

# Did Benjamin Franklin invent transferware?

by WENDY W. ERICH

ON 3RD NOVEMBER 1773 Benjamin Franklin (1706–90) wrote a letter to Peter Perez Burdett, a young engraver then based in Liverpool, thanking him for sending his recently produced specimen of transfer-printed chinaware (see Appendix below).<sup>1</sup> Following words of appreciation and encouragement for the china, the elder statesman then makes an astonishing claim that he himself had pursued his idea for transferring pictures to pottery more than twenty years earlier, only to be laughed at by the English pottery trade. The invention of transferware pottery has been subject to academic dispute, but credit was ultimately bestowed on John Brooks as the creator and John Sadler, of Sadler & Green, Liverpool, as the developer of the transfer-printed style that revolutionised the surface decoration of ceramics for the following two hundred years.<sup>2</sup> However, the importance to ceramic history of this 1773 letter written by Franklin has been overlooked.

By 1773 Franklin was sixty-seven years old and a well-respected figure in worldwide political and scientific realms. His image appeared ubiquitously in periodicals, on trinkets and on home furnishings, including popular exported items such as the transfer-printed creamware bowl celebrating America's heroes (Fig.20). Serving in London as a diplomat, Franklin wrote this letter to Burdett from Craven Street, near Charing Cross, today his only extant London residence (and currently a museum). The letter is addressed to the thirty-nine-year-old Peter Perez Burdett, a cartographer and engraver who had established himself creating topographical surveys of Derbyshire and Cheshire, and by recent work on newly built English canals. Burdett was an occasional model for and close friend of Joseph Wright of Derby, who in 1765 painted a celebrated double-portrait of Burdett, survey instruments in hand, with his first wife, Hannah (Fig.21). Wright encouraged Burdett to form the Society for Artists in Liverpool in 1769, and Burdett confidently elected himself its first President. Described as 'awkward, self-opinionated, and unpleasant',<sup>3</sup> Burdett also claimed to have invented aquatinting, a new technique for producing tonal areas on printed engravings by use of a resist compound on a chemically washed copperplate, rather than the usual methods of cross-hatch or stipple with an engraver's burin. In fact, he had not invented it at all, as it was being done in France at least a year earlier, and samples from Holland had existed for decades.<sup>4</sup>

A year before Burdett and Franklin corresponded, Burdett had been vying unsuccessfully for Josiah Wedgwood to approve his new aquatinted designs for transfer-printing onto creamware,



20. The Franklin bowl, attributed to Josiah Wedgwood. c.1777. Transfer-printed creamware, diameter 22.9 cm. (State Museum of Pennsylvania, Pennsylvania Historical and Museum Commission, Harrisburg).

but Wedgwood was reluctant. Burdett had given Wedgwood a few engravings: a landscape, dead game and a third with shells and seaweed, but the great potter did not want to confuse his customers who may not have known how to 'draw the line betwixt printing and painting, and may take it into their heads that we apply the former to everything'.<sup>5</sup> Wedgwood delayed payment for the designs, and their relationship soured. The following year, just six months after receiving Franklin's letter, the disgruntled Burdett left England permanently to work for the royal court in Karlsruhe, Germany.

Franklin had had numerous opportunities to start a friendship with Burdett, among them during Franklin's 1771 tour of the manufactories of Derbyshire, during Franklin's visits to the Lunar Society meetings in his ancestral city of Birmingham,<sup>6</sup> via their mutual active memberships of the Freemasons, or as a result of the former printer and publisher's long-standing interest in the art of engraving.

The letter opens with Franklin expressing his thanks and praise for some chinaware Burdett had sent him, coupled with hopes for the profitability of Burdett's invention. Although this gift has never been identified, the closing paragraph of Franklin's letter tells Burdett that he sent one of the samples 'containing a number of Sprigs' to the great naturalist Sir Joseph Banks, who was at the time preparing to publish a folio of botanical specimens from the discoveries made on the journey of the *Endeavour*.<sup>7</sup> Whether the samples sent to Banks were engravings on paper or 'that on

The author is most grateful to the Transferware Collector's Club which enabled her to carry out research for this article.

