Engineer, the post of the Instructor continued as hitherto.

4. A third batch of B.E. Students and a fourth batch of non-B.E. Students from the Department were deputed by the Government for training at the All India Institute of Hygiene and Public Health, Calcutta, for the M.E. (P.H.) course and for Diploma in Public Health Engineering course respectively. Practical training of the Students deputed for the courses mentioned above was also arranged for and given in the sanitary Engineering Branch at the request of the Director of the All India Institute of Hygiene and Public Health, Calcutta.

5. *Direction Personnel.*—Sri S. Rajagopalan, B.E., M.I.E. (Ind.), held the post of the Sanitary Engineer to Government during the year.

The Executive Engineers (Public Health) of North and South Madras Divisions with their headquarters at Madras continued to assist the Sanitary Engineer to Government, in addition to their division work, in the preparation of plans and estimates for the various Water Supply and Drainage Schemes and in dealing with technical references on schemes.

Sri S. T. L. K. V. N. S. Ramanujachari, B.Sc. (Eng.) A.M.I.E. (Ind.) held the post of Mechanical Expert to the Sanitary Engineer to Government and also held additional charge of the post of Assistant Mechanical Engineer from 1st May 1950 a.n. to 16th June 1950 f.n.

Sri M. V. Subramaniam, B.A., B.E., held the post of the Assistant Mechanical Engineer which designation was changed into Additional Mechanical Expert in G.O. No. 3203, Health, dated 12th September 1950.

Sri M. G. Parthasarathy, B.E., Assistant Engineer (Public Health) held the post of the Personal Assistant to the Sanitary Engineer to Government.

Sri T. Durairaj, B.E., M.E. (P.H.), A.M.I.E. (Ind.), Assistant Engineer (Public Health) held the post of Assistant Engineer (Technical Section).

Sri S. R. Srinivasan, B.E., Assistant Engineer (Public Health) took charge of the new post of the Assistant Engineer (Public Health), Corporation Works and Experimental Filter Station on 19th December 1950.

PUBLIC HEALTH DIVISIONS.

The following officers held the post of Executive Engineers (Public Health) of the Public Health Divisions mentioned against them :—

- (1) Sri A. Venkataramanan, B.A., B.E., M.I.E. (Ind.), Executive Engineer (Public Health), South Madras Division.

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(2) Sri M. M. Mani, B.E., A.M.I.E. (Ind.), Executive Engineer (Public Health), North Madras Division.

(3) Sri O. Dhananjayan, C.E., Executive Engineer (Public Health), Coimbatore Division.

(4) Sri P. Thambomalla Reddy, B.A., Executive Engineer (Public Health), Vijayawada Division.

(5) Sri S. Jambunathan, C.E., Executive Engineer (Public Health), Tiruchirappalli Division.

(6) Sri G. R. Subramania Iyer, B.E., Executive Engineer (Public Health), Water supply and Drainage Division, Madurai.

13th August 1951

S. RAJAGOPALAN,
Sanitary Engineer to Government.

APPENDICES

Tenure - 10 years

APPENDIX A—cont.

