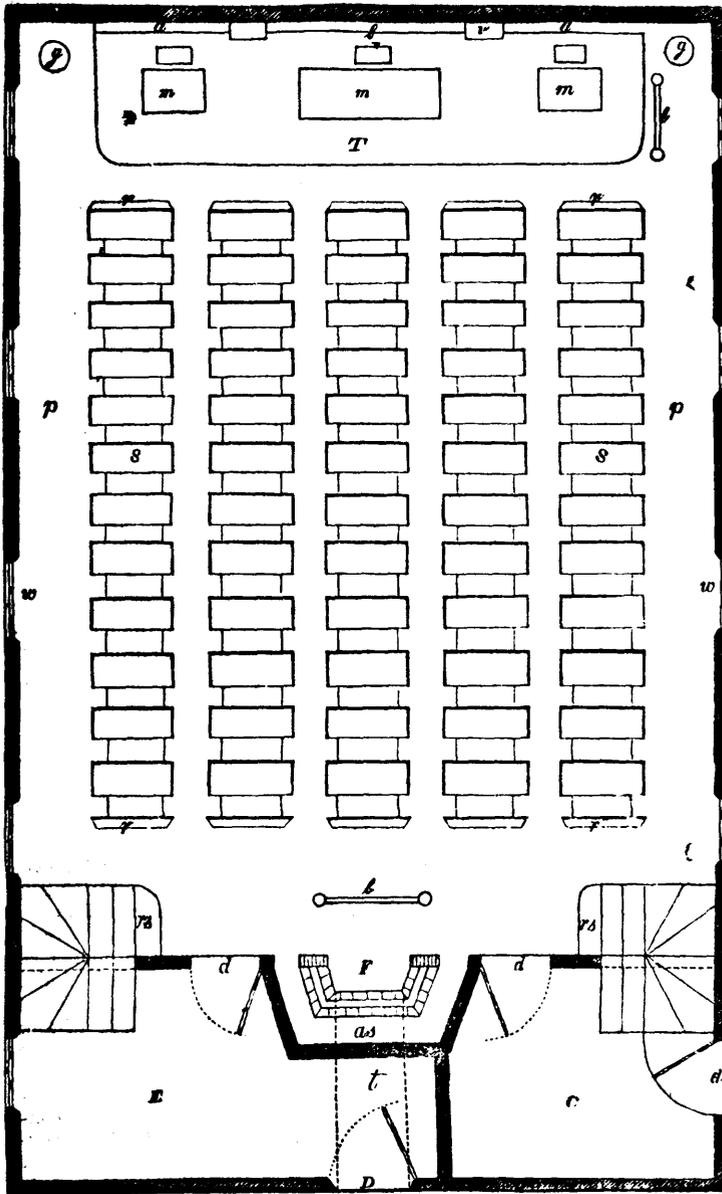


FIG. 1.
SCHOOL FOR ONE HUNDRED AND TWENTY PUPILS.



51 feet by 31 feet outside. [Scale 8 feet to the inch.]

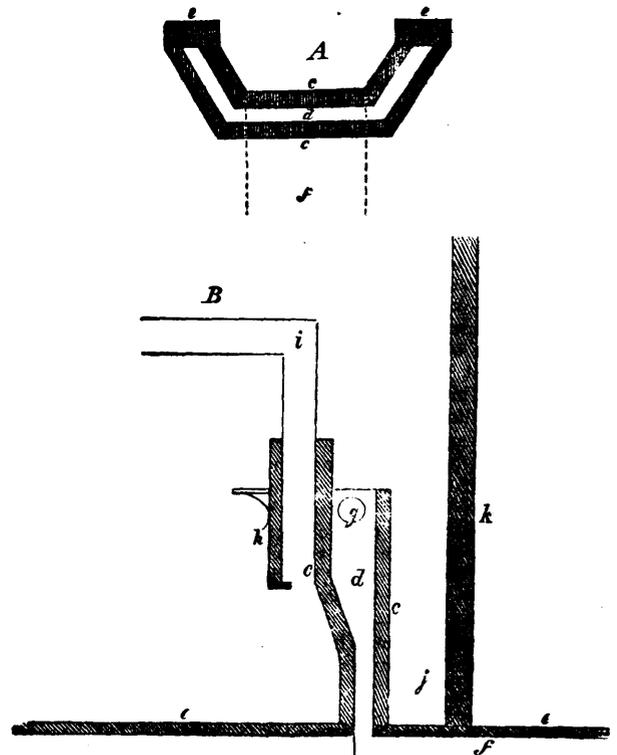
D. Entrance door. E. Entry. F. Fireplace. C. Wood closet. T. Teacher's platform. A. Apparatus shelves. G. Globes. I. Library shelves. M. Master's table and seat. P. Passages. R. Recitation seats. S. Scholars' desks and seats. V. Ventilator. W. Windows. X. Movable blackboard. A. S. Air space behind the fireplace.

