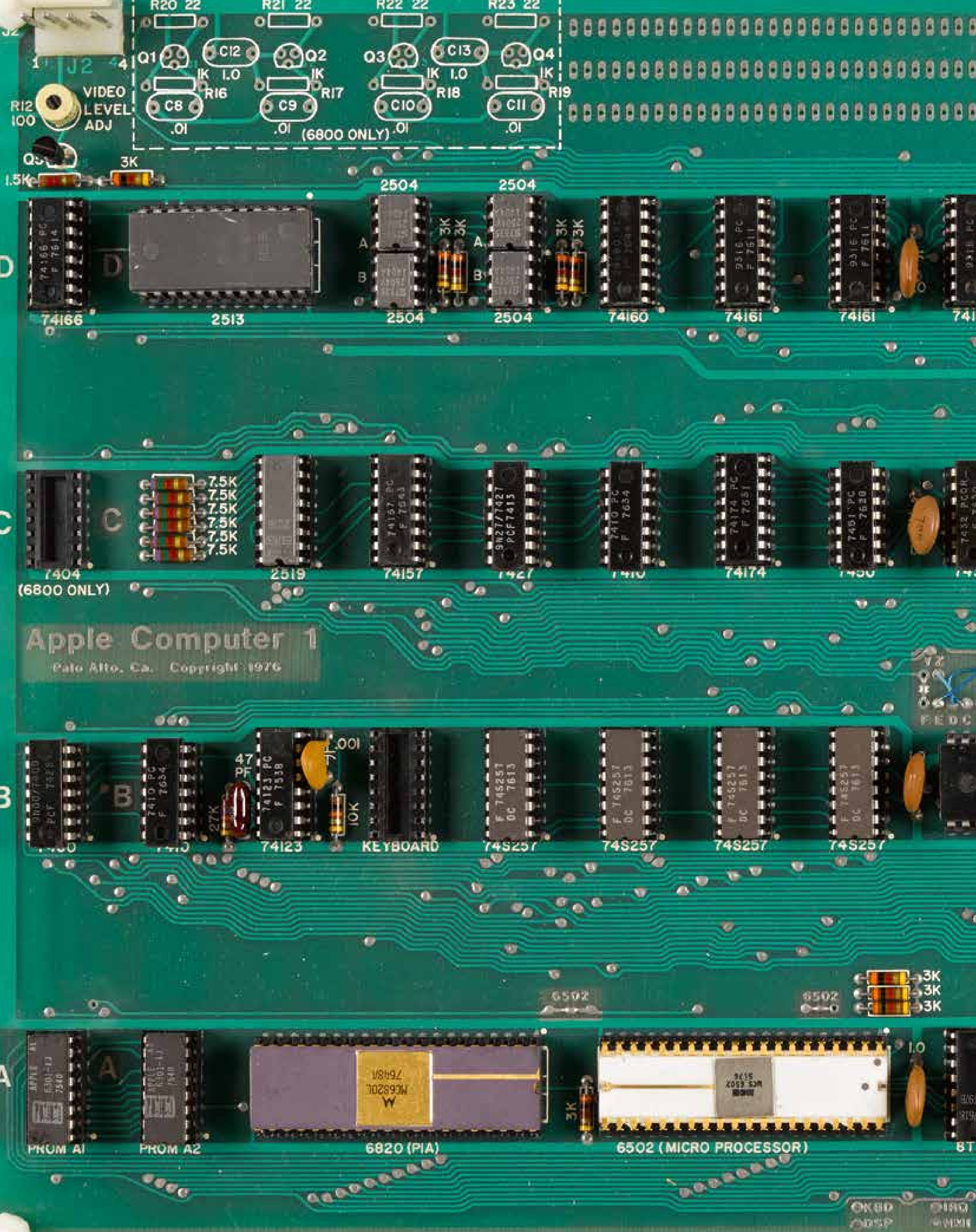
HISTORY OF SCIENCE AND TECHNOLOGY

Wednesday December 6, 2017
New York

Bonhams

NEW YORK


Apple Computer 1
Palo Alto, Ca. Copyright 1976
VIDEO LEVEL ADJ
(6800 ONLY)
2504
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74123
KEYBOARD
74S257
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6502 (MICRO PROCESSOR)

HISTORY OF SCIENCE AND TECHNOLOGY

Wednesday December 6, 2017 at 11am
New York

BONHAMS
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PREVIEW
New York
Saturday, December 2
12pm to 5pm
Sunday, December 3
12pm to 5pm
Monday, December 4
10am to 5pm
Tuesday, December 5
10am to 5pm

SALE NUMBER: 24495
Lots 1 - 115

CATALOG: $35

BIDS
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Please note that telephone bids must be submitted no later than 4pm on the day prior to the auction. New bidders must also provide proof of identity and address when submitting bids. Telephone bidding is only available for lots with a low estimate in excess of $1000.

Please contact client services with any bidding inquiries.

Please see pages 70 to 72 for bidder information including Conditions of Sale, after-sale collection and shipment.

INQUIRIES
San Francisco
Adam Stackhouse, Senior Specialist
+1 (415) 503 3266
adam.stackhouse@bonhams.com

New York
Ian Ehling, Director
New York
+1 (212) 644 9094
ian.ehling@bonhams.com

Tom Lamb, Director
Business Development
+1 (917) 921 7342
tom.lamb@bonhams.com

Darren Sutherland, Specialist
+1 (212) 461 6531
darren.sutherland@bonhams.com

Tim Tezer
Junior Specialist
+1 (917) 206 1647
tim.tezer@bonhams.com

Los Angeles
Dr. Catherine Williamson
Vice President, Director
+1 (323) 436 5442
catherine.williamson@bonhams.com

ILLUSTRATIONS
Front cover: Lot 109
Inside front cover: Lot 111
Inside back cover: Lot 111
Back cover: Lot 98

SESSION PAGES
Session page 1: Lot 10
Session page 2: Lot 53
Session page 3: Lot 111

INTRODUCTION

We close 2017 with another chapter in our History of Science and Technology sales. We've combed the globe, and once again put together a collection of intriguing items across multiple disciplines which may (we hope) entice some of you to venture into new realms.

We open the sale with a selection of scientific instruments focusing on astronomical devices and globes from the late 18th through to the 20th century including orreries, armillary spheres, telluriums, planetariums and, for lovers of symmetry, a kaleidoscope.

We've made a change with the format of our Scientific Books & Manuscripts section, opting to combine the separate disciplines and order it chronologically. This facilitates a view of the parallel development of the various branches of science from alchemy to chemistry, medicine, mathematics, physics, astronomy, natural history, biology and even economics and psychology. Highlights include the most important book in the history of science: the first edition, first state of Sir Isaac Newton's *Philosophiae naturalis principia mathematica,* 1687, introducing the law of gravity, this copy with contemporary marginalia thought to be in the hand of Jacob Hermann, Johann Bernoulli or someone in his circle. Albert Einstein referred to the work as constituting "perhaps the greatest intellectual stride that has ever been granted to any man to make." The *Principia* is complemented by a copy of the first edition in English of the same work as well as two autograph manuscripts by Newton.

The section also includes a selection of books by Charles Darwin featuring the first Russian translation of his *Origin of the Species*, a first edition, first issue of *The Descent of Man*, and an autograph note signed by Darwin to one of his students.

20th century highlights include Robin Gandy's copy of the first edition of the rare offprint of Alan Turing's doctoral dissertation *Systems of Logic Based on Ordinals*, and the Nobel Prize medal for Physics presented to Frits Zernike for the invention of the phase-contrast microscope allowing microbiologists to finally examine fully living specimens. The 20th century section is rounded out by a selection of material from Albert Einstein including the first separate edition of *Generalization of Gravitational Theory,* (1953), a signed photograph and an original etching of Einstein also signed by him.

Our final section is Technology, spearheaded by a group of material that tells the story of Apple Inc. We begin with an early 1970s "blue box" by Steve Wozniak, which includes his first printed circuit board. Both Woz and Jobs claimed that the partnership formed to create and market these phone hacking devices made possible the formation of Apple Computers and the Apple 1. Speaking of which, we also offer an early example with excellent provenance, formerly belonging to Steve Fish, documented in Tom Owad's book on Apple 1s as having been purchased at Orange County, California computer retailer Computer Playground and which includes a prototype Byte Shop walnut case and low Byte Shop inventory number – likely one of the first 50 that Jobs and Wozniak sold to the Mountain View computer retailer (and apparently distributor). The section is amply round out by material from Steve Jobs including an early employment application filled out while at Reed College, a group of business cards from the early 1980s, his backstage pass for Wozniak's US Festival, a signed check and his patent award plaque for the original Macintosh case design.

This represents just a small sampling of the highlights in the sale. We encourage you to take a closer look. Please do not hesitate to contact me or any member of the department with questions.

Adam Stackhouse.
Senior Specialist

ORDER OF SALE

1-28	Scientific Instruments
29-102	Scientific Books & Manuscripts
104-115	Technology

IMPORTANT NOTICE

Subject to the Limited Right of Rescission regarding Authorship, lots are sold with all faults and imperfections. However, if on collation any printed book in this catalog is found to be materially defective in text or illustration, the same may be returned to Bonhams within 20 days of the sale; the undisclosed defect must be detailed in writing.

The following shall not constitute the basis for a return under the foregoing provision: defects stated in the catalog or announced at the time of sale; un-named items, blanks, half-titles, or advertisements; damage to bindings, stains, tears, foxing or other cosmetic defects, unless resulting in loss to text or illustration; defects to atlases, manuscripts, music, periodicals, and items sold as collections, archives, association copies, extra-illustrated copies, or bindings.

Items indicated in the catalog as "framed" have not been examined out-of-frame, unless specifically stated.

SCIENTIFIC INSTRUMENTS

Lots 1-28

1

1

J. FORTIN ARMILLARY SPHERE & CELESTIAL SPHERE

Paris, 1790. Celestial sphere with 12 hand-colored engraved paper gores over papier-mâché, pasteboard frames, horizon rings printed with months, days, signs of the zodiac and directions, meridian rings printed with the degrees of elevation of the poles, the circumferences painted in red. Mounted within meridian ring on the armillary sphere are five armillary rings, one each for the Equator, Arctic, Antarctic and Tropics of Capricorn and Cancer, the five rings surrounded by a band printed on one side with the names of the zodiac as well as the months; mounted in the center is a 2 inch diameter celestial globe. Both on turned wood stands with circular bases, each 7-1/2 inches diameter, 16 inches tall.

$2,000 - 3,000

2

W & S JONES NEW PORTABLE ORRERY

London, 1794. The hand cranked and geared tellarium mechanism demonstrating the movement of the Earth, Moon and two planets around the Sun, the 1 1/2 inch diameter Earth, cartouche reading *"Bardin / London,"* with hand colored and printed gores, mounted above a ring engraved with the Zodiac signs and a disc showing the phases of the Moon, on circular wooden table raised on three feet applied with hand colored and printed degree calendar and zodiac scales, 12 11/16 inches in diameter, 7 inches tall.

$6,000 - 8,000

2

3

DAVID BERINGER POLYHEDRAL SUNDIAL

Nuremberg, late 18th century. 2 5/8-inch wooden cube, five sides mounted with hand-colored engraved plates, five polar brass gnomons on separate sides of cube, one side with brass plumb bob, on turned wood column with bendable joint, base set with compass, 8 inches tall.

$1,000 - 1,500

3

4

NEWTON, SON & BERRY 3-INCH POCKET GLOBE

London, c.1830. 12 hand-colored engraved gores, signed in Northern portion of Pacific Ocean, mounted in graduated brass meridian ring. Inside of upper half of case with 12 engraved hand-colored celestial gores depicting the northern hemisphere sky. Globe with Meridian of London and graduated equatorial and ecliptic, with labels for the Arctic Circle, Antarctic Circle, and the tropics, and with tracks of Cook's voyages, including *"Owyhee / Capt. Cook killed 1779*." Housed in original black sharkskin-covered wood case with two bronze hook-and-eye clasps.

"The Newton family were one of the most important globe making firms in England in the early 19th century. The founder, John Newton (1759-1844), was apprenticed to Thomas Bateman (fl. 1754-1781), who in turn, had been a pupil of Nathaniel Hill ... The firm changed to Newton, Son & Berry when they were joined by Miles Berry, a civil engineer and patent agent..." (*Globes and the Mechanical Universe,* p 56). For a closely similar example, see Dekker, *Globes at Greenwich*, GLB0054.

$3,000 - 5,000

4

5

FRENCH ARMILLARY SPHERE

France, before 1845. 12-inch diameter wooden rings covered in lithographed labels centered with 2-inch diameter sun and 10 revolving wood discs representing planets and planetoids and small brass sphere representing earth, all moving on a brass arms, on turned wood column and stepped walnut base and topped with ebonized wood finial, 22 inches tall.

Wood planet and planetoid discs include: Mercury, Venus, Mars, Vesta, Junon, Ceres, Pallas, Jupiter, Uranus, Taurus. The asteroids/ planetoids Vesta, Juno, Ceres and Pallas were considered planets until 1845, leading one to believe that this armillary sphere pre-dates that discovery.

$1,500 - 2,500

5

6

7

8

6
JOSLIN'S NEW SOLAR TELLURIC GLOBE
Boston, 1853. 6-inch globe with twelve gores and brass meridian on cast iron pointer revolving around iron sun, set on cast iron base with circular calendar, 9 x 11 1/2 inches. * WITH: *Manual for Joslin's New Solar Telluric Globe.* Boston: G. Joslin, 1866. 30, [2] pp. Original printed wrappers.

$1,000 - 2,000

7
FELKL & SOHN 6-INCH TERRESTRIAL TABLE GLOBE
Roztok, late 19th century. Brass meridian, wooden equatorial line, painted hardwood supports, three legs centered with compass between feet, 16 inches tall.

$800 - 1,200

8
PHILIP & SON 13 1/2-INCH LIBRARY GLOBE
London, late 19th century. On turned mahogany column and stepped base, globe with metal equatorial ring, brass geared revolving mechanism, 24 inches tall.

$1,000 - 2,000

9

10

9
ABEL-KLINGER 3 3/4-INCH TERRESTRIAL GLOBE
Nurember, late 19th century. On a turned stained hardwood column and stepped base set with compass, 7 inches tall.

$600 - 800

10
HENRY L. BRYANT EARLY AMERICAN ORRERY AND ARMILLARY SPHERE
Hartford, CT, 1872. “Celestial Indicator,” 11 1/2 inch diameter, comprising a series of brass armillary bands forming a spherical frame, surrounding an orrery comprising the various known planets represented by wooden spheres on wire armatures, a painted wood earth with revolving moon, a rectangular plate representing the asteroid belt, and at the center a brass sphere representing the sun. The orrery is turned by hand using a knob on the outer part of the sphere. The flat brass band encircling the sphere is affixed with an instruction label on the outside, and the ecliptic and constellations in the zodiac belt on the inside. A central front label is mounted on a rounded plate showing part of the northern sky including the serpent constellation. Displayed on a raised, domed cast iron base with gilt-line decoration. 18 1/2 inches tall.

$8,000 - 12,000

11

12

13

11
CHARLES G. BUSH AMERICAN PARLOUR KALEIDOSCOPE
Providence, RI, 1873. Pebbled cloth-covered board barrel, cylindrical eyepiece, brass chamber box with turned with ship's wheel at end, chamber filled with colored glass, liquid-filled ampules, etc., supported by turned mahogany column and stepped stand, 14 x 10 1/4 inches.

$800 - 1,200

12
GEORGE PHILIP & SON TELLURIUM
London, late 19th century. 3 inch terrestrial globe and wood lunar satellite, revolving with geared mechanism around 9 1/4 inch cast iron calendar centered with kerosene lamp representing the sun, cast iron stand, with wooden storage case also containing additional materials for further experimentation, 10 1/2 inches tall.

$1,500 - 2,000

13
W. GILBERT SEXTANT IN CASE
London, 19th century. Blackened "T-frame," wood handle, 12-inch brass radius with inlaid copper scale reading 0-140, radius arm with magnifier and thumb screws, along with various filters, mirrors, and lenses, signed on the radius arm. All in fitted brass-mounted mahogany keystone case, 13 1/4 x 11 x 5 inches.

$1,000 - 1,500

14

15

14
ERNST SCHOTTE & CO. LUNARIUM
Berlin, c.1890. 12 3/16-inch diameter terrestrial globe, cartouche reading: *"Schul & Familien Globus*," with painted wood half sphere moon placed on metal wire as satellite, together on cast bronze column and base with crank and geared mechanism to revolve globe, zodiac ring between globe and column, 31 inches tall.

$1,000 - 2,000

15
RAND, MCNALLY 12-INCH TERRESTRIAL LIBRARY GLOBE
Chicago, c.1900. 12-gore globe supported in metal meridian, wooden equatorial ring with printed zodiac, month and measurements, supported on cast iron stand, 22 x 18 inches.

$800 - 1,200

16

16
A.R. ANDREWS & CO. LUNAR TELLURIUM
Chicago, c.1900. 8-inch terrestrial globe rotating at the end of an iron arm with raised neoclassical decoration incised with maker's name and containing internal gearworks, and with a black-and-white painted wood representation of the moon revolving the earth; all revolving around a central serrated representation of the sun. The entire assembly is mounted on a round tapering standard, ending in a 12-sided base with engraved paper calendar and zodiac, each zodiac sign associated with a side of the base. When turned by hand the earth rotates, and the earth and moon revolve, 15 x 20 inches.

The Andrews Lunar Tellurian is a demonstration model of the movement of the earth and moon relative to each other and to the sun. It shows such phenomena as the succession of seasons, and solar and lunar eclipses. In addition to its educational purpose, the tellurian is also decorative and entertaining.

$4,000 - 6,000

17
LAING PLANETARIUM
Chicago: c.1897. With 3 inch terrestrial globe made up of twelve gores, black- and white-painted wooden moon, wooden arm with maker's plaque spinning and rotating around 4 1/8 inch painted wooden sun and circling black-and-white Venus via string and pulley system, on turned column to stepped wooden base with circular calendar, 13 x 16 1/2 inches.

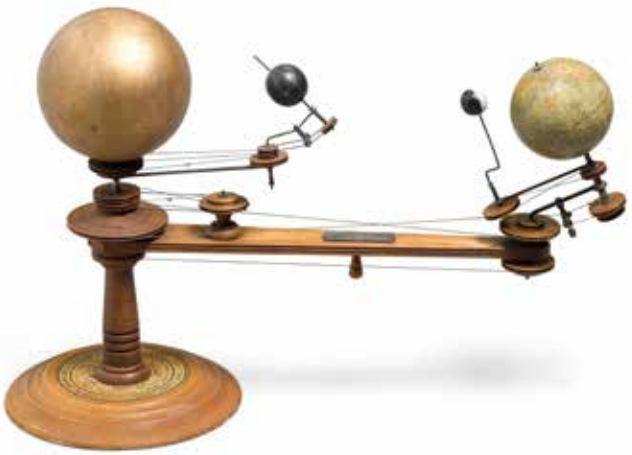
$2,000 - 3,000

17

18

18
LAING PLANETARIUM
Detroit, c.1897. With 3-inch terrestrial globe made up of twelve gores, black- and white-painted wooden moon, wooden arm with maker's plaque spinning and rotating around 4 1/2-inch painted wooden sun and circling black-and-white Venus via string and pulley system, on turned wood column to stepped wooden base with circular calendar, 12 1/4 x 17 inches.

$1,500 - 2,500



19

19
LAING PLANETARIUM
Detroit, c.1897. With 3-inch terrestrial globe made up of twelve gores, black- and white-painted wooden moon, wooden arm with maker's plaque spinning and rotating around 4 1/2-inch painted wooden sun and circling black-and-white Venus via string and pulley system, on turned wood column to stepped wooden base with circular calendar, 13 1/4 x 18 inches.

$800 - 1,200

20
MAUTHE TELLURIUM
Schwenningen, c.1900. With 3-inch terrestrial globe made up of twelve gores, brass moon, brass arm with maker's plaque spinning and rotating around 3-inch brass sun via belt drive system, on cast iron base, 11 x 16 1/2 inches.

A handsome tellurion from this Bavarian clock maker.

$800 - 1,200

20

21

21
RICHARD MECHANICAL LUNARIUM-CLOCK
France, early 20th Century. 5 1/2-inch terrestrial globe on brass support, cartouche reading, *"Richard's Chronosphere,"* with brass lunar sphere on wire connected to support, metal equatorial ring, brass meridian pointer, brass column and base containing geared turning mechanism, 11 3/4 inches tall.

$800 - 1,200

22
LAING/TRIPPENSEE PLANETARIUM
Detroit, c.1907. With 3-inch terrestrial globe made up of twelve gores, black- and white-painted wooden moon, wooden arm with maker's plaque and set with compass, spinning and rotating around 5-inch brass sun and circling black-and-white Venus via string and pulley system, on turned column to stepped wooden base with circular calendar, 12 3/4 x 16 3/4 inches.

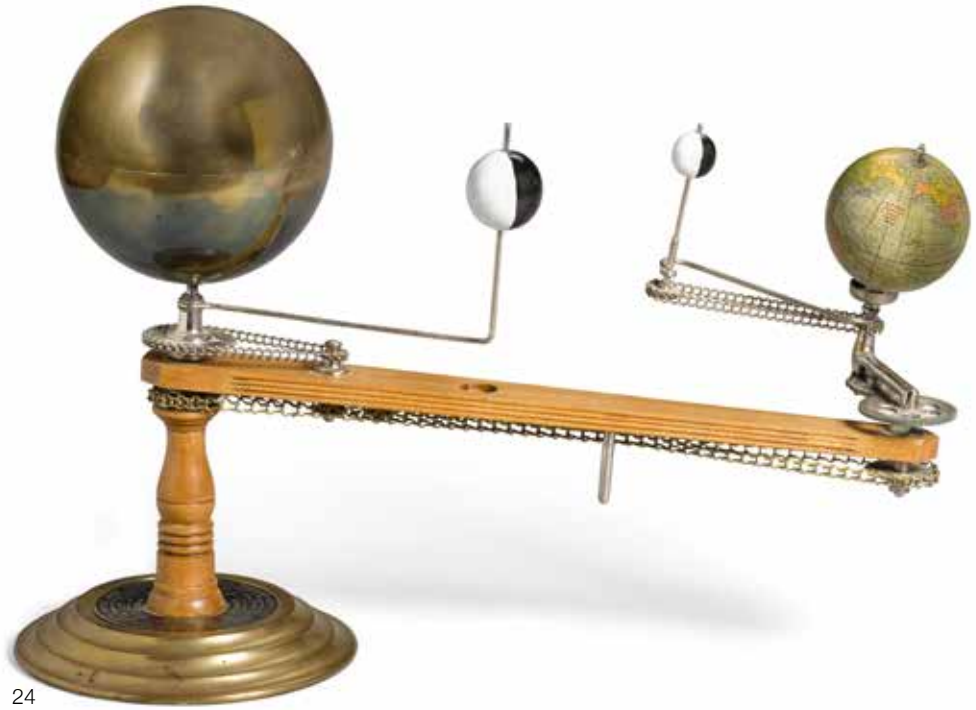
$1,200 - 1,800

23
TRIPPENSEE PLANETARIUM
Detroit, c.1908. With 3 inch terrestrial globe made up of twelve gores, wooden arm with maker's plaque, spinning and rotating around 6 inch painted wooden sun and circling black-and-white Venus, on chain driven turned column to stepped brass base with circular calendar, 14 x 20 inches.

$1,000 - 2,000

22

23



24

24
TRIPPENSEE PLANETARIUM
Detroit, c.1908. With 3-inch terrestrial globe made up of twelve gores, black- and white-painted wooden moon, wooden arm rotating around 5 1/2-inch brass sun and circling black-and-white Venus via chain drive, on turned wood column to stepped brass base with circular calendar, 14 1/4 x 20 1/4 inches.

$1,000 - 2,000

25

25
VETTER/IDEAL PLANETARIUM
Kansas City, MO, early 20th Century.
With 3-inch terrestrial globe made up of twelve gores, and white-painted wooden moon with metal shadow, metal arm with maker's plaque and inset compass, spinning and rotating around 6-inch brass sun and circling black-and-white Venus via geared system, on turned wooden column to metal base with circular calendar, 12 1/2 x 21 inches.

$1,000 - 2,000

26

26
RUSSELL-HAWKES UNIVERSAL PLANETARIUM
Kansas City, MO, 1919. With 3-inch terrestrial globe made up of twelve gores, and white-painted wooden moon with metal shadow, metal arm with maker's plaque and inset compass, spinning and rotating around 6-inch brass sun and circling black-and-white Venus via geared system, on turned wooden column to metal base with circular calendar, with green painted metal case, 12 1/4 x 19 inches.

$1,000 - 2,000

27

28

27
GEOGRAPHICAL EDUCATOR 6-INCH TERRESTRIAL JIGSAW GLOBE
New York, 1927. 7 layer globe with continental puzzle on 6 layers, thermoplastic with printed paper gores, cast iron base, 10 inches tall.

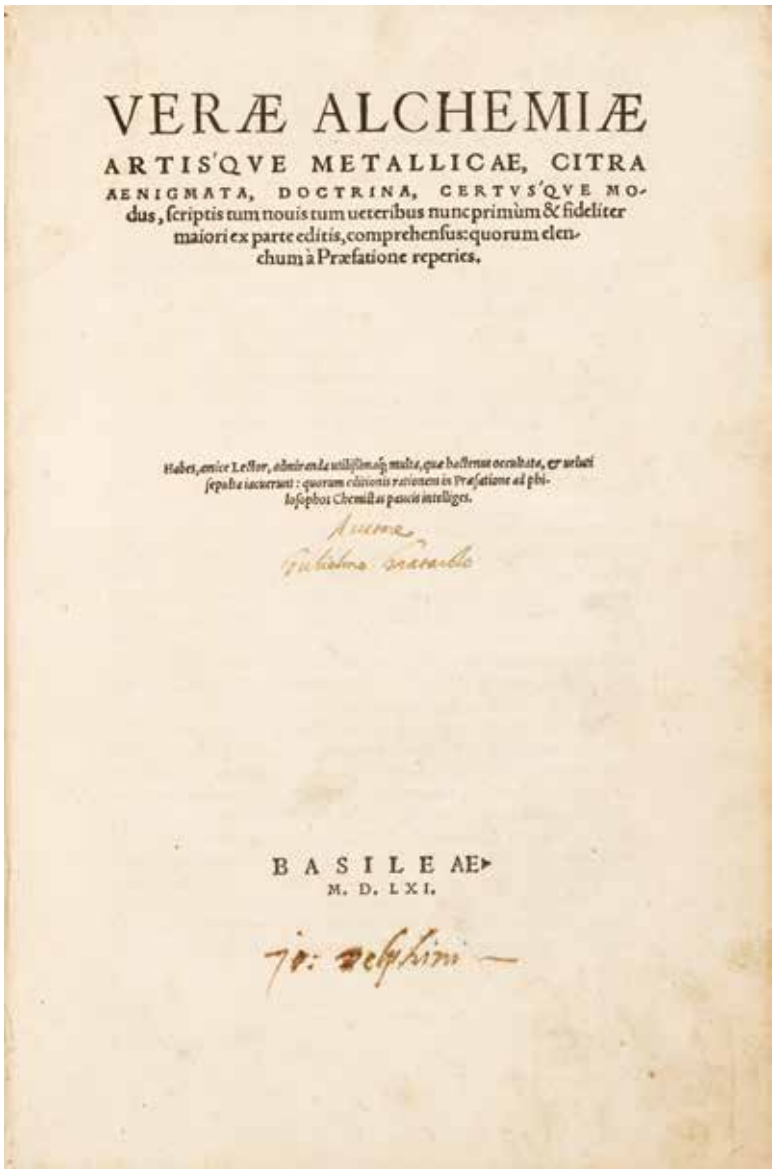
$800 - 1,200

28
QUESTAR TELESCOPE
1969. Catadioptric Apochromatic 3.5-inch telescope, variable focal length, 50.5 to 64 inches, with aluminum extensible tripod, Beseler Topcon 35mm camera, counterweight, and brown leather-covered carrying case. Various user's manuals with differing dates included. Very good condition overall with some dust in recessed areas and handling marks. Length 14 inches with camera; height 41 inches on stand.

$1,000 - 1,500

SCIENTIFIC BOOKS & MANUSCRIPTS

Lots 29-102



VERÆ ALCHEMIÆ

ARTIS QVE METALLICAE, CITRA AENIGMATA, DOCTRINA, CERTVS QVE MODUS, scriptis tum nouis tum ueteribus nunc primùm & fideliter maiori ex parte editis, comprehensus: quorum elenchum à Præfatione reperies.

Habes, amice Lector, admirenda utilissimaq; multa, quæ hactenus occultata, & uelut sepulta iacuerunt: quorum editionis rationem in Præfatione ad philosophos Chemicos paucis intelliges.

BASILEAE
M. D. LXI.

29

29

GRATAROLI, GUGLIELMO. 1516-1568.

Verae alchemiae artisque metallicae, citra aenigmata, doctrina, certusque modus, scriptis tum novis tum veteribus nunc primùm & fideliter maiori ex parte editis, comprehensus.... Basel: Heinrich Petri and Peter Perna, 1561.

Folio (300 x 195 mm). ^{*8} a-v^{6} A-Z^{6} Aa^{6}-Bb^{6}. Contemporary vellum with manuscript lettering to spine and bottom edge, minor stains to binding, presentation slip pasted to free front endpaper.

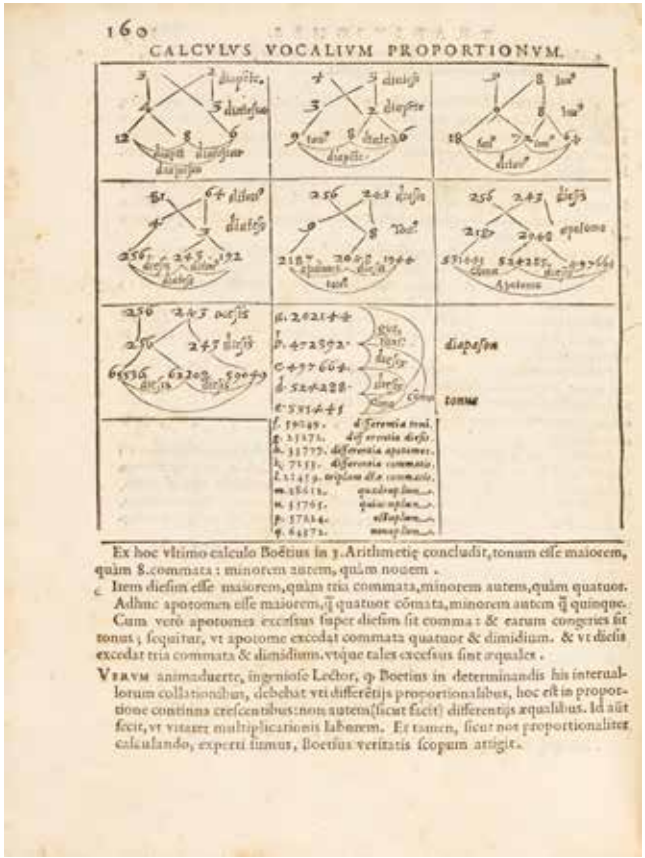
Provenance: Giovanni Antonio Delfini (1506-1561), theologian and Vicar General of the Order of the Convent of San Francisco in Bologna, signature on title.

FIRST EDITION of this rare and important compilation of alchemical texts, including works by Jabir ibn Hayyan, Roger Bacon, Richardus Anglicus, Robertus Tauladanus, Giovanni Battista da Monte, Arnaldus de Villanova, Albertus Magnus, Ramon Llull, Aristotle, Avicenna, Johannes de Rupescissa, Guglielmo Grataroli, Giovanni Braccesco, and Giovanni Aurelio Augurelli. Grataroli (sometimes seen as "Gratarolo") was a native of Bergamo who converted to Calvinism and settled in Basel, where he practiced and taught medicine, and wrote and edited works on medicine and alchemy. The *Verae alchemiae* was his most notable work. Adams A-575; Duveen, p 268.

$6,000 - 8,000


D. FRANCISCI
MAVROLYCI
ABBATIS MESSANENSIS,
Opuscula Mathematica;
Nunc primùm in lucem edita, cum rerum omnium notatu dignarum
INDICE LOCVPLETISSIMO.
TAGELLA HVIC PROXIME CONTIGVA,
eorum Catalogus est.
PER ME QVI SI RIPOSA.
EN CIEL SI GODE.
CVM PRIVILEGIO.
Venetijs, Apud Franciscum Franctiscium Senensem.
M D L X X V.

30


160
CALCVLVS VOCALIVM PROPORTIONVM.
Ex hoc vltimo calculo Boëtius in 3. Arithmetiç concludit, tonum esse maiorem, quàm 8. commata: minorem autem, quàm nouem.
Item diesim esse maiorem, quàm tria commata, minorem autem, quàm quatuor. Adhuc apotomen esse maiorem, q̃ quatuor cõmata, minorem autem q̃ quinque.
Cum verò apotomes excessus super diesim sit comma: & earum congeries sit tonus; sequitur, vt apotome excedat commata quatuor & dimidium. & vt diesis excedat tria commata & dimidium. vtique tales excessus sint æquales.
VERVM animaduerte, ingeniose Lector, q̃ Boetius in determinandis his intervallorum collationibus, debebat vti differẽtijs proportionalibus, hoc est in proportione continua crescentibus: non autem (sicut facit) differentijs æqualibus. Id ait fecit, vt vitaret multiplicationis laborem. Et tamen, sicut nos proportionaliter calculando, experti sumus, Boetius veritatis scopum attigit.

30

MAUROLICO, FRANCESCO. 1494-1575.

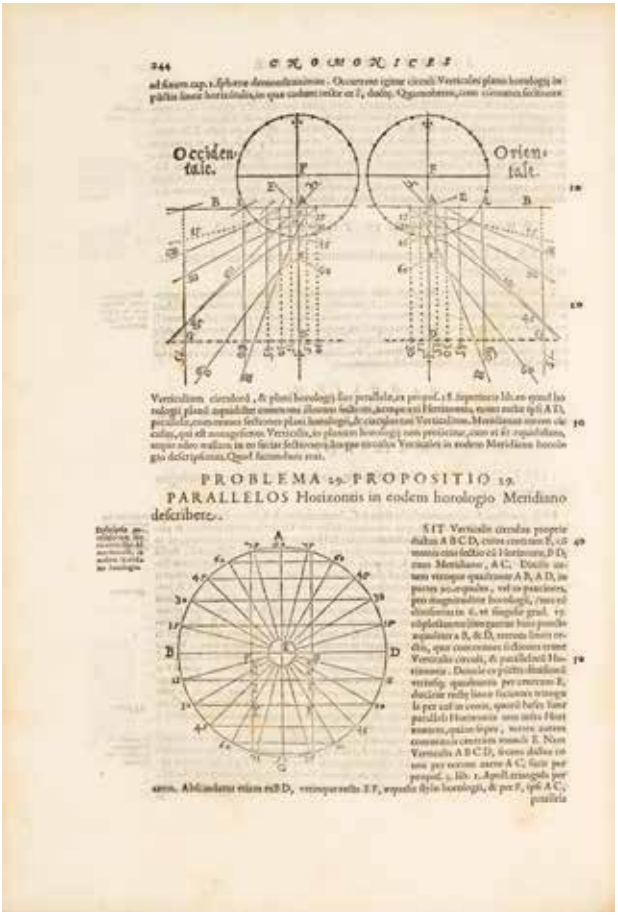
Opuscula mathematica [Arithmeticorum libri duo]. Venice: Francesco Franceschi, 1575. 2 parts in one volume. 4to (214 x 160 mm). a^{10} A-Z^{8}; Aa-Hh^{8} Gg^{10}. Printer's device on titles, woodcut initials and numerous woodcut diagrams in text. Contemporary limp vellum, spine heavily worn, slight dampstaining.
Provenance: contemporary erased inscriptions and stamp on title.