<sup>1</sup> See Appendix below for complete transcription of this letter; it appears in L.W. Labaree *et al.*, eds.: *The Papers of Benjamin Franklin*, New Haven and London 1959–, XX, pp.459–60 (hereafter cited as POBF, with date of relevant letter).

<sup>2</sup> K. Boney: *Liverpool Porcelain of the Eighteenth Century*, London 1957, pp.81–82; and B. Watney and R.J. Charleston: 'Petitions for Patents Concerning Porcelain, Glass and Enamels: Birmingham, "The Great Toyshop of Europe"', *Transactions of the English Ceramic Circle* 6/2 (1966), pp.57–123; my thanks to Maurice Hillis

for kindly clarifying this detail.

<sup>3</sup> A. Finer and G. Savage, eds.: *The Selected Letters of Josiah Wedgwood*, London 1965, p.15 (this is the editors' summary of his character, not Wedgwood's words).

<sup>4</sup> A. Griffiths: *Prints and Printmaking: An Introduction to the History and Techniques*, London 1980, p.94.

<sup>5</sup> J. Wedgwood to T. Bentley, Etruria, 17th February 1772; Finer and Savage, *op. cit.* (note 3), p.118.

<sup>6</sup> J. Uglow: *The Lunar Men: The Friends Who Made the Future*, London 2002, p.139.

<sup>7</sup> According to the Natural History Museum, London, Banks was not

China' is not known, but Franklin's description of Burdett's work refers to its visual appearance as botanical. Franklin greatly admired ceramics, and in 1758 sent his wife in Philadelphia 'something from all the China Works in England'<sup>8</sup> inviting her to inspect 'the Difference of Workmanship'.<sup>9</sup> He also acquired a large china dinner service for his Craven Street home, as he was 'obliged sometimes to entertain polite Company'.<sup>10</sup> Today, few ceramics with a Franklin provenance have survived, and none with transfer-printed botanical motifs that might be identified as Burdett's: most of Franklin's household goods were sold by his daughter after his death.

Franklin's written tone changes subtly when he wishes to clarify a matter to Burdett, one that seems to have troubled the diplomat for some time. Franklin is reluctant to 'contest the Honor' of the person 'who pretends' to have invented the transfer-printed process by which Burdett's designs appear on the chinaware, yet he asserts that 'I have reason to apprehend I might have given the Hint on which that improvement was made'.

Franklin professes ignorance regarding the inventor of transferware, today credited to John Sadler. Yet if Franklin was ever compelled to vindicate himself, he had found his golden opportunity: at the time of this letter, Burdett was an engraver in John Sadler's employ.<sup>11</sup> By pointedly stating that the 'Hint' for the invention was his own, Franklin desires to set the historical record straight.

John Sadler was not a potter by trade, but, like Franklin, a publisher and printer of newspapers. It is probable that Franklin knew of Sadler, for Franklin was in Liverpool just two years after Sadler's initial production of transfer-printed tiles. Franklin had shown great interest in the British manufactories on his original 1758 tour, and it was from this excursion that he sent home the various china samples to his wife. Sadler conducted his tile printing on material bought 'in the white' from various manufactories, such as Wedgwood. On 27th July 1756, he claimed he had miraculously printed 'without the aid or assistance of any other persons', twelve hundred earthenware tiles in six hours,<sup>12</sup> printing them 'neater than one hundred skillful pot painters could have painted in the like space of time',<sup>13</sup> with a new invention that he had been trying to perfect for seven years.<sup>14</sup>

