



# To Counterfeit is Death

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BENJAMIN FRANKLIN'S ANTI-COUNTERFEITING  
PAPERMAKING TECHNIQUES FOR COLONIAL  
CURRENCY

# Map of Lenape languages and tribe



# Monetary system in the early 1700s



Image credit:  
[https://commons.wikimedia.org/wiki/File:Wabanaki\\_Wampum\\_Belts.png](https://commons.wikimedia.org/wiki/File:Wabanaki_Wampum_Belts.png)

Five unique Wabanaki Wampum Belts from the Penobscot, 1915.

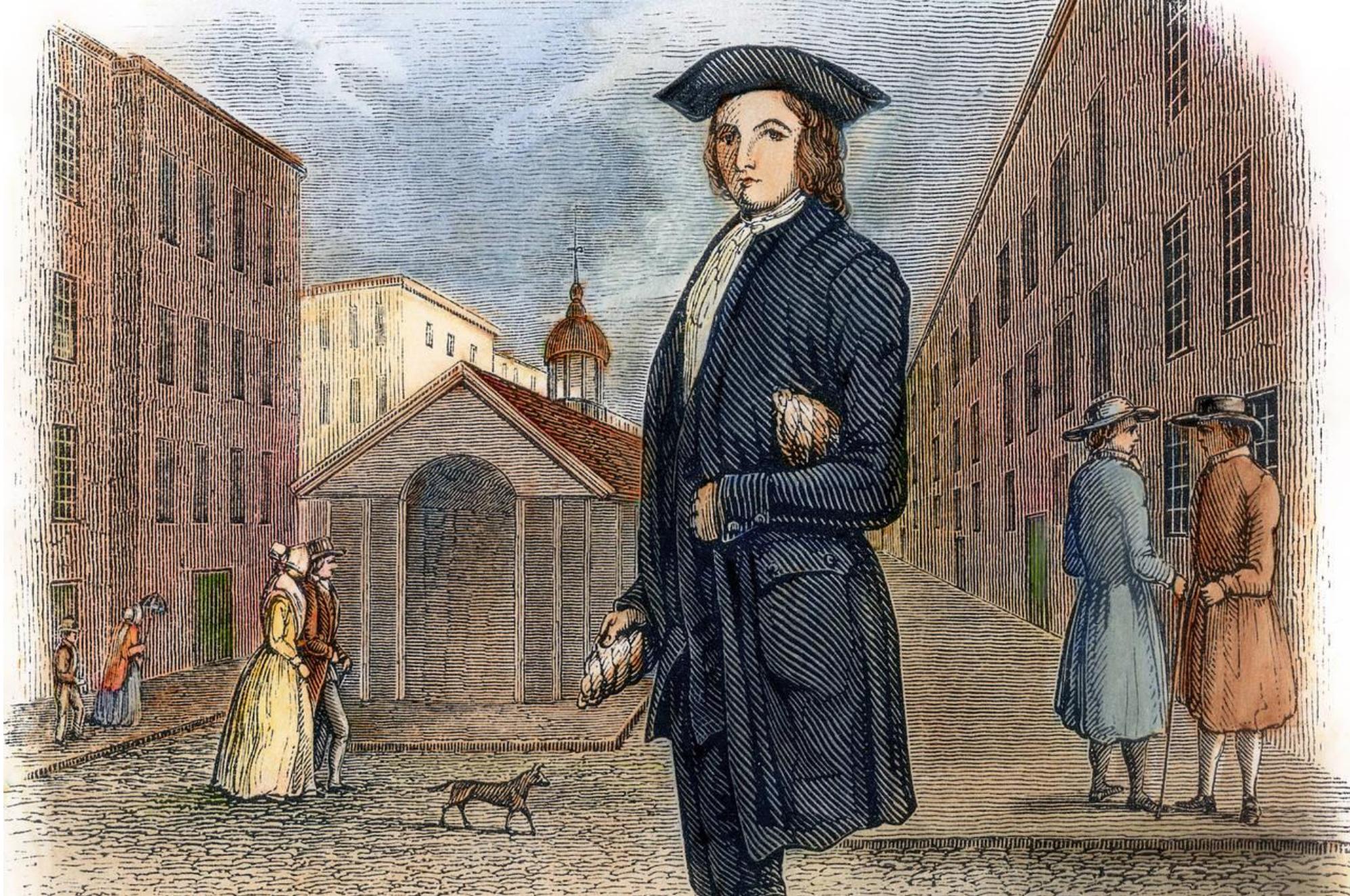


# Philadelphia in the early 1700s

# Monetary system in the early 1700s



Silver dollar of Philip V of Spain, 1739



Rendering of a young Benjamin Franklin.

Image source: <https://www.wsj.com/articles/young-benjamin-franklin-review-poor-richard-sows-his-oats-1537225792>

Paper money led to an increase  
in:

Internal trade

Employment

New construction

Number of residents

Paper money led to an increase  
in:

Internal trade

Employment

New construction

Number of residents

A MODEST  
ENQUIRY  
INTO THE  
*Nature and Necessity*  
OF A  
*PAPER-CURRENCY.*

— *Quid asper*  
*Utile Nummus habet; patriæ, cbarisq; propinquis*  
*Quantum elargiri deceat.* —  
Perf.

PHILADELPHIA:  
Printed and Sold at the New PRINTING-  
OFFICE, near the Market. 1729.



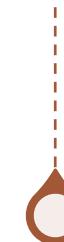
**1741–1746**

Franklin prints by himself for Pennsylvania currency



**1764**

David Hall and William Sellers take over the business

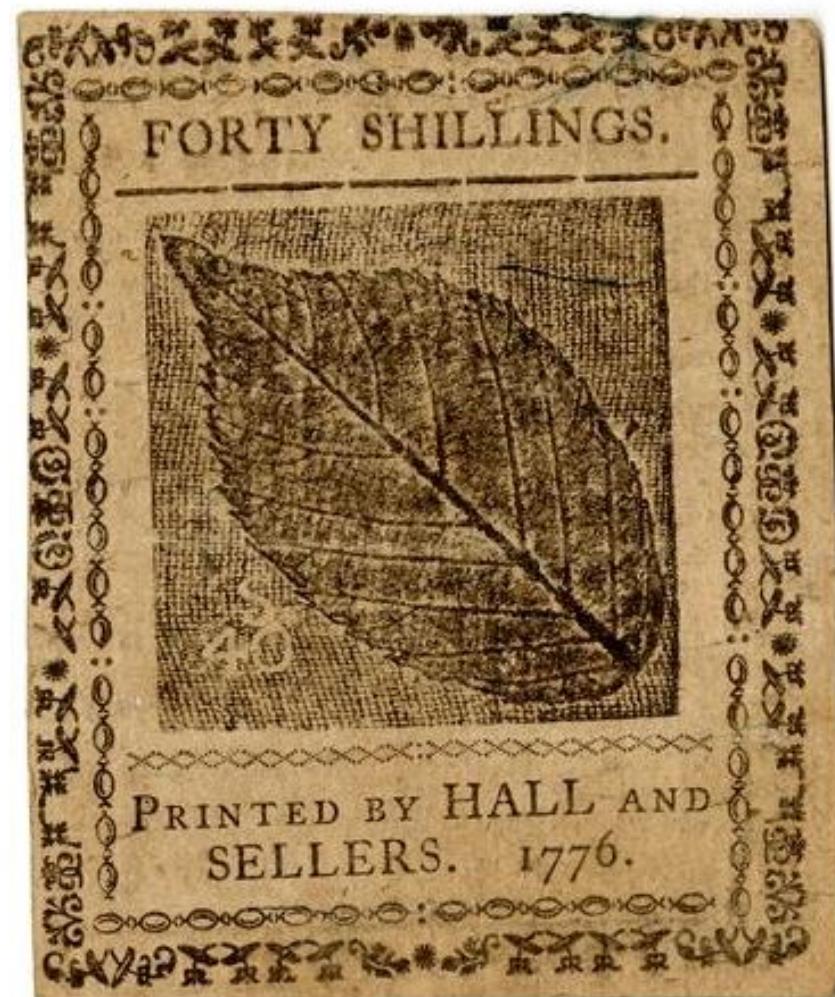
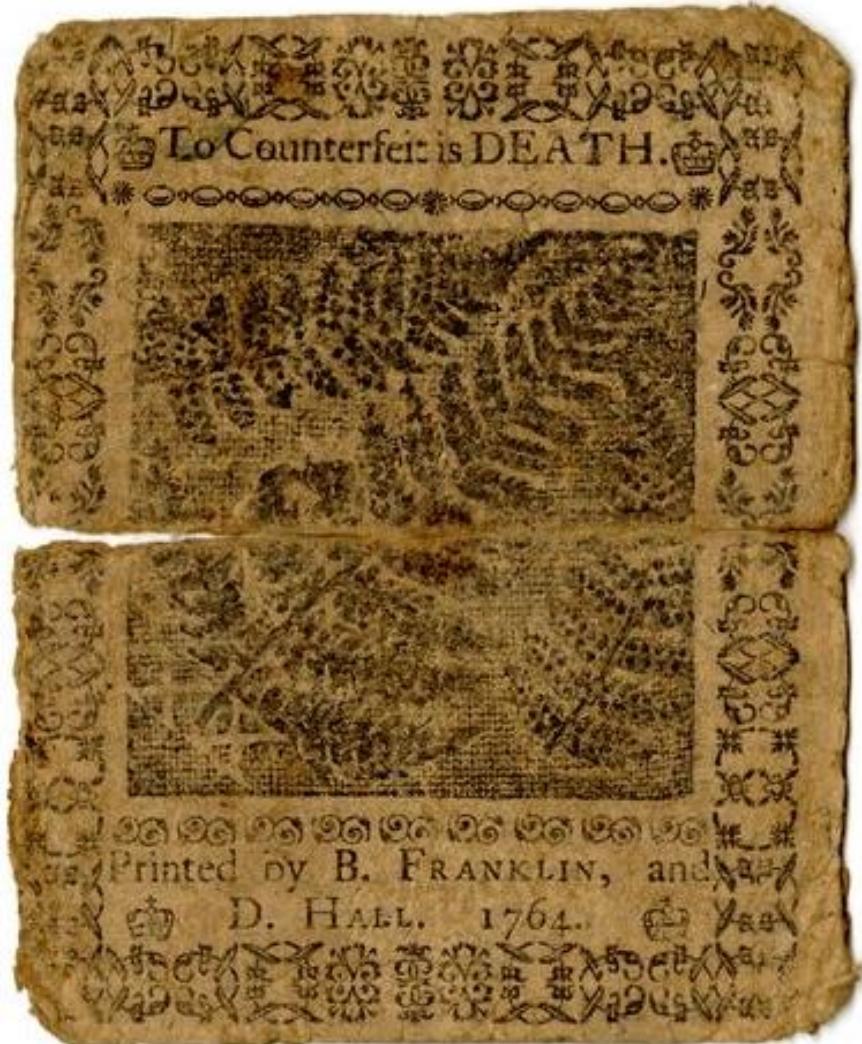