FIRST AND ONLY EDITION of Maurolico's combined scientific writings, containing eight treatises, each published here for the first time: De sphaera liber unus; Computus Ecclesiasticus in summam collectus; Tractatus instrumentorum astronomicorum; Tractatus de lineis horariis; Euclidis propositiones elementorum; Musicae traditione; De lineis horariis; and Arithmeticorum. In the last of these he makes the first clear statement of the principle of mathematical induction, used extensively by Pascal in his Traité du Triangle Arithmetique. The principle had been used earlier by Euclid, Levi ben Gerson and others, but without clearly defining it. The term "induction" was first used in this context by John Wallis in 1655.

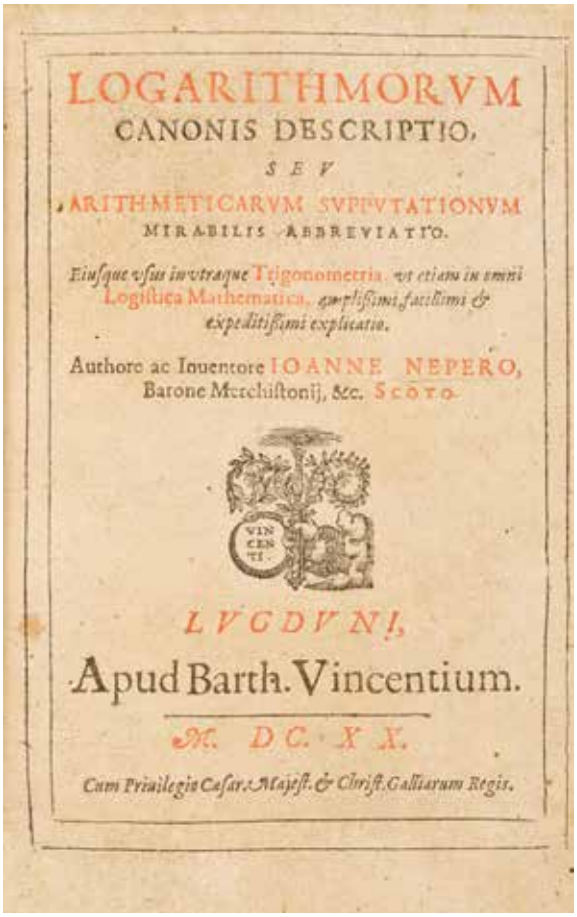
The manuscript of the book was sent to Giovanni Comisino in Venice in 1569, but the book was not in press until November 1574. After further delays, the book was finally published just four days after Maurolico's death.

One of the foremost mathematicians of the sixteenth century, Maurolico was raised in Messina, where his family settled after fleeing from Turkish invaders in Greece. He was ordained as a priest in 1521, and in 1550 became the Abbot of Santa Maia del Parto. Maurolico also held a number of civil commissions in Messina, and like his father became master of the Messina mint. He gave public lectures on mathematics at the University of Messina, where he was appointed professor in 1569. Only a few of his works were printed, although he translated, commented upon, reconstructed, and edited works by a number of ancient authors, including Apollonius, Archimedes, Autolycus, Menelaus and Theodosius. Adams M-919; Riccardi I, 141.

$7,000 - 10,000



31



32

31
CLAVIUS, CHRISTOPHER. 1538-1612.
Gnomonices libri octo. Rome: Francesco Zanetti, 1581.
Folio (322 x 224 mm). *8 A-Z6 AA-ZZ6 AAa-GGg6 HHh8.
Engraved title, woodcut diagrams in text, woodcut initials.
Contemporary vellum, manuscript title on spine, label removed from lower part of spine, vellum with a closed tear across spine, dent at upper right margin through the first 130 pages, not affecting text.
Provenance: Turin, Minorites of St. Thomas, library stamps on first page of dedication and inscription on free front endpaper.

FIRST EDITION of this masterwork on the theory and construction of sundials. Clavius considers the astronomical background, the geometrical theory and the various construction methods of the sundial, a topic which occupied many mathematicians in this period. The problems of sundial construction were related to those of the studies of perspective and shadows, which were also of interest to painters such as Albrecht Dürer.

The Latin name Christopher Clavius is the only name known of this Jesuit mathematician and astronomer, whose given name in German has been lost to time. He was born in Bamberg, and joined the Jesuit order in 1555. He studied at the Collegio Romano, and in 1579 was assigned the task of determining a way to adjust the calendar to keep it in line with the actual seasons of the year. The result, built on the work of Erasmus Reinhold and Aloysius Lillius, was a reformed calendar that was endorsed by Pope Gregory XIII. Adopted in 1582, the Gregorian Calendar is still in use as the common calendar of the Western world today. Adams C-2098; BL/STC Italian p. 126; Houzeau & Lancaster 11383; Lalande p 112.

$3,000 - 5,000

32
NAPIER, JOHN. 1550-1617.
Logarithmorum canonis descriptio. Lyon: Barthalemy Vincent, 1620.
3 parts in one volume. 4to (190 x 126 mm). A-H4; A-L4 M2; A-H4 (without final blank). 3 titles, first printed in red and black, woodcut diagrams. Contemporary vellum, some pages browned, small worm whole trace in the upper right corner (not affecting text), one page in second title with repaired tear.

This edition (the second of the *Constructio* and first Continental edition of the *Descriptio*) was published together with a small appendix containing annotations by Henry Briggs on base-ten logarithms. Napier, the 8th Laird of Merchiston, entered St. Andrews University at the age of 13, although he did not earn a degree. By occupation he was a landowner, and seems to have spent more of his energy on his devout and nearly militant dedication to Protestantism, treating mathematics as a leisure time activity. Nonetheless, his work led him to the discovery of logarithms, as explained in these two publications, as well as seminal work on spherical trigonometry and the invention of a machine that calculates the products and quotients of numbers using numbered rods known as “Napier’s bones.” Brunet IV:39; See PMM 116 (1614 edition).

$5,000 - 8,000

33

34

33
SCHWENTER, DANIEL. 1585-1636.
Geometriae Practicae Novae. Nuremberg: Simon Halbmayer, 1627. Four parts in one volume. 4to (200 x 154 mm).)(^{6} A-Z^{4} Aa-Oo^{4}; (:)^{8} A-Z^{4} Aa-Bb^{4} C^{2};)(^{6} A-N^{4}; A-L^{4}. Two engraved and two woodcut titles, two engraved portraits, woodcut illustrations and diagrams in text. Contemporary vellum, some browning throughout, (:)6 with small paper flaw affecting text.
Provenance: Date, "1640" in ink on front paste-down; Lichtenstein library, bookplate.

FIRST COMPLETE EDITION following the publication of the fourth and final part in 1627. The first part was published in 1616, and the third in 1618. The first book covers mathematics and geometry, the second part surveying techniques, the third part surveying instruments, while the fourth part is a translation of Curzio Casati's *Geometricum problema* (1602). Poggendorff II 878.

$1,000 - 1,500

34
CAVALIERI, BONAVENTURA. 1598-1647
Trigonometria Plana, Et Sphaerica, Linearis, & Logarithmica Bologna: Victor Benatis, 1643. 4to (221 x 170 mm). a-b^{4} A-I^{4} A-N$^{4.}$ Additional engraved title, folding engraved plate attached to final leaf, woodcut initials and headpieces. Contemporary limp vellum, inner hinges a little loose, paste-downs and front free end paper with minor worming, a few stains.

FIRST EDITION. Cavalieri was perhaps the most influential Italian writer in the world of science during the 17th century. He was among the first to recognize the importance of logarithms and this book introduced trigonometry to Italy. A member of the Jesuate order, which was supressed in 1668 by Pope Clement IX, Cavalieri published eleven books on optics, motion, astronomy, and mathematics. His method of indivisibles, which defines volumes of objects in terms of a number of parallel planar areas of infinitesimal width, was an early step toward the development of integral calculus. Riccardi I, 328.

$800 - 1,200


NATVRALIS LIBER I. 59

beret reſiſtentiam, quàm ut ille aër ita perpendiculariter ab aquâ devergente preſſus, aquam E, in labro F contentam, ita urgeret, ut illa maximâ cum celeritate per longius illud & anguſtius brachium E D C in latius & brevius brachium C B A, ad magnam altitudinem E C, copioſè aſcenderet, ubi ab occurrentibus corporibus major aëris prementis fieret reſiſtentia.

Dum autem, per violentam thoracis 1, follis à tergo

clauſi ſive non perforati 2, vel ſiphonis ſuctorii 3, ex an-

H 2 guſtiâ

35


AVR. PHILIP. THEOPH.

PARACELSI

BOMBAST AB HOHENHEIM,

MEDICI ET PHILOSOPHI CELEBERRIMI,

OPERA OMNIA

MEDICO-CHEMICO-CHIRVRGICA,

TRIBVS VOLVMINIBVS COMPREHENSA.

VOLVMEN PRIMVM,

Opera Medica completens.

Sumptibus Ioan. Antonij, & Samuelis De Tournes.

36

35

REGIUS, HENRICUS. 1598-1679.

Philosophia Naturalis. Amsterdam: Elzevier, 1654.

4to (199 x 153 mm). a-f^4 A-Z^4 Aa-Zz^4 Aaa-Iii^4. Engraved portrait frontispiece, numerous woodcut illustrations. Contemporary vellum. Wear to edges, erasures on title. *Provenance*: Ignatija Sternberg (contemporary ownership inscription on title); other ownership inscriptions erased.

FIRST EDITION of this rare work on natural philosophy from a correspondent of Descartes, whose ideas Regius advocated while at the same time distancing himself from the controversial French philosopher. This led to a significantly different approach to epistemology and a falling out between the two men. *Philosophia Naturalis* was derived from Regius' earlier 1646 work *Fundamenta Physices*, and is described on the title page as "*Ed. Secunda*" despite the new title and extensively revised and expanded text. Wheeler Gift 139; Willems 1178 (mentions in the note, an edition of 1651 which we are not able to trace anywhere); Poggendorff II, 588.

$1,500 - 2,850

36

PARACELSUS, 1493-1541.

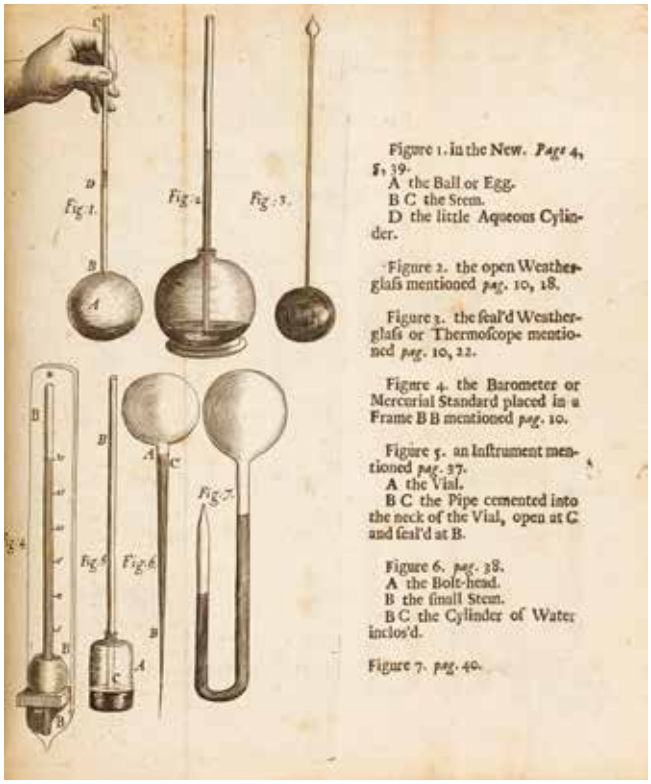
Opera Omnia Medico-Chemico-Chirurgica, tribus voluminibus comprehensa. Editio novissima et emendatissima ad Germanica & Latina exemplaria accuratissime collata. Geneva: Joan & Samuel De Tournes. 1658.

3 volumes in 2. Folio (354 x 212 mm). [36] 828 [40]; [24] 718 [34]; [12] 212 [32], 119, [1], [8], 18 pp. Titles in red and black with large vignettes, woodcut initials, head- and tailpieces, woodcut text illustrations. Contemporary Dutch vellum, blind-stamped center-pieces, some smudging to the spines and a few dark spots to boards, one hinge split.

FIRST TOURNES EDITION with the often missing portrait after Tintoretto. This compendium is the most complete of those editions in Latin, containing almost all of Paracelsus' writings on medicine and philosophy. Philippus Aureolus Theophrastus Bombastus von Hohenheim, who wrote under the pen name Paracelsus, was a Renaissance pioneer of medicine, as well as an astronomer and alchemist. A native of Switzerland, he was educated in Basel, Vienna, and Ferrara, and traveled extensively throughout Europe during his life as an itinerant physician. He is credited with establishing the role of chemistry in medicine, and is sometimes referred to as the "father of toxicology." He recorded the first clinical descriptions of syphilis and epilepsy, and advocated the humane treatment of the mentally ill in an era when they were believed to be possessed by demons. His controversial views alienated both publishers and other physicians, and many of the ideas he proposed were not accepted as medical orthodoxy until hundreds of years after his death. Dibner 124; *Heirs of Hippocrates* 215; Osler 528.

$5,000 - 8,000


GEOMETRIA,
à
RENATO DES CARTES
Anno 1637 Gallicè edita; postea autem
Unà cum NOTIS
FLORIMONDI DE BEAVNE,
In Curia Blesensi Consiliarii Regii, Gallicè conscriptis in
Latinam linguam versa, & Commentariis illustrata,
Operâ atque studio
FRANCISCI à SCHOOTEN,
in Acad. Lugd. Batavâ Matheseos Professoris.
Nunc demum ab eodem diligenter recognita, locupletioribus Commentariis
instructa, multisque egregiis accessionibus, tam ad ulteriorem explicationem, quàm ad amplificandam hujus Geometriæ excellentiam facientibus, ennarata,
Quorum omnium Catalogum pagina versa exhibet.
AMSTELODAMI,
Apud Ludovicum & Danielem Elzevirios,
37



38

37
DESCARTES, RENÉ. 1596-1650.
Geometria, anno 1637 Gallicè edita. Amsterdam: Elzevir, 1659-1661. 2 volumes. 4to (196 x 153 mm). [16], 520; [18], 420, [4] pp. Frontispiece portrait of Descartes in volume I, title printed in red and black and with woodcut printer's device, numerous diagrams in text. Contemporary limp vellum, manuscript title on spines, pastedowns lacking, light wear and warping to binding, old dealer's stamp to fly leaves.

Second edition of Frans van Schooten's Latin translation of Descartes' seminal work. The *Géométrie* first appeared in French as an appendix to Descartes' *Discours de la Méthode* (1637). Van Schooten first saw the *Géométrie* at Leiden, as Descartes had come there to supervise the printing of the *Discours*. Van Schooten published the first Latin translation in 1649, adding his own extensive commentary. In the second edition the commentaries were enlarged, and served as a basic reference for the generation of scholars who developed integral calculus. Isaac Newton, for one, used this edition in his studies, as his annotated copy in the library at Cambridge University can attest. PMM 129. Poggendorff I: 557; Willems 1244.

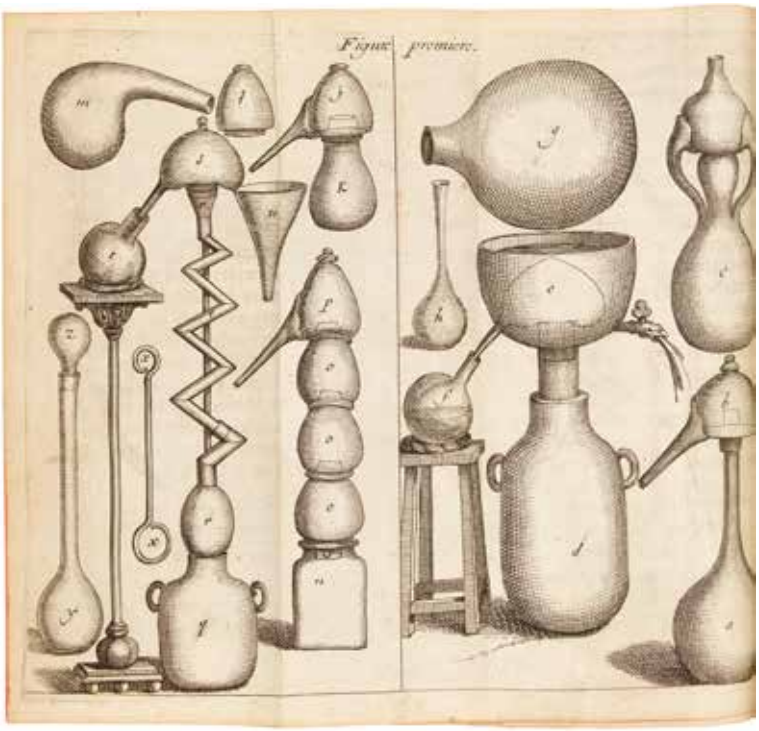
$2,000 - 3,000

38
BOYLE, ROBERT. 1627-1691.
BOYLE, ROBERT. 1627-1691. *New Experiments Physico-Mechanical, Touching the Spring of the Air, and its Effects....* Oxford: H. Hall for Thomas Robinson, 1662. 3 parts in 1 volume. 8vo (189 x 151 mm). [16], 207, [12], 122, [8], 98 pp. Half title, separate title for each part. 1 (of 2) engraved plate (partial). Woodcut on title page, woodcut initials and headpieces. Modern quarter calf over mottled boards. Fold-out plate partly lacking and replaced by facsimile.
Provenance: Wm. Thomas Brande (1788-1866) professor of chemistry at the Royal Institution, signature on title; Harvard College Library, stamp and deaccession stamp on verso of first title David P. Wheatland, (bookplate); Dr. & Mrs. H.R. Knohl, The Fox Pointe Collection, bookplate, their sale Sotheby's New York, 26 October 2016, lot 36.

BOUND WITH: *New Experiments and Observations Touching Cold, or An Experimental History of Cold ... Whereunto is Annexed an Account of Freezing ... by Dr. C. Merret ... Together with an Appendix Containing Some Promiscuous Experiments and Observations....* London: printed for Richard Davis, 1683. [44], 324, [18], [32] pp. Second edition.

SECOND AND MOST IMPORTANT EDITION, publishing for the first time "what Boyle called an 'hypothesis' but what we know as 'Boyle's Law': that the volume of air in a confined space varies inversely as the pressure" (PMM 143). Boyle and Robert Hooke developed a vacuum air pump, and began experimenting and observing the results of their work—an approach that was controversial at the time. Boyle created the modern definition of an element, introduced litmus paper to test acidity, and was a founding member of the Royal Society in London. Fulton 14; Garrison-Morton 666; Wing B-3999.

$3,000 - 5,000



39


SYNOPSIS
OPTICA,
IN QVA ILLA OMNIA
QVÆ AD OPTICAM, DIOPTRICAM,
CATOPTRICAM PERTINENT,
ID EST,
AD TRIPLICEM RADIVM VISVALEM
Directum, Refractum, Reflexum,
BREVITER QVIDEM, ACCVRATE
tamen demonstrantur.
Authore HONORATO FABRI, Societatis Iesu.
Ad Serenissimum Principem LEOPOLDVM, Magnæ Ducis Etruriæ Fratrem.
LVGDVNI,
Sumpt. HORATII BOISSAT, & GEORGII REMEVS.
M. DC. LXVII.
Cum Approbatione & Permissu Superiorum.

40

39
GLASER, CHRISTOPHLE. 1629-1672.
Traite de la Chymie. Enseignant par une brieve et facile methode toutes ses plus necessaires preparations. Paris: by the author, 1663. 8vo (162 x 98 mm). [16], [2], 378, [3] pp. 2 folding engraved plates. 19th century half calf over marbled boards, spine gilt in 6 compartments, with red title label, edges colored in red, joints starting, small dampstain on outside of edge of several pages at head.

FIRST EDITION of one of the earliest texts to remove pure chemistry from the mysticism of alchemy, and to describe chemical preparations precisely. Glaser describes the uses, processes and equipment needed in chemistry, and gives formulas for medicinal preparations created from the available raw materials of the time. Glaser was born in Basel and became apothecary to Louis XIV and the Duke d'Orléans. This, his most famous work, went through thirteen editions between its first publication and 1710. Duveen 251.

$3,000 - 5,000

40
FABRI, HONORÉ. 1608-1688.
Synopsis optica, in qua illa omnia quae ad opticam, dioptricam, catoptricam pertinent, id est, ad triplicem radium visualem directum, refractum, reflexum breviter quidem, accurate tamen demonstrantur. Lyon: Horace Boissat & Georges Remeus, 1667.
4to (223 x 156 mm). [8], 246 pp. 6 folding engraved plates, woodcut vignette on title and woodcut diagrams in text. Contemporary calf, binding with some restoration, ink inscription on title page washed out, dampstain to rear pastedown.

FIRST EDITION of Fabri's influential work on optics, the inspiration for Newton's work on light and color. It was through this work that Newton learned of the discovery of diffraction of light by Francesco Maria Grimaldi. Fabri also writes about the use of telescopes, describes the rings of Saturn, and gives details of the design and construction of compound microscopes. Fabri was educated at the *Collège de la Trinité* in Lyon, and became a Jesuit priest. After teaching at the college for several years, he moved to Rome, where he held the position of Theologian of the Supreme Tribunal of the Apostolic Penitentiary for thirty years. Some of his works were considered controversial within the church, but his standing as a scientist places him squarely among some of the greatest minds of his time. Sommervogel III: 515.

$4,000 - 6,000

41

HURET, GRÉGOIRE. 1606-1670.

Optique de portraiture et peinture, en deux parties. La premiere est la perspective pratique acomplie, pour representer les somptueuses architectures des plus superbes bâtimens en perspective par deux manieres.... Paris: André Cramoisy, 1670.
Folio (370 x 249 mm). [14], 159, [1] pp. 2 engraved frontispieces, woodcut device on title-page, woodcut initials, 8 engraved plates. Contemporary sheepskin, spine and corners with old repairs.

FIRST EDITION of Huret's important work on perspective in drawing and painting. Huret felt that this book should be used as a textbook for the teaching of rules of perspective to students of art, to free them from what he felt were overly formalized mathematical constraints, and allow them to portray perspective as it appears to the human eye. Huret was born in Lyon, a traditional center of engraving and printing, and learned the art of engraving in his youth. He moved to Paris, continuing in the engraving trade, and entered the Royal Academy of Painting and Sculpture in 1663.

$3,000 - 5,000

41

42

LA FAVEUR, SÉBASTIEN MATTE. 1626-1714.

Pratique de la Chymie, divisée en quatres parties ... Avec un avis sur les eaux minérales. Montpellier: Daniel Pech, 1671.
8vo (155 x 94 mm). [14], 360, [8 (of 10 explanatory pages)], [34] pp. Engraved armorial frontispiece, 13 engraved plates, and 12 folding leaves with diagrams and tables. 1 leaf of explanatory pages moved adjacent to the corresponding folding plate between pp 46-47. Contemporary calf, spine gilt in 6 compartments, red mottled edges, scuffing to boards, one plate restored, minor browning.

FIRST EDITION, complete with the folding plates depicting scientific instruments used in chemistry, and a table of chemical symbols, and rarely seen as such. Sebastian Matte la Faveur was one of the most important chemists and pharmacists in France in the 17th century. His discovery of styptic water and other research led to a professorship at the University of Montpellier. His lavender distillate known as "the water of the queen of Hungary" (*Aqua Reginae Hungariae*), earned him the title of "*pharmacies particulier du Roi Louis XIV*" and another chair at the Sorbonne. In 1684 his position in Paris was taken over by Nicolas Lemery, who acknowledged that he used this work in the preparation of his *Cours de Chymie* (1675). Duveen 395; Poggendorff 11, 78.

$1,500 - 2,000

42

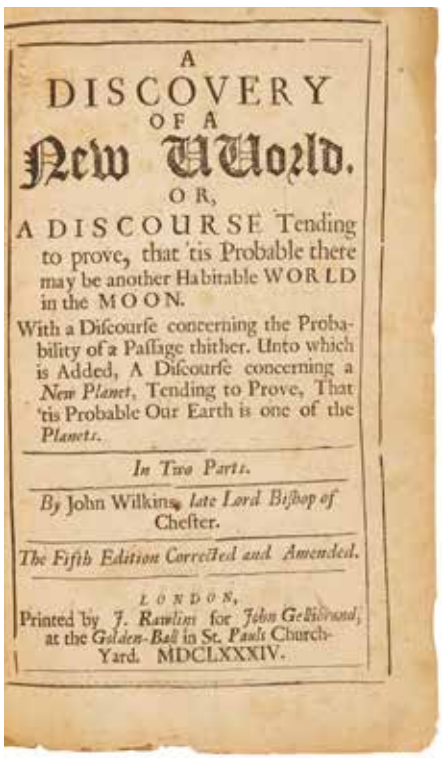
43

WILKINS, JOHN. 1668-1672.

A Discovery of a New World... 'tis Probable there may be another Habitable World in the Moon. London: J. Rawlins for John Gellibrand, 1684.
2 parts in 1 volume. 8vo. [6], 160, [8], 184 pp. Rebacked in modern calf over boards. Pages browned, with slight chipping.

Fifth edition, "Corrected and Amended." Wilkins' bold assertions in his various editions of this book include the possibility that the moon might be inhabited, that humans might be able to find a way to travel there, and that the Earth might indeed be a planet. An Anglican clergyman and Bishop of Chester, Wilkins was a visionary polymath who served as both Warden of Wadham College, Oxford, and Master of Trinity College, Cambridge. He remained well-respected in science and the clergy, despite his sometimes controversial writings. In addition to writing on mathematics, religious philosophy, and astronomy, he proposed a universal language, and a universal system of measurement that predated the metric system.

$1,000 - 1,500


A
DISCOVERY
OF A
New World.
OR,
A DISCOURSE Tending to prove, that 'tis Probable there may be another Habitable WORLD in the MOON.
With a Discourse concerning the Probability of a Passage thither. Unto which is Added, A Discourse concerning a *New Planet*, Tending to Prove, That 'tis Probable Our Earth is one of the *Planets*.
In Two Parts.
By John Wilkins, *late Lord Bishop of* Chester.
The Fifth Edition Corrected and Amended.
LONDON,
Printed by *J. Rawlins* for *John Gellibrand*, at the *Golden-Ball* in St. *Pauls* Church-Yard. MDCLXXXIV.

43

44

45

44
WALLIS, JOHN. 1616-1703.
A treatise of algebra, both historical and practical ... With some additional treatises, I. Of the cono-cuneus ... II. Of angular sections ... III. Of the angle of contact ... IV. Of combinations, alternations, and aliquot parts. London: John Playford for Richard Davis, 1685.
4 parts in one volume. Folio (318 x 196 mm). [20], 374, [4], 17, [1], [2], 176, 2], 17 pp. Engraved portrait of Wallis by Loggan (bound slightly askew and just trimmed in outer margin towards the top), 10 engraved folding plates. Contemporary calf, traces of marbling on edges, covers worn, repairs to hinges and spines.

FIRST EDITION. This work is unusual in its coverage of both the history of algebra, and the exposition of its use. The last 28 chapters are dedicated to methods of exhaustion and indivisibles, the building blocks of calculus, as well as the method of infinite series. This was Wallis' way of making sure that the young Isaac Newton's still unpublished findings were set to print, fearing that others on the continent might publish Newton's work before they were published in England. Wallis attended Cambridge intending to be a doctor, but found that he was more interested in mathematics. He entered the priesthood after receiving his master's degree. His parliamentarian politics led him into cryptography, de-ciphering royalist coded messages, and he was asked by Leibniz to teach cryptography in Hanover. He refused, feeling that the knowledge could be used by foreign powers against England. In addition to mathematics, he also wrote treatises on theology, logic, grammar and philosophy. Wing W-613.

$3,000 - 4,000

45
ALENCE, JOACHIM D'. 1640-1707.
*Traitté de l'aiman. Divisé en deux parties. La prémiére contient les expériences; & la seconde les raisons que l'on en peut rendre. Par M. D***.* Amsterdam: Henry Wetstein, 1687.
12mo (154 x 88 mm). [20], 140, [8] pp. 33 plates by A. Schoonebeck and engraved frontispiece. Contemporary speckled calf, spine gilt in 5 compartments, with black lettering-piece in second compartment, gilt monograms (floriate "B" with a baronial crown) on both covers. Minor repairs to spine, end-papers renewed.

FIRST EDITION of this treatise on magnets and magnetism, including its practical uses such as the compass. D'Alence (sometimes found as "Dalance" or "Dalence") was known also for his work on thermometers and barometers, *Traittez des barometres, thermometres, et notiometres, au hygrometres* (1688), but aside from that little is known of his life and work. The elaborate etchings by Adriaan Schoonebeek are a notable feature of both works, although in this title the images often have only a passing relationship to the scientific content of the text. Brunet 5: 918; Wheeler Gift 200; Hofer *Baroque Book Illustration* 142.

$1,200 - 2,500

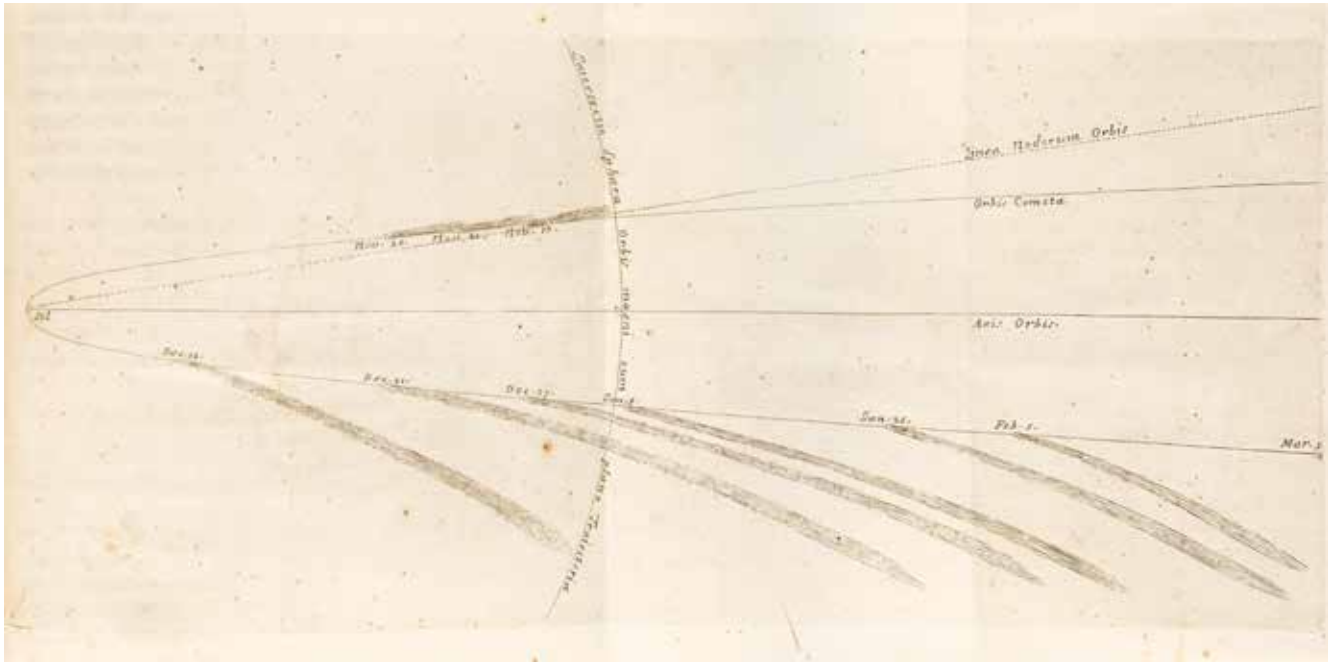
PHILOSOPHIÆ NATURALIS PRINCIPIA MATHEMATICA

Autore *J S. NEWTON, Trin. Coll. Cantab. Soc.* Matheſeos Profeſſore *Lucaſiano*, & Societatis Regalis Sodali.

IMPRIMATUR.
S. PEPYS, *Reg. Soc.* PRÆSES.
Julii 5. 1686.

LONDINI,

Juſſu *Societatis Regiæ* ac Typis *Joſephi Streater*. Proſtat apud plures Bibliopolas. *Anno* MDCLXXXVII.



46

46

NEWTON, ISAAC SIR. 1642-1727, KNIGHTED 1705.

Philosophiae naturalis principia mathematica. [Edited by Edmond Halley. 1656-1743.] London: Joseph Streater for the Royal Society [at the expense of Edmond Halley], to be sold by various booksellers, 1687.

4to (234 x 177 mm). A^4 B-O^4 P^4 (+-P4) Q-V^4 W^4 X-Z^4 Aa-Uu^4 Ww^4 Xx-Zz^4 ***^{4} Aaa-Nnn^4 Ooo^4 (+-Ooo^4). 252 leaves and folding plate. Title in first state with two-line imprint; P^4 cancel correcting orientation of the diagram on verso, errata inserted at end in place of final blank +/- Ooo^4); engraving of cometary orbit inserted before $3M^2$. Numerous woodcut diagrams in text. (Title re-inserted, occasional scattered light spotting and minor staining.) 19th-century blue half calf, spine gilt in five compartments (minor rubbing to extremities); modern black cloth folding case. Provenance: contemporary marginalia, equations, diagrams and notes in Latin, possibly circle of Johann Bernoulli (1667-1748), (see note below), Basel Public Library "Public Bibl. Publ. Basileensis" ink stamp and "Bibliotheca Publ. Basil vendidit" deaccession stamp on verso of title; Zurich, Swiss Federal Observatory "Eidgen. Sternwarte Zuerich," ink stamps on title.

FIRST EDITION, first state, with two-line imprint, *OF THE MOST IMPORTANT WORK IN THE HISTORY OF SCIENCE,* constituting "perhaps the greatest intellectual stride that it has ever been granted to any man to make" (Einstein).

