

REPORT
OF THE
WATER-SUPPLY AND DRAINAGE
COMMITTEE

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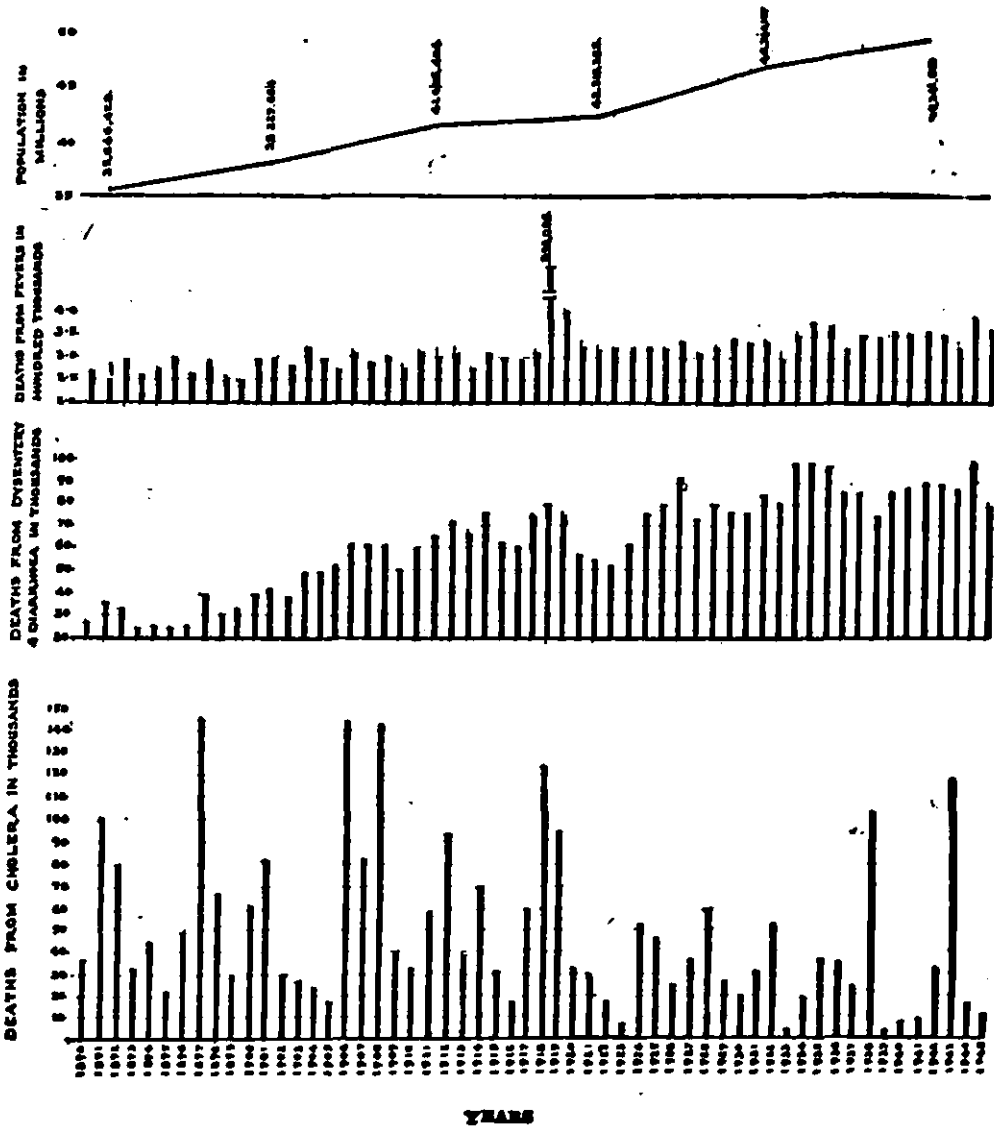
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APPENDIX I

(Vide paragraph 10 of the Report.)

MADRAS PROVINCE.

POPULATION AND DEATHS FROM CHOLERA, DYSENTERY AND DIARRHOEA AND FEVERS DURING THE YEARS 1890-1945.



APPENDIX II

(Vide paragraph 14 of the Report.)

MUNICIPAL WATER-SUPPLY AND DRAINAGE—SOME PARTICULARS.

Serial number and name of municipality.	Population (1941 census).	Water-supply scheme.		Drainage scheme.		Present rate of taxation.		Rough cost of work ahead—rupees in lakhs (pre-war rates).		Remarks on W.S.— (a) Existing scheme to be improved. (b) Scheme to be newly provided. (c) Scheme under execution.			
		When initiated and when completed.	When improved.	Actual rate of supply—gals/head.	Investigations pending since when.	If existing when installed.	Investigations pending since when.	General.	Water-supply and drainage.		Water-supply.	Drainage.	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	
1 Adoni ..	35,481	1898-95	*1948	6.8	..	..	1912	13.0	7.5	1.0	7.1	* New source.	(a)
2 Ankapalli ..	29,249	..	..	..	1941	..	..	10.0	..	3.0	6.0	..	(b)
3 Anantapur ..	21,482	1907-24	1939	5.6	..	..	..	22.0	5.0	2.0	4.8	..	(a)
4 Bellary ..	56,148	1890-27	1938	8.5	†1948	1940 (partial)	..	21.5	7.0	1.0	6.8	† W.S. improvements.	(a)
5 Bozwada ..	86,184	1898-09	1987	..	..	1939	..	27.75	4.5	7.0	14.5	..	(a)
6 Bimlipatam ..	9,914	..	..	..	..	..	..	16.0	..	1.0	2.8	..	(b)
7 Bodinayakanur ..	28,435	1937-44	..	4.7	..	..	1936	22.0	9.25	..	5.0	..	(a)
8 Callicut ..	126,252	..	..	..	†1936	..	1908	9.5	5.0	3.8	29.4	‡ Under execution.	(c)
9 Cannanore ..	34,649	..	..	..	..	..	..	15.0	..	10.6	6.9	..	(b)
10 Chicacole ..	22,249	..	..	..	1912	..	..	28.25	1.0	7.0	5.7	..	(b)
11 Chidambaram ..	26,212	1900-15	..	10.4	..	..	1917 } 1938 }	22.0	8.0	1.0	8.0	..	(a)
12 Chingleput ..	17,829	1909-26	..	12.7	..	1938 (partial)	..	9.0	8.0	0.5	3.6	..	(a)
13 Chittoor ..	20,835	..	..	..	1914 } 1946 }	..	1920	8.0	5.0	6.0	4.2	..	(b)
14 Cocanada ..	75,140	1897-08	1939	9.9	..	..	1938	22.0	5.5	§ 31.6	26.4	§ At present rates.	(c)
15 Cochin ..	26,320	† 1938	..	..	..	..	1910	11.25	3.0	..	11.4	..	(a)
16 Coimbatore ..	130,340	1905-29	1937	12.7	..	..	†1928	16.0	7.0	32.0	9.7	..	(c)
17 Conjeevaram ..	74,685	1895-97	..	13.1	..	..	1933	13.5	6.5	3.8	20.5	..	(a)
18 Coonoor ..	18,783	1897-05	1941	17.6	..	..	..	21-1/6	3.0	1.0	3.8	..	(a)
19 Cuddalore ..	60,632	1932	..	3.02	¶1935	..	..	23.75	3.75	9.1	12.1	¶ New town.	(a)
20 Cuddapah ..	28,246	1893	* 1980	9.8	..	..	1896	..	..	1.0	5.6	..	(a)
21 Devakottah ..	74,315	..	..	..	1928	..	..	17.50	..	3.4	4.9	..	(b)
22 Dharapuram ..	20,660	..	..	..	1937	..	..	13.75	2.0	2.2	4.1	..	(b)
23 Dindigul ..	56,275	1890-96	1939	4.6	¶1937	..	1934	18.875	6.0	40.0	11.2	¶ Distant source.	(a)
24 Ellora ..	64,911	1895-19	1939	..	..	..	1912	10.5	7.0	8.8	14.6	..	(a)
25 Erode ..	39,483	1912-19	**	14.4	..	..	1921	18.5	8.0	..	7.9	** Improvements to filtration plant under execution.	(b)
26 Gudivada ..	23,919	..	..	..	1945	..	..	9.0	2.5	§ 5.8	5.0	..	(b)
27 Gudiyattam ..	32,671	1904-07	1941	6.7	..	..	..	9.5	8.0	0.6	6.5	..	(a)
28 Guntur ..	83,599	1901-05	1928	4.7	††1921	..	1919	22.0	5.0	79.7	20.8	†† New source under execution.	(c)
29 Hindupur ..	19,049	..	..	..	††1920-41	..	1933	22.75	6.0	2.6	3.8	‡‡ I stage under execution.	(b)
30 Hospet ..	26,023	..	..	..	1933	..	..	11.5	..	5.0	5.2	..	(b)
31 Karakudi ..	28,908	1934-37	..	4.9	..	..	1935	7.5	..	0.5	5.8	..	(a)
32 Karur ..	27,575	1935-40	..	10.1	..	..	1934	18-13/30	4.1	0.5	5.5	..	(a)
33 Kodalkanal ..	9,124	1902-18	..	12.0	..	..	1933	16.0	3‡	..	§§ 1.5	§§ As per scheme drawn up.	(a)

34	Kumbakonam	67,006	1901-14	1945	7.2 (partial)	1939	..	1898	24.5	6.0	7.0	22.2	III I stage and advance schema of II stage completed.	(c)
35	Kurnool	45,250	1897	1917	10.6	..	..	1915	21.0	5.0	2.3	§ 5.3	(a)
36	Madura	239,144	1894	↓	18.5	..	1929	..	18.75	7.0	¶ 50.0	¶ 50.0	¶ Tentative.	(a)
37	Mangalore	81,069	1918-24	..	..	1897 } 1946 }	..	1897	10.0	2.0	51.0	16.6	(b)
38	Mannargudi	23,288	..	..	..	..	..	..	17.5	2.0	3.7	6.3	(b)
39	Minallipatam	50,145	1907-18	1937	7.9	..	..	1908	12.0	7.0	2.0	36.8	(a)
40	Mayavaram	32,670	..	..	..	..	..	..	11.0	..	3.3	10.6	(b)
41	Nandyal	25,886	..	..	..	1939	..	1919	11.1	..	§ 9.0	5.2	(b)
42	Narasaraopet	17,644	..	..	..	1912	..	..	10.0	5.1	2.3	3.5	(b)
43	Negapatam	52,936	1897-14	1935	14.8	..	..	1905	22.0	4.5	1.0	1.0	(a)
44	Nellore	56,315	1904-08	1938	11.0	..	..	1909 } 1931 }	5.57	2.257	3.7	11.3	(a)
45	Ongole	21,184	..	..	..	1909	..	..	12.0	..	2.2	4.4	(b)
46	Ootacamund	29,850	1910	1933	9.06	..	..	1911	12.5	3.0	1.0	6.1	(a)
47	Palacole	19,869	1926-31	1937	7.2	..	..	1932	7.25	12.0	1.0	5.5	(a)
48	Palamcottah	30,967	..	..	..	1909 } 1941 }	..	..	8.0	1.5	5.8	6.2	(a)
49	Palghat	55,100	..	..	..	1920	..	..	10.5	..	8.0	11.1	(b)
50	Paini	24,706	1912-32	..	9.6	..	..	1932	11.25	4.5	1.0	4.1	(a)
51	Peddapuram	20,835	..	..	..	1917	..	..	9.5	5.0	4.6	4.2	(a)
52	Periyakulam	25,882	1906-12	1927	11.5	..	..	1919	20.0	3.0	0.5	5.2	(a)
53	Pollachi	26,193	1937	..	..	1929	..	1920	6.25	4.75	1.0	5.2	(c)
54	Proddatur	26,981	1926-33	..	..	..	..	..	20.0	7.5	0.5	5.4	(c)
55	Rajahmundry	74,564	1923-34	..	11.6	..	1944 (partial)	..	22.57	6.0	1.0	24.0	(a)	
56	Rajapalayam	46,289	..	..	..	1939	..	..	14.5	1.0	4.6	9.2	(b)
57	Salem	129,792	1911	↓	3.5	1931	..	1920	23.0	10.0	8.0	2.8	(c)	
58	Sivakasi	16,626	..	..	..	1939 } 1941 }	..	1941	3.25	1.0	1.7	3.3	(b)
59	Srirangam	26,676	1909-39	..	5.8	..	..	1906	22.00	5.5	0.5	2.9	(a)
60	Srivilliputtur	34,642	..	..	..	..	..	..	15.5	1.0	6.5	6.9	(b)
61	Tadpatri	15,184	1930-33	..	3.4	..	..	..	5.0	3.75	0.5	3.0	(a)
62	Tanjore	68,792	1891-95	1930	15.3	..	..	..	22.0	5.50	5.3	13.7	(a)
63	Tellicherry	34,320	..	..	..	..	..	..	16.0	0.5	10.4	8.5	(a)
64	Tonali	40,639	..	..	..	1942	..	1912 } 1934 }	20.5	2.5	7.2	19.5	(b)
65	Tinnevely	60,676	..	..	..	1896	..	..	14.5/16	..	3.3	12.1	(b)
66	Tirupati	20,143	1895-99	1920	..	1923	..	1920	16.0	3.5	1.0	0.5	(b)	
67	Tirupattur	23,008	..	..	..	..	..	1946	17.01	..	2.3	4.6	(a)
68	Tiruppur	33,100	1923-40	..	3.05	..	..	1926 } 1938 }	15.1	4.5	1.0	9.2	(a)
69	Tiruvannamalai	33,575	1900-34	1937	5.9	..	..	1941	19.0	4.25	0.5	5.8	(a)
70	Tiruvarur	22,375	..	..	..	..	..	..	15.0	2.0	2.8	4.4	(a)
71	Trichinopoly	159,566	1896	↓	23.0	..	..	1906	14.25	5.0	16.0	66.6	(c)
72	Tuticorin	75,614	1896-29	1946	13.7	..	..	1933	8.5	1.5	2.0	16.6	(c)
73	Udipi	18,043	..	..	..	..	..	..	9.0	4.75	5.0	3.6	(a)
74	Udumalpet	17,791	..	..	..	1939	..	1939	7.7/24	1.0	11.6	3.5	(b)
75	Vaniyambadi	31,281	..	..	..	1907	..	1915	17.0	2.0	3.1	6.2	(b)
76	Vellore	71,502	1907	↓	12.3	..	1927 (partial)	1936	30.75	7.0	..	7.6	*** Supplemental.	
77	Villupuram	23,829	..	..	..	..	..	..	9.0	..	2.4	4.7	(b)
78	Virudunagar	34,560	1929-38	..	3.5	..	..	1933	17.5	5.0	1.0	8.9	(b)
79	Visagapatam	79,243	1903	1935	5.5	..	..	1929	10.5	6.0	24.0	14.2	(a)
80	Visianagram	51,749	1898-12	1929	9.7	..	..	1896	20.07	7.0	5.0	§ 30.0	(a)
81	Wallajpet	11,048	1943-46	..	..	..	..	..	14.5	5.5	..	2.2	(a)
									Tota.	..	663.0	811.0		

APPENDIX III

A Note by the Secretary read before the Committee
on 23rd June 1947

Relevant statistics from the 1941 census

“ Towns ” are places of usually not less than 5,000 inhabitants possessing definite urban characteristics. “ Village ” is the revenue administrative unit, not the residential village; “ urban ” and “ rural ” refer to towns or villages as above defined.

Definition of a house.—“ Every dwelling with a separate main entrance.”

Area of the Province (British territory)	126,166 sq. miles.
Number of towns	407
Number of villages	35,430
Number of occupied houses. { In towns	1,463,646
{ In villages	8,173,146
Population—49,341,810 .. { Urban	7,864,883
{ Rural	41,476,927

	Number.	Population.
Villages with population of 500 and under ..	12,465	3,120,232
Villages with population of 500—1,000 ..	9,228	6,899,903
Do. 1,000—2,000 ..	8,203	12,253,684
Do. 2,000—5,000 ..	4,929	14,756,214
Towns with population of 5,000—10,000 ..	800	5,876,276
Do. 10,000—20,000 ..	128	1,803,466
Do. 20,000—50,000 ..	57	1,611,352
Do. 50,000—100,000 ..	21	1,376,467
Do. 100,000 and over ..	6	1,547,630
Floating population .. .. .	..	96,586
	<u>35,837</u>	<u>49,341,810</u>

The ratio of urban to rural population is 1 : 5.

Number of district municipalities, excluding Madras City—81.

Population of district municipalities, excluding Madras City—3,689,931.

Population of Madras City—777,841.

Facts about urban schemes

There are 46 municipal water-supply schemes in operation serving about 69 per cent of the municipal population, and installed at a cost of about Rs. 270 lakhs. The City of Madras, in addition, caters to a further 5 per cent of the municipal population, the capital cost so far spent being about Rs. 162 lakhs. Most of the municipal schemes are but partial and have to be expanded. Of the 46 schemes, 5 are 20-gallon schemes, 26 are 15-gallon schemes, 9 are 10-gallon schemes, and 6 are 5-gallon schemes.

There are only seven municipalities with a drainage scheme installed at a cost of Rs. 68 lakhs. All of them are in need of additions or improvements.

In addition to improvements and extensions to the existing water-supply schemes, the provision of water-supply schemes to the remaining municipal stations is estimated to cost about Rs. 400 lakhs at pre-war rates. Likewise the provision of drainage schemes to the remaining municipalities is estimated to cost about Rs. 670 lakhs.

Out of some 6,386 panchayats in the Province, urban and rural, only 12 have water-supply schemes now provided at a cost of Rs. 10 lakhs. Most of them are but 5-gallon or 10-gallon schemes, and also need expansion to serve the entire panchayat area concerned.

Thus 35 municipal towns are yet to be provided with new water-supply schemes altogether; as many as 40 existing municipal water-supply schemes are in need of improvements; and only 6 stations can be said to have a satisfactory scheme in operation. Similarly, 74 municipalities have to be provided with drainage schemes and seven existing schemes are to be improved. Almost the entire urban areas apart from municipal towns, are yet to be provided with water-supply and drainage.

In G.O. No. 902, P.H., dated 30th March 1944, Government ordered the preparation of revised priority lists and a compendium of provincial requirements of water-supply and drainage. A revised priority list and compendium drawn up by the Director of Public Health and Sanitary Engineer to Government were approved by the Government in G.O. No. 55, P.H., dated 7th January 1946.

Subsequently, the priority assigned to a number of stations has been reshuffled on reconsideration of the individual merits of the cases.

The priority list and compendium include for water-supply all places with population of 10,000 and over; and for drainage all places with a population of 5,000 and over.

In their Post-War Reconstruction Scheme No. 98, Government have indicated the scope of their plan—a 20-year plan in four 5-year stages. The full plan of development is to cover 82 municipalities and 167 urban units including schemes now in operation. This plan was since supplemented (in the Provincial Compendium) so as to include drainage schemes also for places with populations 5,000 to 10,000. The rough cost of the first 5-year plan is given out as Rs. 8.79 crores.

