

A black and white portrait of Albert Einstein, showing his characteristic wild hair and mustache. He is looking directly at the camera with a serious expression. He is wearing a dark sweater over a light-colored collared shirt. His hands are visible at the bottom, holding a pair of glasses.

Sotheby's EST. 1744

HISTORY OF  
SCIENCE  
& TECHNOLOGY

NEW YORK 12 DECEMBER 2017



*Just*

note There ~~there~~ are number of  $X_\lambda$ 's  
 (or of  $Y_\lambda$ 's) in  $\Phi$  is

$$e_\lambda^{(0)} = \binom{X_\lambda^{(0)} Y_\lambda^{(0)}}{\lambda} e_\lambda^{(0)}$$

$$e_\lambda^{(1)} = \binom{X_\lambda^{(1)} Y_\lambda^{(1)}}{\lambda} e_\lambda^{(1)}$$

$$e_\lambda^{(k-1)} = \binom{X_\lambda^{(k-1)} Y_\lambda^{(k-1)}}{\lambda} e_\lambda^{(k-1)}$$

$$\text{L.P. is } e_\lambda^0 + e_\lambda^{(1)} + \dots + e_\lambda^{(k-1)} = l_\lambda$$

where ~~the~~  $l_\lambda$  is the power of  $(s - c_\lambda)$  in  $f^s$ .

Hence the total number of  $X$ 's (or  $Y$ 's) in  $\Phi$

$$\text{is } \sum_{\lambda=1}^p l_\lambda = n.$$

Since all the  $X$ 's and  $Y$ 's in  $\binom{X_\lambda^{(k-1)} Y_\lambda^{(k-1)}}{\lambda} e_\lambda^{(k-1)}$   
 also occur in  $\binom{X_\lambda^{(k-1)} Y_\lambda^{(k-1)}}{\lambda} e_\lambda^{(k-1)}$ , — but in different  
 combinations — the same  $X$ 's and  $Y$ 's had none  
~~others~~ — also occur in  $\Psi$   
 N.B. One  $X$  and one  $Y$  in  $\binom{X_\lambda^{(k-1)} Y_\lambda^{(k-1)}}{\lambda} e_\lambda^{(k-1)}$  do not occur in  $\binom{X_\lambda^{(k-1)} Y_\lambda^{(k-1)}}{\lambda} e_\lambda^{(k-1)}$



Thus from formula (25) we have at once

$$\Phi = h g P + h \varphi = \sum_{\lambda=1}^p \sum_{k=1}^{k_\lambda} \left( X_{\lambda}^{(k-1)} Y_{\lambda}^{(k-1)} \right) e_{\lambda}^{(k-1)}$$

$$\Psi = g' P + h' \varphi = \sum_{\lambda=1}^p \sum_{k=1}^{k_\lambda} \left( X_{\lambda}^{(k-1)} Y_{\lambda}^{(k-1)} \right) e_{\lambda}^{(k-1)} + \sum_{\lambda=1}^p \sum_{k=1}^{k_\lambda} c_{\lambda} \left( X_{\lambda}^{(k-1)} Y_{\lambda}^{(k-1)} \right) e_{\lambda}^{(k-1)}$$

HISTORY OF SCIENCE } (38)

where

$$y_{\beta} = \frac{\partial \Phi}{\partial y_{\beta}} = \sum_{\alpha} (g A_{\alpha\beta} + h B_{\alpha\beta}) x_{\alpha}$$

$$y_{\alpha} = \frac{\partial \Phi}{\partial x_{\alpha}} = \sum_{\beta} (g A_{\alpha\beta} + h B_{\alpha\beta}) y_{\beta}$$

Hence

$$X_{\lambda\mu}^{(k-1)} = \frac{1}{V_{\lambda}^{(k-1)}} \left\{ \sum_{\beta=k}^n \beta_{\lambda\mu} \left( g \frac{\partial P}{\partial y_{\beta}} + h \frac{\partial \varphi}{\partial y_{\beta}} \right) \right\}$$

$$Y_{\lambda\nu}^{(k-1)} = \frac{1}{V_{\lambda}^{(k-1)}} \sum_{\alpha=k}^n \alpha_{\lambda\nu} \left( g \frac{\partial P}{\partial x_{\alpha}} + h \frac{\partial \varphi}{\partial x_{\alpha}} \right)$$

(39)







# HISTORY OF SCIENCE & TECHNOLOGY

AUCTION IN NEW YORK  
12 DECEMBER 2017  
SALE N09686  
1:00 PM

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10 am-5 pm

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DEN 27 NOVEMBER 1895 UPPRÄTTATS AV  
**ALFRED NOBEL,**  
ÄGER ATT MED NOBELPRIS BELÖNA  
DEN VIKTIGASTE UPPTÄCKT VARMED DE

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Überreicht vom Verfasser

Über formal unentscheidbare Sätze der  
Principia Mathematica und verwandter  
Systeme I.

Von

Kurt Gödel in Wien.

---

Aus den Monatsheften für Mathematik und Physik, XXXVIII. Band, 1. Heft

---

Leipzig 1931

Akademische Verlagsgesellschaft m. b. H.

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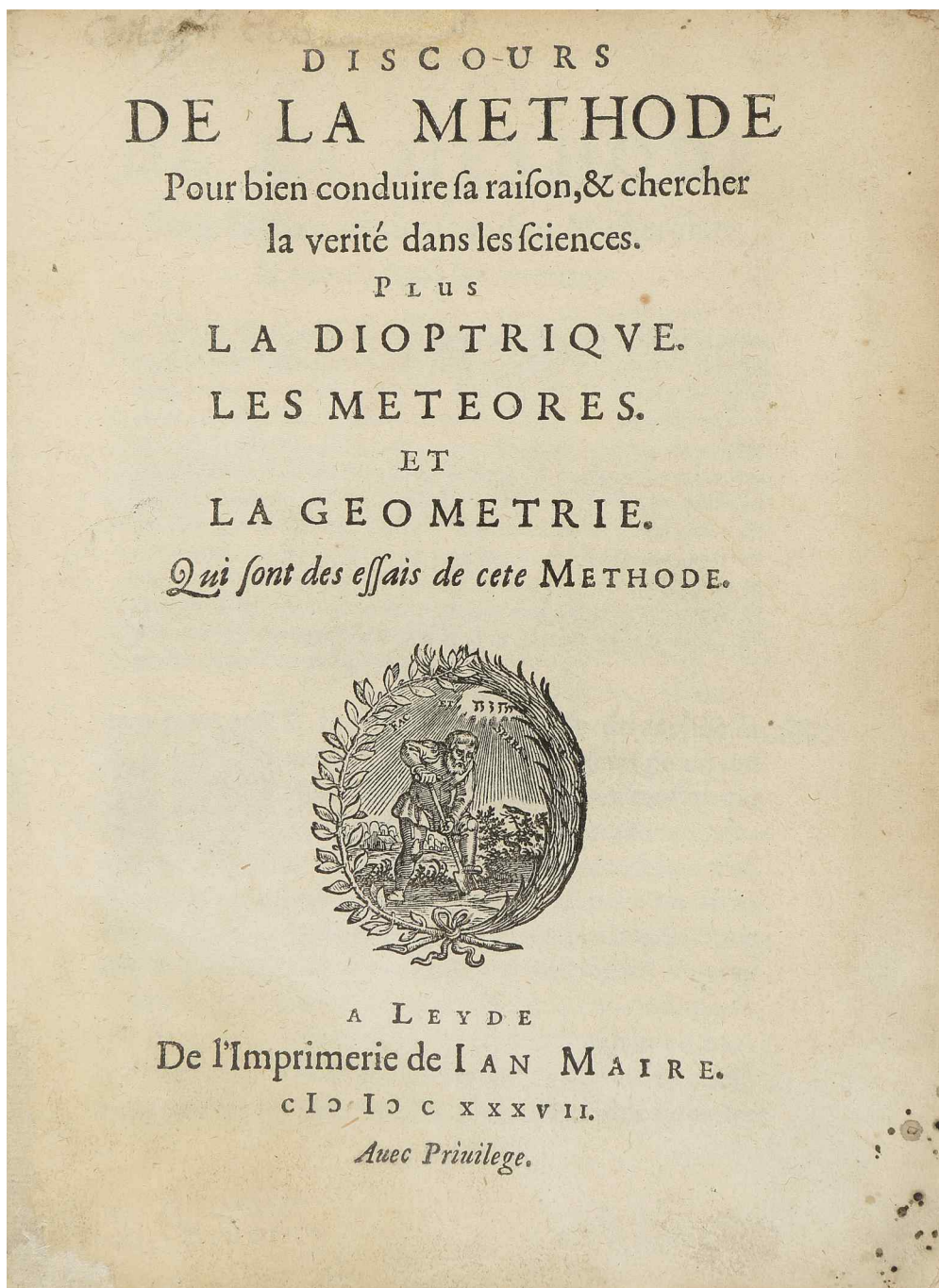


DEVELOPMENT  
OF THE  
SCIENTIFIC  
METHOD

“Cogito Ergo Sum.”

RENÉ DESCARTES

LOT 1



1



1

PROPERTY OF A WEST COAST COLLECTOR

## DESCARTES, RENÉ

*Discours de la méthode pour bien conduire sa raison, & chercher la vérité dans les sciences. Plus La dioptrique. Les météores. Et la géométrie. Qui sont des essais de cete méthode.* Leiden: Jan Maire, 1637

4to (196 x 147 mm). Woodcut printer's device on title, 3 section-titles, woodcut initials, numerous woodcut text diagrams and illustrations, errata and licenses Kkk3.4; title-page lightly soiled with some minor marginal repairs and an inscription ("Collegii ...") faded or effaced, light dampstaining at upper margin and fore-edge, first four gatherings with some soiling at top as well, a little scattered other foxing or soiling, tiny hole on i1 just touching two letters. Early vellum with overlapping fore-edges; ties lost. Cream buckram folding case, red morocco label.

FIRST EDITION OF A FUNDAMENTAL WORK FOR BOTH PHILOSOPHY AND SCIENTIFIC METHODOLOGY. Descartes's first and most celebrated publication is the basis for his far-reaching influence as a philosopher and scientist. He makes three essential points in the *Discours*: "the truth of thought, when thought is true to itself (*cogito, ergo sum*), the inevitable

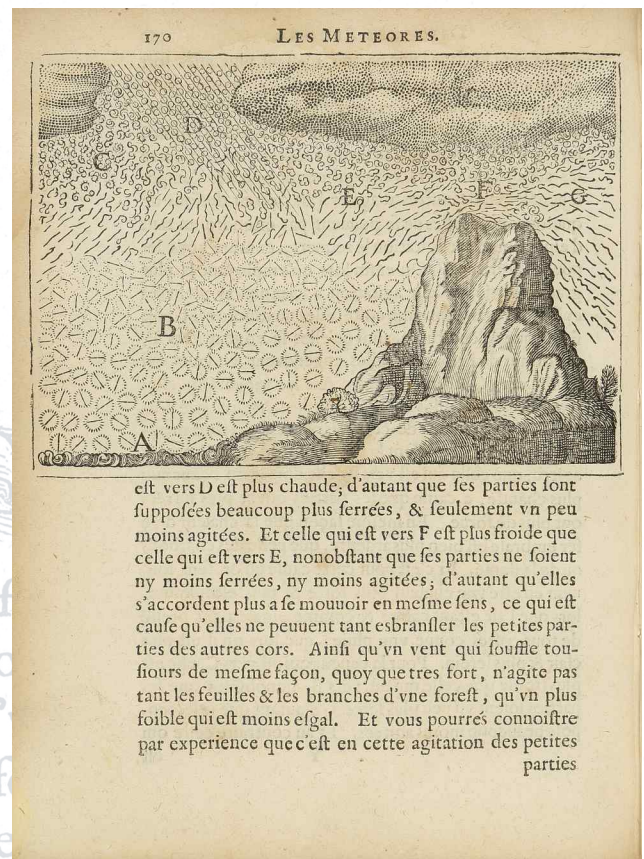
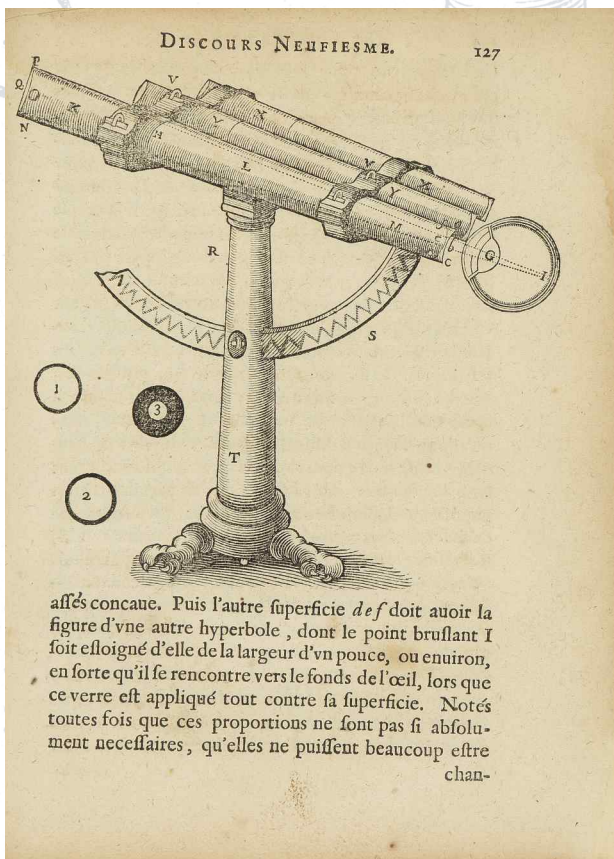
elevation of its partial state in our finite consciousness to its full state in the infinite existence of God and the ultimate reduction of the material universe to extension and local movement. From these central propositions in logic, metaphysics and physics came the subsequent enquiries of Locke, Leibniz and Newton; from them stem all modern scientific and philosophic thought" (*Printing and the Mind of Man*).

The now famous Cartesian method is outlined in the Four Rules presented in Book II. Books III and IV contain discussions of metaphysics and physiology, the latter of which includes a reference to Harvey's discovery of the circulation of blood. The appended essays on optics, meteorology, and geometry demonstrate the type of results that can be obtained by employing his rules of scientific investigation. His essay on optics contains important observations and experiments on refraction as well as one of the earliest mentions of Snell's law of refraction. His brilliant treatise on geometry laid the foundation for analytic geometry.

## REFERENCES

Dibner, *Heralds of Science* 81; Grolier/Horblit 24; Guibert, *Bib. Descartes* 1; Krivatsky 3114; Norman 621; *Printing and the Mind of Man* 129

\$ 80,000-120,000



toutes fois que ces proportions ne sont pas si absolument necessaires, qu'elles ne puissent beaucoup estre



# ASTRONOMY

LOTS 2-21





## LUBIENIECKI, STANISŁAW

[Theatri Cometici pars posterior] *Historia Cometarum, a Diluvio usque ad præsentem annum vulgaris Epochæ à Christo nato 1665. Decurrentem, Unà cum Indiculo lætorum & tristium eventuum, Cometarum apparitionem secutorum, In qua simul Synopsis quædam Universalis Historiæ proponitur.* Amsterdam: Daniele Baccamude, 1666. [BOUND WITH]: *Theatri cometici Exitus De significatione Cometarum...* Amsterdam: Daniele Baccamude, 1668

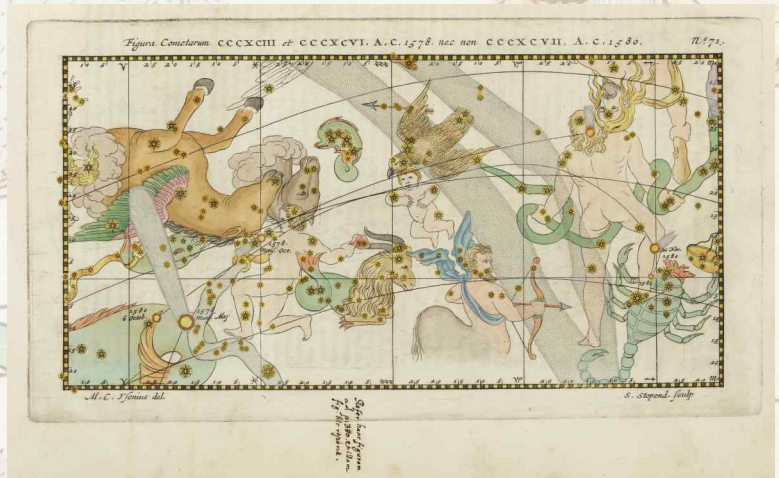
Parts II-III only (of III). Folio (383 x 223 mm). Half-title and 2 letterpress titles. With 2 elaborately engraved allegorical titles by Sebastien Stopendaal after M. Scheits, both richly hand-colored and heightened in gold, and 24 hand-colored engraved plates (20 full page, 2 double page, and 1 portrait of Joannes Ernestus de Rautenstein). Contemporary calf, covers with rules and wreath devices in gilt; all edges gilt and gaufered. Rebacked with remains of original white-washed spine laid down, red cloth repairs to hinges. Open tear with loss of text to lower corner of A4; small closed tear to pl 60, lengthy closed tear to pl 72, small closed tear to H3; approx. 5½ in. tear along gutter of plate 72. Other scattered small closed tears not affecting text or plates. Some light finger-soiling and foxing, but mainly a pleasant copy.

FIRST EDITION, FINISHED IN RICH HANDCOLOR — ONE OF A FEW KNOWN HAND-COLORED COPIES. "CET OUVRAGE EST SI RARE, QUE BENTKOWSKI ... QUI N'A VU QUE LA 1RE PARTIE, DOUTE SI LA CONTINUATION AIT PARU!" (Graesse). Lubieniecki's encyclopedic treatise gathered together the observations of dozens of his contemporaries including Bayer and Hevelius, covering all known comets up to the year 1665. The fine engravings consist of celestial maps showing the paths of comets and the figures of the constellations traversed. "Since each map represents the observations of a different astronomer, taken together they illustrate the variety of cartographic traditions popular during the seventeenth century." (Warner, *The Sky Explored*, p. 164). Halley's Comet, for example, is shown during its 1607 apparition (facing p. 406). The second part (offered here) provides a chronology of 415 comet sightings from the flood (the first report is dated to 2312 BC) to 1665, with commentaries, drawn from a range of historical sources. Rarely encountered in anything near a complete state, even when found in all three parts. Only two complete copies of the first edition are recorded at auction since 1975 by ABPC: the Honeyman and Dunham copies. A third copy, with 3 additional titles and 81 plates, but lacking one of the 2 portraits, was sold in 1989. Of the three copies held by the British Library, two are substantially defective.

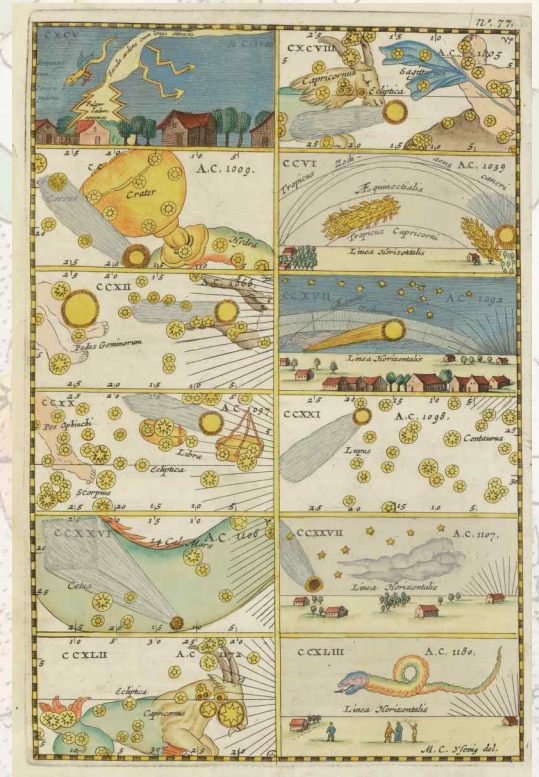
## REFERENCES

Brunet III, 1194; Graesse IV, p 270; Honeyman 2052; Knijff & Jan Visser, *Bibliographia Sociana* 2067; Poggendorff I, 1508; Thorndike *History of Magic and Experimental Science* VIII, 336; Warner 1641; Not in Houzeau and Lancaster.

\$ 18,000-20,000

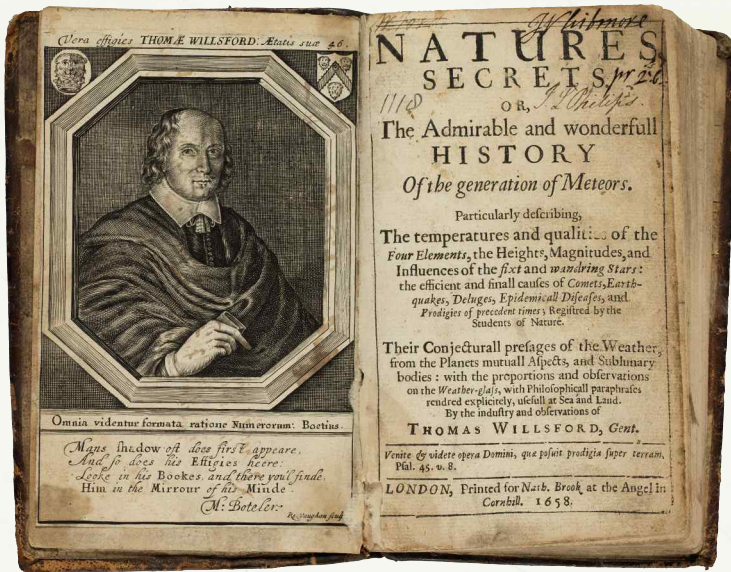


2



2





3

3

**WILLSFORD, THOMAS**

*Nature's Secrets. Or, The Admirable and wonderfull History Of the generation of Meteors ...* London: Printed for Nath. Brook, 1658

8vo (155 x 95 mm). Engraved frontispiece portrait by R. Vaughan, full-page woodcut on p. 150. Extensive contemporary marginalia, especially to paste-downs and fly-leaves, some minor dampstaining and soiling, frontis. laid down, small loss to inner margin of title-page (not affecting text), some headlines just clipped, lacking advertisements. Contemporary sheep with gilt red label to spine; somewhat worn.