"Following the pioneer researches of Galileo in the study of motion and its mathematical analysis and the important contributions of Descartes and Huygens, the scientific revolution of the seventeenth century culminated in the massive achievements of Newton in dynamics and gravitational astronomy. Kepler's law of planetary motion came to be gradually accepted in the latter half of the century and unsuccessful attempts were made to account for them in terms of a central force emanating from the sun" (PMM). Newton showed that his law of gravity would cause a planet to move in an ellipse about the sun as focus. "For the first time a single mathematical law could explain the motion of objects on earth as well as the phenomena of the heavens... It was this grand conception that produced a general revolution in human thought..." (PMM). Newton's scientific views were not challenged until Planck's quantum theory (*Zur Theorie des Gesetzes der Energieverteilung im Normalspectrum, Leipzig, 1900) and Einstein's theories of relativity (Die Grundlage der allgemeinen Relativitaetstheorie,* Leipzig, 1916).

Edmond Halley encouraged Newton to write *Principia* and Newton acknowledges his contribution in the preface: "Mr. Edmund Halley not only assisted me with his pains in correcting the press and taking care of the schemes, but it was his solicitations that its becoming public is owing; for when he had obtained of me my demonstrations of the figure of the celestial orbits, he continually pressed me to communicate the same to the Royal Society..." (translated by Andrew Motte).

The printing history of the *Principia* is well documented. "The first edition was very small (perhaps 250 copies) and... sold out quickly" (Babson). There are two states of the title-page: the first with 2-line imprint for domestic distribution by Halley and Newton in cooperation with a number of unnamed booksellers, the second with 3-line imprint naming the bookseller Samuel Smith for foreign distribution.

Regarding the Basel provenance of this copy Fritz Nagel wrote in his article "Habent sua fata Principia / Newton in Basel": "Detailed investigation has shown, that [the author of the marginalia] corrects printing errors in mathematical formulas [see I2v, M2v, Q3v] and geometric figures [see L1r, M4r] from the second edition to this copy of the first edition. In addition [the author of the marginalia] verified a bibliographic reference by Newton to Apollonius [M2r]. Finally, [the author of the marginalia] has written down short mathematical proofs which are merely suggested or entirely omitted by Newton in the text [see L4v, O3r]. Since only a few contemporaries of Newton had read his *Principia*, or even worked through it in detail, the writer of the notes must have been an above-average gifted mathematician. In the first place Johann Bernoulli comes to mind whose hand-writing actually shows some similarities with the marginal notes of our copy. Another possible author of the marginalia might be Jacob Hermann. On the other hand, the scribe might have been another mathematician of the Bernoulli circle, who, perhaps on behalf of his teacher, compared the texts of the second and the first edition of Principia" (translated from *Fritz Nagel Librarium, Zeitschrift der Schweizerischen Bibliophilen-Gesellschaft,* September 2010 pp. 103-4). Contemporary marginalia is found on: G1v, H2r, I2v, I3r&v, L1r, L4v, M1r, M2r&v, M4r, N4r, O3r, P1r, Q2v, Q3v, R1r&v, R3r&v, R4v. Babson 10; Grolier *Science* 78; Norman 1586 (3-line imprint title); Wing N-1048; PMM 161.

US$300,000 - 500,000

C & D secabant, jam Curvam in punctis illis coeuntibus non amplius secare possunt sed tantum tangent.

PQ. PS :: Pq. PA + PA. PS
:: PT. PD + PD. PR ::
PT. PR.

Scholium.

Detail page 73

BL, CL casu utroq;
se decussant. Agatur
recta infinita MN, &
rotentur anguli illi mobiles circum polos suos B, C, ea lege ut
crurum BL, CL vel BM, CM intersectio, quæ jam sit m, incidat
semper in rectam illam infinitam MN, & - - - - crurum

Detail page 80

in circulum. Recta item & sectio Conica in constructione planorum problematum vertuntur in rectam & circulum.

Prop. XXV. Prob. XVII.

Trajectoriam describere quæ per data duo puncta transibit & rectas tres continget positione datas.

Per concursum tangentium quarumvis duarum cum se invicem, & concursum tangentis tertiæ cum recta illa, quæ per puncta duo data

* Sunto trans mutandæ rectæ GE, HF, concurrentes in puncto C radii OA, & secantes Ba in G & H; Ductâ rectâ Bh in angulo dato hBa

abscindatur Bg = BG, & Bh = BH, jungantur, rectæ OE, OF secantes Ba in e & f. Erit per Lemma punctum G translatum in g, H in h, E in e & F in f, adeoq; recta GE in ge, & HF in hf. Est verò Bg. Be :: BG. Be :: AC. AO :: BH. Bf :: Bh. Bf. Unde rectæ eg, fh sunt parallelæ. Q. E. D.

Detail page 87

ad FO. Cum igitur sit etiam *ig* ad *ih* ut *Mi* ad *Li*, id est, ut *IG* ad *IH*, patet lineas F*I*, *fi* in *g* & *h*, *G* & *H* similiter sectas esse. *Q.* E. F.

In constructione Corollarii hujus postquam ducitur *L K* secans

* Nam per constr. LM. iL :: GH. Hi. & componendo, Mi. iL (:: per constr. DL. RL) E C :: Gi. Hi; dividendo, DL. DR :: Gi. GH; sed ex constr. BD. DL :: FG. Gi; quare ex æquo, BD. DR :: FG. GH. & componendo, BD. BR :: FG. FH.

Detail page 101

47

47

NEWTON, ISAAC. 1642-1727.

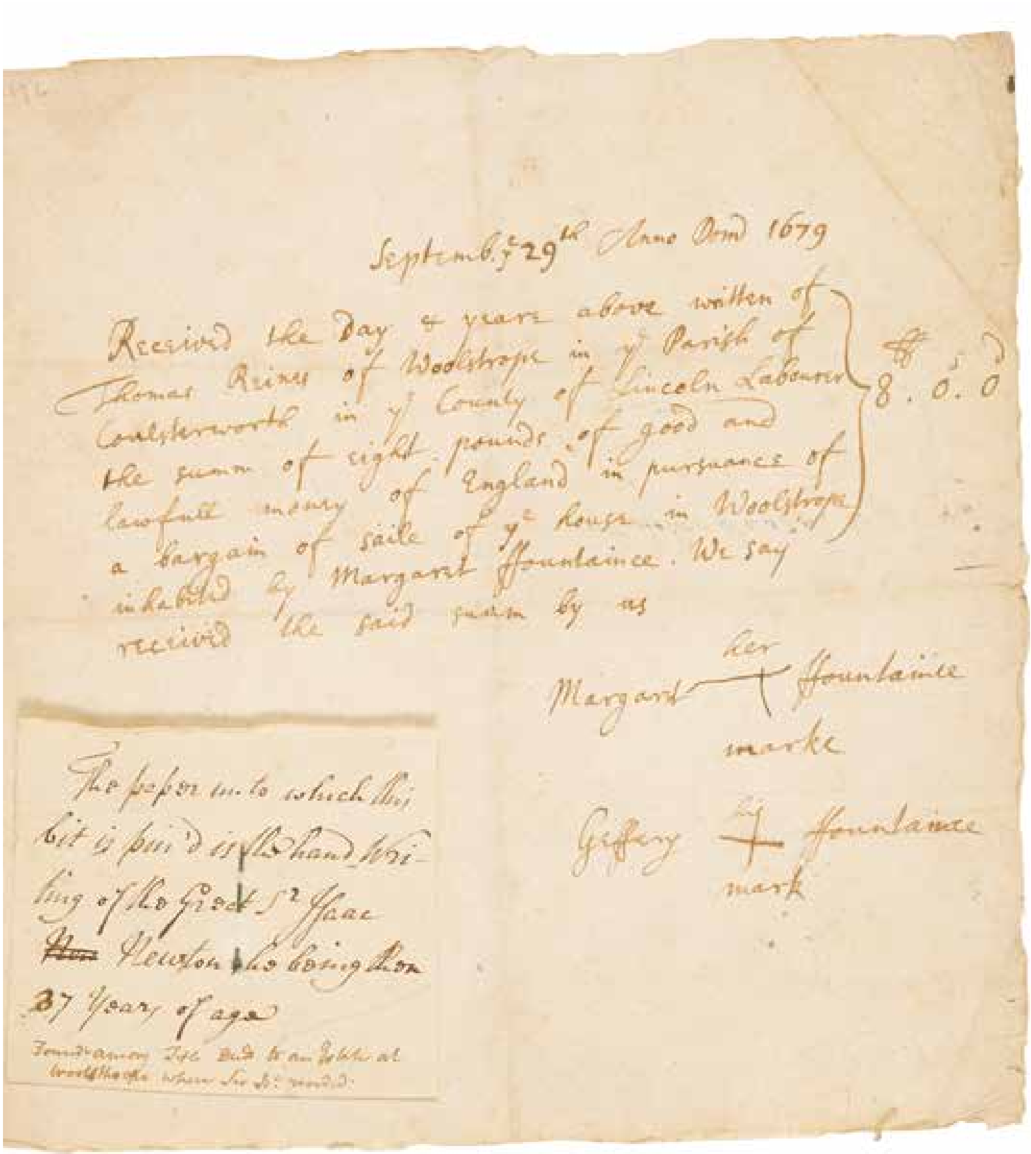
The Mathematical Principles of Natural Philosophy. London: Benjamin Motte, 1729.

2 volumes. 8vo (194 x 111 mm). [38], 320; [2], 393, [13], viii, 71, [1 errata] pp. "The Laws of the Moon's Motion" section by John Machin bound at the end of volume 2. 2 engraved allegorical frontispieces, 47 engraved folding charts on full aprons, 2 folding tables, other illustrations and tables in text. Modern full speckled calf antique, spines gilt-lettered, morocco spine labels. Frontispieces remounted, closed tear to pl 8 (vol 1), some pale gutter dampstain, plates in vol 2 toned, minor occasional soiling, narrow marginal worming to last few leaves of vol 1.

Provenance: G. Morland, ownership inscription to vol 1; James Irwin, ownership inscription to vol 2, dated 1793.

FIRST EDITION OF THE PRINCIPIA IN ENGLISH. First published in Latin in 1687, followed by a second edition in 1713, this translation was made by Andrew Motte, the brother of the printer Benjamin Motte and the author of *A Treatise of the Mechanical Powers* (1727). "The *Principia* is generally described as the greatest work in the history of science. Copernicus, Galileo and Kepler had certainly shown the way; but where they described the phenomena they observed, Newton explained the underlying laws" (*PMM* 161). Babson 20; Wallis 23.

$15,000 - 20,000


Septemb'r 29th Anno Dom 1679

Received the Day & yeare above written of Thomas Reines of Woolstrope in ye Parish of Coalsterworth in ye County of Lincoln Labourer the summe of eight pounds of good and lawfull money of England in pursuance of a bargain of saile of ye house in Woolstrope inhabited by Margaret ffountaince. We say received the said summe by us — £ 8. 0. 0

Margaret her + marke ffountaince

Geffery his + mark ffountaince

The paper in to which this bit is pin'd is the hand writing of the great Sr Isaac Newton he being then 37 Years of age

Found among Title Deeds to an Estate at Woolsthorpe where Sir Isc resided

48

48

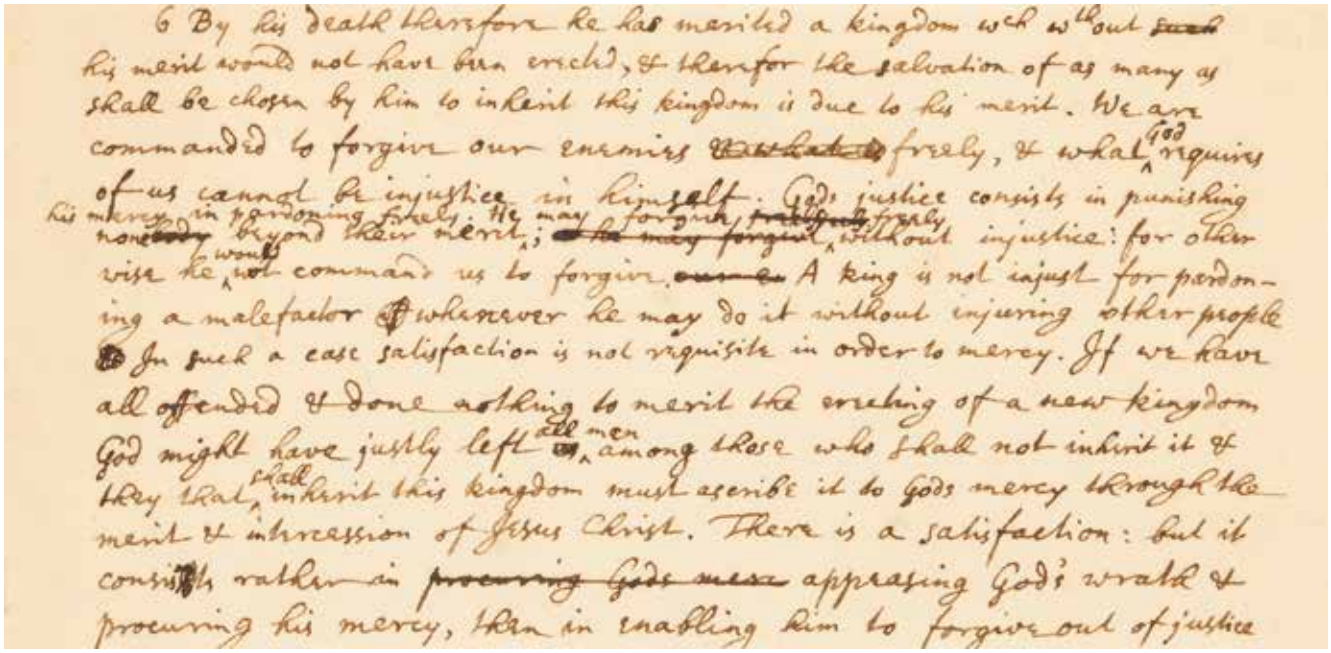
NEWTON, ISAAC. 1642-1727.

Autograph Document, being a deed of sale for Margaret Fountaine on a property at Woolstrope [Woolsthorpe], his ancestral home, ink on paper, 1 p, 210 x 197 mm, Woolstrope, "Septemb'r 29th, 1679," signed for the Fountaines by Newton where they have added their marks, with a manuscript note in a 18th-century hand attesting to Newton's autograph, folds, crease to one corner.

Provenance: Isaac Newton; "found among Title and Deeds to an Estate at Woolsthorpe where Sir Isc resided" manuscript note; John Waller, Harley House, catalogue dated, 1879; sold Anderson Galleries, New York, March 14-15, 1923, Lot 378, sale from the autograph collections of McIver/Hough/Wilkes.

ISAAC NEWTON AUTOGRAPH MANUSCRIPT FROM HIS ANCESTRAL HOME OF WOOLSTHORPE, documenting receipt of "good and lawfull monies" for a "bargain of saile" on behalf of Margaret and Geffery Fountaine. In 1679, Newton returned to Woolsthorpe to nurse his mother, when she fell ill in the spring. According to an entry in the parish record at Colsterworth, "Mrs. Hannah Smith, wid. was burried in woollen June ye 4th 1679." Newton stayed on to tend to her affairs and administer his newly inherited lands for virtually all of the end of 1679. His arrangements of the family lands yielded him annual rents and dues of £200, which would afford him a relatively comfortable life in Cambridge moving forward. Hall, *Isaac Newton: Adventurer in Thought* (Cambridge, 1992).

$10,000 - 15,000


6 By his death therfore he has merited a kingdom wch w^th^out ~~such~~ his merit would not have been erected, & therfor the salvation of as many as shall be chosen by him to inherit this kingdom is due to his merit. We are commanded to forgive our enemies ~~as we do~~ freely, & what God requires of us cannot be injustice in himself. God's justice consists in punishing his mercy in pardoning freely. He may forgive freely ~~without~~ ~~necessity~~ beyond their merit; ~~& he may forgive~~ without injustice: for otherwise he would not command us to forgive. ~~our~~ A king is not unjust for pardoning a malefactor wherever he may do it without injuring other people In such a case satisfaction is not requisite in order to mercy. If we have all offended & done nothing to merit the erecting of a new kingdom God might have justly left all men among those who shall not inherit it & they that shall inherit this kingdom must ascribe it to Gods mercy through the merit & intercession of Jesus Christ. There is a satisfaction: but it consists rather in ~~procuring Gods mercy~~ appeasing God's wrath & procuring his mercy, than in enabling him to forgive out of justice

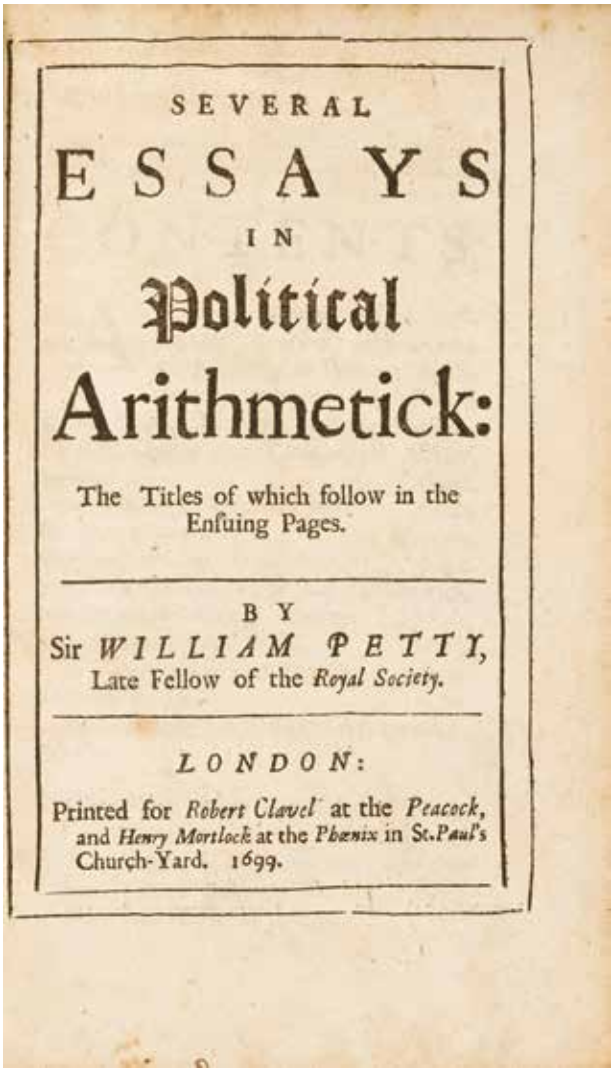
49

49
NEWTON, ISAAC. 1642-1727.
Autograph Manuscript in English, a portion of a draft of Newton's study on revelation, ink on paper, 1 p, 190 x 86 mm, containing 15 lines, with autograph emendations.
Provenance: Isaac Newton; Catherine Barton (1679–1739); by descent, sold Sotheby's, July 1936, lot 255, as part of the Portsmouth Papers, to bookseller Emmanuel Fabius.

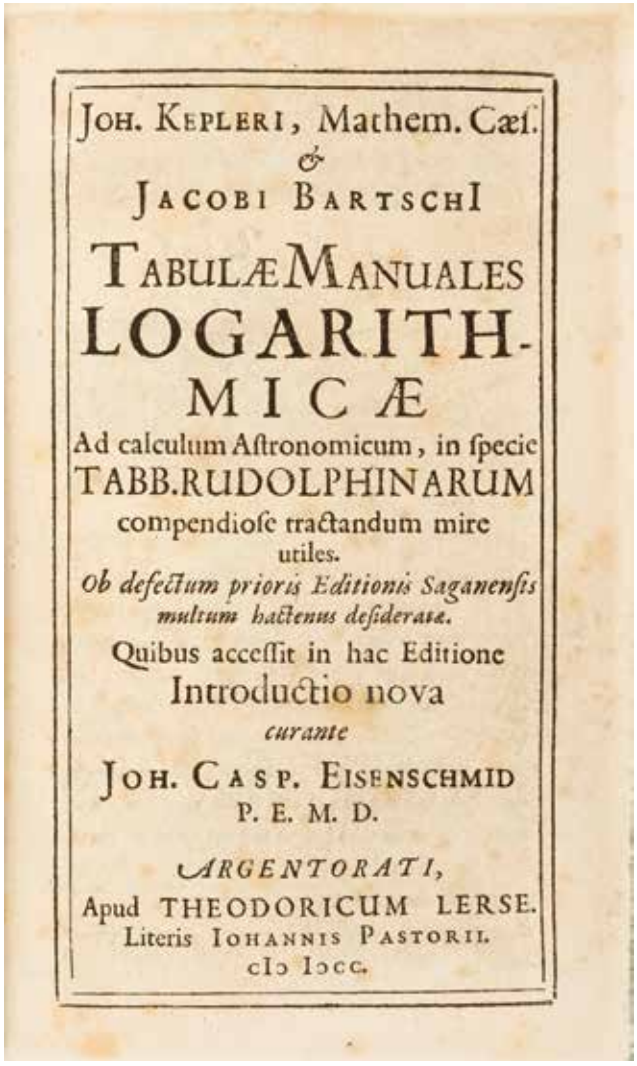
RARE NEWTON MANUSCRIPT from his writings on the Book of Revelation (SL255.7 in the Portsmouth Papers), this portion numbered "6" and containing a lucid and subtle expression of the idea of mercy as a justice beyond satisfaction.

A beautiful example of Newton as theologian, a role that recent scholarship has shown to be inextricable from his scientific genius, this manuscript begins with the idea that "We are commanded to forgive our enemies freely, & what God requires of us cannot be injustice in himself." Since God forgives freely, so, too, man deserves our forgiveness without necessary satisfaction of his punishment, "Satisfaction is not requisite in order to mercy ... There is a Satisfaction: but it consists rather in procuring God's merc appeasing God's wrath & procuring his mercy, then in enabling him to forgive out of justice." Beginning with the 1936 sale of the Portsmouth Papers, and continuing through the on-line publication of many of them through the Newton Project, interest in Newton's theological mind continues to expand.

$15,000 - 20,000


SEVERAL
ESSAYS
IN
Political
Arithmetick:
The Titles of which follow in the Enſuing Pages.
BY
Sir WILLIAM PETTY,
Late Fellow of the Royal Society.
LONDON:
Printed for Robert Clavel at the Peacock, and Henry Mortlock at the Phœnix in St. Paul's Church-Yard. 1699.

50


JOH. KEPLERI, Mathem. Cæſ.
&
JACOBI BARTSCHI
TABULÆ MANUALES
LOGARITH-
MICÆ
Ad calculum Aſtronomicum, in ſpecie
TABB. RUDOLPHINARUM
compendioſe tractandum mire utiles.
Ob defectum prioris Editionis Saganenſis multum hactenus deſideratæ.
Quibus acceſſit in hac Editione
Introductio nova
curante
JOH. CASP. EISENSCHMID
P. E. M. D.
ARGENTORATI,
Apud THEODORICUM LERSE.
Literis IOHANNIS PASTORII.
cIↃ IↃCC.

51

50
PETTY, WILLIAM. 1623-1687.
Several Essays in Political Arithmetick: the titles of which follow in the ensuing pages. London: Robert Clavel and Henry Mortlock, 1699.
8vo (184 x 112 mm). 316 pp. A2, A-T8 U4. Contemporary English calf, capitals and hinges with some wear.
Provenance: Dauntesey, Agecroft Hall, bookplate.

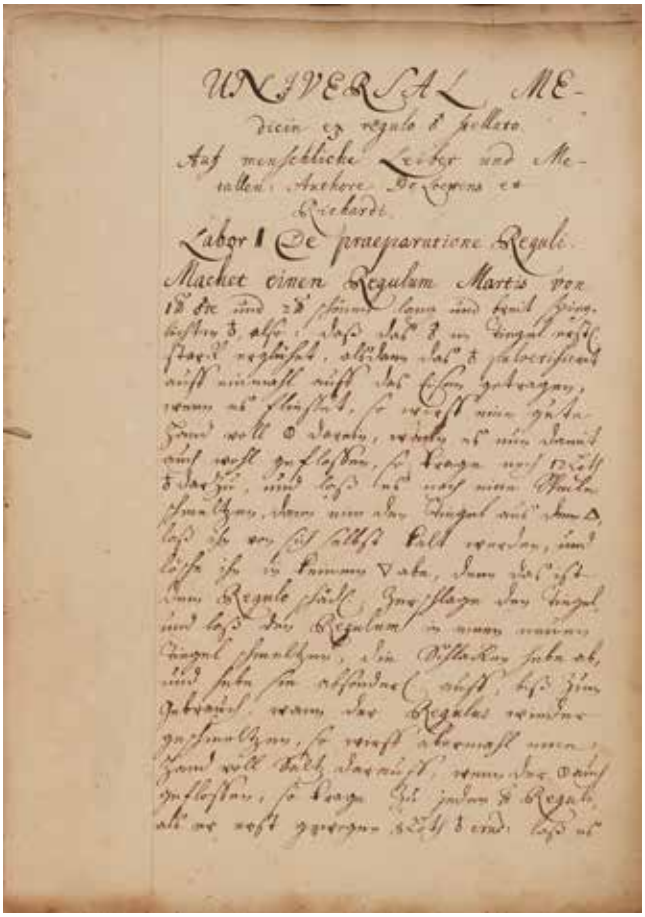
FIRST EDITION of Petty's study on demography and economics in England, Holland and France, rarely found complete as here with all the part-titles. "Political Arithmetick" was a phrase invented by Petty to described the use of statistics in economic theory. Petty studied in Caen, receiving a thorough grounding in Latin, Greek, French, mathematics, astronomy and marine navigation. After serving in the Royal Navy, he furthered his studies in the Netherlands, and became a personal secretary to Thomas Hobbes. He later returned to England and studied medicine at Oxford, where he became an instructor in anatomy. A man of many talents, as was often the case with great men of his era, he was also a professor of music at Gresham College, London. He travelled with Oliver Cromwell's army as physician-general. He served in Parliament and was knighted by Charles II in 1661 and later made surveyor-general of Ireland, where he turned his attention to the social sciences. He concerned himself particularly with taxes, population demographics, and the statistics of monetary exchange, laying much of the groundwork for the science of economics as we know it today. Garrison-Morton 1688; Norman 1688; Wing P-1937.

$3,500 - 4,500

51
KEPLER, JOHANNES, AND JAKOB BARTSCH.
Tabulae Manuales Logarithmicae ad Calculum Astronomicum, in specie Tabb. Rudolphinarum compendiose tractandum mire utiles. Ob defectum prioris Editionis Saganensis multum hactenus desideratae. Quibus accessit in hac Editione Introductio nova curante Joh. Casp. Eisenschmid. Strasbourg: Johannes Pastorius for Theodor Lerse, 1700.
6 parts in one volume. 8vo (154 x 92 mm). 40, [276], [2] pp. Contemporary vellum with original clasps, edges colored blue, very light spotting and browning.

SECOND EDITION, THE FIRST OBTAINABLE EDITION, of the tables used in calculating Kepler's *Rudolpine Tables* of 1627. Published after Kepler's death by his son-in-law, Jacob Bartsch, the first edition was extremely limited due to financial troubles, and Caspar records only one copy, which is defective, of the 1631 edition. Kepler's contribution to science is immeasurable, giving future astronomers three major laws of planetary motion, as well as fundamental theories in optics, geometry and logarithms. Bartsch was an important astronomer in his own right, bringing seven new constellations to the celestial charts with his publication of "Usus Astronomicus Planisphaerii Stellati" in 1624. Caspar 99. Houzeau and Lancaster 12757; Lalande p 338.

$3,000 - 5,000

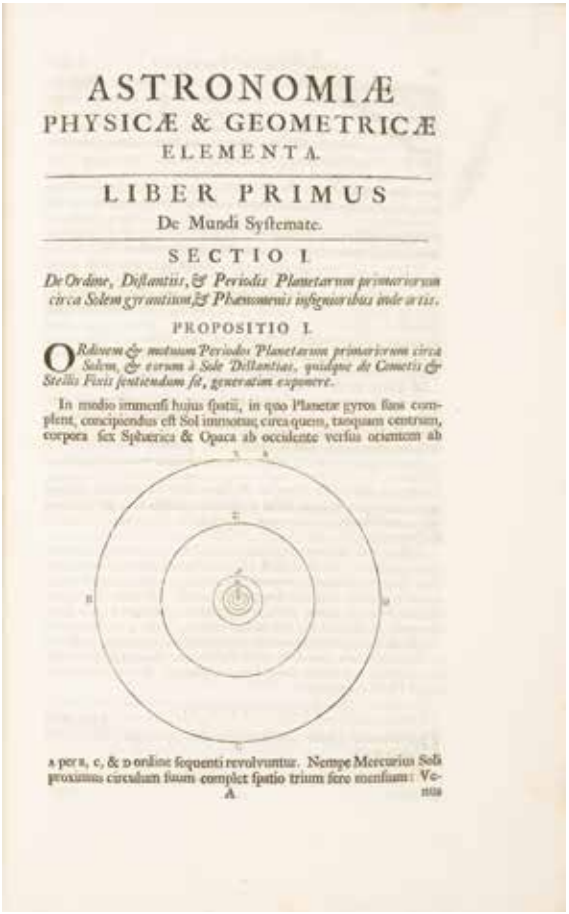


52

52 ¤
ALCHEMY.
Loewens and Richard. *An alchemical manuscript in German and Latin, ink on paper.* N.p. [early 18th-century]. 4to (252 x 185 mm). 130 pp (of 132, lacks second to last leaf). Calf over wooden boards with metal clasps. First few leaves loose, some darkening. Covers detached, chipping, and wear to spine.
Provenance: Wagstaffe's in Brick Lane, London dated 1788 manuscript note on rear free endpaper; Bacstrom, Sigismund, (c. 1750-1805), doctor, translator and collector of alchemical books; Lackington & Co 1805, "A German M.S. on Alchemy, 'This Manuscript belonged a 150 years ago to the Prince Elector of Saxony at Dresden, as mentioned in Kunkel von Loewenstein in his Laboratorium Chemicum,' The above is copied from the list of Mr. Bacstrom's books, which were purchased by Lackington & Co, 1805", manuscript note on rear free endpaper; Bernard Quaritch, 1922, Catalogue 366, item 722.

An interesting example of 18th century alchemical writings with numerous excerpts of recipes of various sources including: LOEWENS and RICHARD. "Universal Medicin ex regulo stellato. Auf menschliche Leiber und Metallen: Autore Dr. Lowens et Richardi." BERNHARDUS TREVISANUS (?) 1406-1490. "Graffens Bernhardi Process mit Auslegung und application communiciert." BECHER, Johann Joachim (1635-1682). "Concordantiae in nostrum descriptum Processum ex variis Authoribus excerptae, ex Becheri Chymischen Glueckshafen." HELMONT, Jan Baptist van. 1580-1644. "Wahre und aufrichtige Description des Menstrui Universalis Alcaheftiri: wie e smit eigener Hanot von dem hochgelehren und hochgelahrten Herrn Johann Baptista von Helmont, is geschrieben und an einem seinere Freunde communiciret worden." In regards to the provenance note by Lackington, we did not find a reference to this work in Kunkell von Loewenstein, Laboratorium Chemicum (available on-line).

$2,000 - 3,000


ASTRONOMIÆ
PHYSICÆ & GEOMETRICÆ
ELEMENTA.

LIBER PRIMUS
De Mundi Systemate.

SECTIO I.
De Ordine, Distantiis, & Periodis Planetarum primariorum circa Solem gyrantium & Phænomenis inde ortis.

PROPOSITIO I.

Ordinem & motuum Periodos Planetarum primariorum circa Solem, & eorum à Sole Distantias, quidque de Cometis & Stellis Fixis sentiendum sit, generatim exponere.

In modo immensi hujus spatii, in quo Planetæ gyros suos complent, concipiendus est Sol immotus; circa quem, tanquam centrum, corpora sex Sphærica & Opaca ab occidente versus orientem ab

a per a, c, & d ordine sequenti revolvuntur. Nempe Mercurius Soli proximus circuitum suum complet spatio trium fere mensium: Ve-
A
nus

53

53
GREGORY, DAVID. 1659-1708.
Astronomiae Physicae & Geometricae Elementa. Oxford: Sheldonian Theatre, 1702.
Folio (369 x 245 mm). [12], 494, [2] pp. Contemporary Cambridge paneled calf, rebacked, spine in 6 compartments with original gilt leather label.
Provenance: armorial book-plate of the Earl of Breadalbane.

FIRST EDITION. Scottish mathematician and astronomer David Gregory was a mathematical prodigy appointed to a professorship at the University of Edinburgh at the age of 24. He corresponded with Isaac Newton and was a supporter of Newton's theories. Learning that there was a position coming open at Oxford as Savilian Professor of Astronomy, Gregory traveled to London and met Newton, who helped him attain the position at Oxford. The two men discussed producing a second edition of Newton's *Principia*, but the work never appeared. His *Astronomiae Physicae & Geometricae Elementa*, his principal work, was the first textbook on gravitational principals and astronomy based upon Newton's principles. Houzeau & Lancaster 9240.

$1,500 - 2,500

54
MONTMORT, PIERRE RÉMOND DE. 1678-1719.
Essay d'Analyse sur les Jeux de Hazard. Paris: J. Quilau, 1708.
4to (249 x 180 mm). [24], 189 [3] pp. Engraved vignette on title, author's name added in manuscript, several headpieces showing gambling scenes, and two engraved figures in text of the backgammon board. Contemporary calf, spine richly gilt, some light wear to joints and spine. Light browning to some gatherings, old library stamp partially removed from title.

FIRST EDITION, FIRST ISSUE, published anonymously without plates and with significant textual differences in comparison with the second issue. Based on the problems set forth by Huygens in his famous treatise *De Ratiociniis in Ludo Aleae* (1657), this book greatly influenced the work of Nicolaus Bernoulli, with whom Montmort corresponded, as well as that of Abraham De Moivre, whom Montmort accused of stealing his ideas.

$1,500 - 2,500

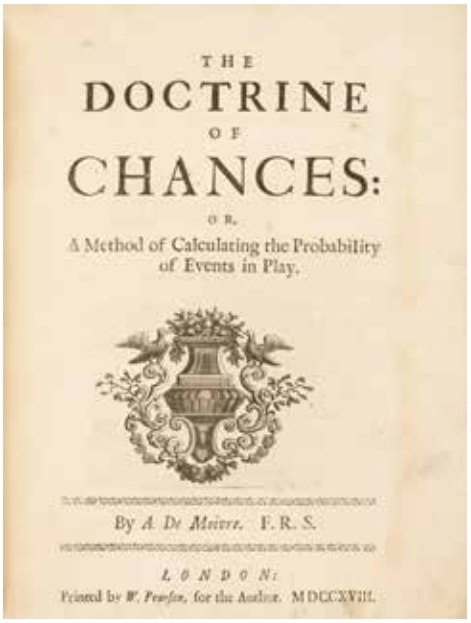

PROBLÊMES
SUR
LES JEUX DE HAZARD.
PREMIERE PARTIE.
DEFINITION I.

54

55
MOIVERE, ABRAHAM DE. 1667-1754.
The doctrine of chances: or, a method of calculating the probability of events in play. London: Printed by W. Pearson, for the author, 1718.
4to (251 x 200 mm). [4], xiv, 175 pp. Woodcut head- and tailpieces. Contemporary paneled calf, front hinge cracked, some light wear to spine ends and corners, light rubbing; cloth folding case. Some darkening and light staining.
Provenance: Charles Meynell, early engraved bookplate.