On rural water-supply.

The number of villages with population below 5,000 is 84,825 with a total population of 37,030,033, i.e., about 75 per cent of the provincial population. Places with population between 5,000 to 10,000 are 800 in number with a total population of another 5,876,276, i.e., another 12 per cent or so.

No correct figures are available, but it is gathered that some Rs. 65 lakhs were spent from Government grants and local finance between 1895 and 1936 on rural water-supply and rural sanitation.

The extent of improvement done in rural areas from 1921 to 1936 is stated to be: new wells sunk 11,624; new tanks dug 467; existing wells improved 14,924; and existing tanks improved 5,070. The Revenue Board has been requested by me to furnish information on (1) the total number of villages for which water-supply schemes are already installed and at what cost, (2) the number of villages for

which schemes are under investigation, design or execution and the amount involved, (3) the number of villages for which schemes are yet to be provided, and (4) the contemplated programme and staff organization proposed for the further work.

A comprehensive rural water-supply scheme spread over a period of ten years, and financed entirely from Provincial funds was inaugurated by Government in 1937-38. A separate fund was also created for the purpose. The object of the scheme was to provide a reasonably pure water-supply free from contamination for all rural units with a population of 5,000 and less and those which have an annual income of Rs. 8,000 and less. The whole scheme is administered by the Revenue Department through the Collectors of the districts.

In 1939, a committee was constituted to report on the best and most efficient way of providing protected potable water in the rural areas of the Province, the types of water-supply to be provided for different kinds of villages and soil conditions, the agency for putting down bore-wells, the agency for their maintenance, the suitable type of pump for bore-wells, centralized purchase of stores, local manufacture of equipment for rural water-supplies, and the best method of utilizing waste water. The report of the Rural Water-Supply Committee was submitted in 1940 with the dissenting minutes of Sri A. V. Raman. In G.O. No. 2307, P.H., dated 2nd June 1947, the Government directed that a yearly programme and not a 10-year plan may be followed. In G.O. No. 1989, P.H., dated 30th July 1945, Government included villages with a population of 5,000 to 10,000 also in the scope of the rural water-supply.

In their Post-War Reconstruction Scheme No. 97, the Government have proposed that, that part of the first half of the 1938 ten-year plan which remains unexecuted will be taken up for execution during the first 5-year post-war years, the balance being executed during the next five years. The supply sources to be provided in the villages will generally consist of bore-wells with iron and steel or cement pipes, masonry dug-wells according to approved designs, wells with infiltration galleries, etc. The types of supply to be provided will be left to the discretion of the Collector. The approximate cost of the first 5-year plan is Rs. 256 lakhs.

In G.O. No. 3242, P.H., dated 13th November 1946, the Government considered that the scheme outlined in the above plan should be vigorously implemented and the pace of execution accelerated. Certain suggestions have been made in this connexion, viz., a special course of Licentiate in Civil Engineering for securing candidates as Minor Irrigation Overseers, the appointment of an Assistant Engineer with each Collector and Special Overseers with adequate staff of maistries for each taluk and the expansion of the Sanitary Engineer's office to scrutinize special schemes, etc. The Board of Revenue has been requested to examine these suggestions and submit proposals to Government.

The procedure in vogue at present is based on the orders of Government in G.O. No. 5825, P.H., dated 11th December 1940. The plans and estimates for rural water-supply schemes are sanctioned by the Collector, up to a cost of Rs. 2,500. For works costing over Rs. 2,500 the estimates are to be sanctioned by the Revenue Board. The Board may consult the Sanitary Engineer on these estimates, if it so desires. Estimates costing over Rs. 10,000 are to be scrutinized by the Sanitary Engineer prior to their sanction by the Board.

In a reference received from the Board of Revenue, dated 23rd April 1947, details of the first 5 years of Scheme No. 97, are furnished as under:—

	Bore wells.	Draw wells.	Wells with infiltration galleries.	Other types.	Total number of works.	Cost. Rs.
I year ..	722	4,335	10	113	5,180	84,08,367
II " ..	705	4,410	31	105	5,251	86,16,210
III " ..	811	4,220	32	122	5,185	80,64,102
IV " ..	908	4,127	23	109	5,167	78,87,943
V " ..	860	4,068	4	134	5,066	77,23,650
	<u>4,006</u>	<u>21,160</u>	<u>100</u>	<u>583</u>	<u>25,849</u>	<u>4,07,00,272</u>

The Board proposes that out of the 25,849 works shown above, only estimates costing more than Rs. 4,500 will be sent to the Sanitary Engineer for scrutiny.

Further details called for from the Revenue Board are awaited.

The work ahead

The progress on water-supply schemes for municipal, urban and rural units during the past half a century has been far from satisfactory. Many a scheme has been hung up after investigation and consideration at periodical intervals, on the final issue of finance. Even the headquarters of some districts remain without a protected water-supply to the present day. The history of schemes investigated, designed and dropped through the past decades makes sad reading. As for drainage schemes, the further work ahead is practically to begin from scratch.

Only a very rough basis may be assumed for assessing the probable cost of the works ahead. On a broad approximation, the cost per head of population is about Rs. 10 for water-supply, and about Rs. 20 for drainage schemes, based on pre-war prices. These figures would be somewhat higher for urban units. A rough forecast of Rs. 18 crores may thus be assumed, for completing the provision of water-supply and drainage schemes for all units with more than 10,000 population. To provide similar facilities for all units with 5,000 to 10,000 population some Rs. 14 crores may have to be allowed. In addition to this Rs. 82 crores, rural water-supplies for all units below 5,000 population is a separate commitment; the first 5-year plan according to the estimate of the Revenue Board, is expected to cost Rs. 4.07 crores. Allowing for present day prices and the trends of coming years, it may not be far out of the mark for us to assume that the capital outlay on schemes, urban and rural water-supply and drainage, would be of the order of Rs. 50 crores if not more.

The problem of finance.

The over riding factor deciding the pace of execution of these schemes is the question of finance. There is the Rural Water-Supply Fund as far as rural water-supplies are concerned. Its limitations and augmentations concern the Government mostly, as the rural units look almost entirely to the Government for financing the schemes. In the case of municipal and panchayat schemes, a degree of self-help is expected of the local bodies, who usually contribute a moiety of the cost of their water-supply and drainage schemes. Two inability of many a municipality to raise funds—out of sheer financial

incapacity or reluctance to tax itself to the high level required—has, after a self-righteous confession by the Government of financial helplessness, postponed a much-needed water-supply or a drainage scheme for the station concerned. And public health, in so far as water-supply and drainage could improve it, continues to be neglected.

The financial resources of municipalities as at present constituted are too poor and limited while the duties they are charged with are exacting and always beyond their means. In the result, they have taken to the unenviable role of poor relations ever looking to the Government for succour in their difficulties and are also treated as such. In their present plight, many municipalities have but two options. Either they should tax themselves to a crippling limit or they should deny themselves essential civic amenities like water-supply and drainage. The former course has visible repercussions in municipal elections while the latter course can always be explained away to the satisfaction of the tax-payers. A change of policy is clearly indicated if progress is to be achieved.

Once it is conceded that the provision of public health amenities is a first charge on the State's funds, as much as maintenance of law and order, the financing of the schemes is more a problem to be solved than to be shelved. It should be possible to think on the lines of

- (a) an optimum level of taxation for each municipality based on its full resources;
 - (b) direct borrowing by local bodies by a State backing of the local bodies' credit;
 - (c) provincial borrowing;
 - (d) the utilization of the locked-up capital available with insurance companies and banks on mutually favourable terms;
 - (e) the sale of municipal bonds to local rate-payers, etc., etc.;
- and
- (f) a provincial water and drainage fund.

Materials of construction

About 50 per cent of the cost of urban water-supply schemes may be assumed as comprising the cost of cast iron pipes and specials and fittings and galvanized iron pipes and fittings. In the case of the rural water-supplies, it may be possible to do with a minimum of piping materials, as a distribution system or a long pumping main will not be normal features of most of these small schemes. Similarly, about 10 to 15 per cent of the total cost may form the cost of pumping plant and machinery in urban water-supply schemes, including manufactures of a proprietary nature like mechanical filtration plant, Chlorinators, etc. The balance of cost usually comprises normal building materials, brick, stone, lime, cement, wood-work, steel and labour.

Similarly, in all underground drainage schemes (which are to be provided for towns with population of 50,000 and over), about 40 per cent of the total cost forms the cost of stoneware pipes for sewers, in a normal scheme. The bulk of the work, on man-holes and flush tanks, storm water drains, pump-houses and sewage farm layout can be constructed with normal building materials. The pumping plant and machinery in non-gravitation drainage schemes

and special equipment for mechanical treatment and disposal of the sewage in the case of a few schemes would call for import of special manufactures and equipment. The drainage schemes for most of the smaller units could normally be drawn up providing for open drains and intercepting sewers (with or without pumping stations as may be necessary) and disposal by sewage farming.

The progress of water-supply schemes largely and of drainage schemes to a lesser extent, must, therefore, depend on the availability of cast iron pipes and specials and of stoneware pipes in quantities and at prices as may be programmed for. The procurement of pumping plant and machinery and other equipments of proprietary nature, would also influence the pace of our execution programme. It is for the committee to consider, and indicate the manner and means of securing cast iron pipes and specials, stoneware pipes and pumping units and machinery at reasonably economical prices, so that the supply meets the demand level without holding up progress of works. As these are materials required for nation-building activities, some form of State intervention would appear desirable to regulate and control the production and price levels, instead of the manufacturing combines exploiting the situation and making the best of it at the tax-payers' money. Similarly, the manufacture of cement as a State industry would seem to bring in substantial advantage and economy and the expedition of these public health schemes. The policy to be adopted in local manufactures of bricks, lime, etc., may also deserve to be considered in detail with a view to their adequate supply being maintained at economic prices as far as Government schemes are concerned.

Organization

The organization of the department on suitable lines is to be considered so that it is adequately staffed and equipped to investigate, design, execute and maintain schemes with efficiency and expedition and according to programme. The functions of the Sanitary Engineering Branch vis-a-vis the general branch of the Public Works Department, the functions and role of municipal engineers and municipal engineering subordinates, and the present administration of the rural water-supply scheme with the help of Minor Irrigation Overseers as the mainstay, are all questions which call for a re-orientation of the present set-up, if better results are to be achieved.

The procedure now being adopted may here be briefly stated. If and when a local body is desirous to have a protected water-supply or drainage scheme, it approaches the Government with a request. A preliminary forecast of the probable cost of investigating and installing the scheme is furnished by the Sanitary Engineer. The local body places funds for the investigation, entirely at its own cost. A scheme is investigated in detail and a report with installation and maintenance costs is furnished. It is at this stage that the financial capacity of the local body is examined in detail by the Government. If the local body is found solvent enough to face the enterprise or willing to tax itself to the level required, and if the provincial revenues permit of the Government doling out the moiety of the capital cost, the operations take a stride forward and the design of the scheme with plans and estimates is ordered by the Government. When this is completed, the scheme is sanctioned for execution. When the

scheme is executed and completed, it is handed over to the municipality for maintenance.

The investigation of schemes is carried out by the two Executive Engineers (Public Health) in immediate charge, with the help of five investigation supervisors. The investigation report goes through the Sanitary Engineer and Chief Engineer to Government, who obtain the views of the local body on the details before sanctioning the preparation of plans and estimates as the next stage. The design of the schemes with plans and estimates is then taken up by the Sanitary Engineer in his office. The technical section consists of 12 posts of III grade draughtsmen, 5 posts of II grade draughtsmen, 2 posts of I grade and one special grade draughtsman. (Proposals are under consideration for a reorganization of the technical section.) The Personal Assistant and the two deputies to the Sanitary Engineer direct and supervise the work. The deputies in addition to their investigation and design work, assist the Sanitary Engineer in dealing with administrative matters too. It is a composite office with the single file system.

The Chief Engineer scrutinizes the proposals at each stage, investigation and design. The Government accord administrative approval to all schemes; the Sanitary Engineer accords technical sanction to schemes costing up to Rs. 1 lakh and the Chief Engineer for bigger schemes. The execution of the schemes is by the Public Works Department without reference to the Sanitary Engineer who, however, can inspect works in progress and offer comments, if any, to the Chief Engineer. There is thus a separation of functions as between investigation, design and execution of schemes. Finally when a scheme is completed, it is taken over by the local body for maintenance with its own technical staff. The municipal engineers are under the administrative control of the Sanitary Engineer and Chief Engineer, while the subordinate engineer staff are under the control of the local bodies entirely except that prior consultation with the Sanitary Engineer is necessary in regard to their appointments and punishments, etc.

It is for the committee to decide if and what changes to this triple control are called for, in the interests of the expedition of the schemes and their after-care and maintenance. The investigator and designer of the scheme being different from the executor of the work and neither of the two having the immediate control of the completed work, would seem to lack the co-ordination necessary for economy and efficiency in water and drainage works, which are admittedly specialized in character. A proposal for the amalgamation of all engineering services was recently sponsored by the Chief Engineer (General); its present stage is not known. A concerted measure to pool all engineering personnel and talents and organize the existing multiple services into well co-ordinated groups would be inevitable sooner or later in the larger interests of the public works of this province.

It may be useful here to recount briefly the history of the organization of the Sanitary Engineering Branch.

A Sanitary Commission was appointed for Madras in 1864 at the instance of the Government of India. It became more expensive and less useful in later years. In 1888, the Government of India suggested the formation of a Sanitary Board. The Madras Government while opposed to the creation of the Board (with their past experi-

ence), considered however that the appointment of a Special Sanitary Engineer was a reform absolutely required. With the concurrence of the Government of India, a Sanitary Engineer was accordingly appointed in 1890. A Sanitary Board was also constituted consisting of the Sanitary Commissioner and the Sanitary Engineer.

In December 1890, the Chief Engineer proposed that the Sanitary Engineer should be graded on the Public Works Department, as a Superintending Engineer extra to the regular scale. The Government did not agree to such a proposal and called for a joint note from the Chief Engineer and the Sanitary Engineer. This joint note, dated 21st May 1891, dealt with the difficulties in the way of the Public Works Department carrying out the execution of schemes designed by the Sanitary Engineer and recommended that the Sanitary Engineer and his department should be made totally independent of the Public Works Department as far as designing and execution of work is concerned, the Chief Engineer merely acting as adviser to the Government on schemes which they might refer to him. Three sanitary circles were proposed, each corresponding to two Public Works Department circles, the Sanitary Engineer, his Deputy and Assistant Sanitary Engineer directing, supervising and executing schemes with subordinate staff to be transferred gradually from the Public Works Department, the latter augmenting its strength with new hands. The proposals were generally approved by the Government.

A large volume of work on several water-supply and drainage schemes was turned out in the nineties. The Sanitary Engineer Mr. J. A. Jones was, however, complaining all the time about the inadequacy of the staff for the ever-expanding work on schemes.

In 1895-96, when the Sanitary Engineer pressed for additional staff as he could not possibly cope with all the work with one Assistant Engineer at headquarters and two others on works under construction, the Government took the advice of the then Chief Engineer, and directed that the work of the Sanitary Engineer be confined to investigating and design of schemes, and their execution entrusted to the Public Works Department.

The Sanitary Engineer thereupon represented the handicaps and difficulties arising from a division of design and execution from each other. Government agreed that if funds were abundant, the best plan would be to create a Sanitary Engineering Department complete in itself and strong enough, not only to design works, but also to carry them out; but, financial considerations stood in the way.

In 1898, the Sanitary Engineer urged again for a reconsideration of the decision pointing out that the system did not result in any saving or expedition; but, the Government did not consider that a change was necessary. The same procedure was continued up to 1920. In 1913, the Government announced a 5-year programme for 1913-18 but, as Government stated in their note, it did not commit them to anything, apart from announcing a programme.

In 1920, the Government constituted a Board of Public Health, absorbing the Sanitary Board and Malaria Board in it.

In 1919, the Madras Government gave their opinion on the recommendations of the Public Works Department Reorganization Committee regarding the organization of the specialist branches of the Public Works Department. Thereupon, the Government of India

communicated to the Provincial Government the decisions of the Secretary of State for India that the specialist services will remain outside the Indian Service of Engineers and will be recognized under three main heads, Architectural, Sanitary and Electrical; that these services will be organized on a provincial basis, the specialist appointments being divided into two classes. The creation of one post in first class and six posts in second class were also sanctioned by the Secretary of State.

In 1933, the Government transferred the control over the Sanitary Engineer and his staff from the Public Works and Labour Departments to the Local Self-Government Department. For the better co-ordination of public health activities it was proposed that the Sanitary Engineer should deal directly with the Government in the Local Self-Government Department. He was accordingly made the head of the Sanitary Engineering Department occupying a position similar to the Surgeon-General and the Director of Public Health.

In 1935, the Government declared the Sanitary Engineering Department as a Provincial Service entitled Madras Sanitary Engineering Service and issued special rules therefor.

In 1936, the Government directed that the execution of all large municipal schemes involving technical skill will be entrusted to Engineering firms on contract, the supervision being entrusted to the Sanitary Engineer.

In 1937, Government decided that in the case of mufussal water-supply and drainage schemes, the scrutiny of plans and estimates by the Chief Engineer may be confined to schemes costing over Rs. 5 lakhs.

In 1938, however, the Government stated that the new system, though it had not been worked for long, had led to delays and difficulties in execution; and the Government had therefore come to the conclusion that the Sanitary Engineering Department should again be placed under the expert control of the Chief Engineer. They directed the Chief Engineer to take over the supervision of execution of works. The Government also defined the powers of the Sanitary Engineer and Deputy Sanitary Engineers and directed the Chief Engineer to address the Education and Public Health Department on all matters regarding the officers in the Sanitary Engineering Department.

In December 1938 again, the Government kept the post of the Sanitary Engineer in abeyance and created a temporary post of Superintending Engineer and Deputy Chief Engineer, Public Health Branch.

In October 1940, the Government directed that the Superintending Engineer (Public Health) be designated as Sanitary Engineer, who would also be the Deputy Chief Engineer for Sanitary Engineering.

In December 1940, the Government further modified their earlier orders and made the Sanitary Engineer's Office separate from the Chief Engineer and specified the relations between the two. In G.O. No. 5337, P.H., dated 12th November 1940, the Sanitary Engineering Service was merged into the Madras Engineering Service as a distinct class and rules were issued for the same.