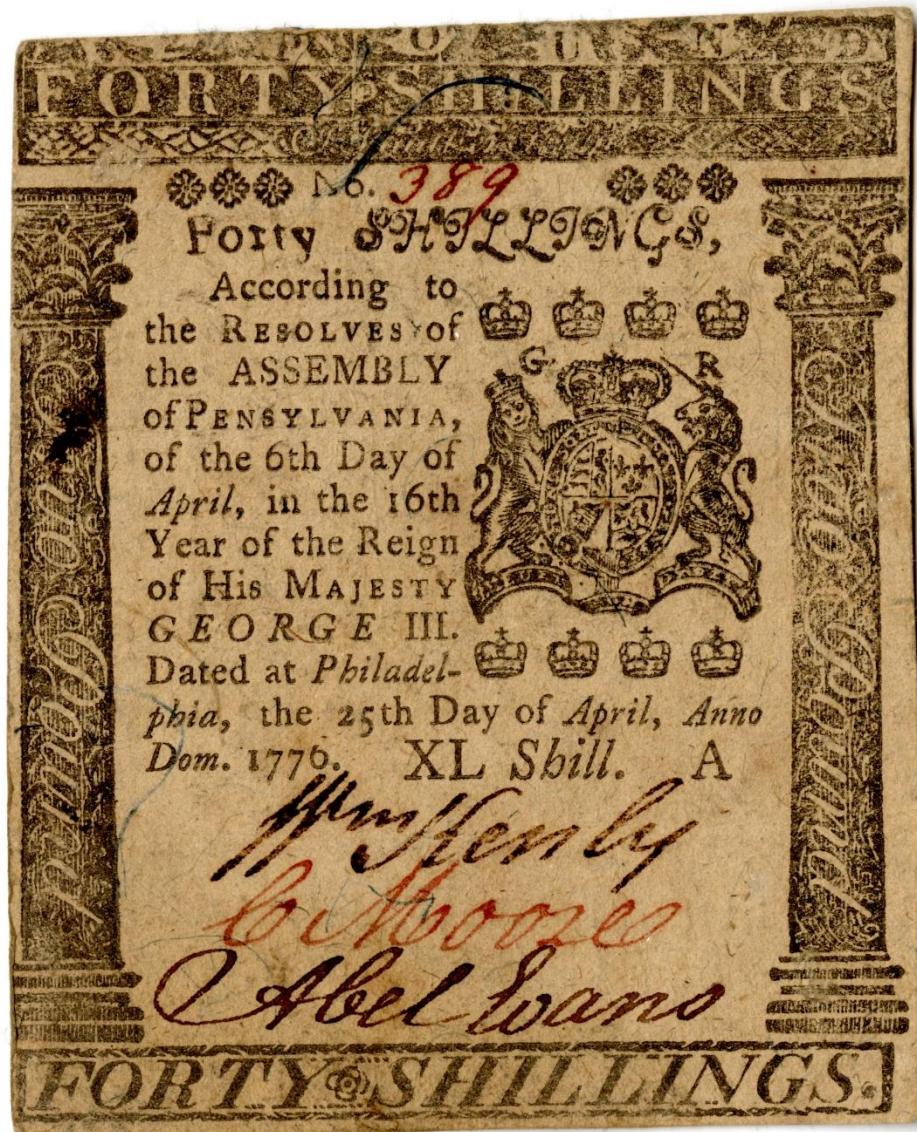
Franklin and David Hall print together for Pennsylvania, Delaware, and one issue of New Jersey



