through the passage and house into the street. Kitchen-chimneys so formed and situated have another inconve­nience. In summer, if you open your upper-room win­dows for air, a light breeze blowing over your kitchen chim­ney towards the house, though not strong enough to force down its smoke as aforesaid, is sufficient to waft it into your windows, and fill the rooms with it, which, besides the dis­agreeableness, damages your furniture.

7. Chimneys, otherwise drawing well, are sometimes made to smoke by *the improper and inconvenient situation of a door.* When the door and chimney are on the same side of the room, if the door being in the corner is made to open against the wall, which is common, as being there, when open, more out of the way, it follows, that when the door is only opened in part, a current of air rushing in passes along the wall into and across the opening of the chimney, and flirts some of the smoke out into the room. This happens more cer­tainly when the door is shutting, for then the force of the current is augmented, and becomes very inconvenient to those who, warming themselves by the fire, happen to sit in its way.

The *remedies* are obvious and easy. Either put an in­tervening screen, from the wall round great part of the fireplace; or, which is perhaps preferable, shift the hinges of your door, so that it may open the other way, and when open, throw the air along the other wall.

8. A room that has no fire in its chimney is sometimes filled with *smoke which is received at the top of its funnel and descends into the room.* Funnels without fires have an effect according to their degree of coldness or warmth on the air that happens to be contained in them. The sur­rounding atmosphere is frequently changing its temperature; but stacks of funnels covered from winds and sun by the house that contains them, retain a more equal temperature. If, after a warm season, the outward air suddenly grows cold, the empty warm funnels begin to draw strongly upwards ; that is they rarefy the air contained in them, which of course rises, cooler air enters below to supply its place, is rarefied in its turn, and rises ; and this operation continues till the funnel grows c∞ler, or the outward air warmer, or both, when the motion ceases. On the other hand, if after a cold season the outward air suddenly grows warm, and of course lighter, the air contained in the cool funnels, being heavier, descends into the room ; and the warmer air which enters their tops being cooled in its turn, and made heavier, con­tinues to descend ; and this operation goes on till the fun­nels are warmed by the passing of warm air through thcm, or the air itself grows cooler. When the temperature of the air and of the funnels is nearly equal, the difference of warmth in the air between day and night is sufficient to produce these currents. The air will begin to ascend the funnels as the cool of the evening comes on, and this current will continue till perhaps nine or ten o’clock next morn­ing, when it begins to hesitate ; and as the heat of the day approaches, it sets downwards, and continues so till towards evening, when it again hesitates for some time, and then goes upwards constantly during the night, as before men­tioned. Now when smoke issuing from the tops of neigh­bouring funnels passes over the tops of funnels which are at the time drawing downwards, as they often are in the middle part of the day, such smoke is of necessity drawn into these funnels, and descends with the air into the cham­ber.

The remedy is to have a sliding plate that will perfectly shut the offending funnel. Dr. Franklin has thus describ­ed it. “ The opening of the chimney is contracted by brick­work faced with marble slabs to about two feet between the jams, and the breast brought down to within about three feet of the hearth. An iron frame is placed just under the breast, and extending quite to the back of the chimney, so that a plate of the same metal may slide horizontally backwards

and forwards in the grooves on each side of the frame. This plate is just so large as to fill the whole space, and shut the chimney entirely when thrust quite in, which is convenient when there is no fire. Draw it out, so as to leave between its further edge and the back a space of about two inches; this space is sufficient for the smoke to pass; and so large a part of the funnel being stopped by the rest of the plate, the passage of warm air out of the room, up the chim­ney, is obstructed and retarded; and by those means much cold air is prevented from coming in through crevices, to supply its place. This effect is made manifest three ways. 1. When the fire burns briskly in cold weather, the howl­ing or whistling noise made by the wind, as it enters the room through the crevices, when the chimney is open as usual, ceases as soon as the plate is slid in to its proper dis­tance. 2. Opening the door of the room about half an inch, and holding your hand against the opening, near the top of the door, you feel the cold air coming in against your hand, but weakly, if the plate be in. Let another person suddenly draw it out, so as to let the air of the room go up the chimney, with its usual freedom where chimneys are open, and you immediately feel the cold air rushing in strong­ly. 3. If something be set against the door, just sufficient, when the plate is in, to keep the door nearly shut, by re­sisting the pressure of the air that would force it open ; then, when the plate is drawn out, the door will be forced open by the increased pressure of the outward cold air endea­vouring to get in to supply the place of the warm air that now passes out of the room to go up the chimney. In our common open chimneys, half the fuel is wasted, and its effect lost ; the air it has warmed being immediately drawn off.”

9. Chimneys which generally draw well, do nevertheless sometimes give smoke into the rooms, *it being driven down by strong winds passing over the tops of their funnels,* though not descending from any commanding eminence. This case is most frequent where the funnel is short, and the opening turned from the wind. It is the more grievous, when it happens to be a cold wind that produces the effect, because when you most want your fire you are sometimes obliged to extinguish it. To understand this, it may be considered that the rising light air, to obtain a free issue from the fun­nel, must push out of its way or oblige the air that is over it to rise. In a time of calm or of little wind this is done visibly ; for we see the smoke that is brought up by that air rise in a column above the chimney. But when a vio­lent current of air. that is, a strong wind, passes over the top of a chimney, its particles have received so much force which keeps them in a horizontal direction, and follow each other so rapidly, that the rising light air has not strength sufficient to oblige them to quit that direction and move upwards to permit its issue.

*Remedies.* In Venice, the custom is to open or widen the top of the flue, rounding it in the true form of a funnel. In other places the contrary is practised ; the tops of the flues being narrowed inwards, so as to form a slit for the issue of the smoke, as long as the breadth of the funnel, and only four inches wide. This seems to have been contrived on a supposition that the entry of the wind would thereby be obstructed ; and perhaps it might have been imagined, that the whole force of the rising warm air being condens­ed, as it were, in the narrow opening, would thereby be strengthened, so as to overcome the resistance of wind. This, however, did not always succeed; for when the wind was at north-east and blew fresh, the smoke was forced down by fits into the room where Dr. Franklin commonly sat, so as to oblige him to shift the fire into another. The position of the slit of this funnel was indeed north-east and south­west. Perhaps if it had lain across the wind, the effect might have been different. But on this we can give no cer­tainty. It seems a matter proper to be referred to expert-