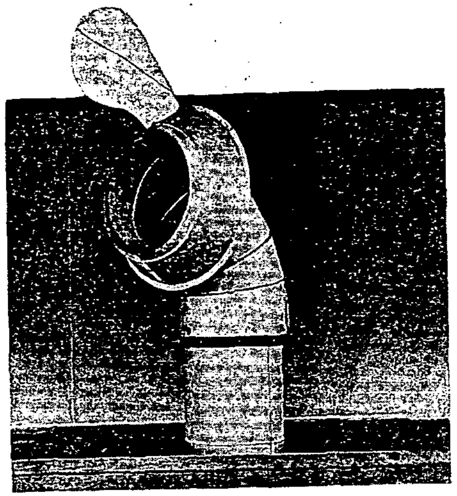

FIG. 71

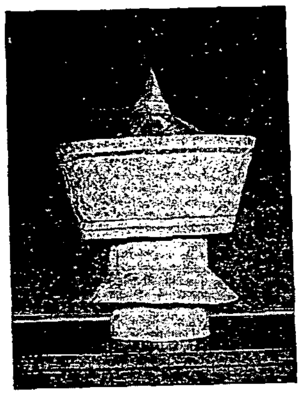

FIG. 72

FIVE STYLES OF ROOF VENTILATORS TESTED

FIG. 73

FIG. 74

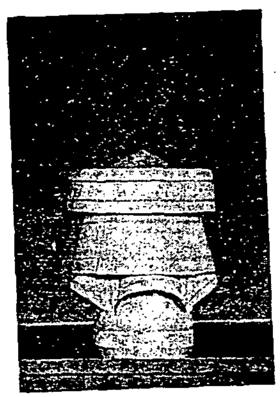

FIG. 75

JOURNAL, March, 1921. These figures will serve to show how some specific points effected the efficiency. The percentage figures at the top of each cut represents the ratio of air passed through the ventilator head, compared to that passed through an open pipe under the same conditions. Figs. 62, 63 and 64 show a stationary ventilator with slight variations. In Fig. 63, a lip *A* has been added at the outlet and in Fig. 64 the band has been lengthened, to cover the lip, no other changes being made. In the ventilator of Figs. 62 and 63, part of the wind entered the head while in Fig. 64 no wind entered the head. From the percentage figures, it will be noted that 63 gained over 62 although both discharged less than an open pipe under the same conditions. Fig. 64 gained 30 per cent over an open pipe. This shows the importance of keeping the air from entering the ventilator head, of using a wide band and of providing an easy passage for the air leaving theventilator. The wide band of Fig. 64 serves two purposes, first, to keep the air from entering the ventilator head and second, to produce a greater low pressure area on the leeward side of the ventilator head.

Fig. 65 and 66 are the same ventilators excepting that in Fig. 66 the storm band has been lengthened to cover the lower lip and prevent the wind from entering the head. This shows a gain from 91 per cent to 113 per cent by changing the band. By comparing Figs. 64 and 66, it will be noted that the principle difference is that the cap in Fig. 66 has been raised with an additional band placed in the outlet. The probable effect of this band is to increase the friction of the air leaving the head, thereby reducing the efficiency.

Fig. 67 shows a stationary siphoning ventilator in which part of the outside wind enters the ventilator head and must be discharged through the head with the air drawn up the ventilator shaft, while this ventilator is more intricate in design than that of Fig. 64, its efficiency is not as good.

Figs. 68, 69 and 70 show rotary ventilators. Fig. 68 has flaring outlet, Fig. 69 has a conical outlet and an auxiliary siphon ring and Fig. 9 has a straight conical outlet. It will be noted that these three ventilators all have about the same capacities, *i. e.* 150 per cent of an open pipe discharge. It was found that if the annular passage in Fig. 69 was closed up the results were the same, showing that the draft in this case was created by the low pressure area and not by the siphoning action of the wind.

Figs. 71 to 80, inclusive, show the photographs and dimensioned drawings of five 10-in. ventilators tested at the Experimental Engineering Laboratories, University of Minnsota.

The curve sheet, Fig. 81, shows the results of the tests. The most efficient ventilator in these tests was the rotary siphoning, Figs. 71 and 76, with the plain stationary, Figs. 72 and 77, a very close second. It will be noted that the stationary ventilator has a large head, rather a wide band which prevents outside air from entering the head, and is designed to give a fairly easy path with no abrupt turns for the exhaust air.

The stationary ventilator, Figs. 74 and 78, gives only two-thirds of the capacity of that shown for Figs. 71 and 76. Upon comparison, it will be noted that the diameter of the head is less, the width of the band is less