easily ventilated. If a current of air is constantly pouring in, a current of the same size will rush out wherever it can find an outlet, and with it will carry the impurities with which the air of an occupied room is always charged. For this an open fireplace may suffice. But when the room is warmed by a common stove, other provisions must be made for its ventilation. In addition to the various modes of ventilation described in previous numbers of this *Journal*, we may remark, that a most effective ventilator for throwing out foul air is one opening into a tube which encloses the smoke-flue at the point where it passes through the roof, as represented by *B* in *Fig. 3*. Warm air naturally rises. If a portion of the smoke flue be enclosed by a tin tube, it will warm the air within this tube, and give it a tendency to rise. If then a wooden tube, opening near the floor, (see *Fig. 3*), be made to communicate, by its upper extremity, with the tin tube, an upward current will take place in it, which will always act whenever the smoke-flue is warm.

For further details and arrangements we refer to the explanations connected with the plates.

As heating by hot air is more generally adopted, we give in *Fig. 4* a transverse section of two stories of a grammar school-house thus heated, and exhibiting the interior arrangements, maps, master's desk, clocks, black-board, seats, hot air and ventilating apparatus, &c. The flues for hot air to the upper floor should be conveyed in the flues and enclosed in the partition.

FIG. 2.
FIREPLACE.



[Scale 4 feet to the inch]

- A. Horizontal section.
- B. Perpendicular section.
- c. Brick walls, 4 inches thick.
- d. Air space between the walls.
- e. Solid fronts of masonry.
- f. Air box for supply of fresh air, extending beneath the floor to the front door.
- g. Openings on the sides of the fireplace for the heated air to pass into the room.
- A. Front of the fireplace and mantelpiece.
- i. Iron smoke flue, 8 inches diameter.
- j. Space between the fireplace and wall.
- k. Partition wall.
- l. Floor.

Figure 5 gives a lateral section of the ventiducals or foul air flues, showing the manner in which the flues are packed together, and carried up separately from the floor of each room until they discharge into the common ejector at the apex of the roof.

A simpler form of heating and ventilation is given in the following figure 6 (p. 58.) The stove is not the ordinary kind, but is a new form of heater. The cold air is brought in under the floor from outside, as indicated by the arrow, and passing round the heated stove, is thrown off at either side through two ducts. The smoke-pipe is carried in the usual way, (high enough to prevent any injurious radiation of heat upon the heads of the pupils below,) to the centre of the opposite end of the room, where, after passing through the ceiling, it enters the ventilating flue, which, commencing at the floor, (see direction of the arrows,) is carried up through the attic, (and out above the roof. The heat of the smoke-pipe produces

a lively current of air in the upper portion of the ventilating flue, sufficient to draw off the lower stratum of air near the floor, and at the same time diffuse equally through the school-room the fresh air which is introduced and warmed by the heater at the opposite end of the room.

The importance of fully providing for the efficient warming and ventilation of school-houses, is thus treated in *Barnard's School Architecture*:

SYMPTOMS OF BAD AIR IN A SCHOOL ROOM.—Every man and woman, who received any portion of their early education in the common school, can testify to the narrow dimensions, and low ceiling of the school-rooms, and to the discomfort arising from the close, stagnant, offensive atmosphere, which they were obliged to breathe. Who does not remember the comparative freshness and vigor of mind and body with which the morning's study and recitations were begun, and the languor and weariness of body, the confusion of mind, the dry skin, the flushed cheek, the aching head, the sickening sensations, the unnatural demand for drink, the thousand excuses to get out of doors, which came along in succession as the day advanced, and especially in a winter's afternoon, when the overheated and unrenewed atmosphere had become obvious to every sense? These were nature's signals of distress, and who can forget the delicious sensations with which her balmy breath, when admitted on the occasional opening of the door, would visit the brow and face, and be felt all along the re-