Private agencies

The Government have asked for the committee's views on the employment of private agencies for the design and execution of rural water-supply schemes. Hitherto the investigation and design of water-supply and drainage schemes of any magnitude has been exclusively confined to the Government departments, engineering firms being employed only in the execution of the schemes. In recent years the Government permitted the entrusting of minor sanitary schemes for Government institutions to Engineering firms on payment of specified design fees. The non-Government professional field is thus not in any advanced or competent stage such as would justify the employment of private talents in the design of water-supply and drainage schemes. Until this field is thrown open to the competitive talents of private enterprise and the experience so gained has been rich in quality and quantity to clothe the private professional Engineers with reliable competence on this subject, the employment of private Engineers at this stage may not yield anticipated results. As far as investigation of such special schemes are concerned, width and richness of experience is a *sine qua non* for initiating any scheme on efficient and economical lines. All these factors however would apply to major urban schemes and may not operate with equal emphasis in respect of the more straightforward and simple rural water-supply schemes. It is for the committee to consider how far a change from the existing procedure will secure better results in the matter of progress of schemes.

Priority for Schemes

In G.O. No. 55, P.H., dated 7th January 1946, Government issued priority lists for water-supply and drainage schemes and a compendium of provincial requirements. A copy of the notes by the Director of Public Health furnished to the Public Health Board which met on 20th June 1947, is sub-joined, which explains the back ground.

In their Memorandum No. 21671-H-1/47-3, P.H., dated 16th June 1947, the Government have desired that the general question relating to the matters to be taken into consideration in fixing ranks for schemes in the compendium of provincial requirements of water-supply and drainage may also be considered by this committee and its views reported to Government as early as possible. The criteria for assigning ranks to the different places have to be gone into and decided by the committee, in the light of the data available.

Copy of the notes by the Director of Public Health explaining the basis of the compendium :—

WATER-SUPPLY AND DRAINAGE SCHEMES—PRIORITY LISTS— COMPENDIUM OF PROVINCIAL REQUIREMENTS.

The Public Health Board at its meeting held on 18th August 1949, recommended that—

“ With regard to water-supply and drainage, priority shall certainly be given to those areas where a water and drainage levy has been in existence for a long period; and to those also who in view of the financial position of the Provincial Government, are prepared not to wait and waive any contribution but would undertake the whole work on themselves.”

If a number of local bodies and municipalities applied under this stipulation then priority will be decided according to the conditions mentioned already by the Sanitary Board, viz.—

- (a) perennial water scarcity,
- (b) partial water scarcity,
- (c) endemicity or epidemicity of water-borne infection,
- (d) protection of existing sources, and
- (e) extension of existing sources.

The Government considered that the best way to give effect to the above recommendations of the Public Health Board was (i) to prepare a priority list on the general principles laid down by the Sanitary Board and (ii) to revise the list periodically and to rearrange the scheme *inter se* according to whether the local body has been levying a tax for a long period or is prepared to finance the scheme entirely from its own funds.

Accordingly a priority list in the following form was drawn up and issued by Government in 1941:—

List 1.—Schemes for which detailed plans and estimates have been sanctioned or have been submitted for sanction.

List 2.—Schemes for which investigation is complete and which are ready for preparation of plans and estimates.

List 3.—Outline schemes which have not been investigated.

In a joint report the Director of Public Health and the Sanitary Engineer raised a number of questions relating to existing procedure, particularly with regard to the practical difficulties encountered, the unsatisfactory form of the existing lists, financial aspects of the schemes, etc., and made a number of general recommendations in which the principles relating to the carrying into execution of items in the priority list and plans for future work had been suggested. The Government after careful consideration of all the aspects of the question passed orders in G.O. No. 902, P.H., dated 30th March 1944, abolishing the existing priority list and ordered the preparation of revised priority list and a compendium of provincial requirements of water-supply and drainage. Accordingly, a revised priority list and compendium were drawn up by the Director of Public Health in consultation with the Sanitary Engineer and they were approved by Government in G.O. No. 55, P.H., dated 7th January 1946.

The priority for water-supply in the compendium was based on the following principles:—

- (1) Existing priority;
- (2) endemicity;
- (3) scarcity;
- (4) partial scarcity;
- (5) pilgrim centres; and
- (6) others.

The priority for drainage in the compendium for places having a population of over 10,000 was arranged in the following order:—

- (1) Towns which already have water-supply.
- (2) Towns with water-supply and under execution.
- (3) Water-supply schemes ordered to be executed.
- (4) Plans and estimates for water-supply schemes ready and sanction awaited.
- (5) Other places based on the priority in the compendium for water-supply.

Priority in respect of drainage schemes for all places having a population between 5,000 and 10,000 was arranged based on the following principles:—

- (1) Malaria;
- (2) filariasis;
- (3) mosquito nuisance;
- (4) contamination of water sources; and
- (5) others.

The following statement shows how the priority was arrived at in the compendium:—

A.—WATER-SUPPLY.

Nos.	
1 to 47	.. Based mainly on previous list prepared as follows:— <i>List I.</i> —Schemes for which detailed plans and estimates have been sanctioned or have been submitted for sanction. <i>List II.</i> —Schemes for which investigation is complete and which are ready for preparation of plans and estimates. <i>List III.</i> —Outline schemes which have not been investigated.
48 to 50	.. Endemicity.
51 to 62	.. Scarcity.
63 to 91	.. Partial scarcity.
92 to 134	.. Epidemics with pilgrim centres.
135 to 195	.. Others.

Note.—In the absence of special reasons, the places were arranged alphabetically.

B.—DRAINAGE.

Nos.	
1 to 61	.. Arranged in the order of— (i) places which have water-supply; (ii) places with water-supply under execution; (iii) water-supply schemes ordered to be executed; (iv) plans and estimates for water-supply schemes ready and sanction awaited.
62 to 233	.. Based on rank in compendium for water-supply.
234 to 565	.. Existence of— (1) malaria, (2) filariasis, (3) mosquito nuisance and (4) contamination of water sources.
566 to 1,063	.. Others.

Note.—In the absence of any special reasons, the places were arranged alphabetically.

Points from the Bhor Committee Report.—

Briefly stated, they are—

Water-supply.—(1) A policy to aim at the provision of protected supply to the entire population within a period of thirty-five years, 50 per cent within the first twenty years and the balance in the next fifteen years. (2) For the smaller villages with population under 1,000

provision of wells properly constructed, one well to serve 250 persons (average cost in Bengal Re. 1 per head), (3) for villages with population above 1,000, piped stand posts water-supply system (cost ranging from Rs. 10 to Rs. 15 per head of population), the source to be copious enough to be expanded to a 25/30 gallon scheme later on, (4) for most towns in India other than highly industrialized cities, a supply of about 35 gallons per head per day is considered adequate, the figure raised to 50 gallons in the case of large industrial cities, (5) assigning of priority for schemes based on incidence of cholera and other relevant considerations, (6) the formation of a Central and Provincial Water and Drainage Board.

Conservancy and drainage.—(1) The sewerage of all towns with a population of 50,000 and over within the short term programme of the first ten years; health resorts and industrial colonies included. (2) Extension of sewerage systems to all urban communities eventually; until this is possible adequate provision of open drains, etc., should accompany provision of water-supply. The Provincial Board to be responsible for the planning of this type of drainage. (3) For smaller places urban and rural, the use of septic tanks and soil absorption systems in order to extend the advantages of water-borne conservancy over as wide an area as possible. (4) Septic tank type public latrines in all unserved areas wherever possible. (5) A vigorous policy of latrine construction and the use of bore-hole latrines on a wide scale. (6) Refuse collection and disposals to be arranged on organized lines.

S. RAJAGOPALAN,
Secretary.

A Note by the Secretary placed before the Committee on 8th July 1947.

Some of the issues on which the Committee have yet to decide are as follows:—

(1) The question of priority of schemes in so far as municipal and non-municipal urban water-supply and drainage schemes are concerned. As the members are aware, the Government have made a special reference to this Committee that this subject among others may also be discussed and recommendations made to Government. I have already circulated to the members the Government reference in question and a copy of the compendium of provincial requirements as it stands at present and a copy of the notes of the Director of Public Health explaining the basis on which this compendium was originally arrived at. The Committee will have to go into this question and make recommendations to Government.

(2) The Committee have not yet been able to discuss the question of finance in relation to the 10-year or 15-year programme, the annual expenditure recurring as well as non-recurring, the question of staff required therefor and cognate matters. I have prepared particulars in this direction based on approximate data and attach copies of a blue-printed statement showing relevant particulars for the members to discuss the details and arrive at decisions.

(3) As will be seen from the proceedings of the meetings held on the 23rd to 26th instants the question of finance was discussed by stages as and when it related to other matters but each time it was left over for a further discussion at a later stage. It may be desirable that the members review this question of finance in the light of the further data now available and, having regard to the commitments involved by a 10 or 15-year plan, confirm or modify the previous broad decisions made. The various methods of raising funds and how far such a procedure as well as the proposal for the central pool are feasible; the need, if any, for a central authority to administer this collective fund; and the need for the enactment of any legislation is also to be examined by the Committee finally. The provisions in the Madras District Municipalities Act as well as in the Local Boards Act have to be examined in this context.

(4) On the question of rural water-supply again, the reply from the Revenue Board (copy of which I have circulated to the members) while it gives certain additional information beyond what we had already, does not however convey full information in the manner we required. The Board have stated that they would address the Collectors for this additional information if the Committee should want them. This might mean indefinite delay and it may perhaps be necessary for us to proceed with our work with the data actually available at present.

(5) On the question of additional personnel to be trained in the higher and lower categories, I understand the President has some more points to be reconsidered before the decisions could be incorporated in the draft report. These also are to be brought up before the Committee.

Charts showing provincial mortality rates with reference to water borne epidemics for the period 1890 to 1945; details of the existing municipal water-supply and drainage schemes, showing work so far done and work yet to be done with figures of cost, etc.; and a skeleton chart for the Public Health Engineering organization as proposed are now placed before the Committee with a view to help further discussion on the issues still pending.

Finance.—On the question of finance, the following approximate figures may perhaps be assumed for the basis of our 10-year scheme:—

	RS. IN LAKHS.
(a) Total cost of municipal water-supply schemes, improvements as well as new schemes, about	563
(b) Total cost of municipal drainage schemes about	811
(c) Total cost of non-municipal, Urban water-supply and drainage schemes to be provided, about	1,625
Total of urban schemes ..	2,999

say, Rs. 30 crores.

Note.—These figures are based on approximate average rates of Rs. 10 per head for municipal water-supply, Rs. 20 per head for municipal drainage, Rs. 25 per head for urban water-supply and drainage for units above 10,000 population and Rs. 20 for urban water-supply and drainage for units less than 10,000 population. All these are based on pre-war prices for materials and labour and in order to equate them to present day price levels the total cost of Rs. 30 crores must be multiplied by a factor varying from 2 to 2.5. As a broad approximation, however, we may assume the cost of urban schemes ahead at Rs. 60 crores.

It may be possible, however to effect a reduction on these figures if the manufacture of the more important materials of construction is partly or fully nationalized. It is also likely that in the coming 10 years, prices of labour and other normal materials may also come down from the present high levels. If an allowance of Rs. 10 crores were to be made for these factors we may assume the future commitment on urban schemes at about Rs. 50 crores instead of Rs. 60 crores.

(d) As far as rural water-supply schemes are concerned, the figures furnished by the Revenue Board give out a total of Rs. 407 lakhs for the works contemplated in the first 5-year plan. This 5-year plan covers the completion of works relating to the first half of the 10-year plan of 1938 which are yet to be completed. For the balance of work which would come up in the second 5-year plan therefore, we may allow an approximate amount of Rs. 6 crores. It is also presumed that the estimate furnished by the Revenue Board at present is based on present day prices. On such basis, the total cost of rural water-supply schemes which remain to be done, would be of the order of Rs. 10 crores.

On the above broad basis, we have to reckon on a total expenditure of Rs. 60 to Rs. 70 crores if we aim at completing all water-supply and drainage works in the Province within the next ten years. The annual turnover would thus be of the order of Rs. 7 crores. It may possibly be Rs. 6 crores if price levels go down from the present peaks.

It is to meet this future commitments of Rs. 6 crores annually that we shall have to consider the problem of organization and staffing. The expenditure of about a crore of rupees every year on rural water-supply need not, it seems, add to the creation of more divisions and subdivisions than is otherwise necessary inasmuch as the rural water-supply schemes are going to be executed by local agencies with the help of subordinate field staff and maistries. The role of the higher officers in the district will be confined to broad direction and supervision only. The extra staff required in Supervisors, Assistant Engineers and Executive Engineers would therefore be based on the figure of Rs. 5 crores to be expended on urban schemes essentially. The number of existing divisions and subdivisions available in the Public Works Department who could shoulder the additional work in the 10-year plan, and the extra staff to handle the balance of work are to be considered and discussed by the Committee. It may be relevant in this connexion to consider also the allotment on several works actually being spent by the divisions at present as compared with the expenditure programme obtaining in the pre-war years.

S. RAJAGOPALAN,

Secretary.

APPENDIX IV

Abstract of the Proceedings of the Committee

ABSTRACT OF PROCEEDINGS OF THE FIRST MEETING OF
THE WATER-SUPPLY AND DRAINAGE COMMITTEE

DATE OF MEETING 23rd June 1947. TIME ; 10 a.m. to 1 p.m.

(In the Public Works Department Library Hall, Chepauk, Madras.)

PRESENT :

Sri A. Kaleswara Rao, M.L.A.

President.

Sri K. A. Nachiappa Gounder, M.L.A.	Sri N. Ranga Reddi, M.L.C.
Sri A. V. Raman, Editor, "Peoples' Health."	Janab H. S. Hussain Saheb, M.L.A.
The Director of Public Health.	The Chief Engineer, P.W.D. (General and Works).
Sri S. Rajagopalan, Executive Engineer, (Public Health), Southern Circle.	The Sanitary Engineer to Government.

Secretary.

At the request of the President of the Committee, Sri A. B. Shetty, Minister for Public Health, was kind enough to be present on the occasion and inaugurate the proceedings of the Committee. The Minister was welcomed by the President and requested to inaugurate the work of the Committee.

The Minister made a short speech in which he thanked the gentlemen who were good enough to accept the membership of the Committee, a set of people representing the different areas of the Province the Circars, the Southern districts and the West Coast and the officials whose full co-operation was available. The Government can look forward to a valuable report from the Committee giving constructive suggestions on the issues involved. The editor of the "Peoples Health" has been rightly stressing the need for environmental sanitation as the most essential subject to be taken up for the improvement of the peoples' health. Water-supply and drainage schemes have to be given first importance in any programme for the betterment of the Province. Insistent demands are being received from several quarters for instituting water-supply and drainage schemes. The Government have on hand the Postwar Schemes No. 97 for Rural Water Supply and No. 98 for Urban Water-Supply and Drainage.

Due to some reason or other, water-supply and drainage schemes take years for investigation, design, and execution. The position is more difficult now than ever before. It is said that the slow progress in carrying out these schemes is due to three causes: (1) Lack of materials, (2) lack of adequate technical personnel, and (3) inability or the unwillingness of the local bodies to find their share of the capital expenditure. It is necessary to survey the present position and suggest how best these difficulties could be got over. It has been suggested

that the Sanitary Engineering department should be made a separate department, but there is the difficulty of finding adequate technical personnel for the purpose. There is a proposal to include Public Health as a branch of studies in our Engineering colleges.

In regard to rural water-supplies again, difficulties are being met with. The inspection of works is not properly done and the revenue staff do not show sufficient interest. They also complain of difficulty of getting labour. There is difficulty in getting materials, tools, cement, etc., and then there is the inadequate staff for supervision work. In the result, an appreciable portion of the works allotment is allowed to lapse without being utilized on the execution of works as programmed. Collectors of districts have been asked to report their difficulties in the working of the scheme. It is necessary to examine the question and see how best the difficulties could be got over. The Government have also given certain suggestions to the Revenue Board and have asked them to consider these in consultation with the departments concerned and to submit a report. It has been suggested in this connexion that a special course of L.C.E. for securing candidates as Minor Irrigation Overseers should be started; the special staff that is necessary in the district as well as in the centre to select site for wells, to scrutinize the proposals and to supervise the work and so on, has also to be considered. "I am glad to tell you, Gentlemen," the Minister continued, "that the present Prime Minister is very much interested in the rural areas and their developments. He wants to institute a special fund for rural water-supply, like the fund inaugurated in 1937-38. All these matters and many others pertaining to this important subject may be considered by you. I hope your labours become very fruitful and enable us to go forward in the prosecution of water-supply and drainage schemes in urban areas as well as rural."

The Minister then left the meeting and the Committee settled down to a preliminary discussion of the entire subject with a view to framing issues.

A note on the present position in regard to schemes in operation, the magnitude of the work ahead and the probable costs of materials and construction, the question of finance, etc., was read out by the Secretary with a view to giving some facts and figures for the information of the members.

Mr. Raman then initiated the discussion and stated that even in regard to existing schemes in operation which were ostensibly styled as 15 gallon scheme, the actual quantity supplied to the consumers fell far short of this figure, and he knew of instances where people get even less than five gallons per head while their scheme in operation was termed a "15-gallon scheme." He suggested that this information should also be made available to the members, so that they could gain a correct idea of the actual position in regard to existing schemes.

He further added that the actual cost so far incurred in regard to the Madras City Drainage Scheme apart from its water-supply could also be ascertained and reported to the committee for its information.

Mr. Raman further suggested that the Revenue Board might be addressed to get information on the number of wells of several types sunk all over the province since the starting of Rural Water-Supply Fund in 1937-38; how many of them yielded satisfactory water in quality and quantity and how many of these wells are in actual use at present and the total amount spent on these wells.

The Chief Engineer then explained the reason why schemes in operation fell short of the anticipated supply per head of the population. Schemes had been designed to provide for an assumed ultimate population in 1941; but actually the census of 1941 showed that the assumed figure was much smaller than the actual population. In addition, no provision is made to enlarge the water-supply scheme as and when the population expands; the result is that the per capita rate of supply falls below the 15 or 20 gallons per head as assumed in the original design.

The Chief Engineer further explained that a provincial compendium had been drawn up by the post-war committee assigning each municipality and major unit a suitable place in it for introducing water-supply and drainage schemes, giving each one a priority based on public health point of view.

The President desired that the Secretary might prepare a statement showing the municipalities, major and minor panchayats, with details about their water-supply schemes as existing or as proposed or under investigation, along with other relevant particulars, so that the members might know the position at a glance. He also raised the question that schemes had been delayed over a long number of years at some stage or other.

The Chief Engineer explained that the question of finance was the stumbling block at every stage. Schemes were investigated and designed and then hung up for lack of funds.

He further explained that owing to the scarcity of materials at present, schemes could not be pushed through. Cast iron pipes and galvanized iron pipes especially were very difficult to procure. The Bhadravati Iron Works, it would appear, may not be in a position to supply against indents outside the Mysore State for some years to come. The Bengal Iron and Steel Company who are the only alternative suppliers are so heavily booked that they are not prepared to accept any orders for delivery within the next 18 or 24 months. The position was thus very tight as regards materials.

Mr. Raman said that the existing system of controls was really proving to be a handicap. He understood that galvanized pipes of varying sizes were even now available in Madras to the tune of nearly Rs. 89 lakhs; but the system which specified that a permit should be issued by a Controller sitting at Calcutta over each and every application for such pipes made the position more difficult than it really need be.

