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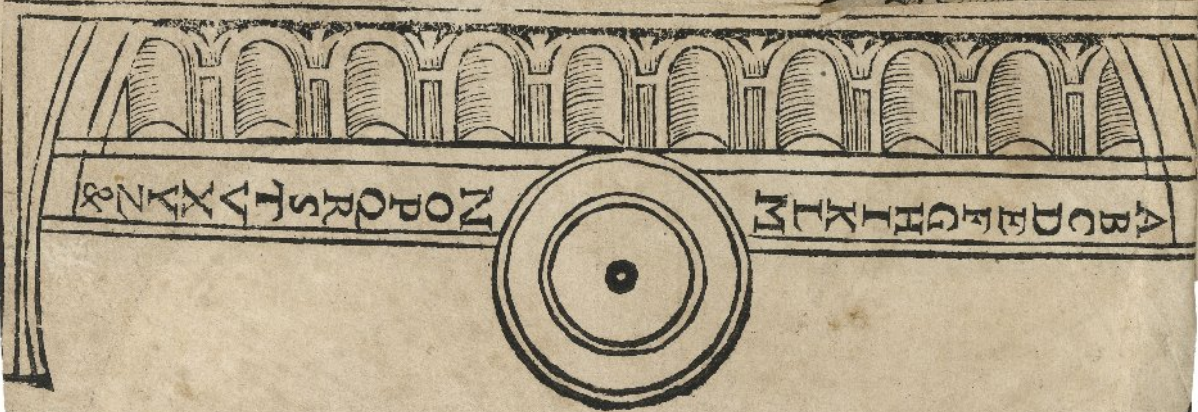
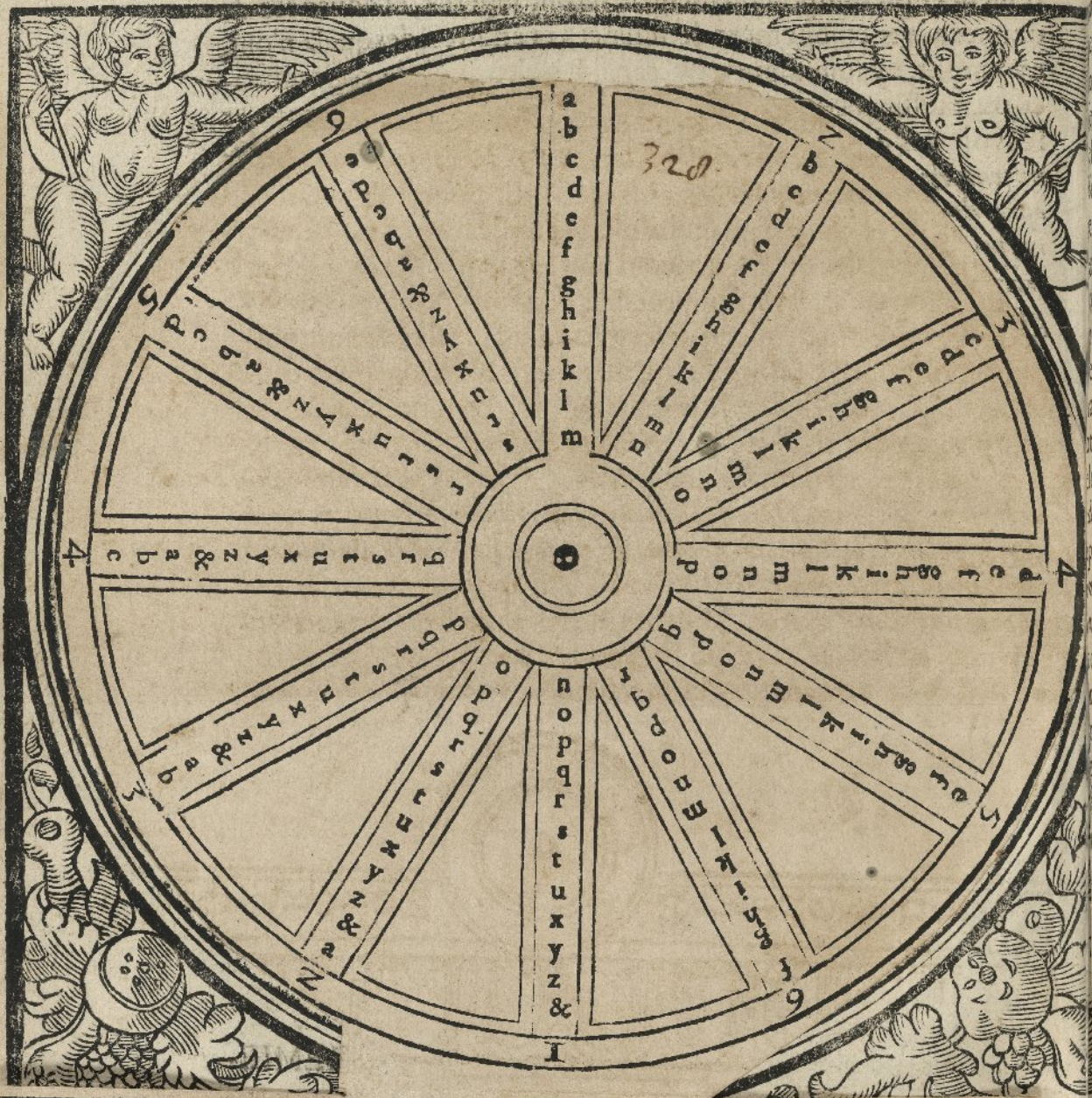
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Decoding the Renaissance