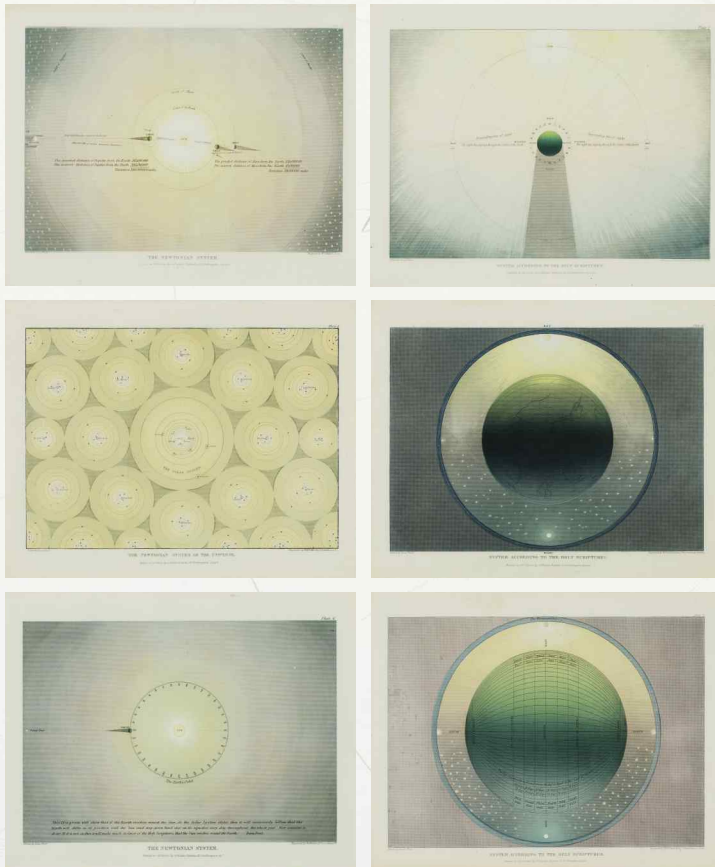
**FIRST EDITION OF THIS ARISTOTELIAN COSMOLOGY AND EXPLANATION OF COMETS AND METEORS.**

With numerous and enthusiastic contemporary notes from a previous owner, including a consideration of the Devil's various exploits ("The Devil who having great Skill in natural causes, & a large command over the Air and other elements, may afsist those that are in league ... with him to do many strange and astonishing things"), physiological responses to lightning ("Do not stand gazing upon lightning for it may hurt the sight, swel the face, or make it break out with scabs or leprosy with its sulphuros poysonous substances"), and astrology ("Superstitious observation of the stars, attributing to them the power of overruling as well our mind as our bodies and that inevitably too, without leaving us any power to decline their influences, is perniciously abominable"). An interesting relic of an early would-be scholar seeking to understand the heavenly bodies, and the world around him.

**REFERENCES**

ESTC R204119; Wing W2875

\$ 2,000-3,000



4

4

**FROST, ISAAC (AFTER)**

Set of Six Muggletonian Astronomical Prints from *Two Systems of Astronomy*. London: George Baxter, 1846

6 engravings printed in colors (each approximately 10 x 12½ in.; 255 x 315 mm), plates 1 (The Newtonian System of the Universe), 3 (The Newtonian System), 6 (The Newtonian System), 7 (System According to the Holy Scriptures), 9 (System According to the Holy Scriptures) and 10 (Night - System According to the Holy Scriptures), engraved by Clubb & Son, printed by G. Baxter. Some minor wear and light browning to edges. Framed and glazed.

A series of six astronomical engravings in tones of blue, white, yellow, and green, intended to demonstrate the geocentric model of the universe, based on planetary charts drawn by Isaac Frost, an artist and scientist associated with a Victorian sect known as the Muggletonians. They were engraved by Chubb & Son, London, and printed by George Baxter, who employed his innovative oil color printing technique that permitted subtle gradations and seamless transitions between colors for a glowing effect.

\$ 2,500-3,500





5

## HERSCHEL, JOHN FREDERICK WILLIAM

An archive of letters to English Geologist Dr. William H. Fitton, and 3 autograph manuscripts treating mathematics and the election of the Royal Society's officers, August 31, 1827- August 9, 1829

7 autograph letters signed ("JFW Herschel" or "JFWH") in total 20 pages, and 3 undated autograph manuscripts, 6 pages in total, all ranging in size from 115 x 93 mm to 314 x 198 mm.

"YOU WILL THINK ME A SAD DOG, BUT IN TRUTH I AM HARASSED. WHAT WITH MY BOOK, THE THIRD PART OF WHICH I HAVE WRITTEN AT LEAST 3 TIMES OVER AND WHICH, AFTER ALL, IS DONE MOST WRETCHEDLY, AND WHAT WITH SITTING UP STAR-GAZING THESE SUPERB NIGHTS..."

A fascinating correspondence with English Geologist Dr. William H. Fitton spanning from 1827-1830, discussing various publications, including the writing of his *Discourse on Natural Philosophy*; happenings of the Royal Society, including Sir Humphry Davy's resignation of his chair; and matters of the Geological Society amongst many other topics. The 3 autograph manuscripts consist first, of Herschel's views of the election of the Royal Society's officers; second, a large chart headed *Tangent of Angles*; and third, mathematical formulae and geometric diagrams.

John Frederick William Herschel was a renowned astronomer, mathematician, chemist, and photographer who discovered the ability of hyposulfite to be used as a fixing agent in photography, and coined the terms *photography*, *positive*, and *negative*. He published his famous treatise *Discourse on Natural Philosophy* in 1830, and made important advancements in the fields of optics and magnetism, as well as to the development of telescopes and microscopes. A prolific writer, he spent his later years building on the work of his famous father astronomer William Herschel, discovering 1,202 pairs of close double stars and 1,708 nebulae and clusters.

\$ 10,000-15,000



## TELLURIAN; TRIPPENSEE CO.

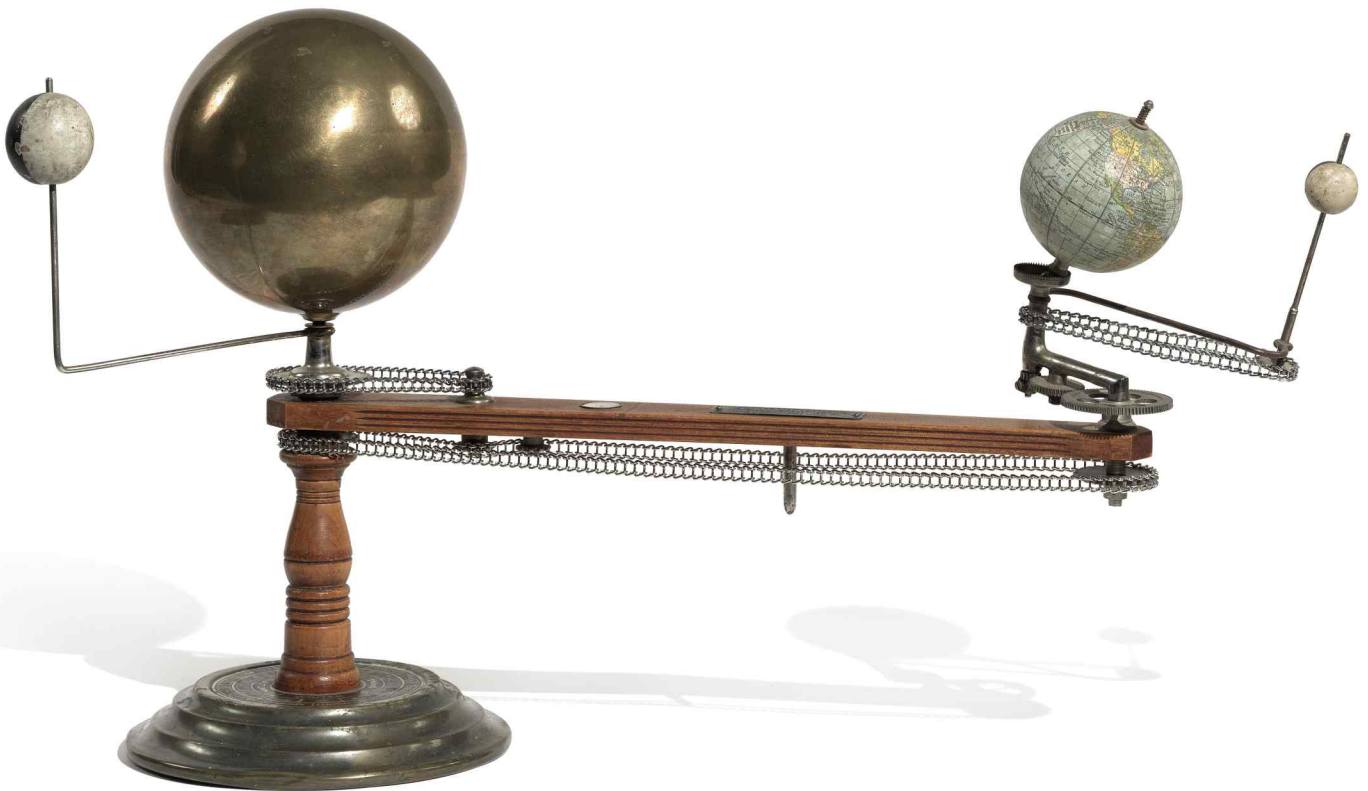
*The Trippensee Planetarium.* Detroit, Mich: The Trippensee Mfg. Co, 1908

Trippensee tellurian (14½ x 18½ in.), fitted with a 3 inch (7.6 cm) diameter terrestrial globe with 12 color printed gores over papier-mâché and plaster, signed within shield shaped cartouche in Pacific, with a 1 inch diameter wooden moon painted black and white rotating around it on a geared metal arm, the two revolving around a central 6 inch (14.8 cm) diameter brass sun which has a wooden 2 inch diameter planet Venus painted black & white rotating around it on a metal arm, all mounted on geared mechanisms on a maple arm with metal label and small compass, on turned wood stand with round brass base printed with seasons, signs of the zodiac and months. Some soiling to paper gores, paint chips to moon and Venus, some oxidation to metal components.

An excellent example of a Trippensee tellurian, a model which demonstrates the rotation of the moon around the earth, and the rotations of the earth and Venus around the sun, as well as the phases of the moon and Venus from the sun.

The Trippensee Manufacturing Company came into being in 1905 when Frank Trippensee and his brother bought out the Laing Company — a Detroit based firm that manufactured planetariums utilizing a simple string and pulley system. Trippensee devised a more complex system using a chain drive and gears, which proved remarkably successful.

**\$ 4,000-6,000**



6



## DRAPER, HENRY (ATTRIBUTED)

"Clavius, the moons diameter 30 inches", probably from Hastings-on-Hudson, NY, February 28, 1874

Albumen print (8 x 7 in.) mounted on card stock, titled and inscribed in pencil "Voigtlander 16305." Some minor fingersoiling (possibly inherent) and creasing. Matted, framed, and glazed.

ATTRIBUTED TO THE FIRST MAN TO TAKE A CLEAR PHOTOGRAPH OF THE MOON The attribution to Draper is uncertain, but he is known to have been using a Voigtlander lens for astrophotography around this time. A doctor, he was also a keen astronomer and directed an expedition to photograph the 1874 transit of Venus. "16305" is almost certainly the serial number of the lens, indicating it was manufactured in 1870.

### PROVENANCE

Ex collection of Ewen Whitaker, lunar scientist and astronomer

**\$ 4,000-6,000**

## RUTHERFURD, LEWIS MORRIS

A view of the Moon, New York, 8 January 1865

Large albumen print (21 $\frac{1}{4}$  x 17 $\frac{1}{8}$  in.) mounted on card stock (23 $\frac{1}{2}$  x 19 $\frac{1}{4}$  in.), signed and dated in-plate ("Lewis M Rutherford | New York January 8 1865"), some foxing, scattered creasing (mostly to margins), small chip to lower edge, small tear to right edge, approx $\frac{1}{2}$  inch. Framed and glazed.

A large-format photograph of the moon by Lewis Rutherford, "the greatest lunar photographer of the age" (Richard Proctor). Rutherford (1816-92) trained as a lawyer, but in 1849 he changed direction, had an observatory built at his home at 11th Street and 2nd Avenue in New York, and spent the rest of his life working on astronomical photography and spectroscopy. He was among the first American astronomers to use photography in astrophysical research, taking his first photographs from his garden observatory in 1858.

In addition to lunar photography, Rutherford produced outstanding photographs of the sun and planets, as well as star clusters and stars down to the fifth magnitude. He invented instruments for his studies, including the micrometer for measuring photographs, a machine for producing improved ruled diffraction gratings, and the first telescope designed specifically for astrophotography.

**\$ 6,000-9,000**

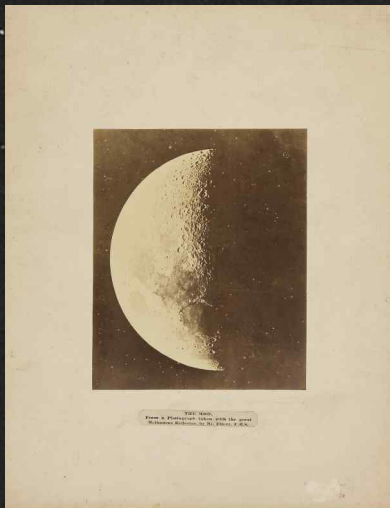


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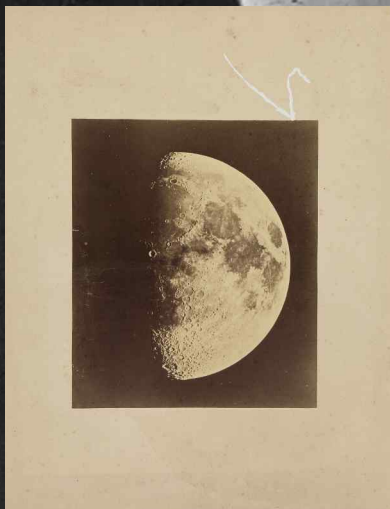




9



9



9

9

### ELLERY, ROBERT JOHN LEWIS

Three Lunar Photographs Executed at the Melbourne Observatory, n.d.

3 albumen prints (each approximately 5½ x 5½ in.) mounted on card stock (11½ x 9 in.) Each with the label of John Browning, 63 Strand London to verso, one with a printed label to front stating "The Moon, From a photograph taken with the great Melbourne Reflector, by Mr. Ellery, F. R. S." Occasional minor scuffing and creasing to photographs, some soiling and wear to card stock.

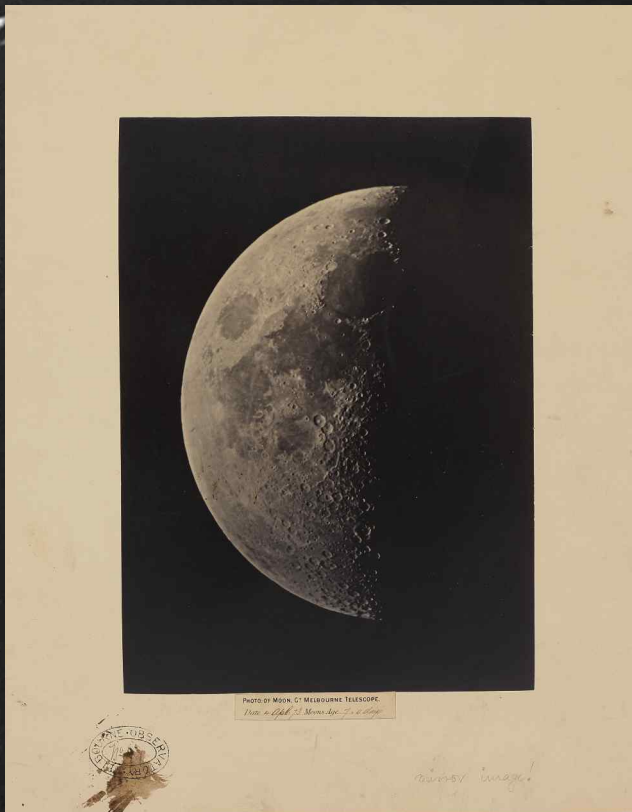
Ellery was the director of the earliest permanent observatory in Australia — the Melbourne Observatory, established in 1863 — and oversaw the installation and operation of the Great Melbourne Telescope, one of the last of a number of large speculum reflectors which became prominent in the nineteenth century and were especially associated with Irish astronomy. The idea for this telescope was first conceived by T. R. Robinson of Armagh Observatory to continue

Sir John Herschel's southern hemisphere observations of nebulae. The initial scheme foundered but was revived with interest from Melbourne in 1862. Ordered from Thomas Grubb of Dublin in 1866, the Cassegrain telescope with equatorial mounting and 48 inch primary mirror was delivered and installed in 1869. Although a number of difficulties with the mirrors and other aspects of the telescope were overcome, and some fine drawings of nebulae were made by Ellery's assistants, the telescope was at best a mixed success. Adequate means were not to hand for publication of the delicate drawings, and, while some fine photographs of the moon were taken, the telescope was not sufficiently stable for the longer exposures required for stellar photography and was unsuited for spectroscopy (DNB).

#### PROVENANCE

Ex collection of Ewen Whitaker, lunar scientist and astronomer

\$ 5,000-8,000



10

10

ELLERY, ROBERT JOHN LEWIS

Lunar photograph executed at the Melbourne Observatory, 4 April 1873

Albumen print (9¾ x 7 in.) mounted on card stock (13⅞ x 10⅞ in.), bearing the circular stamp of the Melbourne Observatory with "No. 47" written in ink the center (slightly obscured by an ink stain), and a printed paper label on the front. Some very minor scuffs to photograph, minor fingersoiling to card stock.

A MIRROR-IMAGE OF THE MOON AT 7 DAYS EXECUTED BY THE NOTED ENGLISH-AUSTRALIAN ASTRONOMER AND SCIENTIST.

**PROVENANCE**

Ex collection of Ewen Whitaker, lunar scientist and astronomer

**\$ 3,000-5,000**



11

11

ELLERY, ROBERT JOHN LEWIS

Lunar photograph executed at the Melbourne Observatory, n.d.

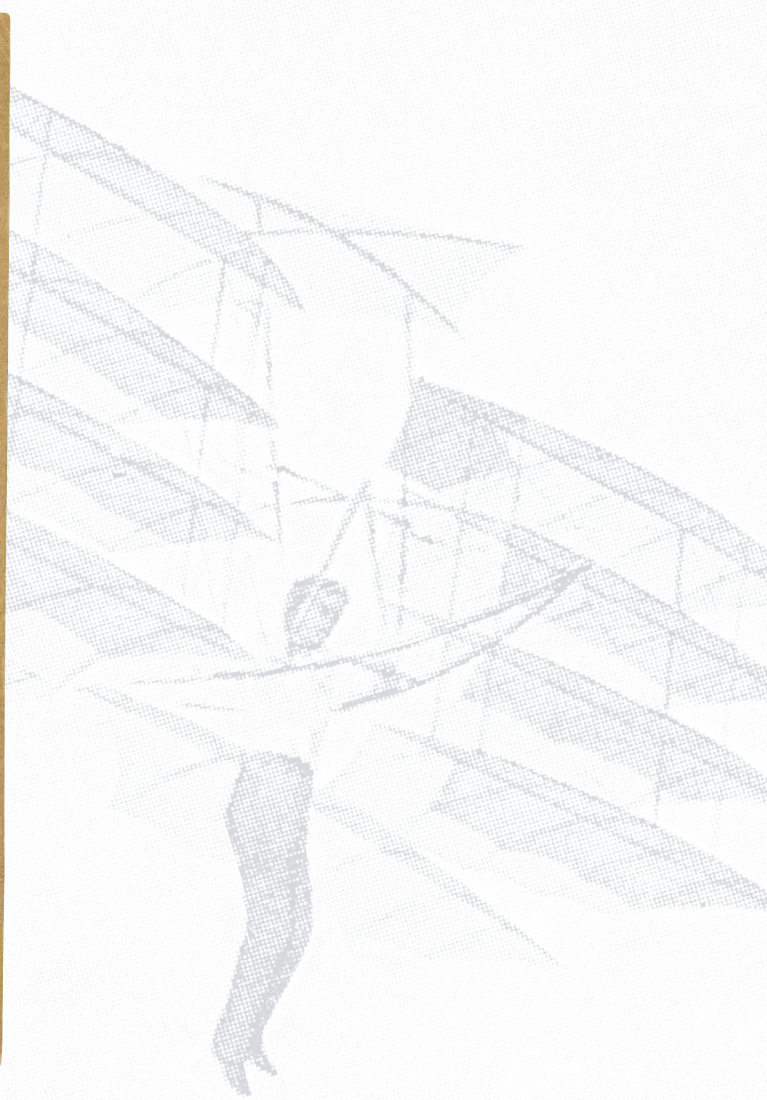
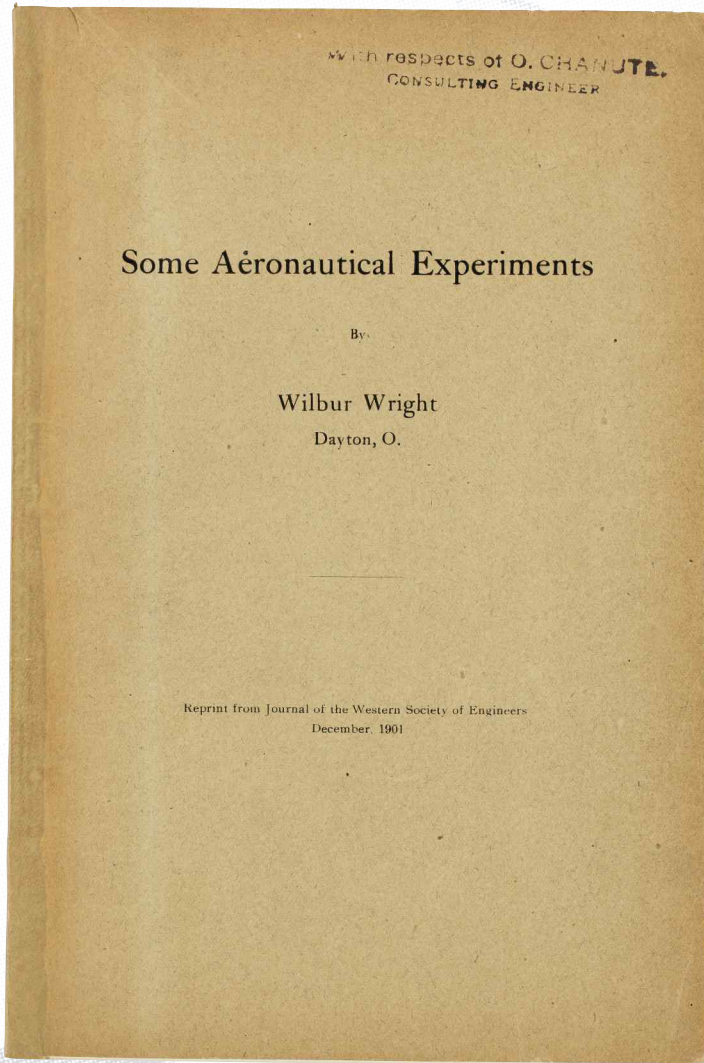
Albumen print (10⅞ x 8 in.) mounted on card stock (11¼ x 8½ in.), a few small scratches.

