

SURVEY OF PHILADELPHIA WATER DISTRIBUTION SYSTEM.

IN a paper which he read last December before a meeting of the Engineering Section of the Association for the Advancement of Science, Mr. Carl. E. Davis, chief of the Bureau of Water of Philadelphia, gives some information of a nature similar to the underground survey work in Ottawa, referred to in our issue of February 11th, but on a more extensive plan. According to Mr. Davis, the original waterworks of Philadelphia were constructed about 1801. The first cast-iron pipe was laid in 1817 and considerable pipe which was in the ground as early as 1820 or 1830 is still doing service in the distributing system. The city at present is an amalgamation of a number of distinct municipalities, some of which had a water supply at the time of incorporation with the larger community.

As the city has grown, various water-supply projects have been developed, used, outgrown, and abandoned in whole or in part. During the last fifteen years the introduction of a filtered supply has brought about a radical readjustment of the principal supply mains and a realignment of the distribution districts.

Certain general maps and plans, compiled by William Whitby, of the Bureau of Water, are now being developed and expanded. The scheme provides certain general features:

(1) Data used chiefly for controlling and regulating the amount and pressure of water throughout the system, or in other words, data used in operating the supply. Under this head are maps defining the limits of the several distinct distribution areas, accompanied by data showing the sources of supply for each area and a list of valves controlling the supply; likewise, general maps showing all large mains, reservoirs and pumping stations, together with detail maps of the piping system and operating valves at the pumping stations, filters and reservoirs.

(2) Data used chiefly for repairs and maintenance, including detail maps showing the complete gridiron of distribution pipes on which the location of all valves and hydrants are indicated. Each street intersection is mapped on a separate plan of a size convenient for use in the field.

(3) Data used chiefly for the business relations between the consumer and the Bureau of Water, such as location, depth, size, date of insertion, kind of pipe, etc., of service connections. These data are listed in a card index and filed by streets and numbers. The system likewise proposes under this head full plans of all pipes in important establishments which may have a special supply for sprinkler systems or other fire protection. These plans will indicate the relations between pipes carrying city water and private pipes which may carry a possible polluted water from a private source, introduced for the purpose of fire protection or manufacturing. The necessity for the complete severance of these dual supplies can be readily seen.

Assuming an available force of sufficient size and individual experience and capacity, the work of mapping pipes and valves proceeds normally along three lines:

(1) Compilation of existing data wherever and however those data may be listed.

(2) An investigation and determination of the present and possible function and use of the several parts of the system. Each foreman in charge of a repair or maintenance crew is furnished with a pad of paper showing the lines of typical street intersection with house lines,

curb lines, etc., printed on it. Whenever and wherever such a crew is called for work, the foreman is required in his spare minutes, which always occur in such an operation, to list up on these blanks such data as an intelligent inspection of his immediate vicinity will discover.

(3) The proper recording of new work and the reduction to tangible shape of existing data.

The system depends upon centralized overhead control. All new work is directed from a central office, thereby insuring uniform practice and procedure, stimulating branch offices by the feeling that their returns are scrutinized and compared with similar returns from other branch offices. Uniform practice and procedure is essential as a man transferred from one section of the city to another feels at home among the familiar records, even though the geography of the district is strange.

Book records have been discarded as far as possible in favor of records capable of easy and rapid reproduction. A complete and satisfactory record, distributed as widely as desired, may not be obtained for some time to come, but enough has already been accomplished to prove the worth of the system.

FILING OF MILEAGE TARIFFS BY RAILWAYS.

AT a recent sitting in Ottawa of the Board of Railway Commissioners an amendment took place of the standard regulations of the Board as to the opening of new lines, so as to provide that, in addition to filing the standard mileage tariff applicable to traffic on the portion of the railway to be opened, the appropriate special tariffs also be filed.

The railways are now required, before opening for the carriage of traffic any extensions of their existing railway systems west of Lake Superior, to publish and file the appropriate supplementary special class or "town" tariffs, mileage commodity tariffs, and special tariffs on grain to the Lake Superior terminals, and on lumber from British Columbia, as these may be applicable to the territories to be served by the new lines, in addition to the standard mileage tariffs therefor.

This action is necessary by the Board owing to the fact that cases have occurred in the past where it has been shown that, although railway companies before opening new lines have either filed standard mileage tariffs applicable to the extensions opened, or already have sufficient mileage to cover the extensions expressed in their existing tariffs, the companies have delayed in filing commodity rates with the result that, in certain instances, shippers on the new lines suffer from a direct discrimination.

In the past, according to the Board, companies at the urgent request of shippers have, through their construction departments, carried freight at any rate they chose to charge. These rates, while excessive as compared with railway rates, were nevertheless always less than those of the previous methods of transportation, and were sought to be justified on the grounds of the necessity of settlers, and the fact that such a service was in any event never remunerative to the carrier and to some extent a nuisance as interfering with construction work.

"In dealing with such applications in the future, while it is clear that the railways cannot be compelled to make the application, some action must be taken by the Board having regard to the necessities of the emergency justifying leave to operate which will limit the toll the railway company may collect."