room in which a large number of people are congregated, when the atmosphere will be found to be warmer, almost irrespirable, and suffocating, unmistakably more foul and offensive than the lower stratas.

On this point, Parkes, than whom we have no better authority, observes :—

"During the last few years it has been argued that it is better that the foul air should pass off below the level of the person, so that the products of respiration may be immediately drawn down below the mouth, and be replaced by descending pure air. But the resistance to be overcome in drawing down the hot air of respiration is so great that there is a considerable waste of power, and the obstacle to the discharge is sometimes sufficient, if the extracting force be at all lessened, to reverse the movement, and the fresh air forces its way in through the pipes intended for discharge. This plan, in fact, must be considered a mistake. The true principle is that stated long ago by D'Arcet. In the case of vapours or gases the proper place of discharge is above; but heavy powders, arising in certain arts or trades, and which from their weight rapidly fall, are best drawn out from below.

"Outlet tubes without artificial heat should be placed at the highest point of the room; should be enclosed as far as possible within walls, so as to prevent the air being cooled; should be straight and with perfectly smooth internal surfaces, so that friction may be reduced to a minimum. In shape they may be round or square, and they must be covered above with some apparatus (the cowl, hexagon tube, &c.), which may aid the aspirating power of the wind, and prevent the passage of rain into the shaft. The louvred openings are not the best.

"The causes of down-draught and down-gusts in outlet tubes are these;—the wind forces down the air; rain gets in, and, by evaporation, so cools the air that it becomes heavier than the air in the room; or the air becomes too much cooled by passage through an exposed tube, so that it cannot overcome the weight of the superincumbent atmosphere; or another outlet shaft, with greater discharge, reverses the current.

"Arrangements should be made to distribute the down-draught, if it occurs; flanges placed at some little distance below, so as to throw the air upwards again before it mixes with the air of the room, or simple contrivances of a similar kind, may be used. Valves should be also fixed to lessen the area of the outlet when necessary. If there are several outlet tubes in a room, all should commence at the same distance from the floor, be of the same height (or the discharge will be unequal), and have the same exposure to sun and wind.