

VENTILATING BY ELECTRICITY.

How easily large halls can now be ventilated is seen in the recently installed plant for lighting and ventilating the house of representatives and the Senate Chamber in Washington. The system of ventilation which is already in operation in the Senate is illustrative of the best modern practice. The fans under the flooring are twelve feet in diameter, and are driven by electric motors of 18-horse power each. There is also a fan on the roof, which is connected to an eight-horse-power motor. The pure air is drawn from a stone tower, situated on the north-west section of the capitol grounds, and passed between steam piping before it is driven up through the double air-tight flooring and into the Senate Chamber. At the front of each of the numerous desks provided for the senators are a number of perforations, and through these holes the air passes inward. Each desk is provided with means of shutting off the supply of air, or regulating it. An ice plant is to be erected later, and in warm weather the air will be cooled before being forced into the chamber.

THE LOSS OF HEAD DUE TO ELBOWS IN PIPES.

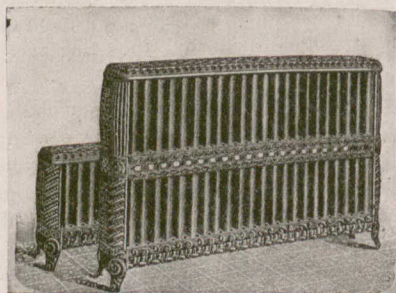
In a series of articles describing the engineering department of the Yorkshire College, Leeds, Engineering has given some particulars of the results of experiments conducted in that institution to ascertain the effect of the friction of water in a pipe fitted with sockets, elbows, tees, bends and a sudden enlargement. The experimental pipe was half an inch in diameter, and the friction was measured by loss of head in the usual way. It is shown in works on hydraulics that the loss of head due to resistance of this nature to the free flow of water in a pipe may be expressed in terms of a length of plain pipe that will give the same loss of head due to friction. Experiments extending over several years show that the loss of head resulting from a socket is equal to that due to from 15 to 17 diameters of the plain pipe; while that of easy right-angled bends may

be from 10 to 15 diameters; and that due to sharp right-angled elbows from 30 to 36 diameters. At one place the experimental pipe is suddenly enlarged to five times the regular diameter. The total loss due to this and the contraction should, by calculation, be equivalent to the friction of 1.92 feet of this half-inch pipe. Experimentally, however, the loss is only equivalent to the friction of a length of from 1.2 to 1.4 feet. The experiments show the detrimental effect of sharp elbows on the discharging capacity of a pipe system.

TESTING THE STRENGTH OF SOIL FOR BUILDING.

THERE is very little to be found in technical literature on the weight that certain soils will support. The few tables extant generally do not indicate with sufficient clearness under what conditions they have been compiled. Rudolf Mayer describes, in the "Zeitschrift des Oesterreichischen Ingenieur und Architekten Vereins," an instrument specially devised for this purpose. It is certainly not complicated, and though it is hardly meant for the ordinary builder, it may prove useful in its present or an improved shape. There is a heavy piston screwed into a cylindrical guide block carrying a platform on its top, on which the weights, iron plates of about 20 lbs. weight, are to be placed. The piston and its guide slide in a strong cylinder, which forms one casting with the bed-plate. This bed should be wide. There are, further, three legs in the plane of the bed, with pins at their ends, by means of which the instrument is fixed in position. The guard carries a sidearm holding a micrometer screw dipping below into a mercury cup, from which a capillary tube branches off. The diameters of the cup and the indicator tube are such that the depression of the screw is marked tenfold. When the weights are applied the piston will sink more and more, fairly proportionally at first; this would graphically give a straight line. When the line changes into a curve which becomes steeper and steeper, it is clear that the bearing limit of the soil has been reached.

New Hot Water Heating System

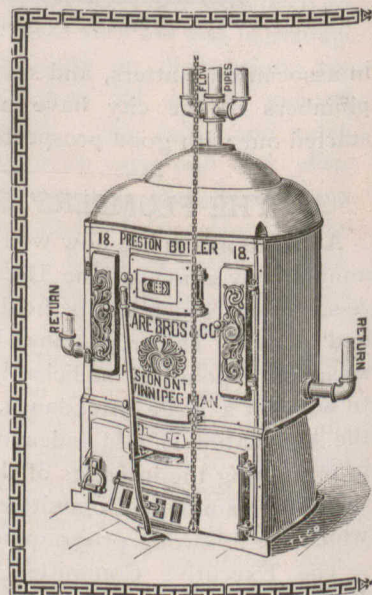


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