Mr. Raman continued that it may not be expedient to depend on the Bengal Iron Company solely for all the provincial requirements in cast iron pipes, etc., and it would be worth while to think of placing bulk indents abroad with the United Kingdom or United States if we were to make progress with our schemes. He feared that the United Kingdom may not be in a position to make any large exports of pipes for some time to come and it would be advisable to try and see whether large shipment of pipes could not be got in from the United States for our purpose. He was sure that financial corporations would be willing to undertake such work, negotiating on the basis of rupee exchange even if dollar exchange was not feasible.

The Sanitary Engineer wanted to know whether this procedure would enable the pipes being obtained at reasonable prices. Mr. Raman said that the prices would be reasonable and economical and compare favourably with prevailing rates.

The Chief Engineer agreed that it was worth while to think of importing bulk quantities from overseas. The Committee agreed to the suggestion of Mr. Raman that the Government of India should be approached for help in the import of such pipes with a high priority and the Provincial Government should be advised to press the case accordingly.

The discussion then turned to the question of finance. Mr. Raman suggested that the Committee should declare that the responsibility for providing water-supply and drainage schemes rests with Government solely; the local bodies should be looked upon only as agents for carrying out the Government's policy and instructions in this behalf. All the members were agreed on this proposition.

The Chief Engineer said that the question of finance as a large issue was to be decided by the Government. However the Committee could agree that the matter of water-supply and drainage should no longer be left to be decided by the financial capacity of the particular municipality or panchayat concerned. In his opinion, the Government should take over this work as its primary responsibility. The Government after examining the financial resources of each municipality might decide on what it considered was a reasonable level of taxation which the municipality should levy and collect towards its water-supply and drainage. The Government might also decide as to the rates at which the municipality should supply water through taps and meters and collect all such proceeds from the water-supply as well as drainage schemes as part of its provincial funds. Once the Government decides to make a pool of all municipal water-supply and drainage tax (at rates which the Government will fix for each station) and also the revenues derived from water-supply and drainage schemes after they are installed, it is the duty of the Government to proceed with the provision of water-supply and drainage schemes to all stations on a regulated programme, augmenting the fund from its own provincial revenues to the extent found necessary. Consultation with the local body will not under such a scheme be a means of holding up progress on schemes. The order in which schemes should be taken up should be more rightly based on public health considerations rather than on others.

Mr. Nachiappa Gounder said that there are a number of municipalities and panchayats anxious to have water-supply schemes and have even taxed themselves already but are unable to get the advantage since they have not been given high priority in the Provincial Compendium. He suggested that whichever municipality or panchayat comes forward with appreciable funds and willingness to have a scheme should be given encouragement in preference to others who, though they may be willing to have a scheme, may not be equally ready to tax themselves for the purpose.

The Chief Engineer explained that under his scheme the local level of taxation to be decided by the Government will no doubt take into account all relevant factors so that the tax fixed will be reasonable from the point of view of the municipality and Government alike. He held that municipalities which are affluent should

not stop with providing their own water-supply and drainage schemes but should be made to contribute, as far as their means would permit, to the central pool from which poorer municipalities and panchayats could be given greater help than would be otherwise possible.

Mr. Ranga Reddi observed that for any such scheme to work successfully the co-operation of the municipalities was fundamentally necessary as the municipality will be the agency for the taxation and its collection.

Mr. Raman suggested the raising of municipal debentures under the authority of the Government; there was some discussion about the feasibility of such a step in the light of past experience. The subject, however, was kept over for discussion at a later stage.

Mr. Raman further suggested that insurance companies should be approached by the Government for loans to carry out these public health schemes. He explained that these companies should be only too willing to come forward with their help as the improvement of the public health was in their own interests in the long run. He mentioned that in England the insurance companies financed research, at their own expense, for the advancement of public health. He was hopeful that large sums of money would be forthcoming from insurance companies for the purpose in view if the Government undertook the responsibility of their repayment within a period of, say, 40 or even 60 years at a very reasonable rate of interest. He expected that the rate of interest would be even less than the rate which Government would have to pay if an open loan was raised by them in the market. There was general agreement among the members that this source could be tapped for raising funds by the Government.

Some members suggested that future grants for maintenance and improvements of existing water supplies in some of the bigger municipalities should be stopped leaving it to the municipalities to attend to these works from their own resources. The Chief Engineer explained, however, that this would not make for a uniform policy. He said that if Government collected appropriate rates of water and drainage tax and the water and drainage revenues from such municipalities also into their common pool, they could probably get more from the municipalities than would be required actually to maintain and expand their schemes.

The President suggested that the point as to how far a local body was entitled to further help could be decided on due consideration of all relevant factors. The question of finance was kept over for more detailed discussion at a later stage.

The Committee then dispersed to continue its meeting from 9 a.m. to 12 noon, the next day, 24th June 1947.

S. RAJAGOPALAN,
Secretary.

A. KALESWARA RAO,
President.

ABSTRACT OF PROCEEDINGS OF THE SECOND MEETING
OF THE WATER-SUPPLY AND DRAINAGE COMMITTEE.

DATE OF MEETING : 24th June 1947. TIME : 9 a.m. to 12 noon.

(In the Public Works Department Library Hall, Chepauk,
Madras.)

Present:

President and other members.

Mr. Ranga Reddi opened the discussions. He referred to the Committee's decision the previous day to urge that the responsibility for providing water-supply and drainage was the Government's and said that as far as contribution from local bodies was concerned certain points would need to be considered. He claimed that rural water-supply by which he meant the provision of some safe water for consumption by rural folks should be pushed through at a very rapid pace and without insisting on any contribution. He referred to the conditions in Ceded Districts where water scarcity is acute all over. In a particular village, it had cost nearly Rs. 18,000 for a single well. It would be beyond the capacity of the village to contribute anything towards this prohibitive cost. In his own village, they had spent nearly Rs. 3,000 on a power drill in pursuit of water but to no purpose and eventually the district board had to sanction another estimate for a well for Rs. 6,000. His point was that the question of real need should be the criterion in all such cases.

The President intervening asked if in the event of the panchayat system being brought in, would not people be willing to tax themselves for water-supply and drainage.

Mr. Ranga Reddi explained that the communal life of the village has totally disappeared now and the spirit of self-sufficiency, self-help and mutual help has unfortunately died out giving place to extreme selfishness and a non-civic and non-corporate spirit in the villager. If, therefore, any scheme of rural water-supply was to be a success we should not think of taxing these backward tracts. His point was that if the villager were to be helped entirely from provincial funds it would be a good psychological gesture.

The Secretary observed that the rural water-supply fund started by the Government in 1937-38 was intended only for the provision of free water-supply to all such villages which Mr. Reddi had in view, i.e., villages with less than 5,000 population and in the case of panchayats which have an income of less than Rs. 3,000. A large majority of the villages which are backward and are not in a position to make any contribution would be entitled to the free help from the provincial funds under the rural water-supply fund. To the extent to which such free help has not yet been extended to the several deserving villages which have long been suffering under acute water scarcity, it was necessary to augment the special rural water-supply fund and extend its help to all the districts as quickly as possible.

The Director of Public Health pointed out that the number of revenue villages was much less than the actual number of rural units and hamlets as each revenue village was really a cluster of several hamlets put together.

Mr. Reddi suggested that the Government could begin with urban taxation only and allot funds out of this for providing free rural water-supply and after the provision of such amenity in the rural area they could begin taxation in those areas. He said this would have a psychological effect on the rural people who would be opposed to any tax until they had some concrete amenity installed for them by the Government.

It was agreed by the members that the urban population only, i.e., 25 per cent of the province should be taxed for the time being for their water and drainage amenities. Mr. Reddi added that a free drinking water well, a free dispensary and a free elementary school for every village was necessary before we could think of taxing these areas at all.

Mr. Reddi then raised the question whether the floating of a loan by a municipality was going to succeed where the Provincial Government do not float a loan themselves. It might be possible if sufficient safeguards are attached to their powers of borrowing. Even so, could they get loans at cheaper rates than the Provincial Government?

The Chief Engineer said it all depended on the security offered to the investor. The security behind the Government borrowing its own loans was certainly far better than a municipality doing it. Moreover, a provincial loan would perhaps make far better uniformity of development throughout the province.

Mr. Nachiappa Goundar asked if it was not better if a particular municipality was allowed to float a loan if the Government were going to take up particular schemes on local considerations. It might yield successful results.

The Chief Engineer said that payment according to ability should be the basis. The user of a water-supply or drainage should pay for what he gets at the maximum rate he can afford, and it is for the Government to discharge their responsibility in the provision of water-supply and drainage, meeting the question of finance in as best a manner as they deemed fit. The priority to be adopted for schemes should be flexible, no doubt, but it should be based on real needs, primarily.

The President then put the following proposition:—

The State must shoulder the responsibility to provide rural water-supply and sanitation (including drainage), free of cost without expecting any contribution from the villages concerned. This free help should be extended to all villages with a population of less than 5,000 and panchayats with income less than Rs. 3,000. The proposition was agreed to by the members. But Mr. Nachiappa Goundar alone contended that this must be extended to all rural areas (excluding major panchayats, ex-unions and municipalities).

The President then said that there are several places where people are willing to make contribution and where private munificence would be forthcoming for providing rural water-supplies locally. Should we not give them some sort of preference? The Director of Public Health added that if the villagers themselves contributed towards their drinking water-supply schemes they would look upon the scheme as their own property and thus a better maintenance was to be expected. In that way contribution had a salutary effect.

The Chief Engineer: People who want water most are in the uplands and dry tracts. People who are rich and can afford to contribute towards their schemes are in the delta where water-supply is not so much a crying necessity. If, therefore, people who come forward with their contributions are going to be given preference it might simply result in the 'starved', areas continuing to remain without water-supply and delta people getting their water-supply in advance. This difficulty should be met suitably.

President: Any question of priority when we are dealing with providing water-supply to thousands of villages will not be practicable. If the investigation and the execution of these works is decentralized and the direction and control is vested at the district level it would then be possible to pursue a satisfactory method and ensure simultaneous progress in the several districts. Under this scheme, it would be possible for us to take advantage of contributions which may be forthcoming from the richer units without in any way holding up progress of works in areas where water-supply was much needed as in the case of Ceded districts.

Mr. Raman said that in our scheme of things the Ceded districts as well as places which are notoriously epidemic-ridden should be given a larger allotment as well as a high priority so that villages in these difficult areas where nature has been unkind would get their water-supply in any case, irrespective of contributions as may be forthcoming from the more favourable areas.

The Committee agreed to make special mention in favour of Ceded districts and similar difficult areas for special consideration in the matter of allotment of grants and speedy execution of works. The agency therefor was then raised by the President. Mr. Raman explained the anomalies in the present working of the rural water-supply scheme. He said that the Labour Department, the Harijan Uplift Department and the Revenue Department were all of them pursuing parallel activities in the matter of providing water-supply amenities to rural hamlets, Harijan cheris, etc., with a woeful and wasteful lack of co-ordination at any stage. The President added that the subject came under as many as three different Ministers if not more. All this resulted in wastage of labour and money without any check being possible.

Mr. Raman continued that in the interest of the speedy and efficient prosecution of rural water-supply schemes it was essential that there should be only one agency which should be held responsible for administering the rural water-supply scheme. The present lack of co-ordination should be put a stop to. And his suggestion was that at the district level there should be one important central agency which would direct and control all activities in regard to rural water-supply in that district. The present multiplicity of agency which was adding to the confusion and causing a lot of infructuous work should be withdrawn. The Director of Public Health strongly supported the proposal. The President suggested that the Public Health Department (Engineering) would be the proper authority to exercise such central and co-ordinated control.

Mr. Nachiappa Goundar wanted to know whether in a simple matter like the location of a rural water-supply well much of a technical skill was necessary. Mr. Raman said that it was not only necessary but also essential that properly trained and qualified men should

be employed in the location of suitable sites for drinking water wells. It called for a discerning knowledge of the principles of water engineering and a general level of experience and efficiency—beyond the domain of Minor Irrigation Overseers—to decide on appropriate sites for wells. He knew of instances where money had been thrown away on wells undertaken on the incompetent advice of men not qualified for the purpose. It was quite wrong to assume that the important work of selection of site for wells or other types of source for a particular area was an easy matter which any minor engineering subordinate could handle without proper training and experience in the line. He laid great emphasis on this aspect of the question.

The Director of Public Health agreed with Mr. Raman and said that he also knew of instances where rural water-supply wells had miscarried by incompetent men handling them. He instanced the case of a big panchayat in Tinnevely district, Kadayanalloor, where the revenue authorities in charge of rural water-supply schemes had located and sunk a well on the wrong side of a local tank. The tank-bed dipped towards the other side and percolation of the tank water was in the direction away from the well sunk by the authorities. In the result, the well was actually in disuse. Strangely enough, the villagers themselves thereupon had dug up a well on the right side of the tank and were actually using this well with advantage. A proper degree of technical competence and experience is therefore necessary in an important issue like the location of a well for a drinking water-supply, in the different terrains and widely varying areas of the province.

Mr. Raman continued that the selection of a proper site for such wells was a more important and difficult task than, say, the selection of a site for an impounding reservoir. It was this want of proper technical assistance that had resulted in the throwing away of good money after bad wells. He, therefore, urged that the future policy must be decentralized execution under one central co-ordinating agency, a competent officer at the district level being entrusted with the direction and control of all works in the district.

Continuing Mr. Raman said that it was no good saying that the Collectors should get on with the work with the help of Minor Irrigation Overseers. For one thing the Minor Irrigation Overseers were not competent for the job. They have other duties to do and do not take to rural water-supply work kindly. The works are so scattered over the district that it is impossible for the Collector to exercise any control or supervision. Even where type designs were available for adaptation to local conditions, the authorities confessed their inability to carry out such works as they had no competence in the subject.

It is to mend this state of affairs that he suggested that the work of rural water-supply should be taken over from the Collectors and vested with the Public Health Engineering branch who will have an officer at the district level to pursue a policy of decentralized execution. As for the subordinate staff under such officer, he would suggest harnessing the services of the existing technical men irrespective of the department to which they belonged. We have the section officers of the Public Works Department who in the discharge of their duties do a lot of touring work. It should be possible for them to devote some time during their itineraries to the direction and guidance of rural water-supply schemes on proper lines. In addition

we have the Assistant Engineers of the Highways Department who are largely touring officers. Their assistance could also be invoked with the minimum of disturbance to their normal duties. Provided we could utilize such higher technical assistance, the additional staff we may need in the lower categories can be of the order of maistries who can carry out instructions from these higher officers. Such a scheme would be fairly simple to adopt under present conditions and would enable us to make some headway.

The Chief Engineer was glad that Mr. Raman's approach to this problem was one which had also his full support. He informed the committee that some 15 months ago he had put up a proposal before the Government for the amalgamation of all engineering services. Under the existing organization of the Engineering department, it happened that the roads officer, the buildings officer and the irrigation officer were all touring the same territory for directing works in their own branches but each independent of the other. The roads man was inspecting all along the road, while the irrigation man followed up, inspecting the canal all along side the road. This entailed a lot of duplication of staff whereas with a unified service of Engineers, the functions relating to roads, buildings, irrigation and public health could all be entrusted to a single District Engineer or Executive Engineer. The jurisdiction of such District Engineers of course will have to be suitably revised and a larger number of divisions than at present may have to be created. But even so, it was desirable that from the District Engineer downwards with his staff of subdivisional officers and supervisors, it should be possible to have engineering works of the several branches carried out without parallel field staff pertaining to each branch being employed right down to the level of the subordinates.

Specialisation, continued the Chief Engineer, was of course necessary but would be confined to the higher levels. As he envisaged it, the Sanitary Engineer would continue to prepare the designs, plans and estimates for schemes with specialised staff for the purpose. But it was his idea that the officers who prepare the designs should be given a chance subsequently to participate in the execution of these schemes; while correspondingly the officers who had executed schemes would likewise be posted to the design section for training in the design of schemes. In this manner he hoped to build up a self-contained unit of officers conversant with the investigation, design and execution aspects of Public Health Engineering works. The Chief Engineer added that specialisation in the other branches, i.e., buildings and roads, irrigation, etc., could also be planned likewise. But all these branches should have from the district level downwards a common field staff who could be relied upon to carry out works pertaining to the several branches. He explained further that under such a scheme, the execution of a water-supply or drainage scheme of any major magnitude would be undertaken by a special district engineer or similar special staff without indenting on the common field staff contemplated above. Minor schemes will be executed by the amalgamated field staff and the regular district engineer will have the control and direction of the works under him during and after execution as well as on the staff engaged thereon. The Chief Engineer pointed out that although this proposal was put forward before the Government 15 months ago no decision had been arrived at so far.

Similarly, he pointed out that two posts of Assistant Engineers and supervisors for investigation work were asked for several months ago. But no orders had so far been received. The proposal was made with a view to achieve better progress in the investigation of schemes and to train up more investigation supervisors.

The Chief Engineer further added that to secure candidates for supervisors' posts in adequate numbers was proving very difficult at present. As against 570 hands required he was able to secure only 170 supervisors recently, from among those who had just left college including those who had applied from Mysore. While he could fill the posts in the higher category of Executive Engineers and Assistant Engineers by promoting existing men, it was obviously impossible for him to find new hands as supervisors. Any question of reorganization had to take into account this relevant aspect of the question also, i.e., paucity of subordinate staff.

Mr. Raman was happy that the Chief Engineer's proposals were very much on the lines he himself had envisaged. He pointed out that to divorce the investigation and design from the execution of schemes was injurious alike from the point of view of design as well as execution. It was to make this principle accepted that he had long fought a lone battle. He strongly endorsed the proposal to have an amalgamated field staff below the district level, in the early stages of development, confining the specialisation to the higher ranks. He deplored that a separate Highway department should have been formed wholly independent of the sister branches. He had no objection to separation and specialisation at the higher levels. It was but appropriate. But no country in the world can afford to have parallel services at the periphery. Russia's notable example which has yielded demonstrable success was its policy of centralised direction and control and decentralised execution of works. It was very necessary that we too should adopt such a policy.

Mr. Raman further added that to ensure continuity of policy and keep up specialisation and direction at the top at a uniformly efficient level, it was desirable that the deputy to the Chief Engineer should be the prospective Chief Engineer. The present practice of appointing as Deputy an Executive Engineer while the Chief Engineer's post would in due course be occupied by a senior Superintending Engineer would call for a change in procedure.

The President intervened to say that for the committee to go into the question of amalgamation including the Highways Branch and Irrigation Branch, etc., might be outside the scope of their enquiry. He thought that it was necessary and sufficient that the committee should confine its proposals in so far as they related to the Public Health Engineering branch.