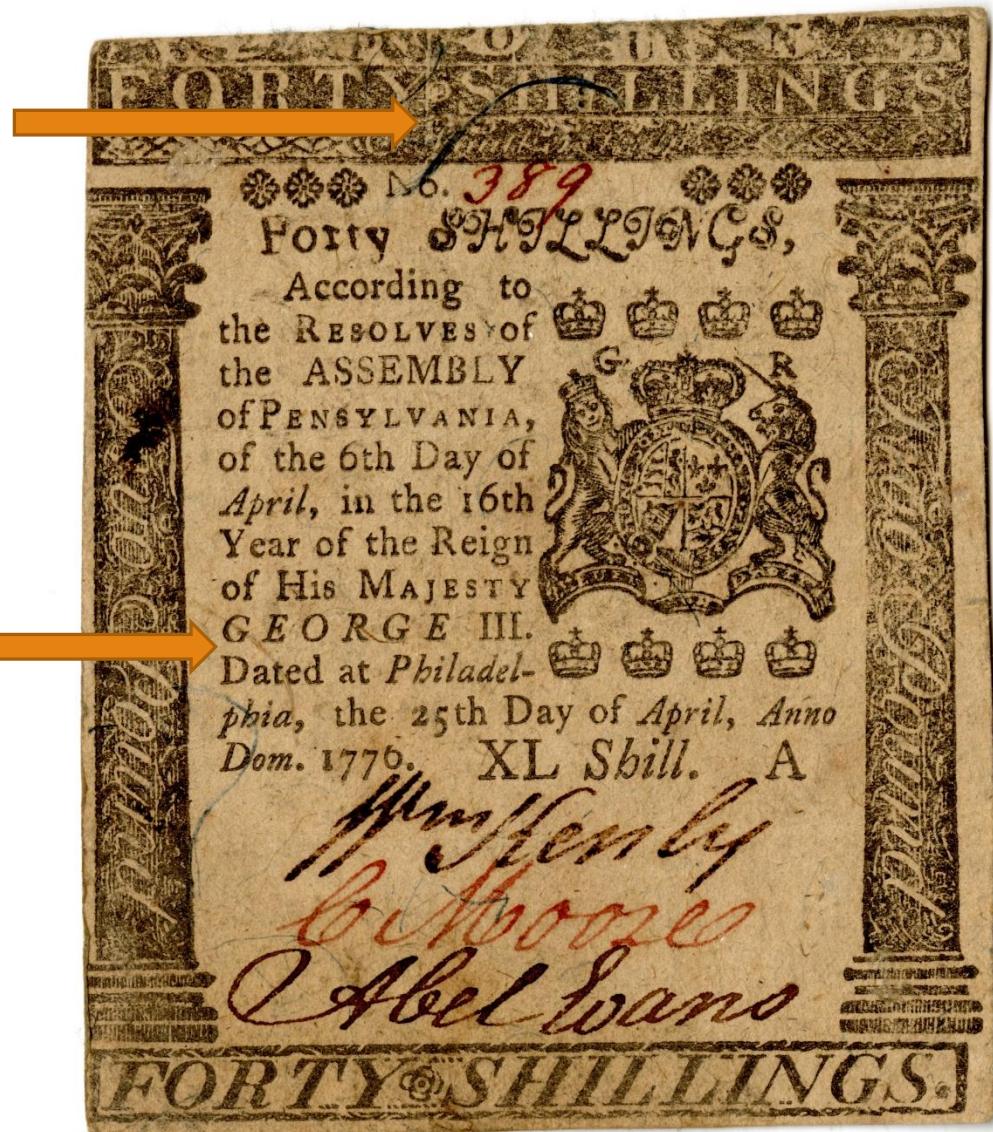
**1749–1764**

# Currency printing timeline





## Anti-counterfeit measures

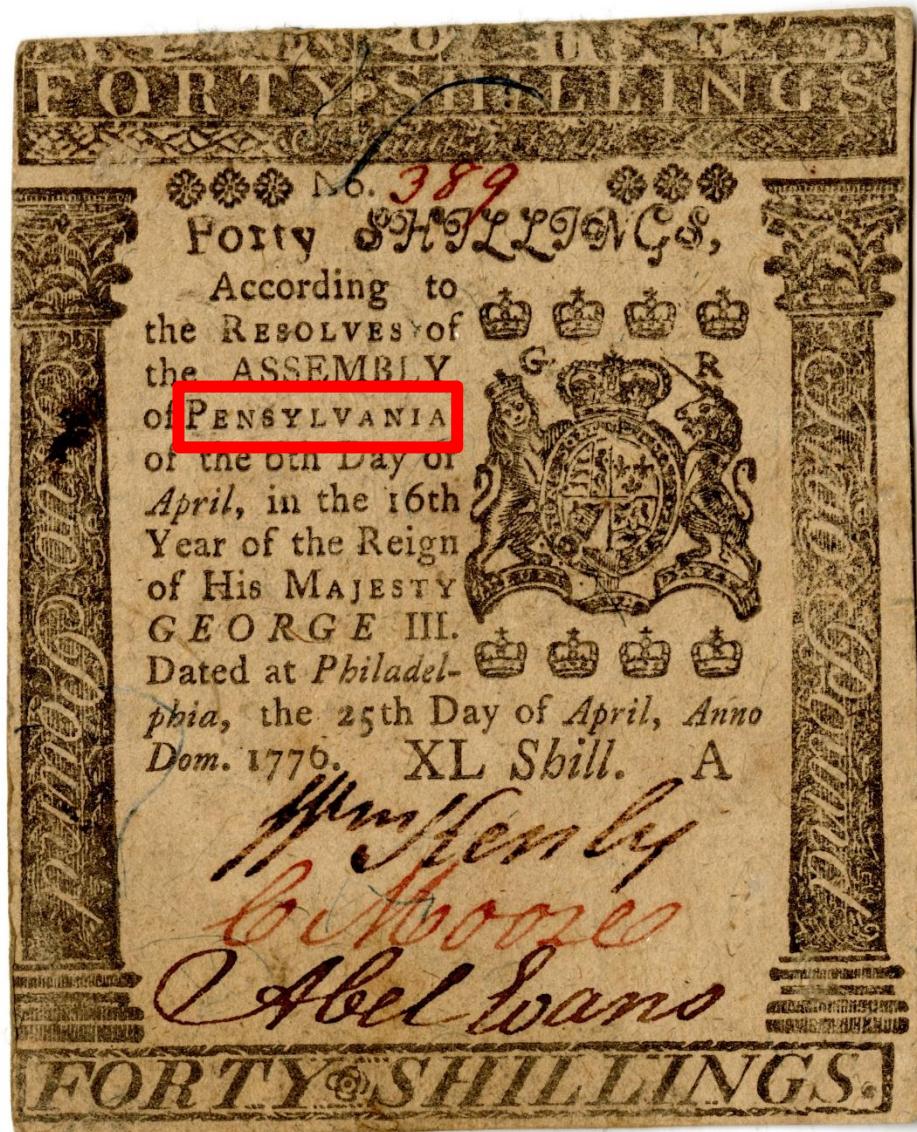


## Anti-counterfeit measures

Mica flakes in the paper

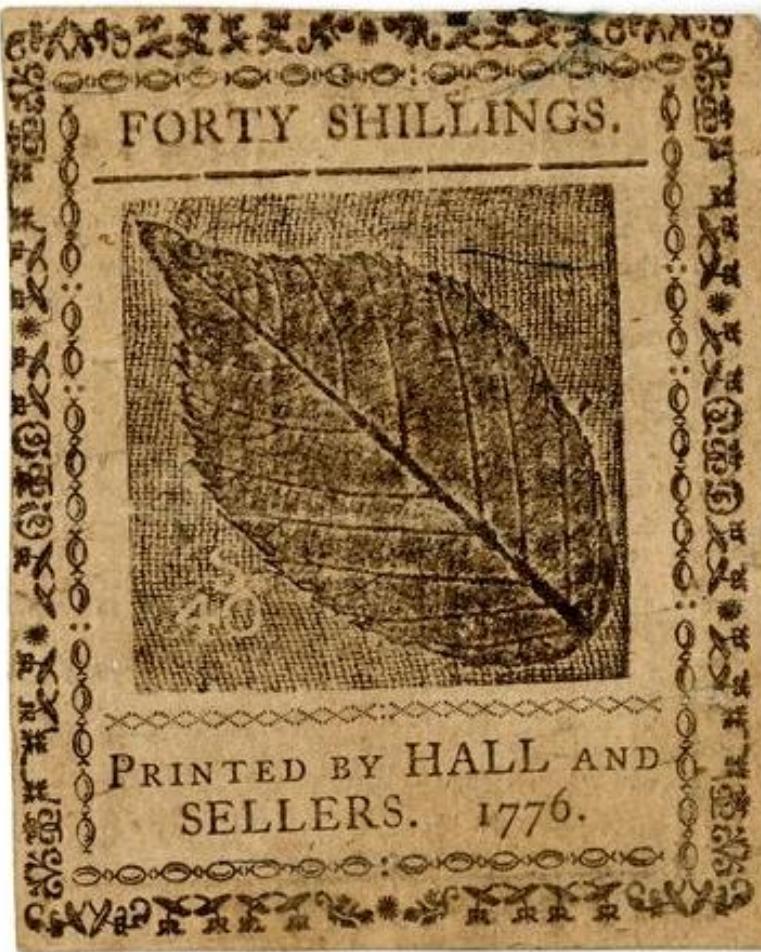
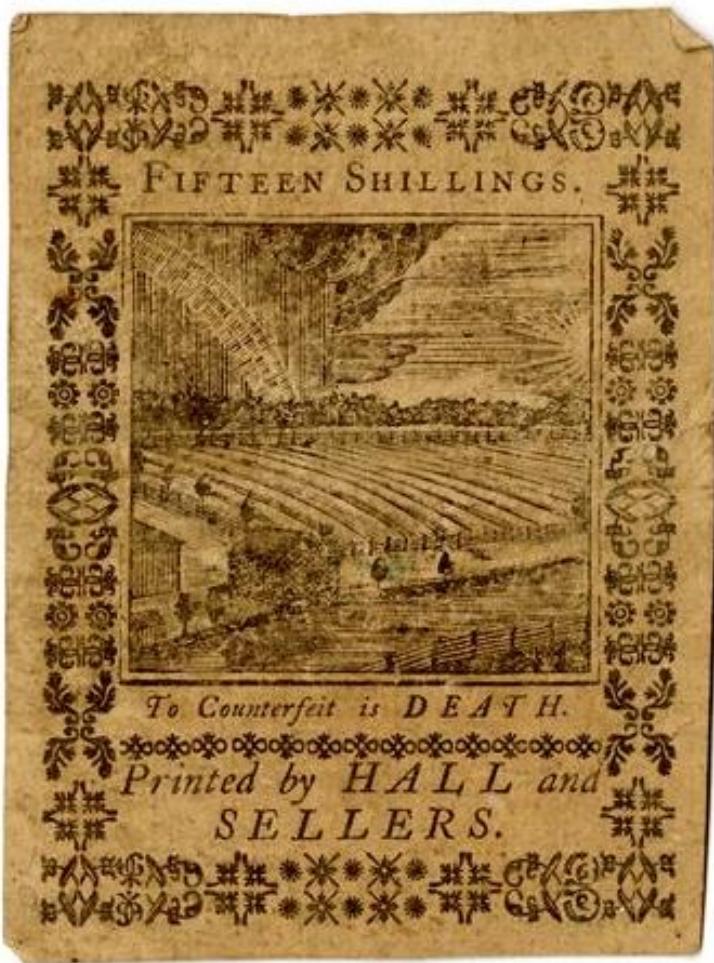


## Anti-counterfeit measures



## Anti-counterfeit measures





12-pointed star



8-pointed star



Anti-counterfeit  
measures

Curved background lines  
Pointier/sharper leaf edge



Straight background lines  
Rounder/blurrier leaf edge



## Anti-counterfeit measures

Longer curve at base of red diamond



Shorter curve at base of red diamond



Anti-counterfeit  
measures

Diamond cutout indicates a confiscated counterfeit

Examples of counterfeit notes in the APS collection



# Newspaper advertisements

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“citizens are warned that the word Indented in the first line is too high, and towards the bottom the words “of this” were put too close together...and all lines of printing were more uneven than in the true bills”

*Pennsylvania Gazette*

August 8, 1734

# Newspaper advertisements

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Philadelphia. July 22, 1777.

W<sup>H</sup>ereas a certain William Howe, alias Gen. Howe, alias Sir William, alias any thing or nothing, has lately gone off greatly in debt to sundry persons in New-Jersey and other parts of the Continent, and has not left wherewithal to make payment for the same; this is therefore to caution all persons not to trust him on any account, as they will certainly lose their money. Said Howe is charged with having in company with one Cornwallis, not yet taken, broke into several houses in New-Jersey, and stolen and carried off many valuable effects; likewise with being concerned in counterfeiting the currency of this Continent, and of having starved to death several good subjects of these States, while he was chief Jailer at New-York. He is a very ill-looking fellow, and is an indented servant to a certain George Whelp, alias Guelph, alias King George.  
Whoever will secure said Howe in any of the Jails of this Continent, or will give notice where he is, to the American army, shall be handsomely rewarded.  
N. B. He was lately seen skulking about Amboy, Westfield, and Spank-town, in the Jerseys, and has not since been heard of. Should he attempt to practise his villainy in this city, 'tis hoped all persons will be on their guard to apprehend him.

British mocking Americans  
*Continental Journal* (August 14, 1777)

Poor Richard, 1737.

A N

# Almanack

For the Year of Christ

1737,

Being the third after LEAP YEAR:

And makes since the Creation	Years
By the Account of the Eastern Greeks	7243
By the Latin Church, when ☽ ent. ♍	6934
By the Computation of W.W.	5744
By the Roman Chronology	3706
By the Jewish Rabbies	3496

Whereto is contained,

The Lunations, Eclipses, Judgment of the Weather, Spring Tides, Planets Motions & mutual Aspects, Sun and Moon's Rising and Setting, Length of Days, Time of High Water, Fairs, Courts, and observable Days.

Fitted to the Latitude of Forty Degrees, and a Meridian of Five Hours West from London, but may without sensible Error, serve all the adjacent Places, even from Newfoundland to South-Carolina.

By RICHARD SAUNDERS, Philom.

PHILADELPHIA:  
Printed and sold by B. FRANKLIN, at the New Printing-Office near the Market.

## RATTLE-SNAKE HERB.

THE Indians long made a Secret of the Herb they used in curing the Bite of that venomous Reptile a RATTLE-SNAKE: but since some curious Persons among the English have fully discover'd and are now well acquainted with it, I hope it will be an acceptable Service to these Parts of the World, if I make it more publick by the following Description, with the Figure of a Leaf of it.

THE Top and Branches of the Plant are thick set with small yellow Flowers in August & September. It is a Species of Golden-Rod, known from the other Sorts by the smoothness of the Leaf, and its pungent Taste, and occasioning when chewed & swallow'd, a small Stoppage of the Breath, and Contraction in the Throat; and the Stalk, which is in some Places less than a yard in height when at full Growth, in others more, is of a dull purple colour, and smooth, and cover'd with a fine blue Dust, like that on many of the English Plums. It grows in most Wood-Lands, but under the Shade of Trees is seldom rank or large, or with more than one, two or three Stalks. It is also found on the Banks of dry Ditches, & sometimes in them, & in Hedge-Rows: But it is most luxuriant near to Run Sides, if the Soil be rich, and not too moist, nor too much shaded.