Other than Sadler, John Brooks is the inventor given credit by historians for the creation of transfer-printing, although not on ceramics. Brooks was an Irish engraver who began working in the York factory in Battersea in 1753, producing the first enamelled boxes transfer-printed with copperplate engravings. His partners were Stephen Theodore Janssen and a Mr Delamin at the York House factory, and Brooks had registered a patent to transfer-print in Birmingham in 1751.<sup>15</sup> However, Sadler's affidavit of 1756 stated he had been 'upwards of seven years in finding out the method of printing tiles, and in making trials and experiments for that purpose, which they have now, through great pains and expense, brought to perfection',<sup>16</sup> placing Sadler's starting point for experimentation in 1749, a full two years



21. Peter Perez Burdett and his wife Hannah Burdett, by Joseph Wright of Derby. 1765. Canvas, 145 by 205 cm. (National Museum of the Czech Republic, Prague).

earlier than Brooks's 1751 patent application. The ceramic historian Hilary Young suggests that in the competitive environment that was standard within the industry, Sadler may have intentionally dated this 'seven year' period of experimentation to predate John Brooks's claim.<sup>17</sup>

If Sadler's claims and dates were to be juxtaposed with Franklin's recollection of events, one could establish a possible timeline for the fruition of the idea to transfer-print on ceramics. Franklin provides his information when he explains to Burdett that it had been 'more than twenty years since' he had communicated his original transfer-printing idea to his friend Dr Mitchell from America.

Peering back twenty years into Franklin's and Mitchell's lives shows certain events that give verifiable credence to Franklin's claim. By 1748 Franklin's long and lucrative career as America's most successful printer had ended and he sold the business to his partner. Civic minded and creative, Franklin had by then carried out plans for a first library, a first fire company and a new university, and had invented such diverse and useful items as the odometer, swimming fins and the now famous Franklin stove. At the age of forty-two, he took early retirement to pursue his burgeoning interest in electricity, after first receiving a glass Leyden jar from English botanist Peter Collinson. This interest consumed him. In March 1747 Franklin wrote that he 'never was before engaged in any study that so totally engrossed my attention and my time as this has lately done; for what with making experiments when I can be alone, and repeating them to my Friends and Acquaintance, who, from the novelty of the thing, come continually in crowds [*sic*] to see them, I have, during some months past, had little leisure for any thing else'.<sup>18</sup> The time before and after his electrical experimentation proved to be the turning point in Franklin's life, a clear demarcation for him to recall events 'twenty years since'.

over-impressed by aquatinting, and preferred the folio engravings from the *Endeavour* travels to be done by 'traditional black line method'; see [www.nhm.ac.uk/jdsml/nature-online/endeavour-botanical/about3.dsml](http://www.nhm.ac.uk/jdsml/nature-online/endeavour-botanical/about3.dsml).

<sup>8</sup> B. Franklin to Deborah Franklin, 19th February 1758; POBF.

<sup>9</sup> *Ibid.*

<sup>10</sup> *Ibid.*

<sup>11</sup> J. Wedgwood to T. Bentley, Liverpool, 23rd November 1771; Finer and Savage, *op. cit.* (note 3), p.116.

<sup>12</sup> E.S. Price: *John Sadler: A Liverpool Pottery Painter*, West Kirby 1948, pp.12–13.

<sup>13</sup> *Ibid.*

<sup>14</sup> *Ibid.*

<sup>15</sup> Watney and Charleston, *op. cit.* (note 2), p.61.

<sup>16</sup> Price, *op. cit.* (note 12), p.12.

<sup>17</sup> H. Young: *English Porcelain 1745–95: Its Makers, Design, Marketing and Consumption*, London 1999, p.64.

<sup>18</sup> B. Franklin to P. Collinson, 28th March 1747; POBF.



22. Benjamin Franklin, attributed to Robert Feke. 1738. Canvas, 127.5 by 101.9 cm. (Harvard University Portrait Collection, Cambridge MA).

Long before he was a recognised statesman or flew his famous kite, when Franklin was a younger man in the early 1740s (Fig.22), he had focused his passion on a different unsolvable problem of American families, that of home heating. Eighteenth-century fireplaces were inefficient, wood fuel was already declining in availability, there was constant bothersome chimney smoke within the house and a persistent danger of fire causing loss of homes and lives. By the time he was thirty-seven, Franklin had spent years searching for a solution, culminating in the invention of the ‘Pennsylvania Fireplace’ (or Franklin stove), produced in 1744 and still copied for use today.