FIRST EDITION. "His work on the theory of probability surpasses anything done by any other mathematician except Laplace" (Babson 181). This work is dedicated to his close friend, Isaac Newton, a lifetime confidante who called on du Moivre in later years to comment on the Principia. Norman 1529.

$3,000 - 4,000

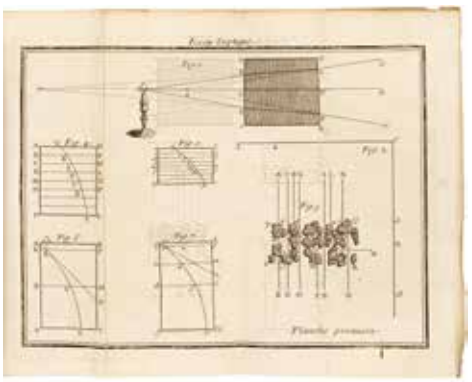

THE
DOCTRINE
OF
CHANCES:
OR,
A Method of Calculating the Probability of Events in Play.
By A. De Moivre, F. R. S.
LONDON:
Printed by W. Pearson, for the Author. MDCCXVIII.

55

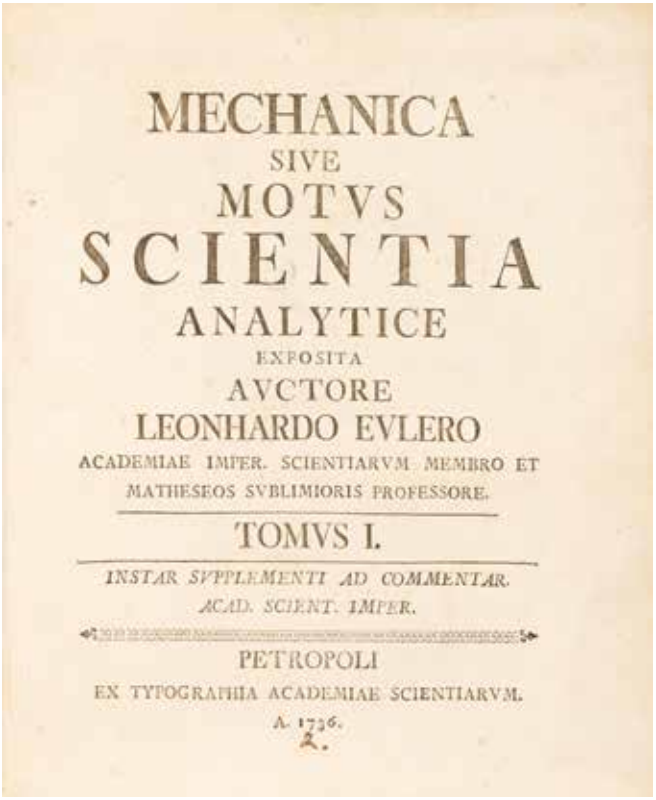
56
BOUGUER, PIERRE. 1698-1758.
Essai d'optique sur la gradation de la lumiere. Paris: Claude Jombert, 1729.
8vo (166 x 100 mm). [22], 164, [4] pp. 3 engraved folding plates. Contemporary mottled calf, spine gilt in 6 compartments, all edges gilt, slight chipping to spine, hinges slightly worn, engraved book plate to front paste down.

FIRST EDITION. The foundational work on photometry, the measurement of light intensity. Pierre Bouguer was the son of a professor of hydrography in Brittany, upon whose death he stepped into the same professorship. His earlier books had all been on hydrography, covering the observation of stars or compass readings for navigation. This essay was his first book on optics, and defined what was originally known as Bouger's Law of optics, but later came to be known as the "Beer-Lambert Law." He traveled with Charles de La Condamine to measure the length of several degrees latitude in order to prove or disprove Newton's assertions about the shape of the earth, publishing his observations on the mission independently following a falling-out between La Condamine and the other scientists on the mission. Norman 283.

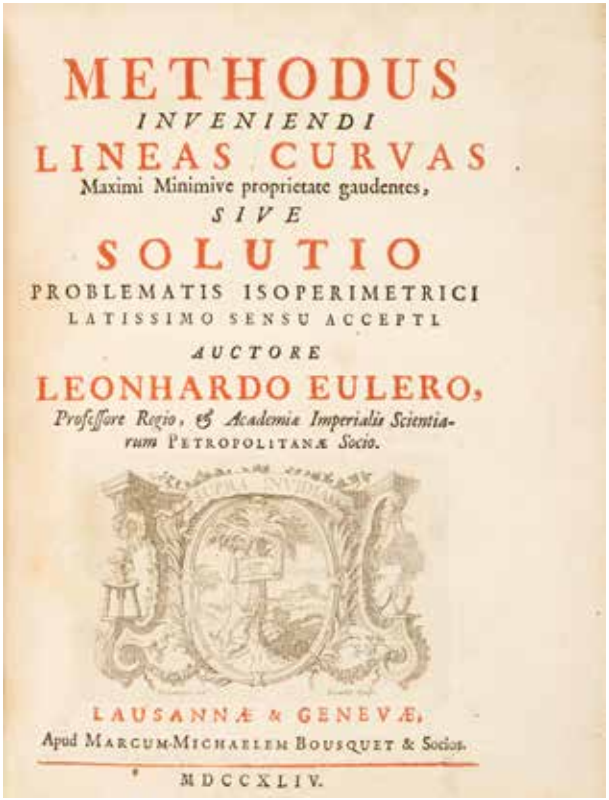
$1,500 - 2,500



56


MECHANICA
SIVE
MOTVS
SCIENTIA
ANALYTICE
EXPOSITA
AVCTORE
LEONHARDO EVLERO
ACADEMIAE IMPER. SCIENTIARVM MEMBRO ET
MATHESEOS SVBLIMIORIS PROFESSORE.
TOMVS I.
INSTAR SVPPLEMENTI AD COMMENTAR.
ACAD. SCIENT. IMPER.
PETROPOLI
EX TYPOGRAPHIA ACADEMIAE SCIENTIARVM.
A. 1736.

57


METHODUS
INVENIENDI
LINEAS CURVAS
Maximi Minimive proprietate gaudentes,
SIVE
SOLUTIO
PROBLEMATIS ISOPERIMETRICI
LATISSIMO SENSU ACCEPTI
AUCTORE
LEONHARDO EULERO,
Professore Regio, & Academiæ Imperialis Scientiarum PETROPOLITANÆ Socio.
LAUSANNÆ & GENEVÆ,
Apud MARCUM-MICHAELEM BOUSQUET & Socios.
MDCCXLIV.

58

57
EULER, LEONHARD. 1707-1783.
Mechanica sive motus scientia analytice exposita.... Saint Petersburg: Academy of Sciences, 1736.
2volumes. 4to (230 x 193 mm). [16] 1-232, 225-480 (i.e., 488); [8], 500 pp. Engraved vignette on dedication leaf and 32 engraved folding plates. Contemporary vellum red edges, ink numbering on upper cover of volume 2.
Provenance: Gotha, Ducal Library, early library stamp and duplicate stamp on verso of title.

FIRST EDITION of Euler's seminal work on mechanics. *Mechanica* won the praise of many leading scientists of the time : Johann Bernoulli said of the work that "it does honor to Euler's genius and acumen," while Lagrange in his own *Mécanique analytique* acknowledges Euler's mechanics to be "the first great work where Analysis has been applied to the science of motion." In the introduction he outlines a program of studies covering every branch of science, but it is his focus on the systematic application of analytical methods that sets the book apart by laying down a foundation of analytical mechanics.

Euler was a talented Swiss mathematician, astronomer, physicist and engineer, who studied at the University of Basel, but spent most of his life in St. Petersburg, teaching at the Imperial Russian Academy of Sciences, and later taking a post at the Berlin Academy. He eventually fell out of favor with the Prussian court and returned to St. Petersburg. He made important discoveries in mathematics, contributing to the development of infinitesimal calculus, along with the Bernoullis, with whom he was closely acquainted. He also made considerable contributions to analytic number theory, graph theory, empirical logic and even music theory. Much of today's mathematical notation was introduced in Euler's work. Poggendorff I: 689.

$6,000 - 9,000

58
EULER, LEONHARD.
Methodus inveniendi lineas curvas maximi minimive proprietate gaudentes. Lausanne & Geneve: Marcum-Michaelem Bosquet & Socios, 1744.
4to (236 x 190 mm). [2], 322, [1] pp. Five engraved folding plates. Contemporary calf, spine gilt in 6 compartments, some scratches to boards, corners worn, spine chipped.

FIRST EDITION of the work considered to be Euler's greatest contribution to mathematics. The publication of this work cemented Euler's reputation as the greatest mathematician of his time. He was the first to define the problems and solutions of the calculus of variations, and his work here provided valuable tools for future generations of mathematicians to apply calculus to real-world physical problems.

$3,000 - 5,000

59

MAUPERTUIS, PIERRE LOUIS MOREAU DE. 1698-1759.

La figure de la terre, déterminée par les observations ... faites par ordre du roy au cercle polaire. Paris: Imprimerie Royale, 1738.
8vo (193 x 123 mm). [24], [4], 184 pp. 9 engraved plates with geometric figures plus 1 engraved map. Contemporary calf, gilt spine, all edges gilt, hinges cracked, minor chipping to spine ends and corners, dampstaining to last few leaves. Heavy erasure to royal arms and crown on title page.

FIRST EDITION of this report of an expedition to the Lapland to determine the shape of the earth. French mathematician Maupertuis, following the theories of Newton, believed the Earth to be oblate and was able to prove the theory as a result of the expedition. He was largely responsible for the acceptance of Newton's theories in France. This account of his adventures in Northern Lapland advanced his reputation as one of Europe's leading scientists.

$800 - 1,200

59

60

D'ALEMBERT, JEAN-BAPTISTE LE ROND. 1717-1783.

Traite de Dynamique, dans lequel les Lois de L'Equilibre & du Mouvement des Corps sont Reduites au plus petit Nombre Possible. Paris: David l'Aîné, 1743.
4to (220 x 168 mm). [4], [32], 186 [2] pp. Engraved title-vignette, head and tail pieces, 5-line initial, and 4 folding plates at end. Contemporary calf, gilt, wear to spine ends and edges, some spotting, light marginal inkstains.
Provenance: T. Blixenstierna, bookplate; The Janus Foundation Library, bookplate, Richard Green, Important Scientific Books, his sale, Christie's New York, 6 June 2008, lot 70.

FIRST EDITION of D'Alembert's first major book, and a landmark work in the history of mechanics, reducing the science to its primary laws and principles. It consists of two parts: the first defining the general laws of motion and equilibrium, and the second covering general principles of the movement of bodies. Its statement that 'the internal for of inertia must be equal and opposite to the forces to produce the acceleration' is still known as d'Alembert's principle.' This principle is applied to many phenomena and, in particular, to the theory of the motion of fluids. It has become useful in the practical solution of many technical and mechanical problems, and is as import for the motion of bodies as is the principle of virtual velocities for their equilibrium." PMM 195; Norman 31.

$3,000 - 5,000


TRAITÉ
DE
DYNAMIQUE,
A PARIS,
M. DCC. XLIII.

60

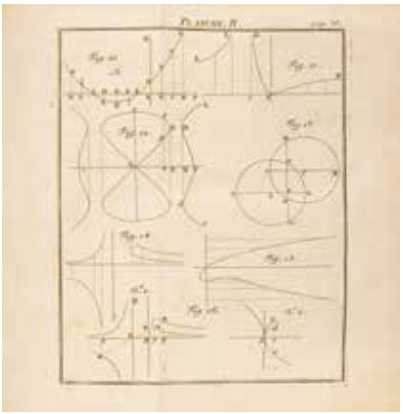
61

CRAMER, GABRIEL. 1704-1752.

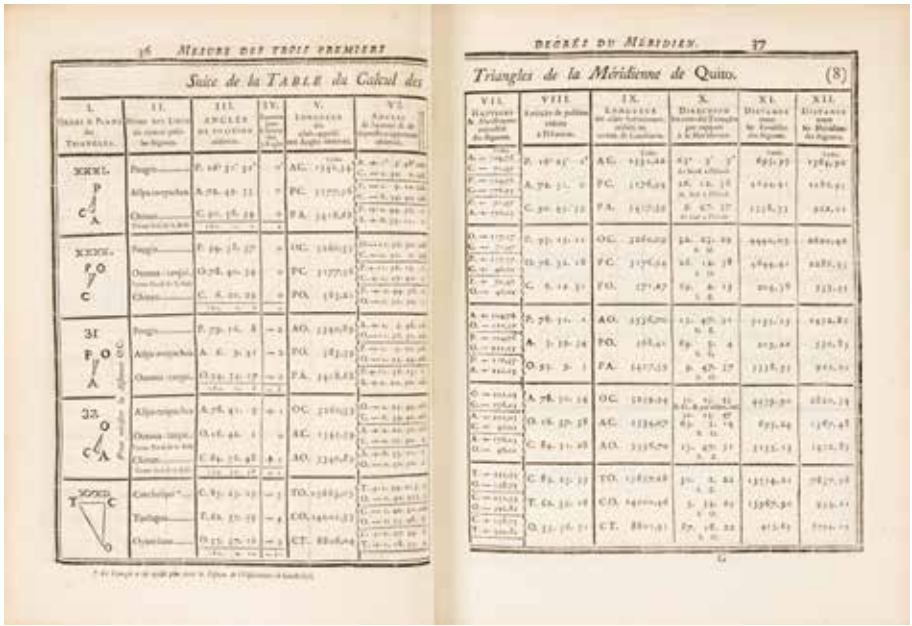
Introduction a l'Analyse des Lignes Courbes Algébriques. Geneva: Freres Cramer & Cl. Philbert, 1750.
4to (234 x 190 mm). [24], 680, [12] pp. 33 engraved folding plates and folding table on page 672. Contemporary calf with spine gilt in 6 compartments, slight chipping to binding, corners bumped, mild browning to interior.

FIRST EDITION of this major treatise on analytical geometry, containing Cramer's theorem and the Cramer-Euler paradox. At the time of its publication, it was the most complete exposition of algebraic curves to date. Cramer's work, along with Euler's, constituted the first textbooks on the subject. Cramer became the co-chair of mathematics at the University of Geneva at the age of twenty, and published editions of works by Jacob and Johann Bernoulli, as well as his own findings on the shape and movement of planets before he was thirty.

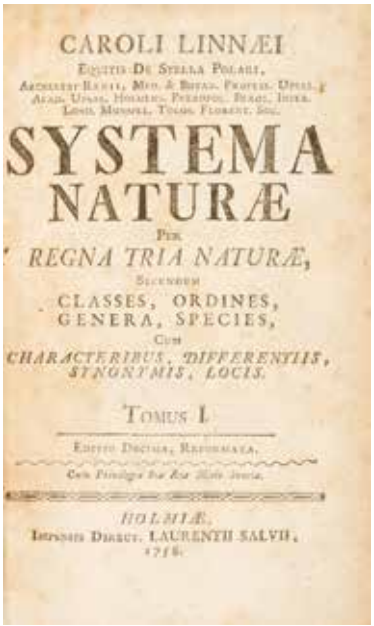
$1,200 - 1,800



61



62



63

62
LA CONDAMINE, CHARLES MARIE DE. 1701-1774
Mesure des Trois Premiers Degrés du Méridien dans l'Hémisphere Austral, Tirée des Observations de M.rs de l'Académie Royale des Sciences, Envoyés par le Roi sous l'Équateur.... Paris: Imprimerie Royale, 1751. BOUND WITH: *Nouveau Projet d'une Mesure invariable, proper a devenir universelle. Extrait d'un Mémoire lû à l'assemblée publique de l'Académie des Sciences, le 24 Avril 1748.* 4to (242 x 191 mm). [2], [8] ("Nouveau Projet" offprint), [10], 266, [10] pp. 3 folding engraved plates. Contemporary sheep, spine gilt in 6 compartments, edges decorated in blue stained patterns, spine edge with some chipping.

FIRST EDITION of La Condamine's report on his ten-year expedition to Peru to measure the length of a degree of longitude along the meridian, in order to confirm Isaac Newton's theory of the oblate shape of the earth. Maupertuis traveled simultaneously to Lapland, but returned with his results first and published them years earlier. La Condamine nonetheless survived a difficult journey beset with personal grievances between him and the other scientists who accompanied him, and published his findings to further cement the standing of Newton in the continental scientific community. Norman 1250; Sabin 38483.

$1,000 - 1,500

63
LINNAEUS, CARL. 1707-1778.
Systema Naturae per Regna tria Naturae, secundum classes, ordines, genera, species cum characteribus, differentiis, synonymis, locis. Editio Decima, reformata. Stockholm: L. Salvius, 1758-59. 2 volumes. 8vo (200 x 125 mm). [4], 823, [1]; [2], 825-1384 pp. Contemporary calf, spines with red gilt lettered label, cloth folding case. Hinges weak and a bit rubbed, some staining to boards, slight chipping to spines, free front endpaper in vol 1 loose, scattered foxing, pencil marks to margins.
Provenance: Gregory M. Matthews, bookplate.

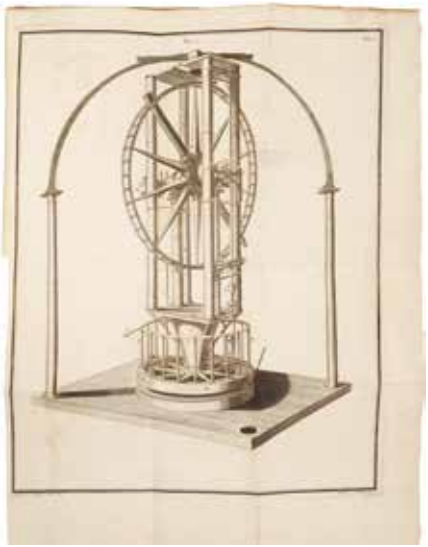
THE IMPORTANT TENTH EDITION, THE DEFINITIVE EDITION, being the first delineation of two essential fields of zoology: taxonomy and nomenclature, and acknowledged as the starting point for modern zoological nomenclature. Linnaeus had a lifelong interest in botany, which became part of his university training in medicine. Shortly after finishing his studies, he published the first edition of *Systema Naturae*, which he continued to revise and expand over time. Dibner 27n; Norman 1359.

$5,000 - 8,000

64
PIAZZI, GIUSEPPE. 1746-1826.
Della Specola Astronomica de' Regi Studi di Palermo, Libri Quattro.
Palermo: Reale Stamperia, 1792.
Folio (370 x 255 mm). [32], 240 pp. 4 folding engraved plates.
Original *carta rustica* binding, minor repairs to spine, smudges and foxing to binding and edges, not affecting text.

FIRST EDITION of Piazzi's account of the Palermo Observatory, which he established, and where he made the observations that led to his discovery of the minor planet Ceres. Included is Piazzi's description of the astronomical instruments he commissioned for the observatory, which he established under the sponsorship of the Viceroy of Sicily, purchasing most of them from England. In particular, he procured a 5-foot diameter vertical altazimuth circle from Jesse Ramsden, a masterpiece of technology at the time. It can still be seen at the observatory today. Piazzi was a Catholic priest who took the chair of mathematics at the University of Malta in 1770. He became a lecturer at the University of Palermo in 1781, which led to his task of establishing the observatory, and ultimately became General Director of observatories in Naples and Sicily. Laland, p 622.

$3,000 - 5,000


64

65
LEGENDRE, ADRIEN-MARIE. 1752-1833.
Essai sur la théorie des nombres. Paris: Duprat, 1797-1798.
4to (258 x 193 mm). [24], 472, [56], [2] pp. 3 interesting manuscript leaves with mathematical contents included. Contemporary gilt-ruled calf, edges colored in red, red leather spine label, light wear and rubbing, a piece of leather scratched from the rear board, prize bookplate, final leaf (publisher's catalog) heavily browned.

FIRST EDITION of Legendre's important early work on number theory, containing his discovery of the law of quadratic reciprocity, which Carl Friedrich Gauss referred to as the "golden theorem." It also contains his conjecture on the prime number theorem, which would be refined in the second edition of 1808.

Born in Paris to a wealthy family, Legendre was educated at Collège Mazarin, taught at the École Militaire and École Normale, and became a member of the Académie des Sciences in 1783. He lost the family wealth in the French Revolution, and the rest of his career was marked by reversals stemming from the changing governments in France. He remained, however, a major figure in the teaching of mathematics in France and one of the most influential mathematicians in Europe until his death.

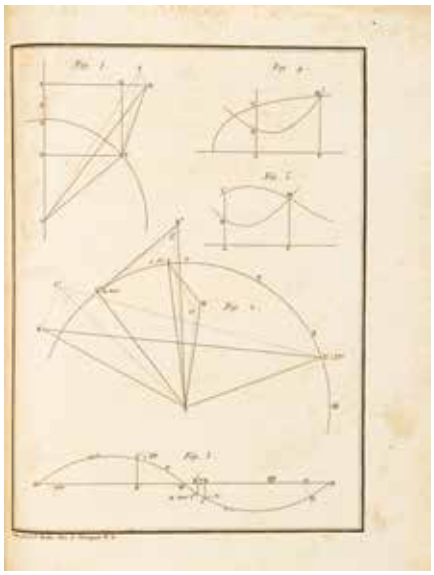
$2,000 - 3,000


65

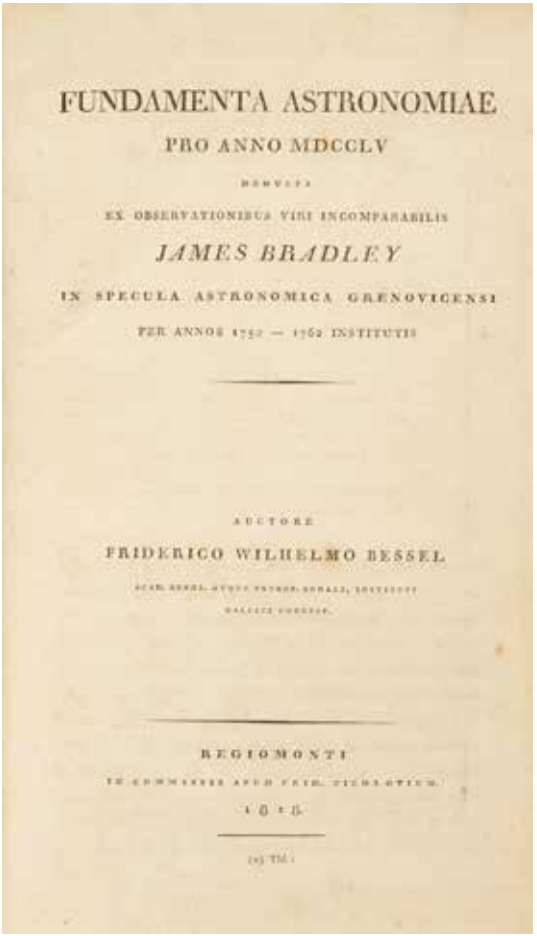
66
LEGENDRE, ADRIEN-MARIE. 1752-1833.
Nouvelles méthodes pour la détermination des orbites des comètes.
Paris: Firmin Didot, 1805.
4to (265 x 210 mm).[8], 80 pp. One engraved plate. Rebacked with original boards, slight spotting in margins, contemporary marginal notations.

FIRST EDITION, FIRST ISSUE, of the first publication of the method of least squares, which was to become the standard approach to regression analysis. The method evolved within the field of astronomy, as part of the statistical analysis of observation of heavenly bodies. Measurements made by Pierre-Simon Laplace for determining the shape of the Earth was used as Legendre's data set for demonstrating his method of algebraic analysis, and the value of the method was immediately obvious to scientists of the time. Carl Friedrich Gauss, in fact, claimed to have been using the method since 1795, although he had not published it prior to Legendre.

$2,500 - 3,500


66

67



68

67
THORNTON, ROBERT JOHN. 1768-1837.
Temple of Flora, or Garden of the Botanist, Poet, Painter and Philosopher. London: Dr. Thornton, 1812.
(390 x 300 mm). 90 pp. Engraved title with vignette, engraved half title, 3 engraved allegorical plates (one hand-colored), 28 colored plates of flowering plants (including the Persian Cyclamen, not found in some copies), stipple, mezzotint or aquatint, some partially printed in colors and finished by hand, all on thick wove paper. Contemporary crimson straight grain morocco decorated in gilt and blind. Cover with some wear especially to edges and hinges (partial split at lower front hinge).

First quarto edition of the *Temple of Flora.* "At the heart of the New Illustration was Thornton's scheme to produce a specifically British botanical publication of a magnificence to surpass all previous examples. Teams of master engravers and colorists, including Francesco Bartolozzi, Richard Earlom, and John Landseer, used the full range of modern printing techniques to produce colored illustrations after paintings by such prominent artists as Sir William Beechey, James Opie, Henry Raeburn, John Russell, Abraham Pether, and his two favoured illustrators, Peter Henderson and Philip Reinagle" (ODNB). The twenty-eight botanical illustrations are justifiably famous for their backgrounds as much as for the botanical depictions. In the distance, one sees churches, sailing ships, the Pyramids at Giza, Indian temples, and mountainous landscapes. Despite the commercial failure of his high-risk literary venture (in which only twenty-eight of the planned seventy plates were produced), its legacy remains as one of the most celebrated and magnificent botanical books in history. Dunthorne 302; Nissen BBI 1955; Stafleu and Cowan 14, 283.

$5,000 - 7,000

68
BESSEL, FRIEDRICH WILHELM. 1784-1846.
Fundamenta astronomiae pro anno MDCCLV deducta ex observationibus viri incomparabilis James Bradley in specula astronomica Grenovicensi per annos 1750-1762 institutis.
Königsberg: Friedrich Nicolovius, 1818.
Folio (330 x 190 mm). [12] 325 [1] pp. Red textured boards with gilt-lettered spine, slight wear to binding, spine lightly sunned, minor yellowing to pages.

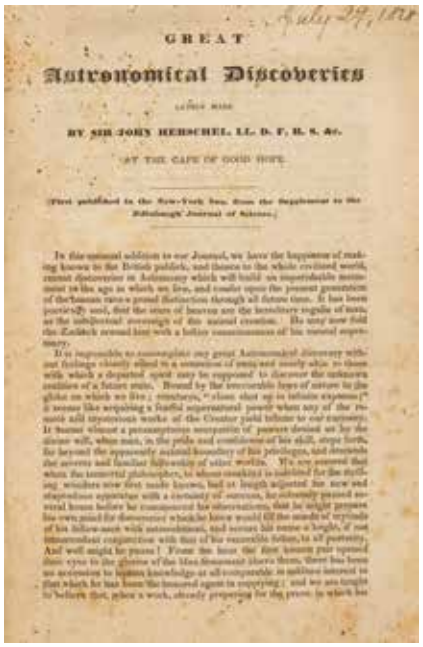
Building on the work of James Bradley, Bessel developed a reference system for the measurement of star positions, taking into account errors in measurement caused by refraction of light. He calculated star positions as observed in the mid-18th century to come up with a common set of positions at a particular time, and published his findings in this work. It gives the proper motions of the stars, as derived from his own and Bradley's observations, as well as those of Giuseppe Piazzi. From this, Bessel developed a principle of astronomical observation that he practiced and taught, making Bradley's observations a starting point for all modern astronomy. Norman 226.

$900 - 1,200

69
THE GREAT MOON HOAX OF 1835.
LOCKE, RICHARD ADAMS. 1800-1871. *Great Astronomical Discoveries Lately Made by Sir John Herscel, L.L., D.F.R.S, etc., at the Cape of Good Hope.* New York: The New York Sun, 1835.
8vo. 28 pp. Later cloth over boards. Foxing throughout, and slight dampstain along top edges.
WITH: *The Moon Hoax, or The Discovery that the Moon Has a Vast Population of Human Beings.* New York: William Gowans, 1859.
Modern black roan over marbled boards. Slight browning, a few pages creased.

"The Great Moon Hoax" was first published in the New York *Sun* starting in August 1835, running as a series of six articles supposedly taken from the *Edinburgh Courant* and falsely attributed to English astronomer Sir John Herschel. The stories claimed that a revolutionary new telescope had revealed winged humanoids and fantastic animals on the moon, as well as buildings, trees and oceans. It greatly increased the circulation of the *Sun*, but Locke eventually came out and admitted authorship of the story.

$1,500 - 2,500


GREAT
Astronomical Discoveries
BY SIR JOHN HERSCHEL, LL. D. F. R. S. &c.
AT THE CAPE OF GOOD HOPE.

69

70
SET OF 7 HAND-COLORED STAR CHARTS.
Hartford: F.J. Huntington, 1835.
Engraved star charts, various sizes, 380 x 340 mm to 360 x 520 mm, hand-colored, engraved by W.G. Evans under the direction of E.H. Burritt for F.J. Huntington, Hartford, Connecticut. Includes two circular Northern and Southern Circumpolar maps, four square celestial maps, and one entitled *Celestial Planisphere or Map of the Heavens*. Fold lines, slight fading. All matted and framed; not examined out of frame.

From Elijah H. Buritt's *Atlas, designed to illustrate the Geography of the Heavens*. There were eight plates in the atlas, one of which was a *Plan of the Solar System* (not present here).

$5,000 - 8,000

70

71
CAUCHY, AUGUSTIN-LOUIS. 1789-1857.
Mémoire sur la Dispersion de la Lumière. In Nouveaux Exercices de Mathématiques. Prague: J.G. Calve, 1835-36.
4to (259 x 202 mm). [4], 236 pp. 19th century half calf and marbled boards, armorial bookplate on front pastedown, rebacked, some browning to pages.

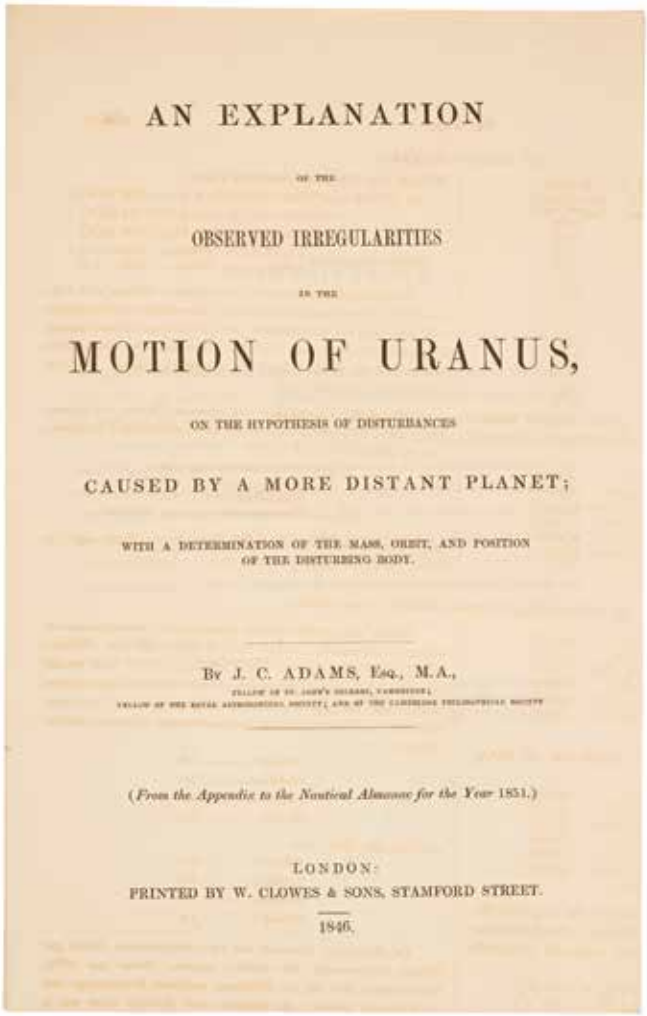
FIRST PUBLICATION OF CAUCHY'S EQUATION, which determined the relationship between the wavelength of light and the refractive index of a material the light passes through. Cauchy produced this publication, which consisted of his own papers, in 1835 and 1836. It was a successor to his earlier *Exercices de Mathématiques*, which he published from 1826 to 1830. A prolific and rigorous mathematician Cauchy's works covered refraction and polarization of light, mechanics, elasticity, number theory and complex functions.

$800 - 1,200


MATHÉMATIQUES,
M. AUGUSTIN LOUIS CAUCHY,
Prague.

71

72



73

72
MACKAY, CHARLES. 1814-1889.
Memoirs of Extraordinary Popular Delusions. London: Richard Bentley, 1841.
3 volumes. 8vo (222 x 137 mm). [iii]-iv, [2], 400; [6], 506; [6] 404 pp. Half-titles in volumes 2 and 3; 5 engraved plates. Late 19th century half morocco gilt, marbled boards, all edges gilt, light fading to spines. Some minor occasional foxing.

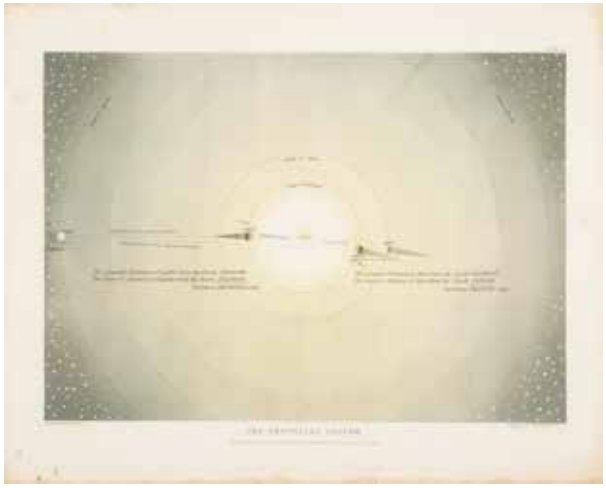
FIRST EDITION of this classic work on crowd psychology, still in print under the title Extraordinary Popular Delusions and the Madness of Crowds. A collection of "the most remarkable instances of those moral epidemics which have been excited ... to show how easily the masses have been led astray" (Preface), describing "popular follies" such as the South Sea Bubble, the Mississippi Scheme, tulipomania, "popular admiration of great thieves," witch mania, "slow poisoners," alchemists, magnetisers, fortune tellers and other economic fads and manias. An important early work of economics and social psychology.

$4,000 - 6,000

73
ADAMS, JOHN COUCH. 1819-1892.
An Explanation of the Observed Irregularities in the Motion of Uranus, on the Hypothesis of Disturbances caused by a more Distant Planet; with a determination of the mass, orbit, and position of the disturbing body. London: W. Clowes & Sons, 1846.
8vo (230 x 145 mm). 31 pp. Offprint from the Appendix to the *National Almanac* for the year 1851. Original printed wrappers, stitched. Light browning, some pages uncut.

FIRST EDITION of Adams' report on his investigations of Uranus between 1843 and 1845. His initial report of his findings, which calculated the likely location and orbit of Neptune based entirely on mathematical calculations of Uranus' observed orbit, was largely ignored, but the French astronomer Urbain Le Verrier was independently making his own calculations, which led to the discovery of Neptune in September, 1846. Only after that was Adams' report published. As a result, the dispute over credit for the discovery has never really been settled.

