

should be inversely as the cubic space, so that, if the latter be diminished, the former ought to be increased in proper proportion. If the cubic space be small, it is almost impossible to keep it pure unless the incoming air be warmed, for cold air will produce such draughts as will be quickly resented; whilst, on the other hand, if the cubic space be inconveniently large, the warming becomes a matter of expense, and the change of air is difficult to accomplish uniformly and continuously. It is unadvisable to change the air of any inhabited space oftener than three times an hour on an average, unless the air be specially warmed, when it may be done oftener; therefore, to give 3,000 cubic feet of air per hour, a space of at least 1,000 cubic feet per head would have to be provided. If, however, this be (as sometimes must be) impossible, then means should be taken to raise the incoming air to a temperature as near as possible to that of the air space. A velocity of unwarmed air amounting to five feet per second is as rapid as is advisable at the point of entry, so that on this basis an air space of 1,000 cubic feet ought to have about one square inch for every 40 cubic feet of space, or 25 square inches of total inlet area, and of course an equal amount of outlet area; this would provide for a movement in both directions of a little over 3,000 cubic feet per hour. If now a greater space be given, a greater velocity at the points of entry, and exit might be borne, but if the space be diminished so must the velocity, and the two extremes may be considered to meet; for if the space be infinitely increased, the ventilation may be infinitely diminished, whilst if the space be reduced to the amount a man requires to stand up, the ventilators would have to be so much increased that the containing surface would be to all intents and purposes done away with; so that in both cases he might be considered to be in the open air. I think a fairly safe rule would be to add on five square inches of total inlet and outlet area for every 100 cubic feet of space less than 1,000—so that we should have the following scale:

Cubic space.	Total sectional area of inlet and outlet.
1,000 cubic feet . . .	50 square inches.
900 . . .	55 . . .
800 . . .	60 . . .
700 . . .	65 . . .
600 . . .	70 . . .
500 . . .	75 . . .
400 . . .	80 . . .
300 . . .	85 . . .
200 . . .	90 . . .
100 . . .	95 . . .