Franklin tells Burdett that he proposed the idea for printing onto hearth tiles to ‘Dr. Mitchell from America’, not to be confused with other mid-eighteenth century John Mitchells in England, including one in Staffordshire. Franklin refers to the Virginia doctor he had first met through their mutual friend, the Philadelphia botanist John Bartram, in the autumn of 1744 when Mitchell visited Bartram for three weeks and was introduced to Franklin. The two spent three days together at Franklin’s home eagerly sharing their many philosophic and scientific interests, including a demonstration of Franklin’s new fireplace.<sup>19</sup> Dr Mitchell, a dedicated botanist and map maker who later gained fame as the cartographer for the first accurate map of the American colonies,<sup>20</sup> left America two years after meeting Franklin because of his fragile health. In 1746 Mitchell and his wife, Helen, moved permanently to England, and while the former’s health improved the latter’s failed, resulting in her death two years after arriving in London. Despite these personal setbacks Mitchell established himself in the Royal Society and was elected a Fellow in 1748, but the scholarly correspondence both Franklin and Mitchell enjoyed all but ceased by 1750. At that time, Mitchell’s health suffered and he no longer wrote letters, a loss Franklin greatly lamented.<sup>21</sup>

<sup>19</sup> E. Berkeley and D.S. Berkeley: *Dr. John Mitchell: The Man Who Made The Map*, Chapel Hill NC 1974, pp.65–67.

<sup>20</sup> The 3rd edition of Mitchell’s map is known as the Red Line map and was used at the 1763 Treaty of Paris to determine America’s boundaries from French and English claims. Mitchell created the map c.1750, and it was first published in 1755.

Given the narrow six-year span of personal communication that existed between the two (1744–50), Mitchell played a significant role in the establishment of Franklin’s future fame. In 1749 Mitchell recommended the then unknown Franklin to Royal Society colleagues in regard to his theories on thunder-gusts, electricity and heat.<sup>22</sup> The report was not well received, and Franklin later wrote in his memoirs how his ideas were ‘laughed at by the Connoisseurs’.<sup>23</sup> It was not until the 1751 publication of these experiments that Franklin and his discoveries became an international sensation. By 1753 the Fellows of the Royal Society awarded Franklin the prestigious Copley Medal, further spreading his fame.

When Franklin wrote to Burdett in 1773, he clearly recalled an event that had taken place twenty years earlier and presumably before he had become a well-known figure in Britain. The scientist explained how he had described to Mitchell the detailed process for printing onto chimney tiles, the ‘manner in which I thought it might be done’, including which engraved pictures to use in transfer-printing and why, and his certainty of the demand for such a useful product.

The idea for transfer-printing onto tiles had come to him as a domestic improvement to replace what Franklin called ‘wretchedly scrawled’ Dutch delftware tiles so prevalently used in American colonial hearths. Having meticulously studied the mechanics of the inner chimney, he pondered its exterior aesthetic as well, and developed the idea that morality pictures printed on tiles and ‘constantly in the eyes of Children [. . .] might give parents an Opportunity, in explaining them, to impress moral Sentiments’. At the time of Mitchell’s introductory visit, Franklin had just become a new parent again to a third child, a daughter barely a year old, and was thus alert to the teachable moments that occur as children gathered by the hearth with their parents.<sup>24</sup>

Franklin delighted in the visual teaching tool that reflected his own hardworking ethics, and often used illustrated text for his published maxims in his annual publication, *Poor Richard’s Almanac*. He suggested to Mitchell that they use prints from *Moral Virtue, delineated*, a 1726 reprint of an older emblem book (Figs.23 and 24).<sup>25</sup> *Moral Virtue, delineated* is an extremely rare volume of morality stories with copperplate illustrations, each with an instructional description of the picture’s meaning in both French and English, reiterated with adjacent poetry to interpret the Homeric vignette. This book was enthusiastically advertised for sale on eight different occasions in Franklin’s *Pennsylvania Gazette* between 1748 and 1750, each one mentioning its ready availability at Franklin’s Post Office.<sup>26</sup>