Mr. Raman said that the proposals made out by the Chief Engineer were no doubt as they were visualised as an ultimate scheme of things. For the present however we might concern ourselves with the Public Health Engineering branch and the manner and method of its organization. He considered that a Chief Engineer (Public Health) may be assisted by two regional Engineers for the North and south Madras with their own design offices. He advisedly suggested this course in view of the eventual bifurcation of the province which would take place. Officers from the general branch of the Public Works Department could be transferred on to this Public Health

branch. An interchangeability as between the design and execution staff would serve to provide the necessary allround training to the officer. He stressed the need for associating the designer with the execution of the scheme in view of the past experience in the execution of Adoni Scheme, etc.

Mr. Raman then dealt with the technical scrutiny and direction brought to bear on schemes. His experience in respect of Tuticorin Drainage Scheme showed that even in a case where a scheme had been technically sanctioned and the Government had ordered its execution, the need for further revision of the scheme at that advanced stage, when pointed out, was accepted as necessary. There were other schemes which were yet to find fruition, although the local bodies concerned had been willing and ready with funds to have their schemes executed. This brought out clearly the need for a radical change in the present set up of the department. He therefore suggested that the committee should strongly recommend the appointment of a top ranking specialist for the post of Chief Engineer (Public Health), just as Major Howard had been appointed to the Hydro-Electric department. He ascribed the lack of progress so far, to the absence of a high level specialist officer who would build up and expand the usefulness of the department.

The Chief Engineer intervened to say that much of the success of the Hydro-Electric department was due to the fact that those schemes paid out dividends and were therefore readily financed by the Government. Water-supply and drainage schemes pay no visible dividends except in the saving of human lives. The question of finance was therefore the main criterion again, to decide the prosecution of water-supply and drainage schemes at the desired rate of progress.

Mr. Raman said that with his knowledge of the history of the Sanitary Engineering department from 1890 to 1947—which would make lamentable reading—he would recommend, with a full sense of responsibility in so doing, that a personality of the type and standing of Major Howard was necessary to put the department in proper shape. A topping man with fresh ideas and modern knowledge who had done several schemes and who is an authority on the subject was necessary. Large principles have to be decided when schemes are going to be taken up at a rapid pace. A man of vast experience and ability even at a cost of Rs. 5,000 per month should be secured if progress were to be achieved. He would train up our own officers by the time his contract period expired.

The President stated that the committee might agree on the question of the proper organization of the Public Health Engineering Branch, so that the investigation, design and execution of schemes and the direction and control of staff would all vest in a self contained department, and an orderly progress, made possible. In regard to the specialised work with central direction and a common staff at the district level he requested the Secretary to prepare a chart explaining the proposals in a skeleton form for further discussion by the members. The President further suggested that there might be two Sanitary Engineers and four Deputy Sanitary Engineers for the province so that the progress of work could be expedited.

Mr. Raman concurred that it was a sound proposal but the question would have to be decided by the availability of personnel for the time being.

Mr. Raman then raised the question about entrusting the investigation and design of water-supply and drainage schemes to private engineering firms. He explained that recruitment to the Government services was governed by rules and regulations whereas private engineering firms were free to employ professional men in the outside field irrespective of such rules. For instance, firms could entertain retired men with rich experience or professional men in the field from foreign countries too, if they found it paying. He thought it eminently advisable to harness and utilise the services of talents available outside the Government services in order that the progress on investigation, design and execution of schemes could be accelerated to the desired rate. He added that the Public Health Act enacted in 1939 contained provisions—these were then included deliberately—to contract with private firms for the furtherance of such schemes. He therefore urged that the committee should consider the entrusting of design and investigation of schemes, apart from their execution, to Engineering firms.

The Chief Engineer was doubtful whether the entrusting of investigation of water-supply schemes to private firms would be a practical proposition. The basis of fixing up quotations for such investigation work involved several indefinite factors, and until a scheme was actually put into execution the success of the source investigated could not be taken as granted. To pay for an investigation work without being sure of the results was therefore a contingency to be faced in such a case.

Mr. Raman explained as a contrast how a drainage scheme for Trichinopoly could without difficulty be entrusted to a private engineering firm as it was a work which would admit of a firm quotation from private firms. After some discussion the Chief Engineer was of the opinion that the investigation of water-supply schemes by private firms was neither feasible nor desirable whereas the procedure might be adopted in the case of drainage schemes.

The Sanitary Engineer observed that in the matter of investigation of schemes, we were already ahead of programme by about seven years and there would seem to be no need for having investigations entrusted to private firms at this stage.

Mr. Raman said that it would be wrong to assume that the investigations undertaken and completed several years ago could be accepted as they are and adopted straightaway for the design stage. He knew of several instances where the investigation particulars were not faithful to local conditions. This apart, conditions have been changing; and to assume that such of the schemes which had been investigated several years ago or in the recent past are all in a ready shape for taking up further design work would not be correct. He could say without hesitation that most of these schemes would need to be investigated *de novo*.

The Secretary also cited one or two instances where investigated schemes had to be redone completely over again for several reasons. This gave relevancy to Mr. Raman's contention.

Mr. Raman continued that ordinarily it took nearly 20 years for a scheme to fructify from the stage it was initiated. He instanced the case of Vizagapatam water-supply.

The Chief Engineer said that in the case of Vizagapatam water-supply two alternative sources found favour with two opposing parties of the Municipal Council with the result that it dragged on for years and years. The question would not have reached any finality had not the army come in and executed both the schemes as a war measure.

The Chief Engineer also cited the case of Chittivalsa Jute Mills who employed a firm in Calcutta to investigate a source for augmenting their water-supply and had paid out Rs. 20,000 in the bargain without having their problem solved.

Mr. Raman said that when it was proposed to entrust both investigations and designs of schemes to private engineering firms there was always the possibility that the quotations for investigation and or design of schemes would always off set the disadvantages implicit in indefinite investigations. His sole anxiety was that the activities in regard to the vast programme of provincial expansion in water-supply and drainage should not be confined exclusively to the Government department, but that engineering talent available in the outside field should also be tapped with maximum advantage.

The President stated that the proposal of utilizing outside agencies preferably responsible and respectable firms, in the execution of schemes had been wholly accepted; the question was how far such outside agencies should be used in the investigation and design parts of the work. Except in the case of investigation of water-supply schemes as explained by the Chief Engineer, there seemed to be no objection in adopting the proposal.

The question of planning for the rural water-supply schemes—whether a five year plan or a ten year plan—was then discussed. This would have to be decided with reference to the total number of villages to be catered for and the total approximate cost involved. It was suggested that even though these schemes would be taken up simultaneously in the several districts it would be necessary to decide on some sort of relative priority as between the several villages in the same district in order to have a planned progress. The constitution of a District committee to go into the question was considered advisable. It was proposed that the sinking of wells could be entrusted to the villagers themselves; as only local labour would be employed even if an outside contractor was engaged for the job. The directions and technical advice would of course be given by the district field staff envisaged in our scheme. Further discussion on the subject was postponed for the next day's meeting. The committee then rose for the day.

S. RAJAGOPALAN,
Secretary.

A. KALESWARA RAO,
President.

**ABSTRACT OF PROCEEDINGS OF THE THIRD MEETING
OF THE WATER-SUPPLY AND DRAINAGE COMMITTEE.**

DATE OF MEETING : 25th June 1947. TIME : 9 a.m. to 12 noon.

(In the Public Works Department Library Hall, Chepauk, Madras.)

Present :

President and other members.

The Chairman opened the proceedings. He referred to the clause in the Public Health Act which empowers a local body to contract with private firms for the supply of water. Did that cover investigation, design and execution?

The Sanitary Engineer said that the practice in England was to entrust the supply of water as a commercial undertaking to private firms who investigated, designed, executed and maintained their own system and sold water at agreed rates; there was thus no question of division of the work among different agencies.

Mr. Raman : In the early days of advancement in any country private resources, capital and professional talents, are invariably tapped as a first stage of progress. In England several water engineering firms were selling water to specific areas under licence until eventually the Metropolitan Water Board was constituted as a Central authority. These firms were making huge dividends, as much as 18 per cent, and the Government had to intervene to restrict the profits. For the advancement of public utility undertakings we should enlist the help of private agencies as an initial step. Shaw has laid stress on this course. At the time the clause in the Public Health Act was being discussed in the select committee, the matter was discussed at great length. The then Prime Minister attached importance to the matter of enlisting private capital and talents in the furtherance of public utility schemes as a highly expedient initial step. Later on the Government could always acquire any paying scheme on merits. His only plea was that the clause which found a place in the Public Health Act must be implemented, now that there was the opportune time for it. Although the Public Health Board had accepted the need for such a course, no action whatever had been taken during the past three or four years. It was for the committee to press that action should be taken under this empowering clause of Public Health Act at least at this juncture.

Mr. Nachiappa Goundar : If the Government were to take upon themselves all the work involved through their own departments it may of course ensure a uniformity in procedure, but there was the fact that by using private agencies wherever it was possible, works could be largely speeded up.

President : There was a fear that private agencies who work on the profit motive would make enormous profits and would exploit the situation wherever they could without any ethical standards. One had to admit that conditions of business in this country were far below the high standard obtaining in England where the code of business morals was pretty high. His own experience in the case of municipal electrification of Bezwada, Cocanada, Rajahmundry, Guntur, etc., was that private agencies were yet to prove their capacity to deal

with customers on a fair and straight level. People were not therefore satisfied with private companies in such matters. They would prefer to depend on the Governmental agency (who though a slow moving and costly machinery have no ulterior motive and were therefore reliable). Provided therefore we decentralised the Governmental agency and provided a larger number of technical officers and subordinate staff, people would prefer the Government to private agency.

Mr. Hussain said that it was for the Government to take up the investigation and design leaving the execution alone to be carried out by private agencies.

Mr. Ranga Reddi: As he understood it there was paucity of technical men and lack of materials which are now holding up the programme.

Sanitary Engineer: I do not think want of staff was mentioned as a reason for the delay.

Chief Engineer: I should think we want more staff and materials to keep up to the programme.

Sanitary Engineer: Would it mean that if the allotment for works is increased from the present Rs. 50 lakhs to Rs. 85 lakhs we would want extra hands? Has it been mentioned?

Secretary: Proposals for extra staff went along with the programme of Rs. 85 lakhs per year. Extra staff is needed.

The Chief Engineer agreed that it was so.

Mr. Ranga Reddi: Mr. Raman's solution for meeting the difficulty of want of hands is to enlist private agencies. Ever such private agencies would have to employ technical hands. They might perhaps employ a few top people from outside the country but they would also be employing retired people for their lower ranks. Why not we also recommend to Government that retired people could be employed by the Government for a like purpose. If necessary we could also recommend additional remuneration, increased scales of pay, etc. His contention was that as between private and state management it very often happened that private agencies were not subject to public pressure and public opinion and would cause inconvenience to their own customers with impunity. He instanced the case of Cuddapah Electric Supply Corporation, against the shortcomings of which the municipality found itself helpless, and water-supply which depended on the electric supply by the firm, was frequently in jeopardy.

Mr. Reddi continued that if private agencies had to be employed for our purpose, the Government should restrict this to approved and registered firms who could be depended upon to do their work with efficiency and reasonableness. It was for the departmental people to decide whether such firms should be entrusted with the investigation and or design of schemes in addition to their execution.

Chief Engineer: To entrust the investigation of water-supplies to private agencies would be of doubtful utility. Conditions in England were different, where water sources were not so doubtful. Further the responsibility for the design and execution of the scheme should not be divided between two different firms. Such a step would encourage either firm to disown responsibility for the results and would leave the customer in the sorry position of holding the baby.

Mr. Ranga Reddi: Even where private agencies carry out the design and execution they would doubtless all conform to the specifications and instructions issued by the supervising Government authority. Then where was the difficulty?

Chief Engineer: A firm which was executing a scheme designed by a rival firm would always try to maintain that the scheme could have been bettered if their own ideas had also been given effect to. This would complicate the issue as regards final responsibility for the results.

Mr. A. V. Raman: The designs are approved by Government experts on whom therefore the final responsibility rests: similarly the execution is supervised by the Government experts, and therefore the responsibility is again on the Government officers.

Chief Engineer explained that having the plans and designs prepared by his own subordinate officers and accepting responsibility therefor was different from assuming similar responsibility for designs prepared by private agencies. In the former case he could be sure that the design was based on an approved common ground whereas in the latter case every firm might have its own basis of designs. Mr. Raman's solution for speeding up work would result in absolving the designing firms from their rightful responsibility for the designs and transferring such responsibility to the authority who passed the plans. It would place him in a very invidious position indeed.

The Sanitary Engineer observed that designs under execution were sometimes referred back to him for modification on details and asked who should carry out such modification if the design and execution were to be carried out by private agency.

Mr. Raman replied that such alterations should be attended to by the Sanitary Engineer as the designing firm faded out of the picture once their design was approved and paid for.

The Chief Engineer wanted to know whether firms would be prepared to spend thousands of rupees on investigation and design of schemes without the surety of their being eventually entrusted with the contract for the work.

Mr. Nachiappa Gounder said that as in the case of execution of schemes the Government experts would no doubt call for preliminary quotations from firms for taking up an investigation or a design work. And only after such a tender was accepted would the firm proceed to the actual investigation or design work.

The Chief Engineer referred to the practical difficulties one would meet with in the case of investigation by private agencies of ground water sources. If a private firm were to give a design based on its own field investigation and full power tests on a river bed source, how far was the Government officer to rely on the accuracy or the adequacy of the proposals made by the firm against the stipulated requirements of a particular scheme? If in the actual execution of such a design it was found that the infiltration works assumed on the basis of the firm's data required further augmentation, where was the utility in having engaged a private agency to design the scheme? On the other hand if the Government were to investigate and design such schemes as hitherto, they would proceed with the field work step by step with their own field subordinates so that in the final execution the actual extent of the infiltration work would have been based on a correct assessment of the potentialities of the sources as found out from yield tests.

Mr. Raman replied that at every stage the Government officer could exercise a check over the private agencies' work. He could supervise the full power tests with his own field staff and make sure about the results of the test as carried out by the contracting agency.

He continued that in England it was consulting firms and engineering companies that carried out the investigation, design and execution of schemes and not Governmental agencies. Such a procedure had enabled engineering firms of high repute to come into existence and the engineering profession as a whole had made rapid strides in the advancement of knowledge and experience of a variety of engineering works. India was just the contrast. Here the Engineering departments have developed solely as Government departments. It was altogether wrong to shut out private engineering firms from participation in the several aspects of the works in the profession. All engineering talents outside the services should be developed if only in the interests of the advancement of the profession itself. If private engineering firms were not associated with the engineering profession and the design and execution of a variety of works, the Government Engineering service, unhampered by any other parallel professionals in the field, would tend to become almost tyrannical in its functions. It was necessary and desirable that Government departmental designs were exposed to public criticism. At the present time they were immune from it because private agencies were never allowed to grow and expand into a healthy and efficient organization. The Sanitary Engineering Department was taking such a long time to design schemes, about 18 months for a water-supply and more than two years for a drainage scheme. Such a position should not be allowed to continue. We wanted as many agencies as possible; we wanted to augment the Public Works Department by outside talents as far as is practicable. The Public Works Department should not claim to be the quintessence of all engineering knowledge and ban outside agencies from interference at any stage. It was a wrong procedure to follow. The interests of the profession would suffer in the long run.

The Chief Engineer observed that it was no doubt desirable that the assistance of private engineering firms should be enlisted for the advancement of the profession. But at present we had not consulting engineers of the calibre and standing mentioned by Mr. Raman in regard to firms in England. It was not therefore a question of the Government officers shutting out private agencies.

The Public Works Department was certainly not claiming to be the quintessence of all engineering knowledge. On the other hand Mr. Raman's proposals would have the effect of making it so. For, did not Mr. Raman say that it was the Government officers who should shoulder the responsibility at every stage even if private engineering firms were entrusted with the investigation, design and execution of schemes? As for subjecting the designs of Government departments to public scrutiny he was not sure what exactly was meant; all he could say was there was no such outside agency now which could take up such a superior function.

Either the private firms who were entrusted with the design of schemes should be held responsible for their work or the Government officers should do the design and assume the responsibility therefor. We could not have it both ways.

Mr. Raman had suggested that when a firm carried out a full power test as part of their investigation contract the Government subordinate could supervise on the spot and check up the figures. If a subordinate was to supervise and be present over each such work all over the province, was it not far better for the Government department itself to carry out such full power tests as hitherto. What was the saving in staff if supervision was necessary over all aspects of a work?

As for the present staff position, the Chief Engineer informed the committee that the recruitment of Assistant Engineers had been stopped since 1943. Meanwhile the students passing out of Engineering College were going outside the Presidency in view of the better pay and prospects available elsewhere. We had to consider this very relevant point. The fact remained that the building up of a body of private engineers, which was no doubt a desirable step, depended upon the number of students coming out of the Engineering Colleges in the country. The present output from the Provincial Colleges was very limited. Even so some of these were migrating outside the province for better jobs. Until the number of trainees was increased considerably, private engineering bodies and Government services would equally be handicapped for want of hands. So far as the investigation and design of water-supply schemes was concerned he was not therefore in favour of entrusting such works to private firms.

Mr. Raman agreed that the investigation of water-supply schemes with underground sources of a speculative character could be taken up by the Government department themselves and not by private agencies. He suggested however that there should be no objection to private firms investigating water-supply schemes where the source was plentiful and of an assured nature. The Chief Engineer agreed.

Mr. Raman then referred to the point in regard to the absence of criticism on Government departmental designs and said that because there were no competent private firms such a criticism was not possible. It, therefore, really amounted to a question of supply and demand. He expressed concern, however, over the fact that the best talents of the province were slowly being driven outside because of lack of adequate prospects within the province. He would say that unless timely steps were taken to retain such talents the engineering in the province would tend to become bankrupt.

Mr. Raman instanced a case where a highly qualified candidate who was trained abroad under Government scholarship could not gain employment even as a municipal engineer and had to seek an employment in a private agency. This showed that there was no anxiety to retain talent at any cost.

Mr. Ranga Reddi said the question now was want of hands.

The President said Mr. Raman's point was that there was also nepotism in the selection of men, not caring for merit.

The Chief Engineer stated that at present people who were being sent abroad for training at Government expense were required to execute a bond that they would serve the Government on their return for not less than five years. There would, therefore, be no difficulty.

The President then put the proposition that in order to speed up schemes, the investigation and design (except in the case of water-supply schemes where the sources were indefinite, underground or speculative in character), may be entrusted to approved and recognized private engineering firms if the local body so chooses, under

the supervision and control of the Government department officers. The execution of these schemes could also be entrusted to private firms as at present, subject to the direction and control of the Government officers.

The Chief Engineer added that even in the matter of employing private agencies for drainage schemes he was not in favour of encouraging any dual responsibility; the design and execution of such schemes being entrusted to a single agency so that the firm may be charged with an undivided responsibility for the results of the scheme.

The President added that in view of the inadequacy of technical staff in the engineering profession special exemption might be recommended for the reemployment of retired people on the basis of the present rules in force.

