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## Curious Colors of Currency: Security Marbling on Financial Instruments During the Long Eighteenth Century

PLATES 37–47

JAKE BENSON\*

The twenty-dollar bills authorized by the Continental Congress and dated May 10, 1775, feature a hand-marbled margin applied as a polychrome security device. The association of Benjamin Franklin with these notes has led scholars to attribute the concept of security marbling to his genius. This article shows that security marbling was first adopted by the Bank of England in 1695. It is further argued that both fractional reserve banking and the issuance of paper currency were intimately intertwined with the advent of paper marbling in England during the mid-seventeenth century. Evidence is presented to show that a Persian artist and émigré to India, Muhammad Tahir, was the true innovator behind the combed and chevron marbled patterns that were later applied to financial instruments.

### INTRODUCTION AND BACKGROUND

Many numismatic historians and collectors are familiar with an emission of 10,800 twenty-dollar bills that the Continental Congress authorized on July 22–23, 1775, then issued with the back-date of May 10, when the Second Continental Congress convened in Philadelphia.<sup>1</sup> They were printed on sheets bearing

\* John Rylands Research Institute, John Rylands Library, University of Manchester (jake.benson@manchester.ac.uk).

1. For the text of the resolution for the emission see United States Continental Congress, *In Congress, Thursday: Resolved, that a sum not exceeding two millions of Spanish mill'd dollars be emitted by the Congress in bills of credit for the defence of America. That the twelve confederated colonies be pledged for the redemption of the bills of credit now directed to be emitted for the defence of America.* [Philadelphia?: s.n, 1775]. Library of Congress Charles Thomson and Continental Congress Broadside Collection, accessed March 13, 2018, <https://www.loc.gov/>

a curious, hand-marbled polychrome margin along the left side of the obverse as a security device. The marbled papers are thought to have been procured by Benjamin Franklin, who also designed the emblem on the obverse depicting the wind blowing over waves surmounted by a Latin motto VI CONCITATÆ (driven by force; Pl. 37, 1).<sup>2</sup> Avid interest among numismatic collectors in this specific emission has resulted in five-figure sales at auction in recent years, a considerable sum for historical paper currency.<sup>3</sup>

Prior writers have attributed the concept of security marbling to Franklin's genius; however, it will be shown that this practice was already well-established in London prior to, during, and well after the periods that he resided there.<sup>4</sup>

item/90898111/. See also Eric Newman, *The Early Paper Money of America*, 5th ed. (Iola, WI: Krause Publications, 2008), 37, 62–63 (also an image reproduced on the upper cover) and Farley Grubb, *The Continental Dollar: Initial Design, Ideal Performance, and the Credibility of Congressional Commitment*. (Cambridge, Mass: National Bureau of Economic Research, 2011), 1–2, tab. 3.1.

2. The emblem design on the obverse appears on the verso of Franklin's "Resolutions on Trade Submitted to Congress, [on or before 21 July 1775]," American Philosophical Society, Mss.B.F85inventory11, L(ii), 45v. See Benjamin Franklin, *The Papers of Benjamin Franklin*, vol. 22, ed. William B. Willcox (New Haven: Yale University Press, 1982), 126 n. 6; editorial note 357–58; reproduced, 359. Franklin's description of the emblem proves that he designed it. This was subsequently published in his "Account of the Devices on the Continental Bills of Credit," *Pennsylvania Gazette*, Sept. 20, 1775, quoted in Franklin, *Writings*, ed. Joseph A. Leo Lemay (New York: Library of America, 1987), 737. See also Newman, *Early Paper Money of America*. For a detailed analysis of these and other emblems printed on contemporaneous currency, see Joseph A. Leo Lemay, "The American Aesthetic of Franklin's Visual Creation," *The Pennsylvania Magazine of History & Biography* 111, no. 4. (October 1987): 485–88; Pl. 40, 5.

3. Several such notes, along with a very rare blue-paper counterfeit detector were sold in 2005. Stack's, *John J. Ford, Jr. Collection: Coins, Medals and Currency. Part VIII, January 19, 2005* (New York: Stack's, 2005), lots 1698–1700. Another counterfeit detector for this issue is held in Colonial Williamsburg (acc. no. 1994-210,19).

4. The source of this paper has been debated by various scholars, whose views have shifted over time. At first, Eric Newman attributed the marbled sheets to an unnamed papermill in Merion, Pennsylvania: see Newman, *Early Paper Money of America*, 1st ed., 17, 30, 266. See also Phoebe Jane Easton, *Marbling: A History and Bibliography* (Los Angeles: Dawson's Book Shop, 1983), 73–74. In his initial correspondence with Eric Newman, Richard Wolfe expressed his belief that the paper was marbled in the United States, to which Newman countered that he thought the paper was procured by Franklin from Europe via Hall and Sellers: see Wolfe to Newman, August 25, 1986, Newman Numismatic Portal, and Newman to Wolfe, August 29, 1986, Newman Numismatic Portal, accessed March 18, 2018, <https://nnp.wustl.edu/library/book/535395?page=6>. Wolfe later attributed the marbling to France in Richard J. Wolfe, *Marbled Paper: Its History, Techniques, and Patterns, with Special Reference to the Relationship of Marbling to Bookbinding in Europe and the Western World* (Philadelphia: University of Pennsylvania Press, 1990), 86. After pertinent information was published in *The Papers of Benjamin Franklin*, vols. 30–31, both Newman and Wolfe again revised their positions; see Newman, *Early*

Significant evidence proves that the formative years of fractional reserve banking and issuance of paper currency were intimately intertwined with the advent of paper marbling in England.<sup>5</sup> Together with new research on the origins and evolution of marbling in the Islamic world, and its subsequent spread to Europe, this essay provides an overview of security marbling throughout the “long eighteenth century” (ca. 1695–1815), until it was ultimately superseded by mechanized security printing.

#### THE ORIGINS OF PAPER MARBLING AND EARLY PRACTICE IN EUROPE AND ENGLAND

In Europe, marbled papers were primarily made by dispersing colors upon the surface of a thickened liquid. Whether erratically spattered or carefully placed, the droplets expand into circular shapes. The expansive force of successive applications causes the first layer of spots to contract into veins (Pl. 38, 2a). The colors can be gently stirred with a stylus to form soft swirls or intricately manipulated with a series of tools and movements to form distinctly different yet relatively consistent homeomorphic chevron and combed patterns (Pl. 38, 2b–c). Afterwards, a sheet of paper, often prepared beforehand with an alum mordant, is carefully laid over top to capture the resulting floating design. Despite their apparent uniformity, marbled papers are technically a form of monotype printing; no two patterns are ever exactly alike.

Before describing how marbling came to be applied as the first polychrome form of monetary security device, a review of the emergence of the art in England in the late seventeenth century, after it was first introduced to Europe from the Muslim world, will help us to comprehend the context in which this practice first occurred.

The ultimate origin of the technique used in Europe is enigmatic. A Chinese compilation, *Wen Fang Si Pu* (Four Treasures of the Scholar's Study), completed

*Paper Money of America*, 5th ed., 62, and James Sumner and Richard J. Wolfe, *The Mysterious Marbler: With an Historical Introduction, Notes on the English Marbling Tradition, and Thirteen Original Marbled Samples by Richard J. Wolfe* (New Castle, DE: Oak Knoll Books, 2009), 100–4. Wolfe also noted how Franklin attended a meeting of the Society of Arts in 1760, at which an award for marbling was raised to £100: Wolfe, *Marbled Paper*, 67–68, 85, 209 n. 17, 209, n. 21.

5. Until now, only one very brief essay devoted to the relationship of marbling to numismatics has been published. See Daniel Forrest, “Paper Marbling in Numismatics,” *The Asylum* 12, no. 1 (Winter 1994): 14–17. In her forthcoming dissertation “Surface Experiments in Early America,” Harvard Ph.D. candidate Jennifer Chuong discusses Franklin's use of security marbling in the broader context of currency production in the early United States.

in 986 by the scholar-official Su Yijian (d. 996), describes a paper called *liu sha jian* (Chinese: floating-sand letter-paper). This decorated paper was made by two different methods; the first is a form of painted paste slurry applied directly to the surface of a sheet of paper, and the other may describe a form of floating color. However, since no physical evidence of Chinese decorated paper made with floating colors has ever been identified, the account remains uncorroborated.<sup>6</sup> In contrast, another method of floating ink on water has been practiced since at least the early twelfth century in Japan, where it was known as *suminagashi* (floating-ink paper). The earliest examples are found in the *Sanjurokunin Kashu* (Anthology of Thirty-Six Eminent Poets), presented to the Heian-period cloistered emperor Shirakawa (r. 1073–1087) on his sixtieth birthday in 1113.<sup>7</sup>

Many writers have claimed or implied that these East Asian marbling methods subsequently “transferred” to the Muslim world; however, there is a conspicuous lack of evidence to support this hypothesis.<sup>8</sup> While the absence of evidence is not necessarily evidence of absence, a gap of several centuries, and more importantly, significant differences in methods, materials, and contexts readily call such assertions into question. Similarly, a widely reported claim that the art was practiced in “13th-century Turkistan” is unfounded as no evidence of any form of decorated paper, much less marbling, has been identified in manuscripts from that region during that time.<sup>9</sup> Rather than an example of transcultural trans-

6. Su Yijian, *Wen Fang Si Pu*: 5 Juan, Part 2. ([s.l.]: Gu'an Lu shi, 1879), 56. Summarized in Tsuen Hsuei Tsien, “Paper and Printing,” in Joseph Needham, ed., *Science and Civilisation in China*, 5; *Chemistry and Chemical Technology*, 1. (Cambridge: Cambridge University Press, 1985), 94–5, fig. 1079. To support his assertion that marbling originated in China, Tsien published several images of modern “An-ji” decorated papers produced in Anhui Province; however, none of those examples were made with floating colors and they cannot be considered examples of marbled papers. See also Jake Benson, “Historical References to Marbling in East Asia,” *Society of Marbling Annual* (2005), 20–22.

7. See Kiyofusa Narita, “Suminagashi,” *The Papermaker* 24, no. 1 (1955): 27–31; and Narita, “Suminagashi,” in Ann Chambers, *Suminagashi: The Japanese Art of Marbling: A Practical Guide*. (London: Thames & Hudson, 1991), 13–16. See also Jake Benson, “Historical References to Marbling in East Asia,” 23. Note that Kiyofusa Narita originally published an incorrect date of 1118 for the *Sanjurokunin Kashu*, which was repeated by subsequent authors, including myself, in the above-mentioned article.

8. Albert Haemmerle and Olga Hirsch were the first to propose this hypothesis, claiming that “Die Kenntnis von der Technik der Tunkpapier dürfte wie das Papier selbst auf dem Wege der großen Seidenstraße über Ostturkestan nach Persien und der Türkei gelangt sein”: A. Haemmerle and O. Hirsch, *Buntpapier: Herkommen, Geschichte*.

9. This assertion was first published in a non-scholarly photographic essay about the late Turkish master Mustafa Düzgünman (d. 1990). See Robert Arndt, “Ebru: The Cloud Art,” *Arnamco World Magazine* 24, no. 3 (May–June 1973): 26. The claim was elaborated by Easton, *Marbling*, 15; and Wolfe, *Marbled Paper*, 8.

ference of a technology (akin to paper making), the physical evidence suggests that the art could have independently emerged in a context of prolific decorated paper production resulting from *intercultural exchanges* between the Ming-Dynasty Yongle Emperor of China (r. 1402–1424) and the Timurid ruler Shah Rukh (r. 1405–1447) early in the fifteenth century.<sup>10</sup> Muslim artists may very well have attempted to imitate decorated papers they had observed, but without any direct technical knowledge of Chinese methods and procedures.<sup>11</sup>

According to more than seventy sources, paper marbling was primarily known by the terms *abr kāgāz* (Persian: cloud paper) and *kāgāz-i abri* (Persian: clouded paper), but it was most often called simply *abri*.<sup>12</sup> The earliest physical evidence for the art is considered to be a pair of leaves bearing rudimentary bisected drop-motifs—one decorated on both sides, the other on the recto only—now held in the Kronos Collection, New York. The verso of the latter bears a Persian notation in *ta'liq* script: “These rare *abris*, from among the gifts of Iran...” accessioned to the library of Ghiyath al-Din Khalji (d. AH 905/1501 CE), ruler of the Sultanate of Malwa, India, at his palace in Mandu on Zu'l-Hijja 1, AH 901/August 11, 1496 CE.<sup>13</sup> In addition to rudimentary, stylized drop-motifs, turbulently swirled and primitive spotted patterns that exhibit minimal control over the process were the main modes of marbling during the long sixteenth century. These early practices were part of a fledgling decorated-paper industry that emerged among professional stationers in Istanbul during the mid-to-late sixteenth century. As early as the 1570s, European travelers to Istanbul purchased these colorful “Turkish papers” and had them bound into small friendship albums (Lat. *alba amicorum*; Ger. *Stambuchen*) and other manuscripts.<sup>14</sup>

10. For a complete list of manuscripts incorporating Chinese papers, see David Roxburgh, *Turks: Journey of a Thousand Years* (London: Royal Academy of Art, 2005), 421, no. 176.

11. Lacquer was made with an extract of *Toxicodendron vernicifluum* in East Asia, but in Central Asia, artists reproduced the appearance with very different materials such as shellac and other resin-based varnishes. This theory that different regional practices of marbling occurred but were not necessarily linked to one another is elaborated in the first chapter of my forthcoming dissertation.

12. The art is also commonly called *abr ū bād* (Persian: cloud and wind) in Iran and *ebr ū* in Turkey today, a variant term adopted in the Ottoman Empire in nineteenth century. Assertions that the word is of purely Turkic origin are unfounded. Various hypotheses of origin and terms for marbling are discussed in Chapter 1 of my forthcoming dissertation.

13. Published in *Sultans of Deccan India, 1500–1700: Opulence and Fantasy*, ed. Navina Najat Haidar and Marika Sardar (New York: Metropolitan Museum of Art, 2015), no. 72, 156, 160–61. If accepted as authentic, this notation would also comprise the earliest mention of the term *abri* with reference to this art.

14. The appellation *Turkish paper* derives from both the point of contact—especially Istanbul—as well as prevailing essentialisms regarding all Muslims as “Turks” by Europeans at that

By 1600, several albums, including one with an ornate prose preface lavishing praise upon an enigmatic Persian artist and émigré to India—likely the Deccan Sultanates—named Muhammad Tahir, feature highly innovative marbled paper mounts including intricately-worked homeomorphic combed designs (Pl. 38, 3).<sup>15</sup> Correspondence written to this master by artists Khalil Vaqqari and Yahya Qazvini from the ancestral shrine of mystical figure Shaykh Safi al-Din Ardabili (d. 1334), progenitor of the Safavid dynasty (1501–1722) also survives.<sup>16</sup> They both describe how their patron, then-Safavid governor of Azerbaijan and cus-

time. It should not be taken to imply that the art is of exclusively ethnic Turkic origin; rather, the evidence demonstrates that Turkey was a conduit by which marbling arrived in Europe. For a recent overview of *alba amicorum*, see Nedim Sönmez, “Le papier turc dans les albums du XVI<sup>e</sup> siècle.” In *Alter Ego: Amitiés et Réseaux du XVI<sup>e</sup> au XXI<sup>e</sup> siècle*, ed. Aude Therstappen and Kerstin Losert (Strasbourg: Bibliothèque Nationale de Universitaire de Strasbourg, 2016), 154–75. While Mehmed Ali Kâğıtçı (d. 1982) asserted that the Ottomans historically employed marbling as a security device, he cited no physical evidence to support his claim, but subsequent authors repeated this unsubstantiated assertion. See Mehmed Ali Kâğıtçı, *Historical Study of Paper Industry in Turkey = Historique de l'industrie papetière en Turquie* (İstanbul: Grafik Sanatlar Matbaası, 1976), 20; and Easton, *Marbling*, 16–17, 24. Instead, it is well documented that when writing official documents, un-sized, hand-polished paper was strictly used for security purposes. See Mübahat S. Kütükoğlu, *Osmanlı Belgelerinin Dili (Diplomatik)* (İstanbul: Kubbealtı Akademisi Kültür ve Sanat Vakfı, 1994), 24. I am grateful to Irvin C. Schick for this reference.

