The objections stated to the stoves as now described, have given rise to the use of those constructed of brick-work, or other materials of a similar nature. These are much used in Flanders, Holland, and Germany, where they are made of the most elegant forms, and finely decorated ; but it is evident that they cannot be so effectual, nor equally warm a room with the same expense of fuel ; earthen ware being inferior to metal in its conducting power. In addi­tion to this, they are liable to a very great objection, the difficulty of preventing their cracking when heated ; for different parts of the stove being of different heats, they ex­pand unequally ; and no cement can be expected to with­stand this, especially when we recollect, that the heat which causes the baked earthen ware to expand, causes a contrac­tion of the clay or cement with which the parts of the stove are joined together. Accordingly stoves of this kind do not stand long without cracking, even when strengthened by iron hoops and cramps judiciously disposed within them; nor does hooping them externally prevent it. When a crack is thus occasioned, it is not only unsightly, but may­be dangerous, from its allowing the vitiated air to escape into the apartment.

For these and other reasons, we can scarcely hope to make stoves of brick-work or pottery which shall bear the necessary heat without cracking ; and their use must there­fore be confined to cases where very moderate heat is suf­ficient. We need not describe their construction. It is evident that it should be more simple than that of iron stoves ; and we imagine, that in the very few cases in which they are likely to be employed in this country, a single fire-place, and an arch over it, divided by a partition or two of thin tile to lengthen the flue, will be quite enough. If the stove is made in whole or in part of potter’s ware, a base for the fire-place, with an urn, column, obelisk, or pyramid above it, for increasing the surface, will also be sufficient. The failure commonly happens at the joinings, where the different pieces of a different heat, and perhaps of a different baking, are apt to expand unequally, and by their working on each other, one of them must give way. Instead of making the joints close and using any cement, the upper piece should therefore stand in a groove formed in the undermost, having a little powdered chalk or clay sprinkled over it, which will effectually prevent the passage of any air; and room being thus given for the unequal ex­pansion, the joint remains entire. This may be considered as a general direction for all furnace-work, where it is in vain to attempt to hinder the mutual working of the parts. When fitted up with these precautions, the brick or pot­tery stoves are incomparably more sweet and pleasant than the iron ones.

But in the intense colds of Russia and Sweden, or even for very large rooms in this kingdom, stoves of these small dimensions are not sufficiently powerful ; and we must fol­low the practice of those countries where they are made of great size, and very moderately heated. It is needless to describe their external form, which may be varied at pleasure. We shall only enlarge a little on the peculia­rities connected with the general principle of their con­struction.

The stove is intended as a sort of magazine, in which a great quantity of heat may be quickly accumulated, to be af­terwards slowly communicated to the apartment. The stove is therefore built extremely massive, and is found to be more powerful when coated with clay as wet as can be made to hang -together. We imagine the reason of this to be, that very wet clay, and more particularly stucco, must become exceedingly porous when dry, and therefore a very slow conductor of heat. Instead of sticking on the glazed tiles with no more clay or stucco than is sufficient to attach them, each tile has at its back a sort of box, baked in one piece, about two or three inches deep. It is represented in fig. 3. This is filled with

mortar, and then stuck on the brick-work of the stove, which has a great number of iron pins or hooks driven into the joints, which may sink into this clay and keep it firmly attached when dry. This coating, with the massive brick-work, forms a great mass of matter to be heated by the fuel. The lowest chamber, which is the fire-place, is somewhat wider, and considerably thicker than the stories above, which are merely flues. When the fire-place is finished, and about to be arched over, a flat iron bar of small thickness is laid along the top of the side-wall on both sides, a set of finishing bricks being moulded on pur­pose, with a notch to receive the iron bar. Cross bars are laid over these, one at each end and one or two between, having a bit turned down at the ends, which takes hold of the longitudinal bars, and keeps them from being thrust outwards either by the pressure of the arch or by the swelling in consequence of the heat. In fig. 4, A is the cross section of one of the long bars, and BC is part of one of the cross bars, and CD is the clench which confines the bar A. This precaution is chiefly ne­cessary, because the contraction of the stove upwards obliges the walls of the other stories to bear a little on the arch of the fire-place. The building above is kept together in like manner by other courses of iron bars at every second return of the flue. The top of the stove is finished by a pretty thick covering of brick-work. The last passage for the air has a ring lining its upper extremity, and projecting an inch or two above it. The flat round it is covered with sand. When we would stop this passage, a cover shaped like a basin or cover for dishes at table is whelmed over it. The rim of this, resting on the sand, effectually prevents all air from coming through and getting up the vent. Access is had to this damper by a door which can be shut tight enough to prevent the heated air of the room from wasting itself up the vent. When the room is too warm, it may be very rapidly cooled by opening this door. The warm air rushes up with great rapidity, and is replaced by cool air from without.

In a stove of this kind the fire is kindled early in the morning, after which the stove-door is shut, and the air-aperture below left open for some time to blow it up ; but in the course of a short time, to prevent the too rapid con­sumption of the fuel, the fire-door is opened, by which the draught is checked. In this way the combustion is allowed to go on, and the materials of the stove become warmed, after which the air-passages are shut, so as to prevent any abstrac­tion of heat by the current that would otherwise be occa­sioned. The stove thus becomes a great mass of heated matter, which is gradually pouring warmth into the apart­ment during the whole of the day ; and as the temperature of the surface never becomes very high, the impurities in the atmosphere are not decomposed, and consequently it is free from those offensive effluvia unavoidable when metal stoves are used. One precaution, however, is necessary in the management of these stoves, which does not apply to the metal ones ; we must take care that when the air-apertures are closed, there is no back-draught to carry the products of combustion into the apartment, which might be attended with fatal consequences. These being almost free from smoke, give little or no warning of their pre­sence, and when inhaled for some time, produce giddiness and lassitude, and in some cases a dangerous state of in­sensibility. Hence the necessity of allowing the fire to be burned down, or nearly so, before closing the air-aper-