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Hot Press printing

The blue pigment needed for underglaze printing was cobalt. The main source of this mineral in 18th century Europe was Saxony. Because of the intensity of the color, it was prepared by dilution into two different products, smalt and zaffre. Zaffre was made by fritting calcined cobalt ore with sand. Smalt was made by fusing zaffre with potassium carbonate to make a glass, which was then ground up. The Saxon government attempted to maintain a monopoly in zaffre and smalt production by exporting cobalt only in those forms, not in its natural state. Because of this monopoly, they were expensive products.

In its first year, 1754, the Society for the Encouragement of Arts, Manufactures and Commerce offered a prize for the best sample of British cobalt. In the following year Francis Beauchamp was awarded the prize for cobalt from Pengreep, a mine near Truro in Cornwall. Encouraged by this, the society offered another prize for the manufacture of zaffre and smalt from British cobalt.

In 1759 cobalt from the Alva mine near Alloa in Fife, Scotland, was tested. Two years later Nicholas Crisp, proprietor of the Vauxhall porcelain factory, became a partner in the mine, owned by James Erskine, Lord Alva. In 1764 Nicholas Crisp won the Society of Arts prize for making zaffre and smalt. William Littler used this Scottish cobalt at his West Pans china factory. Unfortunately, as Crisp noted in a letter on 26 September 1761: ‘another property I observe in these ores, and in the Zaffre made from them is, that they are apt to spread in the Fire, not give a clean distinct line, well defined, but an uneven, or as we term it a Wooly line.’ The porcelain made at West Pans shows this tendency of the cobalt to run in the glaze. By 1768 the mining of cobalt at the Alva seems virtually to have ceased, though a letter from Littler begging Lord Barjarg (as Lord Alva had become) for cobalt is dated 1775.

William Cookworthy of the Plymouth and Bristol porcelain factories is said to have taught Roger Kinnaston to make zaffre and smalt. Kinnaston set up a factory to smelt cobalt at Cobridge in the Potteries about 1772. In about 1807 good cobalt was discovered at the Wheal Sparnon mine near Redruth in Cornwall, and was refined at the British Cobalt Smelting Company in Hanley. A short-lived backstamp used on Spode reads ‘This BLUE-WARE is printed from the CALX of British COBALT, produced from Wheal Sparnon mine in the County of Cornwall. August 1816.’ In the following year a group of Staffordshire potters including Josiah Wedgwood II, George and Charles Mason and John Yates signed a testimonial about the superiority of this pigment. The mark ‘British Cobalt Blue’ is known on a jug dated 1820.