EXPOSITION DES
PREMIERE FIGURE EXTENSIVE
DE LA TABLE RECTE.



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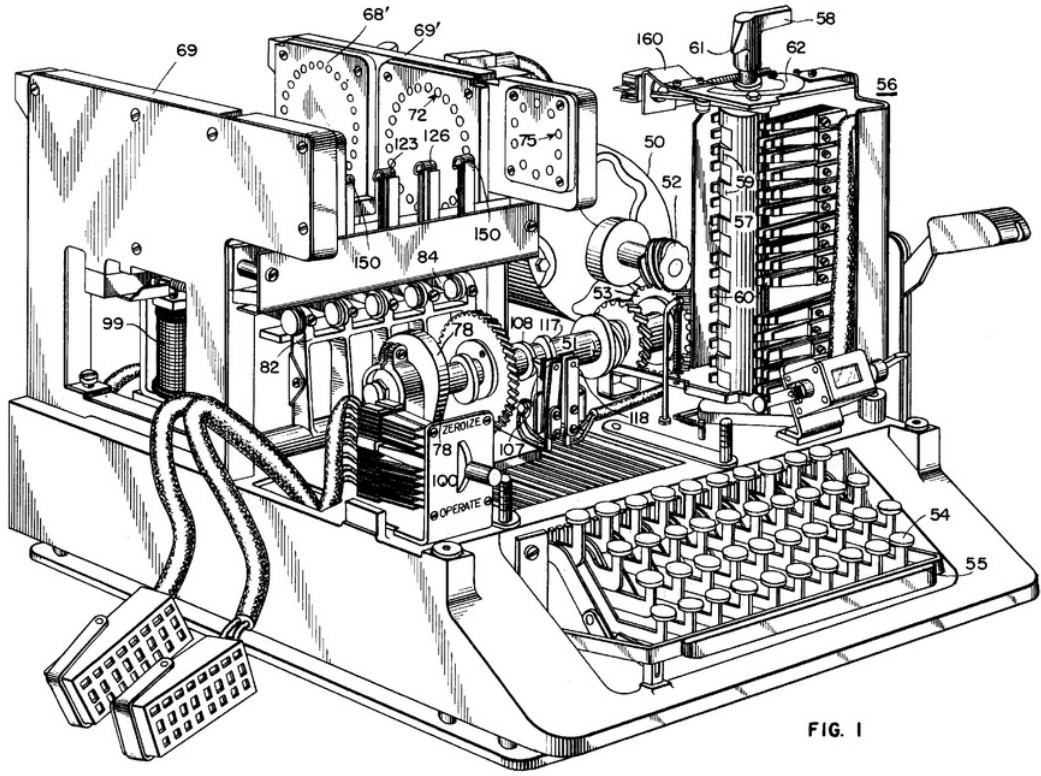