$1,500 - 2,500

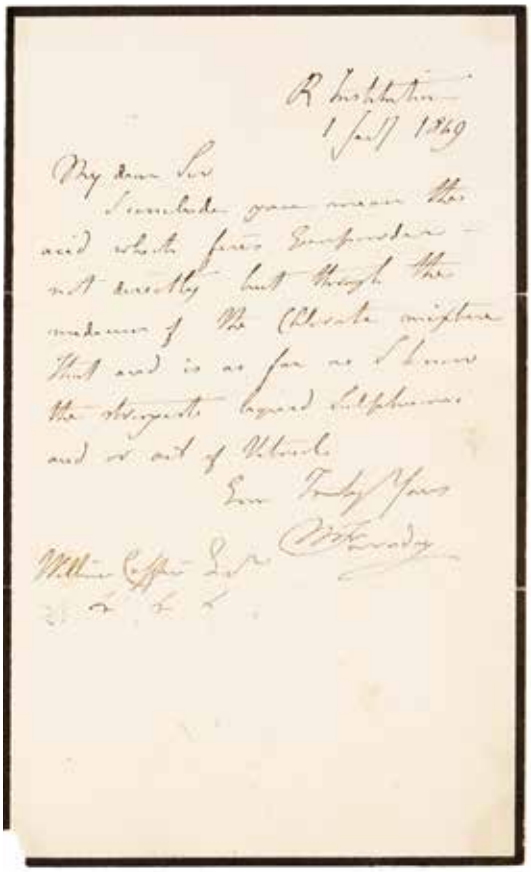


74

74
MUGGLETONIAN PRINTS.
[FROST, ISAAC.] *Six Baxter Prints of the Muggletonian Universe.* 6 loose plates, Baxter prints, approximately 195 x 280 mm each, comprising plates 1, 3, 6, 7, 9, and 10 of the series, after designs by Isaac Frost. Engraved by W.P. Chubb and Son, printed by George Baxter.

Isaac Frost was a prominent member of the Muggletonian sect in the mid nineteenth-century. The Muggletonians, founded in 1651, were originally a non-proselytizing sect, but in the 19th century Frost published *The Two Systems of Astronomy* (1846), denying the Newtonian view of the universe and claiming that the Sun revolved around the Earth. These plates were illustrations for that book, printed by George Baxter with his unique process that utilized a combination of engraved plates and wood blocks.

$1,500 - 2,500

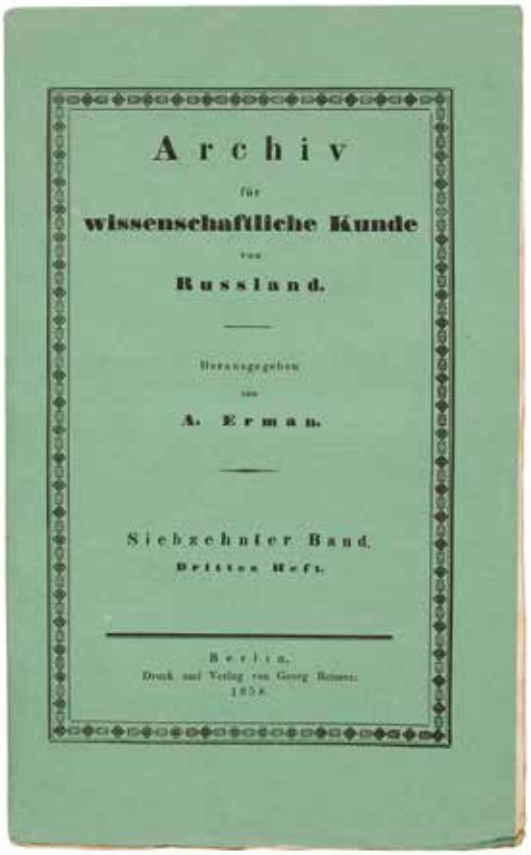


75

75
FARADAY, MICHAEL. 1791-1867.
Autograph Letter Signed ("M. Faraday"), 1 p8vo, "R[oyal] Institution," January 1, 1849, to William Coffin, regarding the acid involved in the reaction of gunpowder, on black-bordered mourning stationery, folds, removed from mount, small chip to lower corner.

Answering a question regarding the chlorate reaction with sulfuric acid, "or oil of vitriol," in gunpowder. Sold with a *carte-de-visite* of Faraday, by John Watkins, annotated "Prof. Faraday" to lower margin.

$500 - 800



76

76
LOBACHEVSKY, NIKOLAI. 1792-1856.
Pangeometrie, oder die auf einer allgemeinen und strengen Theorie der Parallelen gegründeten Hauptsätze der Geometrie. p 341-498 in *Archiv für wissenschaftliche Kunde von Russland*, Volume 17, no 3. Berlin: Georg Reimer, 1858.
8vo (228 x 139 mm). Original green printed wrappers, slight warping and foxing at outside page edges.

FIRST GERMAN EDITION of Lobachevsky's last work on non-Euclidean geometry, dictated by the author, who was then blind, in French. Publication of the little-known German edition was simultaneous with the French edition, both of which were published after his death. In it, he emphasizes the universality of his "imaginary geometry" and gives his most concise formulation of a geometry free of the parallel postulate. He applies differential and integral calculus to non-Euclidian geometry and refines his earlier work.

$1,200 - 1,800

О ПРОИСХОЖДЕНІИ ВИДОВЪ

ВЪ ЦАРСТВАХЪ ЖИВОТНОМЪ И РАСТИТЕЛЬНОМЪ

ПУТЕМЪ ЕСТЕСТВЕННАГО ПОДБОРА РОДИЧЕЙ

ИЛИ

О СОХРАНЕНІИ УСОВЕРШЕНСТВОВАННЫХЪ ПОРОДЪ

ВЪ БОРЬБѢ ЗА СУЩЕСТВОВАНІЕ

СОЧИНЕНІЕ

ЧАРЛЬЗА ДАРВИНА

ПЕРЕВЕЛЪ СЪ АНГЛІЙСКАГО

ПРОФЕССОРЪ МОСКОВСКАГО УНИВЕРСИТЕТА

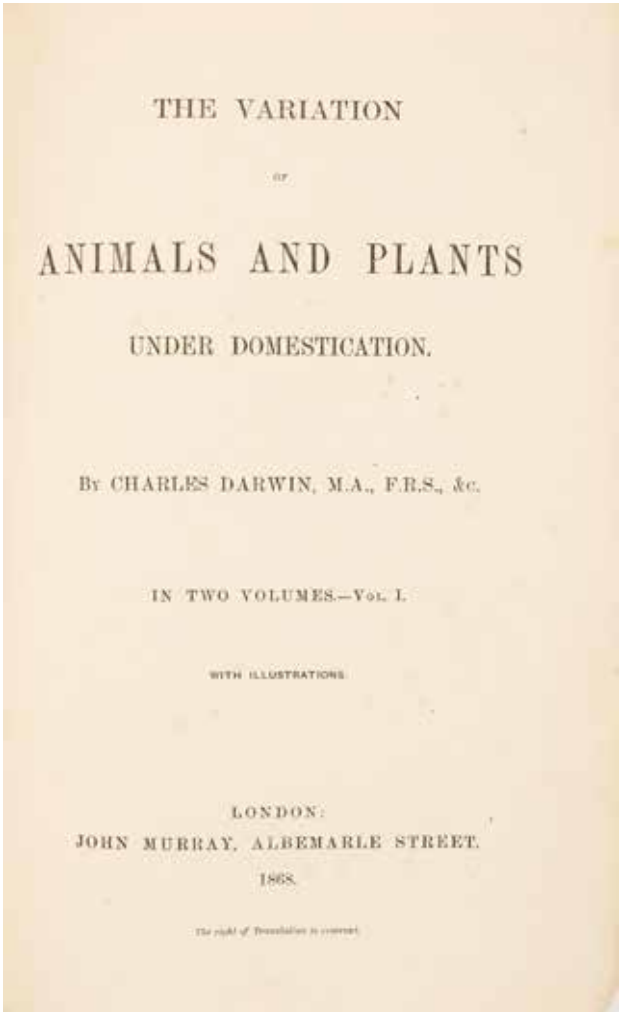
С. А. РАЧЕНСКІЙ

С.-ПЕТЕРБУРГЪ

ИЗДАНІЕ КНИГОПРОДАВЦА А. Ф. ГЛАЗУНОВА

1864

77



THE VARIATION

OF

ANIMALS AND PLANTS

UNDER DOMESTICATION.

By CHARLES DARWIN, M.A., F.R.S., &c.

IN TWO VOLUMES.—Vol. I.

WITH ILLUSTRATIONS.

LONDON:

JOHN MURRAY, ALBEMARLE STREET.

1868.

78

77
DARWIN, CHARLES. 1809-1882.
O proiskhozhdenii vidov. (On the Origin of the Species).
St. Petersburg: A. I. Glazunov, 1864, [1863]. 8vo. [404] pp.
Half morocco over marbled boards. Light wear to edges, top water stain; internal soiling, foxing, some underscoring in ink.

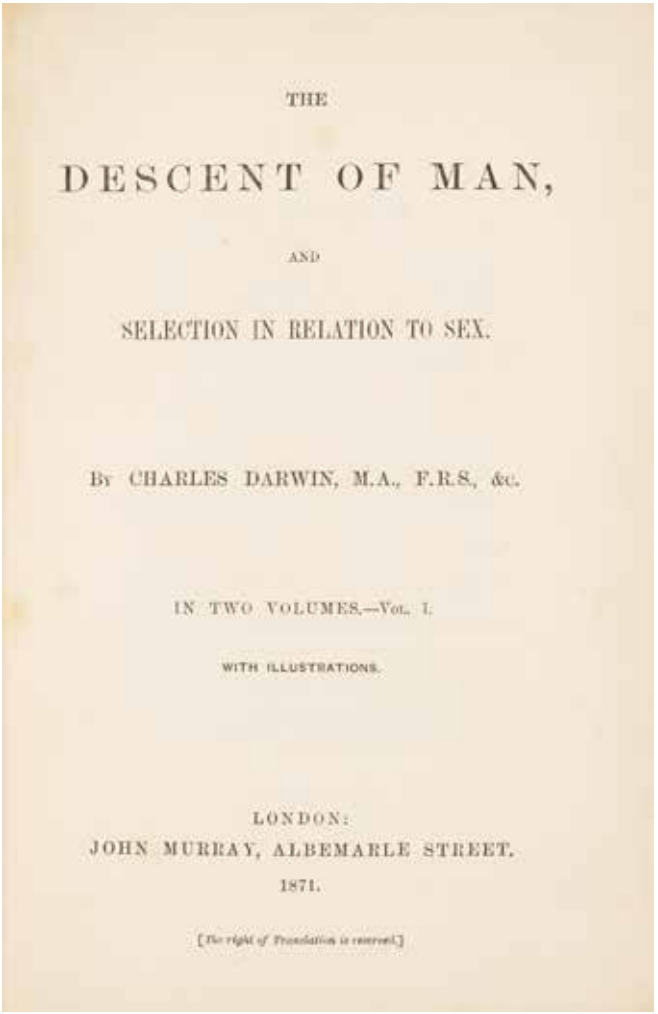
FIRST RUSSIAN TRANSLATION OF THE THEORY OF EVOLUTION, Translated from the sixth English edition by S. A. Rachinskii. All subsequent Russian translations have derived from this earliest one. It includes Darwin's 1860 introduction for the American edition. While it has remained controversial up to the present day in the West, the book was immediately embraced by the Russian scientific community as well as by the general public. Even Orthodox theologians did not object. It sold between 30 and 35,000 copies from 1864 to 1910 in Russia, and over 79,000 between 1926 and 1937 in the USSR.

$7,000 - 10,000

78
DARWIN, CHARLES. 1809-1882.
The Variation of Animals and Plants under Domestication. London: John Murray, 1868.
2 volumes. 8vo (222 x 142 mm). viii, 411 32-page (publisher's catalogue); viii, 486, [2, adverts.] pp. Publisher's catalogue dated April 1867 and February 1868. Illustrated. Original green cloth, blind-stamped, spines gilt-lettered. A bit of paper residue on lower corner of upper cover of vol. I, corners of upper cover of vol. II a bit creased. Occasional minor foxing

FIRST EDITION, second issue. This work "intended to provide overwhelming evidence for the ubiquity of variation" and refuted the idea "that variations had not occurred purely by chance but were providentially directed" (ODNB). It also included the first appearance of the phrase "survival of the fittest." The second issue is distinguished by the single line of errata in vol I, p VI. Freeman 877; Garrison-Morton 224.1; Norman 597.

$400 - 600


THE

DESCENT OF MAN,

AND

SELECTION IN RELATION TO SEX.

By CHARLES DARWIN, M.A., F.R.S., &c.

IN TWO VOLUMES.—Vol. I.

WITH ILLUSTRATIONS.

LONDON:
JOHN MURRAY, ALBEMARLE STREET.
1871.

[The right of Translation is reserved.]

79

80

79
DARWIN, CHARLES. 1809-1882.
The Descent of Man, and Selection in Relation to Sex. London: John Murray, 1871.
2 volumes. 8vo (187 x 126 mm). Half-titles viii, 423, [1], 16 pp publisher's catalogue; viii [2], 475, [1] pp, 16 pp publisher's catalogue; dated January 1871. Engraved illustrations, largely unopened. Original green cloth, blind-stamped, spines gilt-lettered. Hinges of first volume cracked, lower upper corner bumped.

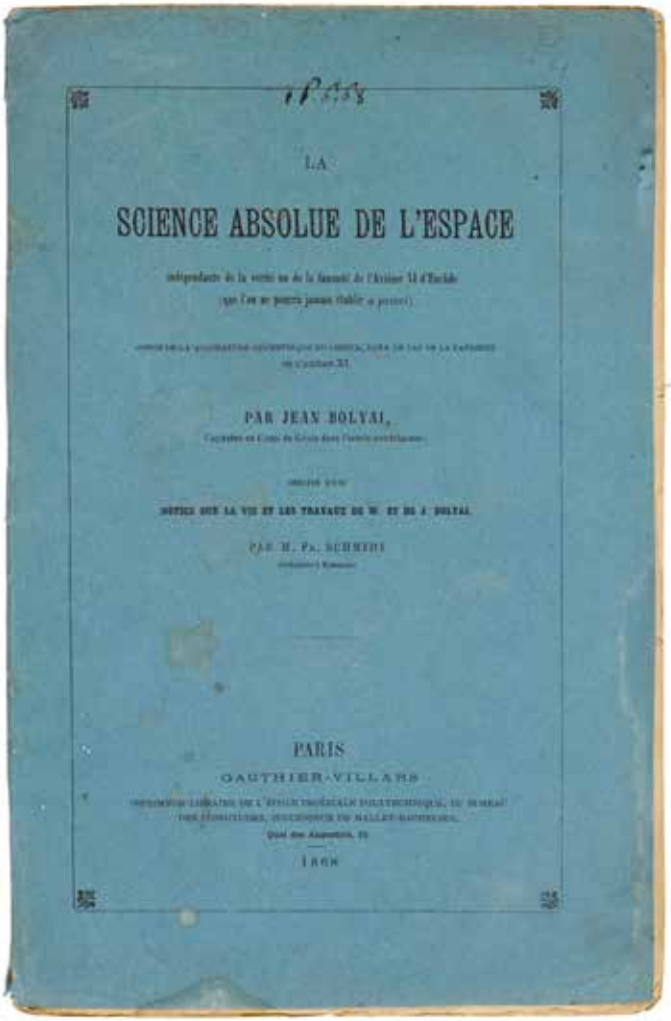
FIRST EDITION, FIRST ISSUE, with the errata on the verso of volume 2 title-page, the "Postscript" leaf in Vol II tipped in after page viii, and "transmitted" appearing as the first word on page 297 of Vol I. Includes the first appearance of the word "evolution" in Darwin's works. Freeman 937; Garrison & Morton 170.

$6,000 - 8,000

80
DARWIN, CHARLES. 1809-1882.
Autograph Note Signed ("Ch. Darwin"), 1 p, 125 x 130 mm, n.p., n.d., folds, mounted beneath a *carte de visite*, framed.

In full, "*I am glad your lectures are going on so well & with many thanks, believe me yours/ very sincerely, Ch. Darwin,"* nicely framed with an Elliot & Fry *carte de visite*, annotated "Prof. Darwin" in a contemporary hand.

$2,000 - 3,000


LA

SCIENCE ABSOLUE DE L'ESPACE

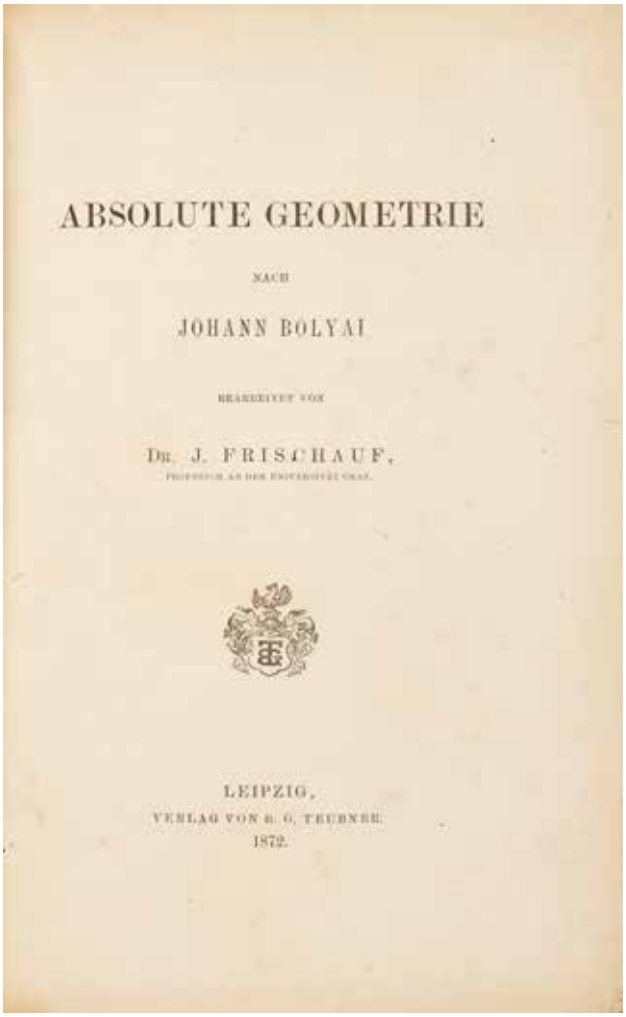
PAR JEAN BOLYAI,

PARIS

GAUTHIER-VILLARS

1868

81


ABSOLUTE GEOMETRIE

JOHANN BOLYAI

Dr. J. FRISCHAUF,

LEIPZIG,

1872.

82

81
BOLYAI, JÁNOS. 1802-1860.
La science absolue de l'espace indépendante de la vérité ou de la fausseté de l'axiôme XI d'Euclide (que l'on ne pourra jamais établir a priori); suivi de la quadrature géométrique du cercle, dans le cas de la fausseté de l'Axiôme XI ... Précédé d'une Notice sur la Vie et les Travaux de W. et de J. Bolyai par M. Fr. Schmidt. Paris: Gauthier-Villars, 1868. 8vo (254 x 166 mm). 64 pp. Original blue printed wrappers. Dampstains to front wrapper, pen and pencil marks on wrapper and title page.

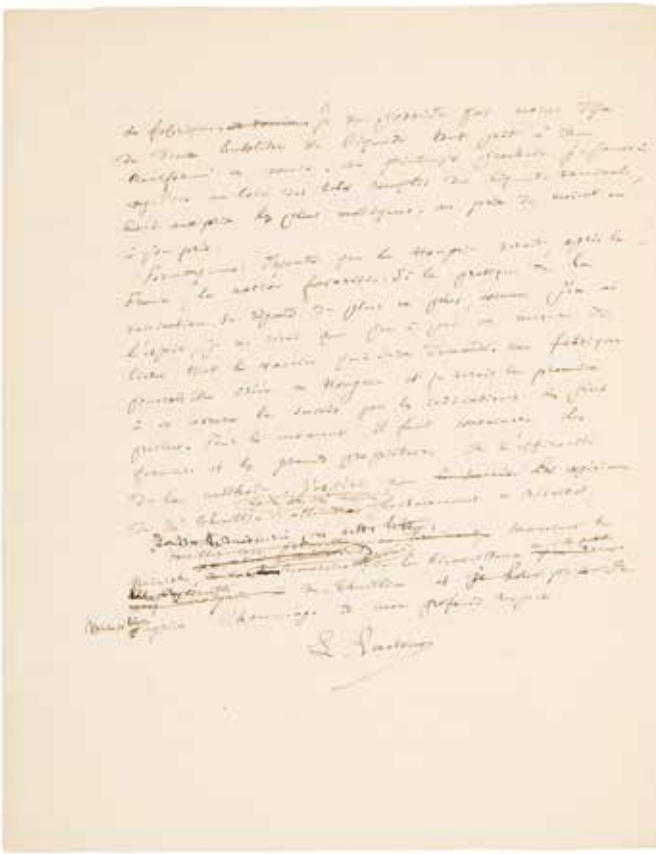
The first separate edition in French of "the most extraordinary two dozen pages in the history of thought" (Halsted), a foundational work of non-Euclidean geometry. Inscribed by the translator Jules Houel to Giusto Bellavitis to half-title. First published in 1832, as an appendix to a larger work by his father, Farkas, by a small Hungarian academic press in an edition no larger than 150 copies, "Appendix Scientiam Spatii Absolute Veram Exhibens" presented a logically based, non-Euclidean system. Bolyai's ideas as expressed here were the first indications of the possibilities that would lead to Einstein's Relativity, and other important mathematical concepts. Dibner 116; Norman 259.

$800 - 1,200

82
BOLYAI, JÁNOS. 1802-1860.
Absolute Geometrie ... Bearbeitet von Dr. J. Frischauf. [bound with] FRISCHAUF: Elemente der Absoluten Geometrie. Leipzig: B.G. Teubner, 1872/1876. 2 volumes in one. 8vo (232 x 150 mm). [12], 96; [6], 142 pp. Contemporary quarter-calf and marbled boards, rebacked with the original spine laid on, paper label on upper cover, corners bumped.

FIRST EDITION IN GERMAN of Bolyai's *Appendix Scientiam Spatii Absolute Veram exhibens*, translated by Frischauf, along with his 1876 revision, which includes reference to Labatschewsky and other earlier students of these new doctrines.

$700 - 1,000



83

84

83
PASTEUR, LOUIS. 1822-1895.
Autograph Letter Signed ("L. Pasteur"), 2 pp, 4to (conjoining leaves), Paris, 4 October 1881, to Baron de Kemeny, the Hungarian ambassador in Paris, who had asked Pasteur to give his country the anthrax vaccine. Bearing several corrections and deletions, and presumed to be a draft, as a copy of the letter in the archives of the *Institut Pasteur* is believed to be the copy sent to Baron de Kemeny. Creases, minor yellowing.

Pasteur discusses the methods of inoculation that can be employed in the use of his anthrax vaccine, and insists on maintaining control over the production and distribution of the vaccine:*"...to ensure its full value, a lot of time and even expense are required. One has daily to test, so to speak, the state of the virulent anthrax parasite as it progressively changes, and this testing can be achieved only by means of inoculations practiced on animals, and finally on a large enough number of sheep ... Furthermore, allow me to point out the fact that out of caution and so as not to compromise the success of a method which is tricky, to say the least, I wish very much that, for at least a year, any vaccine used by sheep or livestock breeders be prepared by me or under my immediate supervision."* He goes on to suggest that a factory could be built in Hungary to produce the vaccine.

Louis Pasteur was a professor of chemistry at the University of Lille, studying problems in the fermentation process, who took the existing germ theory and expanded it by demonstrating decisively that micro-organisms were responsible for fermentation and spoilage of wine and beer. He discovered that the organisms could be killed by boiling the liquids - the process we now know as Pasteurization. His first vaccine, for chicken cholera, was discovered in 1879, and he went on to develop vaccines for anthrax, tuberculosis, smallpox, and rabies.

$7,000 - 10,000

84
LUNAR PHOTOGRAPHY.
LOEWY, MAURICE and PIERRE PUISEUX. *Photographie Lunaire* Paris: Observatoire de Paris, 1896-1908. 16 Heliogravure plates from *Atlas Photographique de la Lune*, folio (572 x 467 mm), of which 14 are full-page images, along with two smaller images entitled *Cliche du 19 Septembre 1894* and *Cliche du 7 Mars 1897*. One plate with tear across image, others with chips, dampstains, foxing and tears, mostly to margins.

Loewy and Puiseux assembled painstakingly photographed images of the moon into an atlas of 82 plates, which were sold by subscription over a period of time. The quality of their lunar photography was unsurpassed until at least the 1970s.

$5,000 - 8,000


Профессоръ И. П. Павловъ.

ЛЕКЦІИ

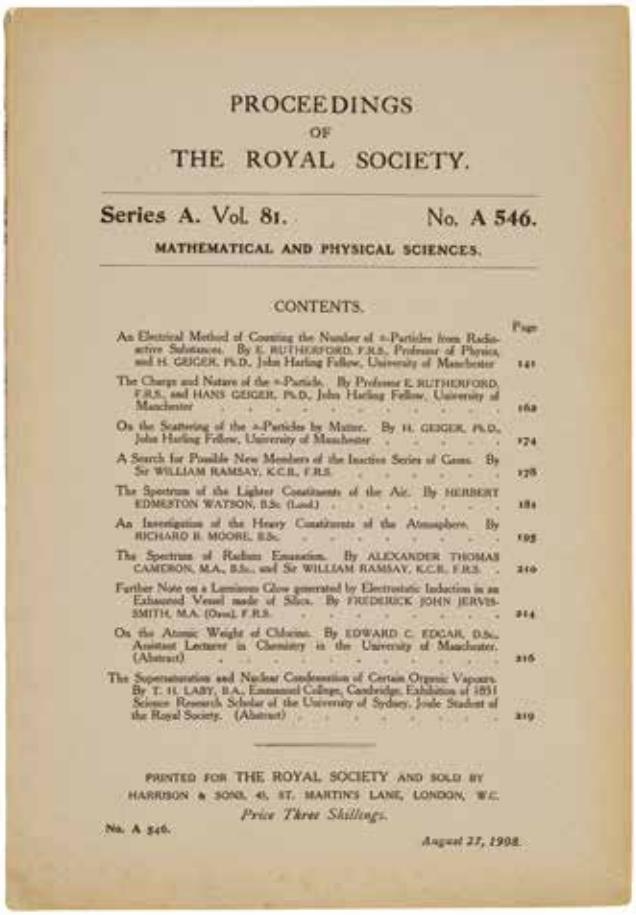
О

РАБОТѢ ГЛАВНЫХЪ

ПИЩЕВАРИТЕЛЬНЫХЪ ЖЕЛЕЗЪ.

С.-ПЕТЕРБУРГЪ.
1897.

85


PROCEEDINGS
OF
THE ROYAL SOCIETY.

Series A. Vol. 81. No. A 546.

MATHEMATICAL AND PHYSICAL SCIENCES.

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The Supersaturation and Nuclear Condensation of Certain Organic Vapours. By T. H. LABY, B.A., Emmanuel College, Cambridge; Exhibition of 1851 Science Research Scholar of the University of Sydney; Joule Student of the Royal Society. (Abstract) . . . 219

PRINTED FOR THE ROYAL SOCIETY AND SOLD BY HARRISON & SONS, 45, ST. MARTIN'S LANE, LONDON, W.C.

Price Three Shillings.

No. A 546. *August 27, 1908.*

86

85
PAVLOV, IVAN PETROVICH. 1849-1936.
Lektsii o rabote glavnykh pischevaritelnykh zhelez. [Lectures on the Work of the Main Digestive Glands.] St. Petersburg: MPS (I. N. Kushnerev i ko), 1897.
8vo. [225] pp. Rebound in three-quarter calf over beveled marbled boards.

WITH: Vintage photograph of I. A. Pavlov in later life, 4 1/4 x 5 3/4 inches, identified in Cyrillic on verso in purple ink ("Akademik Pavlov" [Academician Pavlov]), some wear along edges.

FIRST EDITION OF THE SEMINAL WORK ON BIOLOGY AND NEUROLOGY, containing the first expression of what Pavlov would later term the "conditioned reflex." After twelve years of experimentation with canine digestion and conditioned and unconditioned response, Pavlov published his findings in this celebrated collection of his lectures. In 1904, Pavlov received the Nobel Prize in Physiology or Medicine for this work and became the first Russian Nobel laureate. It was officially awarded "in recognition of his work on the physiology of digestion, through which knowledge on vital aspects of the subject has been transformed and enlarged." Garrison-Morton 1022. PMM 385.

$7,000 - 10,000

86
RUTHERFORD, ERNST, AND HANS GEIGER.
An electrical method of counting the number of alpha-particles from radioactive substances. In *Proceedings of the Royal Society* Series A, Vol 81, No 546 (August 27, 1908). London: Harrison & Sons for The Royal Society, 1908.
8vo (256 x 177 mm). pp 141-220. Original gray printed wrappers, very slight chipping to spine.

FIRST EDITION of this paper that described the invention of the Geiger counter, the device that made possible the alpha-particle scattering experiment carried out later by Geiger and Marsden, which in turn led Rutherford to the discovery of the atomic nucleus. The detector consisted of a wire in a low-pressure chamber with a voltage applied across the wire and the outside of the tube. When an ionizing particle comes into contact with the wire, it disturbs the system enough to complete the circuit, and the resulting connection can be detected by an audible click. Thus it was possible to detect and count alpha particles, allowing Rutherford to devise an experiment to determine the charge of an alpha particle.

$700 - 1,000

87

MINKOWSKI, HERMANN. 1864-1909.

Raum und Zeit: Vortrag, gehalten auf der 80. Naturforscher-Versammlung zu Köln am 21. September 1908. Leipzig & Berlin: B.G. Teubner, 1909.

8vo (261 x 178 mm), 21 pp. Half-tone portrait frontispiece after photograph by Emil Loges. Original buff printed wrappers. First separate printing. Wear to spine, light damp stain to rear wrapper, corners slightly bumped.

FIRST SEPARATE EDITION, commissioned as an offprint after Minkowski's sudden death from appendicitis. This paper elaborated the four-dimensional theory of space-time, which Minkowski originated in 1907, and under which Einstein's theory of special relativity could be better represented and understood. Norman 1514; PMM 401.

$700 - 1,000

88

GEIGER, HANS, AND ERNEST MARSDEN.

On a Diffuse Reflection of the alpha-Particles. In *Proceedings of the Royal Society*, Series A, vol. 82, no. 557. London: Harrison and Sons, 1909.

8vo (257 x 175 mm). 6 pp paginated 495-500. Original printed wrappers. Minor yellowing, small tear to back wrapper.

This article first published the findings of the Geiger-Marsden experiment (or gold foil experiment) which first revealed the existence of atomic nuclei, leading to the development of Ernest Rutherford's planetary model of the atom. This was accomplished by directing alpha-particles towards a very thin gold foil film, and discovering that most of them passed through the foil, with only a very small number of particles reflected back towards the source after colliding with the nuclei of gold atoms. From this, Rutherford concluded that most of the interior of atoms was empty space, with the nucleus taking up only a small amount, and the electrons circling some distance away.

$700 - 1,000

89

TSIOLKLOVSKII, KONSTANTIN EDUARDOVICH. 1857-1935.

Collection of eight scientific pamphlets, comprising: 1. *Budushchee zemli i chelovechestva.* [The Future of the Land and Humanity.] Kaluga: The Author, 1928. 8vo. 28 pp. Original tan wrappers. Minor wear. 2000 copies.
2. *Liubov k samomu sebe, ili stinnoe sebyaliubie.* [Love of Self or True Self-Love.] Kaluga: The Author, 1928. 8vo. 28 pp. Original tan wrappers. Minor wear.
3. *Moya pishushchaya mashina.* [My Typewriter.] Kaluga: The Author, 1928. With charts. 8vo. 27 pp. Original gray wrappers. Minor wear. 2000 copies.
4. *Um i strasti.* [Mind and Passion.] Kaluga: The Author, 1928. 8vo. 27 pp. Original tan wrappers. Minor wear. 2000 copies.
5. *Sovremennoe sostoyanie zemli.* [The Current State of the Earth.] Kaluga: The author, 1929. 8vo. 36 pp. Original pink wrappers. Minor wear. 2000 copies.
6. *Tseli zvezdoplavaniya.* [Aims of the Starfish.] Kaluga: The Author, 1929. 8vo. 40 pp. Original pale green wrappers. Minor wear. 2000 copies.
7. *Nauchnaya etika.* [Scientific Ethics.] Kaluga: The Author, 1930. 8vo. 68 pp. Original pale green wrappers. Minor wear.
8. *Dirizhabli.* [Dirigibles.] Kaluga: The Author, 1931. 8vo. [32] pp. Original violet wrappers. Glue residue on back wrapper. 2000 copies.

FIRST EDITIONS OF THESE RARE PAMPHLETS. K.E. Tsioklovskii was an eccentric scientist and inventor, a recluse who is now considered the father of modern rocketry and space research. Fueled by Jules Verne's science fiction, he came up with ideas that may have seemed preposterous at the time but have since proven to be feasible. Although remembered primarily for his contributions to aeronautics, Tsioklovskii was interested in a vast variety of subjects as suggested by these pamphlets.

$2,500 - 3,500


RAUM UND ZEIT

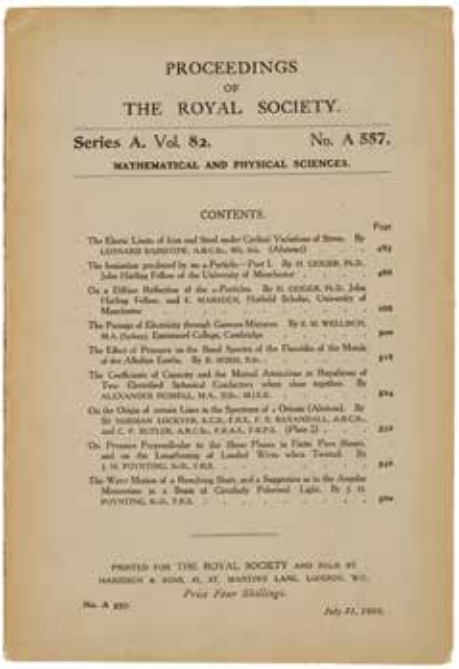
VORTRAG, GEHALTEN AUF DER 80. NATURFORSCHER-VERSAMMLUNG ZU KÖLN AM 21. SEPTEMBER 1908

von

HERMANN MINKOWSKI

LEIPZIG UND BERLIN
DRUCK UND VERLAG VON B. G. TEUBNER

87


PROCEEDINGS
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Series A. Vol. 82. No. A 557.

MATHEMATICAL AND PHYSICAL SCIENCES.