Details of pumping plant—cont.												Remarks.	
Duty.			Pumpage from head-works per day in the year				Capital cost of the pumping plant. (18)	Maintenance cost of the pumping unit during the year 1950-51. (19)	Whether mechanical or not to measure the quantity pumped. (20)	Whether chloromine plant is installed or not. (21)	(22)		
G. P. M. (12)	Head foot. (13)	Present condition of plant. (14)	Cost per thousand gallons of water pumped in annum. (15)	Maximum. (16)	Minimum. (17)								
MUNICIPALITIES—cont.													
1 Adoni Improvements	320	Satisfactory	..	..	..	..	..	..	..	..	..		
2 Ananthapur	240	Do.	3.04	1,84,600	1,10,000	17,500	11,942	..	Venturi meter.	..	..		
	240	Do.	..	..	..	..	..	..	..	..	..		
	384	Do.	..	..	..	..	..	..	..	..	..		
	(are motors which drive pumps No 182. 240/275	Do.	..	..	..	..	..	..	..	..	..		
3 Bellary	240	Satisfactory.	5.55	4,63,600	91,200	77,250	47,985	Venturi meter.	No	..	..		
	300	Do.	..	..	..	..	..	..	..	..	..		
4 Bodinayakanur	100	Old condemned	..	..	..	..	..	..	No	..	..		
5 Cuddapah	100	Satisfactory	2.90	3,36,000	7,000	15,763	17,663	Venturi meter.	No	..	..		
	500	Do.	..	..	..	..	..	..	..	..	..		
	450	Do.	..	..	..	..	..	..	..	..	..		
Improvements	500	..	..	..	..	..	..	..	..	..	..		
6 Cuddalore	100	Satisfactory	5.13	96,200	23,000	22,000	9,012	Yes	No	..	..		
	100	Do.	..	..	..	..	..	..	..	..	..		
7 Chingleput	150.5	Satisfactory	2.00	3,09,400	2,23,600	25,056	12,295	Venturi meter.	No	..	..		
	250	Do.	..	..	..	..	..	..	..	..	..		
	240	Do.	..	..	..	..	..	..	..	..	..		
	173	Do.	..	..	..	..	..	..	..	..	..		
	350	Do.	1.73	58,000	95,000	10,500	11,907	Venturi meter.	No	..	..		
	350	Do.	..	..	..	..	..	..	..	..	..		
8 Chidambaram	150.5	Satisfactory	..	..	..	..	..	..	..	..	..		
	250	Do.	..	..	..	..	..	..	..	..	..		
	240	Do.	..	..	..	..	..	..	..	..	..		
	173	Do.	..	..	..	..	..	..	..	..	..		
	350	Do.	1.73	58,000	95,000	10,500	11,907	Venturi meter.	No	..	..		
	350	Do.	..	..	..	..	..	..	..	..	..		
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	100	Do.	..	..	..	..	..	..	..	..	..		
	100	Do.	..	..	..	..	..	..	..	..	..		
	100	Do.	..	..	..	..	..	..	..	..	..		
	100	Do.	..	..	..	..	..	..	..	..	..		
	100	Do.	..	..	..	..	..	..	..	..	..		
	100	Do.	..	..	..	..	..	..	..	..	..		
	100	Do.	..	..	..	..	..	..	..	..	..		
	100	Do.	..	..	..	..	..	..	..	..	..		
	100	Do.	..	..	..	..	..	..	..	..	..		
	100	Do.	..	..	..	..	..	..	..	..	..		
	100	Do.	..	..	..	..	..	..	..	..	..		
	100	Do.	..	..	..	..	..	..	..	..	..		
	100	Do.	..	..	..	..	..	..	..	..	..		
	100	Do.	..	..	..	..	..	..	..	..	..		
	100	Do.	..	..	..	..	..	..	..	..	..		
	100	Do.	..	..	..	..	..	..	..	..	..		
	100	Do.	..	..	..	..	..	..	..	..	..		
	100	Do.	..	..	..	..	..	..	..	..	..		
	100	Do.	..	..	..	..	..	..	..	..	..		
	100	Do.	..	..	..	..	..	..	..	..	..		
	100	Do.	..	..	..	..	..	..	..	..	..		
	100	Do.	..	..	..	..	..	..	..	..	..		
	100	Do.	..	..	..	..	..	..	..	..	..		
	100	Do.	..	..	..	..	..	..	..	..	..		
	100	Do.	..	..	..	..	..	..	..	..	..		
	100	Do.	..	..	..	..	..	..	..	..	..		
	100	Do.	..	..	..	..	..	..	..	..	..		
	100	Do.	..	..	..	..	..	..	..	..	..		
	100	Do.	..	..	..	..	..	..	..	..	..		
	100	Do.	..	..	..	..	..	..	..	..	..		
	100	Do.	..	..	..	..	..	..	..	..	..		
	100	Do.	..	..	..	..	..	..	..	..	..		
	100	Do.	..	..	..								

9 Coimbatore	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	Improvement under execution.
Improvements	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
10 Coonoor	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
11 Cochin	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Improvements	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
12 Dindigul	150	Satisfactory	3.11	1,41,000	63,200	3,610	8,316	Yes	..	..	..	..	..	..	..	New scheme investigated and report submitted.
Improvements	140	Do.	..	..	..	..	..	..	..	..	..	..	..	..	..	..
13 Eluru	120	Do.	1.43	70,00,500	1,88,500	45,363	21,004	No	..	..	..	..	..	..	..	..
Improvements	150	Do.	..	..	..	..	..	..	..	..	..	..	..	..	..	..
14 Erode	300	Do.	2.70	5,76,000	5,04,000	21,625	34,961	Venturi meter.	No	..	..	..	..	..	..	Additional filter and coagulants tank installed installation of a 3rd electric unit one for high lift and one for low lift is contemplated.
Improvements	300	Do.	..	..	..	..	..	..	..	..	..	..	..	..	..	..
15 Guntur (old)	300	Satisfactory	1.43	3,64,140	2,34,720	10,006	10,893	Output measured by V notch arrangement.	No	..	..	..	..	..	..	New scheme under execution.
Do. (new)	300	Do.	..	..	..	..	..	..	..	..	..	..	..	..	..	..
16 Gudiyaatam	300	Satisfactory	1.76	3,24,000	2,07,000	8,000	7,475	No	..	..	..	..	..	..	..	Pump number 2 was completely overhauled re-moving worn out shaft and bearings The gas engine unit is a stand by.
Improvements	300	Do.	..	..	..	..	..	..	..	..	..	..	..	..	..	..
17 Kurnool	600	Do.	1.35	7,80,000	60,000	8,573	15,152	V notch recorder.	No	..	..	..	..	..	..	..
Improvements	600	Do.	..	..	..	..	..	..	..	..	..	..	..	..	..	..
18 Kumbakonam (old)	650	Do.	1.43	7,47,500	50,000	3,387	7,333	No	..	..	..	..	..	..	..	..
(new)	35	Pumps taken over in August 1950.	..	..	..	..	..	..	..	..	..	..	..	..	..	..
19 Kodalkanal	35	Satisfactory.	29.93	25,200	8,914	10,000	11,206	Yes	..	..	..	..	..	..	..	..
Improvements	80	Do.	..	..	..	..	..	..	..	..	..	..	..	..	..	..
20 Karakudi	80	Do.	1.25	9,84,500	3,40,000	28,000	15,565	Venturi meter	No	..	..	..	..	..	..	..
Improvements	1100/1306	Satisfactory	1.11	4,60,100	3,00,000	10,620	9,672	Water meter	No	..	..	..	..	..	..	..
21 Kancheepuram	1100/1306	Do.	1.41	10,25,200	4,34,100	23,660	21,720	Venturi meter.	No	..	..	..	..	..	..	..
22 Karur	300	Do.	1.77	7,37,500	93,750	7,007	25,264	Venturi meter.	Chloro-feeder.	..	..	..	..	..	..	..
23 Kakkanda (old)	1,250	Do.	0.95	44,26,000	10,14,000	57,607	47,975	Venturi meter with recorder.	Yes	..	..	..	..	..	..	Comprehensive improvements under scheme investigation and design.
(new)	1,250	Do.	4.93	5,69,336	3,49,464	46,150	53,506	Venturi meter.	Yes	..	..	..	..	..	..	Most of the materials required for electrification were received.
24 Masulipatnam	2400/3200	Satisfactory	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Improvements	2400/3200	Do.	..	..	..	..	..	..	..	..	..	..	..	..	..	..
25 Madurai	606	Do.	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Improvements	606	Do.	..	..	..	..	..	..	..	..	..	..	..	..	..	..