15. The Persian preface of one album (Edinburgh University Library, Or. Ms. 373, fol. 5r) explicitly praises Muhammad Tahir and no other artist. Another eight folios detached from that album were combined with a taller one also featuring calligraphy and Deccani drawings mounted on similar papers (New Delhi, National Museum, 55.45). Then, a smaller but fully intact album of calligraphy and Deccani drawings (Bodleian Library, Oxford University, Laud 146) is also mounted on strikingly similar designs. It was acquired in 1638 by then-Archbishop of Canterbury William Laud (d. 1645), and given to the Bodleian Library the following year. Preliminary findings will be published in Jake Benson, “The *Qita’at-i Khush Khatt* Album (University of Edinburgh Or. Ms. 373): Authenticity and Provenance,” in *Iran and the Deccan: Persianate Art, Culture, and Talent in Circulation, c. 1400–1700*, ed. Keelan Overton (forthcoming, Indiana University Press, 2020). A detailed analysis of this album, its preface, and associated correspondence are translated and analyzed in my forthcoming dissertation. Two other Deccani manuscripts created for Muhammad Quli Qutb Shah of Golconda (r. 1580–1612), attributed to the 1590s, contain similar papers: an album with striated swirl marbled mounts completed in 1000/1591–92 (Dublin, Chester Beatty Library Pers 225, fols. 6r and 7v) and combed designs used to form *découpage* birds, angels wings’ and a mythical simurgh inset within an illustration of *Solomon Enthroned* in the same ruler’s own *Divān* dated ca. 1595–1600 (Hyderabad, Salar Jung Museum, Urdu Ms. 153, fol. 29v, Published in Haidar and Sardar, *Sultans of Deccan India*, fig. 72, 211). Considered together, this evidence suggests Muhammad Tahir operated somewhere in the Deccan, but his exact location is still unclear.

16. Tehran, Malik Library and Museum, nos. 3846/64 and 3846/74. Note the letters are not original, but were copies in an anthology of fine epistolography.



todian of the shrine Zu'l-Fiqar Khan Qaramanlu (d. 1610) was so astonished by the designs that he demanded they contact the master in India to learn more about his methods. Since the governor previously served as ambassador to the newly-crowned Ottoman sultan Mehmed III (1595–1603), his expressed preference for Muhammad Tahir's work was necessarily over papers from Turkey.<sup>17</sup> Together with evidence of similarly-patterned papers found in Ardabil manuscripts, Qazvini's letter contains a chronogram dating 1008 AH/1600–1601 CE that provides a *terminus post quem* for Muhammad Tahir's achievement of international fame, and also indicates that he must have mastered his methods during the decade prior.<sup>18</sup>

From India, Muhammad Tahir's novel pattern-making methods rapidly spread to Greater Iran and the Ottoman Empire, where it transformed an already burgeoning decorated paper industry. His patterns only appear in Ottoman manuscripts of the turn of the sixteenth to seventeenth centuries. While a *Dīvān* of Baqī (d. 1600) completed 13 Jumada al-Akhir 1003 AH / 23 February 1595 CE contains no such designs, a *Hadiqat al-Su'ada* (Arabic: Garden of Blessed) of Fuzuli (d. 1556), completed in the Tripoli Eyalet 1004 AH/1595–1596 CE by a janissary forest ranger named Ahmad b. Hasan contains three marble bifolia, including one more advanced striated swirl similar to those observed in Muhammad Tahir's repertoire; however, it lacks combed designs and the indigenous Islamic paper substrate suggests it may not have even been produced in Turkey.<sup>19</sup> In contrast, combed designs with stylized drop-motifs seemingly after Muhammad Tahir are found in an album likely made for Sultan Ahmed I (r. 1603–1616), now divided (Istanbul,

17. The reason is likely because Ottoman marblers were not yet skilled enough to make more advanced patterns. Iskandar Beg Munshi (Turkman). *The History of Shah 'Abbas the Great* (*Tārīk-e 'Ālamārā-ye 'Abbāsī*), 2. Roger M. Savory, trans. (Boulder, CO: Westview Press, 1978): 688–89, n. 3. He likely returned the following year.

18. Contemporaneous manuscripts from Ardabil with similar marbled designs are found in, *Manṭiq al-Ṭayr* (Convocation of the Birds) of Farid-al-Din 'Attar (New York, Metropolitan Museum of Art, 63.210); one illustration (fol. 44) from a dispersed *Būstān* (Persian: Fragrant Orchard) of Sādi (d. 1292) with marbled margin on the reverse and impressed with the Ardabil seal, recently sold at auction (Christies, London. *Art of the Islamic And Indian Worlds*, April 14 2014, lot 101), and two bindings (St. Petersburg, National Library of Russia, Dorn 58 and 260) taken from Ardabil in 1827 by Count Ivan Paskevich (d. 1856).

19. Işık Yazan, the former owner, attributed the marbling to an Ottoman master named Şebek, based upon a spurious notation on fol. 1r, inscribed with a modern metal-nibbed pen in red fountain pen ink, not the colophon. See Işık Yazan, "Ebrû sanatı," *Antika* 14 (May, 1986), 40–43. Tripoli is also located much closer to Damascus—with its famed stationery trade—than Istanbul, further suggesting the papers are not of Istanbul, or even necessarily Ottoman, manufacture, only that they were used to create an Ottoman-era manuscript.

Topkapı Palace Museum Library, H. 2171, fol. 33v; and, New York Metropolitan Museum of Art, 67.266.7, fol. 8v. Further papers were also recently identified by Nedim Sönmez in the *album amicorum* of Johannes Weckherlin (d. 1610) between 1593–1608, as well as his son Johann Michael Weckherlin (d. 1631) between 1611–1623.<sup>20</sup> While all of these examples indicate a degree of technical advancement, they clearly did not approach Muhammad Tahir's mastery of consistently-formed homeomorphic chevron and combed designs.

The appearance of these innovative patterns in manuscripts in Europe coincides with the earliest European technical descriptions of the marbling process. The earliest description of a rudimentary combing method appeared in Dutch by M. Gerard ter Brugghen, in his *Leert perfecktelyck om allerley gemarbert Papier te maecken, als volght* (Dutch: *Instructions to perfectly make all sorts of marbled paper, as follows*), first printed in Amsterdam in 1616.<sup>21</sup> This was followed by the Jesuit scholar Athanasius Kircher's Latin description of marbling, *Chartæ Turcico More Pingendæ Ratio* (*A Way of Coloring Paper in the Turkish Manner*), which he published in Rome in 1646.<sup>22</sup> An earlier German account composed by Daniel Schwenter (d. 1636), "Türkisches Papyr zu machen und zu figuriren" ("How to Make and Design Turkish Papers"), with instructions for producing floral marbled designs, was posthumously compiled by Georg Phillip Harsdörfer for a second volume of Schwenter's *Deliciae Physico-Mathematicae* (Latin: *Delights of Physical Mathematics*), published in Nürnberg in 1651.<sup>23</sup>

20. Stuttgart, Württembergisches Landesbibliothek, Codex Hist. Oct. 217. Sönmez, "Le papier turc", 172–173, and pl. VI-2, describes the manuscript as containing older designs used by the father and later, more advanced designs probably bound in later that were used by the son. On the basis of undescribed (and unreferenced) European watermarks, Sönmez attributes the more advanced marbled designs to the 1590s. However, all folios featuring such patterns bear inscriptions dated to the 1610s—such fol. 26r, inscribed 1614—which suggests they were more likely produced after 1600.

21. M. Geerard ter Brugghen, *Verlichtery kunst-boeck inde welke de rechte fondamenten en het volcomen gebruyvk der illuminatie met alle hare eygenschappen klaerlijcken werden voor oogen gesteld*. (Amsterdam: Herman Allesz. Koster, 1616), fol. D2v. See Marie Ange Doizy, *De la dominoterie à la marbrure: histoire des techniques traditionnelles de la décoration du papier*. (Paris: Arts & Métiers du Livre, 1996): 100–101.

22. Athanasius Kircher, *Ars magna lucis et umbræ...* (Rome: Hermannus Scheus, 1646), bk. 10, *Magia Pars II*, 814–15; English translation in Charles M. Adams, "Some Notes on the Art of Marbling Paper in the Seventeenth Century," *Bulletin of the New York Public Library* 51, no. 7 (1947), 413–15; See also Wolfe, *Marbled Paper*, 3, 15–16, 142–43, 194, n. 17. Another translation was published in Barry McKay, *Patterns and Pigments in English Marbled Papers: An Account of Origins, Sources and Documentary Literature to 1881* (Kidlington: Plough Press, 1988), 24–25.

23. Translated in Barry McKay, *Marbling: Methods and Receipts from Four Centuries with Other Instructions Useful to Bookbinders* (Oxford: Plough Press, 1990), 12–13. See also Adams, "Some Notes," 415–16, and Wolfe, *Marbled Paper*, 16.

In the earliest English description of the paper in 1615, George Sandys (d. 1644) observed that “They curiously sleeke their paper, which is thicke, much of it being coloured & dappled like chamolets, done by a tricke they haue in dipping it in the water.”<sup>24</sup> Francis Bacon also later observed in 1628 that:

The *Turkes* have a Pretty Art of *Chamoletting* of *Paper*, which is not with vs in vfe. They take diuers *Oyled Colours*, and put them severally (in drops) upon *Water*; and ftir the *Water* lightly; and then wet their *Paper* (being of some *Thickneffe*) with it; And the *Paper* will be *Waued* and *Veined*, like *Chamolet* or *Marble*.<sup>25</sup>

Robert Mackay Burch (d. 1919) seemingly paraphrases an observation of London shoemaker John Bagford (d. 1716) in an unidentified manuscript, in which he claimed physician and translator Theophilus de Garencières (d. 1680), probably a Huguenot refugee from France, was the first to practice the art in England. Burch recounts that “...he started to make it in London, at Clerkenwell Green; but his productions were duller and not so glossy as the Dutch, so he turned his attention to the manufacture of the necessary colours, in which he was so successful that on his death, he left a prosperous business to his daughter.” Burch further added that an unidentified scrapbook of Bagford’s, now held in the Harleian Collection at the British Library, “...contains a number of specimens of the marbled paper of two centuries ago, but they are mostly of quite ordinary character.”<sup>26</sup>

24. George Sandys “Of the Turks, their Manners, &c.,” in *A Relation of a Journey begun An Dom 1610...*, 1 (London: W.Barrett, 1615), 72. See also Adams, “Some Notes,” 412.

25. Francis Bacon, “Experiment Solitary Touching Chamoletting of Paper, 741,” in *Sylva Sylvarum: Or A Naturall Hiftorie in Ten Centuries* (London: William Rawley, 1628), 192. Adams, “Some Notes,” 412.

26. Robert M. Burch and William Gamble, *Colour Printing and Colour Printers* (London: I. Pitman, 1910), 48, and recently recounted in Barry McKay and Diana Patterson, “John Baskerville’s Decorated Papers,” in *John Baskerville: Art and Industry in the Enlightenment*, ed. Caroline Archer-Parré and Malcolm Dick (Liverpool: Liverpool University Press, 2017), 152, n. 4, and in McKay, *Patterns and Pigments*, 31. Unfortunately, Burch did not specify the exact volume in which Bagford recorded his remarks on de Garencières; however, marbled paper samples are found in Bagford’s scrapbook entitled “Specimens of paper with two pamphlets on the Paper Tax, 1694,” London, British Library, Harl. MS 5940. See Alfred W. Pollard, “A Rough List of the Contents of the Bagford Collection,” *The Library* 7, no. 1 (January 1902): 148. I thank both Philipa Marks and John Boneham of the British Library for their clarifications of this matter. In a letter to Samuel Pepys (d. 1703) dated June 25, 1699, Humphrey Wanley (d. 1736) reported that he also assembled two sample books that include marbled papers “chiefly by the help of the same Mr. Bagford” that Sir Henry Ellis (d. 1869) identified as Sloane MS 526. See Henry Ellis, *Original Letters of Eminent Literary Men of the Sixteenth, Seventeenth, and Eighteenth Centuries, with Notes and Illustrations* (London: Camden Society, 1843), 275–76.

The first complete technical account of the art in English dates to January 8, 1662, when John Evelyn presented a detailed lecture, “An Exact Account of the Making of Marbled Paper,” for the Royal Society in London.<sup>27</sup> Like Kircher, he was intrigued by the art as a scientific curiosity. Three diagrams that Evelyn drew (Pl. 40, 4) illustrate how combed patterns are formed, and proves that he unwittingly replicated Muhammad Tahir’s methods.<sup>28</sup> Evelyn’s lecture was soon followed on January 22, 1662, by a practical workshop for Royal Society members, the minutes recording that “The Experiment of Making Marbled paper was made which succeeded, according to Mr Evelyns ‘History.’”<sup>29</sup>

Curiously, Evelyn revealed neither from where nor from whom he had learned to marble paper, which led Charles Adams to suggest that since he had previously traveled to Italy and visited Kircher in Rome, he likely first became acquainted with the art there.<sup>30</sup> Reasonable as this assertion seems, correspondence by the German-English polymath, thinker, and “intelligencer” Samuel Hartlib (d. 1662) compellingly demonstrates otherwise.<sup>31</sup> In a journal entry dated in

27. John Evelyn to the Royal Society, “An Exact Account of the Making of Marbled Paper” *Classified Papers*, III (1) no. 4 (Cl.P/31/4), London: Royal Society Archives, 1661, EvJ86. The date for his lecture has been variously given as 1661 and 1662, due to the confusing simultaneous use of both Old Style and New Style calendar “1661/2” on the documents. The earliest holograph copy of Evelyn’s lecture is held in the Royal Society Archives, along with several subsequent copies. Others were subsequently copied for the Society’s register books (*Register Book 1*, London: Royal Society Archives, EvJ87, 137–40; *Register Book Copy 1*, London: Royal Society Archives, 1661–63, MS 776, EvJ88.5, 127–30). Another transcript is held in the National Archives. See *Transcript of part of the Royal Society Register book in the hand of Michael Weeks, Clerk of the Royal Society*, London: National Archives, State Papers, 9/7/27, EvJ90. Another was transcribed for London physician Sir Hans Sloane (d. 1753), who after the death of Sir Isaac Newton in 1727, succeeded him president of the Society (Register 1, London: British Library, Sloane MS 243). Upon his death, Sloane bequeathed his collections to the nation, which were combined with the library of George II (r. 1727–60) to form the British Museum in 1759. Sloane’s manuscripts are now held the British Library, St. Pancras. Charles Adams consulted a microfilm of Sloane’s copy held in the New York Public Library (\*Z-18); see Adams, “Some Notes,” 417–20.

