

# MATTHEW BOULTON'S SILVER AND ITS SUBSTITUTES

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Silver and a number of silver substitutes, especially Sheffield Plate, were used at the Soho Manufactory near Birmingham. The purpose of this essay is to gauge the extent of, and the reasons for, their usage there during the life of Matthew Boulton.

Silver was much more expensive than the substitutes. How did the hierarchy of materials relate to the hierarchy of society? A mid-eighteenth century computation reckoned that the annual income of the aristocracy was typically upward of £10,000 and that of the gentry £8,000 at most; middle-class income ranged from £600 to less than £100; below that incomes ranged from £40 to less than double figures.<sup>1</sup> During Boulton's lifetime those disparities hardly changed,<sup>2</sup> but the proportion of middle-class families rose<sup>3</sup>, incomes were increasingly spent on luxuries and there was a growing

spirit of emulation.<sup>4</sup> Was silver confined to the aristocracy and gentry? Did the middle classes have to be content with the substitutes?

In part, Boulton's uses of silver and its substitutes were characteristic of much industry in Birmingham. Following his inheritance of his father's firm in 1759 and the expansion of the Soho Manufactory from 1761<sup>5</sup> he created a large firm which like many others produced 'toys' (a wide range of domestic and jewelry items) as well as buttons and buckles. The range of materials at Soho and in Birmingham was wide, including silver and some substitutes, as well as non-precious metals, such as brass and steel, and other materials such as tortoiseshell. Soho, like firms in Birmingham, innovatively used drop-stamps and fly-presses to economically make items for a wide market at home and abroad.<sup>6</sup>

By the mid 1760s Soho produced silver candlesticks. By the early 1770s a wide range of table wares, and other artistically ambitious silver items, new to Birmingham, were also made at Soho. This, together with the production of ormolu (gilt bronze or brass mounts used chiefly on vases) was motivated by an ambition to transform his, Soho's and Birmingham's reputation. It led to the recruitment from elsewhere of skilled silversmiths and the foundation of the Birmingham Assay Office in 1773, for which Boulton was primarily responsible.<sup>7</sup> Although small 'toys' such as jewelers' work, thimbles or clasps, items which might be damaged in assaying such as filigree or any articles weighing less than ten pennyweights were not required for assay i.e. the testing of larger pieces to see if they meet the required standard, which in the case of sterling silver, which Boulton made, must contain at least 925 parts per thousand of pure silver before pieces can be passed and sold.<sup>8</sup>

In order to achieve economies in production Boulton insisted that ormolu, larger silver items and similar items in substitute materials were made in the same department. Similarly, with smaller items

such as buttons and filigree, silver and its substitutes were used alongside other materials. This organization of production provided opportunities for flexibility in changing from one material to another and provided a basis for competition with rivals (especially London silversmiths) who specialized in one material.<sup>9</sup> During the 1760s Boulton explored a variety of materials, as he developed the Soho Manufactory.

Chemical amalgamation had been widely used for silvering prior to the eighteenth century,<sup>10</sup> and was used at Soho by 1762.<sup>11</sup> Boulton bought silvered candlesticks from Paris in 1765, presumably to learn from.<sup>12</sup> About 1770 Boulton noted a recipe 'Silver, made into Luna Cornia [nitrate of silver], 1 Common Salt, 2 Salamoniak [ammonium chloride] 2 Glass Gall or Sandiver [a liquid saline matter found floating over glass after vitrification].<sup>13</sup> This was similar to recipes used elsewhere at the time and involved mixing and grinding the materials with water, rubbing them onto the base metal, annealing, quenching in water and finishing by polishing.<sup>14</sup>