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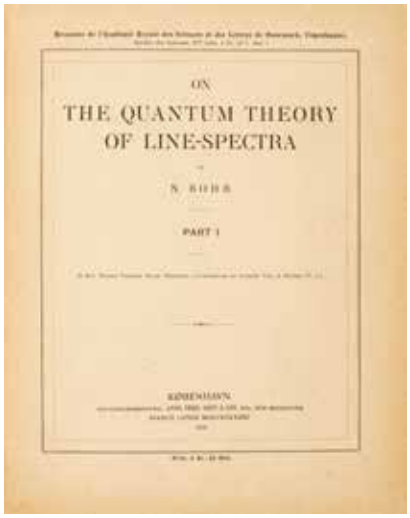
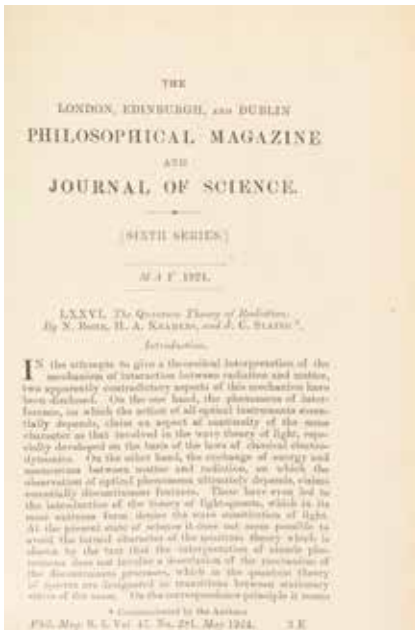

ON
THE QUANTUM THEORY
OF LINE-SPECTRA
N. BOHR
PART I

90

90
BOHR, NIELS. 1885-1962.
On the Quantum Theory of Line-Spectra, I-III. Copenhagen: Bianco Luno, 1918-1922.
4to. (268 x 218 mm). 118 pp. Published as Fasc. 1-3, no 1, vol.4 of the 8th series of *Mémoires de l'Académie Royale des Sciences et des Lettres de Danemark*, all three parts bound in one volume. Later half morocco over boards, retaining original wrappers in binding.

This fundamental paper by Niels Bohr gives the first clear formulation of his "correspondence principal." Considered by many to be his greatest contribution to physics, this principal states that there must be a fundamental analogy between quantum theory and classical physics.

$1,200 - 1,800


THE
LONDON, EDINBURGH, AND DUBLIN
PHILOSOPHICAL MAGAZINE
AND
JOURNAL OF SCIENCE.
[SIXTH SERIES.]
LXXVI. *The Quantum Theory of Radiation.*
IN the attempts to give a theoretical interpretation of the

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91
BOHR, NIELS, H.A. KRAMERS, AND J.C. SLATER.
The quantum theory of radiation. In *Philosophical Magazine*, Sixth Series, Vol. 47, No. 281 (May 1924). London: Taylor & Francis, 1924.
8vo (221 x 145 mm). [ii], 785-1056 pp. Two plates (numbered VI and VII). Original printed wrappers, some chipping to spine, minor creasing.

FIRST EDITION of Bohr, Kramers, and Slater's influential paper on the interaction of light and matter. Printed simultaneously in German in *Zeitschrift fur Physik*, the paper came about from correspondence between Kramers and Bohr (who had won the Nobel Prize in 1922), and rejected the classical laws of electrodynamics, proposing a purely statistical approach. Although elements of what the authors proposed were later disproven, their primary position changed the approach to all study of atomic science that followed.

$700 - 1,000


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REYNOLDS & BRANSON, Ltd.
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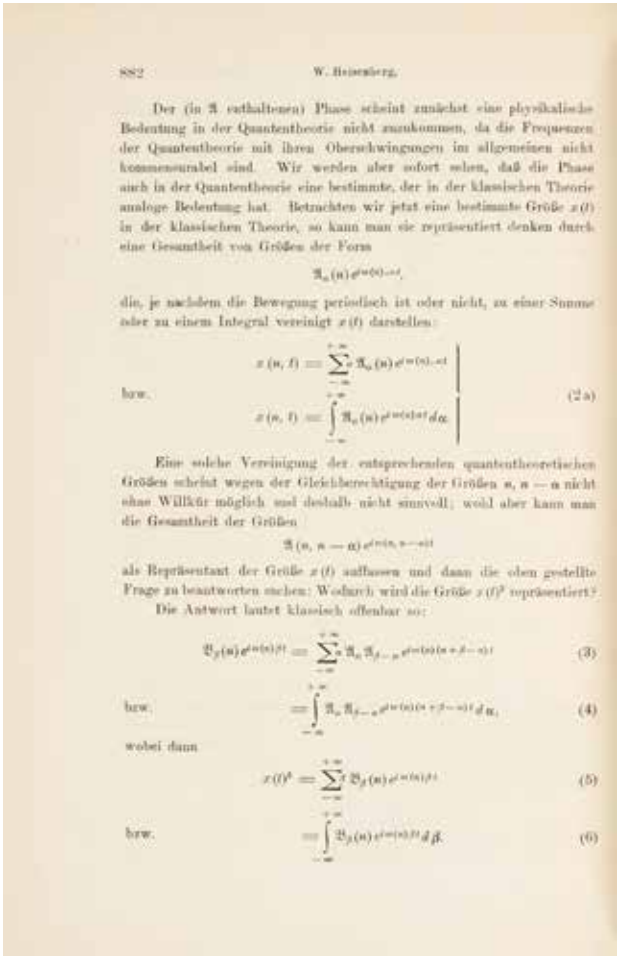
RECORDING THERMOMETERS

92

92
BOHR, NIELS. 1885-1962.
The Quantum Postulate and the Recent Development of Atomic Theory. Pp 580-590 in *Nature*, vol 121, no 3050 (April 14, 1928). London: Macmillan, 1928.
4to. Original wrappers, staples removed, vertical crease to front wrapper and first several pages, one advertisement page with an advert cut out, staples tarnished.

FIRST EDITION of this fundamental paper introducing Bohr's statement of his "complementarity" principle, the basis of what became known as the "Copenhagen interpretation" of quantum mechanics. The principle grew out of discussions with Heisenberg in Copenhagen in 1927, and introduced the idea that natural phenomena could be described by mutually exclusive yet complementary viewpoints. He pointed out that in the realm of quantum mechanics, contrary to that of classical science, no observation of a system can be made without disturbing the system itself. This represented a radically new viewpoint on the role and meaning of scientific investigation.

$1,200 - 1,800



882 W. Heisenberg.

Der (in $\mathfrak{A}$ enthaltenen) Phase scheint zunächst eine physikalische Bedeutung in der Quantentheorie nicht zuzukommen, da die Frequenzen der Quantentheorie mit ihren Oberschwingungen im allgemeinen nicht kommensurabel sind. Wir werden aber sofort sehen, daß die Phase auch in der Quantentheorie eine bestimmte, der in der klassischen Theorie analoge Bedeutung hat. Betrachten wir jetzt eine bestimmte Größe $x(t)$ in der klassischen Theorie, so kann man sie repräsentiert denken durch eine Gesamtheit von Größen der Form

$$\mathfrak{A}_n(n)\,e^{2\pi i\nu(n)\cdot t},$$

die, je nachdem die Bewegung periodisch ist oder nicht, zu einer Summe oder zu einem Integral vereinigt $x(t)$ darstellen:

$$x(n,t) = \sum_{-\infty}^{+\infty} \mathfrak{A}_n(n)\,e^{2\pi i\nu(n)\cdot t} \quad \text{bzw.} \quad x(n,t) = \int_{-\infty}^{+\infty} \mathfrak{A}_n(n)\,e^{2\pi i\nu(n)\cdot t}\,dn \qquad (2\,a)$$

Eine solche Vereinigung der entsprechenden quantentheoretischen Größen scheint wegen der Gleichberechtigung der Größen $n, n-n$ nicht ohne Willkür möglich und deshalb nicht sinnvoll; wohl aber kann man die Gesamtheit der Größen

$$\mathfrak{A}(n, n-n)\,e^{2\pi i(\nu n,\, n-n)\cdot t}$$

als Repräsentant der Größe $x(t)$ auffassen und dann die oben gestellte Frage zu beantworten suchen: Wodurch wird die Größe $x(t)^2$ repräsentiert?

Die Antwort lautet klassisch offenbar so:

$$\mathfrak{B}_\beta(n)\,e^{2\pi i\nu(n)\beta t} = \sum_{-\infty}^{+\infty} \mathfrak{A}_n\,\mathfrak{A}_{\beta-n}\,e^{2\pi i\nu(n)(n+\beta-n)\cdot t} \qquad (3)$$

bzw.

$$= \int_{-\infty}^{+\infty} \mathfrak{A}_n\,\mathfrak{A}_{\beta-n}\,e^{2\pi i\nu(n)(n+\beta-n)\cdot t}\,dn, \qquad (4)$$

wobei dann

$$x(t)^2 = \sum_{-\infty}^{+\infty} \mathfrak{B}_\beta(n)\,e^{2\pi i\nu(n)\beta t} \qquad (5)$$

bzw.

$$= \int_{-\infty}^{+\infty} \mathfrak{B}_\beta(n)\,e^{2\pi i\nu(n)\beta t}\,d\beta. \qquad (6)$$

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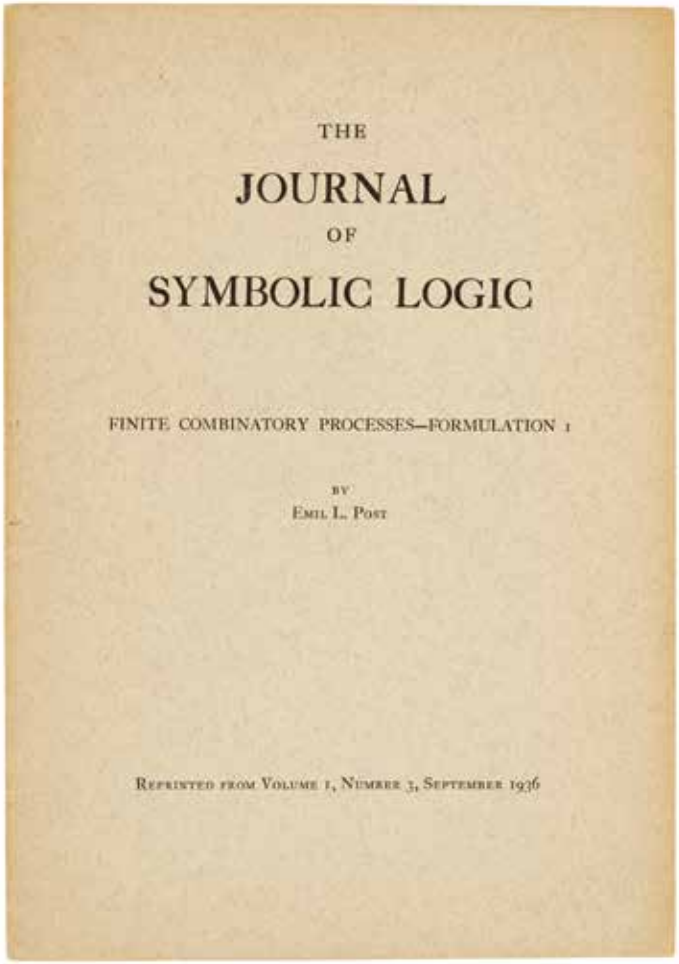

THE

JOURNAL

OF

SYMBOLIC LOGIC

FINITE COMBINATORY PROCESSES—FORMULATION 1

BY

EMIL L. POST

REPRINTED FROM VOLUME 1, NUMBER 3, SEPTEMBER 1936

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HEISENBERG, WERNER. 1901-1976.

Über quantentheoretische Umdeutung kinematischer und mechanischer Beziehungen. Pp 879-893 in vol 33 of *Zeitschrift für Physik*. Berlin: Julius Springer, 1925.
8vo. 950 pp. Contemporary half calf with gilt ruled spine lettering, minor scuffing to boards, thumbed.

FIRST EDITION of Heisenberg's breakthrough paper announcing the discovery of matrix mechanics. Along with Max Born and Pascual Jordan, Heisenberg created a conceptually independent formulation of quantum mechanics that exchanged the electron orbits of Bohr's model of the atom with a model that interpreted the physical properties of particles in the form of matrices. Heisenberg had retreated to the island of Helgoland, which is free of pollen, to escape attacks of hay fever in 1925. Pondering the problem of calculating the spectral lines of hydrogen atoms, he had an epiphany at three o'clock in the morning, and formulated this paper—the first of three that established matrix mechanics. He sent it to Max Born, describing it as a "crazy paper," to review it prior to publishing his results. It led ultimately to a Nobel Prize in Physics for Heisenberg in 1932.

$2,000 - 3,000

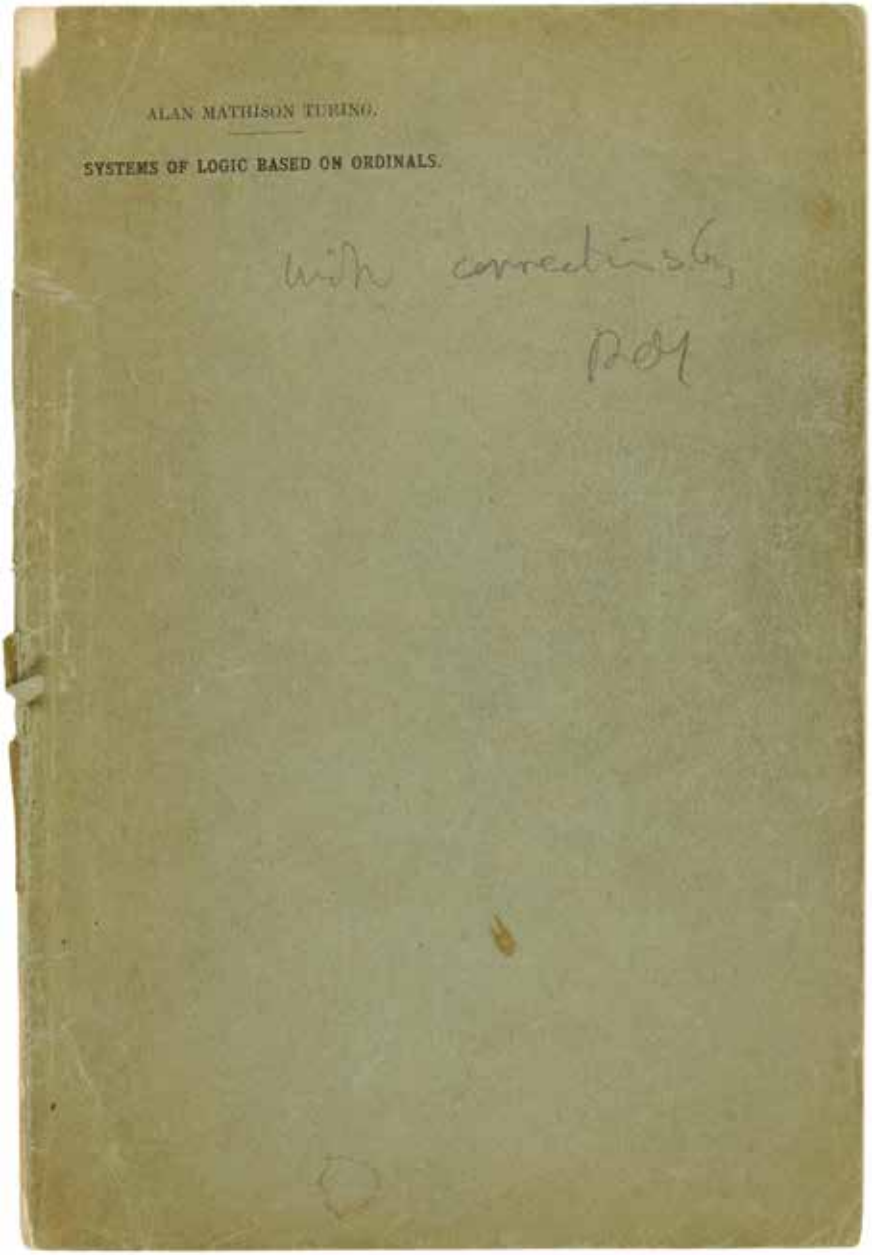
94

POST, EMIL LEON. 1897-1954.

Finite Combinatory Processes: Formulation 1. [Princeton, NJ]: The Association for Symbolic Logic, 1936.
Offprint from *The Journal of Symbolic Logic*, Vol 1, No 3,(September 1936). 8vo (255 x 179 mm). 103-105 pp. Original printed wrappers, minor yellowing, crease across upper inside corner.

FIRST EDITION OF A RARE OFFPRINT of Post's formulation of the notions of computation and solvability by means of a theoretical machine, very similar to the concept of a Turing machine and published just months after "On computable numbers." Post's formulations are less renowned than those of Turing or Alonzo Church, but are considered essential to the advancement of number theory in the age of early computing.

$4,000 - 6,000



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TURING, ALAN MATHISON. 1912-1954.

Systems of Logic Based on Ordinals. London: C.F. Hodgson & Son, 1939. Offprint from: *Proceedings of the London Mathematical Society, Second Series, Vol 45*.

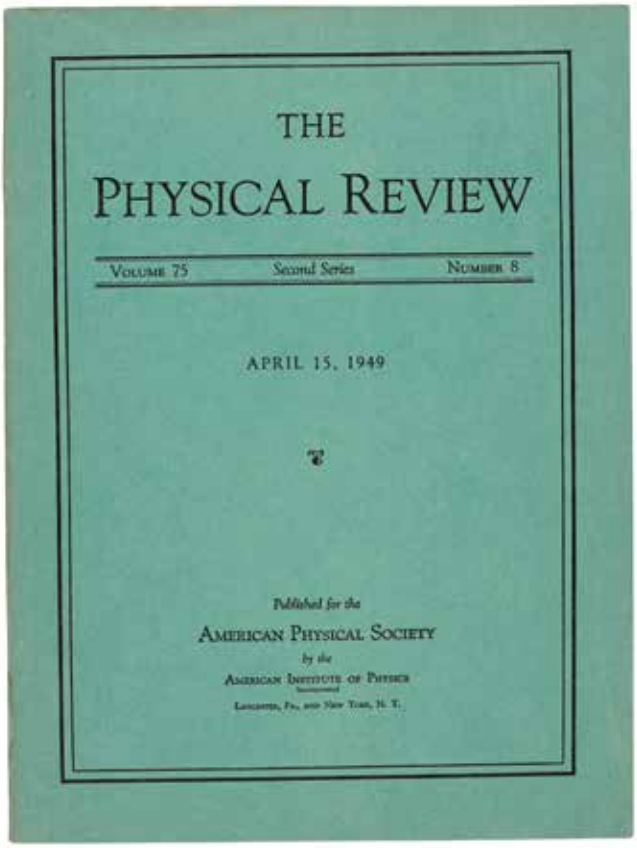
8vo (258 x 178 mm). Pp 161-228. Original printed wrappers. Pencil inscription "*With corrections by ROG*" on upper wrapper and some corrections and annotations in pencil by Robin Gandy in text. Lacking rear wrapper, spine worn with loss at head and foot, light soiling.

Provenance: From the library of Robin Oliver Gandy.

FIRST EDITION OF THE RARE OFFPRINT of Turing's doctoral dissertation, "one of the key documents in the history of mathematics and computer science" (Appel), the personal copy of Turing's close friend and fellow mathematician, Robin Gandy. One of his most formidable papers, Turing, working with Church as his advisor, represents the first systematic attempt to overcome Gödel's theory of incompleteness. In it, Turing proposes that, given an effective description of a sequence systems of logic, all of which share the same language and rules of inference, one can form a new system by taking the effective union of their axiom sets. The idea was significant enough that Church was able to expand upon it, even though Turing himself moved on to other ideas.

"Systems of logic based on ordinals is a profound work of first rank importance. Among its achievements are the exploration of a means of circumventing Gödel's incompleteness theorems; the introduction of the concept of an 'oracle machine,' thereby opening the field of relative computability; and, in the wake of the demolition of the Hilbert programme (by Gödel, Turing and Church), an analysis of the place of intuition in mathematics and logic" Copeland, *The Essential Turing* p 126. Appel, *Alan Turing's Systems of Logic* (Princeton, 2012).

$20,000 - 30,000



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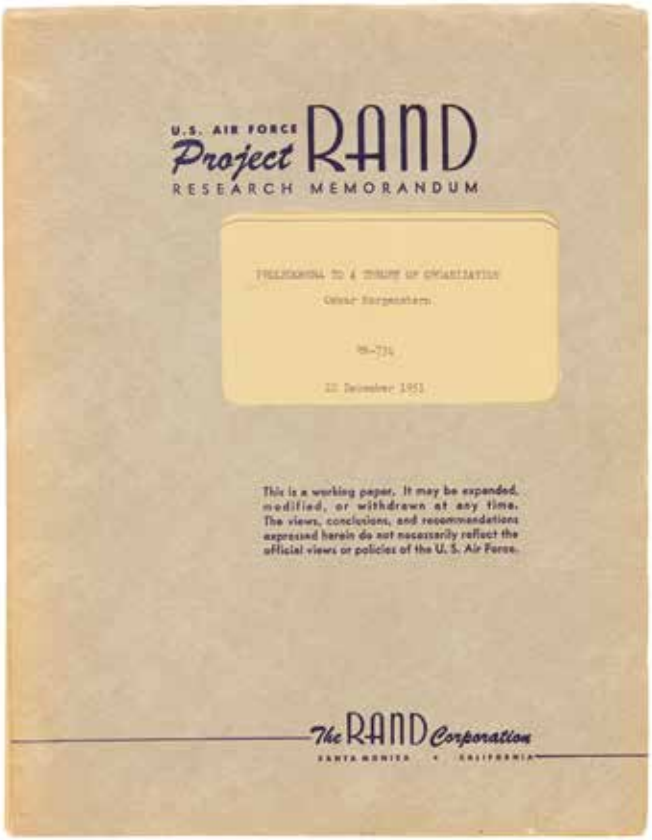

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BARDEEN, JOHN, AND WALTER BRATTAIN.
Physical Principles Involved in Transistor Action. Pp 1208-1225 in *Physical Review* vol. 75, no 8. Lancaster: American Physical Society, 1949.
4to. Original printed wrappers, light wear to spine.

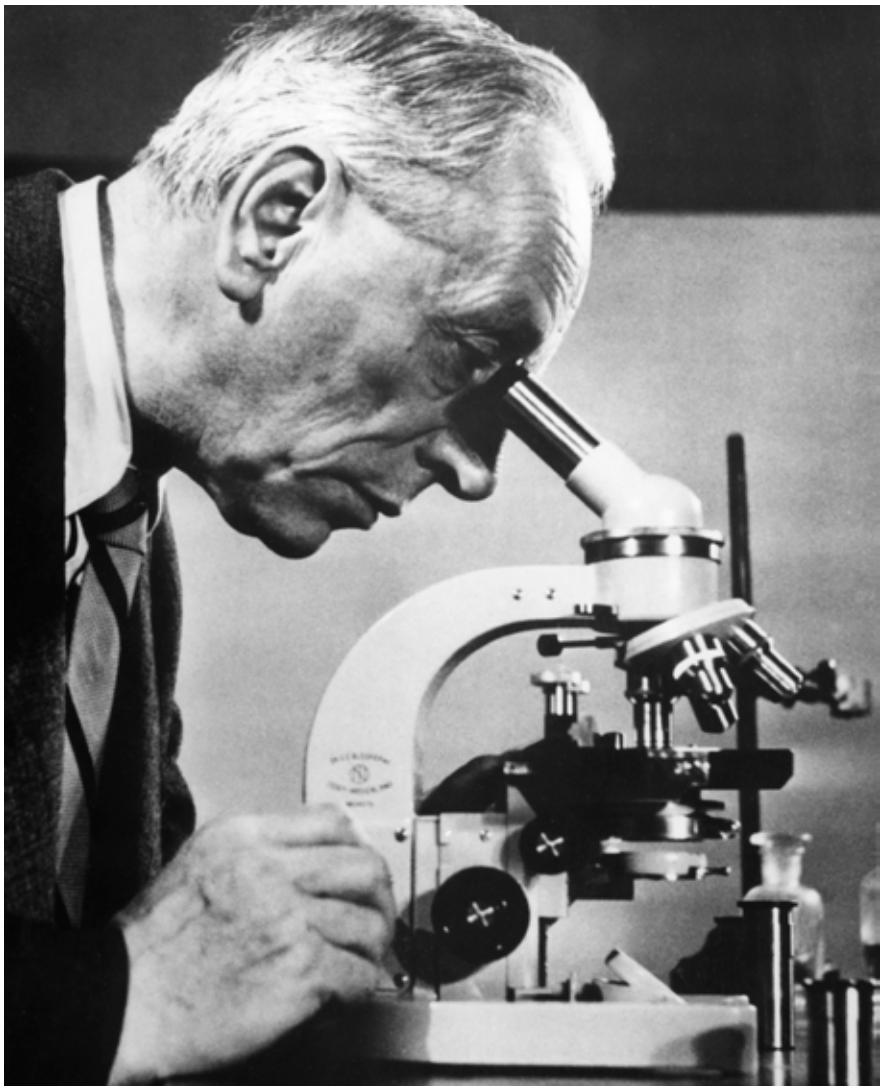
FIRST EDITION of the first comprehensive report on the transistor, arguably the most important invention of the 20th century. First announced in three short letters in July 1948, followed by this comprehensive report, the breakthrough was made by a group of scientists working at Bell Labs, led by Shockley and Walter Morgan. They attempted to use an electrical field to affect the conductivity of a semiconductor, but were unable to yield any results until Bardeen suggested that surface states of the materials used in the semiconductors might be preventing the electrical fields from penetrating them. This led them to four patentable transistor designs. In 1956, Bardeen, Brattain and Shockley shared the Nobel Prize in Physics "for their researches on semiconductors and their discovery of the transistor effect."

$1,000 - 1,500

97
MORGENSTERN, OSKAR. 1902-1977.
Prolegomena to a theory of organization. U.S. Air Force Project RAND report RM-734. Santa Monica, CA: The RAND Corporation, 1951.
4to (283 x 218 mm). Offset typescript, in original printed wrappers, yellowing to page edges, a few corners creased.

FIRST EDITION of a rare theoretical treatise by the German-born economist who is best known for his work with John von Neumann on game theory. Raised in Austria, Morgenstern became a professor of Economics at the University of Vienna. While visiting Princeton University in 1938, the Nazi German government annexed Austria, and Morgenstern remained in the United States, joining the faculty of Princeton. Already familiar with von Neumann's work, the two men met at Princeton and published their seminal work *Theory of Games and Economic Behavior* in 1944.

$1,000 - 1,500



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ZERNIKE, FRITS. 1888-1966.

THE 1953 NOBEL PRIZE MEDAL FOR PHYSICS. *PRESENTED TO FRITS ZERNIKE FOR THE INVENTION OF THE PHASE-CONTRAST MICROSCOPE.*

Nobel medal, in gold, 65.9 mm diameter, 204.1 grams. Designed by Erik Lundberg and struck by the *Kungliga Mynt och Justeringsverkey* (Swedish Royal Mint). Marked on edge "*MOV GULD 1953*." Obverse with bust of Alfred Nobel facing left, "*ALFR. / NOBEL* to left of bust, "*NAT. / MDCCC / XXXIII / OB. / MDCCC / XCVI*" to right of bust, signed "*LINDBERG*" at the lower left edge. Reverse features allegorical vignette of Nature in the form of a goddess emerging from the clouds and holding a cornucopia. Her veil is held up by a figure representing the Genius of Science. Legend above the vignette reads "*INVENTAS VITAM IUVAT EXCOLUISSE PER ARTES*," plaque below vignette reads "*F.ZERNIKE / MCMLIII*," motto to either side of plaque reads "*REG. ACAD. / SCIENT. SUEC.*" (Royal Swedish Academy of Sciences).

Born in Amsterdam in 1888, Frits Zernike was exposed at an early age to physics and chemistry through his parents, who were both mathematics teachers. He attended the University of Amsterdam, and won a prize from the Dutch Society of Sciences for his work on opalescence in gases, which would develop into his doctoral thesis. Although he focused on statistics and mathematical physics in his early career, he turned primarily to optics starting in 1930. While researching spectral lines created by a diffraction grating (a planar or concave mirror with a large number of equidistant grooves ruled on its surface) he noted that there were lines of diffracted light that were out of phase with the main lines from the grating. He then developed a method for converting those variations in phase into variations in light amplitude (brightness), and thus differences in contrast in the visual image through a microscope. His "phase-contrast" microscope revolutionized microbiology, greatly expanding the details a viewer could see and allowing microbiologists to examine living specimens which previously would have been stained and likely killed in the process.

His great leap forward went relatively unnoticed when he constructed the first phase-contrast microscope in 1938, even though at the time a lack of specimen contrast was one of the major concerns in optical microscopy. The German company, Zeiss, began producing the microscopes in 1941, and after the war, most microscope manufacturers rushed to produce microscopes with this enhanced mode of specimen illumination. Soon, his invention swept microbiology, altering and expanding the possibilities within the field. In 1952, he was awarded the Rumford Medal by the Royal Society, and then the Nobel Prize the following year. The mathematically trained Dutch physicist had finally made his outstanding contribution—in the field of microbiology.

$100,000 - 150,000

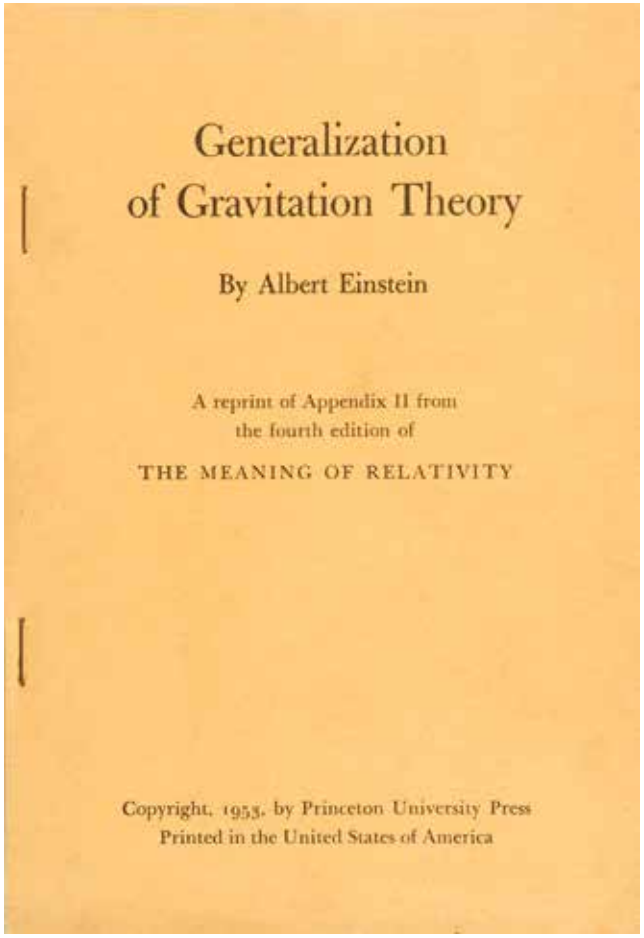
INVENTION OF THE PHASE-CONTRAST MICROSCOPE.


NAT
MDCCC
XXXIII
OB
MDCCC
XCVI
ALFR
NOBEL

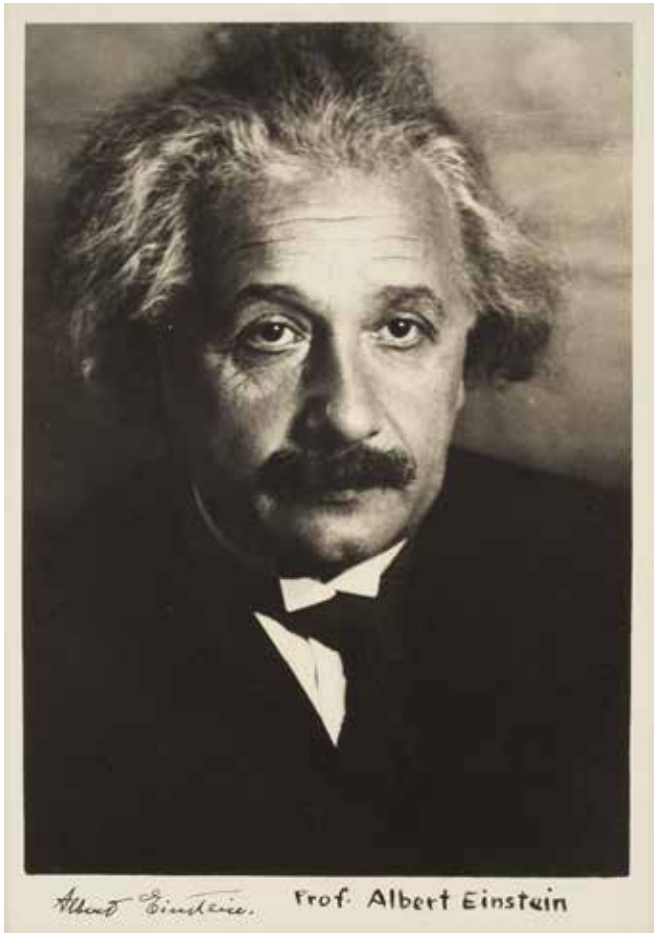
98


EXCOLUIMUS PERARTES
NATURA
SCIENTIA
I VERITAS
MCMIII

98



99



100

99
EINSTEIN, ALBERT. 1879-1955.
Generalization of Gravitational Theory. [Princeton]: Princeton University Press, 1953.
8vo. Offprint from the fourth edition of *The Meaning of Relativity*. Original stapled wrappers. Minor wear to edges and corners, but a clean, bright copy.