28. The diagrams were redrawn and published by Adams, “Some Notes,” 418.

29. Meeting Minutes, Jan. 22 1662, Royal Society Archives (GB 117), JBO/1/62.

30. Adams, “Some Notes,” 416–17.

31. Hartlib’s observations regarding French marbling, hitherto unnoticed by other historians, warrant further investigation. In particular, in his *Ephemerides*, his personal diary of 1639, he notes an author named Vögelin offers instructions for marbling paper, observing that he “Hase the Art of Marbling of paper, which hee learned in Fraunce. Their Bookbinders have the best pappe in the world. There comes never no flies to it is very thinne touch and lasting. Bookes bound with it are never subject to moth-eating as they bee with the other. Samuel Hartlib, *Ephemerides* 1639, 2, 15B, in *The Hartlib Papers*, ed. M. Greengrass, M. Leslie, and M. Hannon (Sheffield: HRI Online Publications, 2013), accessed March 31, 2018, [https://www.dhi.ac.uk/hartlib/view?docset=main&docname=30A\\_04\\_09](https://www.dhi.ac.uk/hartlib/view?docset=main&docname=30A_04_09). The identity of Vögelin is unclear,

early 1600—about two years before the Royal Society lecture took place—Hartlib wrote that he learned via their mutual friend Robert Boyle (d. 1691) that “Mr Evelyn has got a new kind of Marble Paper out of Fraunce excelling all other Inventions.”<sup>32</sup>

On April 4, 1660, Hartlib implored Evelyn for several sheets:

...[I] humbly beg the favour of your Adresse where I may have the excellent Marble Paper (which you were pleased to bestow vpon mee) at Paris. For my Correspondent being to come away shortly from thence I suppose I shal prevaile with him to bring along some Quires of them for mee. For I have written once before but hee answered that hee could not finde them out. I would have good store because I shal endeavour to put them to many handsome and vseful Accomodations, which perhaps will not bee disliked by ingenious spirits.<sup>33</sup>

Hartlib's remarks indicate Evelyn derived his knowledge of the art from contemporary French marblers, which comports with information about marbling in France at that time.<sup>34</sup> Furthermore, a mid-seventeenth-century French *livre secrets* (book of secrets) contains instructions on marbling, together with a

but he was possibly related to German printer Ernst Vögelin (d. 1589). If corroborated, this would pre-date Kircher's account by several years. Hartlib also commented in 1652 that “Child hath the way of making Marble-Paper having several Receipts for it.” *Ephemerides* 1652, 2, 43B in Hartlib, *Hartlib Papers*, accessed March 31, 2018, [https://www.dhi.ac.uk/hartlib/view?docset=main&docname=28\\_02\\_37](https://www.dhi.ac.uk/hartlib/view?docset=main&docname=28_02_37). Between June and September 1656, he observed that “There is an Additional Invention for to make all manner of figures faces letters. etc. vpon Marble Paper. etc” by one “Rocheford”. Later that same year, he comments “Of Marble-Paper the vses to bee learned especially what vses Knötner made of it,” adding that “Hee made very curious skreenes with it and Dr Kuffler judged it to shew fairer then striped hangings.” *Ephemerides*, 1656, 3, 29/5/91A in Hartlib, *Hartlib Papers*, accessed March 31, 2018, [https://www.dhi.ac.uk/hartlib/view?docset=main&docname=29\\_05\\_83](https://www.dhi.ac.uk/hartlib/view?docset=main&docname=29_05_83). While the identities of Rocheford and Knötner are unclear and their works so far unidentified, “Kuffler” is undoubtedly the German chemist Johannes Sibertus Kuffler of Cologne (d. 1677) and “Child” is the agriculturalist and alchemist Robert Child (d. 1654), both associates of Hartlib. See G. H. Turnbull, “Robert Child,” *Publications of the Colonial Society of Massachusetts* 38 (1947), 44.

32. Samuel Hartlib, *Ephemerides* 1660, 29/8/10A, in *Hartlib Papers*, accessed March 31, 2018, [https://www.dhi.ac.uk/hartlib/view?docset=main&docname=29\\_08\\_10](https://www.dhi.ac.uk/hartlib/view?docset=main&docname=29_08_10). Wolfe, *Marbled Paper*, 198n22, notes that a brief account of marbling was published in Robert Boyle, *Some Considerations Touching the Vsefulness of Experimental Naturall Philosophy Proposd in Familiar Discourses to a Friend, by Way of Invitation to the Study of It*, 2nd ed. (Oxford: Printed by Hen. Hall ... for Ric. Davis, 1664), 10. The first edition does not contain this passage, which is quoted in Adams, “Some Notes,” 420, and Easton, *Marbling*, 45.

33. London, British Library Add. Mss. 15948, fol. 99r in *The Hartlib Papers*, [https://www.dhi.ac.uk/hartlib/view?docset=additional&docname=Add15948\\_098&](https://www.dhi.ac.uk/hartlib/view?docset=additional&docname=Add15948_098&).

34. For accounts of early French marbling, see Marie Ange Doizy and Stéphane Ipert, *Le papier marbré: son histoire et sa fabrication* ([Paris]: Éditions Technorama, 1985), 50–53.

marginal notation by the anonymous author attributing the information to one E. Joseph of Saint Antoine Carmé of Lyon on January 14, 1642.<sup>35</sup>

Evelyn's lecture generated considerable interest, not only among members of the Royal Society but also among other of his colleagues and contemporaries. One fellow Society founder, Sir William Petty (d. 1687), briefly described marbling in a treatise on dyeing techniques in 1667.<sup>36</sup> As noted by Adams, John Houghton published Evelyn's account nearly verbatim in three installments some thirty-seven years later in 1699.<sup>37</sup> Prior to that, a brief French account published in 1674, spuriously attributed to the physician Nicolas l'Emery (d. 1715) but in fact probably authored by one Antoine-Joseph d'Emery, was translated into English and published in London in 1685.<sup>38</sup> Finally, a brief technical account by John White (d. 1671), posthumously published in 1688, not only describes marbling paper, but also presents the earliest English instructions for marbling the edges of books.<sup>39</sup>

35. Glasgow, University of Glasgow Library, Ferguson 50. See Richard J. Wolfe, *Three Early French Essays on Paper Marbling, 1642–1765* (Newton, PA: Bird and Bull Press, 1987), 24–38; and Wolfe, *Marbled Paper*, 39–41; fig. 4. Also Marie Ange Doizy, *De la dominoterie à la marbrure*, 101–04. Also note that if Robert Burch's assertion that Bagford claimed de Garencières was the first to marble paper in England can indeed be verified, it would further reinforce this body of evidence showing that technical information about the art primarily transferred to England from France; see note 23 above.

36. William Petty, "An Apparatus to the History of the Common Practices of Dying," in Thomas Sprat, *History of the Royal Society of London for the Improving of Natural Knowledge* (London: T. R. for I. Martyn... Printers to the Royal Society, 1667), 285–87. Lord Brouncker announced that he would describe paper marbling in another essay published in the same volume: William Brouncker, "Experiments of the Recoiling of Guns," in Sprat, *History of the Royal Society of London*, 258.

37. John Evelyn, "An exact account of the making of marbled paper," in John Houghton, *Husbandry and trade improv'd*, nos. 360–62 (June 16, 28, and 30, 1699). Later reprinted in Houghton, *Husbandry and trade improv'd*, 2. (London, 1727) 418–28. See Adams, "Some Notes", 421, n. 19. Despite Evelyn's account.

38. See "Sieur Lemery", *Modern curiosities of art & nature extracted out of the cabinets of the most eminent personages of the French court: together with the choicest secrets in mechanicks, communicated by the most approved artists of France* (London: Matthew Gilliflower and James Partridge, 1685), 234–35. The account was translated from Antoine Joseph Emery, *Recueil de curiositez rares & nouvelles des plus admirables effets de la nature & de l'art* (Paris: Louis Vendome, 1674), 348–50. Wolfe, *Marbled Paper*, 39 noted the attribution to physician Nicolas l'Emery is spurious, and fortunately the Wellcome Library subsequently identified the correct author in an Amsterdam imprint of 1684 held in their collection. See *A Catalogue of Printed Books in the Wellcome Historical Medical Library*, vol. 2 (New York: Martino, 1996), 522.

39. John White, *Arts Treasury: or, A Profitable and Pleasing Invitation to the Lovers of Ingenuity Contained in Many Extraordinary Experiments, Rarities, and Curious Inventions* (London: Printed for W. Whitwood, next the Bible in Duck Lane, and Mrs. Feltham in Westminster Hall,



PROPOSALS FOR AND EARLY EXPERIMENTS WITH SECURITY  
MARBLING IN ENGLAND

Evelyn's seminal lecture and ensuing publications all likely spurred several proposals to employ marbling as a novel polychrome security device applied to paper currency and other financial instruments. In a pamphlet reprinted several times in the 1690s, dramatist and twice-Member of Parliament Sir William Killigrew (d. 1695) declared that he first proposed that the government issue bonds on marbled paper as a way to both secure and enhance commerce early in the reign of Charles II (r. 1660–85), likely during the War of Devolution with France in 1667–68.<sup>40</sup> Killigrew observed, "I know 'tis impossible to Counterfeit the Bonds, which must be made on Marbled, or Flourish'd paper, fairly Talled and Registered in the Office-Books, where the counterparts must be kept," adding that, "I Propose bonds on Marbled Paper, because less Burthensome, and easiest to Register, and turn'd to their Folio; else a Tally of Wood, or Mettal, is as good."<sup>41</sup>

1688), 17, Early English Books Online, accessed March 15, 2018, <http://name.umdl.umich.edu/A96354.0001.001>. Also, Cyril Davenport quoted a passing comment made by the aforementioned London shoemaker John Bagford in his "Of Booke binding Modourne" (London, British Library, Harl. 5943, fol. 2r), stating that "...the leaves were coloured either with red, green, yellow, blue, marbled, which was used but few years ago." See Davenport, "Bagford's Notes on Bookbindings," 137. These accounts coincide with the earliest evidence of edge-marbling in England, as identified on volumes in the library of Samuel Pepys held at Cambridge University. See Easton, *Marbling*, 45–6; and David Pearson, *English Bookbinding Styles, 1450–1800: A Handbook* (London: British Library, 2005), 11.

40. While many catalog records date Killigrew's first publication to 1663, this is clearly contradicted by internal evidence in surviving copies. For one, he stated that "...when a War was voted against France; but a Peace being concluded, no Money was given; and since that, I have had no Opportunity to do my Country the Service I design'd by this *Proposal*." William Killigrew, *A proposal, shewing how this nation may be vast gainers by all the sums of money, given to the Crown, without lessening the prerogative humbly offer'd to the King's Most Excellent Majesty, the Lords Spiritual and Temporal, and to the knights, citizens, and burgesses, assembled in Parliament* ([s.l.: s.n., 1697?]), 5. Both the main adversary and timeframe would comport with the War of Devolution (1667–68), so this would provide a slightly later *terminus ante quem*. In his reply to one James Sheene, Killigrew mentions having issued a prior imprint, so it seems likely he reprinted the pamphlet at least once, if not several times, before his death, likely during the economic crises of the 1690s; however, since no date is given, exactly when they were published remains unclear. See Killigrew, *A Proposal*, 4. One version even appears to have been posthumously published, as an appended clause references "To carry on the War the year 97" after Killigrew's death in October 1695. I am grateful to James Cummins for sharing this observation.

41. William Killigrew, *A proposal*..., 8, 9. Since Killigrew proposed that the bonds be recorded in a register, it may explain the phrase "turn'd to their folio; however, it could also be a misspelling of the word tallied. I am grateful to Farley Katz for his stimulating discussion on the Ex-Libris list concerning the interpretation of this phrase.

While Killigrew's proposal is vague, his equation of a marbled design—presumably an intricate, comb-marbled design—with a calligraphic flourish, and his description of retaining the counterparts, indicates that the document he envisioned was essentially a chirograph or indenture. This format had long been used in England for deeds and other contracts since the Anglo-Saxon period; however, in this case an application of marbling substituted for the traditional chirographic phrase, lettering, or calligraphic flourish.<sup>42</sup>

While the exact date of Killigrew's original proposal is unconfirmed, and he only vaguely alludes to indenting, another, likely subsequent, scheme published by Mark Lewis in 1678 explicitly suggests that together with detailed record keeping and serial numbering, indenting through marbled paper bills would provide sufficient security:

It is propofed, that all Bills fhall be written in Marble Paper, the upper part of the Bill fhall be cut off Indenture-wife, this Talid or Indenture fhall be kept in the Office, where Credit is given out, or fent to the Office where Mony is to be received upon accounts of returns, in this Talid fhall be written the Year, the Month, the day, the Perfons name, the fum and the number of the Bill.<sup>43</sup>

In the 1690s, when debates over currency and coinage were revived—and during which time Killigrew probably reprinted his proposal—others also called for the use of security marbled financial instruments. For example, in a bid to increase monetary circulation between London and the provinces, Welsh resident Sir Humphrey Macworth (d. 1727) advocated the adoption of a national paper currency in 1694:

If a Person at *London* defires money to be returned to *Coventry* or *York*, he pays it in at the Office in *London*, and receives a Bill of Credit after their

42. For more on the history of the chirograph, see William N. Goetzmann and Laura Williams, "From Tallies and Chirographs to Franklin's Printing Press at Passy: The Evolution of the Technology of Financial Claims," in *The Origins of Value: The Financial Innovations That Created Modern Capital Markets*, ed. William N. Goetzmann and K. Geert Rouwenhorst (Oxford: Oxford University Press, 2005), 105–122.

43. Mark Lewis, *Proposals to the King and Parliament, or, A large model of a bank shewing how a fund of a bank may be made without much charge or any hazard, that may give out bills of credit to a vast extent, that all Europe will accept of rather than money: together with some general proposals in order to an act of Parliament for the establishing this bank: also many of the great advantages that will accrue to the nation, to the crown, and to the people, are mentioned, with an answer to the objections that may be made against it* (London: Henry Million, 1678), 14–15, Early English Books Online, accessed March 17, 2018, <https://quod.lib.umich.edu/e/eebo2/A48293.0001.001?view=toc>.



Form, written upon Marble-Paper Indenture-wife, or upon other Paper, as may be contrived to prevent counterfeiting.<sup>44</sup>

The next year, Thomas Houghton outlined a scheme in which paper currency would be issued in exchange for specie recalled under what became known as the Great Recoinage:

That the *Sheriff*, or his *Deputy*, fhall give a Note to each particular Perfon of the Value, Weight, Mark, and Number of their Money, at the Time it is brought into the *Office*, as is afore-faid, upon fuch Stamp'd and Marbled Paper as fhall be provided for that Purpofe...<sup>45</sup>

The following year, Houghton also urged that:

IN Order to remove the growing Difficulties that attend the *Coyn*, with the Obftruction of *Trade*; and to make the Circumftances which now clog *Commerce*, and all *Payments* more eafie to the People, who daily groan under great Difcontent. In all Dutiful Submiffion, I humbly Propofe, *Firft*, That, with all Expedition, You caufe *Three Millions* of *Parliamentary Notes* to be Stamp'd, and Printed upon fuch *Marbled Paper*, and fo Mark'd, as not to be Counterfeited, from *Five Pounds* a *Note*, to *Five Hundred Pounds*.<sup>46</sup>

Considered together, all of these proposals advocate that indenting through a marbled pattern—very likely an intricate comb design—would sufficiently secure a paper document and deter counterfeiting. They also imply that since marbling was then a recently introduced technology, it could be carefully controlled and

44. Humphrey Mackworth, *England's glory, or, The great improvement of trade in general, by a royal bank, or office of credit, to be erected in London wherein many great advantages that will hereby accrue to the nation, to the crown, and to the people, are mentioned: with answers to the objections that may be made against this bank* (London: T.W. for Tho. Bever, 1694), 11–12, Early English Books Online, accessed March 17, 2018, <https://quod.lib.umich.edu/e/eebo2/A50953.0001.001?view=toc>. Curiously, while John Francis related Lewis's proposal, he neglected the marbled notes that were later issued: John Francis, *History of the Bank of England: Its Times and Traditions* (London, Willoughby, 1847), 42.

45. Thomas Houghton. *The alteration of the coyn, with a feasible method to do it most humbly proposed to both houses of Parliament. To which is annexed, a projection, or schem of reasonable terms, for establishing a firm and general peace in Europe* (London: Printed for the author, 1695), 19, Early English Books Online, accessed March 31, 2018, <https://quod.lib.umich.edu/e/eebo2/A70269.0001.001?view=toc>.

46. Thomas Houghton. *A book of funds, or, Some reasonable projections and proposals for raising three millions of money per annum for supplies to be granted His Majesty by such ways and methods as will be least burthensome to the people during the war* (London: Printed for the author, 1696), 28, Early English Books Online, accessed March 31, 2018, <https://quod.lib.umich.edu/e/eebo2/A44597.0001.001?view=toc>.

supervised. Thus polychromed and indented, they suggest it would provide paper financial instruments with a necessary safeguard.