Mr. Raman then referred to the question of training of Public Health Engineers. The Bhore Committee with no single engineer member in it had thought it fit to include in their recommendations a detailed syllabus for training public health engineers—prepared by medical men. That committee had also stated that they had had no time to go into the details of environmental sanitation; all the same they were prepared to give out a syllabus for public health engineering. The position was certainly peculiar. The Government of India had gone forward in implementing the Bhore Committee's recommendations in the matter of training of medical men, leaving alone the Public Health Engineering profession. In the ensuing Public Health Conference on the 27th instant, in the Secretariat, this was also going to be discussed. He requested the Committee's permission to say in that conference that in so far as Public Health Engineering branch was concerned our committee would deal with it in all aspects. The President agreed.

Mr. Raman continued that while tendering evidence before the Bhore Committee it had been proposed that every engineer worth the name will have a basic knowledge—imparted over a period of 18 months—and subsequent special training in Public Health Engineering—not unconnected with the civil engineering line—over a further period of 18 months. In the fourth year the trainee would be put on in the actual profession with a stipend on the principle "earn while you learn."

He then referred to the Guindy College and criticized that the teachers who imparted professional knowledge to the students were not themselves professional men but only arm-chair, specialists. It was a serious defect according to him that the officers who had the control and direction of the public works of the province, had no direct voice in the training of students as engineers. The curriculum might be anything but everything depended on the teacher and his professional competence on the subject he handled, based on actual experience. Such a healthy principle was unfortunately absent here. The Education Department was turning out engineer students and the Public Works Department was accepting them without any inter-co-ordination. The system called for improvement and the Chief Engineer as the head of the profession should take over effective control of the training of the future engineers.

Mr. Raman continued that for the training of Public Health Engineers, the Engineering College was one alternative. A second was that the Government might open up a special college for the purpose. A third was technological colleges as sponsored by the Government of India all over the country. A fourth was a technological-social service course under the aegis of private managements. He said that Public Health Engineering Service was a social service and not a ground for mere careerists. His suggestion was that a band of students imbued with an ardour for social service should be selected, given the necessary training and put on the job on moderate salaries. They could be kept above want but there was no room for monetary ambitions in such service. In this way, they could build up an organization.

Chief Engineer: Mr. Raman is being idealistic. I am rather materialistic. The average Indian parent is also materialistic.

Mr. Raman: I claim to know the Indian parent better. We must have some ideal before us.

President: I am also an idealist. But the present conditions are so confused. Prices are at high levels. There is high communal tension everywhere. I agree that a time will come for ideals being put into practice but conditions must first settle down. Revolutions, commotions, and uprisings should all subside. It must take some time. Then and only then under settled and peaceful conditions could we think of pursuing some ideal on practical lines.

Mr. Hussain: Raman's proposal is good as an objective. But we have to think of an immediate procedure which would be practicable.

The Director of Public Health suggested that to encourage people to take to a post-graduate course in public health training a stipend could be given first, taking in return a bond from them for future service under the Government.

Mr. Nachiappa Goundar: We must provide facilities first. At present there are too many applicants for too few seats. If we had a good many seats available and not sufficient applicants forthcoming, we could think of stipends.

The Director of Public Health said that this suggestion of a stipend related to the post-graduate training only for Public Health Engineering to B.E. students.

Mr. Nachiappa Goundar suggested that instead of training all for the engineer grade a good number of men of a lower category could be trained in the college. The course also could be reduced to much less than the five years, and their activities can very well be limited to field work of a specific nature.

The Chief Engineer explained that such different courses had resulted in a lot of heart-burning in the officers in their later years of service; as one year more or less in their college days would have meant all the difference in prospects as between a Superintending Engineer and a supervisor for life. He was against the creation of a lower and higher course for producing two classes of engineers. He explained that the question of reorganization of the engineering courses was now being considered under a Special Committee for Engineering Colleges, and it was likely that they would recommend an engineer course (spread over three years), and the creation of a draughtsman's class as an entirely separate entity.

Mr. Raman said that in the matter of bringing up a class of Public Health Engineers we could not afford to follow the American example where the course extended over a period of seven years. We must give a basic training as an engineer and then specialized training in Public Health. Two classes of people were not desirable. He had in view the Public Health Engineers who would be trained with engineering bias and the sanitarian—analagous to the sanitary inspector. To speed up the training in the early stages of our scheme he suggested that after the initial basic training of eighteen months a further intensive course supplemented by executive instructions would save some six to nine months from the three years course. He suggested that we should copy the Russian example as conditions in India were more akin to those in Russia than elsewhere.

The President agreed that we could with advantage copy the Russian method; they had built up at a very rapid pace. Our main concern was how we could do things cheap and how we could do things quick. But we must produce more and more trained students from Government institutions or private institutions.

Mr. Raman suggested that the Government should open a new training course which could in due course be affiliated to the University.

The Chief Engineer pointed out the difficulties in the matter of securing buildings, equipment, teaching staff, etc.

In the case of private institutions bringing up trained students the Chief Engineer said that they could be accepted as supervisors if the Institution of Engineers, India, gave recognition to their qualifications; the matter may be left to the Institution.

At this stage after some further discussion about the venue of training of the Public Health Engineers the subject was deferred for consideration again in the next day's meeting.

The meeting was adjourned for the next day.

S. RAJAGOPALAN,
Secretary.

A. KALESWARA RAO,
President.

ABSTRACT OF PROCEEDINGS OF THE FOURTH MEETING OF THE WATER-SUPPLY AND DRAINAGE COMMITTEE.

DATE OF MEETING : 26th June 1947. TIME : 9 a.m. to 12 noon.
(In the Public Works Department Library Hall, Chepauk, Madras.)

Present :

President and other members.

The President, initiating the discussions, referred to the previous day's talks in regard to the training of Public Health Engineers in the Guindy College. He considered that it would be better from all view points to have such a training included in the Guindy College curriculum itself instead of our having to start an institution outside, for the purpose. He understood that as many as 200 students were being admitted to the engineer class this year. The Chief Engineer had informed the Committee that recommendations would shortly be

made by a separate committee about reducing the course from four to three years. Therefore, when all these 200 students had got their basic engineering training within the first 18 months of the course according to this new scheme, some 50 or 60 of these students could thereafter be branched off to the Public Health Engineering course for specialized instruction. The Government might take some time to consider and pass orders on the proposed reduced course of three years for engineers and the provision of a Public Health Engineering branch as part of the curriculum in the Guindy College. The University Syndicate had also to be consulted in the matter. If we could assume that these revised proposals could be brought into effect from, say, June 1948, we could even then apply these revised rules to the batch of students who are being admitted in June 1947 itself so that we could expect to have the first batch of trained Public Health Engineer students three years from now on. As this solution of the problem was feasible and practicable, he did not consider that the committee need go into the alternative of setting up a new institution by the Government solely for the training of Public Health Engineers. They might leave it to the Government to think of such an alternative if at all necessary.

The Chief Engineer agreed that the proposal for the inclusion of Public Health Engineering course in the Guindy College itself could be put forward to the Government on the lines suggested by the President. He thought there would be no objection to it on the part of the University also and we might hope for the acceptance by the Government and the University.

Mr. Nachiappa Goundar asked if it was not necessary to start a diploma course in case the training of degree-holders in the Guindy College was going to be delayed. We could at least be sure of speeding up of our scheme that way. The President was not in favour of such a diploma course as without the surety of a B.E. degree from the University it might be termed an inferior course and lead to complications later on.

The Chief Engineer too was against any distinction being imported into the training courses as it would lead to an inferiority complex among the personnel in their future service which we should avoid at all costs.

It was then discussed and agreed among the members that until the first batch of trained Public Health Engineers become available after three or four years from now it would be worthwhile to concentrate on the speedy prosecution of rural water-supply schemes as far as was possible with the executive staff now available.

Mr. Raman then raised the point about the training to be given to the engineers already in the field, so that they may gain some proficiency and competence in Public Health Engineering. He referred to the Municipal Engineers in this connexion. The Director of Public Health suggested instituting a post-graduate course in the college itself for Public Health Engineering so that all new graduates could avail of this course to become Public Health Engineers. In addition, a refresher course extending over a few weeks only could be instituted for the training of engineers who are already in the profession so that they may have chances of brushing up their knowledge and getting acquainted with the latest developments and results of research work in Public Health Engineering subjects.

Mr. Raman referred to the recommendations of the Bhole Committee that researches in Public Health Engineering should be initiated in the country and said that every institution which trained men for the profession should also have in its facilities for research work.

It was decided that the Government should be advised to provide for facilities for research, a post-graduate course in the college, and also a refresher course for professional men.

Mr. Nachiappa Goundar also suggested that the Government be advised to increase the number of seats for engineers in all colleges as much as possible.

The President then requested the Secretary to prepare, with instructions from the Chief Engineer, a statement showing (a) the number of competent men already available for forming the proposed Public Health Engineering Department; (b) the number required in addition if we aimed at a 10 or 15-year plan for completing all urban and rural schemes in the Province; (c) the number of men to be trained in the college every year; and (d) how best the District Engineers and field staff required for the execution of rural water-supply could be organized as an immediate measure with existing staff of the Public Works Department who are engaged in the execution of water-supply and drainage schemes.

The President then asked if any list was available showing the municipalities and panchayats which were ready with funds to have their schemes designed and executed and in respect of which progress was held up solely for want of Government technical staff. Mr. Raman observed that he knew of several instances where the Government had to pass orders on the request of local bodies who were ready with funds that the question of their drainage or water-supply scheme would have to wait for 5 or 10 years on the ground that the hands of the Sanitary Engineer were then full with other works. The President suggested that a few such instances could be stated in our report in order to bring out the difficulty that existed in the past.

The question then centred round the constitution of the proposed District Committee for rural water-supply. After some discussion, it was agreed that the Committee might consist of the resident Members of the Legislative Assembly and of the Council in the district, the President, District Board, the District Health Officer and the District Engineer. The Committee should deal with all administrative questions and policies relating to the water-supply schemes for all the rural villages in its jurisdiction and the District Engineer should act as the Secretary and Treasurer, carrying out its policies in addition to the execution and control of the several schemes as the chief technical officer of the district. The District Committee would, no doubt, fix the priority of the rural water-supply schemes in the district on the primary grounds of the real need of each case so that units which were in bad need of a scheme would be provided with a water-supply earlier than others.

The President suggested that the District Engineer might be made the final authority for technically sanctioning the plans and estimates for all rural water-supply works in his district as this alone would facilitate speedy progress of works.

The Chief Engineer pointed out that the technical sanctioning powers of an Executive Engineer in respect of original works were confined to a specified monetary limit under the Public Works Department Code. It should not be that two different sets of rules were followed, one for Public Works Department works and the other for the rural water-supply works. It was for the Government to decide whether the present powers of sanction vested with Executive Engineers could be enlarged with increased money limits in the case of rural water-supply in which case it was not for him to object to such a procedure.

Mr. Raman pointed out that in the case of rural water-supply schemes of the nature we visualized, usually directions of general principles of design of sunk wells or built wells or improvement of tank source and the like were given by the central technical authority. The local engineer's function was restricted to the adaptation of these designs to local conditions and therefore it was correct that the District Engineer should be entrusted with all such works using his discretion in these matters. The protection of public interests by imposing money limits for technical sanction did not arise in the case of rural water-supply schemes as these were not original designs involving that measure of technical skill which was called for in a protected water-supply scheme or similar major Public Works Department works. Moreover, the District Engineers, as a rule, would in future be given considerably more powers than hitherto in our policy of decentralization and therefore the District Engineer should be made the final authority in deciding rural water-supply questions. It should however be open to him to consult his superior in cases of doubt as he was bound to. The President agreed.

Mr. Raman then referred to the question of difficulties in the transport of materials. He said that even if materials were available in the sea ports, very often lack of transport facilities made it difficult to bring the materials to the work site. He suggested that the committee should recommend to Government that next to food, priority should be given for materials required for water-supply and drainage schemes in the matter of railway and road transport. This was agreed to. Mr. Raman then referred to the question of the 15½ per cent centage usually charged to schemes executed by the Public Works Department and said that inasmuch as it was the State which was going to have water-supply and drainage schemes executed all over the Province the question of centage should be done away with.

The Chief Engineer agreed and explained that the question would not arise at all, if the recommendations of this committee were accepted and the State took over the responsibilities for the provision of the several schemes. For, in our plan, the design, execution and maintenance of all schemes would be vested in the Government itself under the control of its own department so that any local body paying a centage on the execution cost of a scheme alone would no longer be the practice. As already explained, the local body's contribution towards the amenities it enjoyed would be a level of taxation, as decided by the Government and the collection of water and drainage revenues from the schemes in operation.

The President then referred to the subject of materials, their availability and their manufacture within the country and to what extent under State management. It was already agreed that in respect of

cast iron pipes, etc., bulk indents from overseas should be thought of to speed up our schemes; in the matter of bricks, cement, etc., what suggestions were to be made. The Secretary suggested that as cement, bricks and stoneware pipes would be used extensively in almost all major schemes and would be required in large quantities, it was essential that the State should have a voice and control in the manufacture of these materials. Mr. Raman said these were matters relating to larger policies on industrial planning and should be left to the Government to decide.

The Secretary and the President however pointed out that it would be quite relevant and necessary for the committee to make a reference to this important subject as it had a direct bearing on the progress and cost of the entire plan we had in view. We could not possibly think of continuing to purchase cement at Rs. 65 per ton from private manufacturers.

It was agreed that this aspect of the question might also be dealt with in the report.

The Chief Engineer intervened to say that it was not for him to go into the question of nationalization of these industries but he would sound a note of caution that in the manufacture of steel particularly, and the other building materials, it was essential that the quality of the manufactured material should conform rigorously to a standard of specification laid down for each case. He would say that Tata steel and almost all the cement manufactured in this country at present were uniformly satisfactory and up to the B.S.S. But the Tatas were also manufacturing a class of steel termed "untested steel." If every manufacturer was going to be allowed to turn out two different categories of his finished material it was going to be the most dangerous thing. The Engineer had to design his structures based on accepted factors of safety and on the use of materials satisfying a standard specification. The Institution of Engineers in India could no doubt adopt or modify the B.S.S. as they deemed fit, for this country; but his sole concern was that whatever material was going to be manufactured by whichever agencies, uniformity in quality and up to a standard specification should be rigorously enforced. The committee appreciated this view and unanimously agreed to it.

Mr. Raman then referred to one other point in regard to rural water-supply, viz., that in the case of rural units which are far away from water-supply sources, the Government should supply them water from a grid system or from a common main of a nearby major scheme. The provisions of the Public Health Act allowed for such a procedure. The prior acceptance of the units to take water from a joint scheme was necessary because among the individual units in such a grid system some might have taxable capacity and others might not.

The President then brought up the question of municipal and urban schemes and summed up the previous decisions that a provincial water and drainage fund would be created in which the water and drainage tax paid by municipality would be pooled. The Government would have to find the rest of the amount for providing water-supply and drainage schemes either by borrowing from insurance companies, floating loans or by allotment from provincial revenues. In effect, the water and drainage tax would be provincialized and the municipal autonomy in respect of water-supply and drainage would be taken over and exercised on their behalf by the Government as

their own primary responsibility. The municipalities could not demur to such loss of their autonomy as they would be the obvious gainers in the bargain.

Mr. Nachiappa Gounder observed that there were several places which had been taxing themselves towards a water-supply and drainage for several years now and if their accumulated funds were going to be taken away into the provincial central pool while their schemes were going to be deferred by low priorities it might cause dissatisfaction.

The subject was discussed and it was proposed that such of the municipalities and panchayats which had already accumulated water and drainage funds need not pay their amounts into the central fund until their water-supply or drainage scheme were actually installed by the Government who would then take over the accumulated amount.

Mr. Raman continued and said that the provincialization of the water and drainage tax and revenues was desirable for many reasons. The tax was going to be decided with reference to local conditions and ability to pay; so there could be no grievance. As for water revenues, i.e., charges for excess water consumption by the house-owners it was well known that at present municipal politics played a large part in the collection of water charges and there was nepotism playing havoc with municipal water revenues. It was, he said, an undisputed fact.

The Chief Engineer said that the supply of water should be through metered connexions so that the house-owner who consumed more than his quota of free allowance could be charged for the excess water used.

Mr. Raman said he had something to tell the committee about metered connexions. The question arose some time in 1924-25. Tirupati Municipality was suffering from water scarcity. It had some 800 house service connexions in its list; the water revenue from these was but Rs. 32. It was obvious that there was something wrong. The Government wanted that the matter should be investigated by Sri N. Gopalaswami Ayyangar, then Inspector of Municipal Councils and Local Boards, and himself. On investigating into the matter they found that the so-called metered connexions were mere delusions. Most of the meters were out of order and imaginary readings were being recorded by the subordinates. If the meters were repaired and put back, they went out of gear. After duly examining the whole question, it was recommended to Government that a flat rate at so much per tap should be levied and collected from the house-owners, the flow through the tap being controlled to an optimum discharge by the provision of screw down ferrules at the point of connexion. There was much opposition to this proposal; but the Government agreed that it was the correct policy to adopt in this country where meters are not manufactured.

The municipality subsequently found, when it had adopted the advice given, that it was after all a profitable one; whereas previously it realized no revenue from its water-supply, in subsequent years it was able to collect a substantial water revenue with which it could undertake the commitments of its drainage scheme also.

The President also referred to his experience while as Chairman, Bezwada Municipality, when he had to suspend a meter reader for concocting meter readings. He had an idea that the option was then

given to house-owners on metered connexions to change over into tap rate connexions, and this policy was gradually encouraged in subsequent years.

The Chief Engineer said that if a tap rate basis and not metered basis was to be adopted it was essential to check misuse and waste of protected water for non-domestic and gardening purposes even. He suggested that the Municipal Engineer or some local authority should be invested with penal powers to deal summarily with cases of misuse of water when detected on the spot during inspection. This was agreed to as necessary.

Mr. Raman then referred to the recommendations of the Bhoré Committee on the formation of Provincial Water and Drainage Boards and observed that while such Boards were necessary in the case of England where a central authority had to deal with contending parties for exploiting joint water sources and the like, conditions in this Province, where no such contingencies would arise, would make such a Board practically a fifth wheel to the coach. The President also agreed that with our scheme of centralized direction and decentralized execution and a provincial fund to be administered by the Government such a Board was not necessary.

The President then required to know on what basis we could spread out our entire scheme of work on urban and rural water-supply and drainage. The Chief Engineer pointed out the details and aspects of full power tests with reference to water-supply schemes and how limitations about suitable seasons and availability of pumping units, etc., would make it difficult for investigating several schemes as speedily as might be desired.

Mr. Raman intervened to say that such difficulty would operate only in the case of water-supply schemes of a special nature— indefinite underground sources and the like—which would have to be investigated by the department solely. Investigations, designs and execution of other schemes, both water-supply and drainage, could be pushed forward at an accelerated pace. In fact, there were so many drainage schemes which have long been pending and which could be taken up straightway if our policy to enlist private agencies was implemented.

