

multiplied by 3,600 we have the amount in one hour. For instance, suppose we have a room, the temperature of which is 62° Fahr., while the thermometer in the outer air marks 45° Fahr.; the difference here will be 17° Fahr. If now the height of the inner column of air to the top of the chimney be, say thirty feet, we shall have $17 \times .002 \times 30 = 1.02$. Now the square root of this would be 1.01, and this multiplied by 8 would give us 8.08, the velocity of air current in feet per second. If then the sectional area of the chimney be half a square foot, we have $8.08 \times 0.5 = 4.04$ cubic feet per second

Height of air column.	DIFFERENCE BETWEEN INTERNAL AND EXTERNAL TEMPERATURE.										
	5°	6°	8°	10°	12°	14°	16°	18°	20°	25°	30°
50	254	279	322	360	394	426	455	483	509	569	625
45	241	264	305	341	374	404	432	558	483	540	591
40	228	249	288	322	353	381	407	432	455	509	558
35	213	233	269	301	330	350	381	404	426	476	522
30	197	216	249	279	305	330	853	374	394	441	483
25	180	197	227	254	279	301	322	342	360	402	441
20	161	176	204	228	249	269	288	305	322	360	394
15	139	153	176	197	216	233	249	264	279	312	341
10	114	125	144	161	176	190	204	216	228	254	279

passing out of the chimney; but in most cases there is a loss of at least one-fourth by friction, so that the true amount will probably not exceed 3.03. We have now to multiply this by 3,600, or the number of seconds in an hour, and we have 10,908 cubic feet per hour passing out by the chimney, and of course as much fresh air coming in by some other channel. The table given above will show a few examples, the horizontal lines along the top and bottom giving the difference of temperatures outside and inside, and the perpendicular lines at the side the height of the internal column of air in feet. The number at the junction of any two lines gives the amount of air in cubic feet per minute for a sectional area of one square foot, one-fourth being deducted for friction.

"To find the amount per hour we have simply to multiply by 60, and if the sectional area of the opening be less or more than one square foot, we have also to multiply by the area stated as a decimal fraction of a foot. Thus, if we have a chimney, the sectional area of which is 65 square inches, we should put $\frac{65}{144} = 0.45$ of a square foot. If now the height of our column of air from the floor of the room is 35 feet, and difference of temperature 12° Fahr., we take out from the table 330 (under 12° and opposite 35 feet) which we multiply by 60 to get the quantity in an hour, = 19,800 cubic