**PROVENANCE**

Ex collection of Ewen Whitaker, lunar scientist and astronomer

**\$ 5,000-8,000**





12

12

## WRIGHT, WILBUR

"Some Aeronautical Experiments."

Offprint from: *The Journal of the Western Society of Engineers*, Chicago: December, 1901

8vo (230 x 152 mm). 22, [1] pp. With 2 line block, and 10 quarter page half-tone illustrations. Original tan printed wrappers, stamped on the upper right corner "With respects of O. Chanute, Consulting Engineer." Some very minor internal offsetting, wrappers rebacked, some very light discoloration to wrappers, corners lightly worn, one very small edge-tear to front wrapper, still an attractive copy of a fragile work. In a half-morocco clamshell with cloth chemise.

THE RARE FIRST EDITION, OFFPRINT ISSUE OF THE WRIGHT BROTHERS' FIRST PUBLISHED REPORT ON THE TRIAL FLIGHTS AT KITTY HAWK — AN IMPORTANT ASSOCIATION COPY WITH THE PRESENTATION STAMP OF FRENCH

## AVIATION PIONEER OCTAVE CHANUTE.

"[T]he work that made their experiments famous" (Norman). In this paper, Wilbur Wright describes the progress of trials conducted on the beach at Kitty Hawk, North Carolina, during the summer of 1901, during which they achieved glides of up to 389 feet. "Their work was painstaking, thoroughly scientific, with a careful tabulation of data and critical examination of all conclusions. The glides indicated that a vertical steering rudder was essential ... and that calculations based on existing data were in error" (DSB). Wilbur and Orville Wright became interested in the practical possibility of human flight following the research of German aviation pioneer Otto Lillenthal (d. 1896). After three years of intensive research, they built their first machine, a biplane kite-glider with a fine-foot wingspan, modeled on the glider of Octave Chanute, but in a crucial advance, incorporating wing-warps, which provided a heretofore non-existent degree of lateral control. A year later they built their first full-size glider,

with a 17-foot wingspan, and shortly thereafter, in the summer of 1900, a larger glider with a 22-foot wingspan. The Wrights reported their results to the Society of Engineers at the urging of Chanute, its president, whose own experimental trials were an important stepping-stone to the Wright Brothers' success. Chanute, in a visionary move, had three hundred offprints of the paper printed (the printing of separately issued offprints was relatively unusual for engineering journals) sending half to colleagues, and the other half to the Wright Brothers.

## REFERENCES

Dibner *Heralds of Science* 185; *Dictionary of Scientific Biography* XIV 520-1; *Heirs of Prometheus* (Smithsonian Institution 1978), p 15; Norman 2266

**\$ 20,000-30,000**



## WRIGHT R-1820 "CYCLONE" RADIAL ENGINE

Wright R-1820 "Cyclone" Engine from a B-17 Flying Fortress Heavy Bomber, Wright Aeronautical Corp, ca 1931.

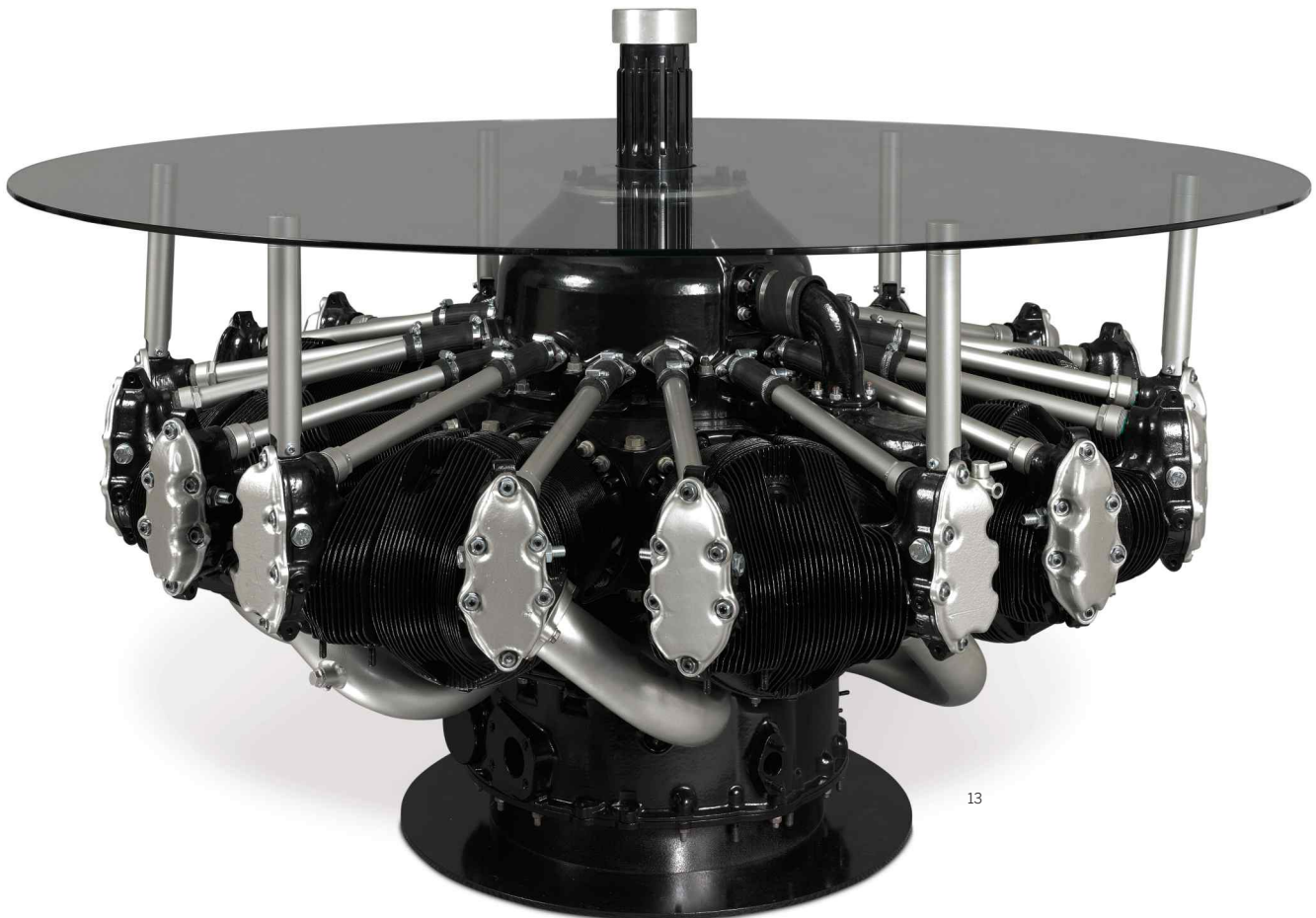
A 9-cylinder, single row, air-cooled, static radial-type engine with steel crankcase divided into 6 separate sections of heat treated metal alloy, weighing approx. 833 lbs, and measuring approx. 55" in diameter and 47" in length. Here, refinished in black with some discrete additions to body allowing the engine to be used as a glass topped table.

ONE OF THE MOST PROLIFIC PISTON ENGINES EVER PRODUCED, FROM THE GOLDEN AGE OF FLIGHT.

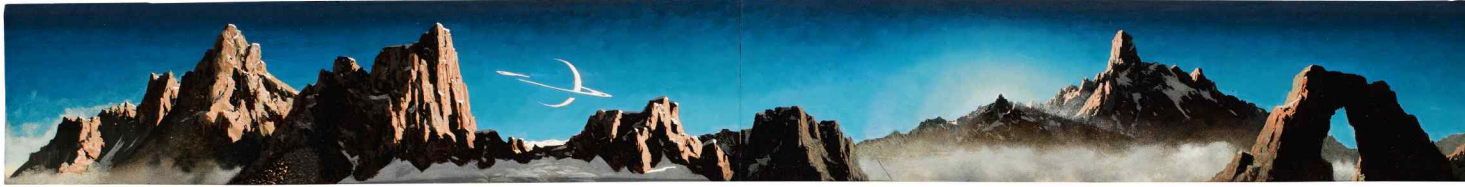
The Wright "Cyclone" R-1820, designated "R" for radial, and 1820 for displacing 1820 ci, had 9 large cylinders radiating out from a propeller shaft like the spokes of a wheel. A piston moved toward this hub, while at the same time the cylinder filled with 201 cubic inches of air mixed with gasoline, which was in turn fired by two spark plugs. The heat was then carried away by cooling fins, similar to those found on a lawnmower. Developed in the early 1930s as a descendant of the R-1750, it powered many famous aircraft, most notably the B-17 Flying Fortress.

The Curtiss-Wright Corporation was formed in 1929 from the merger of Wright Aeronautical and the Curtiss Aeroplane and Motor Company. Curtiss-Wright had three main divisions; Wright Aeronautical, which manufactured engines; Curtiss-Wright Airplane, which produced civil aircraft; and the Airplane division, which produced the military aircraft.

**\$ 10,000-15,000**







14

“Bonestell brought the edge of infinity out of the abstract and into the realm of direct experience.”

WACHORST

14

## BONESTELL, CHESLEY

"Saturn, Viewed from Titan, one of it's satellites."

A mid 1950's study for the 360° Titan panorama, a 1½ x 20 foot panorama created for the Griffith Observatory planetarium in 1959, incorporating Bonestell's most recognizable work, "Saturn viewed from Titan."

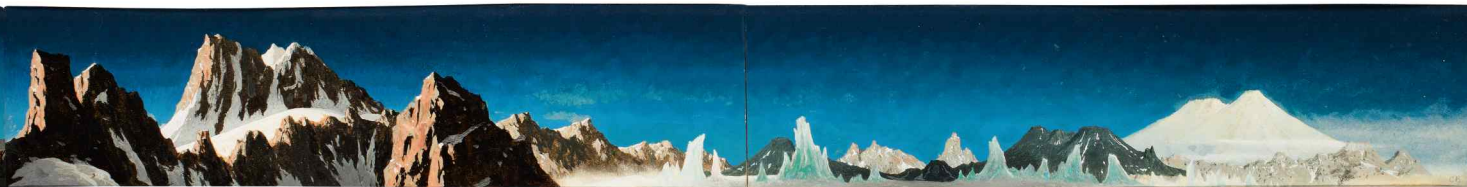
Oil on board, made up of four 3½ x 15 in. panels meant to be displayed in a continuous 360° panorama, mounted together to 8 x 30 in., signed lower right "CB." Captioned on verso in pencil in Bonestell's hand "Sketch for Griffith Observatory, L.A. 360° projected around the dome. Mid-1950's. Saturn, viewed from Titan, one of its satellites (Titan is 3,000 diam., 750,000 mi distant from Saturn). Painted by Chesley Bonestell."

A STRIKING PANORAMA, INCORPORATING BONESTELL'S MOST ICONIC WORK "SATURN AS SEEN FROM TITAN."

"Bonestell brought the edge of infinity out of the abstract and into the realm of direct experience." (Wachorst) Bonestell's *Saturn as Seen from Titan*, oft referred to as "the painting that launched a thousand careers," is probably the single most famous astronomical painting ever created. While Bonestell created hundreds of astronomical paintings in his lifetime, his 1944 *Saturn as Seen from Titan* was his favorite. It was his first published space painting, running in the May 29, 1944 issue of *Life* magazine, and it would launch an era

in which his work would ignite countless imaginations; Bonestell's fantastic depictions of worlds beyond would grace numerous issues of magazines such as *Life*, *Collier's*, *Scientific American*, *Fantasy & Science Fiction*, *Coronet* and *Pic* as well as Willy Ley's 1949 *The Conquest of Space*, and Von Braun & Ley's *The Exploration of Mars*, amongst many others. Bonestell gave the first version of *Saturn, Viewed from Titan* to Willy Ley, and it is now a part of the Bonestell Collection at the Adler Planetarium in Chicago. He would go on to create six other versions of this painting, including a version that he presented as a gift to his daughter, and the 360° panorama created for the planetarium of the Griffith Observatory in Los Angeles (memorialized in the 1955 film *Rebel Without a Cause*, starring James Dean).

Saturn was above all, his favorite subject. "...Bonestell was aesthetically captivated by Saturn, a subject he repeatedly returned to throughout his life. He painted numerous iterations of *Saturn from Titan* and its other moons. In 1949, for instance, he completed paintings of Saturn from Dione, in which the full body of Saturn is glimpsed from the mouth of a cave. His panorama for the Griffith Observatory, completed in 1959, featured a prescient vision of the frozen landscape of Titan with Saturn low on the horizon. Throughout the 1960s, Bonestell reworked different views of Saturn from Titan, changing the lighting or subtly altering Titan's landscape... Bonestell returned to the subject of Saturn again and again, in various configurations, settings, and lighting." (Impey & Henry)



(PANORAMA ASSEMBLED HERE FOR REFERENCE)

“Chesley is the original Kilroy—he’s been there ahead of them all. Neil Armstrong? Well, Tranquility Base was established over Bonestrell’s tracks and discarded, squeezed out paint tubes. The man not only moves across space, but also across time. He was present at our world’s birth and has also set up his easel to paint its death.”

ARTHUR C. CLARKE

Bonestell (1888-1986), a San Francisco native, executed his first space painting in 1905 after seeing Saturn through the telescope at the Lick Observatory. This first painting was destroyed in 1906, in the fire caused by the great San Francisco earthquake. His career began in architecture, and many iconic US landmarks came to life from his designs, including the Art Deco façade and eagles of New York City’s Chrysler building, the US Supreme Court building, the New York Central building, the Plymouth Rock Memorial, and the Golden Gate Bridge to name but a few. His work took on a whole new dimension when, at the age of fifty, he moved to Los Angeles, where he was to become the highest paid special effects artist in Hollywood (though his work went largely uncredited). *The Hunchback of Notre Dame* (1939), *Citizen Kane* (1941), and *The Magnificent Ambersons* (1942) all received their distinctive looks from Bonestell’s brush and pen, and the buildings designed by Ayn Rand’s architect superhero Howard Roark in the 1949 film *The Fountainhead* were by Bonestell.

“Bonestell’s paintings electrified a generation of teenage space enthusiasts: aspiring writers, astronomers, physicists, artists, and engineers... The late Carl Sagan said he didn’t know what other worlds looked like until he saw Bonestell’s paintings of the Solar System. Joseph Chamberlain, director of the Adler Planetarium, maintained that ‘It might even be suggested that without Bonestell and his early space age artistry, the NASA era might have been delayed for many

years, or it might not have happened at all.” Sir Arthur C. Clarke, who collaborated with Bonestell on *Beyond Jupiter* (1972), said that ‘Chesley is the original Kilroy — he’s been there ahead of them all. Neil Armstrong? Well, Tranquility Base was established over Bonestell’s tracks and discarded squeezed-out paint tubes. The man not only moves across space, but also across time. He was present at our world’s birth and has also set up his easel to paint its death...’ (Miller & Durant)

#### REFERENCES

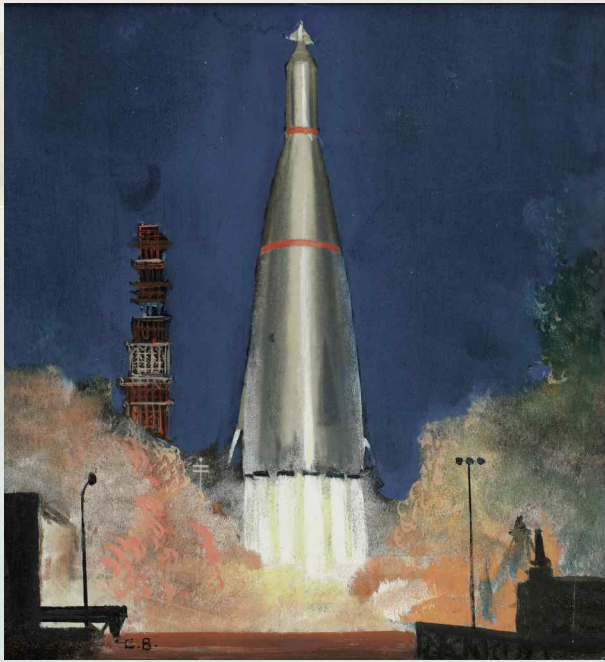
Impey, Chris & Holly Henry. *Dreams of Other Worlds: The Amazing Story of Unmanned Space Exploration*, pp. 114-115; see Ley, Willy. *The Conquest of Space*, p 132, plate XXXVI; Miller, Ron & Frederick C. Durant III. *The Art of Chesley Bonestell*, pp 222-223 (final panorama); Miller, Ron. *The Evolution of a Space Icon*, <http://chesleybonestell.tumblr.com/post/90369676094/the-evolution-of-a-space-icon>; Wachhorst, W. *The Dream of Space Flight: Essays on the Near Edge of Infinity*, p 58

#### PROVENANCE

Chesley Bonestell, to Frederick C. Durant III, to Ron Miller

\$ 100,000-150,000





15

15

## BONESTELL, CHESLEY

Preliminary study for the painting "Takeoff of the Rocketship" executed for the 1959-1960 Columbia Broadcasting Service (CBS) television series *Men Into Space*.

Oil on board (180 x 200 mm to sight). Signed lower left ("C.B."), captioned in ink by Bonestell on verso "*Rocket (Sketch) painted by Chesley Bonestell.*" Matted, glazed and framed to 330 x 315 mm, back of frame with glass panel revealing writing on verso.

A spectacular image, depicting the launch of a powerful direct-ascent rocket, with launch-tower in the background. Executed a decade before a manned space craft was to land on the moon, the direct ascent rocket depicted is one of the methods initially considered by the United States for the Apollo lunar landings, as well as by the Soviets. The US eventually jettisoned the design in favor of the Lunar Orbit Rendezvous method (LOR), as direct ascent would have required an enormous launch vehicle, like the rocket depicted here. The sleek direct ascent rocket, with its clean, curved lines was a favorite theme of Bonestell's, and he would use it time and again.

### REFERENCES

Illustrated in: Ron Miller & Fredrick C. Durant III. *The Art of Chesley Bonestell*, p 208

### PROVENANCE

Ex Collection of Frederick C. Durant, III

**\$ 5,000-8,000**

22

SOTHEBY'S



16

16

## BONESTELL, CHESLEY

"San Francisco & Golden Gate Bridge," ca 1939.

Oil on artist's board (27 x 33 in.), signed "Chesley Bonestell" lower left.

A rare, early painting done by Bonestell of San Francisco's north shore as seen from just south of Sausalito, ca 1939, with the Golden Gate Bridge, the Presidio, the dome of the Palace of Fine Arts, and part of the Marina district in the background, Horseshoe Bay, Point Cavallo, Yellow Bluff, and an apparently no-longer extant harbor just south of Sausalito in foreground. Likely done for the 1939 *Golden Gate International Exposition* in San Francisco.

Starting in 1937, Bonestell began work for the forthcoming 1939 *Golden Gate International Exposition*, timed to coincide with the opening of the Golden Gate Bridge. Bonestell designed the cover for the event program, and did numerous paintings for the project, including aerial views of the island, and renderings of the landscaping and architecture.

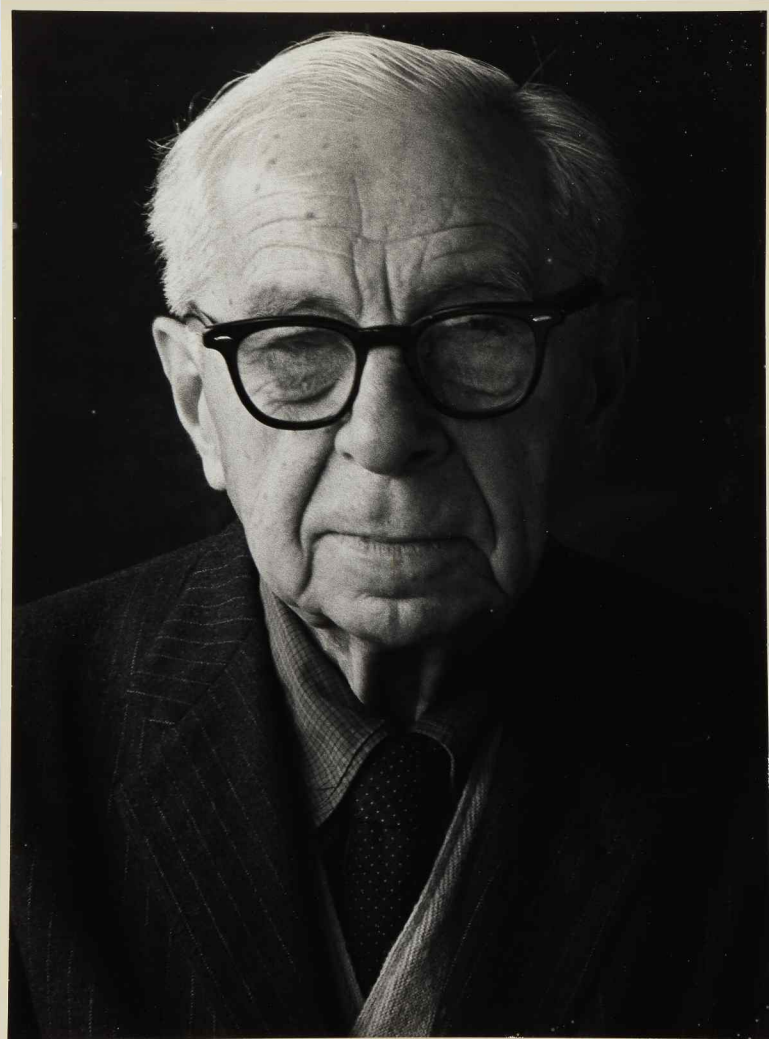
The Golden Gate Bridge featured many times in Bonestell's work. He first prepared illustrations of it in 1932 for Joseph Strauss, the chief engineer on the design for the bridge. "For the next five years, Bonestell's artwork helped the engineer explain 'to the directors how the money allocated each month was to be spent... I [Bonestell] was hired to draw cutaway sections showing in great detail how various parts were to be constructed.' Bonestell also made several contributions to the bridge's final appearance." (Miller & Durant)

### REFERENCES

Miller, Ron & Frederick C. Durant III. *The Art of Chesley Bonestell*, p 31 and pp. 121-122, for two other works executed by Bonestell for the *Golden Gate International Exposition*

**\$ 10,000-15,000**





To Bill Estler... at his suggestion!!!? Chesley

Ansel Adams

17

17

**BONESTELL, CHESLEY; ADAMS, ANSEL**

Photographic portrait of Chesley Bonestell by Ansel Adams, ca. 1980, signed by both Bonestell and Adams, with a typed letter signed from Adams to Frederick C Durant III, 19 December, 1983.