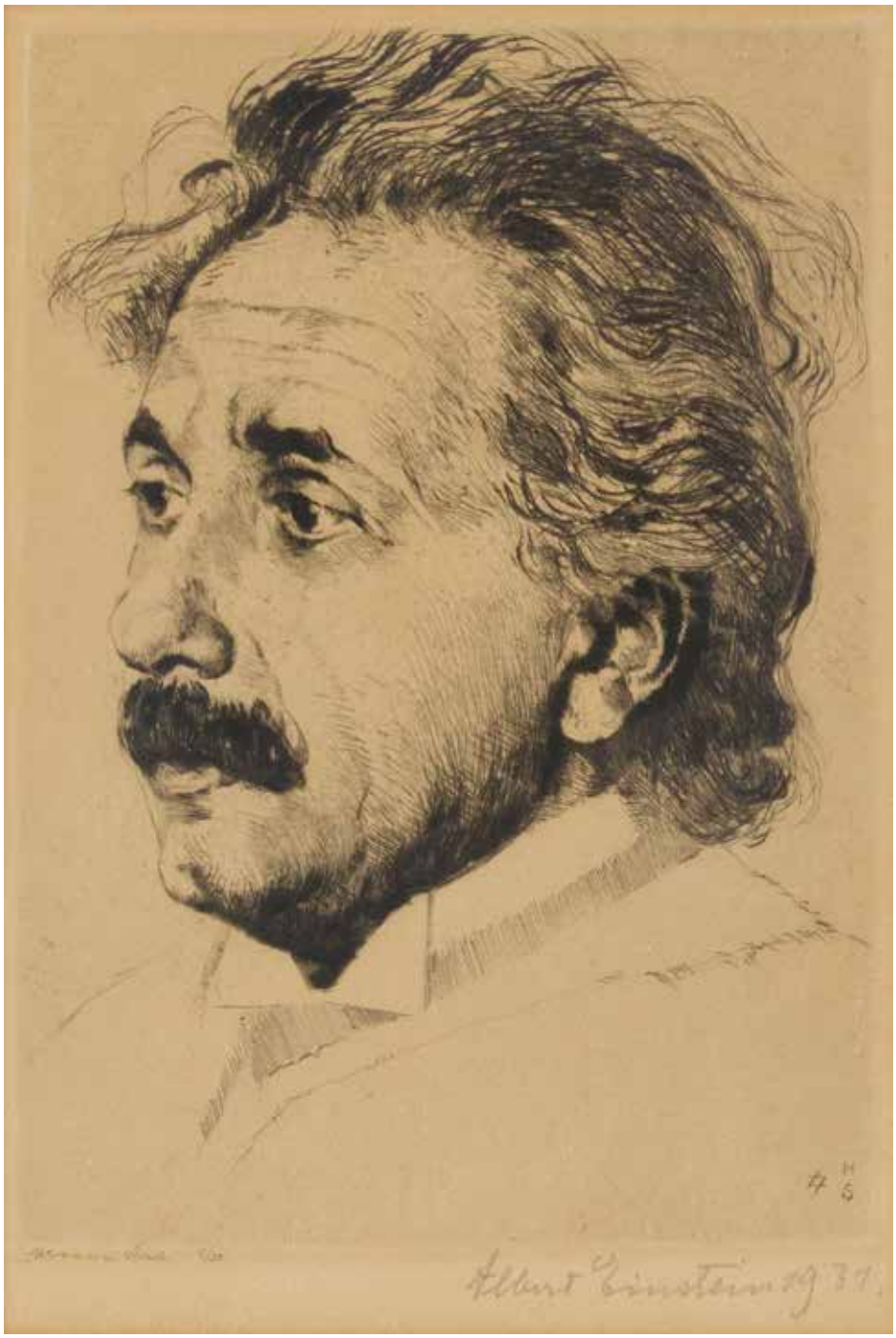
FIRST SEPARATE EDITION of Einstein's attempt to reconcile his own gravitational equations with Maxwell's electromagnetic equations, building toward a unified "field" theory of energy.

$1,500 - 2,500

100
EINSTEIN, ALBERT. 1879-1955.
Photograph Signed ("Albert Einstein"), 8 x 10 inches, gelatin silver print, a portrait detail from the famed 1930 Martin Vos photograph of Einstein and Rabindranath Tagore, Berlin, 1930, annotated in the print lower right "Prof. Albert Einstein," and signed by Einstein in ink lower left, some creasing to the lower corner at signature. Framed.

Unusual photographic portrait of Einstein, taken from Martin Vos's famous image captured during Tagore's 1930 visit to Berlin, signed in the lower margin by Einstein.

$3,000 - 5,000



101

101
EINSTEIN, ALBERT. 1879-1955.
Original etching, a portrait of Albert Einstein by Hermann Struck, plate measuring 228 x 156 mm on a larger sheet (241 x 178 mm), signed and numbered by the artist lower left margin, and signed and dated by Einstein ("Albert Einstein 1931") lower right margin, blank margin of sheet neatly trimmed, thin mat burn outside perimeter of the plate, not affecting image.

ORIGINAL SIGNED PORTRAIT ETCHING OF ALBERT EINSTEIN, one of 50 copies numbered and signed also by the artist Hermann Struck. Hermann Struck made a number of portraits of Einstein (as well as other great minds of his generation including Wilde, Nietzsche, Freud, and Ibsen), but this one decidedly best captures both the sensitivity and gravitas of his subject. A handsome image.

$7,000 - 10,000

102

102
U.S. ATOMIC ENERGY COMMISSION.
Understanding the Atom. Oak Ridge, TN: USAEC Division of Technical Information Extension, 1963-1969.
58 volumes (2 duplicates). 8vo (215 x 139 mm). Stapled into original color illustrated wrappers. Some occasional light surface wear, pencil marks, a few with library markings.WITH: *Preliminary Safety Analysis Report for the Hall of Science Triga Reactor*. New York: Hall of Science of the City of New York, 1970. Detailed proposal and feasibility study for a planned nuclear reactor to be located in Flushing-Corona park on Long Island. Includes maps of the proposed location and details of the construction plans for a reactor that was never to be. Yellow card covers. Lightly rubbed and thumbed.

The United States Atomic Energy Commission (AEC) was a US government agency established by Congress after WWII to control and promote the peacetime development of atomic science and technology. These technical pamphlets, published as part of the Atomic Energy Commission's educational assistance program cover various topics; titles in the series include: *Fallout from Nuclear Tests*; *Nuclear Propulsion for Space*; *Cryogenics, The Uncommon Cold*; *The Genetic Effects of Radiation*; *Snap. Nuclear Space Reactors*; and *The Elusive Neutrino* to name but a few. This lot, comprising 56 separate titles, probably represents a complete run of this publication. Duplicated titles include *Power Reactors in Small Packages* (1964 and 1968 editions) and *Radioactive Waste* (1965 and 1969 editions). A complete listing of titles is available upon request.

$1,000 - 1,500

103
No lot

TECHNOLOGY

Lots 104-115

104

104
KEATON MUSIC TYPEWRITER
33-key model, c.1953, with circular matrix and detachable wooden rack base, with *"Keaton Music Typewriter / Patent Pending ... San Francisco, U.S.A."* plaque, housed in a cloth carrying case with leather padded corners, 6 ¼ x 18 x 22 ½ inches.

First released in 1933, the rare and unusual Keaton Music Typewriter had musical notes and related symbols on its keys for typing sheet music. The first model had only 14 keys, but by 1953, when this model was issued, it expanded to 33 keys. Never that popular with composers, the Music Typewriter was used by publishers and educators to reproduce music quickly.

$1,500 - 2,000

105

105
DINSDALE, ALFRED.
Television: Seeing by Wireless. London: W. S. Caines for Sir Isaac Pitman & Sons, 1926.
8vo (184 x 125 mm). 62 pp, including portrait of Baird and 11 full-page plates. Original printed boards, pictorial dust-jacket, custom cloth clamshell box, tape repair on the back panel of the dust-jacket, minor rubbing.
Provenance: Richard Green, his sale, Christie's Important Scientific Books, June 17, 2008.

FIRST EDITION OF THE FIRST BOOK IN ENGLISH ON TELEVISION. Dinsdale explains the technical challenges of the early development of television, focusing on the work of John Logie Baird, the Scottish Engineer who first successfully transmitted pictures between two televisions in 1925 using a mechanical scan system. Baird's development continued until he was able to transmit recognizable human faces between two rooms, in January of 1926. While Baird's developments did not produce a workable broadcast television system, it was groundbreaking. The parallel work on electronic television using cathode ray tubes, particularly the work of Philo T. Farnsworth and Vladimir Zworykin, would eventually supersede mechanical approaches to scanning images for television.

$2,000 - 3,000

106

106
HOWARD, JOHN LANGLEY. 1902-1999.
Magnetometer, 1958. Oil on masonite, 15 3/4 x 16 1/4 inches, signed ("John Howard Langley") at lower right corner, titled on verso.

Striking painting by Langley of an instrument used to measure both the strength and direction of a magnetic field and the magnetization of a specific material. The above work features a magnetometer high above the ground, obviously on an aircraft. Magnetometers are frequently employed in this manner for mineral exploration and to assist with map geology. Howard, a San Francisco based artist known for his controversial socialist mural in Coit Tower, briefly studied engineering before pursuing art. Much of his work addresses the tension between technological development and the natural world. He also spent roughly a decade illustrating covers for the *Scientific American*.

$1,000 - 2,000

107

108

107
INTEL INTELLEC-8
8-Bit Microcomputer, 1973, aluminum case with hinged top and magnetic closures, face plate with 48 LEDs, 31 switches, ZIF socket and key switch; containing 7 modules, cooling fan, 4 multi-pin female connectors at back, without power cord or key.
Modules include: 1. Intel 8080 CPU Module, 1974; 2. Intel PROM Programmer Module, 1973; 3&4. Intel memory boards, both 1972; 5. Intel PROM Memory Module, 1973; 6. Intel 8080 F/P Controller board; 7. Intel I/O Module, modified for CRT.
WITH: 2 original Intel cartons containing: PROM Memory Module, 8080 F/P Controller board, 8080 I CPU and 8080 I I/O Module.
AND: Intel blue binder containing MCS-8 User's Manual, November 1974; Intel Intellec-8 Reference Manual Rev. 1; Intel Intellec-8/Mod 8 Operator's Manual Version 2 (photocopy); and schematics.

One of America's first microcomputers, the Intel Intellec-8 was produced in relatively limited numbers. Intel led the way, demonstrating with their invention what the microprocessor could do. Although they soon left the computer business to others, they went on to become the dominant supplier of microprocessors. The above unit includes modifications that brings it up to the Intellec-8 Mod 80 level, but also has a rare modification for CRT output.

$1,500 - 2,500

108
ALTAIR 8800
8-Bit Microcomputer by MITS, c.1974, aluminum case with removable top, face panel with 36 LEDs, 25 switches, cooling fan, additional power supply and interface cables at back, containing 9 modules: 1. MITS CPU, REV 0; 2. Processor Technology Corp (PT) GPM, 1977; 3. Godbout Compukit 106C termination board; 4. PT 3P+S I/O; 5. PT VDM-1 REV C, 1976; 6. PT CUTS REV B, 1976; 7&8. PT 8KRA REV D, 1976; 9. Unidentified board.; lacks name plate on front panel, with modification.

THE MODEL WHICH INSPIRED GATES AND ALLEN. MITS ALTAIR 8800 holds the distinction of being the first microcomputer to catch on with the hobbyist market. It was originally offered in kit form for $439 or assembled for $621. Bill Gates, then in his Sophomore year at Harvard, and Paul Allen came across the December 1974 issue of *Popular Electronics* which featured the Altair on the cover and decided to join the computer revolution by writing a BASIC interpreter that would run on Altair's Intel 8080 microprocessor. "It would become the first commercial native high-level programming language for a microprocessor. And it would launch the personal computer software industry" (Isaacson p.332).
This example contains the Processor Technology Subsystem B group of 5 modules. Processor Technology Corporation, a company founded originally to create products for S-100 bus systems like the Altair and noted for their high quality, went on to produce their own microcomputer with the successful Sol 20. Isaacson. *The Innovators.* NY: [2014].

$1,000 - 2,000

109

WOZNIAK, STEVE B.1950; AND STEVE JOBS. 1955-2011.

Blue Box c.1972. An original "blue box" designed by Steve Wozniak in 1972, and marketed by Steve Jobs and Wozniak. Black plastic box measuring 4 x 2 7/8 x 1 1/2 inches, with thin plastic membrane keys mounted in cover plate, housing printed circuit board, loose wiring and 9-volt battery.

WITH: Two versions of a black box, each consisting of two alligator clips, a switch, and a push-button, including a Wozniak circuit, which would artificially support the voltage of a phone line, suppressing the telephone billing activator and allowing its user free incoming calls.

Provenance: David Claxton, gift from his brother Bill Claxton.

While "phone phreakers" (hobbyists who were fascinated by the phone system) had used a "blue box" since the 1950s to avail themselves of free phone service, the first digital blue box was designed by Steve Wozniak in 1972. It was marketed and sold by Wozniak (who took the phone phreak name "Berkeley Blue"), Jobs (known as "Oaf Tobar"), and friends in Berkeley and throughout California in 1972 and 1973. Wozniak cites the number of boxes they produced at 40 or 50, while Jobs put the number at 100; but certainly many of those were confiscated as phone phreaking arrests increased throughout 1973 to 1975, in part due to the commercial distribution of the devices. These blue boxes represent the first commercial collaboration between the two Apple computer giants, and the circuit boards the first printed boards by Woz. Very few of the Wozniak originals have survived.

"IF IT HADN'T BEEN FOR THE BLUE BOXES, THERE WOULD HAVE BEEN NO APPLE. I'M 100% SURE OF THAT."
-STEVE JOBS

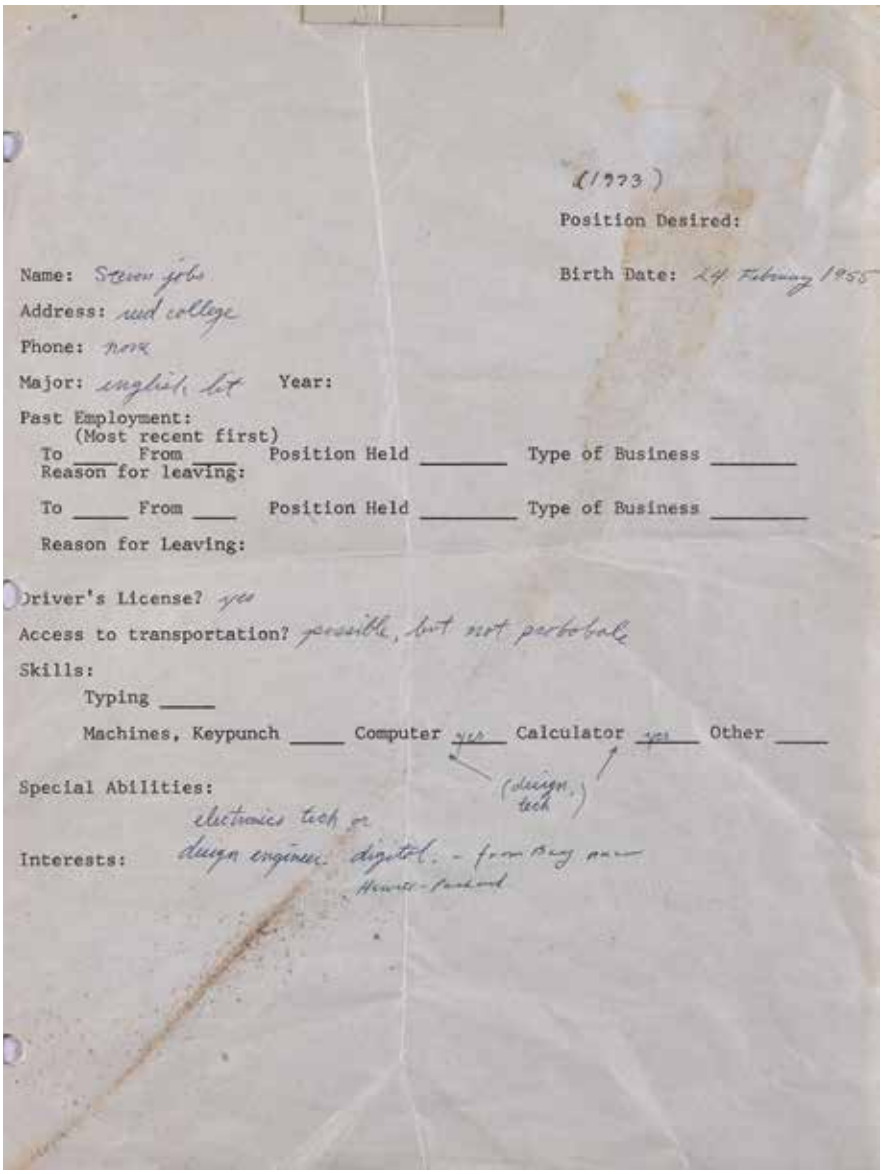
109

In 1971, *Esquire* magazine published an article titled “Secrets of the Little Blue Box,” subtitled “A story so incredible it may even make you feel sorry for the phone company,” about a loose band of engineers who had figured out how to hack Bell telephones automatic switching systems, moving freely through Bell’s “trunk” telephone systems with the use of specific frequency tones generated by “blue boxes.” The story of these “phone phreaks” was a sensation, and one particularly important reader was a young engineering student at Berkeley named Steve Wozniak. As Wozniak recalls, his first move after reading the piece was to call his good friend Steve Jobs, then still a senior in high school, and the next day they jumped in Woz’s car and headed to the Stanford Linear Accelerator library to comb through the stacks searching for clues that would substantiate the details presented in the *Esquire* account. They found it, according to Wozniak: “I froze and grabbed Steve and nearly screamed in excitement that I’d found it. We both stared at the list, rushing with adrenaline. We kept saying things like ‘Oh, ...!’ and ‘Wow, this thing is for real!’ I was practically shaking, with goose bumps and everything. It was such a Eureka moment” (Wozniak, p.100). As they drove back to Berkeley they discussed the possibility of creating a “blue box” in a state of elation, and within three weeks Wozniak had devised one. Finding the frequencies produced by the analog blue box to vary widely, he then designed the world’s first digital blue box. In his biography, he recalls, “I swear to this day—the day I’m telling you this and the day you’re reading it—I have never designed a circuit I was prouder of: a set of parts that could do three jobs at once instead of two. I still think it was incredible” (Wozniak, p.102).

Over the next few weeks, with the fortuitous assistance of “Captain Crunch,” a blue boxer named John Draper who featured prominently in the *Esquire* article and became an instant hero to hackers and phreakers everywhere, Wozniak honed his design, eventually creating the world’s first digital blue box, which was able to produce a much more consistent frequency than the analog contraptions that had existed previously. Now equipped with a “blue box,” the two young men and their friends explored the phone system, including Wozniak’s famous story about reaching the Vatican, and pretending to be Henry Kissinger calling for the Pope (who was unfortunately asleep at the time). Before long, Jobs came up with a plan to market these boxes to willing Berkeley students eager to make free phone calls. They would knock on random doors in the Berkeley dorms and ask for a made-up name, who of course was not available. They would explain they were looking for the guy who makes all the free phone calls, you know, with the blue box. If their mark expressed interest or curiosity, they would proceed to sell him a box. With Jobs’ novel marketing plan and Wozniak’s design, they ended up earning about $6000 on the project, making blue boxes for $40 in parts, and selling them for $150. According to Bill Claxton, who Captain Crunch notes as being in the dorm the first time he went to meet Woz, the earliest blue boxes used solid keys, which were quickly replaced with a soft keypad (as here) in order to make the boxes more affordable. Looking back on the entire experience, Steve Jobs would observe, “Woz and I learned how to work together, and we gained the confidence that we could solve technical problems and actually put something into production.” Lapsley, Phil. *Exploding the Phone: the Untold Story of the Teenagers and Outlaws Who Hacked Ma Bell.* (New York, 2013). Wozniak, Steve. *IWoz: computer geek to cult icon* (New York, 2006). Isaacson, Walter. *Steve Jobs.* (New York, 2011).

For more information, please contact department.

$30,000 - 50,000


(1973)

Position Desired:

Name: Steven jobs

Birth Date: 24 February 1955

Address: reed college

Phone: none

Major: english lit Year:

Past Employment:
(Most recent first)
To ____ From ____ Position Held _____ Type of Business _____
Reason for leaving:

To ____ From ____ Position Held _____ Type of Business _____

Reason for Leaving:

Driver's License? yes

Access to transportation? possible, but not probable

Skills:

Typing ____

Machines, Keypunch ____ Computer yes Calculator yes Other ____

Special Abilities:

(design, tech)

Interests: electronics tech or design engineer. digital. - from Bay near Hewitt-Packard

110

110
JOBS, STEVE. 1955-2011.
Document Signed ("Steven jobs [sic]"), partially printed and accomplished in manuscript, 1 p, 4to, n.p., [1973], being an employment application for an unspecified position, on single sheet of three-hole typing paper, page folded, creased, some staining and with tape remnant to upper margin.

YOUNG STEVE JOBS APPLIES FOR WORK. During his short time at Reed College (enrolled for the fall semester of 1972, but auditing classes for the next 18 months), young Steve Jobs halfhearted filled out this employment application, listing his address halfheartedly as "reed college" (with no phone access), his major as "english lit," and his access to transportation as "possible, but not probable." Under special skills, he has listed Computer and Calculator with arrows indicating "design / tech," and under special abilities he has added "*Electronics tech or design engineer. Digital. From Bay near Hewitt[sic]-Packard.*"

$20,000 - 30,000

111

"EVERY COMPUTER BEFORE THE APPLE I HAD THAT FRONT PANEL OF SWITCHES AND LIGHTS. EVERY COMPUTER SINCE HAS HAD A KEYBOARD AND A SCREEN. THAT'S HOW HUGE MY IDEA TURNED OUT" —STEVE WOZNIAK

111

111

APPLE 1 COMPUTER

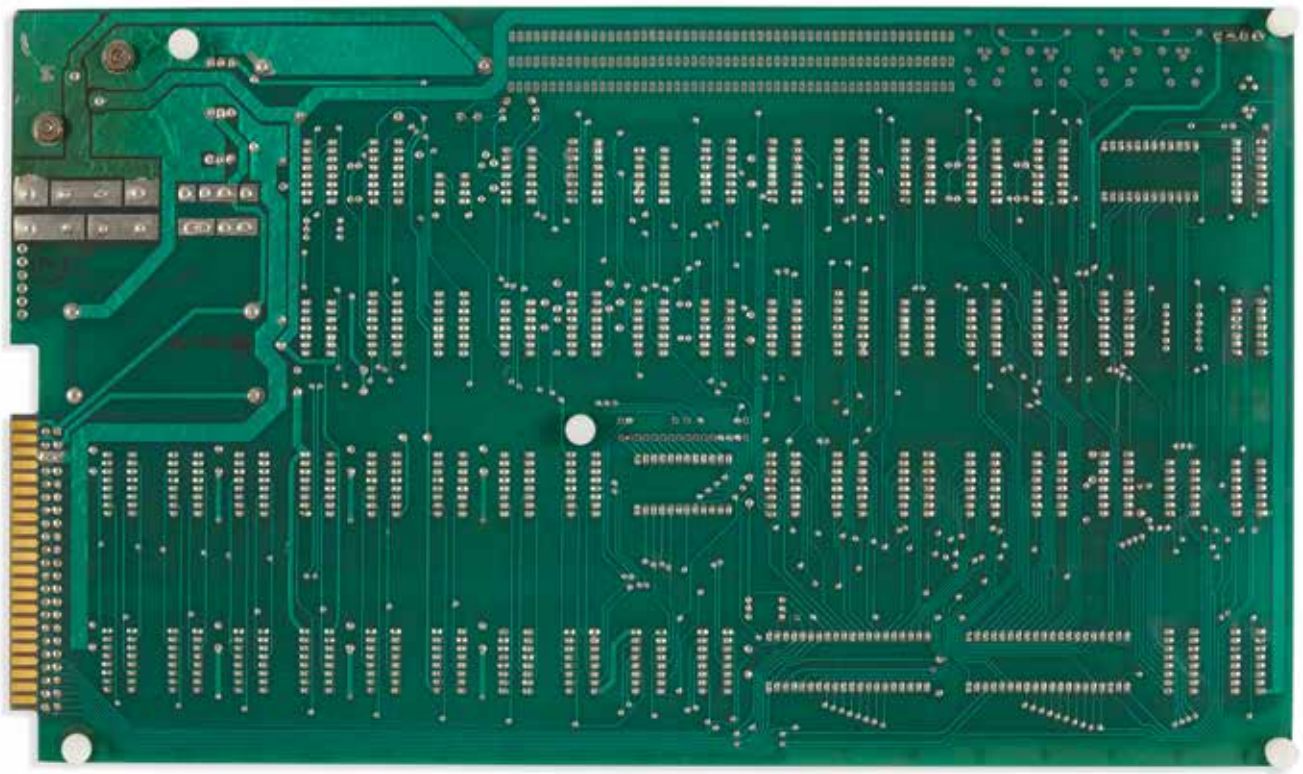
Apple 1 Motherboard, with label "Apple Computer 1 / Palo Alto. Ca. Copyright 1976." Includes circuit board with four rows A-D, and columns 1-18, MOS Technologies 6502 microprocessor, labeled MCS 6502 5176; keyboard interface and connector; 8K bytes RAM in 16-pin 4K memory chips; 4 power supplies including 3 capacitors; firmware in PROMS (A1, A2); low-profile sockets on all integrated circuits; inked in security pen, "*01-0028*" on underside; heatsink; expansion connector; cassette board connector; and original cassette interface, labeled Apple 1 Cassette Interface Copyright 1976 with "NTI" lettered in triangle on component side, overall approximately 15 x 9 x 2½ inches.
WITH: Datanetics Rev-D keyboard (dated 1977); Sanyo VM4209 monitor; custom walnut case with power supply and cooling fan. Lot also includes two period cassette recorders and facsimile owner's manual, and original Synertec SY6500/MCS6500 Microcomputer Family Programming Manual, August 1976. Computer was operational as of February 2017; a video of that operation is linked to the online description of this lot at http://www.bonhams.com/video/24739. It was examined, operated and restored by Corey Cohen, Apple-1 expert. Mr. Cohen notes the Apple-1 is currently in 8.5 (out of 10) condition. See condition report for further information.
Provenance: Steve Fish, 1977, purchased from Computer Playground in Westminster, CA; sold by Fish to current owner in 2005.

APPLE-1 COMPUTER WITH EXCEPTIONAL PROVENANCE AND IN BEAUTIFUL, WORKING CONDITION.

The Apple-1 computer is the first pre-assembled personal computer to come to market, heralding the dawn of the personal computer revolution. Steve Wozniak, in his autobiography, recounts: "I didn't realize it at the time, but that day, Sunday, June 29, 1975, was pivotal. It was the first time in history anyone had typed a character on a keyboard and seen it show up on their own computer's screen right in front of them" (p 166).

The story of its production and sale has become one of the most potent legends in 20th century history. "People who saw my computer could take one look at it and see the future. And it was a one-way door. Once you went through it, you could never go back" (Wozniak p 168).

Wozniak and Steve Jobs demonstrated the breakthrough design at the Homebrew Computer Club in Palo Alto. The next day, the ever enterprising Jobs obtained an order from Byte Shop owner Paul Terrell for 50 assembled boards to be delivered in 30 days at $500 apiece. Jobs scrambled to come up with the $15,000 of parts needed and enlisted friends and family in the assembly process. Approximately 200 units were eventually made, but this is thought to be one of the first batch of 50 with the PCB manufacturer unidentified on the front copper layer of the board.



111

It also bears the inked number “01-0028” on the reverse, of unknown significance, though generally considered to be a Byte Shop inventory number. Only 66 surviving authentic Apple-1’s are listed in Mike Willegas’s Apple 1 Registry as of October 2017. Although the first Byte Shop order sold extremely well (at a retail price of $666.66), there were at least some remainders from the additional 150 and many of these were eventually traded in for Apple II’s, then destroyed by Jobs.

We are able to trace the history of the above unit to its original owner Steve Fish, who went on to found the photographic and audio/visual software and hardware company Peripheral Visions, Inc. Besides the Apple 1, he was also on record owning an Apple II with a serial number 468. Fish was interviewed about his Apple 1 in 2005 by Tom Owad for the latter’s book. Fish came upon the Apple 1 at the Westminster, CA computer store Computer Playground in 1976. There he was able to rent time on the computer to play games. He took a BASIC programming course with store co-owner Dr. Will Otaguro and thereafter used his time to practice his BASIC programming skills. When the Apple II was issued in 1977, he was one of the first owners (serial number 468), buying just the 4K motherboard.

The market for the Apple 1 had evaporated immediately and Computer Playground dropped their prices to clearance levels. Fish purchased one of the nicer Apple 1s, which included the custom walnut case fitted with a keyboard, “mostly out of nostalgia. It was the machine that I learned to program on, and they were dirt-cheap by that time.” There are a number of factors that point to the unit being sold to Computer Playground by the Byte Shop. The security penned number on the PCB verso is one indication and the low number indicates that it was likely from the first batch of 50 that Jobs and Wozniak had sold them. The Byte Shop was also known for the custom wood cases created for the Apple 1s and this looks to be an early version of what is usually seen in a slightly more refined form for the later NTI boards.

Owad, Tom. *Apple I Replica Creation: Back to the Garage.* NY: 2005. pp 18-20; Wozniak, Steve & Gina Smith. *iWoz.* NY: 2006; Isaacson, Walter. *Steve Jobs.* NY: 2011.

$400,000 - 600,000

112

113

112
JOBS, STEVE. 1955-2011.
4 business cards, 2 1/4 by 3 3/4 inches, after September 1980, on ivory stock with rainbow apple logo at upper left, listing Steven P. Jobs as Chairman of the Board and company address as "*Apple Computer, Inc. / 20525 Mariani Avenue, MS:3K / Cupertino, California 95014 / 408 973-2121 or 996-1010,*" three cards rubbed at upper margin, with with wear.

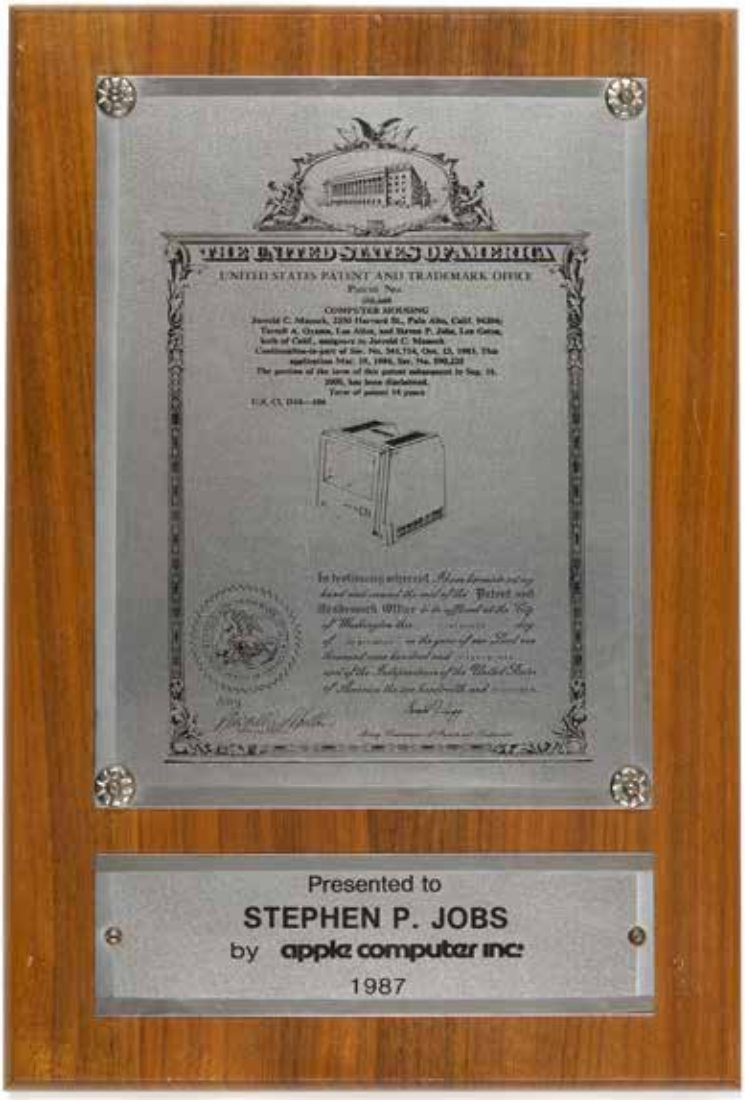
In 1980, after a turbulent four years, Jobs lost his title of VP of Product Development and was appointed Chairman of the Board. Jobs was still the public face of the company, but he had lost operating control of the Apple Lisa, the company's followup product. He turned his talents to the Macintosh project, and quickly the Mac became the future of the company. This card bears the early rainbow Apple logo and the original Mariani Avenue address.

$2,000 - 3,000

113
[JOBS, STEVE. 1955-2011.]
Printed pass, 2 1/4 x 3 3/4 inches, Glen Helen, CA, September 3-5, 1982, being a backstage pass for the "US" Festival produced by Bill Graham Presents, with "*Special Guest / Steve Jobs*" on verso, in period mylar sleeve.

Pioneered (and financially-backed) by Steve Wozniak, the US festival was intended to be "a kind of Super Bowl of rock concerts" using the newest technologies such as jumbo video screens, air conditioned tents with video games, and what Steve Wozniak claimed was the very first concert satellite linkup to the USSR. Held over Labor Day weekend in 1982 (and again around Memorial Day in 1983) the festival featured major acts including Talking Heads, The Police, Santana, The Kinks, Tom Petty & the Heartbreakers, Fleetwood Mac, the Grateful Dead and Jerry Jeff Walker.

$3,000 - 5,000



114

SIMPLICITY IS THE ULTIMATE SOPHISTICATION.

114

JOBS, STEVE. 1955-2011.

Original patent award plaque presented to Steve Jobs by Apple on the occasion of his design for the design of the Macintosh case, 307 x 204 mm, with engraved stainless steel plate reproducing US Patent No. 285,688 for the Macintosh computer housing, with *second plate beneath engraved*, "Presented to Stephen P. Jobs/ by apple computer inc./ 1987", upper plate fastened at corners with decorative washer and screws to walnut mount.

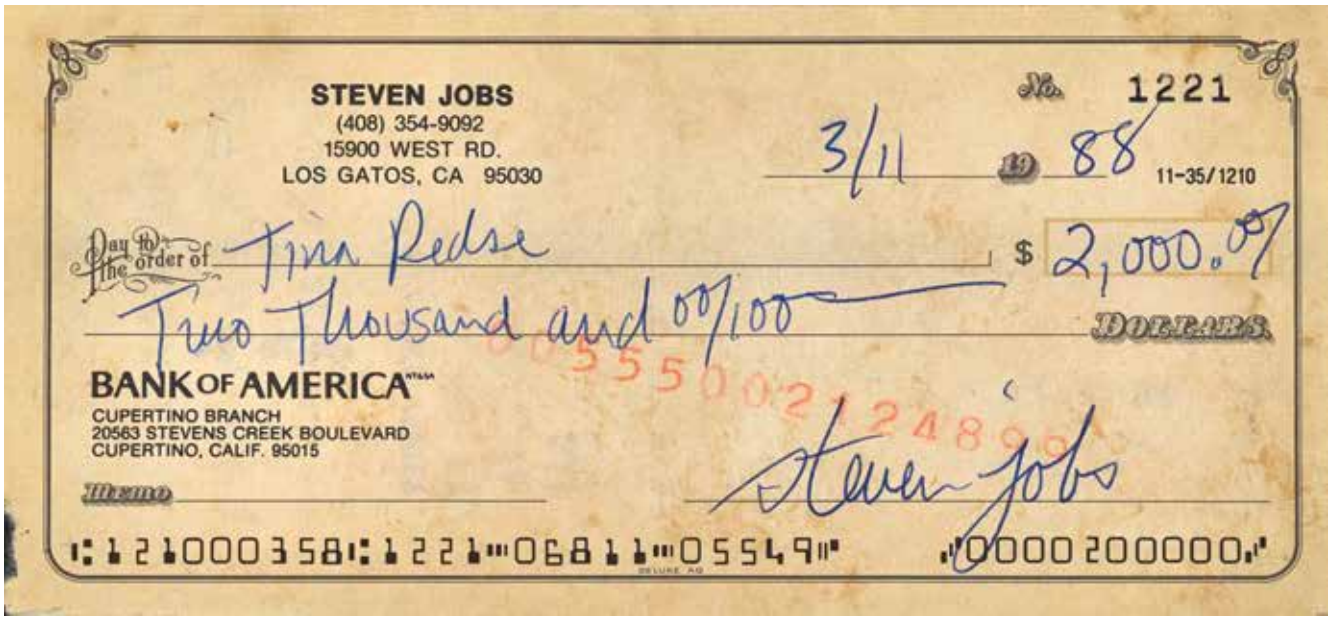
STEVE JOBS' PATENT AWARD PLAQUE FOR THE MACINTOSH CASE DESIGN. Apple's early motto, "Simplicity is the ultimate sophistication," encapsulates the company's approach to innovation and design. Beginning with Steve Wozniak's elegant circuit board designs of the Apple 1 and Apple II, the sleek case of the Apple II series, the company hit its stride with the Macintosh, from its "friendly" case design inspired by Jobs' interest in Bauhaus design philosophy and the Braun products of Dieter Rams to the GUI (Graphical user interface) borrowed from Xerox after a number of visits to their PARC labs.

