

Further to an oral enquiry, explains the hammer test of copper and gives a detailed account of the costs involved in coining.

Author: Isaac Newton

Source: MINT 19/2/413, National Archives, Kew, Richmond, Surrey, UK

<413r>

To the Most Honourable Robert Early of Oxford and Earl Mortimer Lord high Treasurer

In obedience to your Lordships verbal Order of Reference concerning the best manner of Importing Copper into the Mint to be Coyned into Copper Money of a Certain standard and Whether such an Importation may be made free Wee humbly represent to your Lordship that If Copper be mixed with any other base mettall or semimetal it will not endure the hammer when red hott but will fly in pieces: so soon as it is refined by the Copper Workers to that degree as to be pretty well purged from all other base metall, it begins to indure the hammer when red hott without flying in pieces but not without Cracking and the higher it is refined the less it cracks in hammering when red hott untill it endures the hammer without cracing, And for making Vessells and other Vtensills of Copper there is no need to refine it higher.

They that Work Copper from the oar when they have brought it to such a degree as they call fine Copper, sell it to those who have Mills for manufacturing it and expose it to sale in their Warehouses in London And such Copper is worth from 95^{li}. to 100^{li}. per Tun and very little of it is worth above 100^{li} per Tun. This is commonly called fine Copper. But that of 95^{li} per Tun will scarce hammer without flying in pieces, that of 100^{li}. per Tun will scarce hammer without cracking. They refine it at the Copper Mills till it will hammer without cracking and then it is worth 11 $\frac{1}{2}$ per pound Weight or about 107^{li}. per Tun or thereabouts

+ < insertion from lower down f 413r > +Refiners of Copper by refining a small part of any mass can make an Estimate of the charge of refining the whole mass and how much fine Copper it will produce But the best way of makeing such an Assay is not yet agreed upon when it shall be agreed upon and brought into Common use it may be then considered whether the Master and Worker shall be allowed to buy Course Copper by such an assay and put it out to refine with publick money and what he shall be allowed in his Accounts for the refinening thereof according to teh severall degrees of the Courseness, & what for the wast by evaporations. In the mean time the Master or any other person may buy Course Copper, put it out to be refined and send it to the Mints to be Coyned. < text from higher up f 413r resumes >

The Malleability of the Copper depends not only on the fineness of the Metal or freedom from other metals but also upon the manner of refining it, for if it be refined with seacoale it will not be Malleable and fitt for working though it be fine. It may be refined with sea coale till it begins to be fine, and then it must be wrought with charred coal till it be fully fine & the charred Coale of wood is better then seacoal charred: Also the melting diminishes the Malleability, especially if it be melted with too much heat. And for those reasons the assay by the hammer is the best and surest for the Mints.

If it shall be thought fitt that Copper money be made of such Copper as in hammering when red hott will crack but not fly in pieces, it may be bought at the Copper Warehouses in London; If of such Copper as will hammer (red hott) without Cracking it must be had of those who refine Copper.

In the Reign of King Charles the second a pound weight of Swedish Copper was cut into 20 d; The Copper and makeing the blanks cost 18^d. the stamping a penny & a penny remained for other charges; This Copper was malleable so as to hammer red hott without Cracking.

If it be thought fit that the Money now to be Coyned by of like fineness so as to endure the same test, the Copper will cost 11 $\frac{1}{2}$ per pound Weight as above and the Coynage about 6^d. or 6^d. $\frac{1}{4}$ without edging or 7^d with edging And if a pound weight not edged be cut into 20^d. or a pound weight edged by cutt into 21^d. there will be an excess of 2^d $\frac{1}{2}$ per pound weight for purchasing Mills & presses & cutters and flatters & setting up a Copper Mint, and paying Clerks and incident charges of Assaying, weighing, telling, Porterage, baggs, paper & packthread, outting off &c. But if it be thought that the Copper be onely so fine as to endure the hammer when red hott without flying in pieces tho not without cracking a pound weight may be cut into 19^d. not edged or 20^d edged.

The Mills and presses and other engines for setting up a Copper Mint will cost six or seven hundred pounds & three farthings per pound weight in Coyning an hundred Tunns will pay that charge. And when that charge is paid the weight of the money may be little augmented.

If the blanks be so thick or the impression use so high as to strain the Dies or Cutters and make them more apt for break then in the Coynage of Gold and Silver or the casting into barrs prove so difficult as to make above one half of the Barrs become scissell the charge of Coynage must be proportionally augmented for which reasons the charges of Coynage cannot be positively sett without experience in Coyning some Tunns of Copper Money.

The weight of all the Copper received and the weight and Tale of all the Copper money oyned may be entered into Books & in the accounts of the Master and worker & the surplus above all charges may be paid into the Exchequer.

all which is most humbly submit{ted}
to your Lordship's great Wisdom

22^d. Ian^r. 1713

Ian. 1713
about a Copper Coynage