FIG. 1

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Nov 11, 2014 – Feb 26, 2015

Free

The Renaissance was the first great age of mass communication, but it was also the period when the art of secret writing came into its own. The new science of codes and ciphers produced some of the period's most brilliant inventions, most beautiful books, and most enduring legacies. It left its mark on virtually every aspect of Renaissance culture, including the development of diplomacy and the waging of war, the creation of a postal system, the invention of sign language, and the search for hidden meanings in literature and the visual arts. The Renaissance, in turn, provided the inspiration for the pioneering modern code-breaker, William F. Friedman — chief cryptanalyst for the U.S. government from the 1920s to the 1950s and regular researcher at the Folger.

Friedman led the team that broke the Japanese code in World War II, wrote many of the field's foundational texts, and coined the very term “cryptanalysis” for the study of secret writing systems. His introduction to ciphers (as well as to his wife Elizebeth, a distinguished code-breaker in her own right) came through his early work on Sir Francis Bacon, and he drew directly on Renaissance techniques throughout his cryptographic career — many of them learned from the books in this room. *Decoding the Renaissance* will take you on a tour of some five hundred years of secret communication in the company of the country's first cryptographic couple, revealing the surprising connections between Renaissance texts and modern methods of cryptanalysis.

Lenders to the exhibition include:

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Massachusetts Historical Society

National Cryptologic Museum, NSA

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Preservation Partners of the Fox Valley and Kane County Forest Preserve District





Bill Sherman

Head of research, Victoria and Albert Museum; Professor of Renaissance Studies, University of York

This exhibition is made possible with support from the Winton and Carolyn Blount exhibition fund of the Folger Shakespeare Library.

Ron Bogdan

Senior cataloger, Folger Shakespeare Library

Meet the Curator



Bill Sherman

Head of research, Victoria and Albert Museum; Professor of Renaissance Studies, University of York

Bill Sherman is Professor of English at the University of York. He has held visiting positions at Caltech and Queen Mary (University of London) and fellowships at the Folger, Huntington, New York Public Library, and National Maritime Museum. Best known for his work on the history of books and readers, Sherman has also written on the early literature of travel, the theory and practice of editing, and the history of espionage.

He spends as much time as possible digging around in old archives in pursuit of overlooked texts, forgotten objects, and covert actions of various kinds: recent discoveries include Bernardo Bembo's long-lost copy of the letters of Pliny the Younger (the classical model for the country villas built by Bembo and his fellow humanists) and an unpublished book on ciphers by William Friedman (who got his start studying Shakespeare and Bacon and ended up as the most important code-breaker in American history). Sherman's recent publications include *Used Books: Marking Readers in Renaissance England* and editions of

Shakespeare's *Tempest* and Jonson's *Alchemist*; and he is currently working on an edition of Marlowe's *The Jew of Malta*, a book on *The Reader's Eye*, and a study of Renaissance cryptography.

Item List

Case 1 – The Birth of the Cryptographic Book

Leon Battista Alberti (1404–72). *Opuscoli morali*. Venice: Francesco di Franceschi, 1568. PQ4562 .A6 1568 Cage; displayed A1v ([image](#)).

Johannes Trithemius (1462–1516). *Polygraphiae libri sex*. [Basel]: Johann Haselberg, 1518. Z103.T7 P6 1518 Cage; displayed title page ([image](#)).

Case 2 – The First Cryptographic Couple

LOAN courtesy of the Library of Congress. William F. Friedman (1891–1969). *Methods for the Solutions of Ciphers*. Geneva, Ill.: Riverbank Laboratories, 1917–22.

LOAN courtesy of the George C. Marshall Foundation, Lexington, VA. Exceptional Civilian Service Medal. Presented to William F. Friedman in 1944.

LOAN courtesy of the George C. Marshall Foundation, Lexington, VA. Medal for Merit. Presented to William F. Friedman in 1946.

William F. Friedman (1891–1969) and Elizebeth S. Friedman (1892–1980). *The Shakespearean Ciphers Examined*. Cambridge: Cambridge University Press, 1957. Not yet accessioned.

LOAN courtesy of the George C. Marshall Foundation, Lexington, VA. Photo of William F. Friedman and Elizebeth S. Friedman, ca. 1957. 310 2nd Street SE, Washington, DC.