Large silver gelatin print photograph (10 x 13½ in.) mounted, mount signed & inscribed lower left "To Bill Estler... at his suggestion!!!? Chesley" and at lower right "Ansel Adams". Matted, glazed and framed to 17½ x 21¼ in.

WITH: ADAMS, ANSEL. Typed letter signed ("Ansel Adams") to Frederick C. Durant III, 19 December, 1983. 1 page (215 x 280 mm) on Ansel Adams' letterhead with red & black monogram, discussing the publication of this portrait in Durant & Miller's book *The Art of Chesley Bonestell*.

THE ICONIC PORTRAIT OF THE FATHER OF SPACE ART. A classic image, signed by Ansel Adams, and then inscribed and given as a gift by Bonestell to Bill Estler, a close friend and curator of Bonestell's work. The letter from Ansel Adams to Frederick C. Durant III, the conservator of Bonestell's estate, in full:

"Dear Mr. Durant.

*I am deeply appreciative of the handsome book on Chesley Bonestell's art which arrived a few days ago. I am proud to have my portrait of Chesley therein! It is a thrilling and timeless work and you and he are to be congratulated!*

*My best wishes,*

*Ansel Adams"*

**REFERENCES**

Illustrated in: Ron Miller & Fredrick C. Durant III. *The Art of Chesley Bonestell*, pp 98-99

**PROVENANCE**

Ex Collection of Frederick C Durant, III, by descent from Bill Estler. To Bill Estler from Chesley Bonestell.

**\$ 6,000-8,000**



## TURNER, RALPH

High relief of the Mare Cognitum, made at the Lunar and Planetary Laboratory, Tucson, AZ, April, 1965

High relief of the Mare Cognitum, made at the Lunar and Planetary Laboratory, Tucson, AZ, April, 1965, gray epoxy (2 ft 9 in x 2 ft 9 in), inscribed below "*Mare Cognitum* | R. Turner | April 1965," and above "North," "Scale 1:500," and with coordinates, framed.

CAST FROM TURNER'S FIRST PLANETOLOGICAL MODEL, ONE OF ONLY TWO MADE. In 1964, Oregon-born Ralph Turner was teaching sculpture at the University of Arizona in Tucson, when, in his words, "Dr Gerard Kuiper called on me to help make some relief models of the Moon from the new images arriving from the space probes in preparation for landing on the Moon." Kuiper [1905-1973] spent most of his career at the University of Chicago, but moved to Tucson in 1960 to found the Lunar and Planetary Laboratory at the University of Arizona. He was instrumental in lunar cartography and was involved in selecting landing sites for the Apollo program. Turner continues, "the next year I joined the Laboratory as a Research associate full time and left the art Department. However, I got called to a position at Syracuse University in

New York State in 1966 and went there with the stipulation that I could bring some of the lunar research with me, which everyone agreed to. So I continued to make models from 1964 to 1975, under one arrangement or another while I taught and did sculpture of my own" (biography on [fineartamerica.com](http://fineartamerica.com)).

The present model was cast from the first lunar relief Turner produced while working for Kuiper. An unnamed lunar mare in the Oceanus Procellarum had been selected as the target for the impact probe Ranger VII, the first American spacecraft to return close up images of the Moon's surface. Ranger VII transmitted its images on July 31, 1964, and the unnamed sea became known as *Mare Cognitum* ("The Sea that has become known"). Turner worked from a combination of Ranger photographs, telescope observation, and by shining light across his model and comparing the shadows with those on the Moon. This unconventional method proved to be extremely accurate. The whereabouts of the other example are currently unknown.

### REFERENCES

Illustrated: Kuiper, *Lunar Investigations*. Tucson: Defense Technical Information Center, 1965, p 60

**\$ 10,000-15,000**





19

20

## PROJECT GEMINI — WERNHER VON BRAUN

Signed photograph of a group of American astronauts visiting Dr. Wernher von Braun at the Marshall Space Flight Center in Huntsville, Alabama on 28 November, 1962.

Black and white photograph (8½ x 10½ in.) SIGNED BY: Wernher von Braun, Neil Armstrong, James "Jim" McDivitt, James Lovell, Thomas P. Stafford, Elliot See, Charlie "Pete" Conrad, Deke Slayton, Frank Borman, John "J. H." Glenn Jr., Wally Schirra, Edward H. White, and John Young. Very minor edge-wear, some ink slightly smudged.

THE ARCHITECT OF THE AMERICAN SPACE PROGRAM MEETS WITH THE MEN HIS ROCKETS WOULD LAUNCH INTO SPACE, INCLUDING THE FIRST OF THEM TO STEP FOOT ON THE MOON. Signed by von Braun, Armstrong, and 11 early astronauts, including Elliot See, who along with Charles Bassett, was killed in training before their mission.

Von Braun was the famed German-American aerospace engineer, and a complicated figure who worked on the development of rocket technology in Germany, and later became the father of rocket technology and space science in the United States as part of Operation Paperclip. This photograph depicts a group of Project Gemini astronauts visiting von Braun in his Conference room at the Marshall Space Flight Center, where he was appointed its first director in 1960.

### PROVENANCE

Ex collection of Bonnie Holmes, Von Braun's secretary

\$ 4,000-6,000



21

## LUNAR GLOBE

Oxford, London, New York: [Produced by Paul R ath Verlag for] Pergamon Press, [ca. 1963]

A 33 cm diameter lunar globe comprised of twelve paper gores and two polar calottes, 1:10,400,000 scale, mounted within metal half meridian ring on wooden stand with small compass embedded in the base. Some adhesive residue visible right of the Mendeleev crater (possibly inherent), minor wear to wooden base.

Based on the photography of Luna 3, the Soviet spacecraft launched in 1959. Luna 3 was the first space probe to photograph another planetary body, and the first mission to photograph the far side of the moon. Two of the twelve gores remain blank, as the spacecraft only photographed approximately 70% of the far side. The cartouche reads in part: "the map material was prepared by the Central Research Institute of Geodesy, Aerial Photography and Cartography together with the Shternberg State Astronomic Institute of the U.S.S.R."

\$ 1,200-1,800



20

21

## APOLLO PROGRAM

"Apollo Command Service Module in Atmospheric Test Chamber," illustration, ca 1962

Oil on artist's board, 20¾ x 19¾ in., unsigned. Matted, glazed, and framed to 25 x 23½ in.

A finely detailed original illustration depicting a team of eight North American Aviation engineers running tests on the Apollo Command Service Module (CSM) in a conceptual Atmospheric Test Chamber. The Command Service Module was, along with the Lunar Module (LM) the spacecraft built by North American Aviation for NASA to land astronauts on the moon during the United States Apollo program.

\$ 1,500-2,500



# MEDICINE, PHYSIOLOGY & BIOLOGY

LOTS 22-33

22

CROOKE, HELKIAH

ΜΙΚΡΟΚΟΣΜΟΓΡΑΦΙΑ

[Microcosmographia], *A Description of the Body of Man. Together with the Controversies and Figures thereto Belonging.* London: William Jaggard, 1616

Folio (330 x 200 mm), woodcut vignettes on title and over 150 woodcut illustrations in text. Contemporary calf, rebounded, spine gilt in 6 compartments. Occasional soiling and dampstaining, title-page repaired, outer margin repaired gatherings ¶-G, and 4M-4Q, affecting text to varying degrees, missing text supplied in pencil; boards somewhat stained, extremities rubbed.

"THE LARGEST AND FULLEST ANATOMICAL WORK PRODUCED IN ENGLAND UP TO ITS DAY AND FOR A CONSIDERABLE TIME TO FOLLOW" (O'MALLEY, 11).

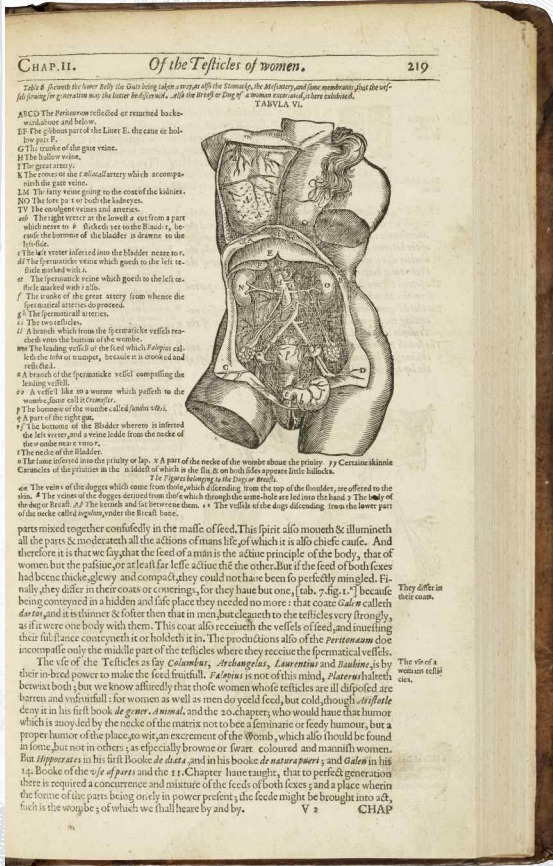
Crooke burst into public awareness in 1615 with the publication of *Microcosmographia: a Description of the Body of Man*. It was the first English language anatomy written by a physician,

rather than a surgeon, and outraged many of his colleagues at the College of Physicians with its plates depicting the parts of the body involved in generation. The efforts of the bishop of London, the president of the college, Sir William Paddy, and other fellows to have the book suppressed were unsuccessful. Crooke had a stronger ally in James I, and in his printed epistle to the King, Crooke attacked physicians for their lack of reverence for the body in their own lectures to the barber-surgeons. Crooke never claimed originality, only the desire to make the best anatomical knowledge of the day available for the use of the surgeons. The book was enormously successful and was reprinted (along with an epitome by the Scottish surgeon Alexander Reid) in 1616 — as seen here — and 1618 (DNB).

## REFERENCES

ESTC S4592; *Heirs of Hippocrates* 405; C. D. O'Malley, 'Helkiah Crooke, MD, FRCP, 1576-1648', *Bulletin of the History of Medicine*, 42 (1968), Russell 218; Wellcome 1683

\$ 2,000-3,000



22



23



## REMMELIN, JOHANN

*A Survey of the Microcosme. Or the Anatomie of the Bodies of Man and Woman ...* London: Joseph Moxon, 1675

4to (387 x 311 mm). 4 engraved anatomical plates, 3 with various layers and internal organs of the body represented by multiple, superimposed movable overlays and flaps; title-page plus 4 pages of explanatory text, one mounted to the first plate, another to the second; margins with multiple small tears and fraying, strengthened and repaired but affecting a few text letters, title-page trimmed, just clipping text, some marginal dust-soiling. Disbound, housed in a quarter red morocco portfolio.

SECOND ENGLISH EDITION OF THE FIRST ANATOMICAL ATLAS MAKING EXTENSIVE USE OF THE FLAP METHOD TO DEPICT THE STRUCTURE OF THE HUMAN BODY.

The first edition is virtually unobtainable (we can trace no copies at auction over the last century, only one other copy of the present edition has appeared in the rooms since 1986). The plates of this edition were re-engraved after Remmelin's *Catoptrum microcosmicum* (Augsburg, 1619), and augmented by a fourth plate after the work of the anatomist Juan Valverde de Amusco. The first depicts the bodies of a man and a woman (presumably Adam and Eve) flanking the trunk of a pregnant woman, the second depicts a man, the third a woman, and the fourth shows the venous system on two figures, front and back, without any overlays or flaps. "The three principal plates, and the many smaller pictures superimposed, totaled, before they were cut out and pasted together, five copperplates" (Choulant-Frank, p. 233). A mixture of anatomy, physiology, and theology, the text was clearly intended for lay persons interested in a better understanding of the human body rather than as a good source of anatomical instruction. Nevertheless, the work was well received, and later translated into German, French, Dutch, as well as English.

## REFERENCES

Choulant-Frank, pp. 232–233; ESTC R232301; Russell, *British Anatomy*, 694; Wellcome 4:504; Wing S4793A (incorrectly attributed to Michael Spaher); cf. *Heirs of Hippocrates*, 456 (1619 Latin edition)

## PROVENANCE

ACQUISITION: Michael Phelps (1989)

\$ 2,000-3,000

## COWPER, WILLIAM

*Anatomia Corporum Humanorum*. Leiden: Joannem Arnoldum Langerak, 1739

Folio (512 x 355 mm), engraved frontispiece, title printed in black and red with vignette, 114 (of 115) engraved plates showing anatomical figures (105 by Govert Bidloo, 9 by Cowper, 3 folding) accompanied by descriptive letterpress text; some minor marginal soiling with a few stains, minor offsetting to some plates, but overall a very clean copy. Contemporary calf gilt, rebound with original spine laid-down, spine label reads "Anatomii de Bibloo"; extremities somewhat rubbed, corners bumped.

FIRST EDITION IN LATIN OF "THE LARGEST IN FORMAT, AND MOST ELABORATE AND BEAUTIFUL OF ALL 17TH CENTURY ENGLISH TREATISES ON ANATOMY"

ONE OF THE MOST EXTRAORDINARY PLAGIARISMS IN THE ENTIRE HISTORY OF MEDICINE. Cowper purchased sets of the copperplates used to illustrate [Govard] Bidloo's book [*Anatomia humani corporis*, 1685] ... apparently without Bidloo's permission, and issued them under his own name with an improved text in English (and later, Latin), and a new illustrated appendix. For the frontispiece Cowper had a small printed flap with his own

name pasted over Bidloo's own engraved title and name" (G-M). In spite of this blatant plagiarism, Cowper's text showed "a great deal of original research and fresh new insights" (*Heirs of Hippocrates*). The nine new plates that Cowper commissioned, drawn by Cooke and engraved by van der Gucht, include front and back views of the entire musculature. The engraver of the Lairese plates is not mentioned in Bidloo's work except on the bust portrait of Bidloo which is signed A. Blooteling sculp. According to Haller the engravings are by Van Gunst, and Moehsen identifies the brothers Peter and Philip Van Gunst (see Choulant p 250). Whomever the engraver, the illustrations are considered masterpieces of Dutch baroque art.

## REFERENCES

Garrison-Morton 385.1; *Heirs of Hippocrates* 723.9; Russell 213; Wellcome II, 401

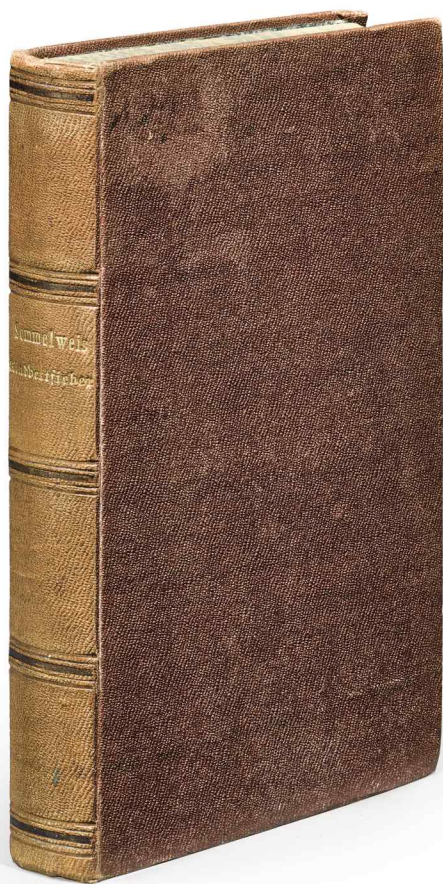
## PROVENANCE

Louis Lepeq de la Clôture (French doctor and author, 1736-1804, inscription on fly-leaf) — Dr. Jules Tinel (French neurologist, 1978-1952, bookplate) — A. Bernardes de Oliveira (bookplate)

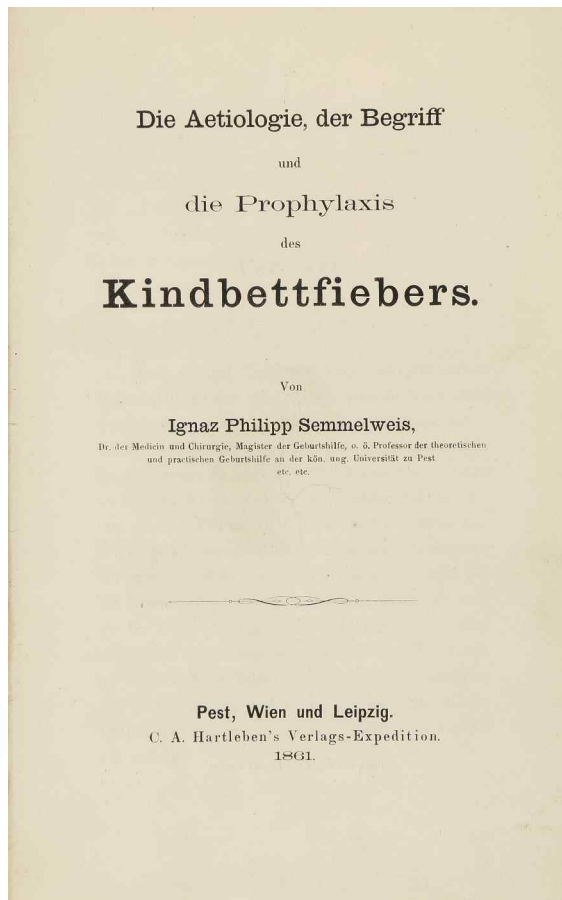
\$ 4,000-6,000







25



25

25

PROPERTY OF A WEST COAST COLLECTOR

## SEMMELEWEIS, IGNAZ PHILIPP

*Die Ätiologie, der Begriff und die Prophylaxis des Kindbettfiebers.* Pest, Vienna and Leipzig: C. A. Hartleben's Verlags-Expedition, 1861

8vo (223 x 143 mm). Errata on 35.2v. Contemporary purple cloth, spine gilt-lettered, marbled endpapers, contrasting marbled edges; spine a trifle faded. Half maroon morocco folding-case; extremities rubbed.

A FLAWLESS COPY OF THE RARE FIRST EDITION OF "ONE OF THE EPOCH-MAKING BOOKS IN MEDICAL LITERATURE" (Garrison-Morton). In the late 1840s, while serving as assistant professor in the maternity department of Vienna General Hospital, Semmelweis had demonstrated that puerperal, or childbed, fever was a septicemia and strove to improve hygienic conditions in the city's obstetrics wards. Completely unaware of

the contributions of Oliver Wendell Holmes in this same field, Semmelweis prescribed the washing of the doctor's hands in a calcium chloride solution before attending a childbirth. The result was that infant mortality was reduced by five-sixths.

Nevertheless, Semmelweis faced enormous opposition and even ridicule from colleagues and when his hospital position was not renewed, he was forced to move from Vienna to Budapest in 1850. In 1855 he was appointed to a chair of midwifery at the University of Pest, where he continued his crusade. Finally in 1861, he published his findings, at the same time issuing a series of polemical pamphlets describing his opponents as "murderers." The personal animosity between Semmelweis and the Viennese medical establishment contributed to the delay in implementing his recommendations. His lack of talent as a writer also impeded the understanding and acceptance of his theories. His biographer, Sir. W. J. Sinclair, remarked that "if he could have written like Oliver Wendell Holmes, his 'Ätiology' would have conquered Europe in twelve months."

## REFERENCES

Garrison-Morton 6277; Grolier/Medicine 72a; *Heirs of Hippocrates* 1851; Norman 1926; *Printing and the Mind of Man* 316(b2); Simmons, *Doctors and Discoveries: Lives that Created Today's Medicine* (2002), pp. 165-168; Waller 8830

**\$ 25,000-35,000**



[AMERICAN RED CROSS]

An archive of correspondence from Clara Barton, chiefly to Benjamin Butler, 1861-1895

18 autograph letters and 1 typed letter, all signed by Clara Barton ("Clara" "C.B." or "Clara Barton"). 2 with written responses by Butler, most from Washington D.C., together over 40 pages of correspondence, with ancillary newspaper clippings and photographs. Condition varies, but generally good; some dampstaining, tape and adhesive residue to extreme corners and edges, a few letters laid down on card.

A SIGNIFICANT ARCHIVE OF CIVIL WAR AND RECONSTRUCTION ERA CORRESPONDENCE FROM THE PIONEERING NURSE AND HUMANITARIAN WORKER, AND FOUNDER OF THE AMERICAN RED CROSS.

The majority of letters contained in this archive are addressed to Benjamin Franklin Butler, a major general of the Union Army during the Civil War. They first became acquainted when Butler appointed her in charge of the hospitals at the front of the Army of the James in 1864. Barton would go on to administer aid at numerous Civil War battles, including Antietam, Fredericksburg, Charleston, Petersburg and Cold Harbor, earning her nicknames: "American Nightingale," and "Angel of the Battlefield." At the conclusion of the war Barton devoted her time to running the Office of Missing Soldiers, whose mission was to find or identify soldiers killed or missing in action. Barton's organization eventually ascertained the fate of more than 22,000 missing civil war soldiers, before she moved on to establish the first American outpost of the Red Cross in 1881.

