

several experiments in order to settle the point. Metallic arsenic was enclosed in a strong barometer tube of glass, which was further strengthened by being placed within a closed iron tube, and packed tightly with sand. The whole was heated to redness by a charcoal fire, and when the heat was withdrawn it was found that the arsenic had fused into a perfectly compact, crystalline mass, moulded to the shape of the tube. It possessed a steel grey color, and brilliant lustre; was of Sp. gr. 5.709 at 19° C.; possessed a considerable degree of cohesive strength, as compared with common sublimed arsenic, and seemed to be slightly malleable. It tarnished gradually by exposure to air and in other respects resembled the sublimed metal. The temperature required for fusion lies between the melting points of antimony and silver.

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PURIFICATION OF BISMUTH.—Mr. Edward Smith, F. C. S., (*Phar. Jour. and Trans.*) recommends the process of Hugo Tamm, (*Chem. News*, VOL. xxv, p. 100), as having proved very efficient and satisfactory as regards the separation of copper. Compared with the *British Pharmacopœia* process of fusion with nitre, it affords much better results, both as to the purity of the resulting metal, and the loss entailed by the process. Tamm says "The sulphocyanide which I use is prepared by mixing eight parts of cyanide of potassium and three parts of sulphur, one part of this mixture is thrown over sixteen parts of the metal, melted at a low temperature." A bright red heat is sufficient, such as may easily be obtained by the use of a good lamp. Mr. Smith tested bismuth treated after this method and found the separation of copper complete. The loss of bismuth, in small operations, may easily be kept under five per cent. while by the nitre process, as stated by Mr. Schacht, (*Phar. Jour. April*, 1868) it ranges between seven and seventeen per cent. The proportion of cyanide laid down by Tamm refers to the pure salt. If commercial fused cyanide be employed, a larger quantity must be used. Practically, fifty parts of impure metal require from three and a half to four of fused cyanide to one part of sulphur. If a deficiency of cyanide be used, sulphide of bismuth is formed, thus involving a second fusion, or entailing a great loss of metal.