APPENDIX A—cont.

Serial number and name of station	Scheme when initiated and completed	Cost of scheme as executed in lakhs.	Is scheme designed as partial or full.	Rate of supply in gals. per head per day.		Source of supply and treatment method.	Is supply pumped or gravitational.	Details of pumping plant.		
				As designed.	As actually obtained.			Type of plant.	Number of units.	H.P.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
MUNICIPALITIES—cont.										
23 Kakinada	 (Old) 1897-1903.	Rs. Lakhs. 4.425	Full	.. ..	15 10.1	(Old) Samalkota canal fed Rajah tank stored water treated on flow sand filters. Additional storage tank proposed at Samalkota.	Pumped	 Electrical Do. Do.	1 45 2 45 3 25 4 25 (summer pumping).	.. ..
24 Masulipatnam	 1907-1918	 6.75	Full	.. ..	15	Bandar canal fed storage tank water treated on Jewell's pre-pressure filters. Infiltration gallery in the Vaigai river bed and bank at Korbadi.	Pumped	 Electrical Do. Do.	1 170 2 170 3 15 4 15	.. ..
25 Mathura	 1894	 14.32	Full	.. ..	15 12.4	Filter gallery at Arapalayam across Vaigai river. Bhavani river water treated on Paterson's gravity filter.	Do.	 Do. Do.	1 170 2 170 3 15 4 15	.. ..
Improvements	 1950	 0.95	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..
26 Mettupalayam	 1930-1934	 2.30	Full	.. ..	5 4.6	.. ..	.. ..	.. ..	.. ..	.. ..
Improvements	 1950	 3.33	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..
27 Nellore	 1904-1908	 1.722	Full	.. ..	15 11.8	Infiltration gallery in the Pennar river bed.	Pumped	 Electrical (high lift). Electrical (low lift). Electrical	1 13 2 13 3 8 4 8	.. ..
Improvements	 1937-1914	 0.96	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..
28 Nazareth	 1907-1914	 9.50	Full		15 15	Infiltration gallery in the Vettar river bed.	Pumped	 Electrical Do. Steam engine.	1 40 2 40 3 50	

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Serial number and name of station	Scheme when initiated and completed	Cost of scheme as executed in lakhs.	Is scheme designed as partial or full.	Rate of supply in gals. per head per day.		Source of supply and treatment method.	Is supply pumped or gravitational.	Details of pumping plant.		
				As designed.	As actually obtained.			Type of plant.	Number of units.	H.P.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
29 Uthamamangalam	 1910	 5.50	Full	.. ..	20 8.5	Impounding reservoirs ..	Gravitational.	.. ..	.. ..	.. ..
30 Proddatur	 1926-1936	 0.50	Full	.. ..	10	Infiltration well in the Pennar river.	Pumped	 Steam engine.	1 10 2 10 3 10 4 10	.. ..
31 Palacole	 1924-1931	 4.225	Do.	.. ..	10 10	Karasapur canal storage tank water treated on Jewell pressure filters.	Do.	 Do. Do.	1 10 2 10 3 10 4 10	.. ..
32 Pedukottai	 1900	.. ..	Do.	.. ..	5	Rainfed tank water treated on Jewell pressure filters. In commission—Pedukulam. —Old Jewell gravitational filter standby.	Do.	 Electrical Do. Do.	1 15 2 15 3 15 4 15	.. ..
33 Palni	 1912-1932	 1.00	Do.	.. ..	10	Rain-fed tank water treated on Jewell pressure filters. In commission—Pedukulam. —Old Jewell gravitational filter standby.	Do.	 Do. Do.	1 3 2 10 3 10 4 10	.. ..
34 Periyakulam	 1906-1912	 3.15	Full	.. ..	15 10.7	Vellar Ammayapatti Palar river water tapped in the hills. Berilam water (from Kodai Hills) treated on slow sand filters.	Gravitational.	 Do. Do.	1 15 2 15 3 15 4 15	.. ..
Extensions	 1928	 0.51	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..
35 Pollechi	 1930-1937	 0.32	Full	.. ..	15 15	Infiltration gallery in the Godavari river water treated on Paterson gravity filters.	Pumped	 Electrical Do. High lift. Low lift. Electrical	1 15 2 15 3 15 4 15	.. ..
36 Rajahmundry.	 1928-1934	 6.42	Do.	.. ..	15 14.3	.. ..	Do.	 Do. Do.	1 16 2 16 3 16 4 16	.. ..
37 Srisaigam	 1900-1939	 1.14	Do.	.. ..	10 10	Infiltration well near Trunanjana Convey.	Do.	 Do. Do.	1 16 2 16 3 16 4 16	.. ..
Improvements	 1950	 0.38	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..
38 Salem	 1911	 8.27	Full	.. ..	15 15	(Old) Rainfed. Panamathupatti lake water treated on slow sand filters.	Gravitational.	 Do. Do.	1 16 2 16 3 16 4 16	.. ..
Improvements	 1951	 81.45	.. ..	.. ..	15	(New) Mettur Reservoir water treated on Paterson gravity filters.	.. ..	.. .. Do. Do.	1 16 2 16 3 16 4 16	.. ..
39 Tadpetri	 1930-1933	 0.95	Full	.. ..	15 4	Infiltration gallery in the Pennar river bed.	Pumped	 Oil engine Do. Do.	1 6 2 6 3 6 4 6	.. ..
40 Tiruchirappalli	 1896	 9.30	Do.	.. ..	15 15	Infiltration works in the Cauvery river bed.	Do.	 Do. Do.	1 120 2 120 3 120 4 120	.. ..
Improvements	 1951	 0.68	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..
41 Tirupati	 1895-1899	 1.00	Full	.. ..	15 14	Infiltration gallery in the Kalyani river.	Gravitational	 Do. Do.	1 100 2 100 3 100 4 100	.. ..
42 Tiruvannamalai	 1900-1934	 3.45	Do.	.. ..	5 5	Infiltration gallery in the Periyar river.	Pumped	 Electrical Do. Do.	1 20 2 20 3 20 4 20	.. ..
43 Tiruvallur	 1930-1936	 1.43	Do.	.. ..	5 4.4	Infiltration well in the Cooum river.	Do.	 Do. Do.	1 7.5 2 7.5 3 7.5 4 7.5	.. ..
44 Tanjore	 1891-1895	 5.30	Do.	.. ..	15 15	Filter basin in the Vennar river.	Do.	 Do. Do.	1 65 2 65 3 65 4 65	.. ..
Improvements	 1928-1940	 1.84	Partial	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..
45 Tiruppur	 1950	 0.49	.. ..	.. ..	.. ..	Infiltration gallery in the Kolliveli vari.	Do.	 Do. Do.	1 3 2 3 3 3 4 3	.. ..