The Root continues over the Winter, and if set in a good Garden, will send forth (in the 2d or 3d Year) at least 50 Stalks. The Plant shoots early in the Spring & withers late in the Fall.

The Indians use it variously; sometimes they bruise it, sometimes chew it and spit in the Patient's



Patient's Mouth, some lay it to the Wound, others about the Wound, sometimes they boil it and give the Water to drink, washing the Wound with it likewise: but always some of it is to be swallowed, either with the Spittle or with Water.

The Leaf figur'd in the Margin is one of the largest; for the most part they are not near so big though the Shape be the same.

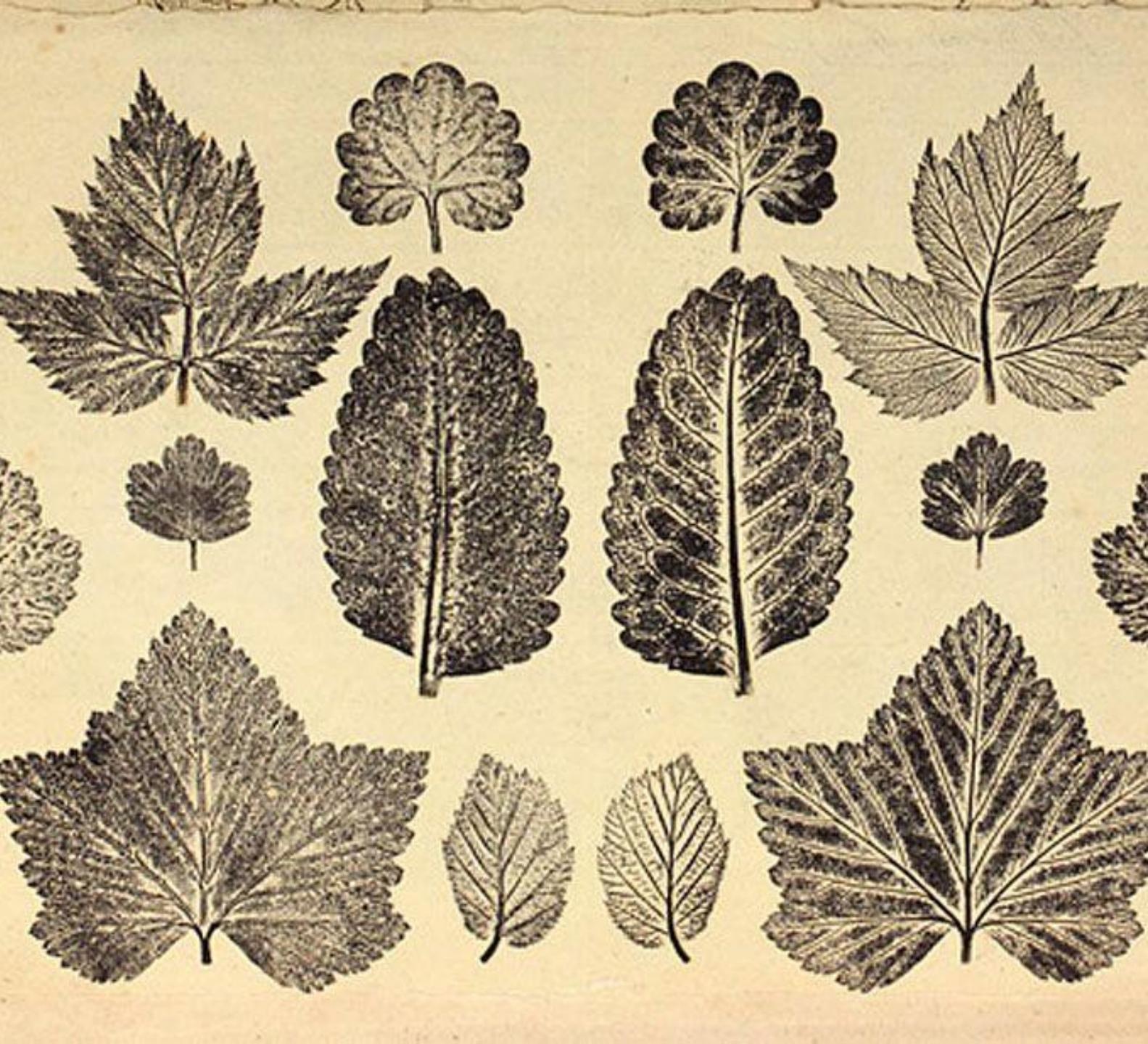
Planets Motions for the 1, 8, 15, and 22

Days in each Month, 1737.

Month	Days	Sun's Place	I	V	♂	♀	☿	♃	♄	♅	♆	Sun's Place	I	V	♂	♀	☿	♃	♄	♅	♆
January	1 22 41	6 21	1 27	23				20	25	8	20	23	18	14	D.						
	8 29 49	5 23	5 24	26				26	48	21	23	2	17	8							
	15 6 56	5 24	8 14	17				3	28	22	25	27	21	14							
	22 14 3	5 26	12	23	29			10	10	23	22	26	26	24							
February	1 24 11	5 29	17	V	X			19	15	23	22	7	25	Ω							
	8 1 15	5 26	21	13	R.			26	30	24	21	12	10	27							
	15 8 17	6	2	25	2	7		3	14	25	20	16	17	Ω							
	22 15 18	6	3	25	25	1	A	10	0	25	9	21	24	23							
March	1 22 17	6	5	II	4	D		19	44	26	18	27	Ω	Δ							
	8 29 14	7	7	8	14	X		26	34	26	17	22	12	19							
	15 6 V 9	7	8	12	22	8		3	25	26	16	6	20	28							
	22 13 3	8	10	6	29	17	December	10	20	26	15	11	28	M							
April	1 22 51	9	12	22	II	V		19	15	26	14	17	Ω	R.							
	8 29 41	10	13	26	14	3		26	13	26	14	22	17	II							
	15 6 5 29	10	15	25	19	4		3	11	13	26	14	26	20	3						
	22 13 15	11	16	5	24	8		10	14	26	15	10	25	25							
May	1 21 55	12	18	10	28	II		20	18	25	13	8	16	Ω							
	8 28 39	13	19	14	25	14		27	23	25	14	12	25	10							
	15 5 II 21	14	20	19	II	26		4	29	24	14	17	M	21							
	22 12 3	15	21	23	27	Ω		11	36	24	14	22	12	1							
June	1 21 35	16	22	29	21	14		20	47	23	15	28	23	15							
	8 28 15	17	22	Ω	17	R.		27	55	22	16	4	4	26							
	15 4 5 24	18	23	8	14	14		5	WP	4	22	17	8	11	WP						
	22 11 34	19	23	12	13	10		12	13	21	18	13	10	13							

# Joseph Breintnall's *Nature Prints of Leaves*

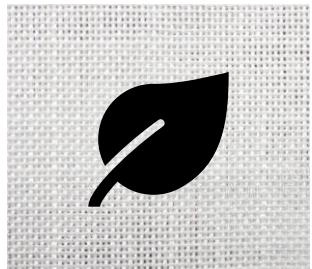
Image credit: The Library Company of Philadelphia



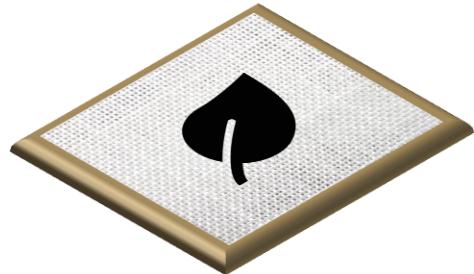
# Leaf casting

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Step 1: Glue leaf to cloth



Step 2: Glue leaf/cloth to small piece of wood



Step 3: Place into shallow box and pour in plaster



Examples of plaster leaf molds



Leaf block used  
to print paper  
money, ca.  
1760.

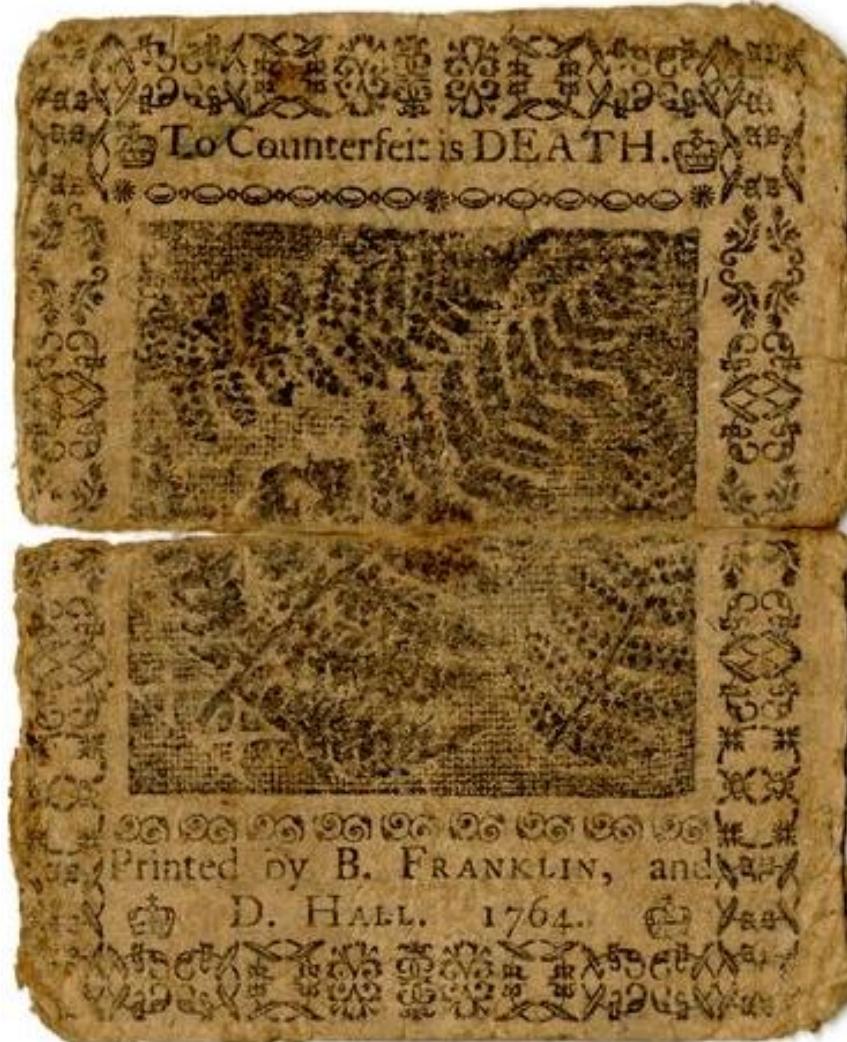
The Library Company of  
Philadelphia, on deposit from  
the Delaware County Institute  
of Science.