In fact, by the time that Macworth and Houghton published their proposals, the Bank of England had already considered issuing currency indented on marbled paper. While the Court of Directors of the Bank did not explicitly cite any of the aforementioned proposals or their authors, it must have been inspired by them, given both the timing and prevalence of publications to that effect. The Court Minutes on August 6, 1694, state that “The Notes for Running Cash being considered as liable to be counterfeited for preventing thereof it was Ordered That they be done on Marble paper Indented;” however, at their next meeting on August 13, the order was further debated, but when an objection was raised, it was curiously tabled.<sup>47</sup> Despite this initial objection, on May 1, 1695, the Court of Directors “Ordered that notes Indented on marbled paper Bee made payable by the Company to the Bearer on demand—to bee laid up as running cash and delivered out in paymt.”<sup>48</sup> R. D. Richards noted that the Bank was primarily motivated to release this new emission not only to deter counterfeiting, but that it “...was also a deliberate scheme to evade that section of the Act [of Parliament] which authorised the issue of sealed bills up to a maximum value of £1,200,000,” as established in 1694 and hence a source of frustration.<sup>49</sup> This experiment would prove to be, unfortunately, very brief, as the notes were put into circulation for only a few weeks. On August 14, the Court of Directors immediately ordered that no more notes be issued, except those handwritten by the cashiers, adding “That notice bee given That whoever hath any of their Letter’d notes without Seale is desired to bring the said Notes to the Bank to change them or have his money for them, the said Court having discovered one of the said Bank marbled notes to have been counterfeited.”<sup>50</sup> A week later on August 21, the Court revised their previous decision and “Ordered that noe Bank Bills brought in bee either allowed or paid, or changed until they bee first chequed.”<sup>51</sup>

47. Court of Directors Minutes Lib. A. G4/1, 34–35.

48. Court of Directors Minutes March 1695 to April 1696, Lib. B. G4/2. (London: Bank of England), 18–19; 44. The episode, including the specific amounts for each denomination issued and subsequent increases of £5 and £10 notes on June 5 is described in R. D. Richards, *The Early History of Banking in England* (London: P. S. King & Son, 1929), 163–64.

49. Richards, *Early History of Banking*, 163.

50. Court of Directors Minutes Lib. B. G4/2, 61.

51. Court of Directors Minutes Lib. B. G4/2, 62. The entry continues, adding “That a mould bee made for making Ten reames of paper more or less for the service of the Bank.” This paper is thought to be the first bearing the Britannia watermark employed for all future paper bills issued by the Bank. A ream of paper at that time consisted of 20 quires of 24 sheets, for a total of 480 sheets. See Philip Gaskell, *A New Introduction to Bibliography* (Oxford: Clarendon Press, 1979), 59.

The counterfeit note was discovered when an unnamed individual reported that he was duped to marble paper for the notorious William Chaloner, who used the sheets to make them. As the anonymous author of *Guzman Redivivus: A Short View of the Life of Will. Chaloner...* recounts:

...he fell to counterfeiting the Hundred-pound Notes of the faid Bank; which being difcover'd by a perfon whom he employ'd in Marbling them, he immediately claps in with the Bank, deliver'd up the falfe Notes he had, and became an Impeacher of his fellows, whereupon the Governour and Directors of the Bank generoufly forbore Profecution.<sup>52</sup>

The above passage relates how Chaloner escaped prosecution by not only surrendering his forged notes, but also informing the Bank's investigators of another scheme that he had masterminded. He was remarkably successful at evading punishment for this and his other notorious crimes, until he was subsequently brought up on different charges by then-director of the Royal Mint, Sir Isaac Newton (d. 1727), for which he was executed at Tyburn in 1699.<sup>53</sup>

Since the Bank had recalled all legitimately issued notes and destroyed them, it was uncertain if the notes were actually marbled or whether another decorative technique had been used.<sup>54</sup> Fortunately, uncirculated £100 sealed bill proofs preserved in the archives of the Bank of England confirm that paper marbling was applied as a chirographic monetary security device to early English paper currency (Pl. 40, 5).<sup>55</sup> They comprise specially formed wide, narrow sheets of

52. Anonymous, *Guzman Redivivus: A Short View of the Life of Will. Chaloner, the Notorious Coyner, Who Was Executed at Tyburn the 22d. of March, 1698/9, Etc.* (London: For J. Hayns, 1699), 8.

53. Thomas Levenson recounts Chaloner's career in *Newton and the Counterfeiter: The Unknown Detective Career of the World's Greatest Scientist* (Boston: Houghton Mifflin & Harcourt, 2009), 133, n. 275–6. Regarding the marbler, he cites Paul Hopkins and Stuart Handley, "Chaloner, William (d. 1699)," *Oxford Dictionary of National Biography* (Oxford University Press, 2004; online edition Jan. 2008), accessed Mar. 31, 2018, <http://www.oxforddnb.com/view/article/66841>. All imply that the unknown marbler was complicit in the scheme with Chaloner; however, the author of *Guzman Redivivus* clearly indicates that the unnamed individual was unaware of the ultimate application of the paper and when he realized that he had been duped by Chaloner, he reported the plot to the Bank.

54. While he was uncertain if they were truly marbled, marbling historian Barry McKay referenced literature on the Bank of England marbled notes and correctly observed the indented format. McKay, *Patterns and Pigments*, 38, 69, nn. 33, 34, citing A. D. MacKenzie, *The Bank of England Note. A History of Its Printing* (Cambridge: Cambridge University Press, 1953), 6.

55. Since these proofs bear the first watermark used by the bank, they were probably experimental designs produced subsequent to 1695, perhaps circa 1697. I am grateful to Jennifer Adam and Eleanor Paton of the Bank of England Museum for sharing images and clarifying the circumstances for the production of those notes.

paper bearing vertical bands of vivid, intricately combed marbling applied to the middle, over what is thought to be the earliest watermark employed by the Bank.<sup>56</sup> The text of these notes was subsequently printed on the right, together with the Britannia seal, while the left was kept blank to write the name of the payor. They were clearly meant to be indented down the middle, through the intricate combed pattern and watermark, into two matching halves, the right half issued, while the left counterpart was retained for the Bank's records.

#### SECURITY MARBLER SAMUEL POPE (FL. 1716–33)

Due to Chaloner's forgery, the Bank of England never again issued marbled bank notes; however, it and other London financial institutions continued to utilize security marbling for other types of financial instruments, especially checks, examples of which survive from the latter half of the eighteenth century. While the full extent of this practice is still under investigation, significant evidence proves this practice continued unabated in England throughout the century.

While no examples from the first half of the century have been identified so far, numerous advertisements by a London stationer, Samuel Pope (fl. 1710–1760), attest that he marbled such papers at his shop in Pope's Head Alley, located off Lombard Street, in the financial district.<sup>57</sup> While he clearly did not invent the security marbling process, it does seem that he was successful in his efforts. The earliest advertisement dates to June 2, 1716, when eighteen different London stationers publicly endorsed his services in the *Daily Courant*:

We whose Names are hereunder written, do certify all Perfons whomsoever, That Samuel Pope, Stationer in the Borough of Southwark, hath found out the Art of Marbling Paper, beyond what any one in the Kingdom of Great Britain could ever yet attain to, and believe (if made use of) it may be of great Service to those who give out Bills, Bonds, as the Bank of England, the East-India Company, Bankers, &c. or others who are particularly concerned in Publick Affairs, it being being impossible to Counterfeite...

56. Note that the non-parallel application of the marbled band is not exactly parallel and bears slight vertical hesitation marks along the edges, demonstrating that the sheets were not masked off prior to marbling, but by holding up the two short ends of the strip of shortgrained paper were simply dipped directly into the trough.

57. Prior marbling scholars have only discussed a brief version of Pope's 1731 patent. See Easton, *Marbling*, 47, in which she asserts that no forgery of currency is documented until 1758; and McKay, *Patterns and Pigments*, 37, doubts the method used was truly marbling; and Wolfe, *Marbled Paper*, 63–64, who reiterates Easton's assertion.

The above-faid Paper Marbled, is Sold by Mr. Edmund Parker at the Bible and Crown in Lombard-Street, near Stocks-Market.<sup>58</sup>

Pope worked in close partnership with Lombard Street bookseller Edmund Parker, who retailed his papers and instructed customers in their use. One advertisement printed by Parker on several occasions announced, "Paper marbled by Samuel Pope for Merchants Notes of Bills of Exchange; to prevent Counterfeiting, or any of the Companies Bonds are now Marbled by him to perfection and Cheaper than formerly."<sup>59</sup> Another appears in the *Daily Post* of October 15, 1728, noting that in addition to the instruments mentioned above, his paper can be used for "...Receipts for Subscriptions or any other instruments that allows of a Check being generally allowed to be the moft effectual Way to prevent their being counterfeited (which Practice of Counterfeiting notes, &c, fo detrimental to Trade at this Juncture appears very notorious)."<sup>60</sup> In 1731, Pope routinely advertised his product in the *Daily Advertiser*; however, on April 7 of that same year, he petitioned the Crown for an exclusive patent:

To the Kings Most Excellent Majestie The humble Petition of Samuel  
Pope Citizen and Draper of London

That Whereas the Practice of Counterfeiting

Bank & other Notes, &c at this time appears very notorious, to the great detriment of the Trade and Commerce of this Kingdome And Whereas the making use of Paper Marbled with a Margent, for Merchants Notes,

58. "We whofe Names are hereunder written..." *Daily Courant* (London, England), Saturday, June 2, 1716, issue 4561, 17th–18th Century Burney Collection Newspapers, Gale (Z2000186344).

59. Advertisements for Pope's papers appear in several of Parker's catalogues and imprints. For the former, see Edward Parker, *Books Latelly Printed for and Sold by Edmund Parker at the Bible and Crown in Lombard-Street*. ([London: Edmund Parker, 1717(?)]), [6b], *Eighteenth Century Collections Online*, Gale (CB3327901242) 29 March 2018; and Parker, *Books Printed For and Sold by Edmund Parker, at the Bible and Crown in Lombard-street* [London: Edmund Parker, 1721?], *Eighteenth Century Collections Online*, Gale (CB3329280329) 29 March 2018. Advertisements are also found in R. B., *Choice emblems divine and moral, ancient and modern: or delights for the ingenious, in above fifty select emblems, curiously engraven upon copper plates* (London: Edmund Parker, 1721), 221, *Eighteenth Century Collections Online*, Gale (CW3306410475), 29 March 2018. Also Robert Warren, *Desiderius Erasmus: The devout Christian's preparative to death. To which are added, meditations, prayers and directions for sick and dying persons* (London: Edmund Parker, 1722), 216. In addition to these, a similar advertisement is apparently appended to the ninth edition of William Vickers, *A Companion to the Altar*, published by Parker. See R. B. P., "Samuel Pope's Marbled Paper," in *Notes and Queries: A Medium of InterCommunication for Literary Men, General Readers, Etc.*, 2 (London: The Office, 1904), 468.

60. "To prevent Notes &c. being counterfeited," *Daily Post*, Tuesday, October 15, 1728, issue 2829, 17th–18th Century Burney Collection Newspapers, Gale (Z2000272359).

Bills of Exchange, Companys Notes or Bonds, Receipts for Subscriptions or any other Instruments that admit of a Cheque being generally allowed to be the most effectual remedy to prevent so great an evil, Your Petitioner has by long study and with great Industry Invented & brought to perfection a New Art of Marbling Paper with a Margent, never practised by any person whatsoever before he Invented it And is performed by a Method entirely new, by taking off the Colours from a body of water prepared after a particular manner, with a proper strength for supporting the said Colours & to prevent their Incorporating with the Water and make them flow upon the surface it whereby the said Colours are more easily taken off upon Paper, which will be of very great Service to the Publick by preventing the Counterfeiting of such Notes Bills Bonds, &c.

Wherefore Your Petitioner is regardless the first Inventor of the said New Art Most humbly Prays Your Sacred Majesties to Grant unto him his Execrs Admrs & Assigns Your Gracious Letts Patent under the Great Seal of Great Britain for the Sole use Exercise & Benefit of his said Invention within that Port of Your Majesties Kingdome of Great Britain called England Your Dominion of Wales & Town of Berwick upon Tweed for the term of fourteen years pursuant to the State in that Case provided.

Along with his petition, Pope also included a signed affidavit in which he asserted that he was the sole inventor of the method, which given that we know the Bank of England had previously issued marbled notes some thirty-five years earlier, as recounted above, is rather amusing:

Samuel Pope Citizen & Draper of London maketh Oath that he is the first & Sole Inventor of a New Art of Marbling Paper with a Margent performed by a method entirely new by taking off the Colours from a Body of Water prepared after a peculiar manner, with a proper Strength for Supporting the said Colours & to prevent them Incorporating with the water and make them flow upon the Surface it whereby the said Colours are the more easily taken off upon paper as described in his Petition hereunto annexed And that the same hath not been practiced by any person whatsoever to his knowledge or beleife in the same manner before he Invented it And further saith that the several allegation in his said Petition are true.

A brief from Whitehall is appended to the petition, dated April 28, 1731: "His Majesty is graciously pleased to refer this Petition to Mr. Attorney or Mr. Solicitor General to consider thereof, and report his opinion what may be fitly done

therein, whereupon his Majesty will declare his further Pleasure. —Harrington<sup>61</sup> Pope's petition was afterwards approved on May 20, 1731, when he was granted royal patent no. 530 for the security marbling process.<sup>62</sup>

Incredibly, Pope warned against "counterfeit" sheets in advertisements published afterwards, and asserted his exclusive right to manufacture and sell such paper, indicating that he was suffering from competition. Two bills of complaint launched by Pope against his rivals for their alleged infringement of his patent shed valuable light on his exact predicament. The first complaint was filed against William Wyatt and Richard Downes for marbling paper for bonds for the York Buildings Company in 1732.<sup>63</sup> The second complaint was lodged against "William Mount and Thomas Page of the Liberty of the Tower of London Stationers and Partiers Eleanor Arnold Widow and Thomas Boote both of the same place Vellum Binders combineing and confederating together and to and with diverse other persons to your Orator at present unknown and put in practice your Orators said Art of Invention of Marbling Paper with a Margent or some imitation or resemblance thereof."<sup>64</sup> Remarkably, this case also preserves the testimony of the defendants, sworn on March 18 and 19, 1733:

61. Samuel Pope, Folio 59, "Petition of Samuel Pope for Letters Patent for his invention of marbling paper..." April 28, 1731 (London: National Archives, State Papers 36/23/59), fols. 1a–2a. William Stanhope was then Baron Harrington (d. 1756), who served as Secretary of State for the Northern Department under Sir Robert Walpole (d. 1745) during the reign of George II (r. 1727–1760).

62. The full text of the patent was previously published in Bennet Woodcroft, *Appendix to Reference Index of Patents of Invention: Containing Abstracts from Such of the Early Patents and Signet Bills As Describe the Nature Of the Invention, and Which Patents Have No Enrolled Specifications* (London: George Edward Eyre and William Spottiswood for the Great Seal Patent Office, 1855), 76. A brief summary is given in the prior edition; see Woodcroft, *Titles of Patents of Invention, Chronologically Arranged: From March 2, 1617 (14 James I.) to October 1, 1852 (16 Victoriae)*, 1 (London: George Edward Eyre and William Spottiswood, 1854), 97. This latter summary was quoted in Easton, *Marbling*, 47.

63. Pope v. Wyatt, 1732 (London: National Archives, Court of Chancery) C 11/866/9. The document is damaged, making a full transcription impossible. A William Wyatt was freed from the Company of Stationers on July 6, 1713, "by Mary Richards, widow, by foreign indentures." See *Records of London's Livery Companies Online (ROLLCO)*, <http://www.londonroll.org/home>, accessed May 15, 2018.

