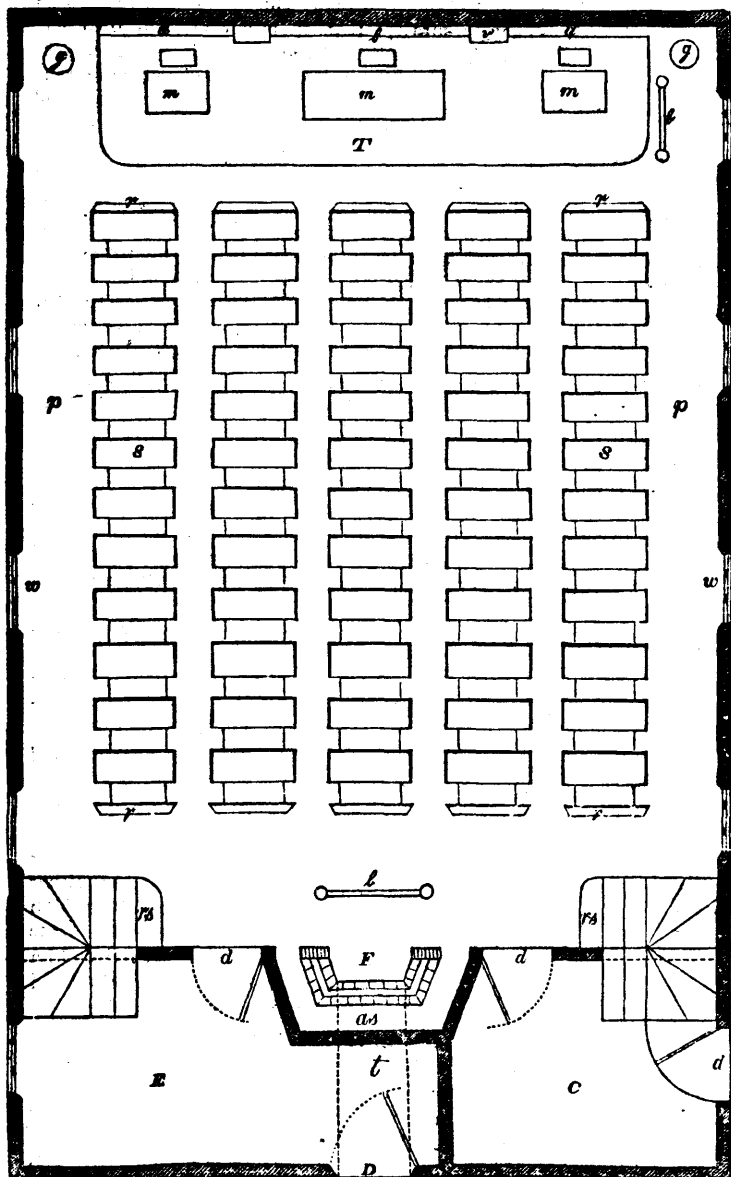


(pointed out in the following Figure 3) let a common brick fireplace be built. Let this be enclosed, on the back and on each side, by a casing of brick, leaving, between the fireplace and the casing, a space of four or five inches, (see Fig. 4, Section A.) which will be heated through the back and jambs. Into this space let air be admitted from beneath by a box 24 inches wide by 6 or 8 deep, leading from the external atmosphere by an opening beneath the front door, or at some other convenient place. (See *l* in Fig. 3.) The brick casing should be continued as high as six or eight inches above the top of the fireplace, where it may open into the room by lateral orifices, to be commanded by iron doors, through which the heated air will enter the room. (See *e e*, Section A Fig. 4.) If these orifices are lower, part of the warm air will find its way into the fireplace. The brick chimney should rise at least two or three feet above the hollow back, and may be surmounted by a flat iron, soap-stone, or brick top, with an opening for a smoke-pipe, which may thence be conducted to any part of the room the same as a common stove-pipe. The smoke-pipe should rise a foot, then pass to one side, and then, over a passage, to the opposite extremity of the room, (when its heat having been exhausted) it should ascend perpendicularly and issue above the roof. (See *i* in Fig. 4, C C in Fig. 5.)

(Fig. 3.)

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. d. Air tube beneath the floor. d. Doors. g. Globes. l. Library shelves. m. Master's table and seat. p. Passages. r. Recitation seats. s. Scholars' desks and seats. r s. Stairs to recitation rooms in the attic. v. Ventilator. w. Windows. b. Movable blackboard. a s. Air space behind the fireplace.

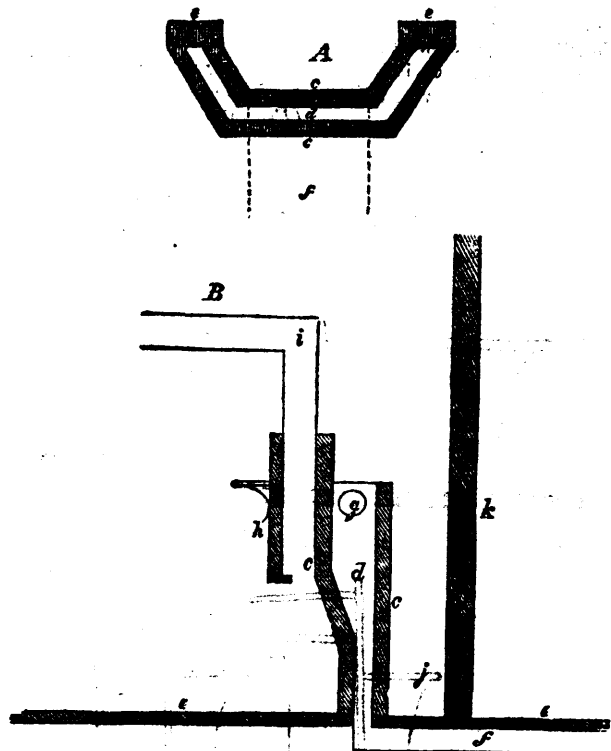
The following are some of the advantages of this double fireplace: — (1.) The fire, being made against brick, imparts to the air of the apartment no deleterious qualities which are produced by the common iron stove, but gives the pleasant heat of an open fire place. (2.) None of the heat of the fuel will be lost, as the smoke-pipe may be extended far enough to communicate nearly all the heat contained in the smoke. (3.) The current of air heated within the hollow-back, and constantly pouring into the room, will diffuse an agreeable heat throughout every part. (4.) The pressure of the air of the room will be constantly outward, little cold will enter by cracks and windows, and the fireplace will have no tendency to smoke.

If instead of this fire-place, the common stove be adopted, it should be placed above the air-passage, which may be commanded by a valve or register in the floor, so as to admit or exclude air. The stove should be placed a little in front of the position assigned to the fireplace in Fig. 3.

8. VENTILATION.—As the best possible ventilator is an open fireplace, a room warmed by such a fireplace as that just described, may be 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. 5. 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. 5.) 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.

(Fig. 4.)

FIREPLACE.



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. h. 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.