

"plenum," which is forcing the air into and thro' the room; or by "vacuum," which is drawing the air out of the room.

The two methods are more commonly known as that of *propulsion* and *extraction*. In this country, where both warmth and ventilation are to be combined, it is a most considerable difficulty, although the simple ventilation of a room where warmth is not required is comparatively easy, although this is no easy matter from the peculiar architectural character of some buildings.

Where an open fire-place is used constantly, it is found to be the most easy and desirable means of ventilation, especially if you have other modes of heating as well. The heat being too small for this latitude, we must have the addition of a stove, hot water, steam, or hot air; but supposing the season of the year being such that a fire-place is sufficient, it acts in this wise: The heat is obtained by radiation from the incandescent fire, also by reflection from the different parts of the grate, while ventilation is carried on by the constant current of heated air rushing up the chimney. Even when no fire is made the chimney acts as a very efficient ventilating shaft. When the doors and windows are closed, the air finds its way through every chink and opening, if no special inlet is provided. So that the very plan of stuffing double windows is defeating the very object we wish to obtain. But where this is the case, the opened fire-place is found to establish fair ventilation, by a double current in the chimney, one up or out, and one in or downward. But unless the fire-place is made in the most approved style, the amount of fuel that may be consumed unnecessarily is wilful waste, and the temperature not equable. It is established that the per centage of heat that passes up the chimney is about seven-eighths of the whole amount generated, along with from 6 to 20 thousand cubic feet of air per hour. Thus it is evident that a single chimney will give an efficient ventilating shaft for a room containing from 5 to 6 or more persons. But unfortunately by far the greatest portion of the fuel is wasted. So, as a heating medium for Canada's winter, it would be useless.

You may very easily heat and ventilate at the same time by hot air, water, or steam; but by all these modes you must have inlets for fresh air and outlets for the foul, vitiated atmosphere. All the air passes through or round the heating apparatus, and from thence it is distributed to the rooms in the building, the foul air being