

pendence of the Hamilton and North-western Railway Co., and that the plaintiffs by certain dealings with the latter company had waived their right to object to the amalgamation complained of. The court unanimously affirmed the judgment of the courts below and agreed with the reasons given. Appeal dismissed with costs.

PERSONAL.

The death is announced of Mr. D. G. Mackenzie, who for nearly nineteen years efficiently discharged the duties of Clerk of the County of Middlesex.

The disposal of city refuse is no more profitable in Edinburgh than in other large cities, notwithstanding the glib talk of some who find great profit—theoretically—in disposing of it to farmers. The Edinburgh Councils lately sent out 1,521 circulars to farmers in their vicinity, inviting tenders for about 51,900 tons of refuse, and manure, or about one-half of the yearly product. Only 47 tenders came in, and these under such conditions that practically required the city to pay all expense of transport, and even, in some cases, to pay the farmers so much a ton for accepting it.—Engineering News.

A machine for breaking up frozen ground, rotten ledges, and similar material frequently encountered in excavating for water-pipes and sewers, has been patented by the executor of the late Richard Fobes, Superintendent of Sewers at Worcester, Mass. The machine consists of an upright frame about 30 feet high, mounted on a car with a hoisting engine and boiler. A pair of guides is attached to the upright frame, and swing back and forth in front of the end of the car. In these guides a heavy bar, carrying a cutter bit at the end, is worked up and down as in an artesian well-drilling apparatus.

It is evident that in every community where a large part of the water consumers is of the tenant class, and especially such as are found in tenement houses, says the Engineering Record, there is no way of enforcing payment for water but to withhold the supply. Yet, since this penalty creates a condition of affairs that becomes a nuisance, which must be abated by the sanitary authorities, it would seem that the only practicable way to deal with this matter is to make the owner of the property in every case responsible for the payment of the water rates for all the water consumed on the premises. This is, in fact, the manner in which these rates are laid in New York City, where all charges for water are deemed to be included in the regular rents, constitute a lien upon the property, and, if unpaid, are returned as arrears and are collected with interest by the same process as the general taxes.

Details of a steel water main 5 feet in diameter are given in Le Genie Civil. The total length of this conduit is 8,445 feet, and it will be used in bringing water from La Vigne and Verneuil to Paris. It is constructed of mild rolled steel. The thickness is calculated so that the strain in no place exceeds 3.8 tons per square inch, and the actual thickness has been increased beyond this amount to allow for oxidation, the actual maximum thickness being 0.235 of an inch. The rivets are of mild steel, and the tubes are lap-jointed. The supports are of cast iron and spaced sufficiently close to prevent sag. The elbows are of cast iron and the cramps of wrought iron. Five manholes per mile

are provided, and there will be two discharge tubes closed with sluice valves at the lowest point of the conduits.

A novel method of thawing frozen earth for making street excavations was described by H. H. Kelley, Superintendent of the Waltham, Mass., Gas Works, in a paper read before the New England Association of Gas Engineers. Stone lime is spread several inches deep over the place where it is desired to excavate, and is thoroughly wetted and covered with straw. A piece of canvas or tarpaulin is spread over the heap, and it is left for 12 hours more or less. In two cases in which Mr. Kelley has tried this method recently, frost 18 in. to 26 ins. was removed from the ground. In ordinary cases the expense of the lime would be too great to permit this plan to be adopted, but gas companies can use the lime afterward in their purifiers.

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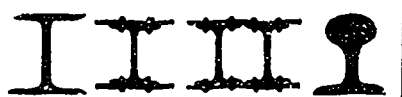
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