APPENDIX A—cont.

Serial number and name of station.	Details of pumping plant—cont.			Present condition of plant.	Cost per thousand gallons of water pumped in annas.	Pumpage from head works per day in the year.		Capital cost of the pumping plant.	Maintenance cost of the pumping unit during the year 1950-51.	Whether mechanical recorder provided or not to measure the quantity pumped.	Whether chloroform plant is installed.	Remarks.
	Duty.		Maximum.			Minimum.						
	G.P.M. (12)	Head Feet. (13)										
MUNICIPALITIES—cont.												
26 Mettupalayam Improvements	140 160 160 160	130 130 57 57	Satisfactory Do. Do. Do.	.. .. .. ..	.. .. .. ..	.. .. .. ..	.. .. .. ..	.. .. .. ..	.. .. .. ..	No	Yes	
27 Nellore Improvements	700/750 700/750	74 66 74 66	Do. Do.	0.82	858,000	396,000	8,856	11,745	Venturi meter.	No	..	
28 Nagapattinam	750 750 508	120 120 147	Do. Do. Do.	9.38	1,021,200	510,100	105,230	20,850	Venturi meter.	Chloro-feeder.	..	
29 Ootacamund	308	55	..	..	..	..	..	..	..	..	..	Steps taken to replace one steam plant by an oil engine.
30 Proddatur	208	55	..	..	..	..	26,261	..	..	..	..	
31 Palacole	240 240	68 68	Do. Do.	3.90	236,368	182,130	15,712	18,644	No	..	Chloro feeder under repairs).	
32 Padakottai	250 137 30 60 90 150	110 133 34 22 160 120	Do. Do. Do. Do. Unit worked occasionally.	.. .. .. .. ..	240,000 .. 34,500 ..	27,500 .. 16,000 ..	.. .. .. ..	.. .. .. ..	No .. No ..	 No ..	.. .. .. ..	
33 Palni	..	..	..	..	..	..	..	..	..	..	..	
34 Periyakulam Extensions	470 470	325 325	Satisfactory Do.	4.43	370,000	140,000	91,000	24,345	Venturi meter.	Yes	..	Orders have been placed for bigger capacity pumping plants. Improvements under execution.
35 Pollachi	875 875 875	86 86 45	Do. Do. Do.	1.20	1,890,000	839,000	7,379	30,952	Venturi meter.	Yes	..	
36 Rajahmundry	..	..	..	..	..	..	..	..	..	..	..	
37 Sistrangan Improvements	230 250	65 65	Do. Do.	1.37	312,000	130,000	6,346	5,179	Yes	..	No	Improvements scheme nearing completion.
38 Salem Improvements	..	..	..	..	..	..	..	..	..	..	..	