In this connexion he observed that the present directions of preparation of schemes were inadequate and unless the central directing staff and investigating staff were adequately increased and expanded progress might be held up. After some discussion the Chairman referred to his earlier requests for information being compiled by the Secretary about staff position for the organization of the public health branch and said that the matter could be discussed when the information was placed before the committee.

A long discussion then took place about the scope of the rural water-supply fund and the position of minor panchayats with reference to that fund. Mr. Nachiappa Gounder pointed out certain difficulties arising out of the definition of non-rural areas. He explained how a so-called panchayat was really a group of villages over an extensive area and how it would be more appropriate to consider the concentration of population in restricted areas than a group of villages comprised in a panchayat, for differentiating between rural and non-rural areas. The other members considered that to extend the scope of rural-water-supply beyond the definition as

conveyed in the Government Orders of 1937-38, when the fund was instituted by the Government, might introduce further complications. The Chairman further observed that once the several villages thought it fit to join into a panchayat so that they could manage their own affairs and gain amenities from the Government, it was but proper that they should tax themselves for water-supply and drainage also. They should not in the same breath claim the advantages pertaining to a panchayat and also the advantages pertaining to a village outside a panchayat.

The President then fixed 8th and 9th July for the next session of the meeting; the Secretary meanwhile would obtain all the information required and keep them in the form of appendices; the members also suggested that a draft report could be got ready based on the conclusions arrived at and circulated to the members for discussion in the next session of the committee. The President then thanked the members for their co-operation and assistance and adjourned the meeting for the 8th and 9th July 1947.

S. RAJAGOPALAN,
Secretary.

A. KALESWARA RAO,
President.

**ABSTRACT OF PROCEEDINGS OF THE FIFTH MEETING OF
THE WATER-SUPPLY AND DRAINAGE COMMITTEE.**

DATE OF MEETING : 8th July 1947. TIME : 9 a.m. to 12 noon.

(In the Public Works Department Library Hall, Chepauk, Madras.)

Present :

President and other members.

The Chairman initiated the proceedings saying that in the course of drafting the report based on the conclusions already arrived at it was found by himself and the Secretary that certain further issues had to be discussed and doubts in regard to issues already settled had to be cleared, before the report in an official shape could be circulated to the members for consideration. A Note prepared by the Secretary explaining the points which required elucidation was also placed before the members.

The Chairman then referred to the earlier decisions in regard to the constitution of district water and drainage committees and raised the question whether the formation of a Provincial Water and Drainage Board was not desirable to administer the Central Water and Drainage Fund proposed in our schemes.

A discussion followed among the members. Mr. Raman explained that there was already the Board of Public Health in the Province which was an advisory body. He was against the formation of any provincial committee again as it would impede progress, acting like a fifth wheel to the coach. When the district committees were going

to be entrusted with the administrative functions relating to all non-municipal water-supply and drainage schemes, the Government themselves could deal directly with and decide on all municipal water-supply and drainage schemes without need for a central committee. The Director of Public Health raised the question whether such a committee should be executive or purely advisory in its character. Mr. Ranga Reddi was not in favour of clothing any such committee with over-riding powers as the ultimate decision in regard to all such matters much rest on the Government.

The analogy of the Revenue Board being placed in charge of administering the rural water-supply allotments was then put forward by the Sanitary Engineer who said that on a similar basis some committee to administer the allotments made from the central fund towards water-supply and drainage may be desirable. Mr. Raman pointed out however that the rural water-supply fund being entirely a contribution from Government revenue was a different question from the expenditure to be incurred on municipal schemes where the local body which was going to contribute towards the cost thereof, was entitled to a large say in matters of policy and administration relating to the municipal schemes. For this reason he was against the creation of any intermediate committee again between the municipalities and the Government. After some discussion it was agreed that the question of a central committee to administer the water and drainage fund in regard to municipalities need not be pursued; that the Government departments themselves could advise the Government on the question of schemes pertaining to municipalities; that in respect of non-municipal schemes the district committees would deal with the administrative aspects and advise the Government on all schemes falling within their jurisdiction.

The issue of finance was then taken up for discussion. The main proposition that the Government should assume the sole responsibility for providing water and drainage and that all urban units, municipal and non-municipal, should pay according to their ability by way of water and drainage tax and water and drainage revenues from completed schemes, was accepted unanimously by the committee; but in regard to the manner in which the Government should proceed to raise funds for the prosecution of the province-wide schemes, Mr. Raman was of the view that the Government should be allowed the discretion to do this in a number of ways, i.e., they might negotiate with business houses and insurance companies directly for bulk borrowing on terms mutually favourable and credit this loan to the central fund. Again, the Government might allow some of the major municipalities to float loans on the strength of the local anxiety and enthusiasm for water-supply and drainage schemes and thus tap all available sources. He was of the view that places like Trichinopoly and Coimbatore would easily be able to raise loans or debentures and proceed with their own schemes straightway independent of the aid from the Government.

Mr. Nachiappa Gounder said that if Mr. Raman's ideas are to be accepted he would suggest a modified form, viz., that instead of the municipality being allowed to raise a loan with the backing of the Government, the Government themselves might start a loan in local areas where enthusiasm for civic amenities would stimulate large subscriptions to such loans. He proceeded to say that all these local loans

raised on the strength of local enthusiasm should be ear-marked for the particular municipality concern and to that extent the Government might themselves be relieved of having to raise provincial loans to cover such areas.

Mr. Ranga Reddi and Mr. Hussain Sahib did not however favour this proposal. They said that once the Government had decided to shoulder the sole responsibility for water-supply and drainage schemes, urban and rural, the raising of any local loan in a favourably placed municipality and ear-marking that fund for the exclusive purpose of providing amenities locally would defeat the main purpose.

The Chief Engineer too agreed that this would offend the principle of each unit paying according to its ability because municipalities in affluent circumstances should not only be made to contribute to their own schemes but surplus revenues from such places should go into the central fund for financing all other municipalities which may not be so favourably placed. If local enthusiasm was stimulated and exploited only to the extent of tapping funds to serve local schemes it would mean that the richer municipalities might secure their schemes quickly and easily; while the poorer municipalities would remain as they were and would be an undue burden on the Government without the Government being able to avail of the maximum amount of relief and assistance possible from the richer municipalities. Moreover, if a local municipal loan were to be floated the Government would have to keep a separate account for that municipality in respect of all income and expenditure and this would only complicate matters. The very idea of the central pool for the common good would be violated to that extent.

Mr. Raman said this would infringe the existing legal provision in the Madras District Municipalities Act under which no municipality could divert the water and drainage tax collected by it to purposes other than the execution of its own water-supply or drainage schemes. After some discussion it was agreed that inasmuch as the State has to assume the full responsibility in regard to water-supply and drainage it would be necessary to amend the Madras District Municipalities Act suitably so that the pooling of a central fund would be made possible by the levy and collection of water and drainage taxes and revenues from the several municipalities and non-municipal urban units.

The question of priority was then broadly discussed. As already agreed it was decided that priority for each place should be decided solely on the real need for the water-supply or drainage depending on local public health considerations and once such a priority was decided upon it should be adhered to without any modifications born of extraneous factors.

The question of a water-supply or drainage scheme for any place where large donations were forthcoming for the purpose was then discussed. It was concluded that while such donations were always welcome they should not have the effect of advancing the priority of a particular place over that of a more needy locality simply because a richer place had been able to get a donation for its own scheme. The committee was of the view, however, that where local donations were of a magnitude to meet the entire costs of a water-supply or drainage scheme without any aid being found necessary from the Government funds, such donations could be accepted and the particular scheme allowed to go forward as a special case.

Mr. Raman stated that in regard to the tapping of local finance by raising municipal loans or debentures, he had to differ from the majority view of the committee and that he would deal with this issue himself separately in a minute.

The President then requested the Chief Engineer to furnish the Committee with approximate costs and commitments involved by a 10-year plan, the necessary staff for it, etc., so that the Committee might discuss the question the next day.

Mr. Raman then raised the question in regard to the rate of supply of water to be adopted for the urban schemes. He was of the view that when the demand of the urban population at present was for the bare minimum necessities in regard to water-supply and drainage, a 15-gallon scheme would be more than ample especially when the State has to assume enormous financial commitments to discharge its responsibility in this direction all over the province. He, therefore, urged that whatever might be the arbitrary recommendations of the Bhoré Committee in regard to what they considered was an optimum rate of supply for urban schemes—he maintained that the rate of 25 to 30 gallons suggested by that committee was more arbitrary than based on any scientific data—the State cannot afford to provide water-supply schemes under present conditions for anything more than a 15-gallon supply.

The Secretary, thereupon, pointed out that in most of the existing water-supply schemes which had been designed on a 15-gallon basis, the actual supply was very much less than that figure, because the requirements had far outgrown the capacity of the schemes as originally installed. He also pointed out that the approximate rate of Rs. 10 to 15 per head of population assumed towards the cost of urban water-supply schemes related to the average cost derived from existing 15-gallon schemes. Even on this basis, the annual turnover would be of the order of Rs. 6 crores. If the Bhoré Committee's recommendations that 25 to 30 gallons per head of population should be the figure adopted for our urban water-supply schemes, it would increase the cost very substantially, perhaps to double the amount now assumed for a 15-gallon scheme. This point would have to be duly considered by the Committee.

The Chief Engineer explained to the Committee that the quantity of supply per head of population must depend entirely on the availability of sufficient quantity of water at the source of supply. Where underground sources or limited storage reservoirs were the only sources from which a town had to be given its water-supply scheme, it might not be possible to give an unlimited supply of water for a prospective population at the rate of 25 to 30 gallons per head. In such cases the utmost we could aim at was to give a 15-gallon scheme and the municipality would have to be satisfied with that much amenity. But in cases where the source was plentiful and beyond doubt as regards quantity, it would be false economy to design a scheme on a 15-gallon basis, while a larger supply would help in the provision of underground sewerage scheme, fire-fighting facilities, etc., and make for a fuller growth of the city than would be possible with a 15-gallon scheme. In any case, he would deprecate the provision of any underground drainage scheme to a town unless it had a copious water-supply of the order of 25 to 30 gallons and not a 15-gallon scheme.

Mr. Raman said that an underground drainage scheme was a luxury which many of the towns could not afford at present and the majority of schemes could be dealt with by the provision of open drains *cum* intercepting sewers. What they required was immediate facilities for removal of sullage water from the habitations and provision of surface drainage to prevent water-logging.

The Bhoré Committee's recommendations in regard to provision of underground sewerage schemes for all urban units with a population of 50,000 and over was then referred to and it was eventually decided that wherever feasible, water-supply schemes to major towns with 50,000 population and over (prospective population), might be based on 25 to 30 gallons per head, so that underground drainage schemes could be provided side by side. In respect of other towns the limitations of the source should largely decide the question of the per capita supply, a rate of 15 gallons per head being normally held sufficient; but if any local source could give a larger supply without substantially adding to the cost, a higher rate of supply could be adopted as also an underground drainage scheme.

Mr. Raman then raised the question that granting that money and materials would be made available, the programme of plans and estimates being prepared for the schemes to suit a 10-year plan would have to be settled, and that the Chief Engineer might assist the Committee with his suggestions in the matter.

The Chief Engineer replied that in regard to investigations we could only make a start with the existing staff as the nucleus; that new men would have to be trained for investigation under the existing staff; and the investigation work expanded gradually as and when new hands became available. He referred to the committee on Engineering Colleges which had been separately constituted by the Government and the possibility of a Public Health Engineering course being started in the Engineering College if the recommendations of that committee went through.

The President intervened to ask what immediate plans could be drawn up until the first batch of Public Health Engineers came out, say, three or four years hence. The Chief Engineer suggested that until the staff could be sufficiently expanded to meet urban schemes we could proceed with the prosecution of rural water-supply schemes vigorously.

The Secretary pointed out that in regard to the taking over of the rural water-supply schemes from the Revenue Board the Committee's proposals were based on the assumption that the amalgamated engineering staff at the district periphery would come into being, who would take over the initiation and direction of all rural water-supply schemes within the district. Until and unless this amalgamated field staff came into being therefore, the position even in regard to rural water-supply would be difficult and indefinite. The Committee agreed that an emphatic recommendation should be made that in view of the existing conditions the amalgamation proposed at the periphery was the only feasible solution and there was no alternative possible; that the Committee should recommend to Government that specialization at the higher levels and decentralization at the district level should be implemented as an immediate measure if progress was to be achieved in any direction.

The employment of retired people, especially in the technical line, was then reiterated by the Committee and it was concluded that a recommendation should be made to the Government that in view of the dearth of technical hands at present the re-employment of retired men physically fit for service should be permitted until such time that new hands became available and were trained for the work ahead.

Mr. Raman then raised the question in regard to the employment of Army Units, Technical and Labour Corps, in the carrying out of water-supply and drainage schemes. He explained how the army when nationalized and stationed in different centres could be usefully employed in peace time, in the field execution of water-supply and drainage schemes, the designs for which would, of course, be prepared by the Chief Engineer and their execution also being under his direction and control. Such a course he suggested, would be economical to the State inasmuch as they had to maintain the army and keep it idle, and to the extent to which they were employed on public works undertaken by the State to that extent it was a saving to the State in preference to employing other agencies and paying for their work.

Some members expressed the view that employing the army agency would be much more costly than employing private agency and if the army were to carry out the work the Army Department would, in any event, insist on crediting the army funds with the cost of the Army Units actually employed on such works. Mr. Raman explained that it would be only a transfer entry in the State's ledger books, and so long as the debit and credit was only a paper transfer and the State did not incur any extraneous expenditure it was a profitable bargain. His main point was that in any case the Army Units which would remain idle had to be maintained by the State at its expense. If they could be usefully employed on a State work, irrespective of the credit and debit of the funds, the State was eventually the gainer in the bargain. The Committee agreed that this course may also be recommended to Government.

The Chairman then requested the official members of the Committee to go into the question of priority for municipal schemes and assist the Committee with their suggestions in the next day's meeting.

The meeting was then adjourned for the next day.

S. RAJAGOPALAN,
Secretary.

A. KALESWARA RAO,
President.

**ABSTRACT OF PROCEEDINGS OF THE SIXTH MEETING OF
THE WATER-SUPPLY AND DRAINAGE COMMITTEE.**

DATE OF MEETING : 9th July 1947. TIME : 9 a.m. to 12 noon.

(In the Public Works Department Library Hall, Chepauk, Madras.)

Present :

President and other members.

The Committee took up for consideration the question of priority for municipal water-supply and drainage schemes. The Director of Public Health explained to the Committee the basis on which the existing priority for the schemes in the compendium had been arrived at, how the vital statistics for each place figured therein with reference to water-borne epidemics, endemic diseases, partial and total scarcity, the importance of a place as a pilgrim or trading centre, etc., and the incidence of malaria, filariasis, mosquito nuisance, etc., in the case of drainage. The need for a water-supply or a drainage scheme for a particular place was assessed with reference to these several factors and relative to other places before a priority was assigned in the list for the particular scheme.

The Committee discussed the subject at some length and decided that a revised priority list for municipal schemes could be drawn up having regard to all the relevant factors; and proceeded to draw up a priority list for municipal water-supply schemes on the following broad lines:—

Firstly, schemes under execution at present would be allowed to proceed without interruption.

Secondly, schemes which are in operation but which stand in need of improvements, should be listed under one group while schemes which are to be newly provided in stations for the first time are to be listed in a separate group.

Thirdly, to facilitate quick and simultaneous progress the priority lists should be drawn up separately for the municipalities in the Northern Circle as against those in the Southern Circle.

The priority list of water-supply schemes as drawn up by the Committee on the above basis was then accepted for inclusion in the report to be submitted to Government. The priority list for municipal drainage schemes was kept over for decision the next day.

In the matter of allotment of funds for schemes, the Committee after some discussion decided that allotment could be made on a 50-50 basis between improvements to schemes and provision of new schemes in municipalities. This was considered desirable because of the fact that the existing schemes in many of the major municipalities have long been in need of improvements and their importance was as urgent as the provision of new schemes to other municipalities.

The Chairman then brought up the question regarding staff and mentioned that in the matter of the prosecution of rural water-supplies an organization was immediately necessary in order to take over these schemes from the purview of the Revenue Board.

Mr. Nachiappa Goundar intervened to say that the District Engineer, it had already been decided, should be entrusted with the execution of the rural water-supply schemes and therefore these schemes could be pushed forward immediately.

The Chief Engineer explained that the first thing to do would be for the Government to form the district water and drainage committees who would fix the priority for the several rural schemes in the districts. The District Engineer would then proceed to carry out these works with the existing staff.

The Director of Public Health explained that from the particulars furnished by the Revenue Board it was seen that the Collectors had employed special technical staff of overseers and maistris for the execution of rural water-supply works; that this special staff could be taken over by the Public Health Engineering branch for distribution under the District Engineers so that they could be employed on rural water-supply works, in addition to the staff available already with the District Engineer.

Mr. Nachiappa Goundar referred to the major panchayat schemes and asked if it was not necessary for the Sanitary Engineer to provide himself with additional staff so that he could take up these works expeditiously. He further added that until the Public Health Engineering branch spreads out, these special technical staff may be put under the Divisional Engineers of the Highways Department who are to attend to the rural water-supply for the time being.

The Secretary explained that in the amalgamation as contemplated the investigation, design and drawing up of these schemes would be confined to the central specialized staff and the District Engineer would only have to carry out the execution of works based on proper plans and specifications furnished by the higher authority. The efficiency of execution of works under such conditions would not suffer as the District Engineer would be an officer with necessary basic qualifications and experience in the field. It would be unnecessary at present to run parallel departments down to the lowest subordinate cadre as specialization was not called for in these lower cadres since the entire field staff below the district level would be employed mainly in the execution of works under central direction and control, the plans and estimates being prepared by the specialized staff at the centre. There should, therefore, be no difficulty in the amalgamation for the purpose in view.

The Sanitary Engineer also explained that such a procedure should be feasible of working as even now the Executive Engineer of the Public Works Department, with his field staff was entrusted with the execution of schemes for which plans and estimates were initiated and drawn up by the Sanitary Engineer with his specialized staff.

Mr. Raman intervened to say that he would not wholly endorse the view that the execution by the Public Works Department of all special works, water-supply and drainage schemes, was as satisfactory as it should be. He knew of instances where the officers, by lack of knowledge on essential public health aspects, had omitted to observe essential precautions necessary in the execution of certain components of these schemes. He instanced the case of pumping mains of Cuddapah water-supply and Srirangam water-supply where such defects in execution had led to a lot of difficulty in having the mains properly sterilized subsequently. His point was that the authority in charge of execution should also have had an opportunity to acquire a basic idea of the subject in respect of which he was to handle execution programmes in the field.

The Chief Engineer remarked that in respect of any major water-supply or drainage works there was no doubt that an engineer with experience in Public Health Engineering alone or who had carried out similar works before, would be posted, and it was not likely that any road engineer or irrigation engineer would be posted for a division charged with the execution of major water-supply schemes.