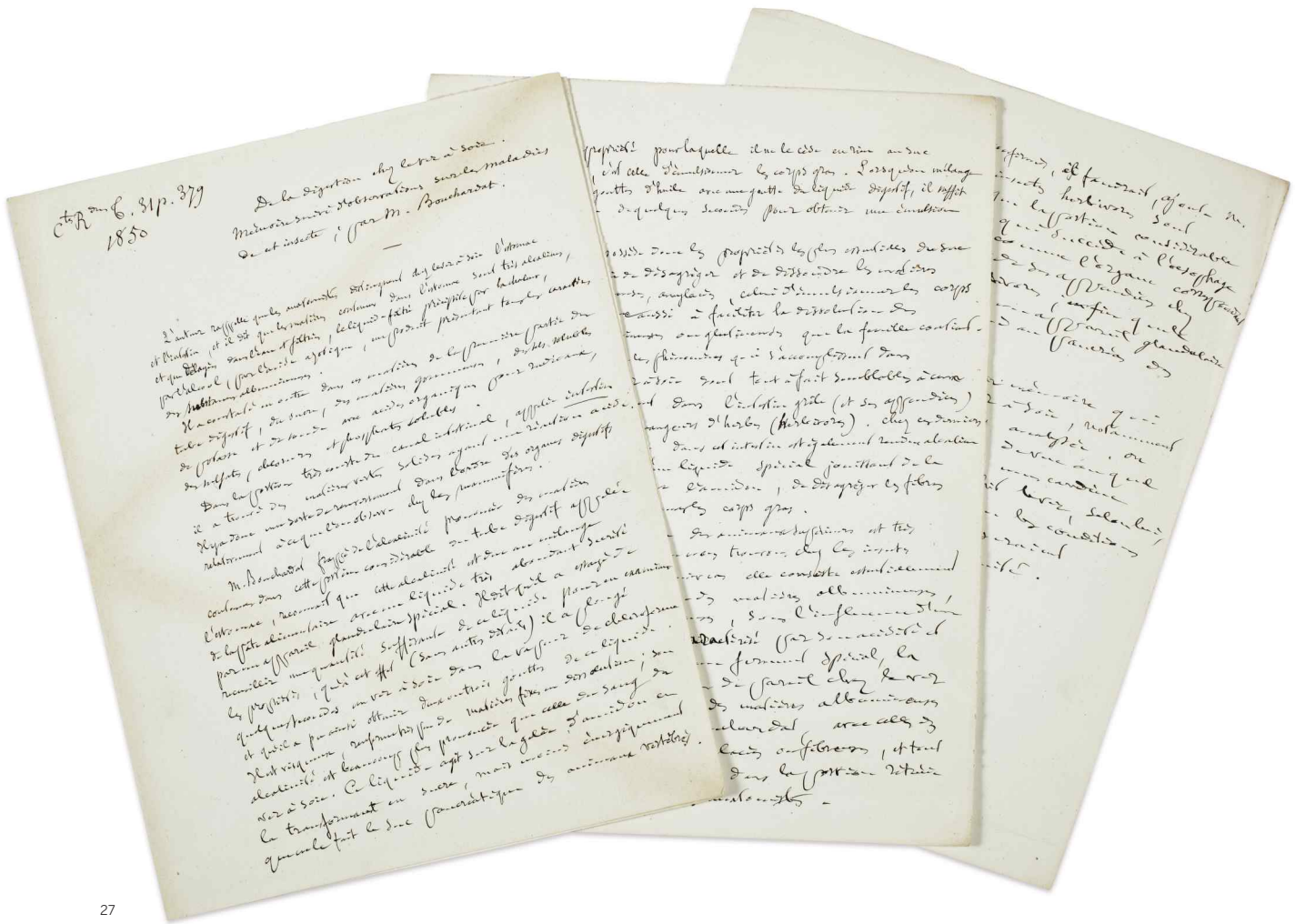
Within this group of correspondence, which encompasses the entirety of the Civil War, and the founding of the Missing Soldiers Office and the American Red Cross, Barton and Butler touch on numerous issues, including President Johnson's pending impeachment, BUTLER: "Nothing can be done this session [of Congress] ... so many are afraid of the impeachment."; the identification of fallen African American soldiers after the war, BARTON: "I have considered diligently your suggestion in relation to the colored troops, and truly believe that with suitable agents this search can be made nearly as successful as that for the white soldiers ..."; her condemnation of the dismissal of a surgeon at Norfolk "after giving a speech in which he said he hoped he should live to see every negro in the south a voter"; and Barton's touching reunion with her brother Stephen, who had been imprisoned under suspicions of being a Confederate agent: "If, upon investigation you find that my brother's course of action has been such that you cannot over look it, and receive him to your confidence as a loyal man, I shall submit to your decision without a murmur ... But if, on the other hand, it prove that he can be trusted, if you can receive him back as a Citizen of the United States ... God only knows the richness and fullness of joy it will bring to my heart."

Full details available online.

\$ 4,000-6,000







27

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**PASTEUR, LOUIS**

Autograph manuscript, in French, analyzing "De la digestion chez le ver à soie. Mémoire suivi d'observations sur les maladies de cet insecte; par M. Bouchardat," France, ca 1868-69.

3 pages (255 x 198 mm) on a bifolium and 2 single sheets, unsigned. Housed in a custom folding case; first page with some faint offset from folding case.

The silk industry represented a significant portion of the French economy in the 19th century, and thus silk worms were particularly precious to the French. Starting in 1853, the worms began to be infected with two then-unknown diseases, now known as *flacherie* and *pébrine*, and by 1865,

farmers were financially devastated due to the silk worms' resulting high death rate. Pasteur was asked to come to the town of Ales in the south of France to solve this mystery and save the silk industry. After five years, he was able to successfully isolate the problems, and determine a method to stop the spread of the diseases.

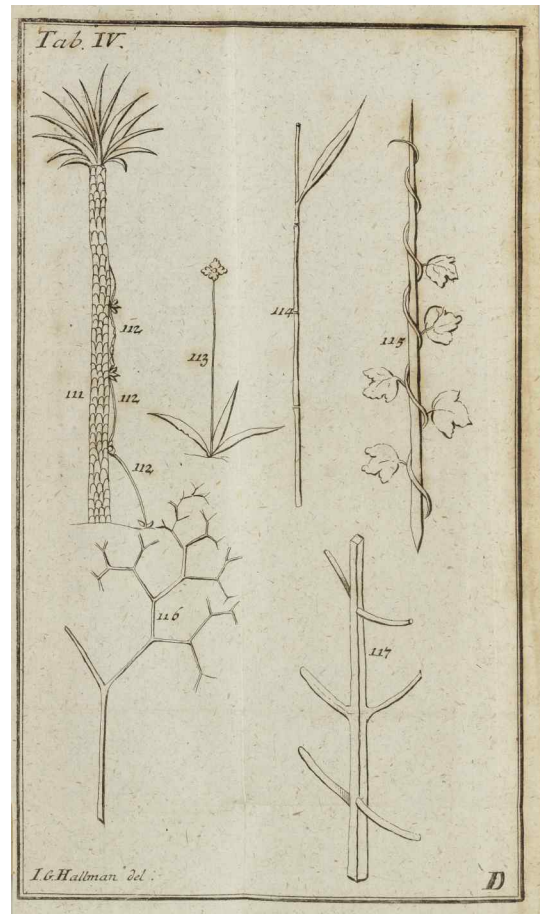
Pasteur's groundbreaking work *Études sur les maladies des vers à soie*, written in 1870, recounts his researches and discoveries during this time. In the present manuscript, Pasteur analyses Apollinaire Bouchardat's 1850 work "De la digestion chez le ver à soie. Mémoire suivi d'observations sur les maladies de cet insecte," which was published in chapter 31 of the *Comptes Rendus* in 1850, focusing on Bouchardat's description of the worm's anatomy, and in particular his description of their digestive

tract: "L'auteur rappelle que les anatomistes de... dans les vers à soie l'estomac et l'intestin, et il dit que les matières contenues dans l'estomac sont très alcalines..." Bouchardat's work was one of many that Pasteur studied while trying to understand what was happening to the silk worms, and it is interesting to see that even at this early stage, Pasteur had an idea that the diseases killing the worms were related to their digestive systems. Bouchardat (1806-1886) was a French pharmacist and hygienist known as the founder of diabetology. He believed that exercise and diet were major factors in controlling the disease, and speculated that the main cause of the disease was located in the pancreas.

**\$ 15,000-20,000**



28



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## LINNAEUS, CAROLUS

*Materia medica, liber I. de plantis.*

Stockholm: Laurentius Salvius, 1749

8vo (198 x 122 mm). Engraved frontispiece of a pharmaceutical cabinet and folding engraved botanical plate, both after I. G. Hallman by Carolus Bergquist. Modern calf, early red-sprinkled edges.

FIRST EDITION OF LINNAEUS'S MOST IMPORTANT MEDICAL WORK, tabulating the Linnaean names, genera and species, and medical properties of over five hundred medicinal plants. The work was never completed, although unauthorized editions, based on Linnaeus's dissertations, of Book II (animals) and Book III (minerals) were published in 1763.

### REFERENCES

Prtizel 5424; Soulsby 968; Stafleu & Cowan TL2 4751

### PROVENANCE

George Howell (signature, partially inked through, dated October 18, 1759, on front flyleaf) — Arpad Plesch (red morocco label; Sotheby's London, 17 November 461)

\$ 4,000-6,000

29

## LINNAEUS, CAROLUS

*Philosophia botanica in qua explicantur fundamenta botanica cum definitionibus partium, exemplis terminorum, observationibus rariorum, adjectis figuris aeneis.* Stockholm: (Laur. Ludw. Grefingii for) Godofr Kiesewetter, 1751

8vo (187 x 118 mm). 9 folding engraved plates after I. G. Hallman, 2 full-page woodcut illustrations, some neat contemporary annotation to index; some light browning and spotting, Z1 remargined at fore-edge. Contemporary Swedish marbled board, orange morocco spine label, plain endpapers, red edges; extremities rubbed. Half red morocco slipcase, chemise.

FIRST EDITION OF THE FOUNDATION STONE OF THE LINNEAN SYSTEM OF BOTANY. Jean-Jacques Rousseau claimed that *Philosophia botanica* had "more wisdom in it than the biggest folios; in it there is not a single useless word" (quoted in Hunt).

Soulsby mentions that some copies contain an engraved portrait of the author, but none of the copies examined by Stafleu and Cowan had one and its presence seems to be arbitrary and not required.

### REFERENCES

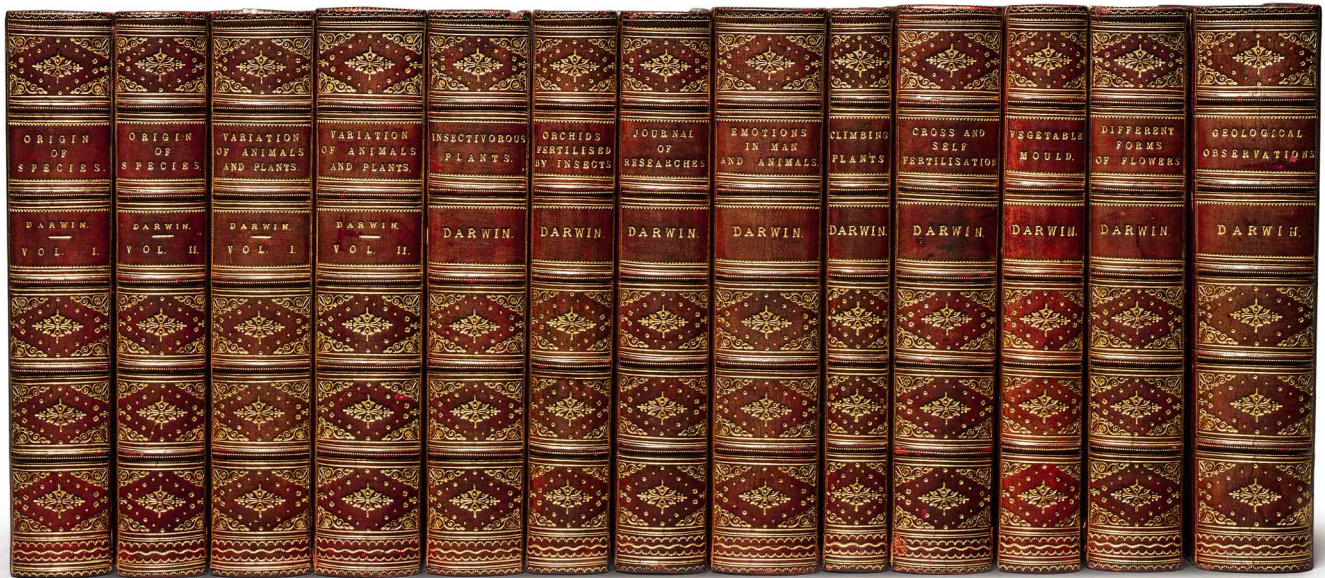
Hunt 541; Pritzel 5426; Stafleu & Cowan TL2 4760; Soulsby 437

### PROVENANCE

Robert Honeyman IV (red morocco label; Sotheby's London, 12 May 1980, lot 2022)

\$ 1,500-2,500





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PROPERTY FROM A NEW YORK PRIVATE COLLECTION

## DARWIN, CHARLES

*The Works of Charles Darwin*. London: John Murray, 1888-92

13 volumes, 8vo. Some volumes illustrated, with two folding maps and four folding plates, one of which hand-colored. Full straight grain morocco, covers double ruled with small flower designs in corners in gilt, spines with raised bands in six compartments, titles and text in second and third, others with an elaborate repeat overall decoration in gilt, turn-ins blindstamped with leaf and vine pattern, marbled endpapers, edges marbled. Spines uniformly and nearly imperceptibly sunned, some minor rubbing to extremities.

An attractive set of Darwin's most important works, including *Journal of Researches*; *On the Origin of Species*; *Expression of Emotions in Plants and Animals*; and *Insectivorous Plants*.

### PROVENANCE

Ethel Maude Trower (bookplate)

\$ 2,000-3,000

Dear Sir

Return the proof sheet  
 or must have revised -  
 as long I  
 I shall not be able to  
 complete the 6 pages for  
 a week or two to  
 come. —

Your enquiry regarding  
 Dr. Walker's work, which  
 you were good enough  
 to call my attention  
 to, I have found<sup>in it</sup>

Mud, which has interested  
 me, but I cannot quite  
 think of the established  
 his theory. —

Believe me  
 Yours truly  
 Chas. Darwin

12 Upper Gower St  
 Friday

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**DARWIN, CHARLES**

Autograph Letter Signed ("Ch. Darwin"), 2 p, 8vo (integral address leaf), 12 Upper Gower Street, Friday, [c. 1839-1842], to Thomas Green Esq. Some general browning, heavier to verso of address leaf, offset and lighter browning to recto of address leaf and verso of p 2, faint dampstain to inner margin. Matted, framed, and glazed in a double window mat.

A SIGNIFICANT AND EARLY LETTER RELATING TO THE PUBLICATION OF DARWIN'S BEAGLE RESEARCHES, in which Darwin discusses the proofing of a type-set manuscript. Thomas Green was a member of the Geological Society of London, and probably oversaw the publication of its journals, in which Darwin published a number of his Beagle based geological researches. Darwin resided at "12 Upper Gower St" between 1839 and 1842. Given the dating of this letter and the number of proof

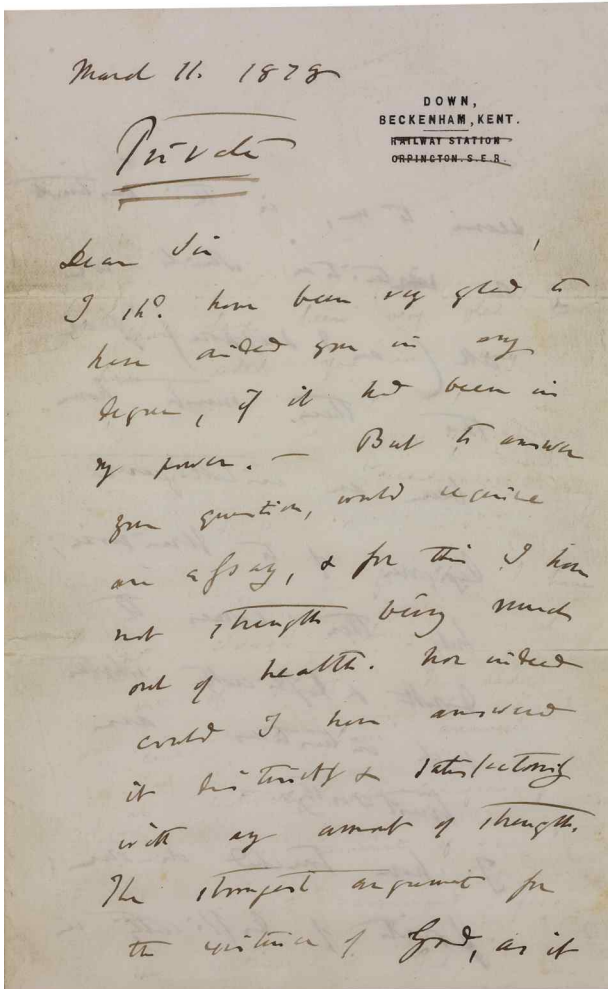
sheets in question, the letter is most probably referring to typeset pages relating either to Darwin's article "On the Connexion of Certain Volcanic Phenomena in South America" (1840), or to his article "On the Distribution of erratic Boulders and the Contemporaneous Unstratified Deposits of South America" (1842). Dr. John Walker, whom the letter references, was a noted Scottish naturalist who published work in several fields, including several books on fossils. Darwin letters of early date and with Beagle-related content are very rare.

**REFERENCES**

Darwin Correspondence Project, "Letter no 524F," accessed on 5 November 2017, <http://www.darwinproject.ac.uk/DCP-LETT-524F>

**\$ 6,000-9,000**





“The strongest argument for the existence of god... is the instinct or intuition which we all feel (as I suppose) that there must have been an intelligent beginner of the universe: but then comes the doubt and difficulty whether such intuitions are trustworthy...”

CHARLES DARWIN

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PRIVATE COLLECTION, CANADA

**DARWIN, CHARLES.**

Autograph letter signed, to James Grant. Down Beckenham, March 11, 1878.

3 pages (201 x 125 mm), signed “Ch. Darwin” on personal stationary watermarked Joynson Superfine; creases where previously folded, split through majority of central crease, smaller splits at other folds, final blank page with some soiling.

Darwin in a detailed and thoughtful response to a curious young reader, a James Grant, who, on March 6, 1878, asked: “...I would... be much obliged to you if you would, in two or three words, simply tell me if your doctrine of the descent of man destroys the evidence of the existence of a God looked at through nature’s phenomena.” Darwin’s response in full: “March 11, 1878. Private.

Dear Sir,

I should have been very glad to have aided you in any degree if it had been in my power. But to answer your question would require an essay, and for this I have not strength, being much out of health. Nor, indeed, could I have answered it distinctly and satisfactorily with any amount of strength. The strongest

argument for the existence of God, as it seems to me, is the instinct or intuition which we all (as I suppose) feel that there must have been an intelligent beginner of the Universe; but then comes the doubt and difficulty whether such intuitions are trustworthy.

I have touched on one point of difficulty in the two last pages of my “Variation of Animals and Plants under Domestication,” but I am forced to leave the problem insoluble.

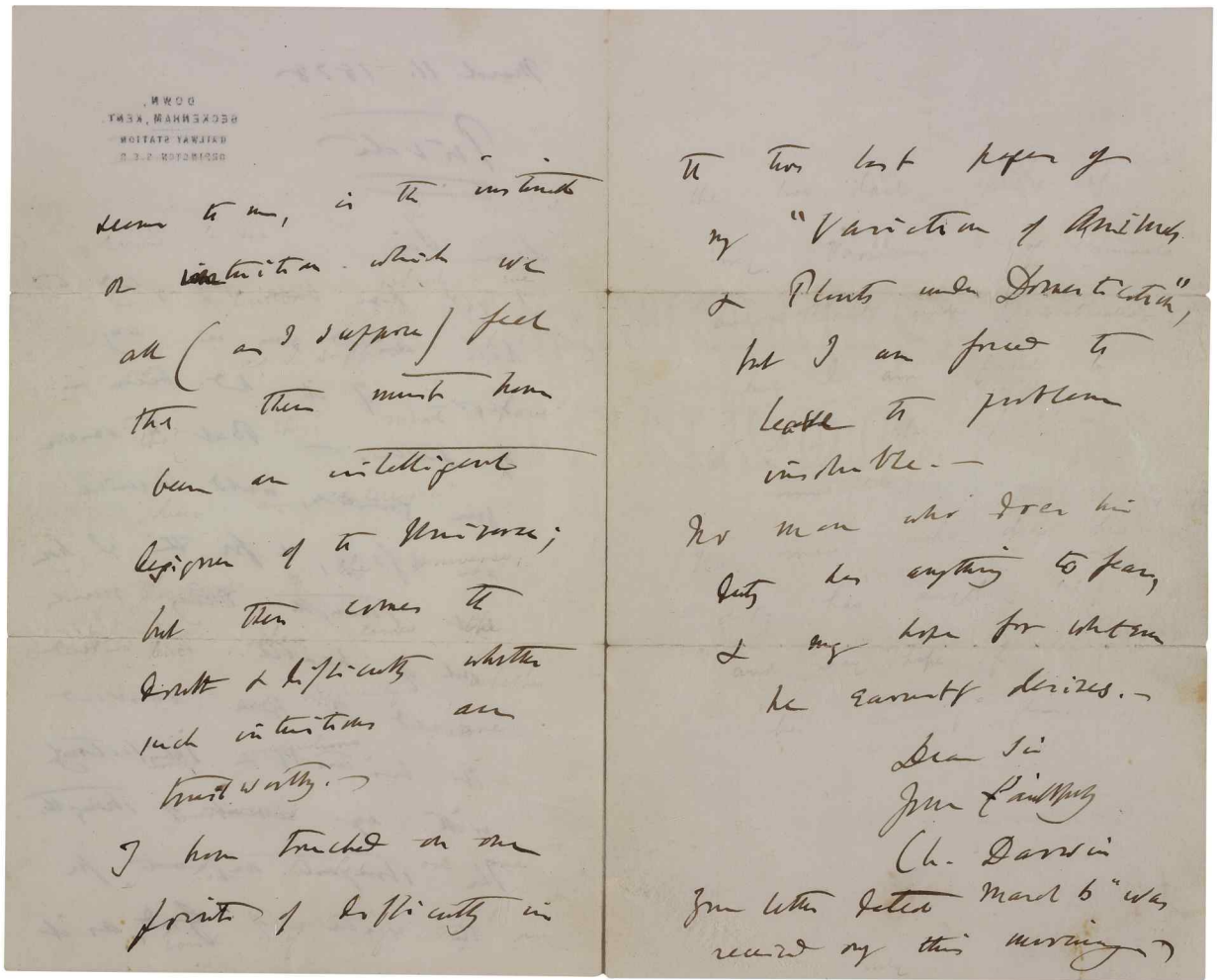
No man who does his duty has anything to fear, and may hope for whatever he earnestly desires.

