In all rooms where there is a fire, the body of air warmed and rarefied before the chimney is continually changing place, and making room for other air that is to be warmed in its turn. Part of it enters and goes up the chimney, and the reſt riſes and takes place near the ceiling. If the room be lofty, that warm air re­mains above our heads as long as it continues warm, and we are little benefited by it, becauſe it does not deſcend till it is cooler. Few can imagine the difference of climate between the upper and lower parts of ſuch a room, who have not tried it by the thermometer, or by going up a ladder till their heads are near the ceiling. It is then among this warm air that the wanted quantity of outward air is beſt admitted, with which being mixed, its coldneſs is abated, and its inconvenience di­miniſhed ſo as to become ſcarce obſervable. This may be eaſily done by drawing down about an inch the upper ſaſh of a window ; or, if not moveable, by cutting ſuch a crevice through its frame ; in both which cales it will be well to place a thin ſhelf of the length to conceal the opening, and ſloping upwards, to direct the entering air horizontally along and under the ceiling. In ſome houſes the air may be admitted by ſuch a crevice made in the wainſcot, cornice, or plaſtering, near the ceiling and over the opening of the chimney. This, if practi­cable, is to be choſen, becauſe the entering cold air will there meet with the warmeſt rising air from before the fire, and be ſooneſt tempered by the mixture. The ſame kind of ſhelf ſhould alſo be placed here. Another way, and not a very difficult one, is to take out an up­per pane of glaſs in one of your ſaſhes, ſet it in a tin frame, giving it two ſpringing angular ſides, and then replacing it, with hinges below on which it may be turned to open more or leſs above. It will then have the appearance of an internal ſky-light. By drawing this pane in, more or leſs, you may admit what air you find neceſſary. Its poſition will naturally throw that air up and along the ceiling. This is what is called in France a *Was ist das ?* As this is a German queſtion, the invention is probably of that nation, and takes its name from the frequent aſking of that queſtion when it firſt appeared. In England ſome have of late years cut a round hole about five inches diameter in a pane of the ſaſh and placed againſt it a circular plate of tin hung on an axis, and cut into vanes; which, being ſeparately bent a little obliquely, are acted upon by the en­tering air, ſo as to force the plate continually round like the vanes of a windmill. This admits the outward air, and by the continual whirling of the vanes, does in ſome degree diſperſe it. The noiſe only is a little inconvenient.

2. A ſecond cauſe of the ſmoking of chimneys is, *their openings in the room being too large ;* that is, too wide, too high, or both. Architects in general have no other ideas of proportion in the opening of a chimney than what relate to ſymmetry and beauty reſpecting the dimenſions of the room ; while its true proportion reſpecting its function and utility depends on quite other principles ; and they might as properly propor­tion the ſtep in a ſtaircaſe to the height of the ſtory, inſtead of the natural elevation of mens legs in mount­ing. The proportion then to be regarded, is what re­lates to the height of the funnel. For as the tunnels in the different ſtories of a houſe are neceſſarily of dif­ferent heights or lengths, that from the loweſt floor be­

ing the higheſt or longeſt, and thoſe of the other floors ſhorter and ſhorter, till we we come to thoſe in the garrets, which are of courſe the ſhorteſt ; and the force of draft being, as already ſaid, in proportion to the height of funnel filled with rarefied air, and a current of air from the room into the chimney, sufficient to fill the opening, being necessary to oppose and prevent the smoke from coming out into the room ; it follows, that the openings of the longeſt funnels may be larger, and that thoſe of the ſhorter funnels ſhould be ſmaller. For if there be a large opening to a chimney that does not drawſtrongly, the funnel may happen to be furniſhed with the air which it demands by a partial current entering on one fide of the opening, and leaving the other side free of any oppoſing current, may permit the ſmoke to iſſue there into the room. Much too of the force of draft in a funnel depends on the degree of rarefaction in the air it contains, and that depends on the nearneſis to the fire of its paſſage in entering the funnel. If it can enter far ſrom the fire on each side, or far above the fire, in a wide or high opening, it receives little heat in paſſing by the fire, and the contents of the funnel are by those means leſs different in levity from the ſurrounding atmosphere, and its force in drawing conſequently weak­er. Hence if too large an opening be given to chim­neys in upper rooms, thoſe rooms will be ſmoky : On the other hand, if too ſmall openings be given to chim­neys in the lower rooms, the entering air operating too directly and violently on the fire, and afterwards ſtrengthening the draft as it aſcenda the funnel, will conſume the fuel too rapidly.

*Remedy. A*s 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 they are often ſtill 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 ſrom the too great dimenſion 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 30 inches ſquare and 18 deep, and thoſe in the upper only 18 inches ſquare and not quite ſo deep ; the intermediate ones diminiſhing in pro· portion 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 burnt 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, &c. 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 happens neceſſarily in ſome caſes, as where