

# MUNICIPAL DEPARTMENT

## THAWING WATERPIPIES BY ELECTRICITY.

The London Electrical Review disposes thus of Mr. C. Hyatt Woolf's novel suggestion in the Standard that a current of electricity should be employed to melt the ice in frozen water pipes:—"The first question would be how much frozen water is there in the pipe, and then the electrical cookery people could soon tell us what it would take to thaw it. Suppose the pipe is 50 feet long and one inch internal diameter, we get a little less than 600 cubic inches of water, or one-third of a cubic foot as its contents—this is about 2 gallons or 20 lbs. It requires a h. p. minute to raise 22 lbs. of water 1 degree C., consequently to boil this water or furnish the heat to properly thaw the ice, about 100 h. p. minutes would be needed, or 1 h. p. for an hour and three-quarters, that is about eight pence worth of current at 6d. per Board of Trade unit. If the current were taken off the supply mains 13 amperes would be needed for an hour. A return circuit would probably be needed to prevent electrolytic action; to insulate the wire it might be strung with a row of glass beads close together. But we weary our readers, and, therefore, conclude with the suggestion that in the first place the effort of scientists would be better directed to ascertaining how deep a month's hard frost penetrates in different soils, and in the second that the energies of the water companies and the capital required for electric appliances would be more economically expended in burying the supply pipes below that depth and seeing that they are well protected when they enter houses, and, perhaps, in addition fixing a small cock in a suitable place, which could be safely left running full bore, without overtaxing the companies' powers of supply."

## GAS ENGINES FOR PUMPING WATER.

The use of gas engines for driving pumping machinery is hardly practised at all in the United States outside of irrigating work, says the Engineering Record, but in Germany they have been installed in a number of cities. At a recent meeting of gas and hydraulic engineers in Landsberg, Mr. Max Munzel described several of these plants. The authorities of Düren were the first to install such engines, which was done in 1884. It became necessary to provide a system of water supply for a population of 30,000, which was assumed to require about 790,000 gallons a day, to be supplied from two pumping systems working 12 hours a day. The two pumping systems which were built have a capacity of 33,000 gallons an hour each and are connected through a wrought-iron force main 14 inches in diameter with a water tower of 145,200 gal-

lons. From this water tower a 12-inch main leads to the system of distribution mains in the city. Since the suction level was about 16 feet below the surface of the ground, horizontal plunger pumps were selected with 40 horse-power duplex motors. The power-house is about 65 feet long and 44 feet wide. The suction pipe of each pump is 14 inches in diameter. The double-acting pumps have plungers 14.4 inches in diameter and a stroke of 30.4 inches, making 30 revolutions a minute. The 40 horse-power motors make 140 revolutions a minute, the connection between the pumps and motors being through friction clutches and spur gearing. There is a two horse-power motor between the larger pair, which drives a line of shafting below the floor of the station. The motors have on their main shafts which are belted to this shaft, so that by starting the small motor the larger ones are given the preliminary revolution necessary to set them in operation. Before starting up, the friction coupling with the pumps is thrown off and the by-pass valve opened. When one of the large motors has reached its normal speed the friction coupling is thrown on and the valve closed, thus putting the pumps at work. The total cost of the system of works amounted to \$38,750 for pumping station, pumps, motors, and water tower, \$30,750 for pipe, \$6,250 for wells and galleries, and \$16,750 for meters, service pipes, and miscellaneous work, or a total of \$92,500.

The completion of these works was followed speedily by the construction of other pumping stations driven by gas motors.

## THE NEW PAVING STONE PROCURED IN MINNESOTA.

A new paving stone has been discovered and those who have taken the trouble to examine its qualities are very enthusiastic in its praise and assert that in a few years it will be the only material laid in the Northwest for paving. The stone is named by Professor Hall, of the state university, as a quartz biotite, and is composed of about 80 per cent. quartz and 20 per cent. mica. It is stated by geologists to be found in large quantities in Minnesota, and at least one quarry large enough to pave all cities of the Northwest has been opened near Little Falls. St. Paul, it is said, will make an experiment with the new stone in the near future.

This quartz biotite resembles a very fine grained granite in appearance and is not open to any of the objections that have been made against this well-known paving material. In the first place, granite wears perfectly smooth and becomes slippery, and, as all know, takes a very high polish. As laid in this city, rough dressed, the street soon becomes a succession of small slippery hillocks, for granite will not wear down even. This rock, being of a much firmer texture, will, it is claimed, in the course of time wear down to an even surface, which will never become perfectly smooth and hence will not be slippery. If such is the case, it will also be comparatively noiseless as com-

pared with granite. The new material is not at all soft. It is as heavy as granite and on account of the large percentage of quartz in its composition is hard and durable, even more so than granite.

It has been subjected to some very severe tests, side by side with the best specimens of granite, by interested parties in this city, and has held its own. In the matter of absorption of water this biotite or mica schist, as it is also called, ranks about the same as granite. For that matter, paving experts state that the absorption by any stone is hardly worth consideration. In the point of abrasion granite was found inferior. Samples of both, hewn to the same size and form, were placed in a rattler for several hours and upon being taken out it was found that the biotite had lost a smaller percentage. It is also stated that the new stone excels with regard to cleavage, and on that account it will be possible by the expenditure of the same amount of money as for granite to secure smoother surfaces on the paving blocks, and the latter will also be more uniform in size. There will be no difficulty in securing an unlimited supply of blocks about three inches thick and eight inches deep, which are considered the most desirable dimensions when the blocks are laid without a concrete base.—Minneapolis Journal.

## CORRECTION.

Mr. Hurd Peters, writes THE CONTRACT RECORD that the paragraph published in this department on March 28th, stating that Mr. Wm. Murdock, C. E., had been appointed City Engineer and superintendent of sewerage and water supply for the city of St. John, N. B., was incorrect. Mr. Peters says: "I am, as I have been for upwards of 30 years past, City Engineer, no other having held that office. Mr. William Murdock was, on the death of his uncle, Mr. Gilbert Murdock, during the last year, appointed in his place, superintendent of sewerage and water supply, which is his present position and in no way interfering with myself as City Engineer." We gladly give place to this explanation.

## KOSMOCRETE CONCRETE SIDEWALKS.

The Engineering News of January 3rd, in a short article on Concrete Sidewalks, states that they are rapidly becoming popular, and one special system is the Kosmocrete pavement, of which some 200,000 square yards have been laid in Brooklyn, N. Y., in addition to considerable amounts in other cities. A bottom course of dry binders, about 12 inches thick, is laid, and upon this a layer of concrete about 4 in. thick, composed of 3 parts of granulated granite or sharp gravel, 4 parts of 1½ in. stone and 1 part Portland cement. On this concrete is worked a facing about 1 in. thick, composed of granulated granite, a small percentage of silicious grit, Portland cement and carbon. The purpose of the granulated granite mixed with silicious grit is to prevent the surface from becoming slippery. This concrete is used not only for sidewalks, but for stable flooring and the paving of public buildings, including the armouries of the 23rd and 14th regiments in Brooklyn. It is also used for making sewer pipe. It is made by the Wilson & Baillie Manufacturing Company, of Brooklyn.