*Dryopteris* fern at center



Pennsylvania, 20 shillings  
Franklin & Hall, June 18, 1764



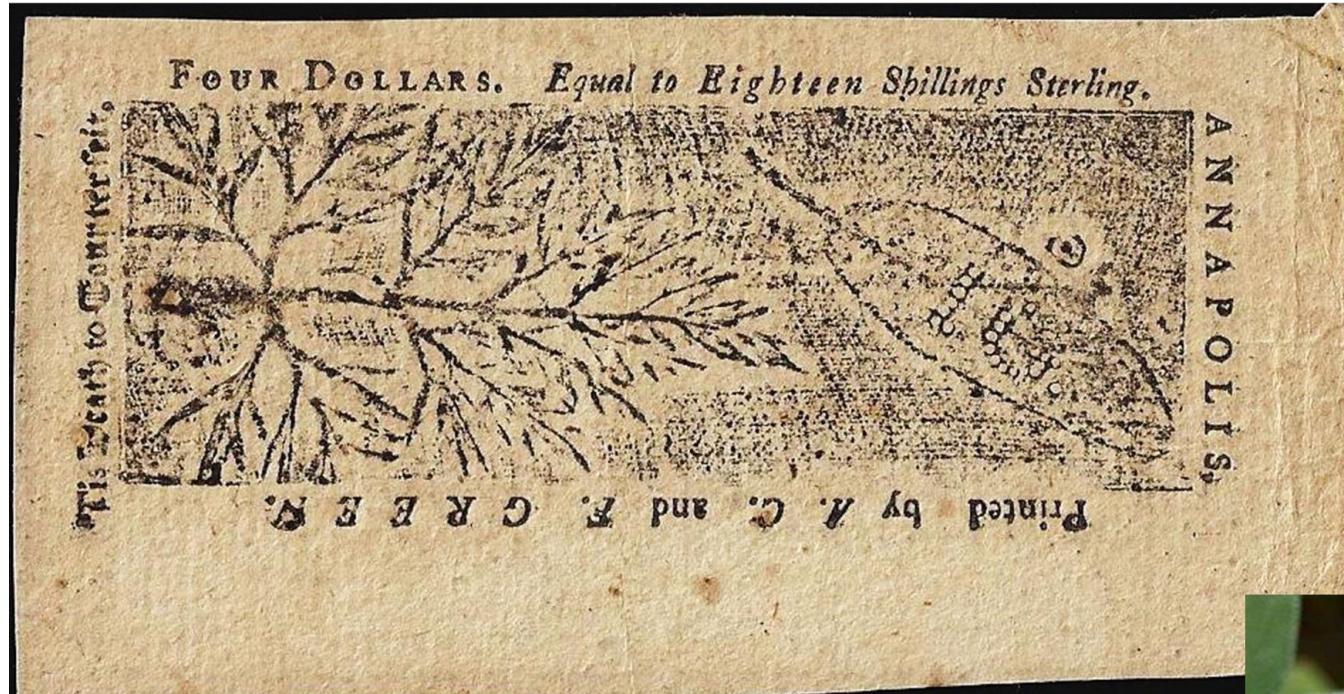
*Dryopteris* fern, right and left  
Underside with spore bodies



