

This incident will again be referred to in speaking of ventilators.

In regard to the moisture of the air, the following may be said: The drier the air, the more rapidly are the liquids of the body evaporated, and digestion and assimilation carried on, the more nervous is the temperament, and the more rapid the development. Generally speaking, the air is much drier in the United States than in Europe. This is the chief reason why our children are less repressible, livelier and more nervous and precocious than those of Europe. Another reason is, that we use here more animal food, which is far more stimulating both to body and mind than vegetable. On the other hand, too dry an atmosphere is unhealthy. As children drink much water, they exhale much aqueous vapor—the sweat-glands and capillary circulation being more active than in the adult—say to the amount of half a pint each, more or less, during school hours. As such a large amount of invisible vapor arises, it serves a useful purpose by adding to the moisture of our dry air, rather than being injurious. In dwellings it is sometimes customary to place a vessel of water upon the stove to produce vapor, so as to diminish the dryness of the air; but, for the reason given above, it is perhaps unnecessary in a school-room. However, as water absorbs equal volumes of carbonic acid gas, and four hundred and thirty volumes of ammonia, a shallow vessel of water may in this way be of some service.

*The inorganic matters* consist of chalk-dust, earth-dust, ashes, etc. Of late years, owing to the large amount of blackboard work done in schools, particularly in the primary departments, chalk-dust floats in large quantities in the air whenever the erasers are used. The particles of chalk-dust are comparatively large in size. When inhaled, it lodges in the posterior portion of the nasal passages and upper portion

of the larynx; and when settled in large amount in these locations it gives rise to a good deal of irritation. The effect of this irritation is the secretion of a tenacious mucus that provokes distressing cough and unpleasant hawking. It is easy to understand how this exciting cause, long continued, may produce a chronic catarrh of these regions, especially in the posterior nasal passages, as they are prone to congestion and a low grade of chronic inflammation. The same remarks apply, but in a far less degree, to ash and earth-dust. The frequent cough and occasional sneeze heard among the audience in theatre, hall or church, are provoked by the inhalation of fine dust suspended in the air, and might be prevented by careful sweeping and dusting after occupancy. The school-room should be swept every evening and dusted at least an hour before opening. The blackboards should be erased as little as possible, and preferably by the so-called "dustless" erasers—though, strictly speaking, no eraser is really "dustless," being simply "less dusty"—and then gently in an up-and-down direction, so that the dust may not be dispersed through the room. The floor should not be disturbed by sweeping at any time during the day. Having examined briefly the different substances that vitiate or foul the air contained in a school-room, and the sources from which they are derived, the means of effecting their removal therefrom will next be discussed.

The chief factors in carrying on ventilation are (*a*) the difference in temperature between the outside air and that within the room, and (*b*) the diffusibility of gases.

It is the difference in temperature that produces a draught up a flue or chimney when a fire is lighted below; for the products of combustion have a very much higher temperature (several hundred degrees Fahr.) than the surrounding atmosphere. Being so much