12. Further Note on Graphitoid Boron and the Production of Nitride of Boron. By R. Sydney Marsden, D.Sc. F.R.S.E., &c.

This note is a continuation of the paper on the “Preparation and Properties of Pure Graphitoid and Adamantine Boron,” by Dr R. M. Morrison and myself, published in the Transactions of this Society, vol. xxviii. p. 689, and its object is to correct a mistake which we have made in giving the properties of this substance. We say—

1st, It is not oxidised by air at a white heat, even superficially.

2d, It does not alloy with platinum at a white heat.

I have again prepared a quantity of this substance and examined its properties under Professor Wöhler, and I find that the above statements are wrong. A very fine film of oxide does form on the surface of this substance when heated on platinum foil over the blowpipe, and this film, although very thin and difficult to observe, is sufficient to prevent all further action of the air, and also to prevent its combining with the platinum. This misled us when we previously examined it. If, however, a quantity of it be placed on a piece of platinum foil, and the foil folded over it and pressed down so as to exclude all the air, then on heating it intensely before the blow-pipe the boron at once combines with the platinum and perforates it.

In that paper also we mention a slatish-grey powder which we found surrounding the metal on opening the porcelain crucible. I have made an examination of this powder, and find it consists of a mixture of nitride of boron and amorphous boron, chiefly, however, of nitride of boron, which is formed by the superfluous boron uniting with the nitrogen of the air. If the experiment is prolonged over many hours the whole of the amorphous boron is converted into this nitride, and the powder is then white. The way in which I tested for the nitride was as follows:—A portion of the powder was heated in a hard glass-tube, with solid caustic potash to convert the nitrogen into ammonia, when the following reaction takes place—

The ammonia is led into a small tube containing water, and tested for in the usual way. In a number of other similar experiments in

which boron was heated with the different metals, this nitride of boron was always found in the crucible surrounding the metal at the end of the experiment.