ware for optic plates. A few tons of the same kind of sand were lately imported into Liverpool, and were eagerly purchased, so that a considerable improvement in the qualities of the finer kinds of flint glass may soon be expected.

Ibid.

On the action of Cold Air in maintaining heat. By ROBERT ADDAMS, Esq.

I was at Sheffield in last December, and then a Mr. Linley, bellows-maker of that town, showed me the following curious experiments: first, a rod of iron, about an inch in diameter, was heated at one end in a forge fire, up to a full white heat, then quickly withdrawn from the fire and exposed to a strong blast of cold air from a forge bellows; the iron immediately became so hot as to fuse, and the liquefied matter was blown off and burnt in the air with the scintillating appearance of iron wire burning in oxygen gas; and so continued to melt until a pound or more of the metal had been thus wasted.

Another mode of producing the same action consisted in heating a rod of iron, as before; but instead of a blast of air, it was tied to a cord, and by it whirled round in a vertical plane; thus by passing swiftly through the cold air it melted, and was thrown off in beautiful scintillations, appearing as luminous tangents to the circle in which the bar was moved.

I have since applied a heated bar of iron to the periphery of a revolving wheel, and by an including tin hoop or guard, it is thus made an interesting class experiment.

The cause of this augmentation of temperature is, I conceive, referable to the oxidation of the metal, which takes place freely under the conditions of the experiments here recorded. Then, as is well known, the formation of the oxide is accompanied with a great development of heat; and the cases before us are striking examples of the heating influence by chemical action predominating over the cooling effect of the air conjoined with the radiating force.

The success of these experiments chiefly depends upon having the iron at first of a sufficiently high temperature, and upon the velocity of the air from the bellows, or otherwise the velocity of the iron through the air. For the iron at a white heat is greedy of oxygen, which the air solidifies. Then the oxide thus formed requires to be blown or whirled off, in order that fresh surfaces of the metal may be exposed to the air.

When the blast is employed, we see the oxide fusing, and deep channels scooped out in the bar by the rushing air on that side where the current is directed.

Lond. and Edin. Philos. Mag.

Iron Steam Vessels.

The Rainbow, an iron steam vessel, built for the General Steam Navigation Company, has been launched since our last, from Mr. J. Laird's yard, at Birkenhead, near Liverpool. She is the largest iron steam vessel built or building in this country, her dimensions being, length over all, 213 feet; beam, within paddle-boxes, 25 feet; extreme width, 49. She is divided into six compartments, by five water-tight partitions, which entirely remove all danger of sinking in case of collision with other vessels; and if all the other advantages iron vessels possess are left out of view, the simple fact, that in them these partitions can be rendered most efficient and secure, will, we