64. Pope v. Mount, 1733 (London: National Archives, Court of Chancery) C 11/513/43 fol. 1r. William Mount apprenticed to his father, Richard, in the Company of Stationers on November 7, 1698, and was later freed on March 26, 1708. On July 2, 1728, his son—also named Richard—became his apprentice. The last record dated February 6, 1739, mentions another son John also becoming his apprentice. Another stationer, Thomas Page, was freed on March 5, 1716, and then another Thomas Page apprenticed to his father on October 6, 1718, and was



...the Said Patent was granted or founded upon a Suggestion or Suggestions that the complainant had Invented and brought to perfection a new Art of Marbling Paper with a Margent never practiced by any perfon whatsoever before the Complainant Invented the same and that the same was performed by a method intirely new in the manner in the Bill mentioned whereas these Defendants humbly infist that the said suggestions are false and that the said Complainant was not the true and first Inventor thereof but that the very same art and method of marbling paper and for the same purposes in the Bill mentioned was, as thefe Defendants believe & hope to prove Invented and found out by some other perfon or perfons than the Said Complainant and was used and practifed for Severall years before the Complainant pretended to have Invented the same and before he obtained the Patent in the Bill mentioned for the Sole use and benefit of the same and in particular this Defendant Thomas Boote for himself saith that he was in the year one Thousand Sevenhundred and Twenty Servant to Ralph Arnold Deceased the late husband of the Defendant Eleanor Arnold and... which Said paper this Defendant so marbled and wrought in the same manner in all respects as is Descrived in the Complainants Bill to be his Method of Marbling paper and for which he obtained the said Patent and this Defendant Saith he was taught the Said Art of Marbling Paper in the manner aforesaid by Thomas Hilyard late of London Bookbinder Deceased who as this Defendant hath heard and believes taught the Complainant to do the same at the request of one Robert Grofvenor a Stationer and thefe Defendants say that the Art or Invention of Marbling Paper in the manner in the Bill mentioned having as they believe been found out or Invented and Exercifed and practifed so many years as aforesaid before the Complainant obtained his said Patent and the same not being then a new Invention as thefe Defendants Severally believe and the Complainant not being as these Defendants believe the Author or Inventor of the said art thefe Defendants humbly Conceive that the said Complainants said Patent

later freed on December 1, 1725. See *Records of London's Livery Companies Online (ROLLCO)*, <http://www.londonroll.org/home>, accessed May 15, 2018. A bookbinder named Ralph Arnold apparently apprenticed to one "Richard Mount, bookseller"—presumably the elder aforementioned Richard Mount to whom William Mount also apprenticed—on April 5, 1703, then was later freed on November 12, 1711. As of 1735, Eleanor Arnold, probably Ralph's widow mentioned in Pope's complaint, worked in Tower Hill with one apprentice—presumably Boote—and her son, John, who had apprenticed to his father in 1729. Ralph must therefore have passed away after 1729 but before March 1733, when Pope launched his complaint. See Ellic Howe, *A List of London Bookbinders, 1648–1815* (London: The Bibliographical Society, 1950), 3–4.



is Grounded upon false Suggestions and that the Crown was Deceived in making Such Grant.

This affidavit further recounts how the defendants conceded that they had produced sixteen reams of paper bonds “for the Honourable Southsea Company which these Defendants admitt were Marbled with a Margent in the same manner with the Complainants pretended new Invented Art in the Bill mentioned and for which... these Defendants William Mount and Thomas Page Received the sum of Twenty two pounds and no more...;” however, they denied being party to any other scheme Pope accused them of.<sup>65</sup>

Samuel Pope’s attempts to gain a monopoly over the security marbling trade would seem to have been thoroughly thwarted with the damning testimony of Mount, Page, Arnold, and Boote. Yet in his last-known advertisement published in the *Country Journal* or *The Craftsman* on December 15, 1733, he persisted in marketing his exclusive patent, with a depiction of his official seal, proclaiming, “What is fold without the Stamp as in the Margent, is a Counterfeit” (Pl. 41, 6).<sup>66</sup> Beyond this, nothing further has been found concerning Pope and his career as a security marbler. The records of the Company of Drapers list him as a member of the livery until 1735, when he joined the Court of Assistants. He even became Master for a period in 1749–50, and thereafter continued as a member of the Court of Assistants until 1760.<sup>67</sup>

65. C 11/513/43 fol. 2r. According to the records of Grosvenor, Chatham, and Co., Robert Grosvenor was reputedly stationer to the Bank of England after it was formed in 1694, and so he may have been involved in the 1695 emission of marbled notes. He is also listed among the stationers who first endorsed Pope in 1716. See note 55 above. A proposal “That a Stock-Book Indented and Marbled (as the Directors shall think proper) shall be delivered (at the Opening of the Books after the next Chriftnas dividend) to every Proprietor, wherein each Perfon shall have Credit for fo much Stock as he has in the Company’s Books...” suggests that the reams mentioned by the defendants may have been for this or a similar scheme to compensate investors after the South Sea Company “Bubble” of 1722, especially since no surviving examples of the original bonds are marbled. See “To the Proprietors of South Sea Capital Stock,” *Daily Post* (London, England), Tuesday, October 2, 1722, issue 939, *17th–18th Century Burney Collection Newspapers*, Gale (Z2000265468). Although Ellic Howe does not document a binder by that name, a Thomas Hilyard, “from Mr. Ward’s, a bookseller, in the Inner Temple Lane”, was buried at the Temple Church on April 16, 1720. See Henry George Woods, *Register of Burials at the Temple Church, 1628–1853* (London: H. Sotheran, 1905), 37.

66. “Pope’s Patent Marbled Paper &c.,” *Country Journal* or *The Craftsman*, Saturday, December 15, 1733, issue 389, *17th–18th Century Burney Collection Newspapers*, Gale (Z2000134134).

67. While Pope primarily operated as a stationer, he was, in fact, freed from the Company of Drapers in 1710 by virtue of patrimony, following his father George (d. 1689). Percival Boyd, *Roll of the Drapers’ Company of London: Collected from the Company’s Records and Other Sources*. (Croydon [England]: J. A. Gordon at the Andress Press, 1934), 431, 450, 463. See also Boyd’s Roll preserved in the Company archives. I am indebted to Penelope Fussell, Archivist of

Curiously, while Pope's recently discovered undated trade card makes no mention of security marbling at all, it instead advertises that he "Sells all manner of Stationary Ware, with Bibles & Common Prayer Books. &c. And makes all Sorts of Shop-books, Journalls, Ledgers, Pocket-books, &c. Neatly marbel'd on the Leaves." (Pl. 43, 7). This demonstrates that Pope may have been the first stationer to edge-marble account ledgers. This traditional practice spread throughout the world by the nineteenth century and continued into the next, as exemplified by a mid-twentieth-century record book produced at the United States Government Printing Office that bears a vivid "old Dutch" combed pattern on the edges resembling many surviving marbled financial instruments (Pl. 43, 8).<sup>68</sup>

While no examples of security marbling from the first half of the eighteenth century have so far been identified, one other reference attests to their circulation in the then-fledgling Georgia Colony in North America, thirty-five years before the 1775 Continental Congress emission. In the *Minutes of the Common Council of the Trustees for Establishing the Colony of Georgia* for May 21, 1740, the Trustees for the Georgia Colony "Order'd That Sola Bills for five thousand Pounds be printed and marbled this Summer for future use. And that they consist of three thousand of One Pound each, two hundred of five pounds Each, And One hundred of ten Pounds Each."<sup>69</sup> Eric Newman noted how such bills were strictly intended for circulation within the fledgling colony, and that they were later recalled by December 31, 1755. Since they were afterwards irredeemable, very few examples survive, none of which, regrettably, are marbled.<sup>70</sup> Given

the Drapers' Company, for sharing information from Boyd's Roll and clarifying the historical relationship between the Companies of Drapers and Stationers.

68. Unfortunately, surviving stationery bindings with edge marbling date to after 1765. See Shannon Zachary, "Stationery Bindings at Stationer's Hall," MA thesis (London Camberwell School of Arts and Crafts, 1986), 21. One small vellum pocket book sold by Pope survives in the Hampshire Record Office in Winchester, UK, but it is regrettably not edge-marbled. Nevertheless, it contains an unillustrated ticket measuring 4.5 × 5.5 cm that states, "Pocket books of all sorts made and sold by Sam Pope stationer at the Pope's Head in the Burrough of Southwark." I am grateful to archivist Gina Hynard for the measurement and transcription of Pope's ticket. Note the reason ledger books were edge-marbled was due to their continual use, often on a daily basis, making them prone to soiling. While Easton claimed that the edge-marbling was applied to deter pages from being torn out of account books—therefore also a form of security marbling—no reference can be found to support her assertion. Easton, *Marbling*, 96.

69. Allen Candler, *Colonial Records of the State of Georgia: Minutes of the Common Council of the Trustees for Establishing the Colony of Georgia*, vol. 2 (Atlanta: Franklin Printing & Publishing, 1904), 334. Newman stated the bills were printed on this date, but the text indicates that they were ordered for later delivery that summer. Unfortunately, there is no mention of their delivery in the subsequent minutes. See Newman, *Early Paper Money of America*, 131.

70. A handwritten Trustee-era sola note dated October 13, 1749, is published in Newman, *Early Paper Money of America*, 131.

the timing of production, it is conceivable that Samuel Pope, or one of his competitors such as Thomas Boote, marbled the paper for these sola bills in London, before they were printed, completed, and then issued in the Georgia colony.

In contrast to the first half of the century, the second half provides us with a wealth of physical evidence of security marbling from England, France, and North America, especially checks, a favored means of commerce under the prevailing regulatory system in England at the time.<sup>71</sup> The earliest surviving examples were issued by the private London bank of Boldero, Carter, Barnston, and Snaith, a firm that originated with the goldsmith Thomas Minors “at the sign of the Vine on Lombard Street” in 1734, very near to Pope’s shop, with Henry Boldero later partnering with Minors in 1741–60 (Pl. 42, 9).<sup>72</sup> Unlike the aforementioned sealed bill proof which was simply dipped into the marbling trough, this example was clearly made by first masking the sheet with a paper stencil, probably with another sheet of the exact same size, but with a vertical rectangle cut out, stopping short of the bottom.

This and other marbled checks from the same firm are all signed by James Gordon, originally a Jacobite from Letterfourie, Scotland, who, together with his brother Alexander, fled to Portugal after the Battle of Culloden in 1746, where they formed the Madeira wine company of Gordon & Gordon.<sup>73</sup> James later returned and settled in London in 1760, when he likely opened his account with the above-mentioned firm.<sup>74</sup> Other checks, both printed and hand-lettered, issued by the Bank of England between the 1770s and 1810s, survive featuring a printed scrollwork flourish on the left margin, with a marbled pattern applied to the reverse in the same area. Indenting through these two security devices

71. R. D. Richards, “The Origin of the Cheque,” *The Banker* 9 (January 1929): 29–36.

72. Both bear watermarks with a crest bearing an inverted ram’s horn as observed on Bank of England sealed bills and checks. The firm “Boldero, Carter, & Co” in 1763. See F. G. Hilton Price, *A Handbook of London Bankers, with Some Account of Their Predecessors the Early Goldsmiths* (London: Simpkin and Marshall, 1891), 17, 190; and Ambrose Heal, *The London Goldsmiths, 1200–1800: A Record of the Names and Addresses of the Craftsmen, their Shop-Signs, and Trade-Cards* (London: Cambridge University Press, 1935), 88, 109, 207.

73. See David Hancock, *Oceans of Wine: Madeira and the Emergence of American Trade and Taste* (New Haven: Yale University Press, 2009), 140, 142, 480, n. 13, 482, n. 22, 488, 56. I am grateful to Hancock for elucidating Gordon’s life and business.

74. One other canceled, undated, marbled check from this firm is held in the British Museum’s Department of Coins and Medals, 1980,1130.714, while another dated December 5, 1768, was sold at auction. See “Marbled Edge 18th Century Check,” Heritage Auctions, Cincinnati, OH (CAA) Sale 269, September 2001, lot 5381, accessed April 11, 2018, <https://currency.ha.com/itm/miscellaneous/checks/marbled-edge-18th-century-check-this-is-a-canceled-check-/a/269-5381.s>.

simultaneously provided an even greater level of protection to the documents than marbling alone (Pls. 43, 10 and 44, 11a and 11b).<sup>75</sup>

### BENJAMIN FRANKLIN AND SECURITY MARBLING

Benjamin Franklin's production of paper currency and keen interest in anticounterfeiting practices is well-documented and need not be reiterated in full here.<sup>76</sup> While prior scholars have attributed the concept of security marbling to him, it is now clear that his curious nature had probably been aroused when he observed this colorful English convention during one of his sojourns in London.<sup>77</sup> Alternatively, he may also have heard of the marbled Georgia sola bills issued in 1740, at a time when he was appointed the official printer of the New Jersey colony and tasked with printing colonial currency. No matter how he first learned of it, this

75. A. D. MacKenzie, *The Bank of England Note*, 6. MacKenzie in turn cited but did not reproduce the check signed and dated 1776 by John Latham (London, Bank of England Archives, no. 1079a, see fig. 12), illustrated in H. G. de Fraine, "Tallies," *The Old Lady of Threadneedle Street* 2, no. 13 (March 1924): 178–87. A nearly full sheet of unused, printed Bank of England marbled checks is held in Baker Library, Harvard Business School, Harvard University Box 2 Folder 22, no. 5. The Coins and Medals Department, British Museum, holds what appears to be a full sheet of 3 unused printed checks dating to 1800, 1980,1130.839, which measures 23.8 × 19.7 cm, indicating the size and format of marbled check-books. They also hold several printed and canceled checks from the early nineteenth century, including 1980,1130.736 dated August 31, 1804, for £1354; 1980,1130.739, dated March 16, 1807 and made out to the Navy Branch for £30,000; 1984,0605.11966, dated March 19, 1807 to the Navy Branch on the account of the Rt Hon. Treasurer of the Navy for £200,000; and 1980,1130.737 made out to the Hambro Synagogue for £8, 7 shillings. In addition to figs. 12 and 13, the Bank of England also holds several checks, one handwritten dated 1790 (no. 285a), and 9 others of a similar type to the aforementioned copies in Baker Library and the British Museum, dated between 1798 and 1808, plus a blank, all printed on the front with a sum block, with a marbled indent on the reverse (nos. 594, 719, 1993/201/2-7, and 87/12/1-2.). I am grateful to Jennifer Adam and Ellie Paton of the Bank of England for this information.

76. See n. 4 above.

77. While Franklin does not discuss counterfeiting in his earliest pamphlet, his innovative "nature printing" method beginning in 1738 clearly demonstrates his interest. See [Benjamin Franklin], *A Modest Enquiry into the Nature and Necessity of a Paper Currency* (Philadelphia: [Franklin and Meredith] Printed and Sold at the New Printing-Office, near the Market, 1729). See also Eric Newman, "Nature Printing on Colonial and Continental Currency," *The Numismatist* 77, nos. 2–4 (February–May 1964): 147–54, 291–97, 457–65, 613–23. See also Newman, *Early Paper Money*, 26–27, and Newman, "Unusual Printing Features on Early American Paper Money," in *Money of Pre-Federal America: Coinage of the Americas Conference at the American Numismatic Society, New York, May 4, 1991*, ed. John M. Kleeberg (New York: American Numismatic Society, 1992), 59–84; and more recently James N. Green and Peter Stallybrass, *Benjamin Franklin, Writer and Printer* (New Castle, DE: Oak Knoll Press, 2006), 52–57. Jessica Linker is currently investigating recently discovered "nature print" blocks of Franklin and Hall from the Delaware County Institute of Science.

experience evidently inspired him to procure security marbled papers for printing the \$20 notes issued by the Continental Congress in 1775 (Pl. 37, 1). Unfortunately, since they have all been cut down, their original format when printed is unclear, as is the manner in which they ultimately were issued. However, a conspicuous gap evident at the bottom of Plate 37, 1, something not observed on all of these notes, is strikingly similar to the check in Plate 44, 11a and 11b). That, together with the decal edge of the paper, suggests it was likely the bottom-most of several notes imprinted on a single sheet, similar to several surviving uncut sheets issued by the Bank of England.<sup>78</sup> Furthermore, the fact that all surviving notes are cut in a straight line, rather than indented in an irregular fashion as observed in the English checks illustrated in Plates 43, 10 and 44, 11a–11b, calls into question whether this issue was, in fact, indented with stubs retained.<sup>79</sup>

The following year, 1776, Franklin famously left for France to serve as minister plenipotentiary, where around June 1779 he was visited by the English printer William Caslon III (d. 1883), the grandson of his famous namesake, together with a London stationer named James Woodmason. During that time Woodmason showed Franklin samples of then-newly-manufactured wove paper produced by James Whatman Jr. (d. 1798).<sup>80</sup> Impressed by its unique quality, Franklin ordered twelve reams, two of which were to be marbled for printing promissory notes to secure loans from the government of France to finance the American War of Independence (1775–83). On December 25, 1779, Woodmason wrote to Franklin that:

I immediately sent 2 Reams to be Marbled, & till this day could not by any means get it done, the reason given me by the Marbler is, that he has been oblig'd to Marble each Sheet 3 Times. If I have your pardon for the Delay

78. See the description of uncut, unused checks imprinted in multiples on the same marbled sheet in note 72 above.

79. By comparison, the subsequent August 6, 1789, “Copper Panic” small change issue, discussed below, clearly was not indented and stubbed, so it may have been the same case with the 1775 issue as well. This issue clearly relied on upon other security devices, such as signatures written in different inks and serial numbers, as well as marbling, but they need not have been issued as indented stubs, but perhaps were recorded in register books that were subsequently lost during the British occupation of Philadelphia in 1777–78. While I thank Jessica Linker as well as Stuart and Maureen Levine for their stimulating discussions as to these various possible formats and modes of issue, the views expressed here are necessarily my own.

