

( 1753 )

nimis vel minimè nos craftino afficiunt die. Immo ad hanc omnem diverfitatem operantur Temperie folummodo differentibus.

Quum igitur tam inviéta fit ubiq; difficultas in debita Pharmacorum evacuantium dose decernendâ; optandam effiet, methodus quâ poffimus eadem absq; dubio admiftrare.

Methodum hanc apodeicticis expeditis argumentis, fimul & figillis oclufam præfidi noftro commiffit.

Rogat tamen Medicos quoflibet, quænam fit illa vel fimilis Methodus quâ fine errore dirigamur; eorumque folutiones ad Cal. Mart. 1705-6 exportabit, quas postmodum cum fua publicabit.

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VIII. *Part of a Letter from Dr David Krieg, F. R. S. to the Publisher, concerning Cobalt, and the Preparations of Smalt and Arfenic.*

I Spent about 8 weeks in my own Country, and my chiefest Buſineſs was to enquire for the Minerals found thereabout, and to obſerve their preparations. Firſt, I ſhall deſcribe the preparation of the blue Colour, called *Smaltum*, which is made of *Cobalt* or *Cadmia nativa*, becauſe it is not clearly deſcribed by any Author, as much as I know.

Now the *Cadmia* or *Cobalt* is a maſſie, heavy, grey ſhining Stone, found in a great quantity in the Mines about *Shneeberg*, and ſome other places of *Hermanduria*. It is very often mixed with *Marcasite*, ſometimes with *Silver* and *Copper Oar*, yea, the *Silver* is (but ſeldom) pure in the Figure of *Hair*.

After they have pick'd out the *Cobalt*, and ſeparated it from the common Stone, they beat it to Powder by an Engine or Machine, commonly uſed in Mines (called a *Poolwork*.) By that Operation, the Water carries away the light ſtuff and Sand, leaving the heaviest behind.

This

This Powder is afterwards put into a low and broad Furnace, made on purpose to separate the Sulphur and Arsenick ; where the Powder is spread all over, and the Fire, which is beneath and behind it, is forced to pass its flame along over the Powder, and so to take along with it the Arsenick in form of a Smoak, which afterwards is receiv'd by a low Chimney, and out of that carried in a close Channel made of Brick wall, of about 50 or more paces, where the Arsenick by the way sticks to the Wall, in form of a White or Yellowish Powder. The same is taken out every 6 months and melted into whole pieces.

The *Cobalt* thus roasted, and smoaking little more, being red hot, is taken out, cooled again and gathered for melting. Its *Colour* by that way of roasting is turned a little more whitish.

When they have a mind to melt it, the Powder of the *Cobalt* is mixed with Pot Ashes and Powder of White Flint Stones : The proportion of them is according to the goodness of the *Cobalt*, or as they will make the *Smalt* of a deep or paler colour : For Example, they take one part of Pot Ashes, two parts of *Cobalt*, and 3 or 4 parts of Flint. This Mixture is put into great strong Pots, standing in a hot Furnace ; 6 or 8 Pots in one Furnace ; there it stands a melting for 5 or 6 hours time, turning into a blue Glass, which afterwards is taken out with a great Iron Spoon and put into a Vessel full of cold Water, where it cracketh and grows more tender, to be the more easily powdered again : But the empty pot in the Furnace is filled up again with the aforesaid mixture. And so they continue night and day, not leaving off the fire in the Furnace.

The blue Glass taken out of the Water is powdered again by the ordinary Engine ; the finest, separated by a Sieve, is put into a Mill, and grinded in Water into the finest Powder, which by washing is still separated from the Courser.

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The same is afterwards dryed in little and warm Chambers, put into Barrels, and thus sent away to several Countries.

If one of the Melting Pots breaks, or is very much burnt, so that it must be taken out, there they find always on the bottom two Cakes of different stuff, not mixed with one another. The undermost is a sort of *es Caldarium* or (*Gleiken Spisse*) and the uppermost is of *Marcastt*.

The Grass and Fruits growing there about, where such a Work-house stands, is commonly poisoned by the Arsenical Smoak, that no Cattel or Men can without damage feed upon them.

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*Explication of the Figures, Tab. 4. concerning the making of Smalt.*

Fig. 1, 2.

**T**HE Furnace where the Cobalt is roasted, and the the Arsenick separated.

- a The Furnace to rost the Powder'd Cobalt.
- b The Chimney accepting the Arsenical Smoak.
- c. c. c. The Channel of Stones to collect the Arsenick.

Fig. 3.

The Furnace for melting the Cobalt into a Glas.

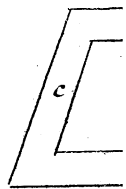
a a a the holes where stand the Melting Pots.

