ed by a stove, and by a grate ; for in the latter instance, not only have we the exhilarating influence excited by the blaze of the fuel, but there is a more rapid renewal of air through the apartment, and accordingly the atmosphere has not the close unpleasant feeling which it has when warmed by a stove.

The warming by stoves must therefore be conducted on principles different from those adopted in the employment of open fire-places. The general principle is, 1st, to em­ploy the fuel in the most effectual manner for heating the external part of the stove, which is immediately efficient in warming the contiguous air, chiefly by contact ; and, 2d, to keep within the room the air thus warmed, at least as much as is consistent with wholesomeness and cleanliness. It would occupy a volume to describe the immense va­riety of stoves which ingenuity has constructed. We shall content ourselves with giving a specimen of the two chief classes into which they may be distinguished.

The air of a room may be equally warmed by applying it either to the surface of a small stove made very hot, or to the surface of a much larger stove more moderately heat­ed. The first kind is chiefly used in Holland, Flanders, and the milder climates of Germany and Poland. The last are used in the frozen climates of Russia and Sweden. The first are generally made of cast-iron, the last partly of iron and partly of brick-work.

Fig. 1 represents a small German stove, fully sufficient for warming a room of 24 feet by 18. The base is about three feet broad and fourteen inches deep, that is, from back to front, and six or seven feet high. The decora­tion is in the fashion of that country ; but the operative structure of it will admit of any style of ornament. A is the fire-place, and the wood or charred coal is laid on the bottom, which has no bars. Bars would admit the air too freely among the fuel, and would both consume it too fast and raise too great a heat That no heat may be uselessly expended, the sole of the fire-place and the whole bottom of the stove is raised an inch or two above the floor of the room, and the air is therefore warmed by it in succession, and rises upwards. For the same reason, the back of the stove is not in contact with the wall of the room, or of the niche in which it is placed. The fire­place is shut up by a door which fits closely to its case, and has a small wicket at the bottom, whose aperture is re­gulated by a sliding plate, so as to admit no more air than what suffices for slowly consuming the fuel. The flame and heated air rise to the top of the fire-place, three or four inches above the arch or mantle-piece, and get out laterally by two narrow passages B, B, immediately below the top-plate of the base. The current bends downward on each side, passes at C, C, under the partition-plates which divide the two side-chambers, and then rises upwards through the outer division of each, and passes through narrow slits D, D, in the top-plate, and from thence along the two hollow piers, E, E. The two lateral currents unite at the top of the arch, and go through the single passage F into the larger hollow behind the escutcheon G. From this place it either goes straight upwards into the vent in the wall by a pipe on the top of the stove, or it goes into the wall be­hind by a pipe inserted in the back of the stove. The pro­priety of this construction is very obvious. The current of hot air is applied to the exterior of the stove everywhere except in the two side-chambers of the base, where the par­tition-plates form one side of the canal. Even this might De avoided by making each of these side-chambers a de­tached hollow pillar. But this would greatly increase the trouble of construction and joining together, and is by no means necessary. The arch H has a graceful appearance, and affords a very warm situation for any thing that requires it, such as a drink in a sick person’s bed-chamber, &c. Per­sons of a certain class use this place for keeping a dish warm ; nay, the lower part of the arch is frequently occupied by an enclosed chamber, where the heat rises high enough even for dressing victuals, as will be easily imagined when we re­flect that the sole of it is the roof of the fire-place.

The stove now described is supplied with fuel and with air by the front door opening into the room. That there may be space for fuel, this middle part projects a few inches before the two side-chambers. These last, with the whole upper part of tire stove, are not more than ten inches deep. The passages therefore from the fire-place are towards the back of it ; so that if we have a mind to see the fire, which is always cheerful, the door may be thrown open, and there is no danger of the smoke coming out after the current has once warmed the upper part of the stove. When the stove is of such dimensions that the base is about two feet and a half or three feet high, the fire-place may be furnished with a small grate in the British style. If the door is so hung that it can not only be thrown back, but lifted off its hinges, we have a stove-grate of the completest kind, fully ade­quate, in our mild climate, to warm a handsome apart­ment, even with an open fire ; and when we hang on the door, and shut up the fire-place, a stove of the dimen­sions already given is almost too much for a large drawing­room.

A very simple form of stove is that represented in the an­nexed cut. It consists of a square box of iron, A B C D, resting on feet, and having a pro­jecting hearth plate at E. FF is an inner box projecting into the outer one. G is the chimney. The fuel is burned at A ; and the flame passes to the chimney around the inner box, which may be used as an oven for cooking. At H there is a large door for the introduction of the fuel, in which there is also a smaller door. Both of these are generally kept shut when the furnace is in use; but when a greater heat is required, the smaller door is opened.

The effect of stoves as now described may be greatly in­creased, as is frequently done, by having the mouth com­municating with or joined to an opening of the same di­mensions, formed in the wall ; and the door is in this case on the other side of the wall, in an antechamber or lobby. In some places the apartments are disposed round a spaci­ous lobby, in which the doors of all the stoves are situated, and through which the fuel and air necessary for the com­bustion are supplied. But this method, though it warms the apartment, is very unfavourable to health and cheerful­ness ; for the same air confined and repeatedly breathed, and adulterated with the volatile emanations of the room, loses the refreshing quality which is so desirable, and even so necessary for health.

Something of this kind, it has been already mentioned, is unavoidable in all rooms warmed by stoves; and the hot­ter the surface of the stove, the more and more unpleasant does the air in it become ; because, in addition to the slight renewal of air consequent on their use, when the surface be­comes very hot, the impurities constantly floating in the atmosphere are decomposed, and emit offensive effluvia. The stove already described is almost always made of metal, and this objection applies particularly to it ; hence the necessity of being attentive when cleaning it outside, to avoid the contact of greasy or oleaginous matter, which is so easily decomposed by heat, and gives off offensive and deleterious vapours.