Dear Sir, yours faithfully, Ch. Darwin. “

Darwin’s religious beliefs had been the subject of debate since the publication of his earth-shattering work *On the Origin of Species* in 1859, and many assumed him to be an atheist after reading the book. This assumption was so wide-spread, that many people, including the correspondent of the present letter, were reluctant to read *On the Origin of Species* for fear that it would threaten their faith. Darwin’s wife Emma was religious, and the pair often discussed questions of Christianity openly together; Charles never hid his uncertainties from Emma, but as far as we know, he never professed atheism to her or anyone else. Over time, Emma became more devout in her religious beliefs, particularly after the devastating death of their eldest daughter Anne at the age of ten (two others died in

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SOTHEBY’S



know to me, in the instance  
 of ~~variation~~ which we  
 all (as I suppose) feel  
 that there must have  
 been an intelligent  
 Designer of the Universe;  
 but then comes the  
 difficulty & difficulty whether  
 such intentions are  
 true or not.  
 I have touched on the  
 point of difficulty in

the two last pages of  
 my "Variation of Animals  
 & Plants under Domestication",  
 but I am forced to  
 leave the problem  
 insoluble.  
 No man who does his  
 duty has anything to fear,  
 & my hope for what  
 he earnestly desires.  
 Dear Sir  
 Your faithfully  
 Ch. Darwin  
 You will find March 6<sup>th</sup> was  
 recorded by this morning

infancy), and out of love for Emma, Charles avoided speaking on questions of religion. Two years after the present letter was written, Darwin stated in a letter penned to the atheist and staunch Darwinian evolution spokesperson Edward Aveling "It has ... always been my object to avoid writing on religion, & I have confined myself to science. I may, however, have been unduly biased by the pain which it would give some members of my family, if I aided in any way direct attacks on religion." It is not surprising to note that Darwin's beliefs regarding the existence of God were very similar to the beliefs held by Einstein - the two, like many others who choose to base their beliefs on empirical evidence, both denied being atheists, and Einstein is often quoted as saying "I am not an atheist.... the problem involved is too vast for our minds." Darwin too denied being an atheist stating "In my most extreme fluctuations, I have never been an atheist in the sense of denying the existence of a God. I think that generally (& more & more so as I grow older) but not always, that an agnostic would be the most correct description of my state of mind." The two did however express a disbelief in religion and the bible, with Einstein saying in a letter to philosopher Gutkind in response to his book Choose Life: The Biblical Call to Revolt: "The word God is for me nothing more than the expression and the product of human weakness, the Bible a collection of honorable, but still purely primitive legends which are nevertheless pretty childish...the

Jewish religion, like all other religions is an incarnation of the most childish superstition..." The letter sold at auction in 2008 for £170,000.

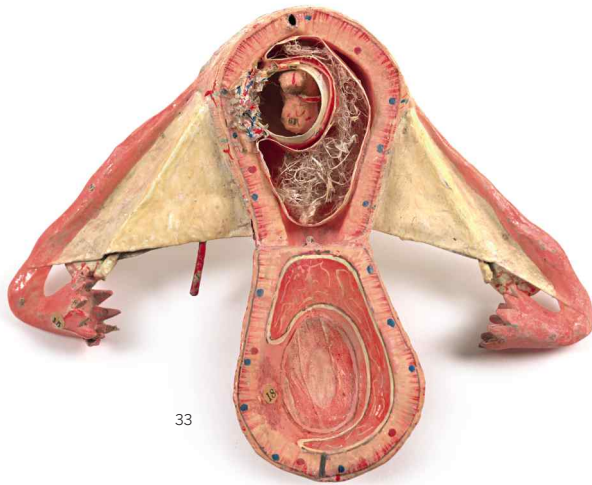
Letters that deal so directly with the theological implications of Darwin's theory of natural selection are exceptionally rare, and the present letter is one of only two to have ever come to auction. The other, which sold at Bonhams in 2015 for \$197,000, very directly shows that Darwin and Einstein shared the same beliefs in regards religion and the Bible, as he states "...I do not believe in the Bible as a divine revelation, & therefore not in Jesus Christ as the son of God."

**REFERENCES**

- Darwin Correspondence Project: "Letter no. 11416," accessed on 21 October 2017, <http://www.darwinproject.ac.uk/DCP-LETT-11416>;
- "Letter no. 10414," accessed on 21 October 2017, <http://www.darwinproject.ac.uk/DCP-LETT-10414>;
- "Letter no. 11428," accessed on 21 October 2017, <http://www.darwinproject.ac.uk/DCP-LETT-11428>;
- "Letter no. 12041," accessed on 21 October 2017, <http://www.darwinproject.ac.uk/DCP-LETT-12041>;
- "Letter no. 12851," accessed on 21 October 2017, <http://www.darwinproject.ac.uk/DCP-LETT-12851>

**\$ 40,000-60,000**





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### AUZOUX CLASTIC ANATOMICAL MODEL

A Clastic anatomical model of the human uterus and embryo at one month gestation, unsigned but by the Auzoux Company in France, early 20th century.

A finely detailed 7 x 3 in. polychrome hand-painted papier mâché and plaster model depicting a human uterus complete with cervix, fallopian tubes, and ovaries, opening with hinged panel to reveal a human embryo at one month gestation with umbilical cord within amniotic cavity, complete with uterine musculature and blood vessels, placental villi, chorionic cavity and chorion frondosum. Anatomical landmarks numbered with applied circular labels.

A beautiful life-size clastic anatomical model of

the human uterus at one month gestation. Dr. Louis Thomas Jérôme Auzoux began producing accurate papier mâché anatomical models while a medical student in Paris during the early 19th century. Developed in response to the frequent lack in availability of cadavers for human dissections, his models, unlike real corpses, could be "dissected" over and over again. The term "clastic" comes from the Greek "To break," and Auzoux models could be "broken" open and taken apart to reveal the finer interior anatomical structures. Auzoux was able to secure funding from the French state to found a factory to produce his anatomical, and later veterinary models, and he soon became a commercial success, with his models in high demand by universities, secondary schools, and hospitals around the globe.

**\$ 1,500-2,500**

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### AUZOUX CLASTIC ANATOMICAL MODEL

A clastic anatomical model of a Bovine uterus with embryo at four months gestation, unsigned, but by the Auzoux Company, France, early 20th century.

A 19½ x 10 x 5 in. polychrome hand-painted papier mâché and plaster model depicting a bovine uterus complete with cervix, uterine horns, ovaries, and oviducts, cut-away revealing outer portion of placenta and placentome network, hinged panel in main uterine wall opening to reveal inside of placenta with placentomes, housing a bovine embryo at four months gestation, embryo with detachable umbilical cord.

*Full details available online.*

#### REFERENCES

See *Price List of Physician's Supplies. Chas. Truax & Co., Manufacturers, Jobbers, and Importers of Surgical Instruments...* Chicago: Truax & Co., 1890

**\$ 1,000-1,500**



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PROPERTY OF THE FAMILY OF FREDERICK C. ROBBINS

## THE "POLIO" NOBEL PRIZE

THE 1954 NOBEL PRIZE MEDAL FOR PHYSIOLOGY OR MEDICINE AWARDED TO FREDERICK C. ROBBINS FOR HIS LIFE-SAVING WORK LEADING TO THE DEVELOPMENT OF THE POLIO VACCINE, WITH THE ACCOMPANYING CALLIGRAPHIC DIPLOMA AND RELATED MATERIALS.

Nobel Prize Medal, struck in 23 carat gold, designed by Erik Lundberg and manufactured by the Kungliga Mynt och Justeringsverket (Swedish Royal Mint). Bust of Alfred Nobel left, *in field left*, ALFR • / NOBEL; *behind head to right*, NAT • / MDCCC / XXXIII / OB • / MDCCC / XCVI; *at left edge, before bust*, E • LINDBERG 1902, *rev.*, INVENTAS • VITAM • IUVAT • EXCOLUISSE • PER • ARTES (*life is enhanced through the arts of discovery*) — REG • UNIVERSITAS — MED • - CHIR • CAROL • (*The Royal Karolinska Institute for Medicine and Surgery*); *below, incuse, on tablet in exergue*, F • C • ROBBINS / MCMLIV, Hygieia (as personification of medicine), laureate, seated left, her right arm holding a patera into which water flows from a crevasse in a rock, an open book in her lap, her left arm supporting a standing figure of a stricken girl; to the right a serpent drinks from the bowl of Hygieia; *in field right*, E • LINDBERG; the edge marked MJV (Mynt

ochs Justeringsverket [*Royal Mint and Assay*]) GULD 1954; weight: 182.57 g.; diameter: 66 mm (2<sup>5</sup>/<sub>8</sub> in.) Virtually as struck; housed in the original red morocco case of issue, the top of the case with a border of a double gilt rule and gilt dot-fillet, corner tools, and the recipient's name (FREDERICK C. ROBBINS) in the center; the fitted interior lined with suede and satin (a bit



Robbins, Enders, and Weller at the Nobel Prize ceremony on 10 December 1954, Stockholm

discolored), the interior case edges with gilt dentelles; extremities of case a bit rubbed.

ACCOMPANIED BY: Frederick C. Robbins' Nobel Prize Diploma: 2 vellum leaves (each 13<sup>1</sup>/<sub>2</sub> x 9<sup>1</sup>/<sub>2</sub> in.; 343 x 243 mm) laid down in a crushed blue morocco binding, the right-hand

leaf with calligraphic inscription in Swedish signed by members of the Nobel Foundation and the Karolinska Institute; the left-hand leaf with calligraphic inscription in Swedish below an allegorical scene in ink, gouache, and gilt by Berta Svensson-Piehl depicting a warrior slaying Polio in the guise of a gigantic serpent; the binding with beveled boards, the covers with a border of six gilt fillets, the front cover with central gilt laurel wreath enclosing Robbins' initials, the rear cover with a central gilt Rod of Asclepius, binding signed on lower rear cover by G. Hedberg and K. Hovboke, Stockholm. Protective blue cloth clamshell case.

ALSO ACCOMPANIED BY: Robbins' copy of the 1954 Nobel Prize yearbook, *Les Prix Nobel en 1954* (Stockholm: Imprimerie Royale, 1955); an offprint from that publication of the Nobel Lecture by John F. Enders, Robbins, and Thomas H. Weller, "The Cultivation of the Poliomyelitis Viruses in Tissue Culture"; 6 other offprints by or about Robbins, one inscribed and signed by him with initials; and an autograph letter signed by Robbins ("Fred"), 2 pages [Boston, 3 June 1948], to his fiancée, Alice Northrop, announcing an important development in his research.

THE NOBEL PRIZE AWARDED FOR ONE OF THE GREATEST ACHIEVEMENTS OF THE MODERN ERA, AND THE MOST PROFOUNDLY IMPORTANT DISCOVERY IN THE HISTORY OF VIROLOGY; ROBBINS, ENDERS, AND WELLER'S BREAKTHROUGH "DISCOVERY OF THE ABILITY OF POLIOMYELITIS VIRUSES TO GROW IN





CULTURES OF VARIOUS TYPES OF TISSUE" PAVED THE WAY FOR VACCINES DEVELOPED BY JONAS SALK & ALBERT SABIN, SAVING COUNTLESS CHILDREN FROM LIFETIMES OF PAIN AND DISABILITY.

The American polio epidemics of the first half of the twentieth-century panicked medical professionals, and struck fear into the heart of every parent. The paralyzing viral infection had the terrifying ability to strike young children and decimate their nervous systems, withering their muscles and twisting their limbs, leaving them with lifelong disabilities. From the late 1930s through 1948, scores of virologists and other research physicians were working for a cure, many with disastrous results, including several fatalities. Finally, in 1948, a three-person lab affiliated with Boston Children's Hospital, The Research Division of Infectious Diseases, discovered how to grow poliomyelitis

virus in human cell cultures, a finding that led to the development of the two most effective poliomyelitis vaccines, which, in turn, eliminated paralytic polio from all but a handful of countries in the world. In urging the Nobel Foundation to recognize the extraordinary breakthrough made by doctors John F. Enders, Frederick C. Robbins, and Thomas H. Weller, Dr. Sven Gard, Professor of Virology at the Karolinska Institute, wrote that "THE DISCOVERY BY ENDERS' GROUP IS THE MOST IMPORTANT IN THE WHOLE HISTORY OF VIROLOGY. ... The discovery has had a revolutionary effect on the discipline of virology."

And yet, as Robbins was to recall more than four decades later, his "involvement with polio came about more or less by accident, and the events leading up to it had little to do with polio" ("Reminiscences of a Virologist," p. 121). Robbins went to medical school at Missouri and Harvard, before training in pediatrics. During World War

II he served in the Army in the Mediterranean theater in an epidemiology unit working on a vaccine for typhus and hepatitis. After being discharged from the Army, Robbins returned to Boston Children's Hospital and joined the laboratory recently established by Dr. Enders. He was joined there by his former medical-school roommate, Tom Weller.

Because so many people were working on a solution to polio, Robbins initially resisted working on that disease. Instead he decided to attempt to "cultivate a virus from infant diarrhea, which at that time was still a major problem in this country. It seemed logical to use tissue cultures of intestine, and I set out to see if I could maintain intestinal tissue in culture. [At the same time] Tom Weller was attempting to grow the virus of chickenpox in tissue culture. He was using human foreskin obtained at circumcision" ("Reminiscences," p. 125).

One day, Dr. Enders suggested that his two younger colleagues inoculate some of their cultures with the Type 2 poliovirus they had in the lab's freezer. (Type 2, one of three polioviruses, is also known as Lansing, because it was obtained, in 1938, from a victim of polio from Lansing, Michigan.) While they did not anticipate success, the virus did grow, and results were even more encouraging when they began using human kidney for the tissue for their cultures. Despite their observations, Robbins and his colleagues were cautious: "Although it appeared that the virus was really growing in the cultures, it was some months before we could convince ourselves that this was true. We realized it was an important observation, but I, at least, was not fully aware of the impact it would have and had not the remotest idea that it would result in a trip to Stockholm. Our first publication appeared in January 1949 ["Cultivation of the Lansing Strain of Poliomyelitis Virus in Cultures of Various Human Embryonic Tissues," in *Science*, 28 January 1949, 109 (2822): 85-87]. From that time on, our lab was visited by people from all over the world. Clearly, other investigators in the field had no difficulty in recognizing the significance of the work. We soon found that the two other types of polio viruses also grew in culture. ..." ("Reminiscences," p. 127). Robbins and his colleagues had succeeded where such titans as Simon Flexner, Albert Sabin, and Peter Olitsky had failed.

As David M. Oshinsky summarizes in *Polio: An American Story*, the implications of the discovery that poliomyelitis viruses could be grown in cultures "were enormous. By cultivating these viruses in a test tube, rather than in the brain or spinal column of a monkey, researchers could get a much better look at the changes occurring inside polio-infected cells. Far more important, a safe reservoir of poliovirus had now been created, free from the contaminating effects of animal nerve tissue. And that, in turn, made possible the mass production of a vaccine" (p. 124). Oshinsky also quotes the reaction of Thomas Rivers—the chairman of committees on research and vaccine advisory for the National Foundation for Infantile Paralysis, who oversaw the clinical trials of Jonas Salk's polio vaccine—to Enders, Robbins, and Weller's first publication in *Science*: "I'll tell you one thing, that report sure as hell captured everyone's attention. ... It was like hearing a cannon go off."

One of the earliest indications of the success of the poliovirus experiment of the Enders-Robbins-Weller laboratory survives in a laconic line in the June 1948 letter from Robbins to Alice Northrop that accompanies this lot. Robbins and Northrop had in fact met at the Research Division of Infectious Diseases, where she worked as a lab technician. Dr. Enders did not permit married couples to work together in the lab, and so when Robbins and Northrop became engaged, she resigned her position. In a letter largely filled with lab gossip and wedding plans, Robbins does mention in passing that "IT LOOKS AS IF LANSING MAY BE GROWING IN MY INTESTINAL TISSUE CULTURES WHICH IS A LITTLE ENCOURAGEMENT." Just how encouraging, he

would shortly realize. (Alice Northrop Robbins, a formidable figure in her own right, holds a place in Nobel Prize trivia for being both the spouse and the child of a Nobel laureate: her father, John Howard Northrop, shared half of the 1946 Chemistry Prize with Wendell M. Stanley "for their preparation of enzymes and virus proteins in a pure form.")

Robbins and Weller were interested in continuing their work on polio by trying to develop a vaccine, but Enders, who was in charge, "felt that this was not the kind of work our laboratory was best suited for. He considered the work to be rather routine and better done in a commercial establishment" ("Reminiscences," p. 130). Robbins briefly considered joining Jonas Salk's lab, but ultimately accepted positions, in 1952, at Western Reserve University School of Medicine and Cleveland City Hospital. Most of the rest of his professional life was devoted to Cleveland until his death in 2003: he served as dean of the Case Western Reserve School of Medicine from 1966 to 1980 and as president of the National Academy of Science's Institute of Medicine from 1980 to 1985.

In 1953, rumors began to circulate that the Enders lab had been nominated for the Nobel Prize. Robbins considered the news, when confirmation came, "a shock but a pleasant one." He also expressed his gratitude to Enders for making "it clear from the outset that his two junior colleagues were full participants and that any recognition that might result from the work should be shared, and so it was" ("Reminiscences," p. 131). Robbins and his wife sailed to Sweden, via England, and flew back, stopping in St. Mortiz, for some skiing. Although their travel and holiday used up most of his Nobel honorarium, one-third of the full \$36,000 award, the Robbinses enjoyed their Nobel travels fully. One of his favorite stories is that when he went to a men's store and said he needed to purchase a tuxedo immediately, the salesman asked, "What's the occasion? Did you win the Nobel Prize or something?"

The Enders-Robbins-Weller Nobel Prize was to be the only one awarded for research concerning polio. While Joseph Salk and Albert Sabin were nominated for the Nobel Prize, neither was selected. Their contentious public rivalry probably did not advance the cause of either of them. When in 1960, those two were nominated with Hilary Koprowski and Sven Gard in recognition of their polio vaccines, Gard declined the nomination on the grounds that the development of the various vaccines entailed no primary work but simply built on the breakthrough by Enders, Robbins, and Weller. Salk and Sabin did both receive numerous academic and public awards and honors, and Salk supposedly used to remark that he did not need a Nobel Prize because everyone assumed he had one.

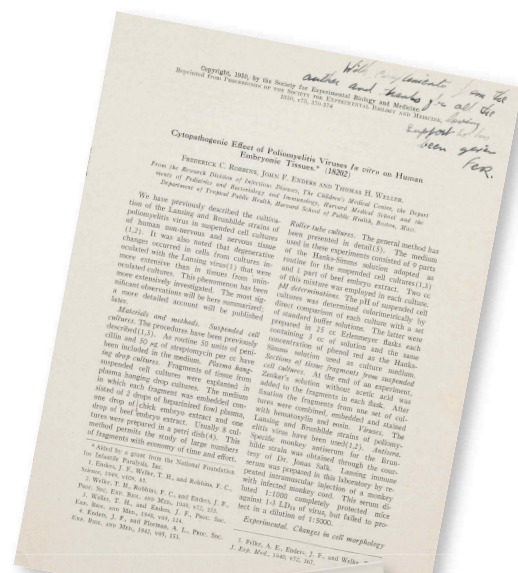
Frederick Robbins, who did win the Nobel Prize, lived a good and great life, and had, perhaps, the single regret that he did not live to see the global eradication of polio, as he had hoped.

## REFERENCES

Frederick C. Robbins, "Reminiscences of a Virologist," in *Polio*, ed. Thomas M. Daniel and Robbins (University of Rochester Press, 1997); John F. Enders, Frederick C. Robbins, and Thomas H. Weller, "The Cultivation of the Poliomyelitis Viruses in Tissue Culture," Nobel Lecture, delivered at Stockholm, 11 December 1954; David M. Oshinsky, *Polio: An American Story* (Oxford University Press, 2005)

*We are grateful to David Tripp for his assistance with the description of Dr. Robbins' Nobel medal.* Please note: The consignors of this lot will donate 25% of their net proceeds to Meharry Medical College, School of Medicine, Nashville, Tennessee. Dr. Frederick C. Robbins was on the board of trustees of Meharry Medical College from 1983 to 1996. He strongly supported increasing the representation of minorities in the health professions. Meharry Medical College is one of the country's oldest and largest historically black academic health science centers. Its mission is to improve the health and health care of minority and underserved communities by offering excellent education and training programs in the health sciences.

**\$ 200,000-300,000**





PHYSICS,  
MATHEMATICS,  
AND  
TECHNOLOGY

LOTS 36-71



36

36

[EUCLID]; ONDERIZ, PEDRO  
AMBROSIO

*La Perspectiva, y Especularia de Euclides. Traduzidas en vulgar Castellano, y dirigidas a la S.C.R.M del Rey don Phelippe nuestro Señor. Madrid: En casa de la viuda de Alonso Gomez, 1585*

4to (203 x 151 mm). Title with large woodcut arms of King Phillip II of Spain, 4 woodcut chapter initials (1 historiated), woodcut geometric diagrams throughout, *Especularia* with separate title dated 1584, but signatures and pagination are continuous with first part; title with paper flaw at imprint, scattered light foxing, small stain running through lower edges. Contemporary flexible vellum, remnants of ties.