In the thirteenth illustration from *Moral Virtue*, ‘He That Lives Well Conceals Not His Actions’, the accompanying explanations inform the reader that Man should be careful not to reveal his good ideas to prying Fame, but rather demonstrate humility in them, disclosing them for the public good, without robbing Virtue of her due by the courting of a crowd.<sup>27</sup> The lesson of this tale chimes with Franklin’s own stance as an inventor who never took out patents on his stove or his lightning rod: ‘That we enjoy

<sup>21</sup> Berkeley and Berkeley, *op. cit.* (note 19), p.159. Franklin’s feelings are expressed in a letter to Cadwalader Colden, 11th October 1750; POBF.

<sup>22</sup> B. Franklin to J. Mitchell, 29th April 1749; POBF.

<sup>23</sup> Franklin quoted in K. Silverman, ed.: *The Autobiography of Benjamin Franklin*, New York 1986, p.173.

<sup>24</sup> The Franklins’ son Francis died of smallpox aged four in 1736, and their daughter,



23. Folio illustration, engraved by P. Daret. From M. Le Roy de Gomberville: *Moral Virtue, delineated*, London 1726. Engraving, 16.5 by 22 cm. (Jefferson Rare Book Collection, Library of Congress, Washington DC).



24. 'He That Lives Well Conceals Not His Actions', engraved by P. Daret. From M. Le Roy de Gomberville: *Moral Virtue, delineated*, London 1726, p.151. Engraving, 14 by 17.5 cm. (Jefferson Rare Book Collection, Library of Congress, Washington DC).

great Advantages from the Inventions of others, we should be glad of an Opportunity to serve others by an Invention of ours, and this we should do freely and generously'.<sup>28</sup> While Franklin wryly hoped that Burdett's aquatinting prospects 'will be (what Inventions seldom are) profitable to the Inventor', his sardonic tone reflects past experience with unprincipled claimants. He may vicariously have been directing a comment at the man 'who [. . .] pretends to that of Copper-Plate Engravings for Earthen-Ware', Burdett's employer, John Sadler.

Franklin claimed that he gave 'the Hint' of how to transfer-print onto tiles, including 'the Manner in which [. . .] it might be done', yet the technique he relayed to Mitchell years before is not redefined for Burdett. Was Franklin's idea to print directly onto tiles, or is he saying that he thought of taking the impressions from printed paper but did not think of putting them 'to other than Flat forms'? Franklin's boxy printing press required a strong back to operate, and the force of torque onto paper left strong indentations, making fragile earthenware an unlikely recipient for a transfer-print. The logical conclusion is that he envisaged taking the impression from paper and transferring it onto a flat tile.

An apprentice printer since the age of twelve, with thirty years experience in the pressroom, the inventive Franklin understood all the physical processes of printing. Transfer-printing onto pottery bears a relationship with eighteenth-century printing techniques: both used the hand-operated printing press to make impressions on wetted paper, which were then hung up to dry. The pigments of some eighteenth-century printing inks were so sticky and deep that smudging was a common spoiler of the printed page, even years and decades after its printing. This problem of the newly printed page was undoubtedly the bane of any printer, and tissue-like interleaves of special paper separated pages as they hung to dry (Fig.25).<sup>29</sup> For a frugal man with a curious mind like Franklin, perhaps this wasted interleaf was re-engineered to good use, as a transfer medium for decorating tiles. To transfer-print on pottery, inked tissue paper is pressed onto the earthenware with a stiff brush and removed with a soapy solution, leaving behind only the permanently transfer-printed ink. Eighteenth-century transferware techniques are still used at Burgess, Dorling and Leigh in Burslem, one of the last transfer-printing English potteries in operation. As both the printed page and transfer-printed chinaware use paper as the medium,

Sally, was born in 1743. Franklin's eldest son, William, born 1730, was the child of a previous unnamed relationship.