The great holes, where they put in the Pots is shut up with Bricks, and a little one left, where they take out the Glas with the Spoon. b b b b.

Fig. 4.

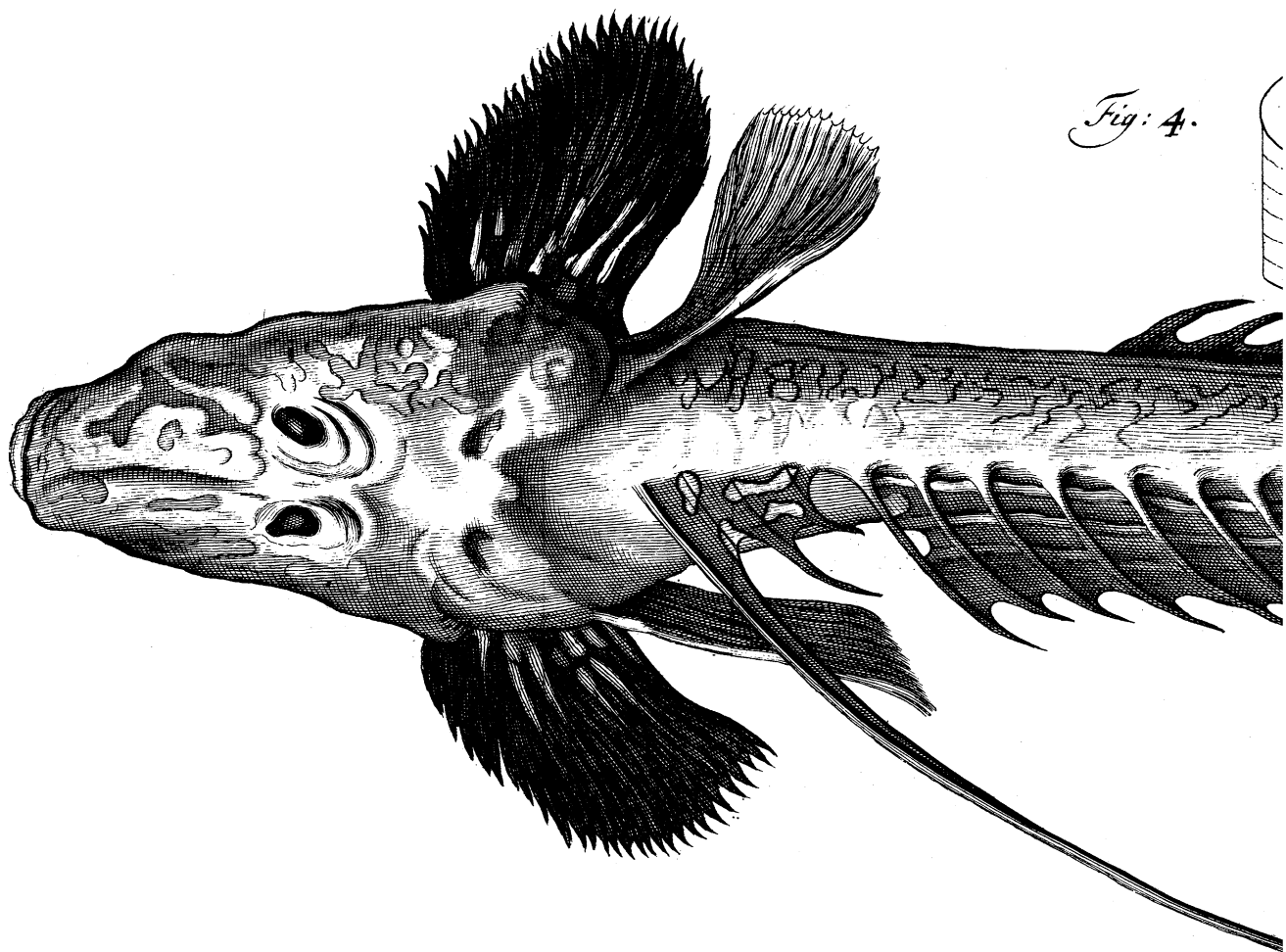
2 Grinding Stones to Grind in Water.

*Philos. Transact. N<sup>o</sup> 293.*



*Tab: 5.*

*Fig: 4.*



Tab: 4.

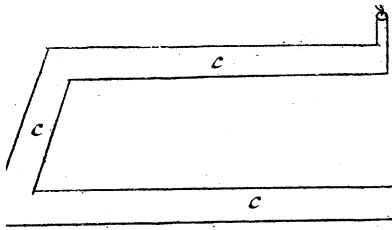


Fig: 2.