80. Benjamin Franklin to Fizeaux, Grand & Cie., 29 October 1779, in *The Papers of Benjamin Franklin*, vol. 30, ed. Barbara B. Oberg (New Haven: Yale University Press, 1993), 609–12. According to Phillip Gaskell, wove paper was comparatively more difficult to produce than laid paper, and since Whatman did not produce much until the 1780s, it was still very rare at that time. See Gaskell, *New Introduction to Bibliography*, 66.

& the Paper gives you satisfaction, I shall feel much pleasure. By the next Amsterdam Ship, shall without fail send it & shall be much obliged to have a Line, whether it gives satisfaction.<sup>81</sup>

In a subsequent message to Franklin dated January 4, 1780, Woodmason stated that he shipped twelve reams of paper to Amsterdam on the *Lady Elizabeth*, yet he also said, "I have now some Paper making on Wove Moulds to print the Proposals on. I wish I may be fortunate enough to please, so that English Paper may be used. I know we are not so cheap, as the Foreign Papers, but we much excell them in the Manufacturing & finishing."<sup>82</sup>

After Franklin received the paper sometime in May 1780, he printed blank forms for what he called "The Congress Promises," in duplicate, on both sides of the vertical marbled band running down the middle of the sheet, probably formed by masking the right and left sides with two sheets of the paper adhered to the surface.<sup>83</sup> After completing the forms, some back-dated for several loans already issued, he indented them and issued them to the French government, retaining the counterfoil for his records. There are a number of duplicates, possibly copies produced as additional records of the transaction. Even more perplexing are the significant discrepancies in the serial numbers as compared to the complete list of twenty-one loans as recounted by the comte de Vergennes in 1783, listed in appendix 1. It shows twenty-six halves of marbled promissory notes to survive, ten right halves issued by Franklin and sixteen left counterfoils retained by him, with a total of six pairs of matching right and left halves, of which no. 12 is here illustrated (Pl. 45, 12).<sup>84</sup>

81. James Woodmason to Benjamin Franklin, [25 December 1779], in *The Papers of Benjamin Franklin*, vol. 31, ed. Barbara B. Oberg (New Haven: Yale University Press, 1995), 284–285.

82. James Woodmason to Benjamin Franklin, 4 January 1780, in *The Papers of Benjamin Franklin*, vol. 31, 341. The exact dimensions of the sheets ordered are still unclear, due to trimming; Wolfe suggested that they may be Whatman's "post" size, but they may also possibly be Demy. Sumner and Wolfe, *Mysterious Marbler*, 105 n 10; Thomas Balston, *James Whatman, Father & Son* (New York: Garland, 1979), 61.

83. While Wolfe, in Sumner and Wolfe, *Mysterious Marbler*, 104, commented that the adhesive was "...undoubtedly made of wheat starch," various forms of hide glue were also very commonly used at the time. In my own professional experience as a conservator of contemporaneous books and papers, gelatin adhesives are often far easier to apply and reverse cleanly in water than wheat-flour paste of that time, which often contains gluten, bran, and other impurities.

84. See Library of Congress. *Journals of the Continental Congress*, 24. Ed. Gaillard Hunt. (Washington: Government Printing Office, 1922), French original 52–3; English translation 59. See also Charles Gravier, comte de Vergennes, to Benjamin Franklin, 26 November 1780, in *The Papers of Benjamin Franklin*, vol. 34, ed. Barbara B. Oberg (New Haven: Yale University Press, 1998), 72–73 n. 7.

After Franklin had concluded all loan agreements with the French government, he was approached by Mathurin Roze de Chantoiseau (d. 1806), on January 31, 1783, to discuss a scheme to reduce the national debt of the United States, as previously proposed for France.<sup>85</sup> A week later, on February 7, Roze de Chantoiseau met Franklin at Passy, during which time Franklin gave him either one or two of Woodmason's English security-marbled wove sheets.<sup>86</sup> The next day, February 8, 1783, he drafted out his proposal for the bills of credit to Franklin, with the phrase "Banque Nationale des treize Provinces unies d'amerique / Lettre de credit public de 300 *l.t.* &c." written directly over the marbled band, reminiscent of a chirograph. Roze de Chantoiseau's proposal is currently preserved in the Historical Society of Pennsylvania (Pl. 46, 13).<sup>87</sup>

After Franklin's return to the United States from France in 1784, he apparently used security marbled paper for personal checks. Two handwritten examples, presumably drawn upon his account at the Bank of North America, survive from 1787, one of which is held in the National Numismatic Collection (Pl. 47, 14).<sup>88</sup> Both the combed pattern and paper appear distinctly different from the 1775 twenty-dollar bill and French promissory notes, so it would appear that Franklin had, at some point, ordered further sheets, likely from Woodmason, although this is unconfirmed. Since no other marbled checks from the Bank of North America are known, it seems that Franklin acquired the paper for his own personal use, and so they are exceptionally rare.

85. Mathurin Roze de Chantoiseau to Benjamin Franklin, 31 January 1783, in *The Papers of Benjamin Franklin*, vol. 39, ed. Ellen R. Cohn (New Haven: Yale University Press, 2008), 109–11.

86. Note how the marbled margin here runs across the width of what was once one sheet, rather than across the height as observed in the promissory notes, suggesting that Franklin's two reams may have included further variant sheets.

87. Mathurin Roze de Chantoiseau to Benjamin Franklin, 8 February 1783, in *Papers of Benjamin Franklin*, vol. 39, 151–152, and n. 3. Wolfe incorrectly stated the author was "Joseph DuPrunoul" in Sumner and Wolfe, *Mysterious Marbler*, 106, n. 12.

88. One other marbled check dated February 28, 1787, also signed by Franklin is currently held in the Riggs Historical Collection, PNC Bank, held in Washington, DC. See "Benjamin Franklin Check" *PNC Legacy Project: Artifacts*. Accessed March 30, 2018. <https://pnclegacy-project.com/artifacts.html#3>. I am grateful to Renée Petricevich and Dustin Vessels for further information about this item. Another purportedly marbled check signed by Franklin on October 16, 1787 was sold by One of a Kind (OAK) Auction Collectibles, on November 19, 2015. While the handwriting is Franklin's, it is not truly indented and instead appears to be a strip of eighteenth-century marbled paper adhered over the handwriting, hence its authenticity is doubtful. See "Benjamin Franklin signed check valued at \$20,000," Paul Fraser Collectibles, November 3, 2014, accessed March 30, 2018, <https://www.paulfrasercollectibles.com/blogs/memorabilia-benjamin-franklin-signed-check-valued-at-20-000>.



While the paper and patterns of the checks are quite different, the emission of fractional “tickets or notes” was ordered by the Bank of North America was ordered on August 6, 1789, during the “Copper Panic.” The Bank’s minutes record the motion as follows:

Mr. Richard Bache moved, upon the Recommendation of Dr. Benjamin Franklin that the Bank should now issue small Tickets or Notes to Supply the call of the Public for change during the present interruption of the Circulation of Copper Coins. And presented a Sheet of Paper of a very peculiar Fabrick as most suitable for the purpose, Of which paper the Doctor had only two Reams which he would Spare the Bank for this particular use.

Wherefore Resolved — That the Bank will for the Recommendation of the Public Issue printed Tickets or Notes of Three Ninetieth part of a Dollar, and other Tickets or Notes of One Ninetieth of a Dollar, the whole to be printed by Benjamin Franklin Bache only on the paper now offered by Dr. Franklin in the name of the Cashier.<sup>89</sup>

An intact sheet of this emission preserved in the Historical Society of Pennsylvania shows how Bache printed the threepence notes four in a single row, with Series A–D imposed across the marbled margin. These were composed together with three rows of four one-penny notes in the same galley, Series A–M, impressed upon the blank reverse of the same sheet (Pl. 48, 15).<sup>90</sup>

After this, no other instance of security marbling applied to a financial instrument is found from North America.<sup>91</sup> Ironically, while the practice declined in North America, it continued unabated by the Bank of England until the early nineteenth century, as several checks issued by the Bank between 1790 and 1815

89. “Bank of North America, 6th August 1789,” Philadelphia, Historical Society of Pennsylvania, Bank of North America records (Collection 1543), vol. 2: Minute and letter book, 1781–1792. I am grateful to Cary Hutto for clarifying this reference, as Newman was inexplicit as to where he obtained this reference. See Eric Newman, “Franklin and the Bank of North America,” *The Numismatist* 69, no. 12 (December 1956): 1369.

90. Another sheet without the marbled threepence notes is held in the Historical Society of Pennsylvania, Bank of North America records (Collection 1543, part 14, Miscellaneous 1733–1939), box 9, file 26, no. 5. Another untrimmed sheet is reproduced in Newman, *Early Paper Money*, 460; however, its current whereabouts is unknown. My thanks to Louis Jordan for this reference.

91. One tax form dated 1811 was not prepared as a security-marbled financial instrument, but is, rather, an example of the common practice of marbling over printers’ waste. Phoebe Jane Easton Collection of Marbled Papers, Houghton Library, Harvard University. 52L-908, no. 470.



attest (Pl. 44, 11a–11b).<sup>92</sup> The practice of security marbling, along with other early forms of security printing, was eventually supplanted by stereotype steel-plate engraving invented by Jacob Perkins (d. 1849) in 1792, then adopted by the Commonwealth of Massachusetts in 1809 and England in 1819.<sup>93</sup>

### CONCLUSION

Within roughly a century of circa 1600, when Persian artist Muhammad Tahir developed his innovative marbling methods and produced his ubiquitous, intricately combed patterns in India, they were applied as the first polychrome security device on some of the earliest indented paper banknotes issued by the Bank of England in 1695. Surprisingly, while the Bank employed—and soon abandoned—security marbling for paper currency, it and other London banks continued to use it on other financial instruments, especially checks, throughout the long eighteenth century. This convention not only proves that the art of marbling was practiced in England far earlier than previously thought, but it may also account for reports of secrecy with which marblers once reputedly practiced their craft.<sup>94</sup> Advertisements by marbler Samuel Pope from 1716–33, together with lawsuits against his competitors William Wyatt, Richard Downes, William Mount, Thomas Page, Eleanor Arnold, and Thomas Boote for infringement of his 1731 patent, prove that security marbling was actively employed by a range of banks and corporations in the emerging eighteenth-century London financial market. While no marbled financial instrument from this period has so far been found, this information, together with the earlier Bank of England Seal bill proofs dated to circa 1697, along with surviving checks from James Gordon dated to the 1760s, proves that it had been continuously practiced in London during that time.

While we still cannot say where he first encountered it, such conspicuously colored and indented English financial instruments undoubtedly caught the keenly observant eye of Benjamin Franklin, who cleverly utilized security marbled wove papers to safeguard early American paper currency, as well as his own personal checks and, most importantly, French promissory notes that financed the Revolutionary War. In this way, the innovative marbled patterns of Muhammad Tahir, a Persian Muslim and émigré to India, were used not only to secure the vulnerable fledgling fractional reserve economies of both England and the

92. See n. 72 above.

93. Woodcroft, *Patents of Invention*, 747.

94. Easton, *Marbling*, 49.

United States during critical junctures, but also to safeguard the latter's independence, for without the support of that vast quantity of French gold, it would likely not be a separate nation today.

#### ACKNOWLEDGMENTS

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## PLATES

1. Obverse (above) and reverse (below) of 20-dollar bill no. 4432, Philadelphia, Hall and Sellers, ca. July 29, 1775. St. Louis, ex Eric P. Newman Numismatic Education Society. Marbled on thin wove paper, approximately  $6.5 \times 12.4$  cm. Images courtesy of the Eric P. Newman Numismatic Education Society, reproduced with permission.
2. (a–c) Stages for creating a combed marbled pattern in three colors by Christopher Weimann (d. 1988): a) spotted design, b) chevron, and c) final comb or “Old Dutch.” Images by Jake Benson, reproduced with permission of the estate of Christopher Weimann.
3. Portrait of a male Deccani youth surrounded by a combed marbled mount attributed to Muhammad Tahir, circa 1600. Ahmadnagar or Bijapur, *Qit’at-i Khushkhatt* (Specimens of Fine Calligraphy) album. Edinburgh, Centre for Research Collections, University of Edinburgh Library, Or. Ms. 373, fol. 12v.  $43.2 \times 29.7$  cm. Image courtesy of the Centre for Research Collections, University of Edinburgh Library, reproduced with permission.
4. Diagrams drawn in the margin of John Evelyn’s handwritten lecture notes depicting (I) a stylus or “pointed stick”, (II) the path for drawing it across the trough of floating colors, and (III) a marbling comb drawn across afterwards to form a basic combed pattern. From John Evelyn, *An Exact Account of the Making of Marbled Paper*, 1662. London, Royal Society Cl.P/3i/4, fol. 2v. Image courtesy of the Royal Society, reproduced with permission.
5. Uncirculated interest-bearing sealed bill proof, with a “marbled margent” applied over an interlaced watermark, circa 1697. London, Bank of England Museum, acc. 124/001.  $13.0 \times 52.8$  cm. Image courtesy of the Bank of England Museum and reproduced with permission.
6. Advertisement depicting Samuel Pope’s official stamp, from the *Country Journal or The Craftsman*, Dec. 15, 1733. Image reproduced from the Burney News Paper Collection, British Library 17<sup>th</sup>–18<sup>th</sup> Century News Papers, Gale (Z2000134134), with the permission of the British Library.
7. Samuel Pope’s trade card, Farmington CT, Lewis Walpole Library, Yale University, File 66 700 P81.  $14.0 \times 9.0$  cm. Image courtesy of the Lewis Walpole Library, Yale University, reproduced with permission.

8. Record book with "Old Dutch" patterned, combed marbled edges with cut and pre-printed index tabs. Circa 1950s, Government Printing Office, Washington, DC. Collection of the author, 35.5 × 22 cm. Photo by Jake Benson.
9. Check dated July 18, 1769, and signed by Madeira wine merchant James Gordon, drawn on his account at the private London firm of Boldero, Carter, Barnston, & Snaith. Watermarked, laid paper, 7.3 × 18.3 cm. London, British Museum, 1990,0812.7. Image © The Trustees of the British Museum, reproduced courtesy of the British Museum. <[http://www.britishmuseum.org/research/collection\\_online/collection\\_object\\_details.aspx?objectId=1094555&partId=1&images=true&object=23525&page=1](http://www.britishmuseum.org/research/collection_online/collection_object_details.aspx?objectId=1094555&partId=1&images=true&object=23525&page=1)>. Note how the lower left was clearly masked before it was marbled.
10. Obverse (top) and reverse (bottom) of a cancelled handwritten check no. 7383 issued by the Cashier of the Bank of England to John Latham Esq. for £16 on Aug. 6, 1776. Bank of England Museum, acc. 1073A, 7.2. × 16.8 cm. Image courtesy of the Bank of England Museum, reproduced with permission. Made of watermarked, laid paper, it is simultaneously indented through both printed scrollwork on the obverse and chevron-patterned marbled margin on the reverse.
11. (a) Canceled check no. 7546 N on May 30, 1797, to W. Turnbull for £12,500. London, Bank of England Museum, acc. 1993/201/001, 7.3 × 17.3 cm. (b) Unused check issued by the Bank of England, circa 1800. Both this and the above example are printed on a thin, transparent unwatermarked wove paper and are simultaneously indented through both engraved scrollwork on the obverse with marbled chevron patterned margins applied to the reverse. Also note the prominent engraved rectangle of meandering scribbles designed to deter forgers from copying handwriting, especially signatures. London, Bank of England Museum, acc. 1983/079, 8.1 × 20.1 cm. Images courtesy of the Bank of England Museum, reproduced with permission.
12. Promissory Note No. 12 (right) issued to the comte de Vergennes for 750,000 livres and corresponding counterfoil retained by Benjamin Franklin (left). Marbled on wove paper made by James Whatman Jr., and supplied by London stationer James Woodmason to Franklin, who personally printed and later completed the form and signed it, then indented through the security marbling at Passy, August 15, 1781. Left: Loyola Marymount University Library, E249 .F73 1781; right: Philadelphia, American Philosophical Society, Mss.B.F85.ba. Wove paper. Approximately 38.7 × 49.5 cm. Images courtesy of

the Loyola Marymount University Library and the American Philosophical Society, reproduced with permission.

