MUNICIPAL DEPARTMENT

BRICK FOR RESERVOIRS.

The use of bricks for reservoir purposes is largely on the increase, says the British Clayworker, but we do not think that the engineer takes the fullest advantage from the material. Generally speaking, he relies too much on the value of puddle, which does very well, for a time, for small reservoirs, but is often notoriously bad for large ones. The quantity of bricks used even in brick reservoirs, however, is nothing like what it ought to be. In dealing with stone the engineer uses that material so lavishly as to surpass all possible requirements; but with bricks he is always sparing, and never employs them except in a half-hearted way. Nothing beats a good sound brick for keeping in, or keeping out water; no stone either natural or artificial is so impervious, or has such a long life. Engineers should never forget this fact.

DIVIDING THE COST OF A SEWER.

A correspondent writes to the Engineering Record as follows:

SIR: The city of B contemplates a sewerage system for a section comprising 75 acres, the outlet of which is to be temporarily the present sewerage system of A, but eventually the new intercepting sewer already commenced by A. The problem is to determine what amount B ought to pay A for the privilege of entering their sewer. This section of 75 acres will require immediate disposal into the A system. We also have about 7.6 miles of sewers which will eventually be obliged to enter the intercepting sewer at a different point, but only the 75 acres demand immediate attention. A is much more thickly settled than B, the 75 acre tract being very thinly settled. The population being no criterion, we have thought of making the sewered areas a basis of settlement for the present, taking in the remaining areas as fast as sewered. Can you give us any suggestions on the subject outside of the work of the Boston, Mass., Metropolitan Sewer Commission?

In replying to the above questions it is stated that the subject has been studied more carefully by Engineer F. H. Snow, of Brocton, Mass., than, perhaps, by anyone else. His recommendations are that one-half of the total cost, including maintenance, be raised by rental assessed on the user, one-fourth by assessment on the abutting land, vacant or otherwise, and the remaining one-fourth by general tax levy. To equalize the disputed justice of assessments by areas and assessments by frontage he advised that six-tenths of the second item, that is, the assessment on the abutting land, be assessed on the area and four-tenths on the frontage. So that to find the amount which was charged per square foot of area, six-tenths of one-fourth of the whole cost of the sewers, was divided by the total number of square feet within a certain distance of the street beyond which it was thought the additional depth of the lot did not insure any additional benefit from the sewer. In Brocton this distance was fixed at 125 feet. The assessments recommended by Mr. Snow were as follows: For 1st assessment 3 mills per square foot and 15 cents per foot front; for rental 28 cents per 1,000 gallons entering the sewer, or $8.40 per year for unmetred connections; for general taxes about $1.32 per $1,000 in 1895, to about 88 cents in 1900. Their application is of course largely local. The rental rates were determined from the consumption of water, estimating that 95 per cent. of the water in dwellings reaches the sewer and 30 per cent. from shops. As agreements between towns are usually more convenient if made on some approximation, a side light might be had by estimating roughly the cost of any disposal system B might build independent of A. Then the annual charge paid by B to A ought not to exceed the sum of the interest on first cost, operating cost, and depreciation charge on this possible disposal system. Again, these three items of the annual cost of the sewer actually built by A might be found and divided among the two places by Mr. Snow's plan. If A is to build the sewer larger to accommodate B, B ought to pay the increased cost of the larger sewer, but if A is building the sewer large now to meet future needs so that it costs nothing to handle B's sewage, a very reasonable adjustment of charge would be of advantage to both towns if B cannot now afford to pay its proper share. These could be readjusted as the growth of B allowed.

THE SEPARATE SEWAGE SYSTEM

In view of the consideration which is now being given to the question of obtaining a satisfactory system of sewage, the following particulars regarding the separate system may be of interest to municipal officers:

The separate system of sewers was first introduced into the United States in 1880, in the city of Memphis, where two years before 5,000 of the 30,000 population had died of yellow fever. Eighteen miles of such sewers were constructed, at a cost of $137,000; and the system is said to have proved so great a success that many other similar works were constructed in southern towns and cities.

Brockville was the first Canadian town to adopt the separate system. This occurred in 1887, when the population was 8,500. The town drained naturally into a mill creek connecting with the river, but the adoption of a water works system rendered necessary the construction of a long intercepting main sewer.

Col. Waring, a Rhode Island engineer, who first brought the separate system idea to the continent, reported for Brockville, and recommended the exclusive separate system. This was adopted, but some details he proposed were not, because he apparently had not considered the weather conditions fully, and some changes were made. All sewers were laid deeper than seven feet below the surface where possible. This system was begun in 1887, and completed in 1891. Eight miles of sewers were laid, at a cost of $95,000, about $15,000 of which represented rock excavation.

In a report upon the Brockville and other separate systems of sewage in Ontario, all of which were constructed under his supervision, Mr. Willis Chipman, civil engineer, says that although Brockville was the first town in the province to have the separate system, the results have been very satisfactory. Stringent rules and regulations governing plumbing add to the efficiency of the service received. All plumbing or house sewers must be laid under the supervision of the engineer. A complete record of house sewers and plumbing is kept by the town engineer.

Before the construction of the sewage system the town had constructed box drains for the removal of storm water and for draining cellars, and these were retained, the sewage being diverted into the sewers proper. New storm sewers had to be constructed on a few streets.

Cornwall has a satisfactory separate sewage system.

Barrie also has this system. It was recommended to them by Mr. Chipman for financial and sanitary reasons. Surface drainage in Barrie caused no inconvenience, the graded street gutters removing what is not absorbed by the porous soil.

Brantford has 12½ miles of separate sewers. Here the sewage is discharged into the river about two miles below the city. The sewers are strictly upon the separate system, not even roof water being permitted to enter them. The surface grades, the location of natural watercourses and the very porous character of the soil allow storm water to cause very little inconvenience. In Brantford it is necessary to remove fungus growth in two or three sewers about once in three months.

Berlin has a sewage farm, which it is said can be made a success only by careful management.

In 1891 Toronto Junction entered into an agreement with the city by which the town was permitted to discharge its sewage into the sewers of the city, all storm water to be excluded. The sewers were laid consequently on the separate system, and gave the greatest satisfaction.

TEARING UP PAVEMENTS.

The breaking up of pavements for necessary repairs, or for making new connections for water and gas pipes, sewers, etc., is an unavoidable evil which is especially a disadvantage to asphalt pavements. All pavements suffer more or less from this kind of work, for it is very seldom that a contractor is inclined to, or is able to make the pavement as good as it was at first. The filling put in invariably settles after a time, causing the surface of the pavement to sink. To prevent this a regulation has just been made in Brooklyn, N. Y., requiring, in addition to a proper refilling and ramming of the trench, the laying of 8 inches of Portland cement concrete under the asphalt. The object of this is to form a bridge in the event of the filling settling, and so prevent the surface falling in. This increases the expense of the work considerably, and tends also to discourage the tearing up of the pavements for anything but really necessary work.

In other cities a check is put upon the breaking up of pavements by means of a fixed charge; New York city charges $4 per square yard for opening an asphalt pavement, with a minimum charge of $16. The city of Philadelphia charges $13 for a permit to open an asphalt pavement, and increases this fee to $18, between December 1 and March 1, in any year.