LOAN courtesy of the Bacon cipher collection, manuscripts and Archives Division, The New York Public Library, Astor, Lenox, and Tilden Foundations. William F. Friedman. *Cipher Baconis Gallup*. Manuscript, ca. March 1916.

Case 3 – Invisible Ink

John Wilkins (1614–72). *Mercury; or the secret and swift messenger*. London: J. Norton for John Maynard and Timothy Wilkins, 1641. W2202; displayed p. 42-43 ([image](#)).

Miscellaneous collection of recipes. Manuscript, ca. 1600. V.a.140; displayed fol. 14v ([image](#)).

LOAN courtesy of the Library of Congress. H. O. Nolan. *The Production and Detection of Messages in Concealed Writing and Images*. Geneva, Ill.: Riverbank Laboratories, 1918.

Case 4 – Secretaries, Scribes, and Ciphers

Sir Francis Walsingham (1530?–90). Autograph letter, partly in cipher, to unknown recipient, May 26, 1574. Manuscript compilation, 17th or 18th century. V.b.264; displayed item 5 btwn. p. 434-435 ([image](#)).

Leonhart Fuchs (1501–66). *De historia stirpium*. Basel: Michael Isingrin, 1542. 245- 323f; displayed back endleaf 3rv ([image](#)).

George Digby, Earl of Bristol (1612–77). Coded letter written for King Charles I. April 27, 1645. X.c.125; displayed p. 1 ([image](#)).

Case 5 –The Secret Science at a Glance

LOAN courtesy of the Library of Congress. Gustavus Selenus [pseudonym for August II, Duke of Braunschweig-Lüneburg-Wolfenbüttel] (1579–1666). *Cryptomenytices et cryptographiae libri IX*. Lüneburg: Johann and Heinrich Stem, 1624.

LOAN courtesy of the Library of Congress. Claude Comiers (d. 1693). *Traité de la parole, langues, et ecritures*. Brussels: Jean Leonard, 1691.

Case 6 – Alphabets

Giovanni Battista Palatino (ca. 1515–ca. 1575). *Compendio del gran volume de l'arte del bene et leggiadramente scrivere tutte le sorti di lettere et caratteri*. Rome: Heirs of Valerio and Luigi Dorici, 1566. Z43.A3 P3 1566 Cage; displayed F3v-F4r ([image](#)).

Blaise de Vigenère (1523–96). *Traicté des chiffres, ou, Secretes manieres d'escrire*. Paris: Abel L'Angelier, 1586. Z103 .V6 1586 Cage; displayed fol. 302v-fol. 303r ([image](#)).

Giambattista della Porta (1535?–1615). *De furtivis literarum notis*. London: John Wolfe, 1591. STC 20118 Copy 1; displayed p. 90-91 ([image](#)).

Case 7 – Stenography

John Willis (d. 1625). *The art of stenographie, teaching...the way of compendious writing*. London: W. White for Cuthbert Burbie, 1602. STC 25744a; displayed A8v-B1r ([image](#)).

FACSIMILE. John Willis (d. 1625). *The art of stenographie, teaching...the way of compendious writing*. London: W. White for Cuthbert Burbie, 1602. STC 25744a; displayed title page ([image](#)).

Francis Bacon (1561–1626). *De sapientia veterum*. London: Felix Kingston, 1634. STC 1129; displayed A3r additional title page ([image](#)).

Henry Oxinden (1609–70). Manuscript miscellany, ca. 1642–70. V.b.110; displayed 2nd leaf, verso ([image](#)).

Thomas Shelton (1601–50?). *Tachygraphy*. London: Samuel Simmons, 1674. 262551; displayed p. 1 ([image](#)).

Case 8 – Tables

LOAN courtesy of the Library of Congress. Johannes Trithemius (1462–1516). *Polygraphiae libri sex*. [Basel]: Johann Haselberg, 1518.

LOAN courtesy of the Library of Congress. Giovan Battista Bellaso (active 16th century). *La cifra*. Venice: 1553.

Blaise de Vigenère (1523–96). *Traicté des chiffres, ou, Secretes manieres d'escrire*. Paris: Abel L'Angelier, 1587. Z103 .V6 1587 Cage; displayed item 2 btwn. p. 184-185 ([image](#)).