13. (a) Recto of “Developpement du Plan proposé pour operer la liquidation des dettes d’un Etat,” Mathurin Roze de Chantoiseau to Benjamin Franklin, 8 Feb. 1783. (b) Verso of “Developpement du Plan proposé pour operer la liquidation des dettes d’un Etat,” Mathurin Roze de Chantoiseau to Benjamin Franklin, 8 Feb. 1783. Trimmed leaves of marbled wove paper provided to Franklin by James Woodmason. Philadelphia, Historical Society of Pennsylvania, Benjamin Franklin Papers (Coll. 215, Vol. 6, Box 12, folder 29). 37.5 × 48.9 cm. Image courtesy of the Historical Society of Pennsylvania and reproduced with permission.
14. Marbled and indented check on thin wove paper signed by Benjamin Franklin, October 2, 1787. Washington DC, National Numismatic Collection, Museum of American History, Smithsonian Institution, 1979.1263.01594. 6.3 × 16.7 cm. Image courtesy of Andrew Shiva, reproduced with permission under Creative Commons licensing and with permission of the National Numismatic Collection.
15. (a) Marbled obverse of an uncut sheet of Bank of North America small change “tickets” printed by Benjamin Franklin Bache, Philadelphia, Aug. 6, 1789, on paper supplied by James Woodmason to Benjamin Franklin. The threepence notes are printed over the marbled margin, while the one-penny bills are on the blank reserve in a format that clearly could not be indented. (b) Reverse of an uncut sheet of Bank of North America tickets printed by Benjamin Franklin Bache, Philadelphia, Aug. 6, 1789. Philadelphia, Historical Society of Pennsylvania, Bank of North American Records (Collection 1543, Part XIV, Miscellaneous 1733–1939), vol. 655, 18.1 × 24.6 cm. Originally bound in an extra-illustrated edition of Lawrence Lewis *History of the Bank of North America*, 1. Images courtesy of the Historical Society of Pennsylvania, reproduced with permission.

APPENDIX:  
BENJAMIN FRANKLIN FRENCH MARBLED PROMISSORY NOTES  
AND COUNTERFOILS<sup>95</sup>

Franklin Note No.	Vergennes Loan No.	Date	Livres tournois	Left counterpart kept by Franklin	Right promissory note
2	6	9/16/1779	250,000		American Philo- sophical Society, Mss.B.F85.ba <sup>1</sup>
3	7	10/4/1779	250,000	American Philo- sophical Society, Mss.B.F85.ba <sup>2</sup>	Benjamin Franklin Collection Harry Ransom Center, University of Texas at Austin (T. E. Hanley Manuscript Collection MS- 01473).
5	9	2/29/1780	750,000		American Philo- sophical Society, Mss.B.F85.ba <sup>3</sup>
9	13	11/27/1780	1,000,000		Historical Society of Pennsylvania. Simon Gratz autograph col- lection (Collection 250A), Case 1, Box 5, Folder 29. <sup>4</sup>
10	14	2/15/1781	750,000	American Philo- sophical Society Mss.B.F85.ba. <sup>5</sup>	Butler Library, Co- lumbia University. <sup>6</sup>
11	15	5/15/1781	750,000	American Philo- sophical Society Mss.B.F85.ba <sup>7</sup>	Albert and Shirley Small Special Col- lections Library, University of Vir- ginia, MSS 6676. <sup>8</sup>
12	16	8/15/1781	750,000	William H. Hannon Library Loyola Marymount University, E249. F73 1781. <sup>9</sup>	American Philo- sophical Society, Mss.B.F85.ba. <sup>10</sup>
12 bis	(16?)	8/15/1781	750,000	Butler Library, Columbia Uni- versity. <sup>11</sup>	
13	18	11/15/1781	750,000	Lucy Scribner Li- brary, Skidmore College. <sup>12</sup>	Robbins Collec- tion, University of California, Berkeley Law School.

Franklin Note No.	Vergennes Loan No.	Date	Livres tournois	Left counterpart kept by Franklin	Right promissory note
13 bis	(18?)	11/15/1781	750,000	American Philosophical Society, Mss.B.F85.ba. <sup>13</sup>	
15	-	7/18/1781		Miller Special Collections Library, Colby College.	American Philosophical Society Mss.B.F85.ba. <sup>14</sup>
15 bis	-	7/18/1781	800,000	American Philosophical Society, Mss.B.F85.ba. <sup>15</sup>	
16	-	10/1/1781		American Philosophical Society Mss.B.F85.ba. <sup>16</sup>	
16 bis	-	10/1/1781	1,000,000	Private collection. <sup>17</sup>	
17	-	10/30/1781	600,000	American Philosophical Society, Mss.B.F85.ba. <sup>18</sup>	
18	-	12/4/1781	816,000	Private collection. <sup>19</sup>	Private collection. <sup>20</sup>
19	-	2/8/1782	500,000	Syracuse University Library Special Collections, SC431 <sup>21</sup>	American Philosophical Society, Mss.B.F85.ba. <sup>22</sup>
19 bis	-	2/8/1782	500,000	Private collection. <sup>23</sup>	
20	-	3/12/1782	500,000	American Philosophical Society, Mss.B.F85.ba. <sup>24</sup>	
21	19	4/10/1782	1,500,000	Karpeles Manuscript Library Museum, Santa Barbara. <sup>25</sup>	

## Notes

1. Published: <http://diglib.amphilsoc.org/islandora/object/benjamin-franklin-ferdinand-grand-francepromissory-note-no-2-september-16-1779>; also in Louis C. Karpinski and Charles Bache, "How France Aided American Liberty," *Dearborn Independent* 25, no. 27 (July 4, 1925): 4; French loan certificate, *Papers of Benjamin Franklin*, vol. 31, 345–47; also in Goetzmann and Williams, "From Tallies and Chirographs to Franklin's Printing Press at Passy," 119. All promissory notes and counterfoils from the Franklin-Bache collection held in the American Philosophical Society are listed in this finding aid: <https://search.amphilsoc.org/collections/view?docId=ead/Mss.B.F85.ba-ead.xml>.

2. Published: "Promissory note, no. 3," accessed April 29, 2018, <http://diglib.amphilsoc.org/islandora/object/promissory-note-no-3#page/1/mode/1up/search/Promissory>

3. Published: "Promissory note, no. 5," accessed April 29, 2018, <http://diglib.amphilsoc.org/islandora/object/promissory-note-no-5#page/1/mode/1up>

4. Mentioned in *The Papers of Benjamin Franklin*, 34, 73, n. 7.

5. Published: "Promissory note, no. 10," accessed April 29, 2018, <http://diglib.amphilsoc.org/islandora/object/promissory-note-no-10#page/1/mode/1up>; also in Karpinski and Bache, "How France Aided American Liberty," 4.

6. Published in Karpinski and Bache. "How France Aided American Liberty," 4. Donation to Butler Library by Percy S. Brown noted in Roland Baughman, "Our Growing Collections," *Columbia Library Columns* 10, no. 2 (Feb. 1961): 47.
7. Published: "Promissory note, no. 11," accessed Apr. 29, 2018, <http://diglib.amphilsoc.org/islandora/object/promissory-note-no-11#page/1/mode/1up/search/Promissory>. Transcribed as French loan certificate [15 May 1781], *The Papers of Benjamin Franklin*, vol. 35, ed. Barbara B. Oberg (New Haven: Yale University Press, 1999), 71–72.
8. Donated by Percy S. Brown on November 24, 1961, but missing as of December 1980. I am grateful to Ellen Cohn for sharing a photostat provided by the late Perc S. Brown to the Papers of Benjamin Franklin project at Yale University. The note is inscribed, "la présente ne devant servir que d'une seul et même piece avec l'ampliation que nous en avous delivrée aujourd huy?"
9. Published: "Archives and Special Collections Treasures On the Move!" January 30, 2009, accessed Apr. 29, 2018, <http://lmu.typepad.com/whhupdate/2009/01/archivesand-special-collections-in-the-new-library.html>
10. Published: "Benjamin Franklin to Ferdinand Grand (France) Promissory Note no. 12, August 15, 1781," <http://diglib.amphilsoc.org/islandora/object/benjamin-franklin-ferdinand-grand-francepromissory-note-no-12-august-15-1781>; also in Ellen R. Cohn, "The Printer at Passy," In *Benjamin Franklin: In Search of a Better World*, ed. Page Talbott (New Haven, Conn: Yale University Press, 2006): 255, fig. 7.14.
11. Note that *Mai* is crossed out and *Aout* is overwritten at top, and no. 49 (19?) is also crossed out.
12. Published: "Mr. Perc Brown Donates Rare Document to Library" *Skidmore News* (January 18, 1962): 6, accessed Apr. 29, 2018, <http://cdm15968.contentdm.oclc.org/cdm/compoundobject/collection/p15968coll1/id/552/rec/2>.
13. Published: "Promissory note, no. 13," accessed April 29, 2018, <http://diglib.amphilsoc.org/islandora/object/promissory-note-no-13#page/1/mode/1up/search/Promissory>.
14. Published: "Promissory note, no. 15," accessed May 19, 2018, <http://diglib.amphilsoc.org/islandora/object/promissory-note-no-15#page/1/mode/1up>.
15. Benjamin Franklin to Ferdinand Grand (France), promissory note no. 15, July 18, 1781, accessed April 29, 2018, <http://diglib.amphilsoc.org/islandora/object/benjamin-franklin-ferdinand-grand-france-promissory-note-no-15-july-18-1781>; also in William G. Anderson, *The Price of Liberty: The Public Debt of the American Revolution* (Charlottesville: University Press of Virginia, 1983), 73.
16. Published: "Promissory note, no. 16," accessed Apr. 29, 2018, <http://diglib.amphilsoc.org/islandora/object/promissory-note-no-16#page/1/mode/1up>.
17. Published: Stack's Bowers, *American Numismatic Association*, Chicago, August 13, 2011; Eldred's, "Americana, Paintings, Marine Art, and Militaria at Auction, April 8–10, 2010" (East Dennis, MA: Robert C. Eldred Co., 2010), Thursday, April 8, lot 132.
18. Published: "Benjamin Franklin to Ferdinand Grand (France) Promissory Note no. 17, October 30, 1781," accessed April 29, 2018, <http://diglib.amphilsoc.org/islandora/object/benjamin-franklin-ferdinand-grand-france-promissory-note-no-17-october-30-1781>.
19. Sold by dealer Joe Rubinfine, an image of which is held in American Philosophical Society, B F85.432, published: "Promissory note," accessed April 29, 2018, <http://diglib.amphilsoc.org/islandora/object/promissory-note#page/1/mode/1up>; also in Wolfe. *Marbled Paper*, pl. 18, no. 1.
20. Described: Parke-Bernet, *American and European Manuscripts & Rare Books... Property of the Estate of Perc S. Brown...* Jan. 19, 1966, 19–20, lot 91. Published: Sotheby's (New York) *The Americana Library of Laird U. Park, Jr.* (Nov. 19, 2000): 102, lot 131.
21. Note the word "Copy" is written at top.



22. Published: "Promissory note, no. 19," accessed April 29, 2018, <http://diglib.amphilsoc.org/islandora/object/promissory-note-no19#page/1/mode/1up>. Transcribed in *The Papers of Benjamin Franklin*, vol. 36, ed. Ellen R. Cohn. (New Haven: Yale University Press, 2001), 347.
23. Published: Ned W. Downing, "The Transatlantic Paper Trade and the Emergence of the American Capital Market" in *The Origins of Value: The Financial Innovations that Created Modern Capital Markets*, ed. William N. Goetzmann and K. Geert Rouwenhorst (Oxford: Oxford University Press, 2005), 293; and Downing, *The Revolutionary Beginning of the American Stock Market* (New York: Museum of American Finance, 2010), 12, fig. 4.
24. Published: "Promissory note, no. 20," accessed April 29, 2018, <http://diglib.amphilsoc.org/islandora/object/promissory-note-no-20#page/1/mode/1up/search/Promissory>; also mentioned in Wolfe, *Marbled Paper*, 86.
25. Published: *American History TV Cities Tour: Santa Barbara*. "Karpeles Manuscript Library Museum" Program 404334-1. C-Span 3, Jan. 12, 2016, <https://www.c-span.org/video/?404334-1/karpelesmanuscript-library-museum>. Probably former Perc S. Brown collection.

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- . “An Exact Account of the Making of Marbled Paper.” *Classified Papers*, III (1) no. 4 (Cl.P/3i/4). London: Royal Society Archives, 1661, EvJ86.
- . “An Exact Account of the Making of Marbled Paper,” in *Register Book Copy 1*. London: Royal Society Archives, 1661–63, MS 776, EvJ88.5, 127–30.
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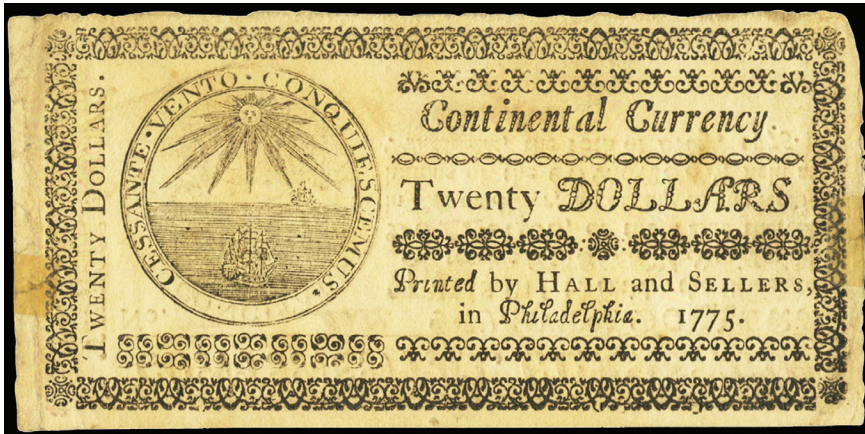
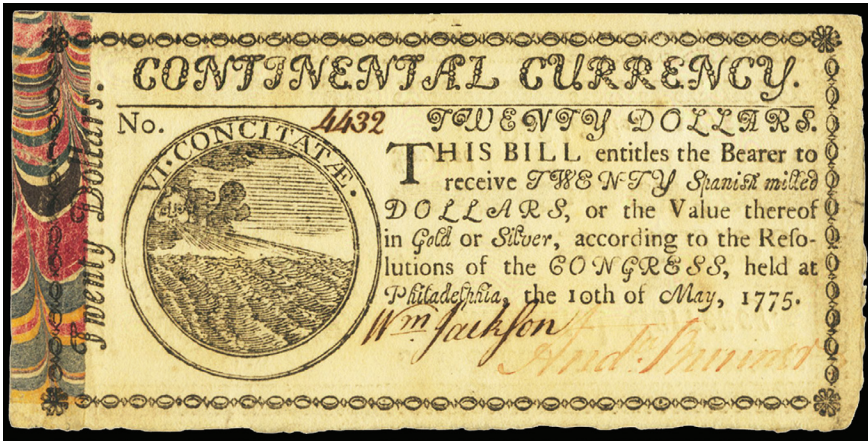
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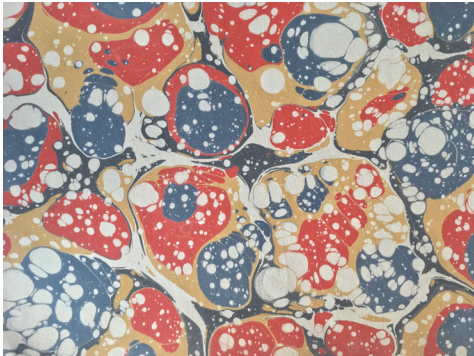
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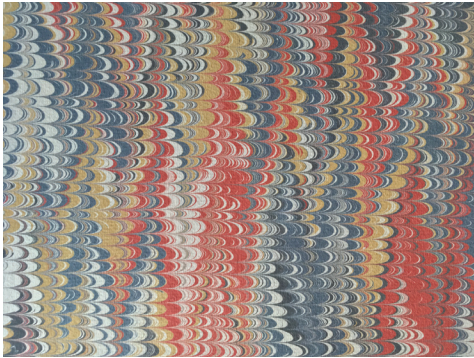