## Maryland, Four Dollars

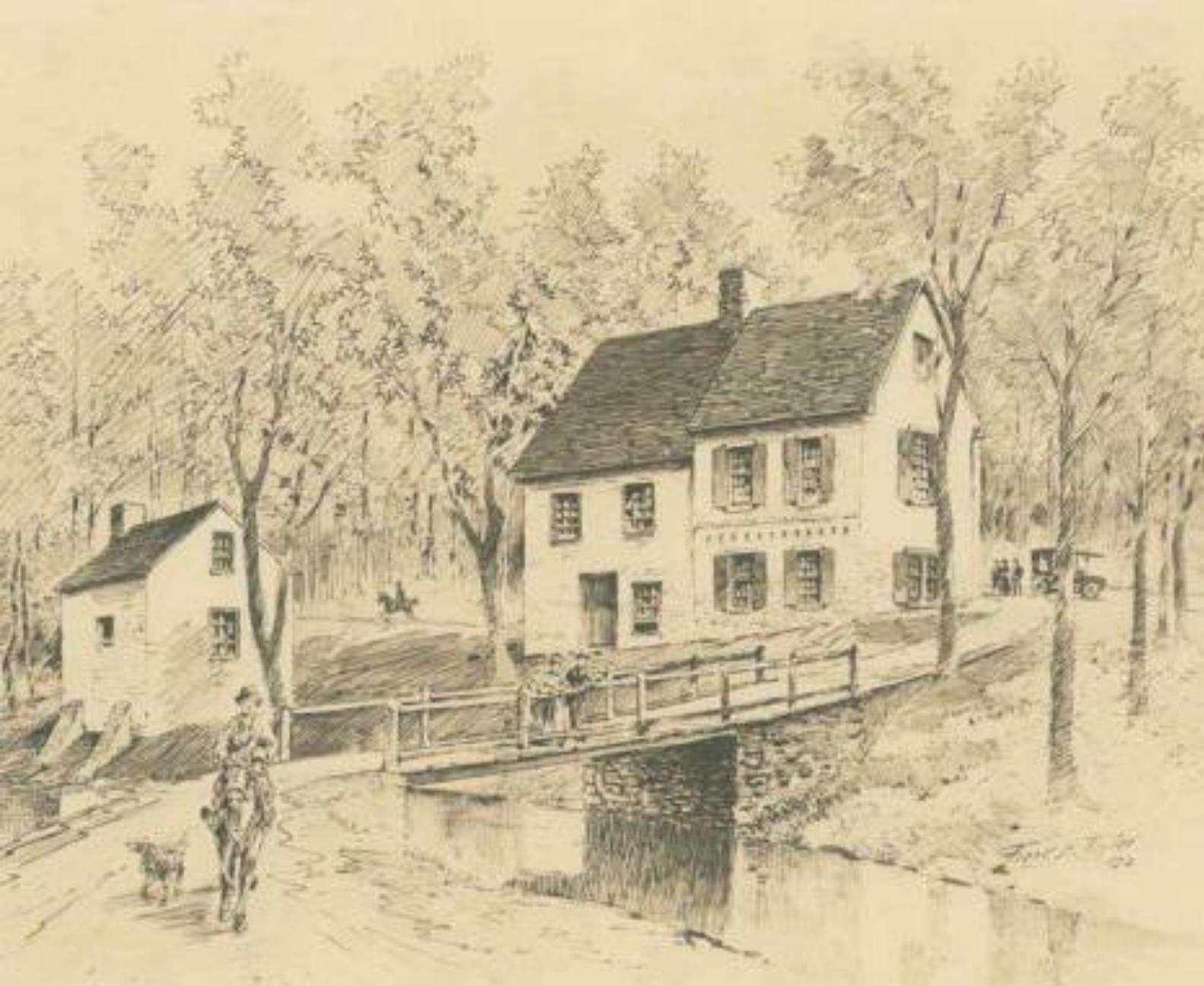
Anne & Frederick Green, April 10, 1774

*Daucus carota*,  
carrot greens



*Salvia officinalis*,  
culinary sage



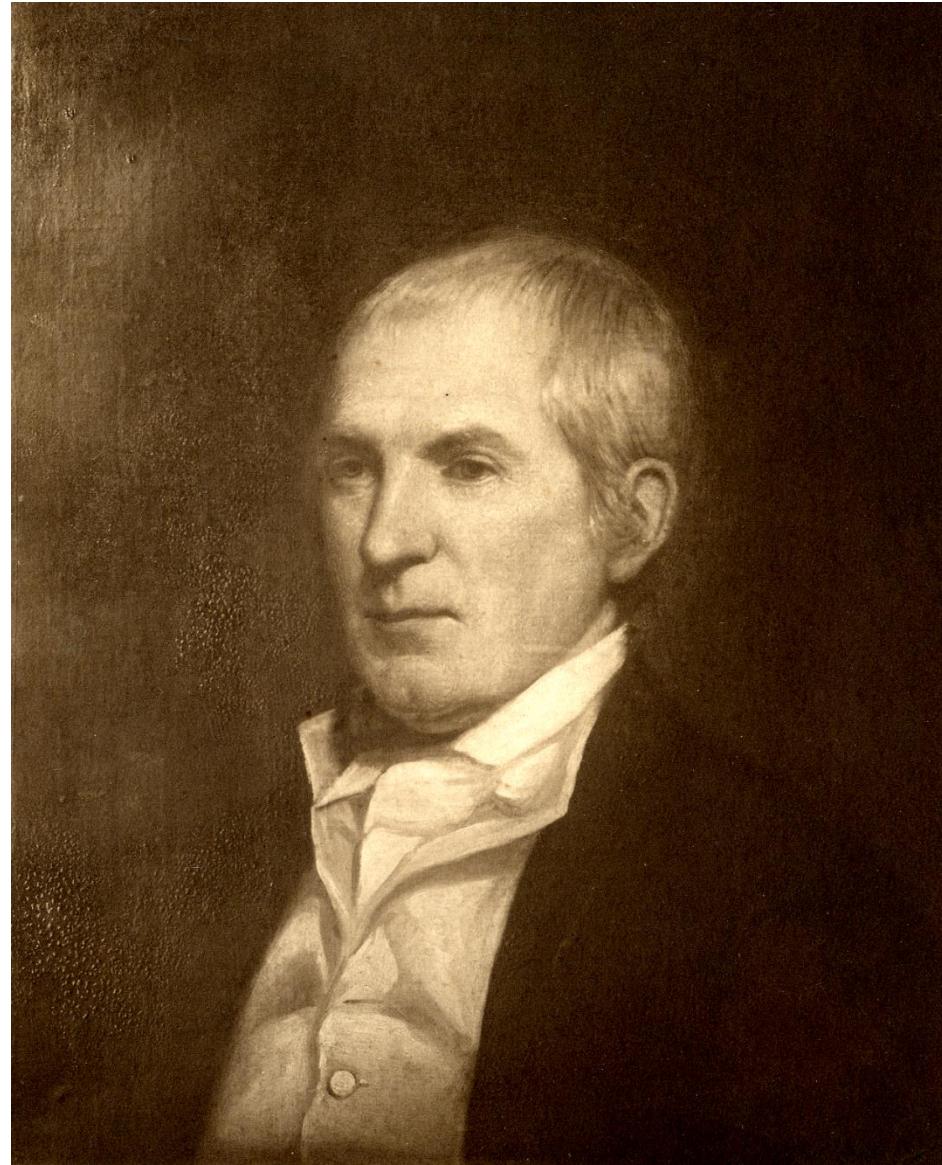


Site of  
America's first  
papermaking  
mill

Constructed in 1690  
by William  
Rittenhouse

# Nathan Sellers

Portrait by Charles Wilson Peale, ca.  
1820

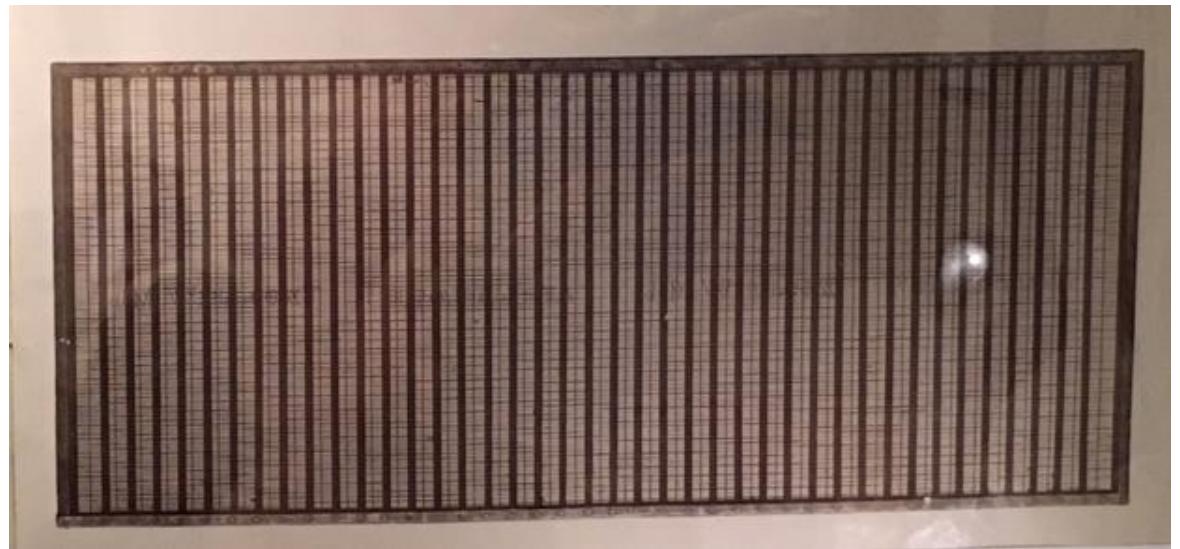


# Nathan Sellers and American Papermaking

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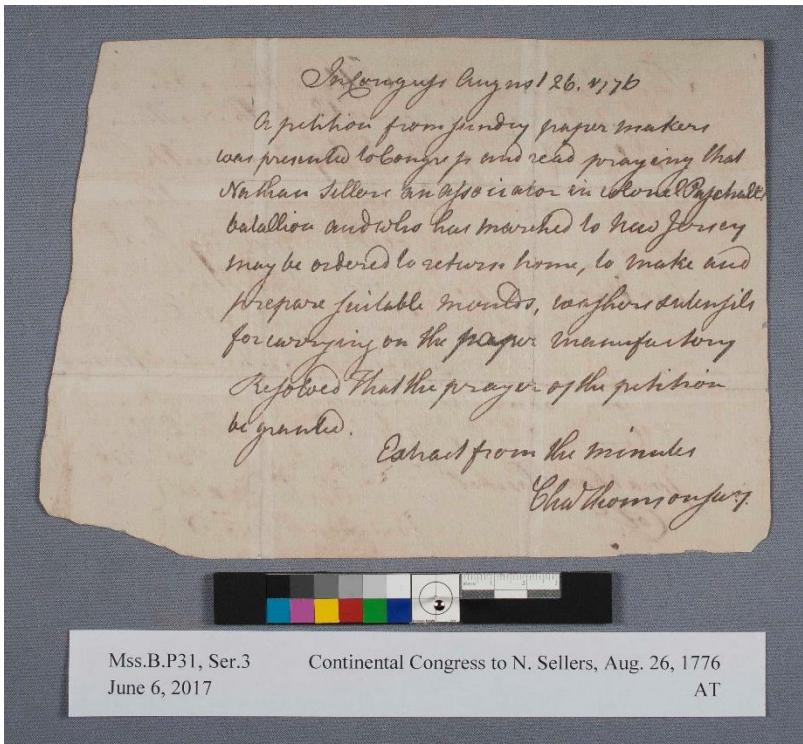
Nathan Sellers,  
hand-drawn brass wires,  
before 1787



Photograph of one of Nathan Sellers's laid paper molds with J. W. Wilcox watermark

# Nathan Sellers and American Papermaking

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Continental Congress,  
pass releasing Nathan Sellers from military  
service to make paper molds  
(APS, Peale-Sellers Family Collection)

In Congress August 26, 1776

A petition from sundry paper makers was presented to Congress and read praying that Nathan Sellers, an associator in Colonel Paschall's batallion and who has marched to New Jersey may be ordered to return home to make and prepare suitable moulds, washers & utensils for carrying on the paper manufactory. Resolved that the prayer of this petition be granted.

Extract from the minutes

Chas Thomson, Sec<sup>y</sup>.

Vellum — vellum vellum No. 3

**SALEM BANK.** Mold Shop 5.10.0 }  
72 letters 6.15.0 } £12.5.0

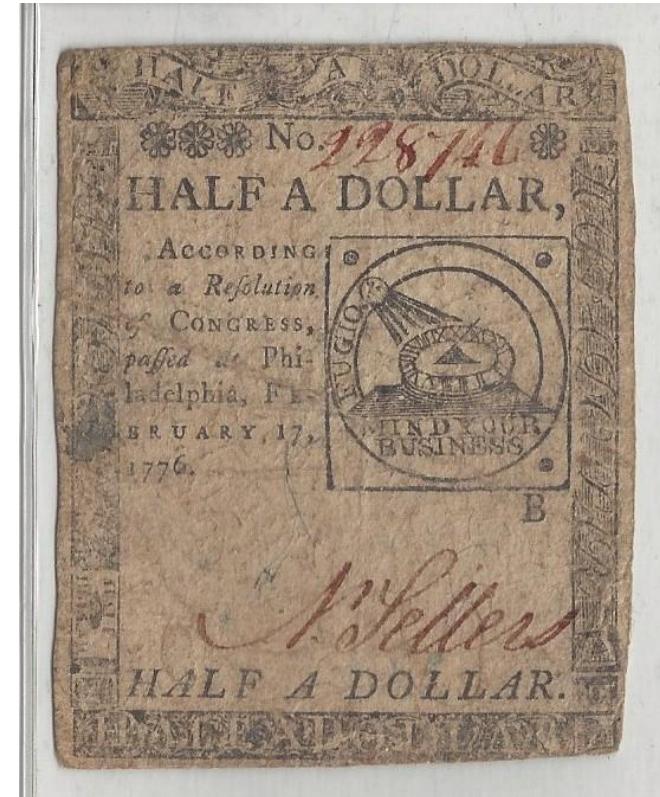
29 Elliston & John Porot - Bank Mold - 13 $\frac{1}{4}$  by 16 $\frac{1}{2}$  - 14 bars  
 Said - Bar wire 24  
 Mold Shop £5.10.0 Fe. Do 32  
 NEWBURY PORT 8 times is 88 lbs 3 $\frac{1}{4}$  lbs 8.5.0 To melt 25.20  
 £ 13.15.0

John Jordan Jr. - Bank Mold - 13 by 16 - 14 bars  
 Vellum - Wire wire No. 36.  
 8 Month Shop £5.10.0

KENTUCKY J CO. 8 times is 88 lbs 3 $\frac{1}{4}$  lbs 8.5.0  
 £ 13.15.0

May 4 Matthew Carey - Bank Molds 12 $\frac{3}{4}$  by 16 - 13 bars  
 for New York } Vellum - Wire wire No. 36.  
 STATE BANK. Mold Shop - 5.10.0  
 72 letters - 6.15.0 £ 12.5

