

## MUNICIPAL ENGINEERS, CONTRACTORS AND MATERIALS

two-fifths in the pressure it sustained when a vertical wall exposed to the same air current was below it. A roof slanting 45 degrees lost four-fifths, and one slanting 30 degrees showed no pressure. The cause of this is that when the side of a house is struck by a current of air traveling at right angles to its surface, the motion is turned into an upward one, and the air slides off the wall in a vertical direction with such force that it wholly or partly takes with it the upper horizontal current that would otherwise strike the roof. A parapet still further protects the roof from the effects of wind, carrying the oncoming air higher still.

## QUARRYING WITH FINE CHISELS.

At Bangalore, in southern India, the quarrying of granite slabs by means of wood fire has been brought to such perfection that an account of the method is interesting. The rock forms solid masses uninterrupted by cracks for several hundreds of feet, and when quarried over an area is treated as follows: A narrow line of wood fire, perhaps seven feet long, is gradually elongated, and at the same time moved forward over the tolerably even surface solid rock. The line of the general splitting of the rock, light wood, which have been left burning in their position until strokes with a hammer indicate that the rock in front of the fire has become detached from the main mass underneath. The burning wood is then pushed forward a few inches, and left until the hammer again indicates that the slit has extended.

Thus the fire is moved on, and at the same time the length of the line of fire is increased and made to be convex on the side of the fresh rock, the maximum length of the arc amounting to about twenty-five feet. It is only on this advancing line of fire that any heating takes place, the portion which has been traversed being left to itself. This latter portion is covered with the ashes left by the wood, and with thin splinters which have been burst off. These splinters are only of about one-eighth of an inch in thickness and a few inches across. They are quite independent of the general splitting of the rock, which is all the time going on at a depth of about five inches from the surface. The burning lasts eight hours, and the line of fire advances at the average rate of nearly six feet an hour. The area actually passed over by the line of fire is 460 square feet, but as the crack extends about three feet on either side beyond the fire, the area of the entire slab which is set free measures about 740 sq. feet. All this is done with, may be, about 15 cwt. of wood. Taking the average thickness of the stone at five inches, and its specific gravity at 2.62, the result is 30 pounds of stone quarried with one pound of wood.

Mr. Archibald Blue, director of the Ontario bureau of mines, during his recent trip through the northwestern portion of the province, became interested in the

question of using trap rock as a material for roadways. The city of Cleveland has been using this material in the construction of about two miles of roadbed, and it has been ascertained from the authorities there that the foundation of the road is of limest one, ten inches thick, above which the trap rock is laid to a depth of eight inches, having first been crushed into screenings and dust. The roadbed cost per square yard, \$3.10, \$3.19 and \$3.65, according to the grade of work.

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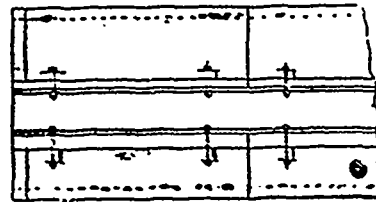
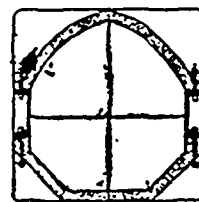
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