In 1765 Boulton was keen to learn about French-plating in London.<sup>15</sup> Although it had an earlier ancestry the technique derived its popularity in England from its

popularity in France from ca. 1700. According to Denis Diderot's *Encyclopedie*, 1751-2, the process was usually carried out on copper, brass or iron. After cleaning, the object was heated to a red heat and cooled before being cleaned again. The object was again heated, but now to a moderate temperature and quenched to etch the surface. Cross-hatching, used especially on iron, improved the adherence of squares of silver foil which were applied after the object had been heated (to a peacock-blue, in the case of brass). The first application of silver involved two leaves, which adhered with the aid of heat and burnishing. Subsequent leaves were added, with four or six at a time, until as many as sixty layers were applied (though Boulton whimsically noted that fifty seven and a half were just right). The final step was to burnish the last layers to achieve a smooth finish.<sup>16</sup> Some silver leaf was ordered from London, in 1772, for an experiment in French-plating<sup>17</sup> and in 1771 some unspecified pieces were sent to John Legrix in Long Acre, London for French-plating.<sup>18</sup> He was a specialist, who made a variety of table wares.<sup>19</sup> There was a French-plater at the Soho Manufactory, at least in the early nineteenth-century.<sup>20</sup>

A related and also ancient technique, described in the nineteenth century and since as close-plating but which was simply described as 'plating' or confused with French-plating<sup>21</sup> in the eighteenth century, was used in Birmingham. Since French-plating on steel was generally found to be unsatisfactory, close-plating was often preferred. The technique involved cleaning the article, dipping it into ammonium chloride (then called sal ammoniac) to act as a flux and then into molten tin. Silver foil, cut to size, was laid over the tinned surface and pressed firmly into position. A hot iron was then placed over the surface of the foil, thus melting the tin and forming a solder between the silver and base metal. Much burnishing was required of the lapped edges of the foil. Several patents were taken out in the second half of the eighteenth century, bringing improvements to the technique.<sup>22</sup>

However, these older techniques were increasingly challenged by Sheffield-plate, introduced in Sheffield c1743,<sup>23</sup> which Boulton insisted on calling "plated" wares.<sup>24</sup> The technique which involved fusing a thin layer of silver onto copper, on one, or from the 1760s, both sides; the significant discovery was that

silver and copper readily adhered even when the ingot was rolled into a thin sheet. In Sheffield the material was first used for buttons and small articles such as knife hafts and by the 1760s for table wares by firms which also made articles in silver often with the aid of dies. By the 1750s the material was used in Birmingham for small articles and Boulton was using it for candlesticks by 1765 and for a wide range of table wares by the early 1770s.<sup>25</sup> Boulton placed his own 'maker's' marks and those of John Fothergill (his partner from 1762-1782) on Sheffield-plate up to 1773, when this was prevented by Act of Parliament since the public might have been deceived into thinking such work was silver.<sup>26</sup>

Boulton also experimented with non-precious metals that resembled silver. One of these was tutenague. The word derived from the Chinese 'pai-tung' (meaning white copper) an alloy of copper, zinc and nickel. At this time it was only available from China. Boulton's scientific friends made efforts to understand its composition, but they failed, believing the nickel to be iron. It was not until 1775 that a correct analysis was made (by the Swedish scientist Gustav

Engestrom) and that was not generally understood until late in the century. Boulton was familiar with the metal by the mid-1760s and decided that in its lustre and whiteness it resembled silver and (better than silver) resisted tarnish.<sup>27</sup> Boulton described another metal, 'white metal', as 'semi-argent' when he speculated ca. 1770 on its use for a wide range of wares.<sup>28</sup> The metal is an alloy of 210 parts of tin, twelve parts of antimony and four parts of copper.<sup>29</sup> By 1762 Boulton was also aware of platina,<sup>30</sup> a silvery-white alloy of copper (46.5%) and zinc (53.5%).<sup>31</sup>

The range of materials used for buttons at Soho was very wide and included horn, pearl, steel and brass.<sup>32</sup> Boulton had reservations about platina<sup>33</sup> but it was used for buttons, at least on one occasion, at 12s 0d per gross on bone bases for military uniforms.<sup>34</sup> Tutenague was used at least on one occasion, in 1772.<sup>35</sup> Buttons were also occasionally made in 'white metal'<sup>36</sup> but the metal only became widely used in the nineteenth century.<sup>37</sup> Silvering was cheaper than other methods of adding a silver appearance but is subject to discoloration.<sup>38</sup> Boulton was not enthusiastic; on



Figure 1 W. Humphrey, 'Coup de Bouton', 1777.

