Breunlin was of opinion that the sulphur in both green and blue ultramarine was in the form of polysulphide of sodium, and not in that of hyposulphite of soda, for the latter salt decomposes into sulphur and a sulphate at the temperature at which ultramarine is formed. To this Wilkens answers, that green ultramarine mixed with sulphur only requires a temperature a few degrees above the boiling-point of water to pass into blue. At this temperature hyposulphurous acid is formed, and not decomposed.

When ignited with saltpetre blue ultramarine first becomes green, which Wilkens explains by the assumption that the hyposulphite of soda is sooner oxidized than sulphide of sodium, which latter is the coloring principle of green ultramarine. Charcoal effects the same transformation of blue with green ultramarine at a red heat; in this case the hyposulphite is reduced to sulphide. When green ultramarine is heated in the air, it passes into blue even without the addition of sulphur. Breunlin thought that in this case a part of the silica of the silicate abstracted sodium from the bisulphide of sodium, which became converted into pentasulphide of sodium. Wilkens remarks on this, that the change takes place at so low a temperature that silica could not be set free, and hence an action on the sulphide of sodium could scarcely take place. If pentasulphide were the condition of the formation of blue color, green ultramarine would be converted into blue without access of air, which is however not the case. Hence the oxygen of the atmosphere plays an important and active part in the formation of the blue color.—*Liebig's Annalen*, xcix. p. 21.

To the Editor of the Journal of the Franklin Institute.

On the loss of Lead and Silver Ores in Washing. By ERSKINE HAZARD.

In an extract from the *Comptes Rendus de l'Academie des Sciences*, on page 61 of your present volume, a loss of lead and silver ore is said to arise from the difficulty of wetting the powder by pouring water upon it, and it floats off. In mixing a dose of magnesia, if you merely throw it upon the surface of the water, it very soon sinks of itself, and is quite smooth; whereas it is very difficult to prevent its being lumpy, if you reverse the process by pouring water upon the magnesia. Perhaps this method would be an improvement in the treatment of the powdered ores.

*Metallic Alloy for the Formation of Medals, small Figures, &c.**

By M. VON BIBRA.

Six parts of bismuth, 3 parts of tin, and 13 parts of lead are fused together first of all in a crucible or iron ladle: the mixture is poured out and fused again, if it is to be employed in casting. It is almost as readily fusible as the well-known Rose's metal, but besides possessing considerable hardness, it has the particular advantage of not being brittle, because it possesses no crystalline structure upon the fracture. If the cast objects be bitten with dilute nitric acid, washed with water, and

* From the Chemical Gazette, No. 463.