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have left, so that there is not the slightest inconvenience from this cause, nor need there be even when the house is occupied.

The operation is performed by the draining off of the liquids through the cocks "CC," the cover is then removed, the contents mixed with calcined gypsum and powdered charcoal or sawdust, when it assumes about the consistency of peat, and with a long-handled shovel can be cut into cakes, and deposited on the manure heap for use in fertilizing.

This device is used at the Brighton Hotel, Manhattan and Oriental Hotels, at Manhattan Beach, the Argyle Hotel and Cottages at Babylon, L. I., and at many private summer residences on Long Island, giving everywhere entire satisfaction.

WOODEN WATER PIPE.

REGULAR MEETING, MAY 3D, 1884.—Mr. C. Henry Roney exhibited a section of 4-inch Wooden Water Pipe and Joint found about two feet below the surface while excavating a trench for the conduit of the Philadelphia Sectional Electric Underground Company on Chestnut street, between Fourth and Fifth, and described those which had been found on Chestnut and Market streets during the progress of the work. These are interesting as showing the durability of such pipes and connections under the conditions to which they had been subjected.

The section shown was of spruce, originally about 14 inches in diameter at the large end and somewhat smaller at the other, having a wrought-iron band about $1\frac{1}{2}$ inches wide, $\frac{3}{8}$ inch thick at one side and tapering to a thin edge at the other, so that it could be driven on or into the end of the log near the outer circumference; a piece of iron pipe 4 inches internal diameter and about 12 inches long, tapered to a thin edge at each end, served to connect the ends of two adjoining logs, which were driven over it end to end, and prevented from splitting by the iron bands around the ends of the logs. In some cases no interior iron coupling pipe was used; one log was tapered at the end and driven into the next one which was prevented from splitting by the exterior iron band.

The 4-inch pipes, so far found, were of yellow pine, spruce and oak, of about 12-foot lengths, and from 12 to 24 inches in diameter, and supposed to have been laid between 1795 and 1805; the depths at which they were found varied from two to eight feet below the surface of the street.

The outer bark and heart wood of the spruce logs were generally sound, while the inner bark and sapwood were decayed, except where the soil was dry, gravelly or porous, when the greater part of the wood was decayed and the iron badly corroded. A specimen of red oak from a log adjoining the spruce one shown was decayed on the under side, but other portions looked nearly as fresh as if recently laid, the portions in contact with the iron coupling and band were blue-black from the action of the tannic and gallic acids on the iron. The 6-inch pipes were much larger, in some cases nearly 30 inches external diameter; in most instances the iron couplings and bands were but slightly corroded, the amount of corrosion seemed, however, to depend very much upon the character of the soil in which they were found—where the wood was decayed, the iron seemed to have rusted more than where the wood was well preserved from access of air and probably from the same causes. In some

instances where the logs were of very large diameter, they had been reduced at the ends to fit the bands, but in most cases the bands were driven into the ends of the logs without any reduction of diameter. Where exposed to the action of leaky gas pipes, the wood was blackened by it and very offensive in odor; in other cases no unpleasant odor was perceptible upon removal of the wood from the soil.

POPE'S "BRIDGE ARCHITECTURE."

REGULAR MEETING, MAY 17TH, 1884.—Howard Murphy, Esq., Secretary and Treasurer Engineers' Club of Philadelphia, Dear Sir: I herewith present you, for the Club, an interesting work on "Bridge Architecture," printed in the year 1811. It contains a description of "Pope's Flying Pendant Lever Bridge," which was the plan proposed about that time for spanning the Hudson River. An interesting article on the "Schuylkill River Bridge" that was completed about the time this book appeared, is one of particular interest to those members of the Club who reside in Philadelphia. It speaks of it as "the permanent bridge lately erected over the Schuylkill River." It would be interesting to know how long since it ceased to be permanent. If I had the time it would afford me great pleasure to present a paper of comparison of the bridges in the early part of this century with those of to-day. I have not the time, but trust some other member of the Club will take the subject up.

The idea of utilizing the approaches of the East River Bridge for storage warehouses, etc., is not original, since T. Pope purposed doing the same thing with his Flying Pendant Bridge seventy-three years ago. Respectfully submitted, Saml. Rea.



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