Detail of paper mold orders for banks, Nathan Sellers account book



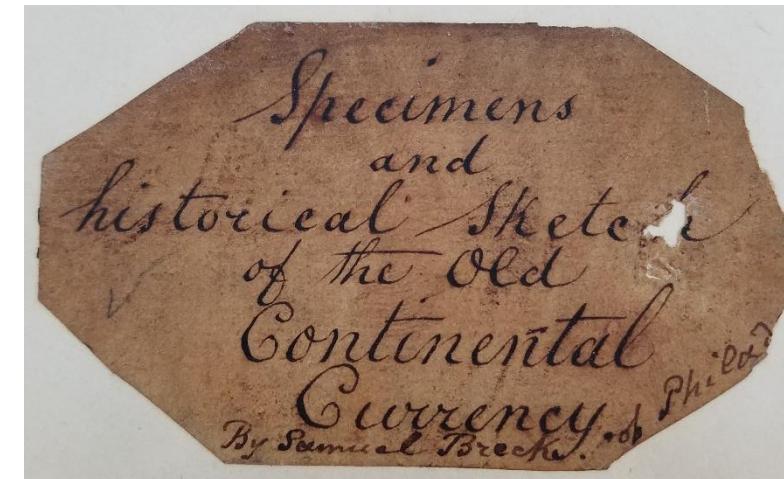
Half dollar bill signed by  
Nathan Sellers

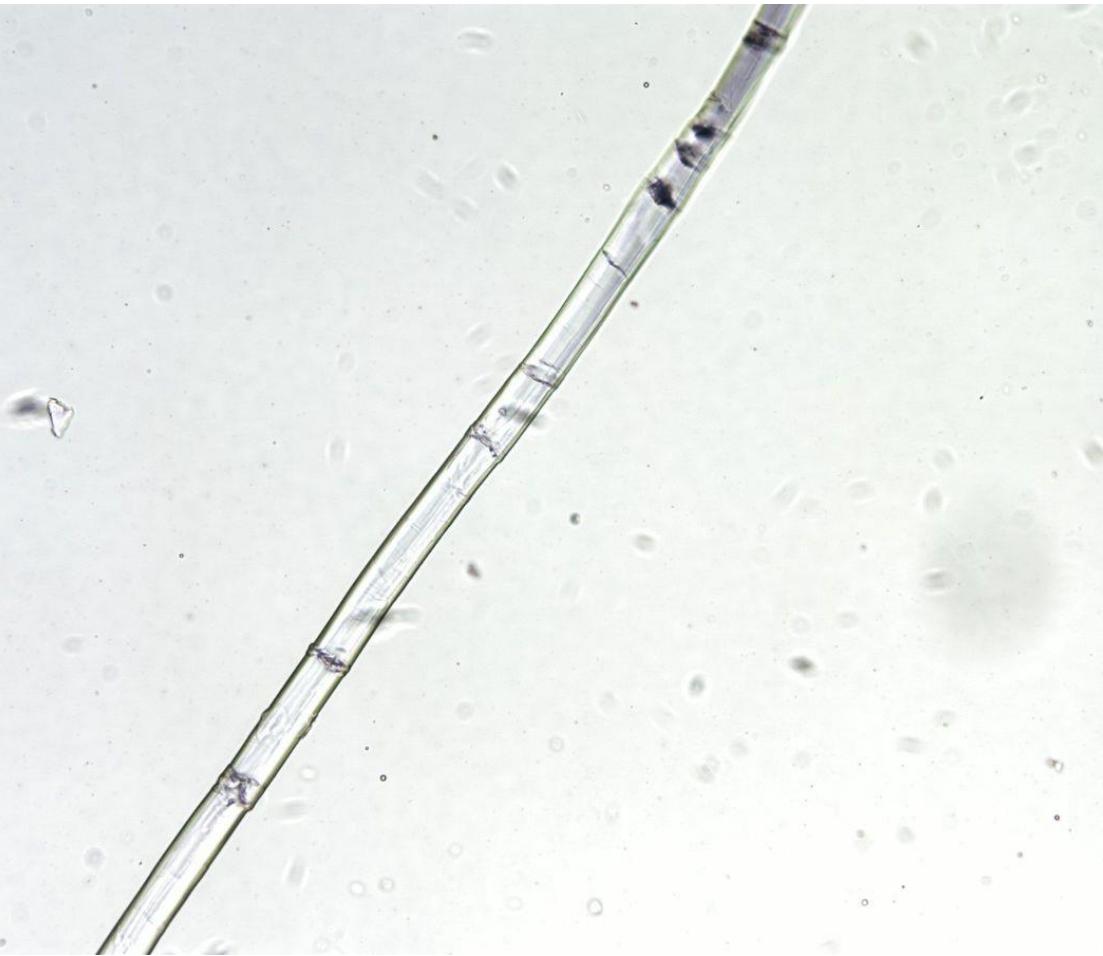
# Specimens and historical sketch of the Old Continental Currency

Samuel Breck's scrapbook of colonial currency in the APS collection

159 original currency notes  
(1759-1780)

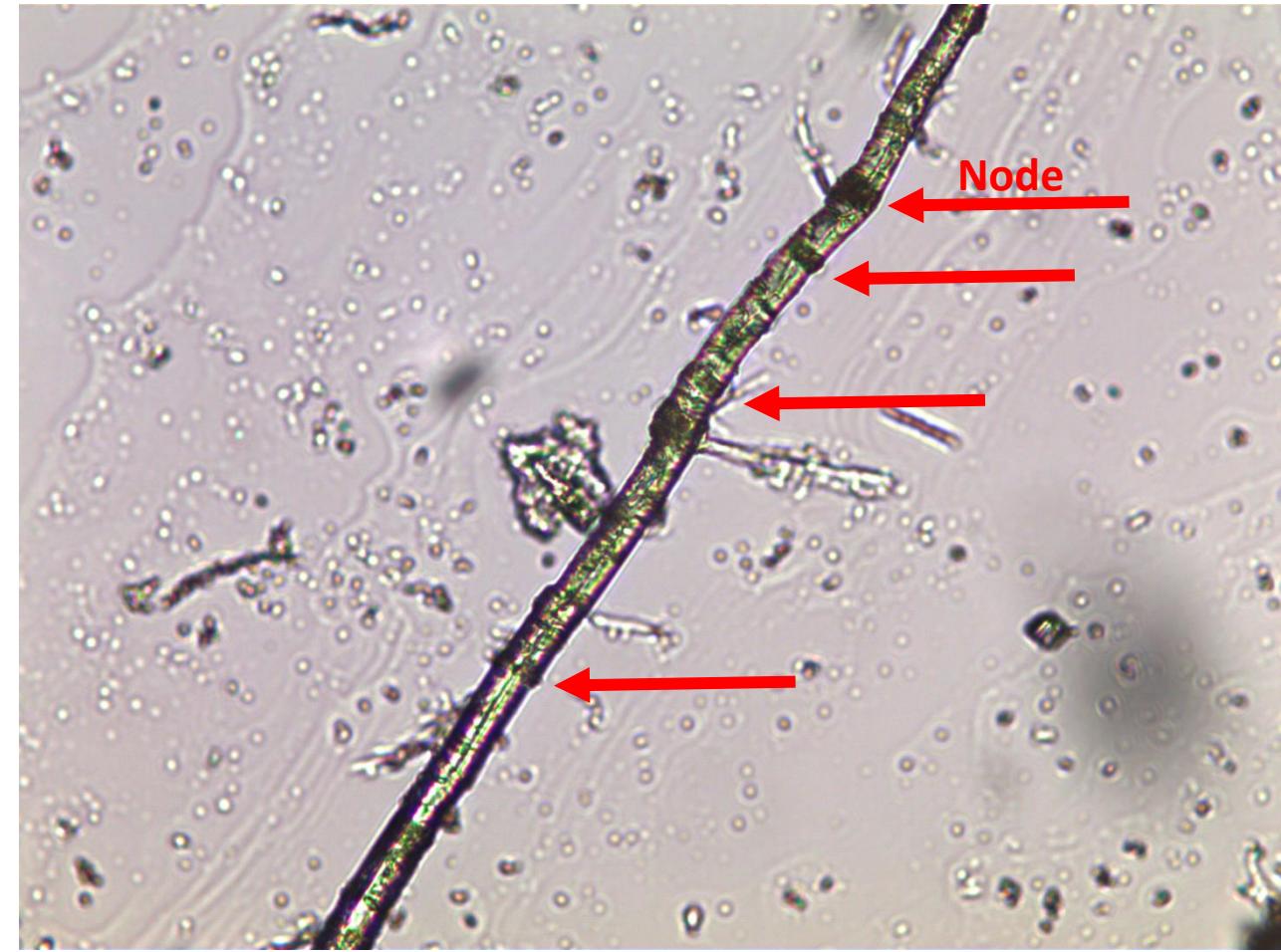
7 counterfeit notes





Reference photomicrograph of flax at 200X. Sample provided by the MFA Textile Conservation Lab.