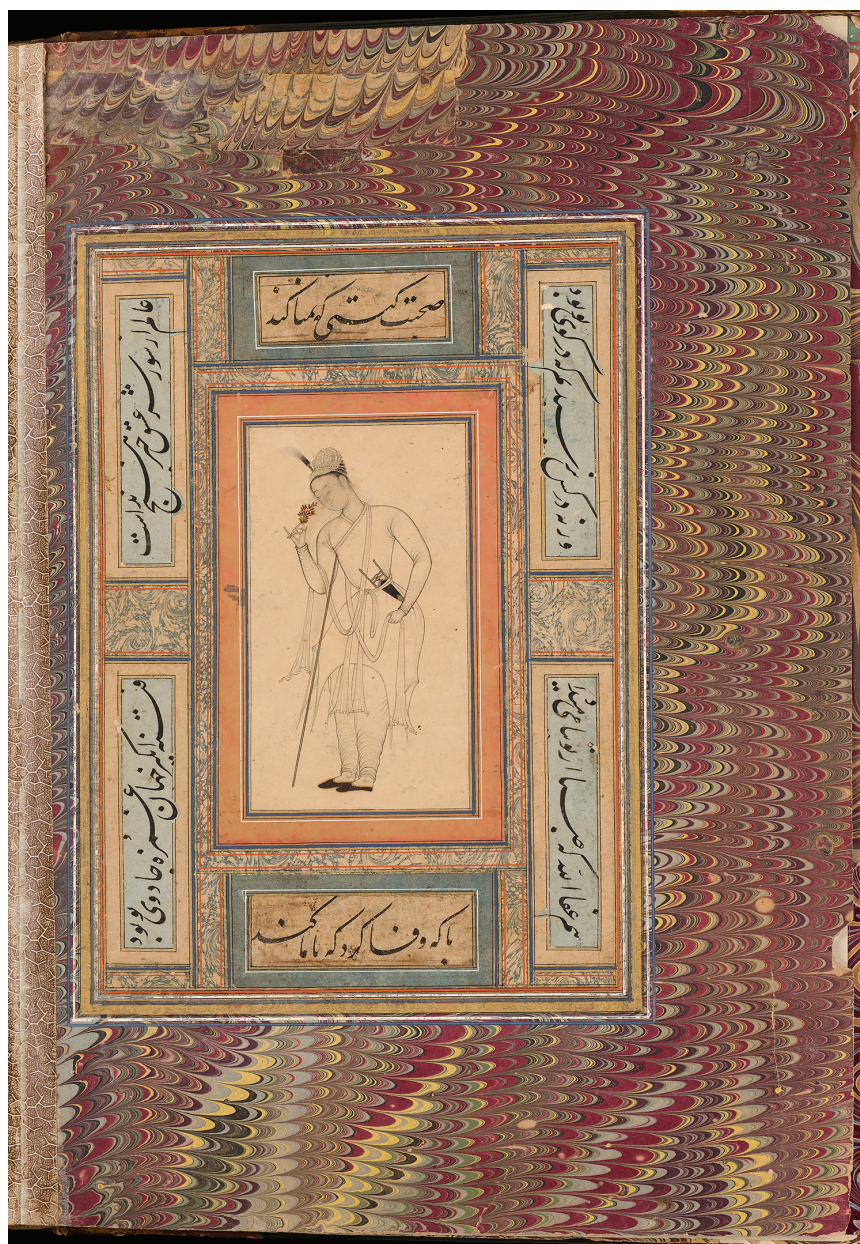
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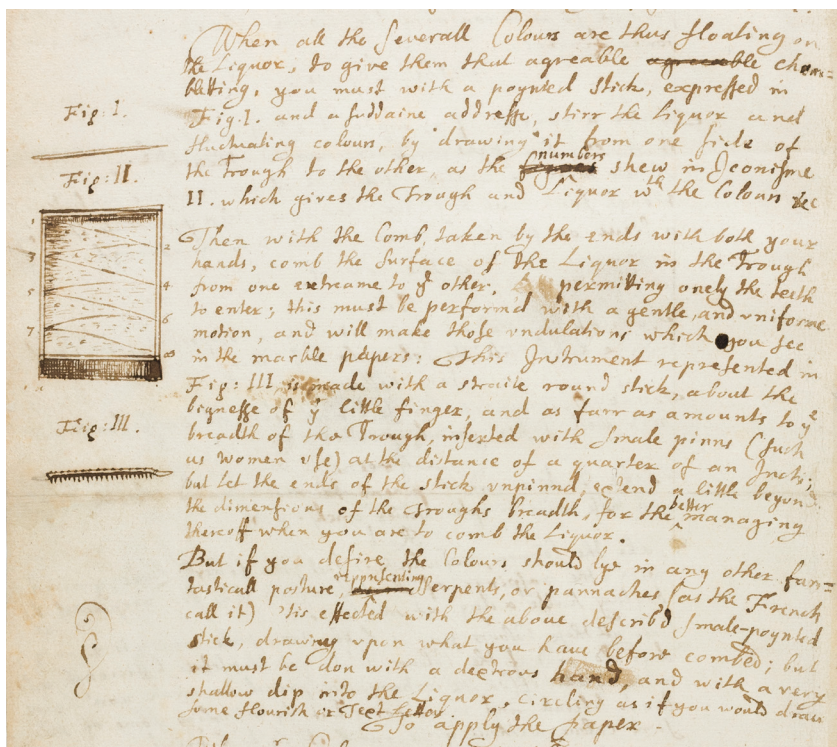
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2c







4



5



**POPE'S  
PATENT MARBLED PAPER, &c.**



**H**ATH been found of very great Use to the Publick, by preventing the Counterfeiting of Merchants Notes, Bills of Exchange, Companies Notes, Receipts for Subscriptions, or any other Instruments that admit of a Cheque, the Inventor himself not being able to marble two Margens alike, and the Colours being as durable as the Paper, and no way liable to be discharged or imitated, while all other Inventions of Cheques printed from Copper-Plates, &c. have

been found liable to be counterfeited. This Paper is prepared only by SAMUEL POPE, the Patentee; and is now sold at reasonable Rates, by the Stationers of London, who will instruct the Buyer in the inimitable Use thereof.

N. B. What is sold without the Stamp as in the Margent, is a Counterfeit.

6

*Sam. Pope Stationer at y<sup>e</sup> Popes  
Head, in y<sup>e</sup> Burrough of Southwark.*

*Sells all manner of Stationary Ware,  
with Bibles & Common Prayer Books, &c.*

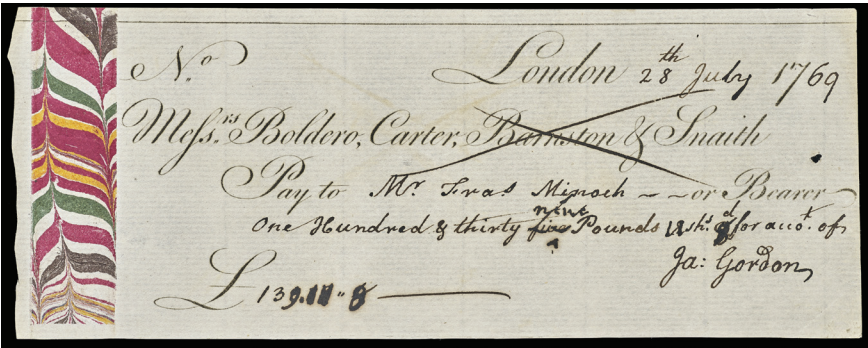
*And makes all Sorts of Shop-books,  
Journalls, Ledgers, Pocket-books, &c.*

*Neatly marbled on the Leaves.*

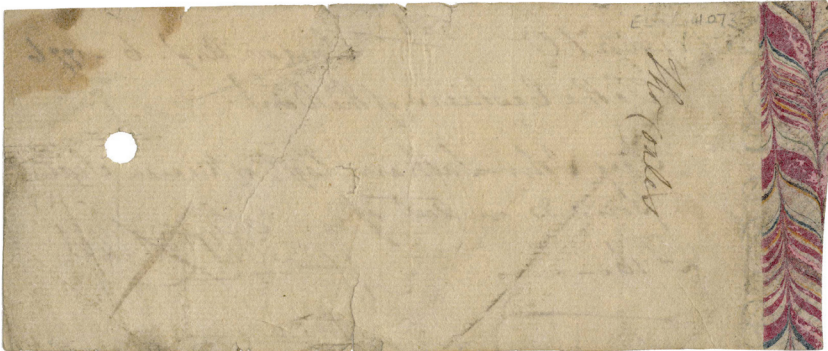
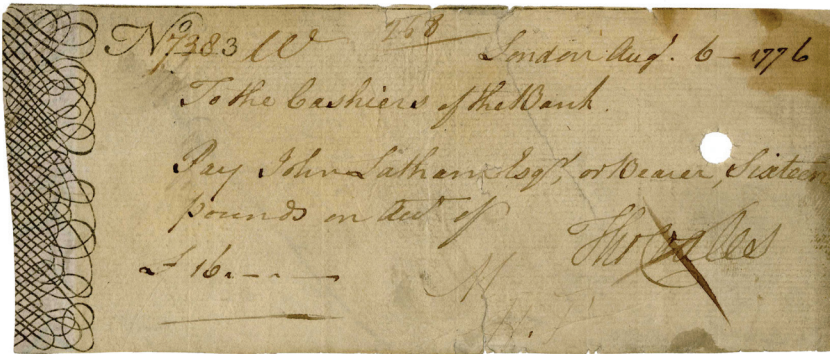
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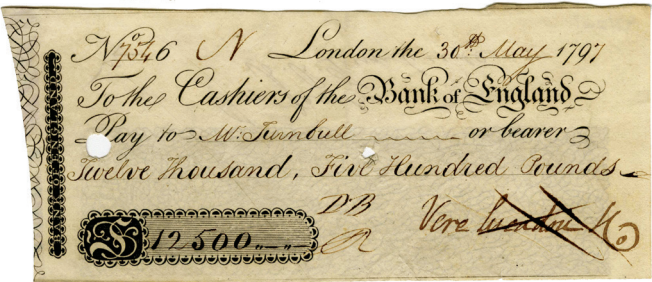
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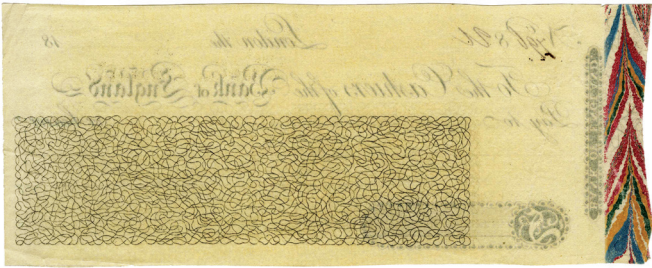
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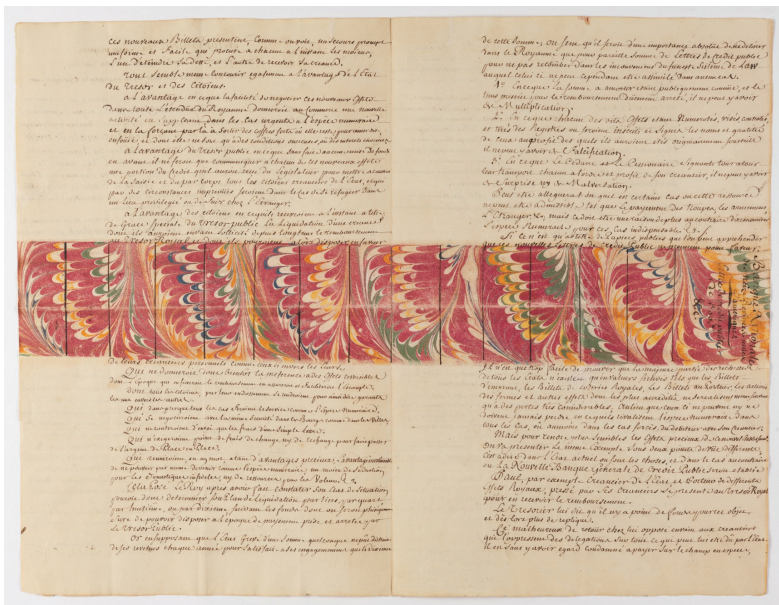


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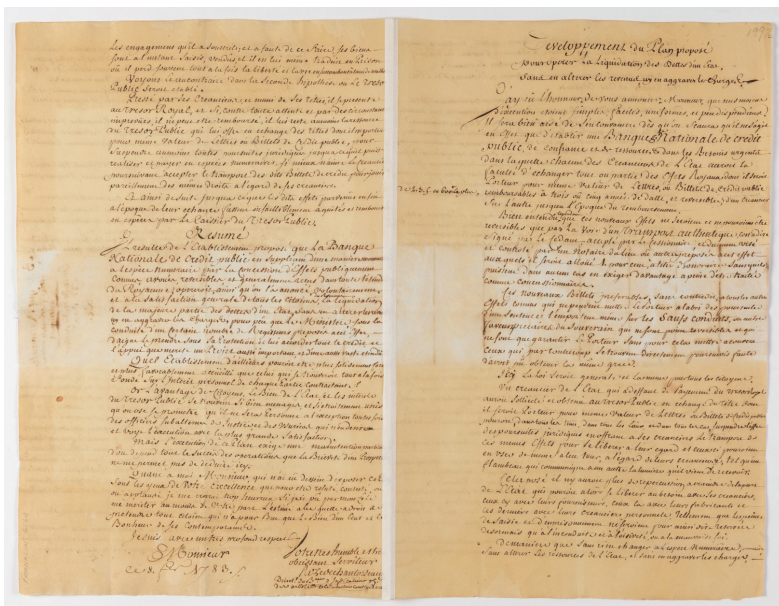


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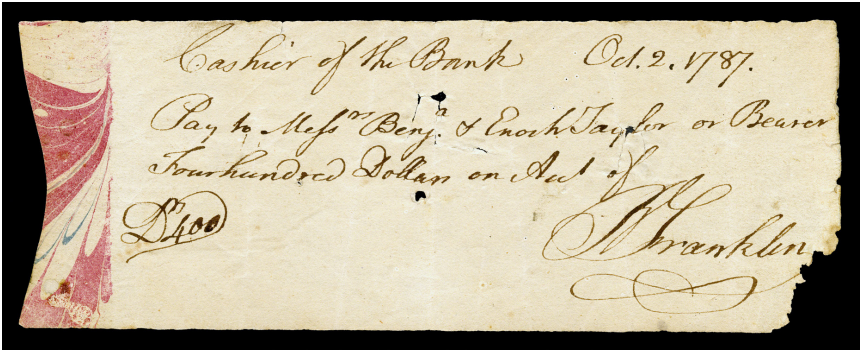


13a



13b





14



15a



15b