Case 9 – Bacon's Biliteral Cipher

Francis Bacon (1561–1626). *Of the...advancement of learning*. London: Thomas Purfoot and Thomas Creede for Henrie Tomes, 1605. STC 1164 copy 1; displayed sig. 2Q1r ([image](#)).

Francis Bacon (1561–1626). *De dignitate & augmentis scientiarum*. London: John Haviland, 1623. STC 1108; displayed p. 278-279 ([image](#)).

Francis Bacon (1561–1626). *Of the advancement and proficiencie of learning*. Oxford: Leonard Lichfield for Robert Young and Edward Forrest, 1640. STC 1167 copy 1; displayed p. 266 ([image](#)).

LOAN courtesy of the George C. Marshall Foundation, Lexington, VA. William F. Friedman (1891–1969). "KNOWLEDGE IS POWER." Aurora, Ill., ca. January 1918.

Case 10 – Disks and Volvelles

Jacopo Silvestri (active 16th century). *Opus novum*. Rome: Marcello Silber, 1526. Z103 .S5 1526 Cage; displayed f. 6v ([image](#)).

Giambattista della Porta (1535?–1615). *De furtivis literarum notis*. London: John Wolfe, 1591. STC 20118a; displayed p. 72-73 ([image](#)).

Johannes Trithemius (1462–1516). *Polygraphie et universelle esriture caballistique*. Paris: Jacques Kerver, 1625. Z103.T7 P6 F7 1625 Cage; displayed p. 328 ([image](#)).

Case 11 – Grilles

Girolamo Cardano (1501–76). *De rerum varietate*. Basel: Heinrich Petri, 1557. 156- 884f; displayed title page ([image](#)).

Giambattista della Porta (1535?–1615). *De occultis literarum notis*. Montbéliard: Jacques Foillet and Lazarus Zetzner, 1593. 173- 568.1q; displayed p. 134 ([image](#)).

LOAN courtesy of the George C. Marshall Foundation, Lexington, VA. William F. Friedman (1891–1969) and Elizebeth S. Friedman (1892–1980). Cryptographic Christmas Card for 1928.

LOAN courtesy of the Massachusetts Historical Society. John Clotworthy, viscount Masereene (d. 1665). Autograph letter to John Winthrop, Jr., with grille. Dublin, 6 March 1634/35.

Case 12 – Say It with Flowers

FACSIMILE courtesy of the Bacon cipher collection, Manuscripts and Archives Division, The New York Public Library, Astor, Lenox and Tilden Foundations. Cora Jensen [and William F. Friedman (1891–1969)]. “Saying It’ in Cipher.” *Florists’ Review*, 1920.

LOAN courtesy of the Library of Congress. Johann Balthasar Friderici (active 17th century). *Cryptographia*. Hamburg: Georg Rebenlein, 1685.

LOAN courtesy of the Library of Congress. Loose-leaf note from Friedman’s team at Riverbank. Johann Balthasar Friderici (active 17th century). *Cryptographia*. Hamburg: Georg Rebenlein, 1685.

FACSIMILE courtesy of the Bacon cipher collection, Manuscripts and Archives Division, The New York Public Library, Astor, Lenox and Tilden Foundations. [Cora Jensen and William F. Friedman (1891–1969)]. “Saying It’ in Cipher.” Typescript, 1920.

Case 13 – Music

FACSIMILE (adapted with message deciphered) courtesy of the Bacon cipher collection, Manuscripts and Archives Division, The New York Public Library, Astor, Lenox and Tilden Foundations. William F. Friedman (1891–1969). Modified sheet music, 1916.

John Wilkins (1614–72). *Mercury: or, The secret and swift messenger*. London: Printed for Richard Baldwin, 1694. W2203; displayed p. 144-45 ([image](#)).

LOAN courtesy of the Library of Congress. Johannes Balthasar Friderici (active 17th century). *Cryptographia*. Hamburg: Georg Rebenlein, 1685.

Gustavus Selenus [pseudonym for August II, Duke of Braunschweig-Lüneburg-Wolfenbüttel (1579–1666)]. *Cryptomenytices et cryptographiae libri IX*. Lüneburg: Johann and Heinrich Stem, 1623. Z103 .A9 1624 Cage; displayed p. 340-41 ([image](#)).