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39 Tadipatri	104 104	75 75	Satisfactory. Do.	..	106,300	58,400	6,400	6,136	Yes	No	Improvement under execution.
40 Tiruchirappalli Improvements	1800 2150 2150 1300	150 106 106 150	Do. Do. Do. Do.	3.62 0.95	3,880,000	2,270,000	31,081	81,484	Venturi meter with recorder.	Yes	..
41 Tirupati	230/290 210/200	116 123/150	Satisfactory. Do.	..	..	..	..	..	..	..	..
42 Tiruvannamalai	105 105	92 92	Do. Do.	1.11	228,700	64,500	3,000	3,400	Yes	No	..
43 Tiruvallur	1100 1100	130 130	Do. Do.	0.85	1,382,000	319,000	20,132	21,576	Venturi meter and recorder.	Yes	..
44 Tanjore Improvements	105 105	43 43	Do. Do.	2.73	127,500	48,750	7,686	4,179	Yes under repairs.	No	..
45 Tiruppur Improvements	100 100	40 40	Do. Do.	..	..	..	..	..	..	..	Comprehensive improvements scheme to be investigated. Improvements under execution.
46 Tuticorin Improvements	833 833	65 65	Do. Do.	..	..	..	..	..	No	No	..
47 Vellore	450 450	230 230	Do. Do.	..	..	..	..	..	No	No	..
48 Vijayawada Improvements	600 1000 1200 1200	152 146 100 100	Do. Do. Do. Do.	10.34	7,573,460	1,088,729	13,860	34,426	Venturi meter	No	Comprehensive improvements scheme under investigation by special subdivision.
49 Virudunagar	345 345	187 187	Do. Do.	1.62	391,800	149,700	11,920	10,809	Yes	No	..
50 Vixathapatnam	290 290	48 48	Do. Do.	1.58	404,000	165,000	17,524	10,435	No	No	..
	130 130	265 265	Do. Do.	3.66	193,200	102,400	6,885	10,621	Yes	No	..
	300 300	300 300	Do. Do.	4.00	..	..	1,000,000	90,432	..	..	Improvements under execution
	416 550	235 150	Do. Do.	..	..	..	..	..	..	..	..
	500 500	150 150	Do. Do.	..	..	..	..	..	..	..	..
51 Vizianagaram Improvements	261 261	270 270	39 years old units. Satisfactory.	5.08	7,95,800	356,100	91,000	78,793	Venturi metre.	No	..
52 Walajpet	100 100	125 125	Satisfactory Do.	..	..	..	..	..	Water meter under repairs.	No	..

MUNICIPALITIES—cont.

Serial number and name of station.	Details of pumping plant.										
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
	Scheme when initiated and when completed.	Cost of scheme as executed.	If scheme was designed as partial or full.	As designed.	As actually obtained.	Rate of supply in gals per head per day.	Source of supply and treatment method.	Supply pumped or gravitational.	Type of plant.	Number of units.	H.P.
MUNICIPALITIES—cont.											
46 Tuticorin	 1896-1929.	.. 2.00	Full	..	15	..	Infiltration gallery and well in the Tambraparni river.	Pumped ..	Oil engine .. Do. Electrical ..	1 .. 2	75 75 46
Improvements	 -1950.	.. 0.04	Full	..	15	12.8	(Old.) Rained tank water (Oteri) treated on slow sand filters and supplemented by infiltration gallery outside the tank bund.	Gravitational.	.....	..	..
47 Vellore ..	 1902-1907.	.. 1.39	Full	..	..	..	(New.) Infiltration works in the Palar river bed.	Pumped ..	Gas engine .. Do. Electrical ..	1 .. 3	47.52 47.52 65
48 Vijayavada ..	 Redistribu- tion in 1938.	.. 7.06	Full	..	15	8.0	Infiltration wells in the Krishna river padural.	Pumped ..	Do. Do. Do.	1 .. 2	55 55 35
Improvements	 -1950.	.. 2.50	Full	..	10	9.6	Infiltration gallery across the Aruna river.	Pumped ..	Do. Do. Mudharlova--	1 .. 2	35 35 16.17
49 Viradunagar ..	 1929-1938.	.. 6.41	Full	..	15	..	at Mudharlova and stored water treated on slow sand filters; supplemented by infiltration gallery along the toe of the bund.	Gravitational combined with pump.	Oil engine .. Do. Walkair-- Electrical ..	1 .. 2 ..	16.17 16.17 22 22
50 Visakhapatnam	 1897-1903.	.. 4.21	Full	..	..	..	(New) Infiltration wells in the Gosthani river bed.	Pumped ..	High lift-- Oil engine .. Do. Do.	1 .. 3 ..	92 92 92 92
51 Vizianagaram ..	 1898-1912	.. 4.98	Full	..	15	..	Infiltration gallery in the Nellimarla river bed.	Pumped ..	Low lift-- Oil engine .. Do. Do.	1 .. 3 ..	13.5 13.5 13.5 35
Improvements.	 -1950.	.. 0.45	Full	..	..	..	Infiltration well in the Palar river.	Pumped ..	Steam engine .. Do. Do.	1 .. 2	35 35 35
52 Waltlapet ..	 1942-1946	.. 1.10	Full	..	5	4.80	Infiltration well in the Palar river.	Pumped ..	Electrical .. Do.	1 .. 2	10 10 10

PANCHAYAT BOARDS.