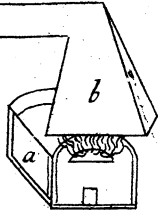
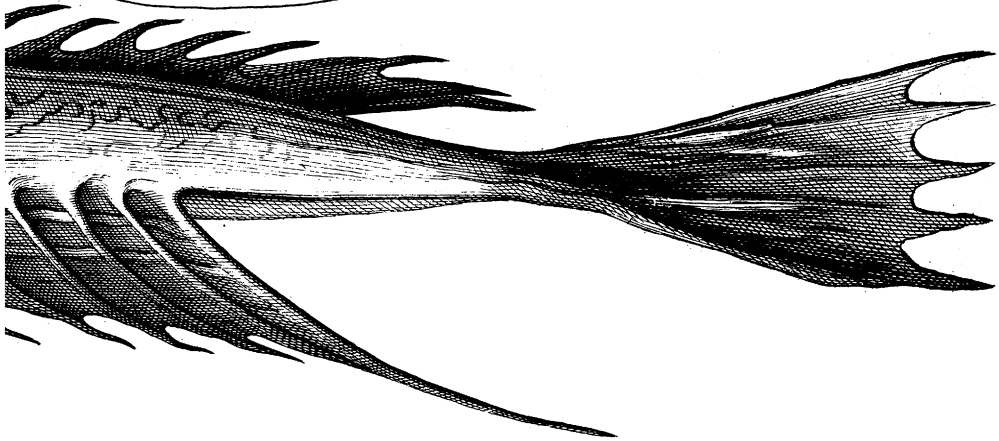
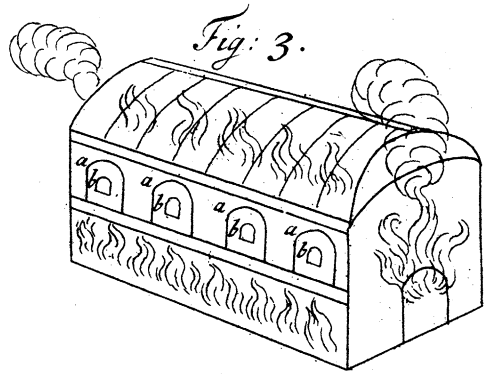
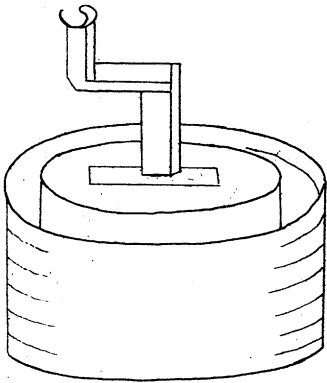
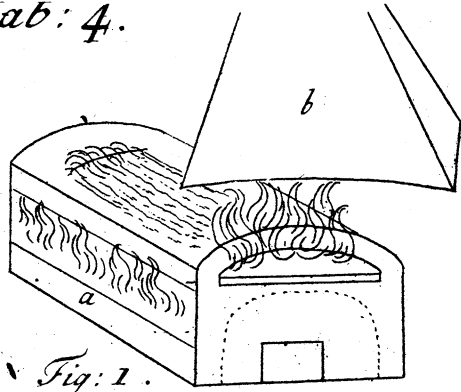
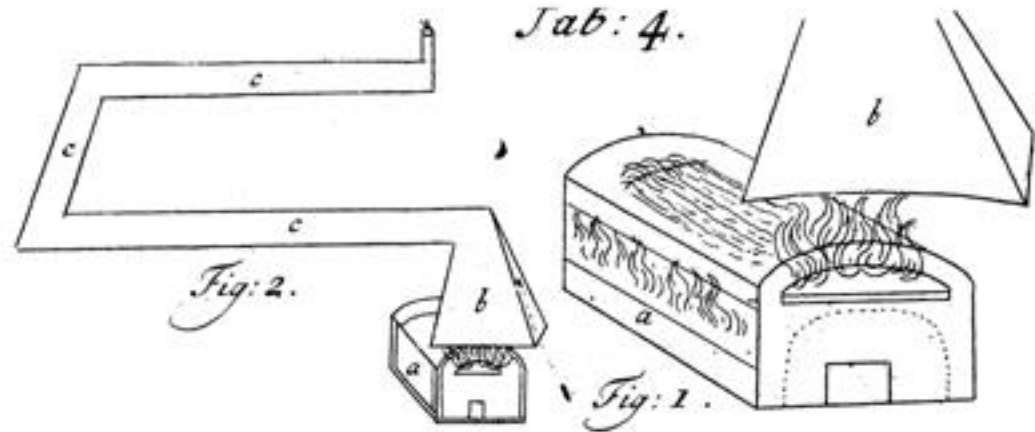


Fig: 1.



*Philos. Transact. N<sup>o</sup> 293.*



*Tab: 5.*