<sup>25</sup> Originally titled *The Doctrines of Morality: or, A View of Human Life Exemplified in One Hundred and Three Copperplates, done by the Celebrated Monsieur D'Art*, by M. Le Roy de Gomberville, London 1721.

<sup>26</sup> L.C. Olsen: *Benjamin Franklin's Vision of American Community: A Study in Rhetorical*

*Iconology*, Columbia SC 2004, pp.7–8. The Post Office was actually Franklin's printing shop, then run by his business partner, David Hall, but its name refers to Franklin's title as Postmaster of Philadelphia.

<sup>27</sup> M. Le Roy de Gomberville: *Moral Virtues, delineated*, London 1726, pp.150–51.

<sup>28</sup> Silverman, *op. cit.* (note 23), p.130.

<sup>29</sup> B. Hunnisett: *Steel Engraved Book Illustration in England*, London 1980, p.186.



25. *Reconciliation of Franklin with his brother*, attributed to Samuel Goodrich. From S. Goodrich: *The Life of Benjamin Franklin*, Philadelphia 1836, p.69. Engraving, 7.5 by 5.5 cm. (Benjamin Franklin Collection, Rare Books, Library of Congress, Washington DC).

Franklin may well have recognised the advantage of an easy application to the flat surface of tile, but never went beyond his 'first idea' and his focus on the fireplace.

Franklin recalled to Burdett the comment he had made to Mitchell regarding the 'great Demand for them if executed'. After John Sadler transfer-printed onto tiles in 1756, the innovation became an instant success. Owing to the large number of tiles Sadler was able to produce quite effortlessly, he was soon undercutting the labour-intensive Dutch tile painters by half,<sup>30</sup> and Sadler's biggest struggle was keeping enough stock of blank tiles on which to print.<sup>31</sup> When the quality was considered too inferior for the English market, the printed tiles were shipped to less demanding clients in the Colonies on the next sailing vessel from Liverpool. By 1768 signed Sadler tiles were built into the home of one of America's most prosperous ship magnates, still *in situ* (Fig.26) at the Jeremiah Lee Mansion in Marblehead MA.<sup>32</sup> These original Sadler tiles display the sophisticated visual appeal of a copperplate print that Franklin envisaged to replace common delftware hearth tiles. Inviting further suspicion that Sadler & Green had borrowed a lucrative idea, they also began producing tiles depicting *Aesop's Fables* for the moral edification of young children, just as Franklin had hoped.

Franklin knew well the paucity of manufactured products made in colonial America in the mid-eighteenth century and how such foreign goods were anxiously sought after by the affluent. In c.1730, thirty years before the Jeremiah Lee Mansion was built, James Logan, one of Philadelphia's wealthiest and most prominent citizens and a close friend of Franklin, had built his home, Stenton.<sup>33</sup> On the occasion of Mitchell's trip to Philadelphia, Franklin introduced the two scholars on 14th September 1744 at Stenton, and Logan offered a tour of his exquisitely furnished home, possessed of the finest library in

colonial America, one so big that it required two fireplaces.<sup>34</sup> Able to afford the best, Logan had installed imported Dutch delftware tiles to be used for fireplace surrounds (Fig.27), still *in situ*. Perhaps Franklin's observation of what he termed 'wretchedly scrawled' Bible tiles were noticed that day for their incongruous appearance among the elegant surroundings, and persisted in his memory.

