ART. XIX.—A METHOD FOR PREVENTING THE LIQUID CONDENSATION OF SMOKE IN METALLIC FLUES. BY WILLIAM SHEPPARD, OF WOODFIELD.

READ, 21ST FEBRUARY, 1835.

As it comes within the scope of the Literary and Historical Society's views to promote improvements in the useful Arts, I submit for its consideration a successful application of a principle in physical science to the removal of an annoyance to which, in the winter season—some of our Canadian dwellings are subject. I allude to dripping from the pipes or flues of our ordinary close stoves, with which our housekeepers are sometimes plagued.

Such as have had the misfortune to contend with this unpleasant source of annoyance can duly appreciate all its attendant evils—floors are stained, furniture spoiled, and the house filled with a disagreeable, unwholesome and destructive exhalation; creating domestic murmurs, and wishes for a remedy.

Our ordinary fuel for close stoves—wood of different kinds—is seldom free from moisture, being filled with the sap of the tree, and with water in a greater or less degree. In using fuel of this description, the greater part of the moisture is converted into steam, carrying with it in ascending the flue, the pyroligneous acid contained in the wood. On reaching a colder medium, the steam—imbued with carbon—is condensed into a liquid, and shews itself to our horror oozing through the joints of the flue, in the shape of a disgusting black liquor.

The usual palliative in such a case is to suspend beneath the pipe a tinplate gutter, to receive and convey the dropping liquid to a receptacle at one end of the room. But this resource often fails to be attended with the desired end, for this liquid being very penetrating and corrosive, will find for itself a passage through the joints of the gutter, and so drop to the floor; the reservoir will also overflow, if not regularly attended to.

The announcement of an effectual preventative for such a source of discomfort, it is supposed will be acceptable to those who have felt the inconvenience.

The prevention of this evil I think I have accomplished by the application of a well known principle in Science. Perhaps I may have been preceded by others in the use of the principle in this particular case; but, if so, it has not come to my knowledge.

The obvious remedy is to keep the surface of the pipe from contact with air cold enough to cause the condensation of the contained steam and rarified acid. The discovery, if so it may be called, consists in surrounding the stove-pipe with another tube of metal, of a diameter just large enough to allow it to pass freely over the former, and which should be so fixed as that a clear space may exist between the two: the swaged mouldings now usually made at the joinings of smoke flues, to regulate the length of the overlap, being quite sufficient to keep the outside tube from coming in contact with the flue; except at one point merely of the moulding, which is of no consequence. The outside tube may be made of the thinnest material, or of light tinplates; and may be made ornamental if so required. In most cases it will be found sufficient to apply an outer pipe to the space between the last angle of the flue and the chimney, where the smoke having parted with its heat in its passage through the pipe to the air of the apartment, will be more liable to become condensed into liquid.

I have been led to this result by an unfortunate dripping pipe of my own. A stove placed on the second floor of my house, with the assistance of the pipe passing into the attic above, heats both stories: but the pipe is necessarily long and contains five angles; it was therefore subject to the inconvenience of dripping between the last elbow and the chimney. Here was a good opportunity for an experiment; and having opportunely a suitable tube on hand, I passed a portion of it over the part of the flue subject to drip, on the occasion of the first cleaning of the pipe, which occurred in November last; and I have been quite gratified with the satisfactory result. No vexation from black dripping liquor has occurred since the alteration: and it is moreover pleasing to announce that the alteration has been attended with another good consequence; which is, that the pipe does not now require cleaning so frequently as it did before the experiment. Formerly, if not taken down every fortnight and well brushed out, we were annoyed by the smoke finding a passage through the joints of the flue into the rooms, instead of wholly proceeding to the chimney and thence off to the air. Cleaning the pipe once in six or eight weeks is now found to be

sufficient. The coating of this part of the pipe, no doubt, allows the carbon of the smoke to pass off without being precipitated upon the inside of the pipe in such abundance as before the application.

It will perhaps be supposed that this plan is attended by a considerable loss of heat to the apartments. This possibly may be the case in a small degree; yet I have not found it to have such an effect to any extent; the outside pipe becoming nearly as hot as the single one did previously. But, even if this should be a partial consequence, the benefits gained are an ample compensation.

The first outlay will be greater, but the pipes not being exposed to corrosion by the pyroligneous acid, will wear much better; and the trouble and annoyance of cleaning them will be greatly diminished.