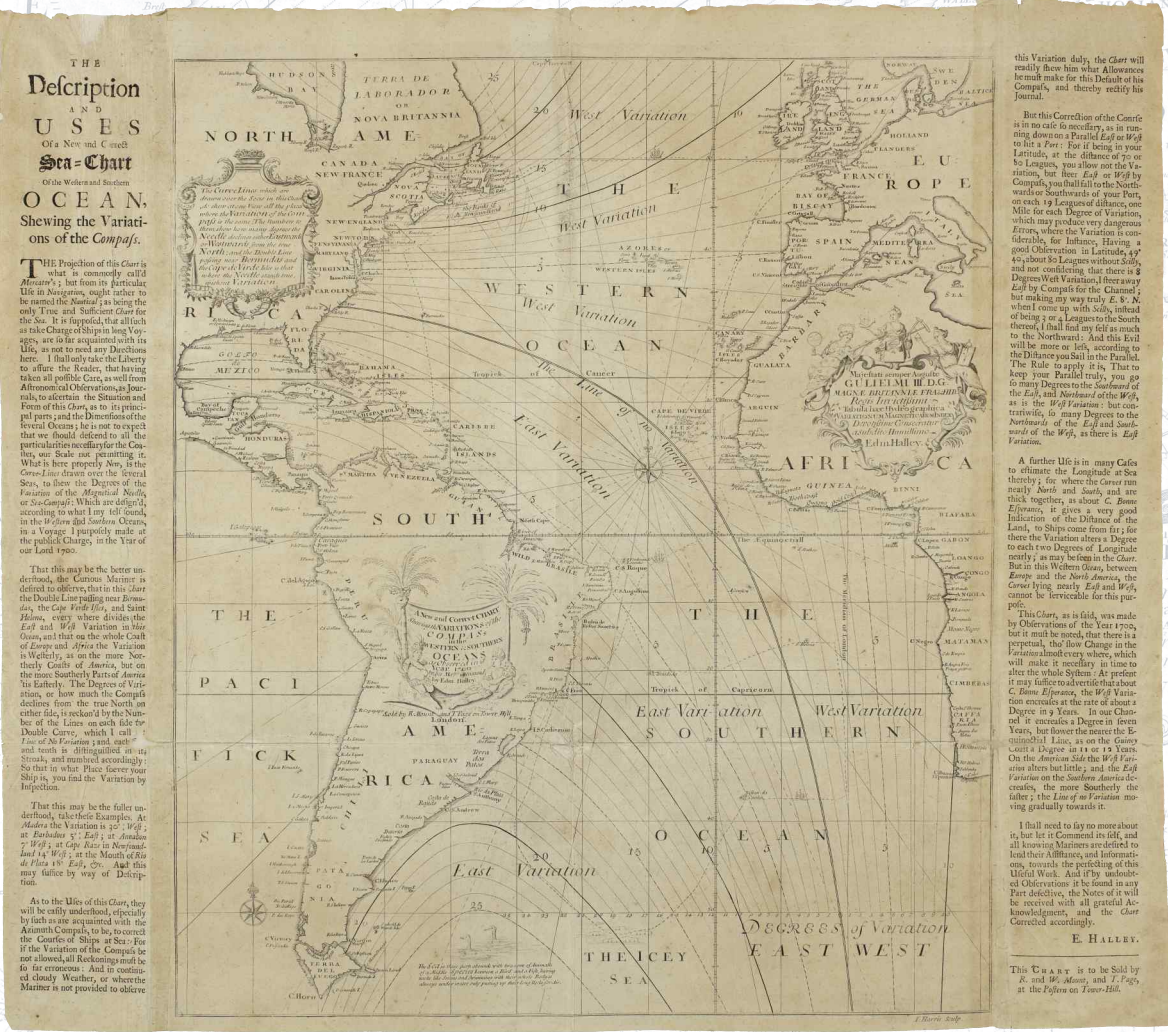
FIRST EDITION IN SPANISH OF EUCLID'S *OPTICA ET CATOPTICA*. Translated into Spanish by Onderiz, *Optica et Catoptrica* is the earliest surviving Greek work on perspective, and until the arrival of Newton's *Opticks*, the most important. Pedro Ambrosio Onderiz, was appointed by King Philip II to a chair in the newly established Academia de Matemáticas, and was expressly charged with the translation of scientific works into Spanish. The only earlier work by Euclid that had been translated into Spanish was the 1576 *Los seis libros primeros de la geometria*; prior to that, the only printing of Euclid in Spain was a truncated *Mathematicae quaedam selectae*, done in 1566.

REFERENCES

Palau 84722; Perez Pastor 219

\$ 3,000-5,000





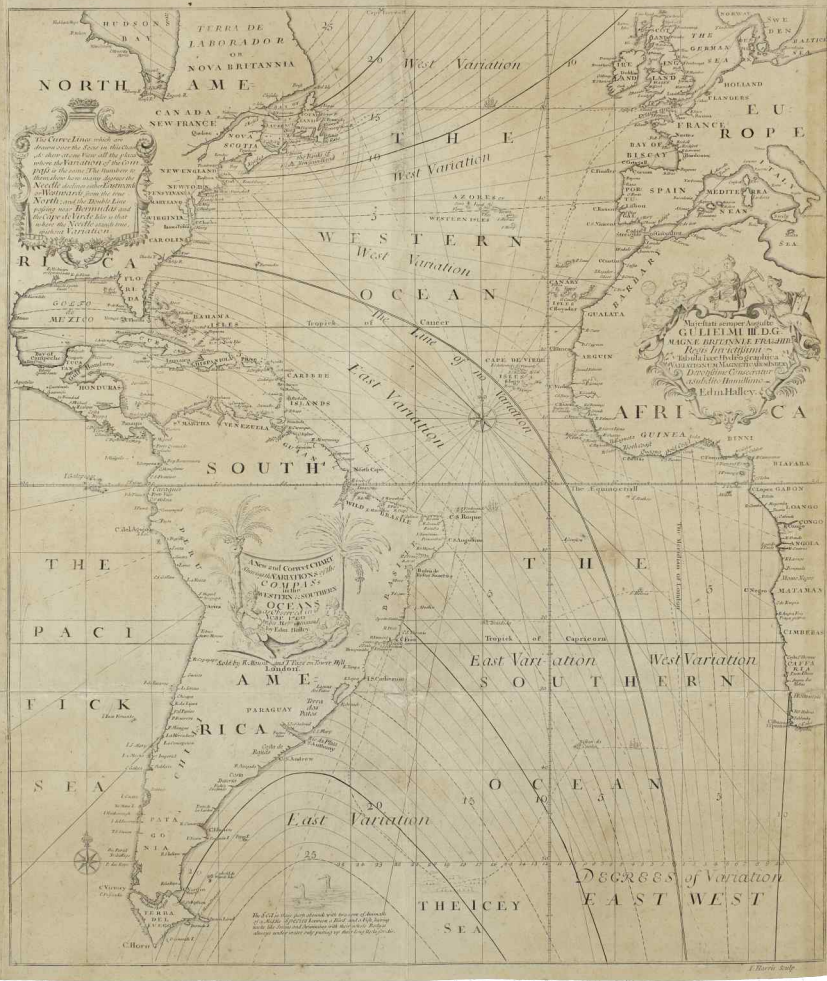
**THE Description AND USES OF A New and Correct SEA-CHART OF THE WESTERN AND SOUTHERN OCEAN, SHewing the VARIATIONS of the COMPASS.**

**THE** Projection of this Chart is what is commonly called *Mercator's*; but from its particular Use in Navigation, ought rather to be named the *Nautica*; as being the only True and Sufficient Chart for the Sea. It is supposed, that all such as take Charge of Ships in long Voyages, as to be acquainted with its Use, as not to need any Questions here. I shall only take the Liberty to advise the Reader, that having taken all possible Care, as well from Astronomical Observations as Journals, to ascertain the Situation and Form of this Ocean, as to its principal parts, and the Direction of the several Currents; he is not to expect that we should pretend to all the particularities necessary for the Conduct, or Safe use, pertaining to. What is here properly My, the *Compass* Line drawn over the several Seas, to show the Degrees of the Variation of the Magnetic Needle, or *Sea-Compass*. Which are design'd, according to what they fell forth in the *Western* and *Southern* Oceans, in a Voyage; I purposely made at the publick Charge, in the Year of our Lord 1760.

That this may be the better understood, the *Compass* Meridian is design'd to observe, that in this *Chart* the Double Line passing near *Zimbarwe*, the *Capo Verde*, and *Santo Helena*, every where divides the *East* and *West* Variations of the *Ocean*, and that on the whole Coast of *Europe* and *Africa* the Variation is *Westerly*, as on the more Northerly Coasts of *America*, but on the more Southerly Parts, towards its Eastern, the Degrees of Variation, or how much the *Compass* declines from the true North on either side, is reckon'd by the Number of the Lines, or *Compass* Double Curve, which I call *Lines of Variation*; and each is distinguished as *Streaks*, and numbered accordingly; So that in what Place ever you are Ship is, you find the Variation by Inspection.

That this may be the better understood, take this Example, At *Madera* the Variation is 20° *West*; at *Madagascar* 5° *East*; at *London* 7° *West*; at *Capo Verde* in *Newfoundland* 14° *West*; at the Mouth of *Rio de Plata* 14° *East*, &c. And this may suffice by way of Distinguishing.

As to the *Miles* of this *Chart*, they will be easily understood, especially by such as are acquainted with the *Amount* *Compass*, to be directed to the *Courts* of *Ships* at *Sea*; For if the Variation of the *Compass* be not allowed, all *Reckonings* will be so far erroneous. And in uncertain, cloudy Weather, or when the Matter is not provided to observe



This Variation daily, the *Chart* will readily show him what Allowance he must make for this Defect of his *Compass*, and thereby rectify his *Journal*.

But this Correction of the *Course* is in no case necessary, as in running down a Parallel *East* or *West* to 100 *Leagues*. For if being in your Latitude at the distance of 70 or 80 *Leagues*, you flow not to Variation, but *East* or *West* by *Compass*, you shall fall to the Northward or Southward of your Port, on each 19 *Leagues* of distance, one *Mile* for each Degree of Variation, which may produce very dangerous Errors, where the Variation is considerable, for Instance, Having a good Observation in Latitude 49° 00' about the *Magellan* Straits, and not considering that there is 3 Degrees *West* Variation there away *East* by *Compass* for the *Chart*; but making my way truly *E. S. N.* when I come to with *Sails*, instead of being 3 or 4 *Leagues* to the South thereof, I shall find my self as much to the Northward. And this will be more or less, according to the Distance run in the Latitude. The Rule to apply is, That to keep your Parallel truly, you go to many Degrees to the Southward of the *East*, and *Northward* of the *West*, as is the *West* Variation; but not to many Degrees to the Northward of the *East* and Southward of the *West*, as there is *East* Variation.

A further Use is, in many Cases to estimate the Longitude at *Sea* thereby; for where the *Course* run nearly *North* and *South*, and are thick together, as about *C. Bone* *Islands*, it gives a very good Indication of the Distance of the Land, or Ships come from first; for there the Variation alters a Degree to each two Degrees of Longitude nearly; as may be seen in the *Chart*. But in this *Western* Ocean, between *Europe* and the *New* *America*, the *Course* lying nearly *East* and *West*, cannot be serviceable for this purpose.

This *Chart*, as is said, was made by Observations of the Year 1760, but it must be noted, that there is a perpetual flow Change in the Variation almost every where, which will make it necessary in time to alter the whole System. As therefore it may be useful to advertise that about *C. Bone* *Islands*, the *West* Variation encreases at the rate of about a Degree in 3 Years. In our *Chart* it encreases a Degree in seven Years, but however the nearer the *Equator* you are, as on the *Guinea* Coast it is 10 or 12 Years. On the *American* Side the *West* Variation alters but little, and the *East* Variation on the *Southern* *America* decreases, the more Southerly the farther; the *Line* of *No Variation* moving gradually towards it.

I shall need to say no more about it, but let the *Command* and all knowing *Nautics* be desir'd to lend their Assistance, and Informations, towards the perfecting of this Useful Work. And if by unobscured Observations it be found in any Part defective, the Note of it will be received with all grateful Acknowledgment, and the *Chart* Corrected accordingly.

E. HALLEY.

This *Chart* is to be Sold by *R. and W. Mount*, and *T. Page*, at the *Expire* on *Tower-Hill*.

37

**HALLEY, EDMUND**  
*A New and Correct Chart Shewing the Variations of the Compass in the Western & Southern Oceans as Observed in the year 1700 by his Majesty's Command by Edm[und] Halley... Tabula haec hydrographica variationum magneticarum index... London: Sold by R. Mount and T. Page on Tower Hill, [1702].*

**WITH LETTERPRESS INSTRUCTIONS:**  
 HALLEY, E. *The Description and Uses of a New and Correct Sea-Chart of the Western and Southern Ocean, Shewing the Variations of the Compass.* [London]: R. and W. Mount, and T. Page, [1712].

Engraved chart (612 x 696 mm) flanked by letterpress instructions sheets affixed vertically to either side of chart, title cartouche over South America, secondary cartouche over Africa with dedication to William III. Creases where previously folded, several small paper repairs. As issued.

APPARENT FIRST EDITION OF HALLEY'S FAMED ISOGONIC CHART, WITH RARE EARLY ISSUE OF INSTRUCTIONAL TEXT: "AMONG THE RAREST OF CARTOGRAPHICAL TREASURES" (Tooley).

An instrument of singular importance for navigation in the North and South Atlantic, of which few examples have survived. While Halley is perhaps best known for his computation of the orbit of Halley's comet, his theory of terrestrial magnetism is one of his most important scientific achievements. Between 1698 and 1700, Halley sailed across the Atlantic in the ship *Paramour* charting magnetic variation. By postulating the existence of four magnetic poles, Halley hoped to explain the magnetic variations recorded on the Earth's surface. He published two charts during his voyage on the *Paramour*, a meteorological chart in 1701, and the present magnetic chart in 1701/1702. The two were the first published charts with lines of equal magnetic variation in the oceans; these were referred to as "Halleyan lines" by his contemporaries, and are now known as *isogonic* lines. "Thus the isoline, or lines of equal value, was invented. For more than a century Halley's magnetic lines were a familiar feature

of the world chart (Shirley, p. xiv). Instrument, rather than chart, is the best designation for this early issue, for which the printed text provides instructions on use. Throughout the 18th century, the Mount & Page partnership and imprint went through numerous permutations. Robinson dates that of "R. and W. Mount, and T. Page" to 1712. An inspired work of science by one of the great astronomers of the age, which went on to be re-printed numerous times through the 18th century, including in numerous editions of *The English Pilot*.

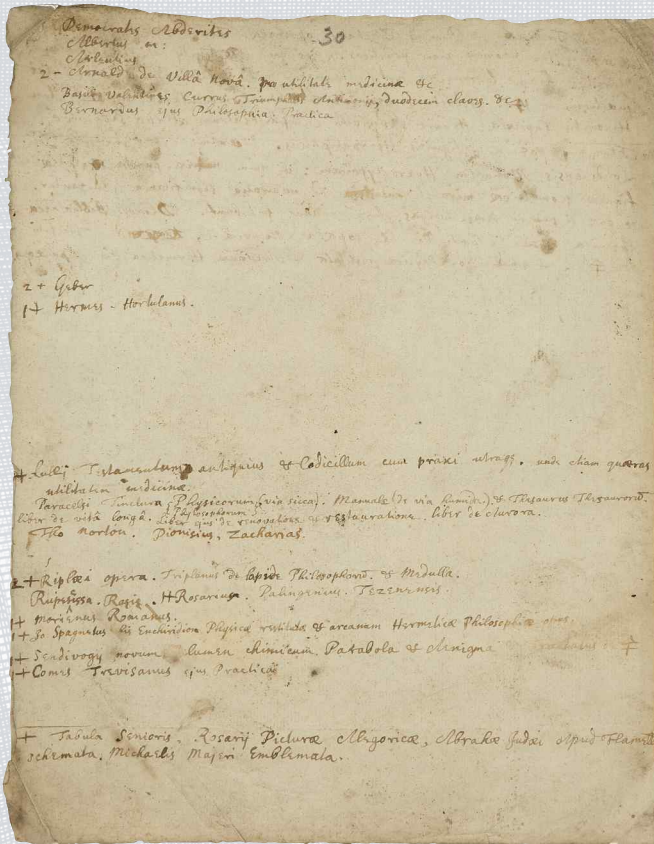
**REFERENCES**

Louis A. Bauer, "Some Bibliographical Discoveries in Terrestrial Magnetism," *Nature* 52 (1895) pp 79-80; "Edmund Halley and Thematic Geo-Cartography" In: *The Compleat Plattmatic*; Robinson. *Marine Cartography in Britain*, pp 117-11; Tooley. *Maps and Map-Makers*, p 55; *The World Encompassed*, 199

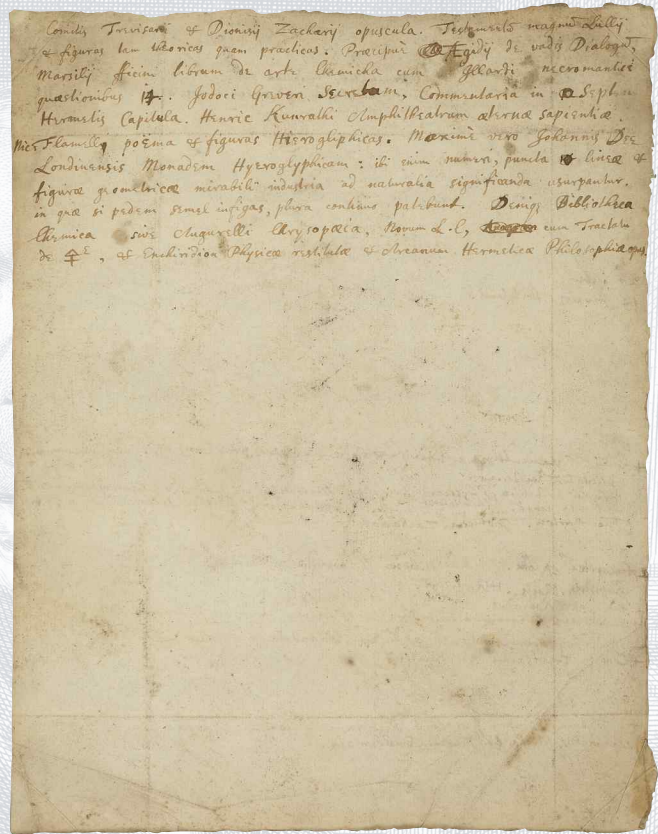
\$ 8,000-10,000

37





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## NEWTON, ISAAC

Autograph Manuscript in Latin, 2 pp, 4to (199 x 155 mm), [np], [c. 1670], being an unpublished listing of chemical authors with some citations of their works that Newton has worked with or is intending to research, some light soiling to edges and a few very minor spots.

VERY RARE UNPUBLISHED MANUSCRIPT WRITTEN AT THE BEGINNING OF HIS CHEMICAL RESEARCHES, in which Newton composes a list of chemical authors he has either worked with or is intending to research, together with some citations of their works. ALMOST ALL OF NEWTON'S MANUSCRIPTS ARE IN INSTITUTIONS, AND MANUSCRIPTS BEARING ON HIS SCIENTIFIC RESEARCHES ARE ESPECIALLY RARE IN PRIVATE HANDS. The authors listed range from Democritus, the ancient proponent of atomic theory, to the Elizabethan scientist/magus John Dee, and include many of the most famous alchemists and "chymists": e.g. Albertus M[agnus], Arnold de Villa Nova, Basil Valentine, Flamel, Geber, Heinrich Kunrath, [Raymond] Lull, Marsilio Ficino, Ripley, and Sendivogius. Illustrations in the work of 4 noted author are singled out in the final two lines on the

recto (beginning "Tabulae Senioris"). The text on the verso is written as a paragraph, where Newton intercalates the author citations with his own thought and comments. The text on the recto lists authors alphabetically on distinct lines. John Dee's work on the *Monas Hieroglyphica* is especially singled out for its excellence — Newton here writing: "There numbers, points, lines and geometrical figures are used with remarkable industry to signify natural things. Once you put your foot there, more will immediately open." This manuscript bears relationship to Newton's famous "*Index Chemicus*," and is very possibly a first effort to its creation. It was compiled over the course of years and ultimately ran to some 100 pages.

The new scholarly paradigm of Isaac Newton evidences the integral linkage of Newton's "chemical philosophy" and his "natural philosophy" (i.e. physics). It is widely recognized that Newton thought chemistry held the solution to "the active cause of gravity" (which the *Principia* did not provide). Many scholars would argue that Newton's pre-*Principia* researches into the "active principles" of chemical philosophy had a formative influence on the concept of

gravitational force expressed in his natural philosophy — a concept of "attraction" which, in turn, subsequently appears to have framed his post-*Principia* conclusions about chemical philosophy. The scientific fruit of this mutual intercourse of fields is most prominently evident in Newton's "De natura acidorum," where we observe "the transition from the alchemical concept of active principle to the Newtonian concept of attraction expressed in his own words."

Newton spent some 30 years in the research of chemistry and was highly guarded about his studies throughout his lifetime. Indeed his sole lifetime published work in the field, "De natura acidorum" (printed in Harris' *Lexicon Technicum*), was perhaps published without his official permission. It is only in recent decades that scholars have had access to Newton's chemical manuscripts and have begun their formal study.

### PROVENANCE

Bonhams, 2015, lot 49

\$ 40,000-60,000



NEWTON, ISAAC — [ALBERT  
EINSTEIN & ROMAN VISHNIAC]

*Philosophiæ Naturalis Principia  
Mathematica*. London: Apud Guil. & Joh.  
Innys, Regiæ Societatis typographos,  
1726

4to (244 x 190 mm). Privilege leaf, engraved  
frontispiece portrait by George Vertue from the  
painting by I. Vanderbank, half-title, title printed  
in black and red, with numerous in-text diagrams,  
advertisement at end; modern morocco to style,  
spine gilt in 6 compartments. Scattered minor  
foxing, extremities a bit rubbed, hinges just  
starting.

A SUPERB ASSOCIATION COPY OF NEWTON'S  
LANDMARK BOOK — WITH THE BOOKPLATES  
OF BOTH ALBERT EINSTEIN AND ROMAN  
VISHNIAC.

The third edition of “the greatest work in the  
history of science” (PMM), last to be published  
during the author’s lifetime, and the basis for  
all subsequent editions. A cornerstone treatise  
on dynamics and gravitation, the *Principia*  
explains the phenomena described by Newton’s  
predecessors (Copernicus, Galilei, Kepler) by  
elucidating the mathematical laws underlying  
them. At the urging of Edmond Halley, secretary  
to the Royal Society, Newton set about to prove  
that Kepler’s law of planetary motion would  
cause a planet to orbit elliptically around the Sun.  
Newton established the mathematical bases for  
the law of inertia and the mechanics of fluids,  
including the effect of bodies moving through  
resistant fluids.