As Franklin reviewed the decades-old conversation with Burdett in his own memory, he lamented the reason why his invention had never come to fruition: 'Dr. Mitchell wrote me in answer, that he had communicated my Scheme to several of the principal Artists in the Earthen Way about London, who rejected it as impracticable'. The London potters sought out by Mitchell echoed the derisory reaction to the young Franklin by the Royal Society. Mitchell became familiar with many tradesmen shortly after his arrival in London, when he became engrossed in important research on potash. Used in glassmaking, the making of potash was a 'mechanic Art, practiced only by the Vulgar, and neglected and overlooked by the Learned',<sup>35</sup> and Mitchell recorded a visit in 1747 to tradesmen making 'white glass'.<sup>36</sup> This documented visit was potentially one of Mitchell's ideal opportunities to communicate Franklin's idea to London manufacturers. John Brooks may even have been among 'the Vulgar' via his association with the opaque-white glass industry in London, and Brooks's 1754 patent specifically refers to printing on '... Enamel, Glass, China and other Ware'.<sup>37</sup>

Towards the end of his letter to Burdett, Franklin mentions his curiosity when he first saw someone with a small enamelled box many years afterwards, clearly transfer-printed with a copperplate design, and was curious about the technique. In vogue by the mid-1750s, the tiny domed patch boxes had printed designs on their lids created by a gelatinous substance used for the transfer medium that would accommodate nearly any shape. Called glue bats, this transfer-printing process was 'beyond [Franklin's] first idea', and strengthens the case that Franklin's invention, presented to potters by Mitchell, was to transfer-print only flat paper onto flat tiles. Finally, Franklin concludes his letter with one or two other passing remarks of interest: he has sadly heard that the China Works in his hometown of Philadelphia were closing,<sup>38</sup> and ends the letter with the offer to forward Burdett's aquatinted specimens to Sir Joseph Banks for potential use in Banks's new folio.

And so a last question arises: where is the earlier correspondence between Franklin and Mitchell that would prove Franklin's claim? According to J.A. Leo Lemay, the biographer of Franklin, none exists.<sup>39</sup> Perhaps the letter was never copied before being sent, as was the contemporary practice; additionally, Franklin stated in his autobiography that he lost many of his papers during the War of Independence; and there is the possibility that Franklin's idea was communicated in person when he and Mitchell met in 1744, rather than by letter. But there is one very possible explanation for this lost earlier letter. In their biography of Mitchell, the Berkeleys relate the story of Mitchell's departure from America in May 1746. As he and his wife, Helen, crossed the Atlantic, their ship was seized and robbed by pirates

<sup>30</sup> N. Riley: *Tile Art: A History of Decorative Ceramic Tiles*, London 1987, p.78.

<sup>31</sup> Boney, *op. cit.* (note 2), p.87.

<sup>32</sup> The Jeremiah Lee Mansion is currently a museum operated by the Marblehead Museum and Historical Society. Along with original Sadler tiles, the house is also noted for its rare original eighteenth-century English hand-painted wallpapers.

<sup>33</sup> Stenton is currently operated as a public museum administered by the National Society of the Colonial Dames of America; Logan was secretary to William Penn.

<sup>34</sup> Berkeley and Berkeley, *op. cit.* (note 19), pp.67–68.

<sup>35</sup> *Ibid.*, pp.102–03. Originally printed in *Philosophical Transactions of the Royal Society* 45 (1748), pp.541–63.



26. Hearth tiles, by John Sadler at Jeremiah Lee Mansion, Marblehead MA. 1766–68. Tin-glazed earthenware. (Courtesy of Marblehead Museum and Historical Society; photograph by Marcia Hunkins).



27. Delftware Bible hearth tiles at Stenton, Philadelphia PA. c.1730. (Courtesy of the National Society of the Colonial Dames of America in the Commonwealth of Pennsylvania).

aboard the *Tiger*, commanded by a Captain Pallier of St Malo: ‘With horror, Mitchell saw his years of study represented in his notes disappear along with all of his herbarium specimens and all of the parcels’.<sup>40</sup> If Franklin’s letter was then among Mitchell’s papers, the pirates’ actions assured it would not be recovered and Mitchell arrived in England with nothing to show the English potters.