Image credit: Keith Lawrence, Museum of Fine Arts, Boston  
[http://cameo.mfa.org/wiki/File:34\\_flax\\_200X.jpg](http://cameo.mfa.org/wiki/File:34_flax_200X.jpg)



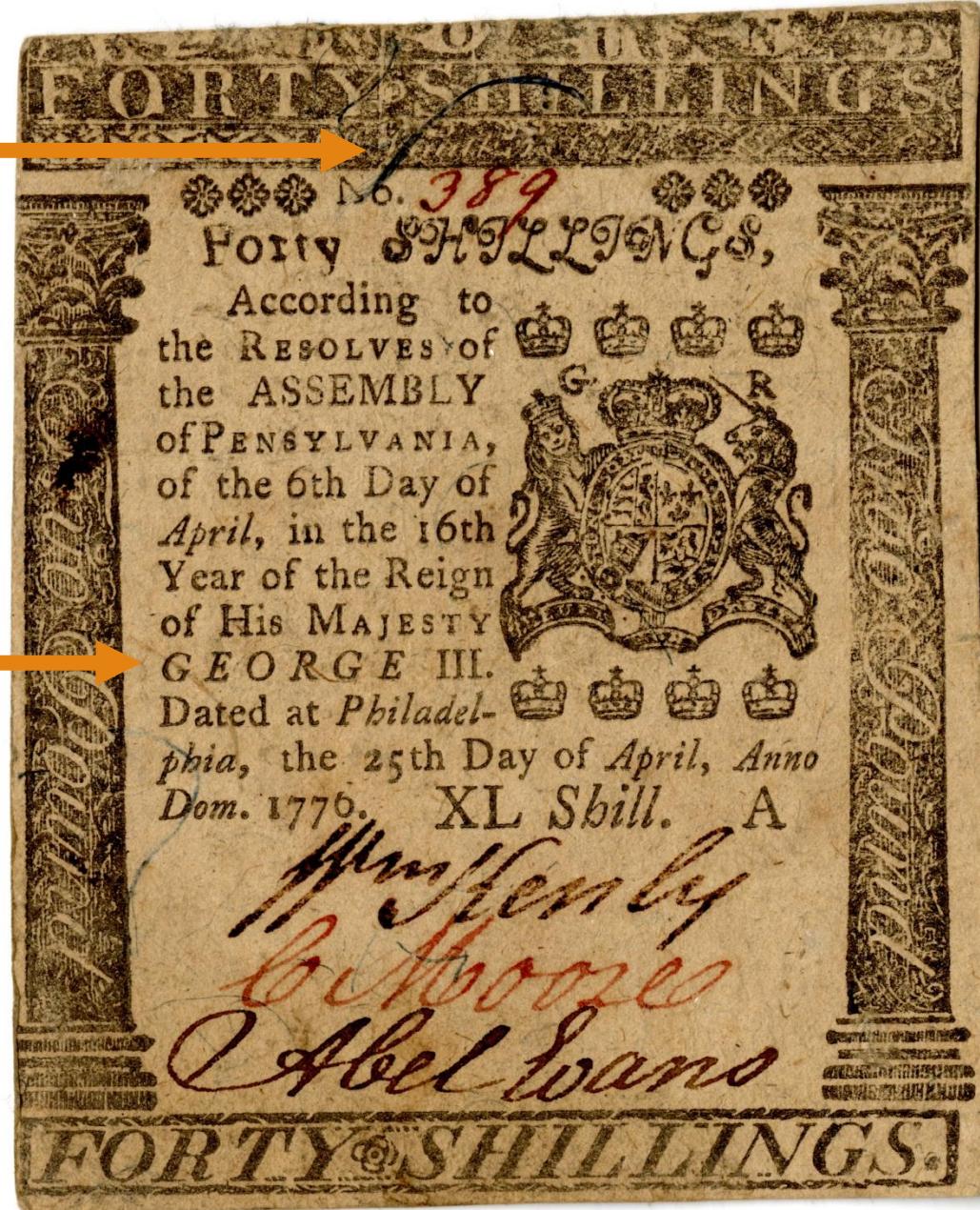
Photomicrograph of colonial currency from 1759 of flax at 200X.

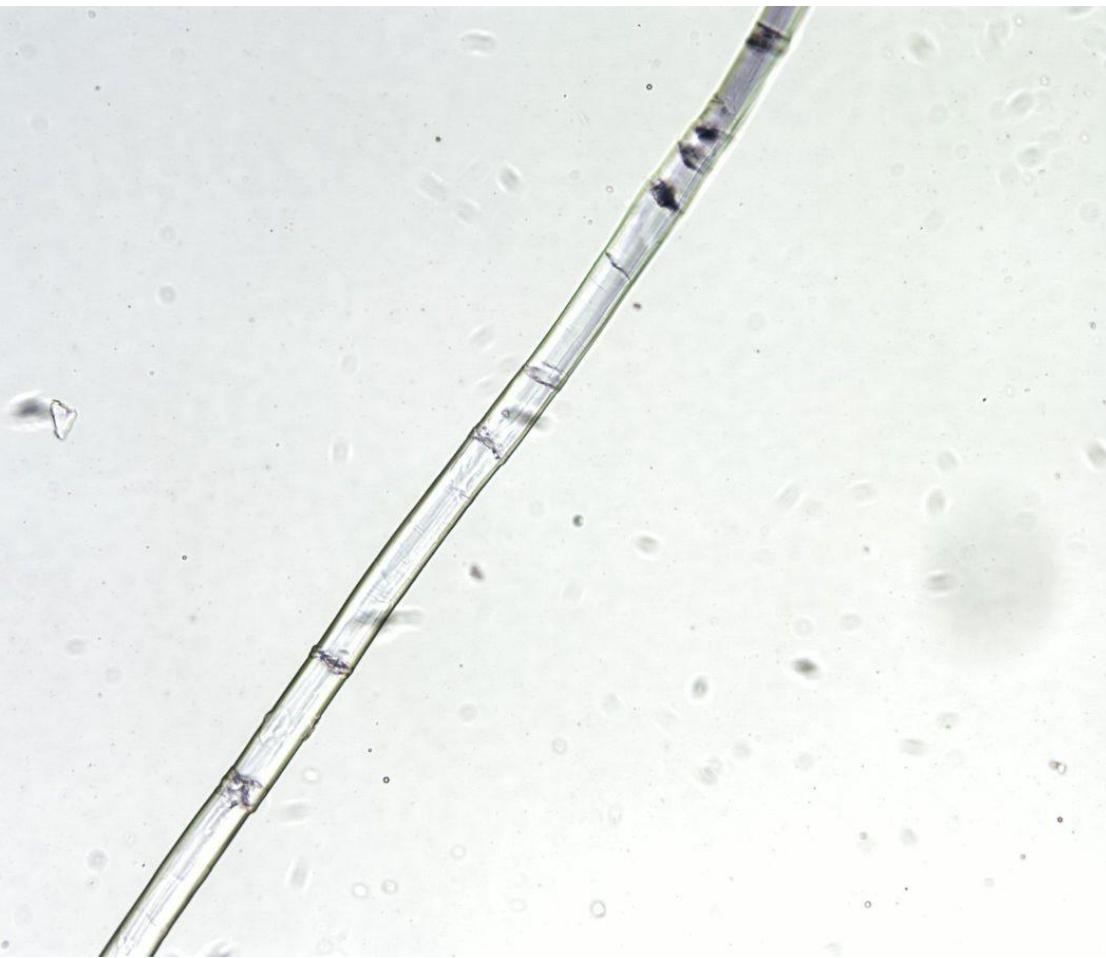


Photomicrograph showing flax bast fibers with shive at 400x.  
Sample has been stained with Graff "C" stain.  
Image credit: Jennifer McGlinchey Sexton and Paul Messier.  
[http://cameo.mfa.org/wiki/File:Flax\\_40x\\_nodes\\_basthive.jpg](http://cameo.mfa.org/wiki/File:Flax_40x_nodes_basthive.jpg)



Photomicrograph of colonial currency from 1759 of flax at 400X, stained with Graff ‘C’ stain.





Reference photomicrograph of flax at 200X. Sample provided by the MFA Textile Conservation Lab.

Image credit: Keith Lawrence, Museum of Fine Arts, Boston  
[http://cameo.mfa.org/wiki/File:34\\_flax\\_200X.jpg](http://cameo.mfa.org/wiki/File:34_flax_200X.jpg)



Photomicrograph of dyed blue fiber of colonial currency from 1775 of flax at 200X.

# Asbestos

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Benjamin Franklin's purse woven of asbestos fibers, presented to Sir Hans Sloane  
ca. 1700



“I also send you a few Sheets of Paper made of the Asbestos. I am sorry it is so tender. I made some formerly that was much stronger. Please to present a Sheet of it to your noble President, if he will be so good as to accept such a Trifle.”

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BENJAMIN FRANKLIN IN A LETTER TO PETER COLLINSON

JUNE 26, 1755

[Franklin] had several years ago gotten a piece of [asbestos], which he gave to one of his journeymen printers in order to get it made into a sheet at the paper mill. As soon as the fellow brought the paper, Mr. Franklin rolled it up and threw it into the fire, telling the journeyman he would see a miracle, a sheet of paper which did not burn. The ignorant fellow insisted upon the contrary, but was greatly terrified upon seeing himself convinced. Mr. Franklin then explained to him, though not very clearly, the peculiar qualities of the paper. As soon as he was gone, some of his acquaintances came in, who immediately recognized the paper. The journeyman thought he would show them a great curiosity and astonish them. He accordingly told them that he had curiously made a sheet of paper which would not burn, [if] it were thrown into the fire. They pretended to think it impossible, and he as strenuously maintained his assertion. At last they laid a wager about it, but while he was busy with stirring up the fire the others slyly besmeared the paper with fat. The journeyman, who was not aware of it, threw it into the fire and that moment it was all in flames. This astonished him so much that he was almost speechless, upon which they could not help laughing, and so disclosed the whole artifice.

Peter Kalm, from The Franklin Papers  
November 11, 1748

# Asbestos fibers



Sample of a commercial asbestos paper, 185x  
*Papermaking Fibers: A Photomicrographic Atlas*  
Ed. Wilfred A. Côté

# Further research

Differences in materials and techniques between colonies, states, and printers

Differences in materials and techniques over time

Role of female printers

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**1966.0006 Currency** [Enlarge](#)



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Prints and Maps

**Currency (Two sheets Continental Currency)**

**Category:**  
Prints and Maps

**Creator (Role):**  
Hall & Sellers (Printer)

**Place of Origin:**  
Philadelphia, Philadelphia, Pennsylvania, Mid-Atlantic, United States, North America

**Date:**  
1779

**Materials:**  
Ink; Paper (laid)

**Techniques:**  
Letterpress

**Museum Object Number:**  
1966.0006

**Complete Details**

**Object Number**

1966.0006



View the exhibition online or in person!

# Acknowledgements

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Franklin Papers

American Philosophical Society Library & Museum staff