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Observations on Dr. Gries' Mode of introducing Air for heating Apartments. By R. HARE, M. D. *Professor of Chemistry in the University of Pennsylvania.*

TO THE EDITOR OF THE JOURNAL OF THE FRANKLIN INSTITUTE.

Sir.—In an article in the number of your Journal for August last, Dr. Gries urges that in conveying hot air into apartments for the purpose of warming them, it is expedient to have it enter near or through the floor. He anticipates that his views will not be considered as new, but presumes that if the course which he recommends has been pursued before, it has been through *mere accident where it happened to be the most convenient arrangement, and not upon any well understood principle.*

The opinion expressed by Dr. Gries, has been long entertained, and acted upon by me; and in my lecture room, has been verified during ten years past. This must be sufficiently evident from the following paragraph in a description of my laboratory, which was published with a former edition of my text book, and republished in Silliman's Journal and the London Philosophical Magazine and Journal.

“The laboratory is heated by stoves under the arches beneath the hearth; of which one is included in a chamber of brick work. The chamber receives a supply of fresh air through a flue terminating in an aperture in the external wall of the building; and the air, after being heated, passes into the laboratory at fifteen apertures, distributed over a space of thirty feet. Twelve of these apertures are in front of the table, being four inches square, covered by sheet iron full of holes. In the hearth there is one large aperture of about twelve by eighteen covered by a cast iron plate, replete with perforations. Two other apertures for the admission of the hot air are under the table. By these means the air heated by the stove is, at its entrance, so much diluted with the air of the room, that an unusually equable temperature is produced; there being rarely a difference of more than two degrees of Fahrenheit, between the temperature in the upper and in the lower part of the lecture room.”

Agreeably to the expedient described in the passage above quoted the currents of air entering through nearly 500 perforations, are so intermingled with the comparatively cool air of the room as to prevent the tendency to rise which Dr. Gries justly deprecates as tending to transfer the air to the upper portion of the room.

I beg leave to assure Dr. Gries that this arrangement was adopted after reflection, and upon principles which I supposed myself to understand; and which I have endeavoured to explain to my class during my course of lectures for many years. An engraving and description of my lecture room were attached to a former edition of my text book in which the peculiarity to which I have alluded was mentioned.

“I will take this opportunity of stating that the air received as above mentioned is supplied from a chamber in the cellar of about 12 feet square, heated by an anthracite stove; and that I consider it highly advantageous to have a cavity for the stove of these unusually large dimensions and also an ample influx of fresh air from the exterior of the building through a flue, or a trunk, provided for the purpose.”

Evidently an equal rise in the temperature of an apartment may be effected by a small mass of air intensely heated, or a large mass moderately heated; the quantity being inversely as the temperatures: but in the one case, the particles of vegetable or animal matter which are always floating in the atmosphere are not liable to be decomposed, while, in the other case, their decomposition ensuing in consequence of the undue heat, is productive of that unpleasant effluvium which characterizes stove rooms. The warmth imparted to the air of my lecture room, is like that which results from a change in the weather; it has no attribute which would lead an observer to suppose it to arise from a stove, or from a culinary fire of any kind.

I will also take this opportunity of mentioning, that at first I found a great difficulty in getting cast iron to withstand the long continued and occasionally intense heat of an anthracite fire, as supported in stoves employed to heat chambers as above mentioned. Agreeably to my subsequent experience this difficulty may be surmounted by employing a comparatively large cylinder for the fire place, with a grate of about half the diameter. By these means the heat being chiefly in a vertical column, of which the grate forms the base, a thickness of several inches of fuel in a comparatively low state of ignition, is interposed between the iron and the hottest part of the fire. The coal in fact serves as a lining to the iron. The diameter of the cylinders which I use is at bottom twenty inches, while that of the grates associated with them is only eleven inches.

Though the term cylinder is employed, the casting to which it is applied is really a hollow conical frustrum about two inches less in diameter at the upper end, than at the base. This lessens the weight of metal and yet answers at least as well as if the shape were that of a true cylinder, because the upper half is less exposed to the fire than the lower.

*Notice of advances made in the Science of Mineralogy during the year 1837.
From the Report of Berzelius to the Swedish Academy.*

Berzelius' "Annual Report" to the Swedish Academy "of the progress of the Physical Sciences," presents us with a very full account of the advances made during the year preceding that in which it is published, and although treating in some measure of them all, is more valuable to the