The idea for transfer-printing onto ceramic material is not the same as the production of transferware, and John Sadler and John Brooks deserve due credit for the pursuit and implementation of the invention that became a revolution in the surface decoration of pottery. Nevertheless, this analysis of Franklin’s

overlooked 1773 letter shows the writer’s clear declaration of ownership for the original idea to decorate tiles by transfer-printing. It is not known how long Franklin’s invention brewed in his mind before he described it to Mitchell, but at some point between the years 1744 and 1750 it was relayed in full to the Virginia doctor. When Mitchell responded with the chorus of negative responses regarding the idea’s impossibility, it was simply because it had never before been done. Nonetheless there were those who may have listened to the carefully conceived idea, believing that transferring prints to pottery was an invention worth pursuing and, by the middle of the next decade, were producing English transferware.

## Appendix

**Letter from Benjamin Franklin to Peter Perez Burdett, 3rd November 1773.** (Collection of American Philosophical Society; transcribed from L.W. Labaree *et al.*, eds.: *The Papers of Benjamin Franklin*, New Haven and London 1959–, XX, pp.459–60).

Nov 3, 1773  
Sir,

I was much pleased with the Specimens you so kindly sent me, of your new Art of Engraving. That on the China is admirable. No one would suppose it any thing but Painting. I hope you meet with all the Encouragement you merit, and the Invention will be, (what Inventions seldom are) profitable to the Inventor.

I know not who (now we speak of Inventions) pretends to that of Copper-Plate Engravings for Earthen-Ware, and am not disposed to contest the Honor of it with any body, as the Improvement in taking Impressions not directly from the Plate but from printed Paper, applicable by that means to other than flat Forms, is far beyond my first Idea. But I have reason to apprehend I might have given the Hint on which that Improvement was made. For more than twenty years since, I wrote to Dr. Mitchell from America, proposing to him the printing of square Tiles for ornamenting chimnies [*sic*], from Copper Plates, describing the Manner in which I thought it might be done, and advising the Borrowing from the Bookseller, the Plate that had been used in a thin

Folio, called *Moral Virtue delineated*, for the Purpose. As the Dutch Delphware Tiles were much used in America, which are only or chiefly Scripture Histories, wretchedly scrawled, I wished to have those moral Prints (which were originally taken from Horace’s poetical Figures) introduced on Tiles, which being about our Chimneys, and constantly in the Eyes of children when by the Fire-side, might give Parents an Opportunity, in explaining them, to impress moral Sentiments; and I gave Expectations of great Demand for them if executed. Dr. Mitchell wrote to me in Answer, that he had communicated my Scheme to several of the principal Artists in the Earthen Way about London, who rejected it as impracticable: And it was not till some years after that I first saw an enameled [*sic*] snuff-Box which I was sure was a Copper-Plate, tho’ the Curvature of the Form made me wonder how the Impression was taken.

I understand the China Work in Philadelphia is declined by the first Owners. Whether any others will take it up and continue it, I know not.

Mr. Banks is at present engaged in preparing to publish the Botanical Discoveries of his Voyage. He employs 10 Engravers for the Plates, in which he is very curious, so as not to be quite satisfied in some Cases with the Expression given by either the Graver, Etching or Metzotinto, particularly where there is a Wooliness or a Multitude of small Points of a Leaf. I sent him the largest of the Specimens you sent containing a Number of the Sprigs. I have not seen him since, to know whether your Manner would not suit some of his Plants, better than the more common Methods.

With great Esteem, I am, Sir, Your most obedient Servant, B. Franklin

University of Delaware.

<sup>40</sup> Berkeley and Berkeley, *op. cit.* (note 19), p.85. The authors used accounts from letters between Johann Frederick Gronovius and John Bartram, Franklin and Cadwalader Colden. Franklin (16th October 1746; POBF) says Mitchell was ‘plunder’d of all his learned Observations’.

<sup>36</sup> *Ibid.*, p.104.

<sup>37</sup> Watney and Charleston, *op. cit.* (note 2), pp.61, 62–63 and 78.

<sup>38</sup> The short-lived Bonnin and Morris factory, Philadelphia, closed after two years in 1772.

<sup>39</sup> Information via email from the late Dr Lemay, du Pont Winterthur Professor,