Case 14 – Steganography

Johannes Balthasar Friderici (active 17th century). *Cryptographia*. Hamburg: Georg Rebenlein, 1685. 166- 900q; displayed loose leaf opp. p. 217 ([image](#)).

LOAN courtesy of the Library of Congress. Blaise de Vigenère (1523–96). *Traicté des chiffres, ou, Secretes manieres d'escrire*. Paris: Abel L'Angelier, 1587.

Gustavus Selenus [pseudonym for August II, Duke of Braunschweig-Lüneburg-Wolfenbüttel (1579–1666)]. *Cryptomenytices et cryptographiae libri IX*. Lüneburg: Johann and Heinrich Stem, 1624. Z103 .A9 1623 Cage; displayed p. 324-35 ([image](#)).

Case 15 – Cryptography before the Computer

LOAN courtesy of the National Cryptologic Museum, NSA. William F. Friedman (1891–1969). SIGABA machine.

FACSIMILE courtesy of the National Cryptologic Museum, NSA. US patent 6,175,625. January 16, 2001.

Samuel Morland (1625–95). *A new method of cryptography*. London: 1666. M2781A; displayed p. 12 ([image](#)).

LOAN courtesy of the Preservation Partners of the Fox Valley and Kane County Forest Preserve District. Wheatstone-Plett Cipher Device. From George Fabyan's collection at Riverbank Laboratories.

Case 16 – Kircher's Cryptographic Machines

Gaspar Schott (1608–66). *Schola steganographica*. Nuremberg: Heirs of Johann and Wolfgang Endter, 1680. 170- 941q; displayed opp. p. 91 ([image](#)).

Athanasius Kircher (1602–80). *Magnes sive De arte magnetic*. Rome: Biaggio Diversin, Zenobio Masotti, and Vitale Mascardi, 1654. 166- 834f; displayed p. 290-91 ([image](#)).

Case 17 – The Voynich Mystery

LOAN courtesy of the Beinecke Library, Yale University. *The Voynich Manuscript* (ca. 1410–30).

Case 18 – The Friedmans and the Folger

William F. Friedman (1891–1969) and Elizebeth S. Friedman (1892–1980). *The cryptologist looks at Shakespeare*. Typescript, 1954. Y.d.76; displayed chapters 1-6 stacked, title page on top ([image](#)).

William F. Friedman (1891–1969) and Elizebeth S. Friedman (1892–1980). *The Shakespearean Ciphers Examined*. Cambridge: Cambridge University Press, 1957. PR2937 .F7 1957 Copy 2 Cage; displayed front endleaf 1r ([image](#)).

LOAN courtesy of the George C. Marshall Foundation, Lexington, VA. *Washington Post*, April 3, 1955

Case 19 – The Friedmans and the Voynich Manuscript

LOAN courtesy of the George C. Marshall Foundation, Lexington, VA. William F. Friedman (1891–1969) and the Voynich Manuscript Study Group. Voynich character frequency tables, ca. 1944.

LOAN courtesy of the George C. Marshall Foundation, Lexington, VA. William F. Friedman (1891–1969) and the Voynich Manuscript Study Group. Agreed alphabet for transcription of Voynich characters. June 13, 1944.

LOAN courtesy of the George C. Marshall Foundation, Lexington, VA. Anonymous. RCA Computer run of characters from the Voynich Manuscript.

Case 20 – Puzzling Pages

Athanasius Kircher (1602–80). *Polygraphia nova et universalis ex combinatoria arte detecta*. Rome: Lazzari Varese, 1663. Folio P361 .K5 1663 Cage; displayed p. 23 ([image](#)).

Henry Clay Folger (1857–1930) and Emily C. J. Folger (1858–1936). Solution to Shakespearean Enigma.” New York Herald Tribune, March 15, 1925. Y.d.1009; displayed 2b ([image](#)).

LOAN courtesy of the George C. Marshall Foundation, Lexington, VA William. F. Friedman (1891–1969) and Elizebeth S. Friedman (1892–1980). Cryptographic dinner menu, May 15, 1929.

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