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The Heyday of the Gold Standard, 1820-1930

1866 February 6

The Trial of the Pyx: "Statement of Proceedings at the Mint as to the Deposit of the Gold and Silver Coins in the Mint Pyx Boxes; and at Goldsmiths' Hall, in the Assay of the Gold and Silver Pieces, constituting the Public Trial of the Pyx; by Henry W. Field, Queen's Assay Master at Her Majesty's Mint". This report concerns the process by which the standard of fineness of the gold and silver coinage of the realm is traditionally ascertained.

Preliminary Remarks.

ALL coin before issued to the public from the Mint undergoes severe test as to accuracy of weight and fineness by a private pyx in the Master's Department within the Mint.

It is usual as soon as 100 journeys (each 15 lbs. troy) of gold have been coined, to pyx them, which is effected as follows:

One of the officers of the coining department brings the 100 bags of coin to the Mint Office Pyx Room, where the Deputy Master, the Queen's Assay Master, a senior clerk, and two juniors are assembled: the senior clerk counts by inspection (having the aid of a simple machine for that purpose) the number of pieces in a pound troy from each bag.

The Queen's Assay Master carefully weighs each lb., and his report is registered by the clerks. The deputy master takes from each of these pounds two pieces which he weighs accurately, and notes any discrepancy from its proper or standard weight, These two pieces are set aside, one for assay before the money leaves the Mint, the other for the public trial. Thus 100 of the selected pieces are given to be assayed, the other 100 are folded in paper, sealed with the private seals of the master, deputy master, and Queen's Assay Master, and docketed as to contents and date; these packets are then deposited in the iron pyx chest having three locks, the keys being in the custody of the three officers who sealed the packets ; there they remain until the day of "trial" at the Exchequer or public trial.

The packets of coin above alluded to are opened by the jury of goldsmiths, the contents counted and examined with the particulars docketed on the outside; from each of these packets one piece is taken by the jury, and after the whole pyx has

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been examined these pieces are collected by the foreman into one bowl, the standard weight computed, and then they are carefully weighed to ascertain the nearness to the computed weight, in other words, whether within the legal "remedy."

This bowl of coins is then melted and poured into a mould forming an ingot, from which a certain number of pieces are cut, flattened by a hammer on an anvil till reduced to the thickness of a sixpence; they are then passed through rollers to further reduce their thickness, and from these pieces a certain portion is cut and adjusted to the weight of the assayer's pound, a conventional weight, varying from 10 to 1,3 grains troy.

Thus far this description is applicable to both gold and silver.

A digression must here be made to introduce the test by which the purity is to be ascertained: this is effected by "trial plates," mixtures of pure metal with the legal quantity of alloy. Such plates have been made from time to time, even previously to the reign of Edward the 4th. Of late years, these "fiducial pieces" of gold and silver have been commixed by the Goldsmiths' Company, but under the strict check of the Queen's Assay Master and the other Mint assayers, and are now placed in the custody of the chief officer of the Exchequer.

To resume the subject of the examination of the gold.

Several portions of the ingot, melted from the coin, as well as of the "trial plates" by which they are to be tested, are weighed accurately to the assayer's pound, and separately placed in cases of sheet lead, the weight of which is regulated to the presumed quantity of alloy in the metal: to each of these portions is added a certain amount of pure silver, free from gold, which amount also depends on the supposed quality of the gold ; these, the silver and gold, being carefully wrapped in the sheet lead, and charged into cupels, which have been brought to sufficient heat in an assay furnace, are melted together, the lead and alloy is oxidized and absorbed by the cupel, which has the peculiar property of absorbing oxides of metal, being made of phosphate of lime or bone ash, and the silver and gold remain as a button on the surface of the cupel. When sufficiently cool. the cupels are removed from the muffle, the buttons flattened by hammering, and rolled to the thickness of an ordinary card; this operation having rendered the slips or fillets hard, they are annealed by being made red hot, and each is rolled up loosely into what is called a "cornet."

The cornets are charged into flasks, with about 1 ½ oz. of nitric acid, and by means of a convenient arrangement of gas-burners they are boiled for a certain number of minutes; the acid is then poured off, and a dose of stronger is substituted, in which they are again boiled ; this acid is also removed, and the cornets receive two washings with distilled water.

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The acid having deprived the gold of all the silver, the cornets are again subjected to the heat of the furnace and annealed to brightness. After this annealing they are accurately weighed, and the plus or minus above or below the standard trial plate is ascertained.

The silver is prepared in the same way to the assayer's pound, subject to cupellation, and the resulting button weighed, and thus the plus or minus from the standard silver trial plate is also shown.

Her Majesty's Mint,
6 February 1866.

(signed) *Henry W. Field*,
Queen's Assay Master.

Source: First Report of the Royal Commission Appointed to Inquire into the Recent Changes in the Relative Values of the Precious Metals, (London: Her Majesty's Stationery Office, 1887), Appendix X, pp. 44-45.