Jobs, who had been ejected from the Lisa project just a few months earlier, took over as project manager of Macintosh in January 1981, immediately butting heads with team leader Jef Raskin. Raskin had envisioned a computer that would sell for $1,000 and be a simple all-in-one unit. He even supplied the name based upon his favorite apple. Raskin left the company, however, and went on to develop the unremarkable Canon Cat, Jobs refocused the project, sacrificing portability for a more distinctive design. "He plopped down a phone book and declared, to the horror of the engineers, that it shouldn't have a footprint larger than that" (Isaacson p 128).

The case was designed by Jerry Manock and Terry Oyama with Jobs' constant input. Oyama remarked, "even though Steve didn't draw any of the lines, his ideas and inspiration made the design what it is. To be honest, we didn't know what it meant for a computer to be 'friendly' until Steve told us." The patent for the case design, issued to all three, was finally awarded in 1987, two years after Jobs left the company to start NeXT. Curiously, whether a joke or a mistake, the above patent award plaque bears the incorrect spelling "Stephen." Jobs did not hold the plaque in a place of esteem, but left it at Jackling House after he moved out, eventually gifting it to a friend.

Isaacson. *Steve Jobs* (NY, 2011).

$40,000 - 60,000



115

115

JOBS, STEVE. 1955-2011.

Check Signed ("steven jobs"), 2 3/4 by 6 inches, paid to the order of Tina Redse in the amount of $2,000, drawn on the Bank of America, Cupertino branch, March 11, 1988, canceled in red ink at center right just impinging the "j" of Jobs, endorsed on the verso by Redse, creased vertically, light toning.

Christina (Tina) Redse began dating Steve Jobs while she was working as a computer consultant in early 1985. Though they had a somewhat rocky 5-year relationship, Jobs said: "She was the first person I was truly in love with. We had a very deep connection. I don't know that anyone will ever understand me better." Later, when Jobs began his battle with pancreatic cancer, Redse got in touch with him to lend her support. Isaacson, Walter. *Steve Jobs* (NY, 2011).

$4,000 - 6,000

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CONDITIONS OF SALE

The following Conditions of Sale, as amended by any published or posted notices or verbal announcements during the sale, constitute the entire terms and conditions on which property listed in the catalog shall be offered for sale or sold by Bonhams & Butterfields Auctioneers Corp. and any consignor of such property for whom we act as agent. If live online bidding is available for the subject auction, additional terms and conditions of sale relating to online bidding will apply; see www.bonhams.com/WebTerms for the supplemental terms. As used herein, "Bonhams," "we" and "us" refer to Bonhams & Butterfields Auctioneers Corp.

1. As used herein, the term "bid price" means the price at which a lot is successfully knocked down to the purchaser. The term "purchase price" means the aggregate of (a) the bid price, (b) a PREMIUM retained by us and payable by the purchaser EQUAL TO 25% OF THE FIRST $250,000 OF THE BID PRICE, 20% OF THE AMOUNT OF THE BID PRICE ABOVE $250,001 UP TO AND INCLUDING $4,000,000, AND 12.5% OF THE AMOUNT OF THE BID PRICE OVER $4,000,000, and (c) unless the purchaser is exempt by law from the payment thereof, any Arizona, California, Colorado, Connecticut, Florida, Georgia, Illinois, Massachusetts, Nevada, New Jersey, New York, Pennsylvania, Texas, Virginia, Washington, D.C., Washington state, or other state or local sales tax (or compensating use tax) and other applicable taxes. With regard to New York sales tax, please refer to the "Sales and Use Tax" section of these Conditions of Sale.

2. On the fall of the auctioneer's hammer, the highest bidder shall have purchased the offered lot in accordance and subject to compliance with all of the conditions set forth herein and (a) assumes full risk and responsibility therefor, (b) if requested will sign a confirmation of purchase, and (c) will pay the purchase price in full or such part as we may require for all lots purchased. No lot may be transferred. Any person placing a bid as agent on behalf of another (whether or not such person has disclosed that fact or the identity of the principal) may be jointly and severally liable with the principal under any contract resulting from the acceptance of a bid.

Unless otherwise agreed, payment in good funds is due and payable within five (5) business days following the auction sale. Whenever the purchaser pays only a part of the total purchase price for one or more lots purchased, we may apply such payments, in our sole discretion, to the lot or lots we choose. Payment will not be deemed made in full until we have collected good funds for all amounts due.

Payment for purchases may be made in or by (a) cash, (b) cashier's check or money order, (c) personal check with approved credit drawn on a U.S. bank, (d) wire transfer or other immediate bank transfer, or (e) Visa, MasterCard, American Express or Discover credit, charge or debit card. A processing fee will be assessed on any returned checks. Please note that the amount of cash notes and cash equivalents that can be accepted from a given purchaser may be limited.

To the fullest extent permitted by applicable law: The purchaser grants us a security interest in the property, and we may retain as collateral security for the purchaser's obligations to us, any property and all monies held or received by us for the account of the purchaser, in our possession. We also retain all rights of a secured party under the California Commercial Code. If the foregoing conditions or any other applicable conditions herein are not complied with, in addition to all other remedies available to us and the consignor by law, we may at our election: (a) hold the purchaser liable for the full purchase price and any late charges, collection costs, attorneys' fees and costs, expenses and incidental damages incurred by us or the consignor arising out of the purchaser's breach; (b) cancel the sale, retaining as liquidated damages all payments made by the purchaser; and/or (c) cancel the sale and/or resell the purchased property, at public auction and/or by private sale, and in such event the purchaser shall be liable for the payment of all consequential damages, including any deficiencies or monetary losses, and all costs and expenses of such sale or sales, our commissions at our standard rates, all other charges due hereunder, all late charges, collection costs, attorneys' fees and costs, expenses and incidental damages. In addition, where two or more amounts are owed in respect of different transactions by the purchaser to us, to Bonhams 1793 Limited and/or to any of our other affiliates, subsidiaries or parent companies worldwide within the Bonhams Group, we reserve the right to apply any monies paid in respect of a transaction to discharge any amount owed by the purchaser. If all fees, commissions, premiums, bid prices and other sums due to us from the purchaser are not paid promptly as provided in these Conditions of Sale, we reserve the right to impose a finance charge equal to 1.5% per month (or, if lower, the maximum nonusurious rate of interest permitted by applicable law), on all amounts due to us beginning on the 31st day following the sale until payment is received, in addition to other remedies available to us by law.

3. We reserve the right to withdraw any property and to divide and combine lots at any time before such property's auction. Unless otherwise announced by the auctioneer at the time of sale, all bids are per lot as numbered in the catalog and no lots shall be divided or combined for sale.

4. We reserve the right to reject a bid from any bidder, to split any bidding increment, and to advance the bidding in any manner the auctioneer may decide. In the event of any dispute between bidders, or in the event the auctioneer doubts the validity of any bid, the auctioneer shall have sole and final discretion either to determine the successful bidder or to re-offer and resell the article in dispute. If any dispute arises after the sale, our sales records shall be conclusive in all respects.

5. If we are prevented by fire, theft or any other reason whatsoever from delivering any property to the purchaser or a sale otherwise cannot be completed, our liability shall be limited to the sum actually paid therefor by the purchaser and shall in no event include any compensatory, incidental or consequential damages.

6. If a lot is offered subject to a reserve, we may implement such reserve by bidding on behalf of the consignor, whether by opening bidding or continuing bidding in response to other bidders until reaching the reserve. If we have an interest in an offered lot and the proceeds therefrom other than our commissions, we may bid therefor to protect such interest. CONSIGNORS ARE NOT ALLOWED TO BID ON THEIR OWN ITEMS.

7. All statements contained in the catalog or in any bill of sale, condition report, invoice or elsewhere as to authorship, period, culture, source, origin, measurement, quality, rarity, provenance, importance, exhibition and literature of historical relevance, or physical condition ARE QUALIFIED STATEMENTS OF OPINION AND NOT REPRESENTATIONS OR WARRANTIES. No employee or agent of Bonhams is authorized to make on our behalf or on that of the consignor any representation or warranty, oral or written, with respect to any property.

8. All purchased property shall be removed from the premises at which the sale is conducted by the date(s) and time(s) set forth in the "Buyer's Guide" portion of the catalog. If not so removed, daily storage fees will be payable to us by the purchaser as set forth therein. We reserve the right to transfer property not so removed to an offsite warehouse at the purchaser's risk and expense, as set forth in more detail in the "Buyer's Guide." Accounts must be settled in full before property will be released. Packing and handling of purchased lots are the responsibility of the purchaser. Bonhams can provide packing and shipping services for certain items as noted in the "Buyer's Guide" section of the catalog.

9. The copyright in the text of the catalog and the photographs, digital images and illustrations of lots in the catalog belong to Bonhams or its licensors. You will not reproduce or permit anyone else to reproduce such text, photographs, digital images or illustrations without our prior written consent.

10. These Conditions of Sale shall bind the successors and assigns of all bidders and purchasers and inure to the benefit of our successors and assigns. No waiver, amendment or modification of the terms hereof (other than posted notices or oral announcements during the sale) shall bind us unless specifically stated in writing and signed by us. If any part of these Conditions of Sale is for any reason invalid or unenforceable, the rest shall remain valid and enforceable.

11. These Conditions of Sale and the purchaser's and our respective rights and obligations hereunder are governed by the laws of the State of California. By bidding at an auction, each purchaser and bidder agrees to be bound by these Conditions of Sale. Any dispute, controversy or claim arising out of or relating to this agreement, or the breach, termination or validity thereof, brought by or against Bonhams (but not including claims brought against the consignor by the purchaser of lots consigned hereunder) shall be resolved by the procedures set forth below.

SALES AND USE TAX

New York sales tax is charged on the hammer price, buyer's premium and any other applicable charges on any property collected or delivered in New York State, regardless of the state or country in which the purchaser resides or does business. Purchasers who make direct arrangements for collection by a shipper who is considered a "private" or "contract" carrier by the New York Department of Taxation and Finance will be charged New York sales tax, regardless of the destination of the property. Property collected for delivery to a destination outside of New York by a shipper who is considered a "common carrier" by the New York Department of Taxation and Finance (e.g. United States Postal Service, United Parcel Service, and FedEx) is not subject to New York sales tax, but if it is delivered into any state in which Bonhams is registered or otherwise conducts business sufficient to establish a nexus, Bonhams may be required by law to collect and remit the appropriate sales tax in effect in such state. Property collected for delivery outside of the United States by a freight-forwarder who is registered with the Transportation Security Administration ("TSA") is not subject to New York sales tax.

MEDIATION AND ARBITRATION PROCEDURES

(a) Within 30 days of written notice that there is a dispute, the parties or their authorized and empowered representatives shall meet by telephone and/or in person to mediate their differences. If the parties agree, a mutually acceptable mediator shall be selected and the parties will equally share such mediator's fees. The mediator shall be a retired judge or an attorney familiar with commercial law and trained in or qualified by experience in handling mediations. Any communications made during the mediation process shall not be admissible in any subsequent arbitration, mediation or judicial proceeding. All proceedings and any resolutions thereof shall be confidential, and the terms governing arbitration set forth in paragraph (c) below shall govern.

(b) If mediation does not resolve all disputes between the parties, or in any event no longer than 60 days after receipt of the written notice of dispute referred to above, the parties shall submit the dispute for binding arbitration before a single neutral arbitrator. Such arbitrator shall be a retired judge or an attorney familiar with commercial law and trained in or qualified by experience in handling arbitrations. Such arbitrator shall make all appropriate disclosures required by law. The arbitrator shall be drawn from a panel of a national arbitration service agreed to by the parties, and shall be selected as follows: (i) If the national arbitration service has specific rules or procedures, those rules or procedures shall be followed; (ii) If the national arbitration service does not

have rules or procedures for the selection of an arbitrator, the arbitrator shall be an individual jointly agreed to by the parties. If the parties cannot agree on a national arbitration service, the arbitration shall be conducted by the American Arbitration Association, and the arbitrator shall be selected in accordance with the Rules of the American Arbitration Association. The arbitrator's award shall be in writing and shall set forth findings of fact and legal conclusions.

(c) Unless otherwise agreed to by the parties or provided by the published rules of the national arbitration service:

(i) the arbitration shall occur within 60 days following the selection of the arbitrator;

(ii) the arbitration shall be conducted in the designated location, as follows: (A) in any case in which the subject auction by Bonhams took place or was scheduled to take place in the State of New York or Connecticut or the Commonwealth of Massachusetts, the arbitration shall take place in New York City, New York; (B) in all other cases, the arbitration shall take place in the city of San Francisco, California; and

(iii) discovery and the procedure for the arbitration shall be as follows:

(A) All arbitration proceedings shall be confidential;

(B) The parties shall submit written briefs to the arbitrator no later than 15 days before the arbitration commences;

(C) Discovery, if any, shall be limited as follows: (I) Requests for no more than 10 categories of documents, to be provided to the requesting party within 14 days of written request therefor; (II) No more than two (2) depositions per party, provided however, the deposition(s) are to be completed within one (1) day; (III) Compliance with the above shall be enforced by the arbitrator in accordance with California law;

(D) Each party shall have no longer than eight (8) hours to present its position. The entire hearing before the arbitrator shall not take longer than three (3) consecutive days;

(E) The award shall be made in writing no more than 30 days following the end of the proceeding. Judgment upon the award rendered by the arbitrator may be entered by any court having jurisdiction thereof.

To the fullest extent permitted by law, and except as required by applicable arbitration rules, each party shall bear its own attorneys' fees and costs in connection with the proceedings and shall share equally the fees and expenses of the arbitrator.

LIMITED RIGHT OF RESCISSION

If within one (1) year from the date of sale, the original purchaser (a) gives written notice to us alleging that the identification of Authorship (as defined below) of such lot as set forth in the **BOLD TYPE** heading of the catalog description of such lot (as amended by any saleroom notices or verbal announcements during the sale) is not substantially correct based on a fair reading of the catalog (including the terms of any glossary contained therein), and (b) within 10 days after such notice returns the lot to us in the same condition as at the time of sale, and (c) establishes the allegation in the notice to our satisfaction (including by providing one or more written opinions by recognized experts in the field, as we may reasonably require), then the sale of such lot will be rescinded and, unless we have already paid to the consignor monies owed him in connection with the sale, the original purchase price will be refunded.

If, prior to receiving such notice from the original purchaser alleging such defect, we have paid the consignor monies owed him in connection with the sale, we shall pay the original purchaser the amount of our commissions, any other sale proceeds to which we are entitled and applicable taxes received from the purchaser on the sale and make demand on the consignor to pay the balance of the original purchase price to the original purchaser. Should the consignor fail to pay such amount promptly, we may disclose the identity of the consignor and assign to the original purchaser our rights against the consignor with respect to the lot the sale of which is sought to be rescinded. Upon such disclosure and assignment, any liability of Bonhams as consignor's agent with respect to said lot shall automatically terminate.

The foregoing limited right of rescission is available to the original purchaser only and may not be assigned to or relied upon by any subsequent transferee of the property sold. The purchaser hereby accepts the benefit of the consignor's warranty of title and other representations and warranties made by the consignor for the purchaser's benefit. Nothing in this section shall be construed as an admission by us of any representation of fact, express or implied, obligation or responsibility with respect to any lot. THE PURCHASER'S SOLE AND EXCLUSIVE REMEDY AGAINST BONHAMS FOR ANY REASON WHATSOEVER IS THE LIMITED RIGHT OF RESCISSION DESCRIBED IN THIS SECTION.

"Authorship" means only the identity of the creator, the period, culture and source or origin of the lot, as the case may be, as set forth in the **BOLD TYPE** heading of the print catalog entry. The right of rescission does not extend to: (a) works of art executed before 1870 (unless these works are determined to be counterfeits created since 1870), as this is a matter of current scholarly opinion which can change; (b) titles, descriptions, or other identification of offered lots, which information normally appears in lower case type below the **BOLD TYPE** heading identifying the Authorship; (c) Authorship of any lot where it was specifically mentioned that there exists a conflict of specialist or scholarly opinion regarding the Authorship of the lot at the time of sale; (d) Authorship of any lot which as of the date of sale was in accordance with the then generally-accepted opinion of scholars and specialists regarding the same; or (e) the identification of periods or dates of creation in catalog descriptions which may be proven inaccurate by means of scientific processes that are not generally accepted for use until after publication of the catalog in which the property is offered or that were unreasonably expensive or impractical to use at the time of such publication.

LIMITATION OF LIABILITY

EXCEPT AS EXPRESSLY PROVIDED ABOVE, ALL PROPERTY IS SOLD "AS IS." NEITHER BONHAMS NOR THE CONSIGNOR MAKES ANY REPRESENTATION OR WARRANTY, EXPRESS OR IMPLIED, AS TO THE MERCHANTABILITY, FITNESS OR CONDITION OF THE PROPERTY OR AS TO THE CORRECTNESS OF DESCRIPTION, GENUINENESS, ATTRIBUTION, PROVENANCE OR PERIOD OF THE PROPERTY OR AS TO WHETHER THE PURCHASER ACQUIRES ANY COPYRIGHTS OR OTHER INTELLECTUAL PROPERTY RIGHTS IN LOTS SOLD OR AS TO WHETHER A WORK OF ART IS SUBJECT TO THE ARTIST'S MORAL RIGHTS OR OTHER RESIDUAL RIGHTS OF THE ARTIST. THE PURCHASER EXPRESSLY ACKNOWLEDGES AND AGREES THAT IN NO EVENT SHALL BONHAMS BE LIABLE FOR ANY DAMAGES INCLUDING, WITHOUT LIMITATION, ANY COMPENSATORY, INCIDENTAL OR CONSEQUENTIAL DAMAGES.

SELLER'S GUIDE

SELLING AT AUCTION

Bonhams can help you every step of the way when you are ready to sell art, antiques and collectible items at auction. Our regional offices and representatives throughout the US are available to service all of your needs. Should you have any further questions, please visit our website at **www.bonhams.com/us** for more information or call our Client Services Department at +1 (212) 644 9001.

AUCTION ESTIMATES

The first step in the auction process is to determine the auction value of your property. Bonhams' world-renowned specialists will evaluate your special items at no charge and in complete confidence. You can obtain an auction estimate in many ways:

- Attend one of our Auction Appraisal Events held regularly at our galleries and in other major metropolitan areas. The updated schedule for Bonhams Auction Appraisal Events is available at **www.bonhams.com/us.**
- Call our Client Services Department to schedule a private appointment at one of our galleries. If you have a large collection, our specialists can travel, by appointment, to evaluate your property on site.
- Send clear photographs to us of each individual item, including item dimensions and other pertinent information with each picture. Photos should be sent to Bonhams' address in envelopes marked as "photo auction estimate". Alternatively, you can submit your request using our online form at **www.bonhams.com/us**. Digital images may be attached to the form. Please limit your images to no more than five (5) per item.

CONSIGNING YOUR PROPERTY

After you receive an estimate, you may consign your property to us for sale in the next appropriate auction. Our staff assists you throughout the process, arranging transportation of your items to our galleries (at the consignor's expense), providing a detailed inventory of your consignment, and reporting the prices realized for each lot. We provide secure storage for your property in our warehouses and all items are insured throughout the auction process. You will receive payment for your property approximately 35 days after completion of sale.

Sales commissions vary with the potential auction value of the property and the particular auction in which the property is offered. Please call us for commission rates.

PROFESSIONAL APPRAISAL SERVICES

Bonhams' specialists conduct insurance and fair market value appraisals for private collectors, corporations, museums, fiduciaries and government entities on a daily basis. Insurance appraisals, used for insurance purposes, reflect the cost of replacing property in today's retail market. Fair market value appraisals are used for estate, tax and family division purposes and reflect prices paid by a willing buyer to a willing seller.

When we conduct a private appraisal, our specialists will prepare a thorough inventory listing of all your appraised property by category. Valuations, complete descriptions and locations of items are included in the documentation.

Appraisal fees vary according to the nature of the collection, the amount of work involved, the travel distance, and whether the property is subsequently consigned for auction.

Our appraisers are available to help you anywhere and at any time. Please call our Client Services Department to schedule an appraisal.

ESTATE SERVICES

Since 1865, Bonhams has been serving the needs of fiduciaries – lawyers, trust officers, accountants and executors – in the disposition of large and small estates. Our services are specially designed to aid in the efficient appraisal and disposition of fine art, antiques, jewelry, and collectibles. We offer a full range of estate services, ranging from flexible financial terms to tailored accounting for heirs and their agents to world-class marketing and sales support.

For more information or to obtain a detailed Trust and Estates package, please visit our website at **www.bonhams.com/us** or contact our Client Services Department.

BUYER'S GUIDE

BIDDING & BUYING AT AUCTION

Whether you are an experienced bidder or an enthusiastic novice, auctions provide a stimulating atmosphere unlike any other. Bonhams previews and sales are free and open to the public. As you will find in these directions, bidding and buying at auction is easy and exciting. Should you have any further questions, please visit our website at **www.bonhams.com** or call our Client Services Department at +1 (212) 644 9001.

Catalogs

Before each auction we publish illustrated catalogs. Our catalogs provide descriptions and estimated values for each "lot." A lot may refer to a single item or to a group of items auctioned together. The catalogs also include the dates and the times for the previews and auctions. We offer our catalogs by subscription or by single copy. For information on subscribing to our catalogs, you may refer to the subscription form in this catalog, call our Client Services Department, or visit our website at **www.bonhams.com/us**.

Previews

Auction previews are your chance to inspect each lot prior to the auction. We encourage you to look closely and examine each object on which you may want to bid so that you will know as much as possible about it. Except as expressly set forth in the Conditions of Sale, items are sold "as is" and with all faults; illustrations in our catalogs, website and other materials are provided for identification only. At the previews, our staff is always available to answer your questions and guide you through the auction process. Condition reports may be available upon request.

Estimates

Bonhams catalogs include low and high value estimates for each lot, exclusive of the buyer's premium and tax. The estimates are provided as an approximate guide to current market value based primarily on previous auction results for comparable pieces, and should not be interpreted as a representation or prediction of actual selling prices. They are determined well in advance of a sale and are subject to revision. Please contact us should you have any questions about value estimates.

Reserves

Unless indicated by the ¤ symbol next to the lot number, which denotes no reserve, all lots in the catalog are subject to a reserve. The reserve is the minimum auction price that the consignor is willing to accept for a lot. This amount is confidential and does not exceed the low estimate value.

Auction House's Interest in Property Offered at Auction

On occasion, Bonhams may offer property in which it has an ownership interest in whole or in part or otherwise has an economic interest. Such property, if any, is identified in the catalog with a ▲ symbol next to the lot number(s).

Bonhams may also offer property for a consignor that has been guaranteed a minimum price for its property by Bonhams or jointly by Bonhams and a third party. Bonhams and any third parties providing a guarantee may benefit financially if the guaranteed property is sold successfully and may incur a financial loss if its sale is not successful. Such property, if any, is identified in the catalog with a ○ symbol next to the lot number(s).

Bidding at Auction

At Bonhams, you can bid in many ways: in person, via absentee bid, over the phone, or via Bonhams' live online bidding facility. Absentee bids can be submitted in person, online, via fax or via email.

Valid Bonhams client accounts are required to participate in bidding activity. You can obtain registration information online, at the reception desk or by calling our Client Services Department.

By bidding at auction, whether in person or by agent, by absentee bid, telephone, online or other means, the buyer or bidder agrees to be bound by the Conditions of Sale. Lots are auctioned in consecutive numerical order as they appear in the catalog. Bidding normally begins below the low estimate. The auctioneer will accept bids from interested parties present in the saleroom, from telephone bidders, and from absentee bidders who have left written bids in advance of the sale. The auctioneer may also execute bids on behalf of the consignor by placing responsive or consecutive bids for a lot up to the amount of the reserve, but never above it.

We assume no responsibility for failure to execute bids for any reason whatsoever.

In Person

If you are planning to bid at auction for the first time, you will need to register at the reception desk in order to receive a numbered bid card. To place a bid, hold up your card so that the auctioneer can clearly see it. Decide on the maximum auction price that you wish to pay, exclusive of buyer's premium and tax, and continue bidding until your bid prevails or you reach your limit. If you are the successful bidder on a lot, the auctioneer will acknowledge your paddle number and bid amount.

Absentee Bids

As a service to those wishing to place bids, we may at our discretion accept bids without charge in advance of auction online or in writing on bidding forms available from us. "Buy" bids will not be accepted; all bids must state the highest bid price the bidder is willing to pay. Our auction staff will try to bid just as you would, with the goal of obtaining the item at the lowest bid price possible. In the event identical bids are submitted, the earliest bid submitted will take precedence. Absentee bids shall be executed in competition with other absentee bids, any applicable reserve, and bids from other auction participants. A friend or agent may place bids on your behalf, provided that we have received your written authorization prior to the sale. Absentee bid forms are available in our catalogs, online at **www.bonhams.com/us**, at offsite auction locations, and at our San Francisco, Los Angeles and New York galleries.

By Telephone

Under special circumstances, we can arrange for you to bid by telephone. To arrange for a telephone bid, please contact our Client Services Department a minimum of 24 hours prior to the sale.

Online

We offer live online bidding for most auctions and accept absentee bids online for all our auctions.
Please visit **www.bonhams.com/us** for details.

Bid Increments

Bonhams generally uses the following increment multiples as bidding progresses:

$50-200	by $10s
$200-500	by $20/50/80s
$500-1,000	by $50s
$1,000-2,000	by $100s
$2,000-5,000	by $200/500/800s
$5,000-10,000	by $500s
$10,000-20,000	by $1,000s
$20,000-50,000	by $2,000/5,000/8,000s
$50,000-100,000	by $5,000s
$100,000-200,000	by $10,000s
above $200,000	at auctioneer's discretion

The auctioneer may split or reject any bid at any time at his or her discretion as outlined in the Conditions of Sale.

Currency Converter

Solely for the convenience of bidders, a currency converter may be provided at Bonhams' auctions. The rates quoted for conversion of other currencies to U.S. Dollars are indications only and should not be relied upon by a bidder, and neither Bonhams nor its agents shall be responsible for any errors or omissions in the operation or accuracy of the currency converter.

Buyer's Premium

A buyer's premium is added to the winning bid price of each individual lot purchased, at the rates set forth in the Conditions of Sale. The winning bid price plus the premium constitute the purchase price for the lot. Applicable sales taxes are computed based on this figure, and the total becomes your final purchase price.

Unless specifically illustrated and noted, fine art frames are not included in the estimate or purchase price. Bonhams accepts no liability for damage or loss to frames during storage or shipment.

All sales are final and subject to the Conditions of Sale found in our catalogs, on our website, and available at the reception desk.

Payment

All buyers are asked to pay and pick up by 3pm on the business day following the auction. Payment may be made to Bonhams by cash, checks drawn on a U.S. bank, money order, wire transfer, or by Visa, MasterCard, American Express or Discover credit or charge card or debit card. All items must be paid for within 5 business days of the sale. Please note that payment by personal or business check may result in property not being released until purchase funds clear our bank. For payments sent by mail, please remit to Cashier Department, 220 San Bruno Avenue, San Francisco, CA 94103.

Sales Tax

Residents of states listed in Paragraph 1 of the Conditions of Sale must pay applicable sales tax. Other state or local taxes (or compensation use taxes) may apply. Sales tax will be automatically added to the invoice unless a valid resale number has been furnished or the property is shipped via common carrier to destinations outside the states listed in the Conditions of Sale. If you wish to use your resale license please contact Cashiers for our form.

Shipping & Removal

Bonhams can accommodate shipping for certain items. Please contact our Cashiers Department for more information or to obtain a quote. Carriers are not permitted to deliver to PO boxes.

International buyers are responsible for all import/export customs duties and taxes. An invoice stating the actual purchase price will accompany all international purchases.

Collection of Purchases

Please arrange for the packing and transport of your purchases prior to collection at our office. If you are sending a third party shipper, please request a release form from us and return it to +1 (212) 644 9009 prior to your scheduled pickup. To schedule collection of purchases, please call +1 (212) 644 9001.

Handling and Storage Charges

Please note that our offices have requirements for freight elevator usage. Please contact us to schedule an elevator appointment for pickup of any large or awkward items. Bonhams will hold all purchased lots in our gallery until 5pm Wednesday December 6 without penalty. After Wednesday December 6 oversized lots (noted as W next to the lot number and/or listed on page N/A) will be sent to Cadogan Tate where transfer and full value protection fees will be immediately applicable. Storage charges will begin accruing for any lots not collected within 5 business days of the date of auction. All other sold lots will be retained in Bonhams Gallery until Wednesday 20th December without penalty provided however that if buyers of oversized lots also buy other non listed lots these other lots will also be sent to Cadogan Tate where Transfer and full value protection fees will be immediately applicable. collection of lots will be by appointment only. Please call +1 (212) 644 9001 at least 24 hours in advance to make an appointment.

Storage charges of $5 per lot, per day will begin accruing for any lots not collected by the 31st day after the auction. Bonhams reserves the right to remove uncollected sold lots to the warehouse of our choice at the buyer's risk and expense. Handling and storage fees will apply.

Auction Results

All you need is a touch-tone telephone and the lot number. Auction results are usually available on the next business day following the sale or online at **www.bonhams.com/us.**

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- Auction and Preview Information
- Directions to Bonhams's salesrooms
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(Attendee / Absentee / Online / Telephone Bidding)
Please circle your bidding method above.

Bonhams

Paddle number (for office use only)

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Sale title:	Sale date:
Sale no.	Sale venue:

General Bid Increments:

$10 - 200 .....by 10s	$10,000 - 20,000 .....by 1,000s
$200 - 500 .....by 20 / 50 / 80s	$20,000 - 50,000 .....by 2,000 / 5,000 / 8,000s
$500 - 1,000 .....by 50s	$50,000 - 100,000 .....by 5,000s
$1,000 - 2,000 .....by 100s	$100,000 - 200,000 .....by 10,000s
$2,000 - 5,000 .....by 200 / 500 / 800s	above $200,000 .....at the auctioneer's discretion
$5,000 - 10,000 .....by 500s	The auctioneer has discretion to split any bid at any time.

Customer Number	Title
First Name	Last Name
Company name (to be invoiced if applicable)	
Address	
City	County / State
Post / Zip code	Country
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Resale: please enter your resale license number here
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You instruct us to execute each absentee bid up to the corresponding bid amount indicated above.

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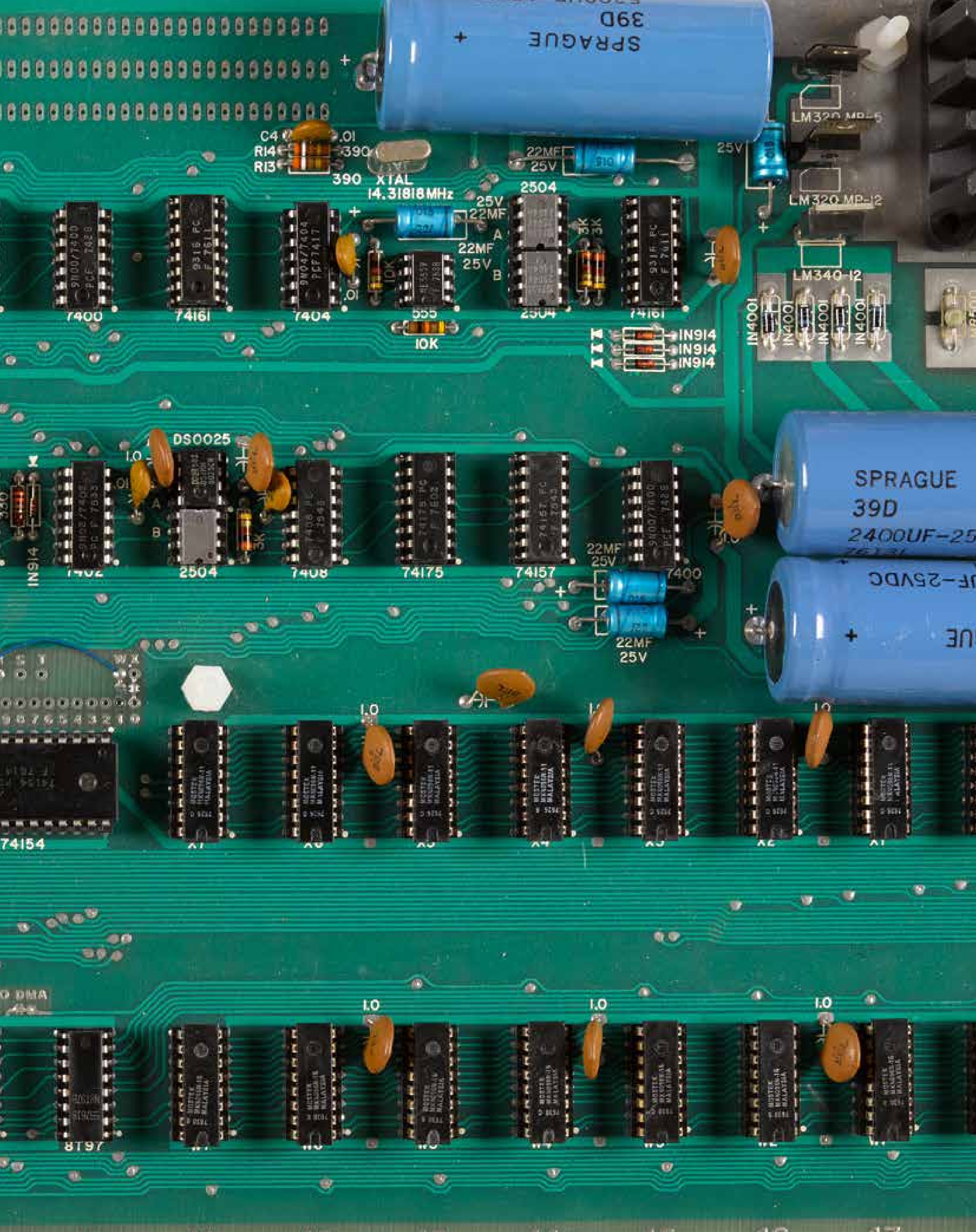
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C4
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390
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14.31818MHz
22MF
25V
2504
LM320 MP-12
LM340-12
7400
74161
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Bonhams
580 Madison Avenue
New York, NY 10022

+1 212 644 9001
+1 212 644 9009 fax