

over their drawing boards, and artisans move languidly at their work: subjected as they are day by day to an atmospheric bath of vitiated, polluted air.

The famous authority on hygiene, Dr. Parkes, has well said, that

Statistical enquiries prove beyond a doubt that, of the causes of death which are usually in action, impurity of the air is the most important.

And since self-preservation is the first law of nature, it is manifestly **instinct** which impels the young to "watch the clock," and crave fretfully over their books for a breath of "fresh" air.

There are thousands of offices and factories to-day where the owners are not getting the best out of their employes, because of the unsanitary conditions under which they are working.

Michel Angelo was one day observed to be sketching on the pavement opposite a public statue which he had openly condemned in the School of Athens, as being out of proportion. When asked what he was doing, said, "I criticize, not by finding fault only, but by doing something better." So far we have treated the subject negatively, we now proceed to show—

### The Better Way.

The popular belief that the carbonic acid gas and organic impurities contained in the watery vapours dis-

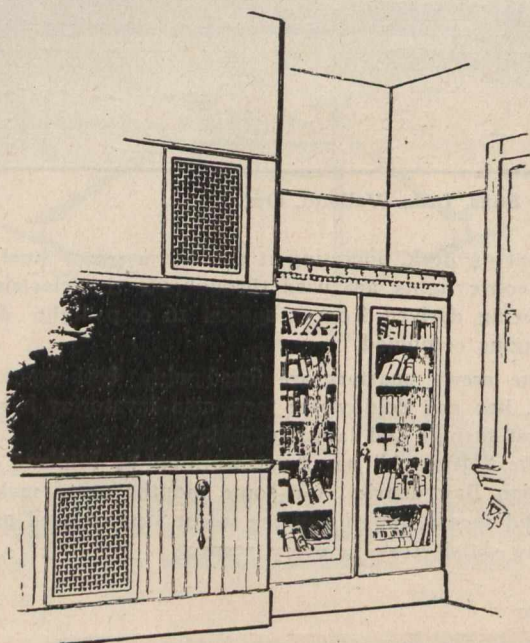


Fig. 2.—"Mechanical" System of Ventilation.

charged from human lungs in an occupied room, descend naturally toward the floor—due to being heavier than air—is refuted by the experience of every smoker who has seen the blue smoke from his pipe curling up towards the ceiling. It is a scientific fact, that air discharged from human lungs is, at the moment of exhalation, equal in weight to pure air at a temperature of 90° Fahr. Until these products of respiration have parted with so much heat as to become heavier than pure air at this temperature, they will ascend, not descend, in a normally pure atmosphere.

In making the foregoing statement of facts, we are sure of our ground, and, hence, affirm that the only rational method of ventilating an occupied room or building is by introducing fresh air in near the floor, and letting the foul air out near the ceiling—as shown in Fig. 4.

This method is not new, for it was propounded more than fifty years ago by Robert Boyle—the co-worker with Professor Michael Faraday—the founder of modern electrical science, and has been perfected into a complete scientific system by his lineal descendants. Yet in spite of the eminence of the inventor; and notwithstanding the convincing logic of the arguments in its favor, backed by the beneficial results which have accrued wherever the Boyle system has been applied, we see the opposite system being installed by architects and engineers on every hand. Truly some superstitions die hard.

Boyle's contribution to the science of ventilation was principally his invention of the unique "air pump" ventilator, shown in Figs. 1, 4 and 5:—

It consists of an arrangement of metal plates at certain angles enclosing a central chamber, from which the air is exhausted through a series of protected openings, by the movement of the external air through annular spaces and deflected across the openings at given angles in a compressed form, creating an induced current and also a partial

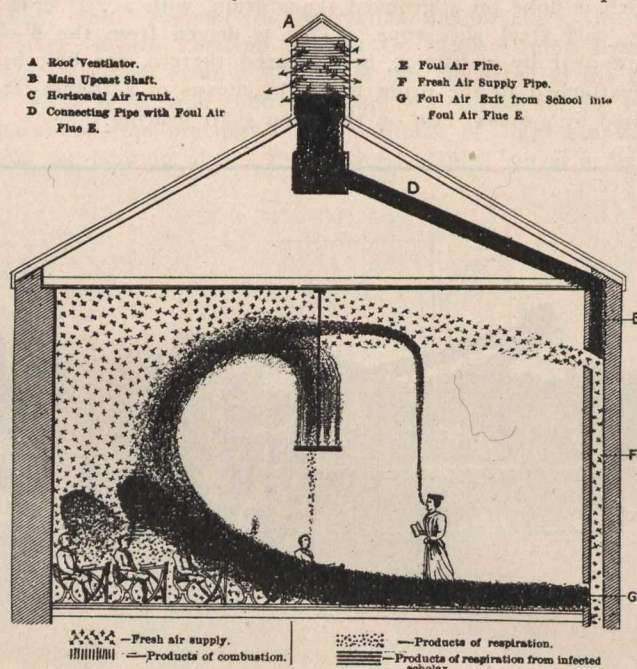


Fig. 3.—Mechanical Ventilation on the Lateral and Downward Principle, by Impulsion, as Applied to a School.

vacuum by exhausting the air from the top of the shaft. The foul air of the room being ventilated immediately ascends the shaft to take the place of the air exhausted, a continuous and powerful upward current being maintained.

It is not a rule-of-thumb device, made to depend upon wind currents, but is constructed on sound scientific principles and operates in strict accordance with nature's laws. The different parts are so nicely adjusted, that the gentlest

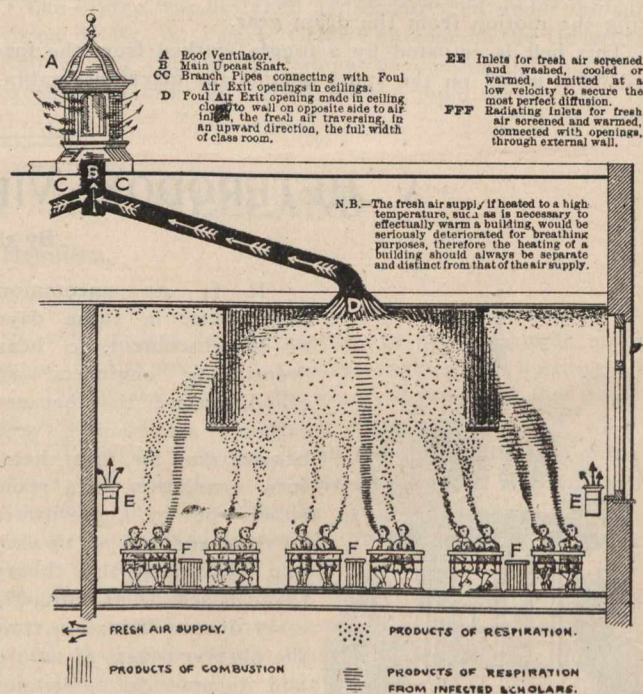


Fig. 4.—Natural System of Ventilation by Extraction and Diffusion, Applied to School-rooms.

movement of the air impinging upon them, acts as a motive power for exhausting the vitiated air. To the objection that such a device must be ineffective in a "still" atmosphere, we cannot do better than quote Dr. Parkes again:—

Incessant movement of the air is a law of nature; we have only to allow the air in our cities and dwellings to take share in this constant change, and ventilation will go on uninterruptedly without our care. In this country (Eng-