

Part of a Letter written in Latin to Thomas Gale, S. T. D. Secret. Reg. Soc. from Carniola, by Mr. John Weichard Valvasor liber Baro; containing the Method of casting Statues in Metal; together with an Invention of his for making such cast Statues of an extraordinary thinness, beyond any thing hitherto known or practised.

I Send you likewise my Method of casting Statues in Metal, in obedience to the Commands of the Royal Society; it is as follows. *First*, I form out of good Clay, that will endure the Fire, and not crack either in drying or burning, such a Figure or Statue as I desire to cast; when this is well dry, I make, all over the Figure, little holes of no great depth (but both size and depth proportionate to the bigness of the Statue) into which I let small pieces of Metal, and with some of the same Clay fix them firmly in the holes; the use of these bits of Metal, marked in Figure. I. *a, a, a, a, a,* is to keep the *Core* and *Mould* from touching one the other, or falling together when the Wax runs out; and that they may remain constantly in the same fixt Posture. This done, I scrape away with some proper Instrument as much of the Clay in thickness as I design for the thickness of my Statue, and then laying it in a Furnace, I burn the *Core* till it be red-hot. (by the *Core* I mean always the Statue first made in Clay.) When it is cold I rub the *Core* all over with that sort of Earth or colour, which our *German* Potters use, to colour the joynts of the Tiles when they sett Stoves of Tiles or (*Kachel-Ofens*;) This Colour resembles much that which the French call *Plomb de mer* (*Black Lead*)
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which is used to design on Paper, and easily wipes out with Bread, but it is not the same: this colour I mix with Water, and daub all over the *Core*, because the Metal is found to run freely upon it. There are other Substances proper for this purpose, but I have always made use of this, especially for thin Statues. This done, I lay on upon the *Core* as much yellow Wax mixed with Pitch or Rosin as will make the thickness of the intended Statue, which I form in the Wax with all the exactness possible.

Here note, that the Particles of Metal mentioned to be set into the *Core*, to keep it at a distance from the *Mold* must be so set as to fall in with the surface of the Wax exactly: and that the reason of mixing Pitch or Rosin with the Wax is, because that when it is burnt out, it makes a great smoak, and that smoak adhering to the *Mold* occasions the Metal to run more freely: as I have experienced it. Next I put all over upon the surface of this Statue of Wax, little pieces of Wax which I call the little chanel; in the Figure marked *c. c. c. c. c. c.* (all which must be contrived so as to enter into the great Chanel *d. d. d.*) This done, I cover the *Core* and wax all over with the same sort of Clay, that will endure the Fire, without cracking; and so I have my Concave Statue or Mould made. Upon this I lay the great Chanel marked *d. d. d. d.* both upright and transverse, formed likewise in Wax, and placed according to Judgment, so as best to receive the ends of the little Chanel *c. c. c. c. c.* for the more easie distribution of the Metal. These great Chanel must all meet at the top of the Statue, so as to come out by one hole, as at *E*, where the Metal is to be poured in; it is also necessary to have a Chanel or two to let out the Air as the Metal enters, as those marked *f. f.*: and there must be a hole or two left at the foot, as *g. g.* where the great Chanel and waxen Statue joyn; and whereat, when the Mould is burnt, the wax as well of the Statue as of the Chanel may run out. The great Chanel being thus placed, the Mould must

must be again laid over with the same sort of Clay. (I use constantly to bind about the Mould with Iron Wire and then lay on more Clay) and when this Mould is well drie, then I heat it red hot ; as I did before the Core, so now both together.

The first time I practiced this method, I burnt both Core and Mould together, and all the small bits of Metal melted, so that, though it chanced to succeed well, yet I was in great danger of miscarriage ; and ever since I burn the Core first, that so there may not need so strong a fire to burn the *Mould* : but for small manageable Statues of not above a foot or two high, they may be both burnt together, and there is no need of the holes *g. g.* but the *Mould* may be inverted, and the Wax run out by the Channels *f. f.* and *E.*

The *Mould* being thus burnt, I stop with the same Clay the two holes *g. g.* and then I bury it in a pit, and proceed as is usual in casting of Bells and the like, but care must be taken that the Metal be very well in fusion.

If it be a small Statue not above a foot or two high, whose *Mould* may be managed in ones hands; then I make me a concave Statue of Wax, of the thickness I desire, and then place upon it all those great and lesser Channels, as afore : which done I put it all together, into a liquid substance made of Plaister and Tile or Brick dust tempred with water ; but I doubt not but the way of casting in Plaister is well known in *London*, and therefore shall not need to write it.

If the Statue be intended very thin, then I take Copper, and when it is well in fusion, I mix with it a good quantity of *Zinc*, without observing any certain proportion of weight; the more *Zinc* the better the Metal runs. I have sometimes for small and thin Statues put in above a third part of *Zinc*. now *Zinc* is a certain Mineral Substance like *Marcasite* or *Bismuth*, in French *du Zinc*; without it our work would not succeed if it be very thin, and

I have found by experience that this Mineral makes the Metal run most freely, and gives it a fair golden Colour.

The Statue being cast, I take off the *Mould* and cut off all the little Channels ; all which both great and small are filled with Metal, which may be kept for further use : In these there is much more Metal than in the whole Statue ; for if the Statue be very thin, there must be more and bigger Channels ; and so the cheaper the the Statue the more weighty the Channels and the more Metal remaining.

To know the quantity of Metal requisite for my intended work, I take a lump of the same mixture of Wax and Pitch, with which I make the *Mould* of my Statue ; and having weighed it, I make a *Mould* upon it, and cast in the same a lump of Mettle of the same size ; which I weigh and thereby compute the proportion of the weight of the Mettle and Wax ; then observing how many pounds of Wax I use about the Figure and Channels, I can calculate to a small matter how much Metal I need to melt.

This is my manner of casting statues very thin, and which always succeeded happily with me. Hitherto I have cast no statue above nine foot high, but I doubt not but I could, by the same methods, cast one of any bigness desired. And when we shall be more at ease from our ill neighbour the *Turk*, I will cast at one fusion the Statue of our Emperour *Leopold. I.* sitting on Horsback, much greater than the life ; I have been already in treaty about the charges thereof with the States of this Country ; and if these *Turkish* troubles had not come upon us, it had been now finished. &c.