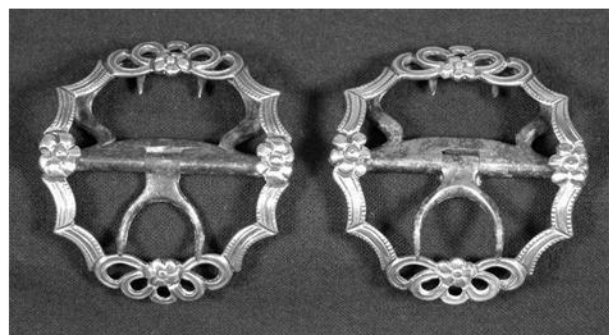
one occasion when silvered buttons had been made at Soho there was immediate customer dissatisfaction,<sup>39</sup> but normally he either factored such buttons for a 5% commission or advised customers to go elsewhere.<sup>40</sup> In contrast, Sheffield-plate buttons, which Soho produced at least as early as 1766, were subsequently made in enormous quantities: in 1780 alone Soho made 4000 gross as opposed to just 40 gross of silver-gilt buttons. One

dozen silver-gilt breast buttons cost 24s8d while a double gross of Sheffield-plate buttons ranged from 17s6d to 27s0d. Prices varied according to type (coat buttons cost more than the smaller waistcoat buttons), quality of plating, the type of shank and the quality of material used for the base, such as boxwood or bone. Livery buttons were an important source for Sheffield -plate orders. Demand was enormous: a Georgian gentle-

man wore as many as four dozen buttons on one set of clothes for the coat, waistcoat and breeches.<sup>41</sup> Buttons could be a means of conspicuous display (Figure 1) and John Hodges, while only an apprentice at Soho, bought in 1776 eighteen silver coat buttons at £1.1s.01/2d and a further fourteen for 16s.6d.,<sup>42</sup> an enormous outlay considering that his weekly wages were only 7s.0d.<sup>43</sup>

Buckles were available from Soho in a wide variety of materials, including gilt, steel and imitation tortoiseshell.<sup>44</sup> At least on one occasion, in 1772, tutenague buckles were made at Soho.<sup>45</sup> Early in the life of the Manufactory silver buckles were made there.<sup>46</sup> However, at least by 1773 Boulton was factoring silver buckles made by Thomas Mynd whose work Boulton thought was of a high standard.<sup>47</sup> The silver buckles shown in Figure 2, though with the makers' marks of Boulton and Fothergill, were therefore probably not made at Soho. However, c1790 silver buckles were made there as were Sheffield-plate buckles<sup>48</sup>; Boulton had earlier refused to make the latter too<sup>49</sup> though he had been willing to send customers cards of 'plated' buckles by

Willmore and Alston<sup>50</sup> or recommended customers to go to that Birmingham firm.<sup>51</sup> It is not clear how these "plated" buckles were made. Sheffield-plate presented problems in covering the copper edge<sup>52</sup> and French -plating on steel (which was widely used for buckles) was generally found to be unsatisfactory;<sup>53</sup> close-plating was therefore often preferred and John Alston was much involved with improvements to close-plating in the 1780s, though he also made improvements to French-plating, in both cases specifically in connection with buckles.<sup>54</sup> An employee Thomas Greenhow bought a pair of 'plated' buckles in 1781 for 2s.10d;<sup>55</sup> Boulton once bought a (probably elaborate) pair of silver shoe buckles for 27s.0d.<sup>56</sup> Boulton formed a partnership with James Smith in 1793, to make latchets, which pinched the two sides of a shoe together;<sup>57</sup> they were



**Figure 2**  
**Boulton and Fothergill, pair of silver buckles, 1773-4, partial and promised gift, James C. Codell Jr., courtesy The Speed Art Museum**

available (per pair) in Sheffield-plate for 3s.6d and in silver from 7s.0d. to 10s.0d.<sup>58</sup>