No.	Name	Year	Partial	2-57	5	..	Infiltration well in the	Pumped	Electrical	1
1	Aranthangi	1938-1950	Partial	..	5	..	Infiltration well in the Vellar river.	Do.	Do.	1
2	Arkonam	1931-1939	Full	1-93	10	..	Infiltration gallery in the Kallar river.	Do.	..	2
3	Batlagundu	1940-1942	Do.	0-93	5	..	Infiltration well in the Manjalar river.	Do.	Do.	1
4	Dharmavaram	-1914	Do.	0-09	5	..	Infiltration well (local)	Do.	Do.	5/7
5	Gudur	1928-1931	Do.	1-14	7-5	..	Infiltration well near irrigation tank	Do.	Gas engine	12-5
6	Koelgi	-1915	Do.	0-11	5	..	Infiltration well (local)	Do.	Do.	1
7	Manaparai	1937-1939	Do.	0-15	1	5-0	Infiltration well in the Manundiar river.	Do.	Oil engine	18
8	Rameswaram	1914-1922	Full	0-35	10	..	Infiltration wells in fresh water tract in sand dunes.	Do.	Do.	2
9	Ramachandrapuram.	1933-1935	Do.	0-06	1	0-16	Storage tank water treated on slow sand filters.	Do.	Do.	11/12
10	Tiruttani	1930-1931	Do.	0-41	3	2-2	Damarakulam	Do.	Do.	3
11	Yenniganur	1925-1927	Partial	0-38	5	..	Infiltration well (local)	Do.	Do.	6

APPENDIX A—cont.

Serial number and name of station.	Details of pumping—cont.				Pumpage from head-works per day in the year.		Capital cost of the pumping plant.	Maintenance cost of the pumping unit during the year 1950-51.	Whether mechanical recorder provided or not to measure the quantity pumped.	Whether chloroform plant is installed or not.	Remarks.
	Duty.		Present condition of plant.	Cost per thousand gallons of water pumped in annas.	Maximum.	Minimum.					
	G.P.M.	Head feet.									
(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	
PANCHAYAT BOARDS.											
1 Arantangi ..	100	80	Satisfactory	..	..	..	..	..	Water meter ..	No ..	..
2 Arkonam ..	200	132	Do.	337	193,300	70,900	5,711	8,527	Yes. Required	No ..	..
3 Batlagundu ..	146	60	Do.	319	44,600	21,400	2,500	2,231	Yes ..	No ..	..
4 Dharmavaram ..	60	70	Do.	..	18,000	12,000	..	..	No ..	No ..	..
5 Gudur ..	118	91	Satisfactory	..	..	..	..	..	No ..	No ..	Repairs have been carried out.
6 Kosi ..	80	..	Mediocre	..	..	..	..	..	No ..	No ..	Old. Needs replacement.
7 Manaparai ..	53	97	Satisfactory	..	..	..	4,890	3,203	Yes ..	No ..	..
8 Rameswaram ..	141	120	Old and Mediocre.	723	1,22,500	17,500	21,490	5,955	No ..	No ..	..
9 Ramachandrapuram ..	83	17	..	..	..	..	..	..	..	..	Not in the Inspection list.
10 Tiruttani ..	60	90	..	..	..	..	..	..	..	..	Do.
11 Yemmiganur ..	135,330	85/61	Satisfactory	..	..	..	..	..	No ..	No ..	The old 5 h.p. oil engine pump set worked till September 1950. A new oil engine driven pump set 13 h.p. was installed in September 1950.

APPENDIX B.

Serial number and name of station.	When installed.	Cost of scheme as executed.	Type of scheme.	Drainage.	Details of pumping plant.						Present condition of plant.
					Type of plant.	Number of unit.	H.P.	Duty.			
								G.P.M.	Head.		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	
DRAINAGE.											
RS.											
IN LAKHS.											
1 Ootacamund ..	1894	Not available.	Underground drainage.	Gravitation.							
2 Madurai ..	1929	50.00	Do.	Pumping ..	Main stations—Steam Engines.	1	60	2,140	58.4		
					Sub-Pumping Station No. 1, Electrical.	2	60	2,140	58.4		
					Sub-Pumping Station No. 2, Electrical.	3	60	2,140	58.4		
					Sub-Pumping Station No. 3, Electrical.	1	3.5	250	13		
					Sub-Pumping Station No. 4, Electrical.	2	3.5	250	13		
					Sub-Pumping Station No. 5, Electrical.	3	5.5	750	15		
					Sub-Pumping Station No. 6, Electrical.	1	3.5	250	13		
					Sub-Pumping Station No. 7, Electrical.	2	3.5	250	13		
					Sub-Pumping Station No. 8, Electrical.	3	5.5	750	13		
					Sub-Pumping Station No. 9, Electrical.	1	3.5	200	19		
					Sub-Pumping Station No. 10, Electrical.	2	3.5	200	19		
					Sub-Pumping Station No. 11, Electrical.	3	5.5	500	19		
					Sub-Pumping Station No. 12, Electrical.	1	5.5	250	20		
					Sub-Pumping Station No. 13, Electrical.	2	5.5	250	20		
					Sub-Pumping Station No. 14, Electrical.	3	11.5	750	30		
					Sub-Pumping Station No. 15, Electrical.	1	3.5	170	22		
					Sub-Pumping Station No. 16, Electrical.	2	3.5	170	22		
					Sub-Pumping Station No. 17, Electrical.	3	5.5	500	20		
3 Vellore ..	1927	7.60	Open drainage (partial).	Do.	Gas engine	1	28/32	285	40		
					Do.	2	28/32	285	40		
					Do.	3	7.5	220	40		
					Do.	4	7.5	220	40		
4 Bellary ..	1940	6.80	Do.	Gravitation..	..	..	..	..	..		
5 Vijayavada ..	1939	14.50	Do.	Pumping ..	Electrical ..	1	9	450	30		
					Electrical ..	2	23.5	900	42		
					Electrical ..	3	23.5	900	42		
6 Chingleput ..	1938	3.60	Do.	Gravitation..	..	..	..	..	..		
7 Rajahmundry ..	1944	24.00	Do.	Pumping ..	Electrical ..	1	6.5	247	69		
Improvements ..	1950	3.36	Do.	Do.	..	2	6.5	247	68		
8 Srirangam ..	1948	2.30	Do.	Do.	..	1	3	165	25		
					..	2	5	210	27		

FEET.

