# RELATIVE COST OF MUNICIPAL WORK DONE BY DAY LABOR AND BY CONTRACT.\*

# By Harrison P. Eddy,† Consulting Civil Engineer, Boston, Mass.

# The Decreasing Efficiency of the Day Labor Forces and Some of the Causes.

Among the various lines of investigation carried out by the late Boston Finance Commission were several which threw considerable light upon the relative efficiency of the contract and day labor systems and some of the causes of the inefficiency of the day labor forces of the city of Boston.

An effort was made to ascertain as nearly as possible the actual facts in all cases, and to reduce the conditions to figures thus eliminating opinions. The results of these investigations are, therefore, interesting and important as showing the results of conditions surrounding city departments, and not as exploiting theories of ideal conditions, which are rarely found in any city.

While most of the data refer to the city of Boston, it is believed that the lessons drawn from them are typical, and that similar results would be obtained from like investigations in many other cities.

# Relative Prevalence of Contract and Day Labor Systems.

In order to ascertain the general municipal practice throughout the country in building waterworks and sewerage systems, a postal card inquiry was sent to all cities in Massachusetts and to all cities in the country exceeding 30,000 in population, as shown by the Census Bureau in 1905. The results of this inquiry appear in Table 1. The questions were so worded as to apply only to ordinary extensions, and it is probable that in some cases work upon new systems may have been done by contract, while ordinary extensions were made by day labor.

#### TABLE I,

# Relative Prevalence of Contract and Day Labor.

# Sewer Construction in American Cities of Populations Exceeding 30,000 (not including Boston).

Population.	Number of Cities of speci- fied size (1905 Census Esti- mate).	Number of Cities enumer- ated).	Cities doing work wholly by Contract.	Cities doing work wholly by day-'abor.	Per cent. of Cities doing work by Contract.
30,000 - 50,000	67	31	20	II	65
50,000-100,000	47 -	22	15	7	68
100,000—150,000	14	8	5	3	63
150,000-200,000	6	2	2		100
Over 200,000	20	IO	IO		100
Totals	154	73	52	21	71
Outside of New England	126	51	48	3	
cepting Massa-					
chusetts	IO	6	4	.2	67
Massachusetts	18	18	. I	17	6

\* Read before Section I. of the American Association for the Advancement of Science, December 28th, 1909.

+ Of the firm of Metcalf & Eddy, consulting engineers to the late Boston Finance Commission. Relative Prevalence of Contract and Day Labor.

Water Pipe Laying in American Cities of Populations Exceeding 30,000 (not including Boston).

30,000 50,000 50,000 150,000 150,000 200,000 00ver 200,000 Totals	F1 0 0 H L V 0 Number of Cities of speci- fied Size (1905).	85   G N OSI B Number of Cities enumer- ated.	6   + : + 4.6 Cities doing work wholly by Contract.	6   G N G J Gittes doing work wholly by	0. 7
Outside of New England New England, ex-	126	40	19	21	48.0
cepting Massa- chusetts Massachusetts	10 18	3		3	,

Postals were sent to 154 cities, and replies relating to sewerage systems were received from 73 cities, and relating to waterworks extensions from 58 cities.

Of the 73 cities making replies to the inquiries relating to sewerage systems, 52 or 71 per cent. were found to be



#### EFFICIENCY OF LABOR IN BOSTON WATER DEPARTMENT THE AVERAGE EFFICIENCY FOR THE IS YEARS 1880-1894 HAS BEEN TAKEN AS 100% DATA FOR THIS DIAGRAM HAVE BEEN REDUCED TO A UNIFORM BASIS OF WAGES AND HOURS FOR THE ENTIRE PERIOD 110% 100% 100% 90% 90% 80% 80% イン Z 70% 70% Ш 5 4 60% 60% 4 Ш 50% 50% 1900 905 890 885 895 40% 40% YEAR

doing this class of work wholly by contract. Of the cities located outside of New England, 94 per cent. were found to be doing their work by contract, while but 67 per cent. of the cities in New England outside of Massachusetts were using this system, and in Massachusetts only 6 per cent. The prevalence of the day labor system in Massachusetts is very strikingly shown by these figures, which, it should be noted, are based upon replies from all of the eighteen cities