

current of five feet per second will require our "hole," or inlet, to be one-sixth of a square foot, or twenty-four square inches, per individual; and the same to let the air out. If heated it will have to flow more rapidly, and it may more safely be allowed to do so. Whilst I am speaking of heating, let me dispose of a popular fallacy. I think it is generally supposed that in winter people can more safely crowd together, and do with smaller air space than in summer. Unless the air is heated before it is introduced, the reverse of this is true; the air has to "git warm," as our poem has it, and consequently cannot be changed so frequently, unless we are to be chilled by it.

The next point in connection with the ventilation of the school-room, is the *relative position* of the inlets and outlets. Their relative positions will vary much, according to varying circumstances; among which may be mentioned the shape and size of the room, the season of the year, the mode of heating. And let me here say, that the ventilation and heating of any room must always be considered together. We shall not be able in the compass of this general paper to consider minutely all the varying circumstances alluded to. For a fuller description of details of some of the plans to be resorted to, I shall refer you to one or two papers within your reach. Some others we may consider somewhat in detail; and there are certain general principles which, if strictly remembered and carried out, will help us much in the consideration of details in each special case. There are four of these general principles that must never be lost sight of:

1. The air brought in must be distributed throughout the whole of the breathing space.

2. It must be of a suitable temperature when it comes in contact with the inmates, and of a suitable degree of humidity.

3. It must be pure.

4. Hot air is lighter than cold.

It is of great importance to bear in mind these four principles; it will be found that every defect in ventilation is due to a violation of some one of them.

In many of our school-rooms the feet are in Greenland, whilst the head approaches the torrid zone. The light hot air is at the top of a room, the colder strata below. The air may thus be in a stagnant condition, or an attempt may be made to let the heated and supposedly impure air out by ventilators at the top. And now what happens? In rooms heated by stoves, just as soon as the air becomes enjoyably warm it flies out and away, the lower part of the room being always uncomfortably cold. Following out principles which I have expressed above, sanitarians in various places seem to have hit upon a modification of the Ruttan method, which may be expressed thus: Cold, pure air is conducted so as to impinge upon the stove, or heating surface; here it becomes heated and ascends; meanwhile, at the sides of the room and close to the floor are outlets, sometimes funnel-shaped (of which I here show a sample), taking off air from the floor-line by means of pipes passing up through the room and connecting with the stove-pipe, with the chimney, or with the outside air. The air heated by the stove rises to the ceiling; cooling, it gives way to that which, expanding beneath it, rises to take its place; it falls over in a fountain form, gradually settling down, till it is drawn down and out by the outlet shafts. This plan is illustrated and described in a paper by Dr. Cassidy, to be found on pp. 150-1 of the First Annual Report of the Provincial Board of Health, to which any person in this audience can readily refer.* You will

* The reports and documents issued by the Provincial Board of Health are distributed as extensively as the Government grant will allow. Copies are