The President then recapitulated the earlier decision of the Committee that specialization at the higher level and amalgamation at the district level would have to be strongly recommended in view of the dearth of engineers and in order to fully utilize the existing engineers under the several departments of the Government. Until such amalgamation at the district level was given effect to, the execution of rural water-supply schemes proposed under the District Engineer would, he understood, have to be carried out by the present Public Works Department staff under the Chief Engineer in charge of water-supply and drainage with the assistance, however, of the entire field staff of all the branches of the Public Works Department. He then proceeded to the question of urban water-supply and drainage schemes and called for a discussion in regard to the staff required for the purpose.

The Secretary explained that during an informal discussion the previous day with the Sanitary Engineer and the Chief Engineer on this subject the question was gone into as to what would be the immediate nucleus of staff with which a start could be made in the investigation and design of water-supply and drainage schemes. The Secretary and the Sanitary Engineer had proposed that in view of the Committee's recommendations it might be assumed that private agencies could be entrusted with about 30 per cent of work on investigation of schemes and about 50 per cent of the work on the design of schemes in the initial stages. On this basis they had proposed that for the purpose of departmental investigation work one supervisor at least for each district should be employed so that with 24 such supervisors about 50 schemes in the year could be investigated, the quantum of work being increased as and when more supervisors became available. Their work would be directed and supervised by three Assistant Engineers and one Executive Engineer for each of the North and South circles of the province. Similarly in regard to design of schemes, it was considered that in addition to the existing technical sections of the Sanitary Engineer and the Chief Engineer, it would be necessary to provide for one Executive Engineer, two Assistant Engineers and twelve supervisors for each of the two circles, in order that the volume of design work (including scrutiny of designs prepared by outside agencies) could cope with the actual intensity of the programme in view. It was expected that the nucleus of staff as proposed above could handle a volume of work to the tune of about Rs. 3 crores in the year. The building up of the investigation and design staff would, therefore, have to be proceeded with on these lines as an immediate measure.

The Chief Engineer, however, said that while he agreed that the proposals as suggested were desirable, they were not possible at this stage because of the acute shortage of technical staff; that even if the Government were to sanction so many additional posts it would be impossible for him to find the men to fill these posts, that the

only practicable method he could suggest was to begin with one Assistant Engineer for each circle who would train up three supervisors on investigation, who, in their turn, would train up more supervisors in due course; that in so far as design work was concerned, the staff could be expanded only when more hands became available.

Mr. Raman: "At this rate we cannot hope to make any progress. I am afraid that the immensity of the problem before us is not being properly appreciated. I am constrained to remark that every time the question of expansion of the Sanitary Engineering Department came up, difficulties were being put forth. The history of this department would reveal how it had been prevented at every stage to develop into its fullest stature of usefulness. It is an eloquent commentary on the situation that after 57 years of existence the Sanitary Engineering branch has not a single permanent officer in it. I would like to review the situation briefly so that the Committee might take advantage of the mistakes committed in the past.

"In 1890, you created a Sanitary Engineer. You kept him under the Chief Secretary direct. Mr. J. A. Jones, father of the Sanitary Engineering Department, was first appointed as the Sanitary Engineer. He developed schemes much more rapidly than we are doing at present. In 1895, he felt the need for a single additional Assistant Engineer to cope with the large volume of work then in hand. The then Chief Engineer negatived the proposal and refused to loan an officer. In 1899, Mr. Jones thought he would be unable to discharge his duties without strengthening his staff. At this stage, the Chief Engineer, Public Works Department, took away the execution of works from the Sanitary Engineer altogether, and clipped off his wings, as it were. In 1904, Mr. Jones left this country. From 1904 to 1947, we have not had a permanent Sanitary Engineer excepting for a short period when one officer was there. Several attempts were made, when most brilliant men occupied the chair, to get the department separated from the Public Works Department so that the department might rise to its own position and power; but the Public Works Department prevented the department from rising to its fullest stature.

"Then proposals were made in 1920 to have the department organized as a specialist department. The Public Works Department Reorganization Committee went into the question. Under compulsion by the Government of India in 1921, a specialist service was organized in the Province, the Sanitary Engineering Department being the one and the Electricity Department being the other. In course of time, this so-called specialist service was sabotaged and the Sanitary Engineering Department languished in continued neglect. The result to-day is that in spite of 57 years of history, the Sanitary Engineering Department is nothing. On the contrary, the Electricity Department affords a refreshing contrast. That department too was organized with three officers only in the first instance. But no impediments were placed on its path towards progress. Time and again the Sanitary Engineering Department was used as the venue for giving advance promotions to Public Works Department officers, without any idea of building up this department. Officers were posted and after they had acquired some special knowledge of the work in this branch, they were transferred to the Irrigation or other branches

of the Public Works Department. There was no continuity of work or knowledge allowed to develop in this department. So much so, we find that at the present day, the department is reduced to a nullity, and we have to start all over from the very beginning. My proposal is that if the Chief Engineer, Public Works Department, can give only that measure of assistance which he thinks he could give, then this department should be organized by other means. Import men if you like. Let the Chief Engineer give us back those officers who had the benefit of training in the Sanitary Engineering Department, instead of saying that he cannot spare their services. Having had the control of the department from 1900 to 1947 and having reduced it to its present position, the head of the department cannot reasonably or justly say that he cannot spare the officers for building up the department. All the officers who have already worked in this branch should be released for building up the new organization. What I say is not impossible. It should be possible for the Chief Engineer to spare some of the officers back to this branch and promote other men to their posts in the Public Works Department. The Public Works Department should be able to do without the few officers whom we require for this branch. I want the Chief Engineer to be good enough to consider this practical proposition. I want to enlist his co-operation in the early stages of development of this department so that it may be made to stand on its own legs."

The Chairman intervened to say that it was as much the concern of the Chief Engineer himself to organize this branch in an efficient manner; as it was he who would be doing the functions of the Chief Engineer (Public Health) at this stage. He should endeavour to do his best and build up this new department.

Mr. Raman: Until he is relieved by a new Chief Engineer (Public Health) he will have to function as the Chief Engineer (Public Health) first and thereafter as Chief Engineer (Buildings and Defence). So it is as much his concern as ours. Again, the supervising staff over the design section in the Sanitary Engineer's office is practically nil at present. The post of Personal Assistant was being filled by officers from the Public Works Department who got back to their own department after some time. The design staff and the design section should be properly organized. The Chief Engineer should amalgamate with the present Sanitary Engineer's technical section the draughtsman whom he engages on Sanitary Engineering work in his own technical section. By having one composite technical section we could ensure better progress of work and employ the available men to better advantage. Immediately we must see that this department is furnished with men who have had experience in the working of this branch and in the execution of water-supply and drainage works. Otherwise there is no salvation.

The Chief Engineer replied that he had not been unaware of animosities that existed in the past between the Sanitary Engineering Department and the Public Works Department and that he was trying to do all he could to put an end to this evil spirit. As for the staff, he said, we had to face facts. For instance, the Chief Engineer for Electricity, who had two big schemes on hand had been indenting on the Chief Engineer for 80 supervisors long since. But it was physically impossible to find these supervisors, as we had no men in the field. He could only place the facts before the Government in respect of the indent for supervisors from his co-Chief Engineers. The Government, on some arbitrary basis decided on the

number of supervisors from out of the available men that each Chief Engineer should employ. It was in that connexion that he had asked for eight supervisors for this branch. As regards the Personal Assistant to the Sanitary Engineer the Public Services Commission had recently appointed a war service candidate to this post. In regard to the scrutiny of schemes, proposals in pencil stage were submitted by the Sanitary Engineer for scrutiny by the Chief Engineer who sent them back with his remarks for the Sanitary Engineer to finalize the proposals and send them again to the Chief Engineer for sanction.

Mr. Raman: I initiated that procedure; but most often it takes the character of a quarrel between the draughtsmen of one office and the draughtsmen of the other. We want scrutiny by the Chief Engineer and not his draughtsmen. There is always a feeling that in the matter of the scrutiny in Chief Engineer's office, the notes of the technical section should be such as to increase the volume of work and increase the number of points, influenced perhaps by a sub-conscious feeling that the Sanitary Engineer is not an expert but the Chief Engineer's expert scrutiny should be the final say. That has been the mentality which has reduced this department to nullity at present. But even so, what has been the benefit resulting out of this expert scrutiny by the Chief Engineer? For the Salem water-supply a scheme had been approved by the Chief Engineer whereby water from the tail race of the turbines in the Mettur Dam would have been used for the water-supply scheme, a water which would have been thoroughly unsuitable for the purpose. I had to intervene at the eleventh hour and propose an alternative to draw water from cut of a valve tower and near the surface level of the lake. Even then I had to prove to the then Chief Engineer that the construction of such a valve tower was feasible as an engineering proposition before he would accept the alternative proposal. I had to produce before the Chief Engineer a written undertaking from an engineering firm of repute saying that they were prepared to execute the work, before the Chief Engineer would agree that the construction of a valve tower as proposed by me was not only suitable but also possible.

The Chief Engineer intervened to say that there was no point in quoting past history when instances could be advanced from both sides, and no useful purpose would be served thereby.

Mr. Raman: My point is that the scrutiny by the Chief Engineer should be on a far higher level than is the case at present. The Chief Engineer ought to visualize the schemes and check them on fundamental broad points with a view to see whether any improvements in technique, etc., were possible. Hence it is that I make this proposal. For the preparation of plans and estimates in detail the existing personnel available in the office of the Sanitary Engineer is very inadequate. The present procedure is for the Sanitary Engineer to send up his scheme in pencil stage for the approval of the Chief Engineer. This involves the office of the Chief Engineer preparing technical notes on the scheme for the information of the Chief Engineer. This is a clear and wasteful duplication of work. My suggestion is that the technical staff of the two offices may be amalgamated and on a single technical note the officers concerned at the top level should offer suggestions for the completion of the scheme. This would save not only time and labour but would also help to utilize the existing men in the two offices to the best advantage. Such an amalgamation would also be helpful for the future Chief Engineer (Public Health) taking over if and when he comes.

The Secretary endorsed this suggestion of Mr. Raman. He said that from his personal experience in the department during the past few years, he was convinced that an amalgamation of the two technical sections was a very desirable step, the officers dealing with a single technical note right up to the Chief Engineer to discuss and decide on the issues bearing on a scheme. He would also make bold to say that such an amalgamation was essential in order to remove the present inter-office feelings and complexes which were indirectly affecting the morale of the subordinate staff. He would say, however, that the Chief Engineer was genuinely concerned to build up better relationship between the two offices; but if only the two technical sections could be cemented into one as proposed it would make a good beginning in the direction we wanted. Above all we had to utilize the existing men to the maximum advantage and the proposal would make for better progress, efficiency and expedition on schemes.

The Chairman: Now we are organizing something big and large and it is necessary that we should make a good start and on a proper foundation. The Chief Engineer must help us to build up the organization for such a purpose. Two scrutinies with different notes do not appear necessary. The committee shall put it in the form of a proposal. The Chief Engineer and the Sanitary Engineer will no doubt settle it among themselves.

The Chief Engineer replied that it was a technical matter for the Sanitary Engineer and himself to decide. Whatever could be done would be done.

The Sanitary Engineer then raised the point that at the present stage we still had to face the question that no extra staff was available. The Chief Engineer pointed out that as and when the staff could be increased, more and more amount in the coming years could be spent on urban water-supply and drainage schemes. Mounting rural water-supply could be expedited as much as possible. His point was that while we could aim at a 10-year plan the expenditure could be made progressive with the advancing years when we could hope to have an increase of staff, of materials and of finance too. If we divided the total expenditure by 10 years and sought to proceed with the scheme even in the first year up to this average level of expenditure, it would be difficult. His solution for a graded and progressive rate of expenditure would meet the situation.

Mr. Raman intervened to say that in regard to the rural water-supply, if the capacity for execution could be expanded to the desired extent, the Government would be prepared to provide even more funds than one crore of rupees on rural water-supplies alone. Everybody was feeling that the tiller of the soil had been long neglected and the urban folks had been able to press their grievances for what they were worth all these years. So to the extent to which rural water-supply could be pushed through in an intensive form, to that extent the Government also might be willing to provide funds.

A discussion followed whether the committee should go into the question of the amount of taxation and water and drainage revenues which might be available from urban areas as their contribution to the central water and drainage fund. The Secretary was requested to go into these figures as well as the details of cost of the ten-year plan for the Committee to discuss the next day.

The Chairman at this stage referred to certain aspects in the Bhole Committee's Report. He quoted figures for India as well as for other countries which showed that the expenditure on Public Health in India per head of population compared to the average income was much too low and was several times lower than the corresponding figures in other countries. The Committee agreed that these aspects might be brought into the report. Mr. Raman added that there was a snooker in the figures furnished by the Bhole Committee regarding expenditure on Public Health in the several provinces in India. The six annas per head of population supposed to be spent on Public Health in Madras included the services provided for medical, curative, hospital, etc., but if we took the amount of money spent on environment it would be practically negligible. That point ought also to be brought out.

The Chairman then referred to the question of forming two circles in the Province, one for the north and the other for the south, each circle being in charge of a Sanitary Engineer to be styled Deputy Chief Engineers (Public Health). He asked whether this could not be arranged for as an immediate measure. The Chief Engineer said that the circles, north and south, would be in the charge of two Deputy Sanitary Engineers as at present. The Chairman however said that this was not what he meant but that the two circles should immediately be provided with an officer of the Sanitary Engineer's rank and that there should be no difficulty in making such an arrangement.

At this stage the committee adjourned for meeting again the next day.

S. RAJAGOPALAN,
Secretary.

A. KALESWARA RAO,
President.

ABSTRACT OF PROCEEDINGS OF THE SEVENTH MEETING
OF THE WATER-SUPPLY AND DRAINAGE COMMITTEE.

DATE OF MEETING : 10th July 1947. TIME : 9 a.m. to 12 noon.

(In the Public Works Department Library Hall, Chepauk, Madras.)

Present :

President and other members.

The committee first proceeded to draw up a list of priority for all municipal drainage schemes in the Province, grouping them into two separate lists, one for the north and the other for the south circle.

The question of the rough cost of the work ahead, on urban as well as rural schemes, was then taken up for discussion. A statement showing the rough cost of schemes ahead prepared by the Secretary was discussed. It was agreed that with the data available before the committee only a very rough approximation based on a cost per head of population for urban and rural schemes, could be assumed. A variety of indefinite factors attendant on water-supply and drainage schemes between place and place would make it impossible to arrive at any definite figures of cost in regard to the schemes which have to be executed. In order however to gain some idea about the commitments involved, the committee went into the details and decided to assume the total cost of schemes ahead at Rs. 101 crores based on present day prices. It was also decided to indicate the annual recurring expenditure on the schemes at so much per head of population, based on present schemes in operation.

In regard to the incidence of taxation on urban units to be decided according to the ability of each unit, the committee was of the view that a maximum rate up to 20 per cent of property tax could be suggested in respect of municipalities and up to a maximum of 10 per cent in the case of other urban towns, the Government deciding the actual rate of taxation applicable to each place dependent on local conditions.

The question of Municipal Engineers and Municipal Subordinate technical staff was then referred to and it was decided that all such technical staff would form part of the Public Health Engineering Branch and would be utilized to the best advantage in the execution and maintenance of water-supply and drainage schemes. If any of these officers stationed in a municipality or an urban town were to be utilized in execution of local municipal schemes they could undertake such works also, holding themselves responsible to the municipality concerned in regard to budgetary matters and allotments.

Mr. Raman then brought up the question in regard to transport of materials to the work-site and said that rural areas in the Province were many of them inaccessible in an emergency as the conditions of village roads and unfordable streams made several of these villages so many remote islands. He suggested that in order to expedite the programme in respect of water-supply and drainage schemes the committee should press on the Government their view that in the programme of village reconstruction improvements to village roads should be given high preference.

Similarly, Mr. Raman added, the electricity programme of the Government should be expanded side by side with water-supply and drainage so that electrical energy was made available to as many rural units as possible. This would facilitate pumping plants with electrical motors being installed without difficulty, avoiding costly and complicated diesel engines and steam units. The expansion of electricity to rural areas he added, would incidentally improve well irrigation also and aid the grow more food campaign.

Mr. Ranga Reddi agreed that there would be no difficulty about the electricity programme in the manner envisaged but in regard to village roads he was afraid that enough co-operation and co-ordination might not be possible, if matters should continue as at present.

The Chief Engineer intervened to say that when the District Committee of our plan were charged with the prosecution of an intensive programme of water-supply and drainage they should be able to smoothen out difficulties in the way and get things done to the common advantage.

The Secretary then raised the question that in the matter of investigation of water-supply sources existing riparian interests should not be allowed to impede progress and that some legislation to this purpose should be recommended to Government. The issue was explained in some detail by the Chief Engineer and Mr. Raman and it was decided that drinking water being nature's gift should be given priority over riparian interests and that measures of legislation to the effect should be recommended by the committee.

Mr. Raman also said that the existing practice of sale of raw water from irrigation sources, etc., at Re. 1 per 1,000 cubic yards should also be discontinued, as the spirit behind Government selling drinking water to the public, albeit at low rate, was not correct.

Mr. Nachiappa Gounder then referred to the long delays which occurred at present in the acquisition of lands for water-supply and drainage schemes as the procedure to be adopted under the Land Acquisition Act held up matters at different stages and it usually took 1½ to 2 years before acquisition proceedings could be completed. He suggested that in view of the urgency of the plan ahead, it would be advisable to recommend that provision for acquiring lands on the lines of the Defence of India Act should be made in respect of water-supply and drainage schemes. The committee accepted the view.

After some informal discussion the chairman announced that the Secretary could now proceed with his draft report, after which he would himself go through it with the assistance of Sri A. V. Raman and the final draft when ready, would be circulated to all the members for their consideration. He fixed August 11th, 1947, for the next meeting of the committee when they could discuss and adopt the final report to be submitted to Government.

The meeting was then adjourned.

S. RAJAGOPALAN,

Secretary.

A. KALESWARA RAO,

President.

**ABSTRACT OF PROCEEDINGS OF THE FINAL MEETING
OF THE WATER-SUPPLY AND DRAINAGE COMMITTEE.**

DATE OF MEETING : 28th August 1947.

(In the Public Works Department Library Hall, Chepauk, Madras.)

Present :

President and all other members.

The Water-Supply and Drainage Committee sat from 9 a.m. to 12 noon and again from 3 p.m. to 6-30 p.m. and considered in detail the draft report prepared by the President and the Secretary and circulated to the members previously. The report was adopted unanimously with a few important amendments and was signed by all the members without any dissenting minutes.

The Chairman thanked all the members for their hearty co-operation and for their unanimity in decision.

With a vote of thanks proposed by Sri A. V. Raman to the Chair, the meeting terminated.

S. RAJAGOPALAN,
Secretary.

A. KALESWARA RAO,
President.

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