APPENDIX B.—cont.

Serial number and name of station.	When installed.	Cost of scheme as executed.	Type of scheme.	Drainage.	Type of plant.	Details of pumping plant.			Present condition of plant.
						Number of unit.	H.P.	Duty. G.P.M. Head.	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9) (10)	(11)
DRAINAGE—cont.									
		RS. IN LAKHS.							
9 Salem	1932	1.75	Open drainage (partial)	Gravitational..	..	..	..	..	..
10 Tirupathi	1934	3.50	Open drainage ..	Do.	..	..	..	..	..
		0.50							
		0.05							
11 Nagapattinam	1941	11.03	Open drainage (partial).	Pumping	Pumping Station No. 1, Electrical.	1	15	394	53
	1950	2.27				2	5.5	197	34
12 Pudukkottai	1950	21.41	Open drainage ..	Gravitational..	Pumping Station No. 2, Electrical.	3	5.5	197	34
13 Coimbatore	1950	21.41	Underground drainage.	Do.		1	5	210	26
						2	5	210	26
						3	7.5	324	33



HEALTH DEPARTMENT

G.O. No. 3737, 31st October 1951

Administration Report—Sanitary Engineering Branch—1950-51—
Reviewed.

READ—the following papers :—

Letter from Sri M. S. THIRUMALE IYENGAR, B.E., M.E., (Hons.), M.I.E. (Ind.), I.S.E., Chief Engineer, Public Health, to the Secretary to Government, Health Department, dated Madras, the 10th September 1951, No. 3139-PWW/51-6.

[Administration Report - Sanitary Engineering Branch—Annual
Report for the financial year 1950-51.]

In continuation of my letter No. 3139-PWW/51-5, dated 27th August 1951, I forward herewith Sanitary Engineer's letter No. 11696-2/51-E-1, dated 13th August 1951, enclosing the Administration Report of the Sanitary Engineering Branch for the year 1950-51 together with Appendices A and B thereto.

2. Chapter I of the Administration Report as sent by the Sanitary Engineer (copy also since submitted to Government with Sanitary Engineer's letter No. 11696-31/51, dated 5th September 1951), is an elaborate dissertation on the position and activities of the Sanitary Engineering Branch before and after the reorganization. The opening chapter in the last year's report has already given a brief picture of not only the reorganized branch but also other allied important matters like the 5-year plan, financial policy, creation of reserve stock, etc., which are intended to facilitate quick execution of water-supply and drainage schemes. All this need not be repeated in this year's report. Moreover the figures of expenditure in paragraph 6 of Chapter I of the original report prepared by Sanitary Engineer attempts to present a comparative picture of the progress in execution made before reorganization and after reorganization. Such figures of expenditure are not always a true measure of the volume of actual work done by way of execution of a scheme especially having regard to the steady uptrend in the cost of materials like cast-iron pipes, sluice valves, etc. I have therefore completely cut out Chapter I of the report as sent by the Sanitary Engineer.

3. Chapter II of the Sanitary Engineer's original report also contains repetitions of what have been stated in the previous report and what are stated in the subsequent chapters of the present report. I have therefore suitably recast Chapter II which is now numbered as Chapter I and the numbers of subsequent chapters have been altered also.

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4. In the chapter relating to Municipal Engineering Service and rural water-supply schemes, the Sanitary Engineer has given an inkling of certain changes, considered necessary by him in the organization of the Municipal Engineering and Subordinate Service and the staff for execution of rural water-supply schemes, now within the province of the Revenue Department. The reorganization of the Municipal Engineering Service is under separate consideration now. Regarding the expansion of the Sanitary Engineering Branch for taking over the execution of rural water-supply schemes also, it will be recalled that according to the recommendation of the Water-supply and Drainage Committee, the execution of rural water-supply schemes should be taken over by an independent Public Health Engineering Department. Therefore, it seems that the question of taking over the entire execution of rural water-supply schemes can be considered only when a Public Health Engineering Department is constituted. However, for the present, the existing system whereby selected major rural water-supply schemes are entrusted to the Sanitary Engineer for investigation, design and execution by employing additional staff as found necessary may continue.

5. Regarding the last paragraph of the Sanitary Engineer's letter enclosing the Administration Report, I agree that copies of his Administration Report may be furnished to the department specified by the Sanitary Engineer.

6. Appendices A and B are on the lines of those furnished with the last year's report. In Appendix A to this year's report some additional particulars are given in columns (17) to (22).

ENCLOSURE.

Letter from Sri S. RAJAGOPALAN, B.E., M.I.E., Sanitary Engineer to Government, to the Chief Engineer, Public Works Department (General), dated Madras, the 13th August 1951, No. 11696-2/51-E-1.

[Administration Report—Sanitary Engineering Branch—Annual Report for the financial year 1950-51. Reference.—Correspondence resting with this office No. 11696-1/51-E-1, dated 10th August 1951.]

I forward herewith my Annual Report for the period from the 1st April 1950 to the 31st March 1951.