Small filigree items were usually made in gilt base metal or silver. Large gilt handkerchief slides (i.e. rings through which the sides of a handkerchief could be drawn together) cost 9s.0d. a dozen, the same as in silver.<sup>59</sup> The purse runner (a ring which was used to push coins to the ends of a fabric tube, sometimes called a 'miser' or 'stocking' purse) were made in steel at 3s.9d. per dozen while those in silver filigree cost 9s.0d. a dozen. Silver



**Figure 3**  
**Boulton and Fothergill, pair of silver 'Lyon-faced' Candlesticks, 1768-9, partial and promised gift, James C. Codell Jr.,**  
**Courtesy The Speed Art Museum.**

filigree tea measures cost 5s.9d. or 5s.0d. (whereas tea measures fashioned from a sheet of Sheffield-plate cost 18s.0d. a dozen<sup>60</sup>). Extravagant hair-styles required hat pins; those in silver filigree cost 5s.6d. per dozen<sup>61</sup> but, there was a market for plated wire and pearl hat pins costing 2s.71/2d. for an unspecified number on a card.<sup>62</sup>

Candlesticks were made at Soho in other metals such as copper and Boulton thought about making silvered candlesticks in the 1760's but that was not pursued.<sup>63</sup> He dismissed as early as 1762 (for reasons which are not clear) the idea of using platina for candlesticks.<sup>64</sup> Early in the 1770s a number of tutenague candlesticks were sold to trade customers in London,<sup>65</sup> at between 25s.0d. and four guineas per pair,<sup>66</sup> but by 1772 Boulton decided not to continue with the metal "as our plated wares [i.e. Sheffield Plate] can be afforded as cheap and look much better",<sup>67</sup> though some sales were subsequently made to middle-class customers.<sup>68</sup> Occasionally Boulton made cast candlesticks in silver: 'lyon-faced' candlesticks were made by that method for 3rd Earl of Kerry in 1771-2; these

required 108 troy ozs of silver, at 5s.9d. per troy oz for which they charged, ( with a fashioning charge of 2s.3d. per oz) a total of £43.8s.9d. That method was used in London, but through making the candlestick to the same design with a drop-stamp and dies (Figure 3) only 38ozs were required and for these Boulton charged just £17.2s.0d. These were sold to Sir Alexander Gilmour in 1771 and a Mr. Udney, a City merchant . The same dies were also used to make the pattern in Sheffield-plate at £7.17s.6d.<sup>69</sup> Boulton was surprised that 1st Baron of Ravensworth ordered four pairs in Sheffield-plate and tried to persuade him to buy another pattern in silver; Ravensworth could not be persuaded and in 1774 bought four pairs for himself and two pairs for his friend the 2nd Marquis of Rockingham.<sup>70</sup> Boulton made other patterns in silver from £5 to £10 per pair and in Sheffield-plate from £1.0s.0d. to £2.12s.6d..<sup>71</sup> In 1780, thirty were sold in silver, and 2500 in Sheffield-plate.<sup>72</sup>

There is substantial evidence for the purchase of Sheffield-plate candlesticks by the middle classes <sup>73</sup>(Figure 4) and candlesticks remained a consistent part of production at Soho,<sup>74</sup> even though can-



**Figure 4**  
M. Boulton Plate Co., pair of Sheffield -plate candle sticks, c 1800, Birmingham Assay Office.

dlesticks of brass or iron were available from elsewhere for as little 7s.6d. and 2s.0d. respectively.<sup>75</sup>

Wicks required the use of snuffers. Boulton factored snuffers, usually of steel, to provide a sharp and durable cutting edge and these sold for 4s.0d. Silver handles ('bows') could be added, in which case the cost was 15s.0d. Partially plated snuffers were sold at 8s.9d.



but those described as 'entirely plated' cost 15s.6d. These may well have been Sheffield-plate, used for snuffers elsewhere, but some listed in a Soho Inventory of 1782 were specifically described as French-plated.<sup>76</sup> Another pair was described as 'silvered'<sup>77</sup> though these were factored.<sup>78</sup>

**Continued in Part II**