**a** chimney is required in a low building ; for, it 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 oſ 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, build addi­tional ſtories 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 caſe 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 expence, 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 it. 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 oſ 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 oſ 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, the 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 air down 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 as 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 have 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 heats down the ſmoke contained in them.

To illuſtrate this, let A (fig. 3.) repreſent a ſmall building at the ſide of a great rock B, and the wind coming in the direction CD ; when the current of air comes to the point D, being hurried forward with great velocity, it gtes a little forward, but ſoon deſcends downward, and gradually is reflected more and more in­ward, as repreſented by the dotted lines EE, &c. ſo that, descending downwards upon the top oſ the chim­ney A, the ſmoke is beat back again into the apart­ments.

It is evident that houſes ſituated near high hills or thick woods will be in ſome meaſure expoſed to the same inconvenience; but it is likewiſe plain, that if a houſe be ſituated upon the slope of a lull (as at F, fig. 3.), it will not be in any danger oſ ſmoke when the wind blows towards that ſide of the hill upon which it is ſituated; for the current of air coming over the houſe-top in the direction GH, is immediately changed by the ſlope of the hill to the direction HC, which powerfully draws the ſmoke upward from the top of the chimney. But it is alſo evident, that a houſe in this ſituation will be liable to ſmoke when the wind blows from the hill ; for the current of air coming downward in the direction CH, will beat downward on the chimney F, and prevent the ſmoke from aſcending with freedom. The effect will be much height­ened if the doors and windows are chiefly in the lower- moſt ſide of the houſe.

*Remedy.* That commonly applied to this caſe is a turncap 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 tried. “ 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 or *was-ift-dases,* on that ſide, would tend to balance the preſſure down the chimneys, and leave the funnels more free in the exerciſe of their func­tions.”

6. There is another caſe which is the reverſe of that laſt mentioned. It is where the commanding eminence