2. With the year under review began the effective working of this branch under the reorganized set-up. I have explained, in the first two chapters of the report, the background and the scope of this reorganization, and the structure of this branch as reorganized, so that the functions and activities of the branch now and in the coming years could be understood and appreciated.

3. Chapter III gives, as in the past year, statistical particulars in regard to population, schemes in operation and the work ahead. The appendix to the report contains all salient details of the schemes in operation including particulars of the pumping plants and the reports of the Mechanical Expert on their working and performance.

4. Chapters IV and V give details of the progress made in the year on the various schemes under execution, design and investigation, and particulars of the grant-in-aid works of the Madras Corporation Water-Supply and Drainage Schemes, coming within the purview of the Sanitary Engineer as the Inspecting Officer for such works on behalf of the Government.

5. In Chapter VI, I have dealt with certain aspects of the Municipal Engineering Service and the Municipal Subordinate Engineering staff which are relevant in this report. As the Sanitary Engineer has to exercise administrative control over the Municipal Engineering Service and advisory control over the Subordinate Municipal Engineering staff, I consider it necessary to review in the broad outline, their working year after year in this report.

6. Chapter VII deals with the important subject of the maintenance of schemes in operation, and the existing handicaps attendant thereon. I consider it is essential to bring out the salient features in the maintenance of the several costly schemes in operation, and to touch upon the points requiring attention, so that the annual report may serve to convey a broad picture of the conditions obtaining and the measures required for their improvements from time to time.

7. Chapter VIII deals with the question of Rural Water-supply as far it came within the purview of this department. Experience gained with the present arrangement, under which rural water-supplies are being prosecuted by Minor Irrigation Engineering staff as the mainstay for professional advice, shows that in many cases, the minor irrigation staff do not have the competence and experience required to deal efficiently with rural water-supply schemes, other than of a minor nature. Some radical change in the present setup would seem to be necessary.

8. Chapter IX describes briefly the activities pursued by this department to procure the scarce materials required for water-supply and drainage schemes, i.e., cast-iron pipes, and specials and sluice valves, etc. Large quantities were being received during the year, both from the Indian manufacturers and from outside the country, in a concerted attempt to build up a reserve stock of cast-iron pipes and specials and thereby speed up schemes in progress.

9. I have endeavoured to make the present Annual Report more comprehensive than in the previous years, inasmuch as the department is entering into a new phase of its history and the several functions falling to this branch should be brought out in their correct perspective, so that its activities now and in the coming years may be understood and appreciated. Accordingly the chapters on Municipal Engineering Service and maintenance of schemes have had to include a review of the past also, in order to explain the background and the improvement measures now called for.

10. The year under review has registered a better progress in all directions as compared to the previous year. Even so, the handicaps of building up a new organization, almost from scratch, could not be fully surmounted during the year as the problem of manning the different sanctioned posts (both technical and administrative) in the new setup, by suitable trained personnel, continued to be difficult. Raw Engineering Graduates, even if available to fill sanctioned posts, had to be given training for a minimum period before they became conversant with the special nature of the work in this branch and could make themselves effectively useful in shouldering their allotted work on design or investigation of schemes. The period of transition for a newly reorganized and specialized branch of Engineering was thus a period of stress and entailed a strenuous and heavy responsibility on the higher officers in charge of this branch. Judged from the performance during the year, however, the reorganized branch should be deemed to have justified itself, and better progress can be expected in the coming years.

11. As the activities of the Sanitary Engineering Branch relate also to the Public Works Department and Local Administration Department of the Government, and the several municipalities of the State, I would suggest that copies of my Annual Reports with the order of Government Health Department thereon, may be furnished to the concerned Departments of the Secretariat, and to all the municipal Councils, as also to the Board of Revenue.

Order—No. 3737, Health, dated 31st October 1951.

Recorded.

2. The number of municipal and panchayat water-supply schemes in operation during the period under review was 63 as against 62 in the previous year. The new scheme completed and brought into commission in the year was the Arantangi Panchayat Water-Supply Scheme. The number of municipal drainage schemes in operation was 13 as in the previous year. No drainage scheme was functioning in any panchayat.

3. The number of water-supply schemes under execution was 29 in municipalities and eight in the panchayats. The number of drainage schemes under execution was nine in municipalities and one in a panchayat.

4. Detailed plans and estimates were prepared for eight water-supply schemes and two drainage schemes during the year. Field investigation was completed in respect of seven water-supply schemes and one drainage scheme.

5. The year under review was the second year of the five-year programme drawn up for the execution of municipal water-supply and drainage schemes on the basis of priority. Considering the initial difficulties in finding suitable men for the posts in the reorganized setup of the Sanitary Engineering Branch and in securing cast-iron pipes for the schemes, the progress in the implementation of the programme is fairly satisfactory.

(By order of His Excellency the Governor)

S. R. KAIWAR,
Secretary to Government.

To the Chief Engineer (Public Health).

- „ Director of Medical Services.
- „ Director of Public Health.
- „ Sanitary Engineer to Government.
- „ Director, King Institute, Quindiy.
- „ Director, All-India Institute of Hygiene and Public Health, Calcutta (with covering letter).
- „ Public Health Commissioner with the Government of India (with covering letter).
- „ Librarian, Secretariat Library.
- „ Editor, *People's Health*, Lloyds Road, Royapetia, Madras.
- „ Public (Economics and Statistics) Department.
- „ Press (as per distribution list in G.O. No. 4831, P.H., dated 11th November 1941).
- „ Development Department (2 copies).