the entering air operating too directly and violently on the fire, and afterwards strengthening the draft as it ascends the funnel, will consume the fuel too rapidly.

*Remedy.* As different circumstances frequently mix themselves in these matters, it is difficult to give precise dimensions for the openings of all chimneys. Our fathers made them generally much too large. We have lessened them ; but still they are often of greater dimensions than they should be, the human eye not being easily reconciled to sudden and great changes. If you suspect that your chimney smokes from the too great dimensions of its open­ing, contract it by placing moveable boards, so as to lower and narrow it gradually, till you find the smoke no longer issues into the room. The proportion so found will be that which is proper for that chimney, and you may employ the bricklayer or mason to reduce it accordingly. How­ever, as in building new houses something must be some­times hazarded, Dr. Franklin proposes to make the open­ings in the lower rooms about thirty inches square, and eighteen deep, and those in the upper only eighteen inches square, and not quite so deep ; the intermediate ones di­minishing in proportion as the height of the funnel is di­minished. In the larger openings, billets of two feet long, or half the common length of cordwood, may be burned conveniently ; and for the smaller, such wood may be sawed into thirds. Where coals are the fuel, the grates will be proportioned to the openings. The same depth is nearly necessary to all, the funnels being all made of a size proper to admit a chimney-sweeper. If in large and elegant rooms custom or fancy should require the appearance of a larger chimney, it may be formed of expensive marginal decora­tions, in marble, or in any thing else. But in time, per­haps, that which is fittest in the nature of things may come to be thought handsomest.

3. Another cause of smoky chimneys is *too short a fun­nel.* This necessarily happens in some cases, as where a chimney is required in a low building ; for, if the funnel be raised high above the roof, in order to strengthen its draft, it is then in danger of being blown down, and crush­ing the roof in its fall.

*Remedies.* Contract the opening of the chimney, so as to oblige all the entering air to pass through or very near the fire ; whereby it will be more heated and rarefied, the funnel itself be more warmed, and its contents have more of what may be called the force of levity, so as to rise strongly and maintain a good draft at the opening.

Or you may in some cases, to advantage, raise additional storeys over the low building, which will support a high funnel. If the low building be used as a kitchen, and a contrac­tion of the opening therefore inconvenient, a large one being necessary, at least when there are great dinners, for the free management of so many cooking utensils ; in such cases the best expedient perhaps would be to build two more funnels joining to the first, and having three moder­ate openings, one to each funnel, instead of one large one. When there is occasion to use but one, the other two may be kept shut by sliding plates, hereafter to be described ; and two or all of them may be used together when wanted. This will indeed be an expense, but not an useless one, since your cooks will work with more comfort, see better than in a smoky kitchen what they are about, your victuals will be cleaner dressed, and not taste of smoke, as is often the case ; and to render the effect more certain, a stack of three funnels may be safely built higher above the roof than a single funnel.

The case of too short a funnel is more general than would be imagined, and often found where one would not expect. For it is not uncommon, in ill-contrived build­ings, instead of having a funnel for each room or fire-place, to bend and turn the funnel of an upper room, so as to make it enter the side of another funnel that comes from below. By these means the upper room funnel is made short of course, since its length can only be reckoned from the place where it enters the lower room funnel ; and that funnel is also shortened by all the distance between the entrance of the second funnel and the top of the stack ; for all that part being readily supplied with air through the second funnel, adds no strength to the draft, especially as that air is cold when there is no fire in the second chim­ney. The only easy remedy here is, to keep the opening of that funnel shut in which there is no fire.

4. Another very common cause of the smoking of chim­neys is, *their overpowering one another.* For instance, if there be two chimneys in one large room, and you make fires in both of them, with doors and windows close shut, you will find that the greater and stronger fire shall overpower the weaker, from the funnel of which it will draw down air to supply its own demand ; which air descending in the weaker funnel, will drive down its smoke, and force it into the room. If, instead of being in one room, the two chim­neys are in two different rooms, communicating by a door, the case is the same whenever that door is open. In a very tight house, a kitchen chimney on the lowest floor, when it had a great fire in it, has been known to overpower any other chimney in the house, and draw air and smoke into its room as often ns the door communicating with the staircase was opened.

*Remedy.* Take care that every room have the means of supplying itself from without with the air which its chim­ney may require, so that no one of them may be obliged to borrow from another, nor under the necessity of lending. A variety of these means has been already described.

5. Another cause of smoking is, *when the tops of chim­neys are commanded by higher buildings, or by a hill.* so that the wind blowing over such eminences falls like water over a dam, sometimes almost perpendicularly on the tops of the chimneys that lie in its way, and beats down the smoke contained in them.

*Remedy.* That commonly applied in this case is a turn-cap made of tin or plate iron, covering the chimney above and on three sides, open on one side, turning on a spindle; and which, being guided or governed by a vane, always presents its back to the current. This may be generally effectual, though not certain, as there may be cases in which it will not succeed. Raising your funnels, if prac­ticable, so as their tops may be higher, or at least equal, with the commanding eminence, is more to be depended on. But the turning-cap, being easier and cheaper, should first be tied. “ If obliged to build in such a situation, I would choose,” says Dr. Franklin, “ to place my doors on the side next the hill, and the backs of my chimneys on the farthest side ; for then the column of air falling over the eminence, and of course pressing on that below, and forcing it to enter the doors on that side, would tend to balance the pressure down the chimneys, and leave the funnels more free in the exercise of their fonctions.”

6. There is another case which is the reverse of that last mentioned. It is where the commanding eminence is farther from the wind than the chimney commanded.

*Remedy.* There is but one remedy, which is to raise such a funnel higher than the roof, supporting it if necessary by iron bars. For a turncap in this case has no effect, the dammed-up air pressing down through it in whatever posi­tion the wind may have placed its opening.

Dr. Franklin mentions a city in which many houses are rendered smoky by this operation. For their kitchens being built behind, and connected by a passage with the houses, and the tops of the kitchen chimneys lower than the tops of the houses, the whole side of a street when the wind blows against its back, forms such a dam as above described ; and the wind so obstructed forces down those kitchen chimneys, especially when they have but weak fires in them, to pass