The *Principia* explained a system of the universe  
that, once established, was unchallenged until the  
twentieth century ushered in quantum theory and  
the theories of relativity, and essentially marks  
the beginning of modern physics. Einstein himself  
remarked that it was “perhaps the greatest  
intellectual stride that it has ever been granted  
to any man to make”. We can trace a direct  
line from Newtownian physics to special and  
then general relativity, marking this association  
copy as a fascinating object related to our  
developing understanding of the universe from  
the eighteenth century to present. Moving from  
physics to photography — Roman Vishniac was  
a Russian-American photographer who famously  
photographed Einstein in his study in Princeton  
in 1942.

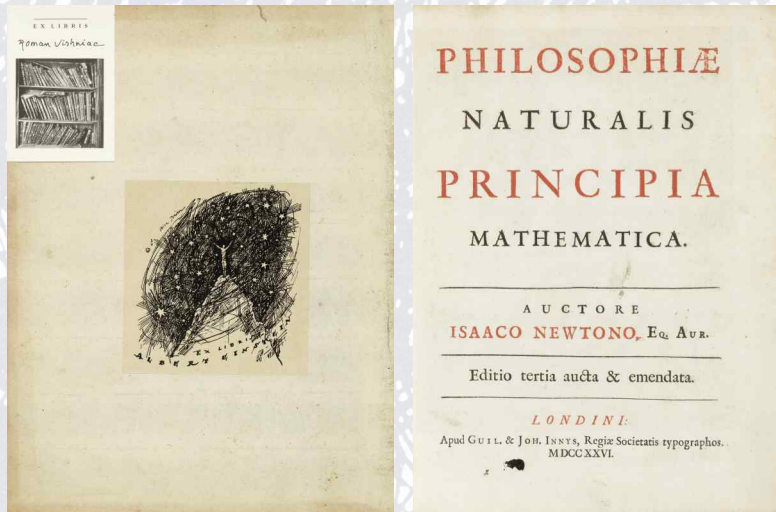
REFERENCES

See PMM 161

PROVENANCE

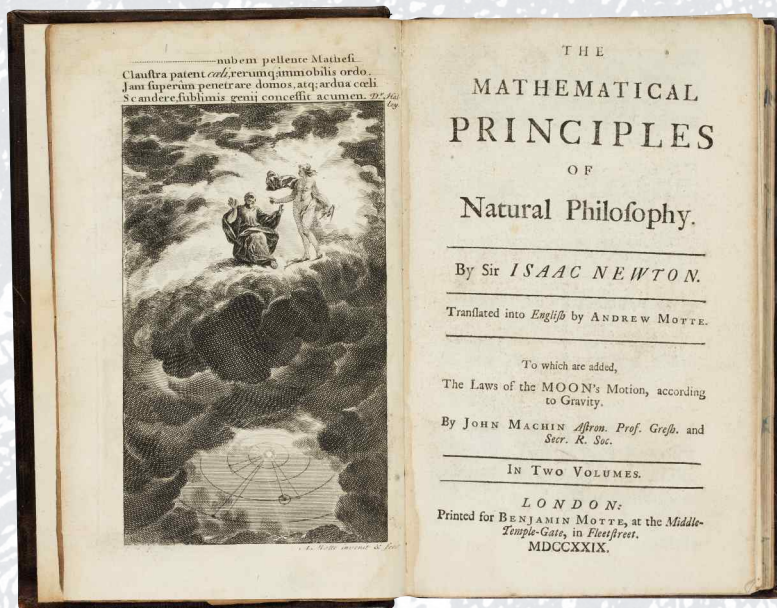
Albert Einstein (bookplate) — Roman Vishniac  
(bookplate)

\$ 8,000-12,000



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NEWTON, ISAAC

*The Mathematical Principles of Natural  
Philosophy* [Trans. A. Motte]. ... *To which  
are added, The Laws of the Moon's Motion,  
according to Gravity.* By John Machin.

London: for Benjamin Motte, 1729

2 volumes, 8vo (194 x 117 mm). Engraved  
frontispiece after and by A. Motte in first  
volume, section-title to Machin's "Laws of  
Motion", 47 folding engraved plates, 3 folding  
letterpress tables, 3 engraved headpieces by  
Motte, numerous woodcut head and tailpieces,  
historiated and ornamental woodcut initials;  
antique calf to style. Internally fine.

FIRST EDITION IN ENGLISH OF NEWTON'S  
PRINCIPIA, the most important work in the  
history of science, “perhaps the greatest  
intellectual stride that it has ever been granted  
to any man to make” (Einstein). “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).

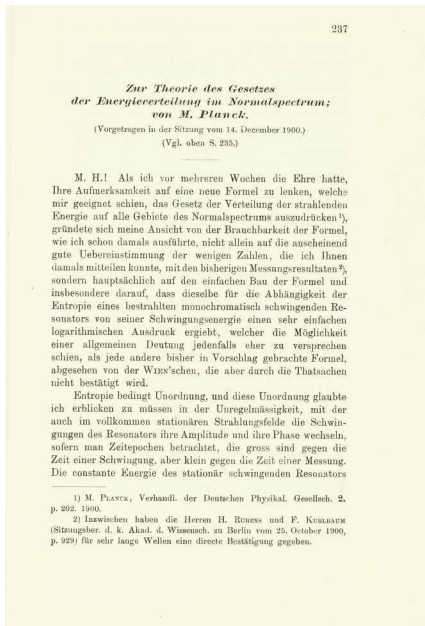
The first edition was published in Latin in 1687,  
followed by a second in 1713. This edition is  
by Andrew Motte, who was the brother of the  
publisher, and who provided the engravings for  
the frontispieces and three headpieces. The third  
book of the *Mathematical Principles* is actually a  
translation of Newton’s *Treatise of the System of  
the World*; the first Latin and English publications  
of this work appeared the previous year. John  
Machin’s unsuccessful attempt to correct  
Newton’s lunar theory is included at the end.

REFERENCES

Babson 20; Gray 23; Wallis 23; see PMM 161

\$ 20,000-30,000





41

41

### PLANCK, MAX

“Zur Theorie des Gesetzes der Energieverteilung im Normalspectrum.”

In: *Verhandlungender Deutschen Physikalischen Gesellschaft im Jahre 1900*. Nr. 17, Jahrg. 2. Leipzig: Verlag von Johann Ambrosius Barth, 1900.

8vo (223 x 142 mm). Original pale green printed wrappers. Papers repairs to spine, lower wrapper with light creasing and a few tiny spots of foxing, as well as some tiny chips to edges.

FIRST PRINTING OF PLANCK'S ANNOUNCEMENT OF HIS QUANTUM THEORY, FOR WHICH HE WAS AWARDED THE 1918 NOBEL PRIZE FOR PHYSICS. Planck's quantum of action, known as the constant *h*, explained the pattern of light intensity which was emitted from a black body at any given frequency. "In this important paper, he stated that energy flowed not in continuous, indefinitely divisible currents, but impulses or bursts or action [quanta]" (Dibner). "Planck's theory contradicted the mechanics of Newton and the electromagnetics of Faraday and Maxwell. Moreover it challenged the notion of continuity of nature." (PMM) Planck's new theory was baffling to other scientists, but it gained acceptance after Einstein used his constant *h* to determine the photoelectric effect, and Niels Bohr applied it to the principle of the atom.

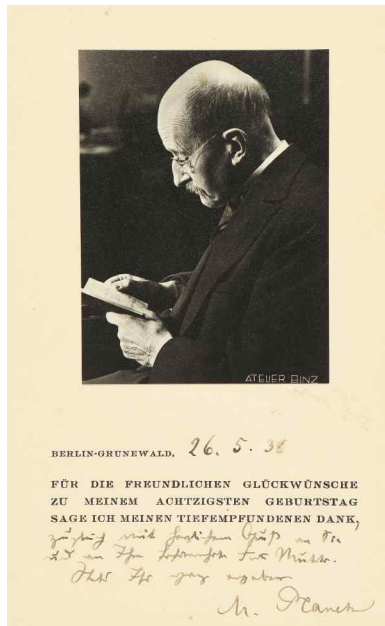
#### REFERENCES

Dibner *Heralds of Science* 166; Evans 47; Grolier/Horblit 26a; Norman 1713; *Printing and the Mind of Man* 391a; Sparrow 162

\$ 25,000-35,000

44

SOTHEY'S



42

42

### PLANCK, MAX

Autograph note signed, Berlin-Grunewald, 26 May 1938

Photograph (3½ x 2½ in.) affixed to a printed card with autograph note (7 x 4½ in.), signed "M. Planck." Some very minor fingersoiling.

Max Planck was a German theoretical physicist, best known for contributions to the field of quantum theory. Planck was awarded the 1918 Nobel Prize for physics "in recognition of the services he rendered to the advancement of Physics by his discovery of energy quanta." This card extends his printed thanks for good wishes on his 80th birthday; the handwritten portion, in German, roughly translates to: "at the same time with cordial greetings to you and your highly esteemed mother. Always your completely devoted, M. Planck."

\$ 1,200-1,800



43

43

### BOHR, NIELS

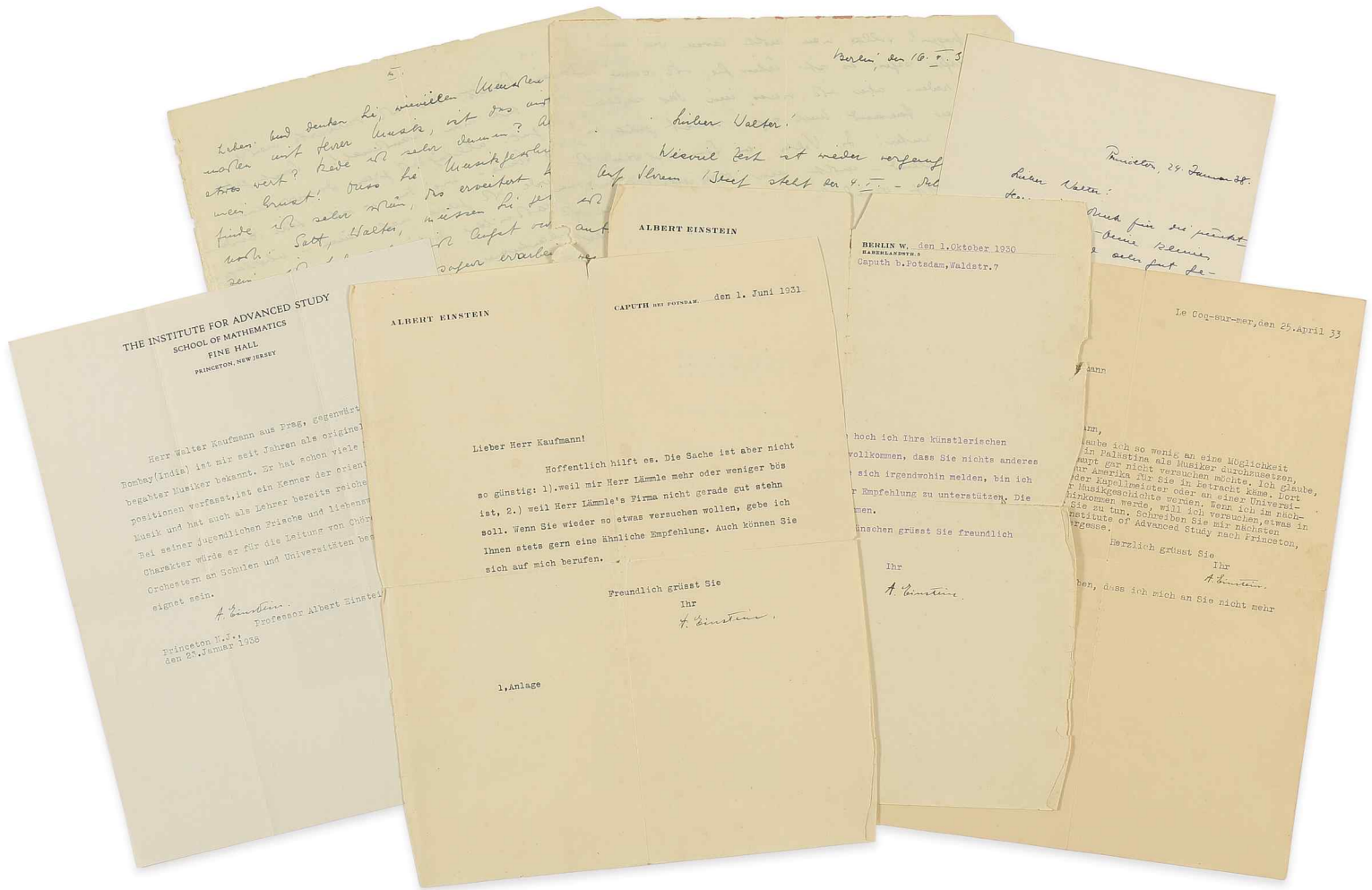
Signed photograph of Bohr giving a lecture at age 75

Black and white photograph (5¾ x 4 in.), signed and dated "Niels Bohr Geneve, 5-2-1960" in pen; faint purple stamp to verso which reads, in part: "Bern ZURICH Lausanne," with small strip of adhesive residue.

Niels Bohr was a Danish physicist who made foundational contributions to our understanding of atomic structure and quantum theory, and laid the groundwork for modern atomic physics. Bohr received the 1922 Nobel Prize in Physics "for his services in the investigation of the structure of atoms and of the radiation emanating from them".

In the 1960's his primary interest lay in his more philosophical pursuits, more specifically in the need to search for the diversity of cultural developments. He embodied his beliefs in his essay and address titled "The Unity of Human Knowledge." Bohr's goal to "promote mutual understanding between nations with very different cultural backgrounds" was deeply informed by his experience in World War II, which had forced his family into exile. Deeply concerned about the dangers of the Cold War, Bohr spent a good part of his later years working for peaceful uses of nuclear energy, and arms control.

\$ 1,200-1,800



**EINSTEIN, ALBERT; EINSTEIN, MARGOT**

An archive of 4 typed letters signed from Albert Einstein and 2 autograph letters signed from Margot Einstein, all to Walter Kaufmann, primarily on the topic of Kaufmann's musical career. Caputh bei Potsdam, 1 October 1930 & 1 June 1931; Coq-sur-Mer, Brussels, 25 April, 1933; and Princeton, New Jersey, 23 January, 1938.

4 typed letters signed "A. Einstein", 1 page each (11 1/8 x 8 1/2 in.), 2 on Einstein's personal letterhead from Germany, 1 on letterhead of the Institute for Advanced Study, School of Mathematics, Princeton, New Jersey. WITH: 2 autograph letters signed ("M.E." and "Margot"), 4

& 2 pp. Berlin, 16 February 1933 & Princeton, 24 January, 1938. Creases where previously folded, some chips & tears with loss to a few letters to 1 Margot Einstein letter.

AN EARLY CORRESPONDENCE SHOWING A FRIENDSHIP UNHINDERED BY SPACE AND TIME, WITH EINSTEIN WRITING OVER A 8 YEAR PERIOD FROM GERMANY, BRUSSELS, AND THE US TO KAUFMANN IN GERMANY, CZECHOSLOVAKIA, AND INDIA.

Kaufmann, a composer, conductor and musicologist was a family friend of the Einstein's having met in Pre-War Germany. From 1927-1933, Kaufmann, a Czech national, conducted summer sessions of the opera in Karslbad, Berlin, and Eger, while working on a doctorate in musicology during the year. Kaufmann submitted his doctoral thesis in 1934, but upon learning

that his thesis supervisor was the leader of a local Nazi youth group, chose not to accept the doctorate. Shortly thereafter, Kaufmann left Germany for Bombay, India. He spent the next 12 years of his life there, before eventually settling in the United States where he became a professor at the Indiana University School of Music. His work is recognized across India, as he is known for composing the signature music for All India Radio, a tune which is still played as the opening sequence of AIR stations across India.

It is not surprising that Einstein and his step-daughter Margot shared friends. Of all his children, Einstein felt closest to Margot, and in a letter to his second wife Elsa, Margot's mother, he wrote: "I love her [Margot] as much as if she were my own daughter, perhaps even more so, since who knows what kind of brat she would have become [had I fathered her]."

**\$ 10,000-15,000**



Lieber Herr Ehrenmann!

EINSTEIN, ALBERT

Autograph letter signed "A. Einstein" to Dr. Rudolf Ehrmann, 22 March, 1943.

One page (8 1/2 x 11 in.) signed "A. Einstein," in German, black ink. Creases where previously folded, matted, glazed, and framed together with English translation of letter and black & white photograph of Einstein smoking a pipe and carrying a bat.

EINSTEIN GIVES A HUMOROUS FREUDIAN ANALYSIS OF THE MAN WHO CONVINCED HIM TO QUIT SMOKING

Translation reads in full:

"Dear Mr. Ehrmann!

I thank you ever so much for the book you sent for my birthday and the kind congratulations. The interesting aspect of it is that you inscribed the book 14th of April instead of 14th of March. All attempts to interpret that lapsus in a Freudian fashion were in vain because of the absence of information about your Achilles heel. There only remains the banal guess that you wished the winter to be over sooner because of insufficient heating at home. Maybe you'll be able to find a deeper point that may be hiding behind that tiny lapsus.

I discover that your advice to drop the smoking habit turned out very well indeed, so that there would be no excuse for me were I to start up again. I am delighted that you have now become independent of that abhorrent Ratnoff - in every respect, independence happens to be the first condition of a carefree existence.

All best regards and good wishes to all three of you from your A. Einstein."

Dr. Ehrmann was Einstein's personal physician in Berlin, and like Einstein and many other German Jews at the time, sought to obtain passage to the US as the German political climate deteriorated. Ehrmann had many difficulties getting out of Germany, but it was thanks to the lobbying of Einstein and a few other friends that he was finally able to obtain passage. He settled in New York, where he once again served as Einstein's personal physician. Einstein was known to love smoking his pipe, and is oft quoted as saying "I believe that pipe smoking contributes to a somewhat calm and objective judgment in all human affairs." Despite this, Dr. Ehrmann was able to convince him to give up smoking in 1943, though he continued to carry pipe with him, just chewing on the stem. The pipe is such a part of the persona of Einstein, that the most requested artifact in the Smithsonian's modern physics collection is in fact Einstein's pipe.

REFERENCES

Roger Catlin. "Why Albert Einstein, the Genius Behind the Theory of Relativity, Loved his Pipe." Smithsonian.com April 16, 2015 <https://www.smithsonianmag.com/smithsonian-institution/why-albert-einstein-genius-theory-relativity-loved-pipe-180954991/>

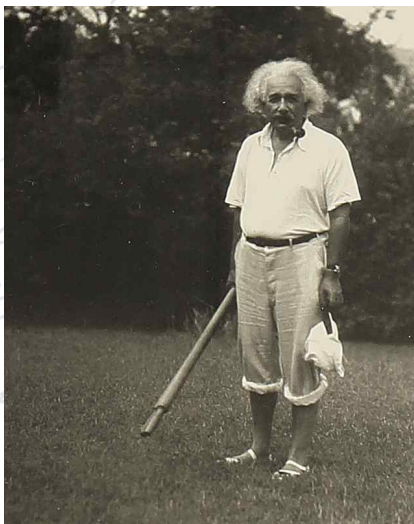
\$ 4,000-6,000

Lieber Herr Ehrenmann!

Ich danke Ihnen freundlich für das zu meinem Geburtstag gesandte Buch und die liebevollsten Gratulationen. Das Interessante dabei ist, dass Sie im das Buch eingetragenen haben 14. April statt 14. März. Alle Bemühungen, diesen Lapsus im Freud'scher Weise zu deuten sind mangels an Information über Ihre diesbezügliche Achilles-Heile fehlgeschlagen. Es blieb nur die banale Vermutung, dass Sie den Winter vorbeiwünschten wegen ungenügender Heizung zuhause. Vielleicht finden Sie einen tieferen Witz, der hinter das kleinen Lapsus sich verbirgt.

Ich finde leider, dass Ihr Rat, das Rauchen aufzugeben, sich recht gut bewährt, so dass ich keine Entschuldigunng hätte, wenn ich wieder anfänge. Ich bin froh, dass Sie nun unabhängig geworden sind von dem abscheulichen Ratnoff - überhaupt ist zu der Unabhängigkeit die erste Bedingung für eine freie Existenz.

Herzliche Grüsse und Wünsche für Sie alle drei von Ihrem A. Einstein.

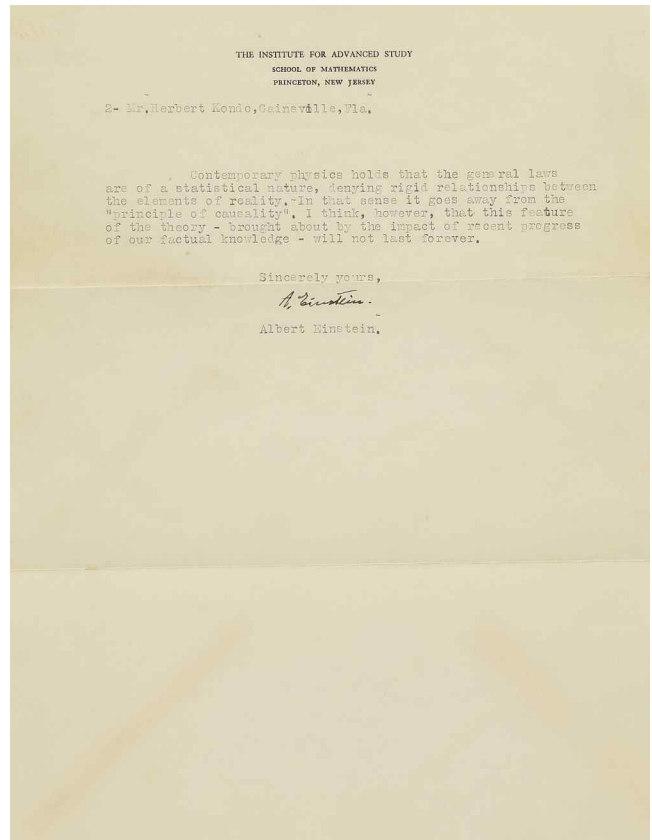
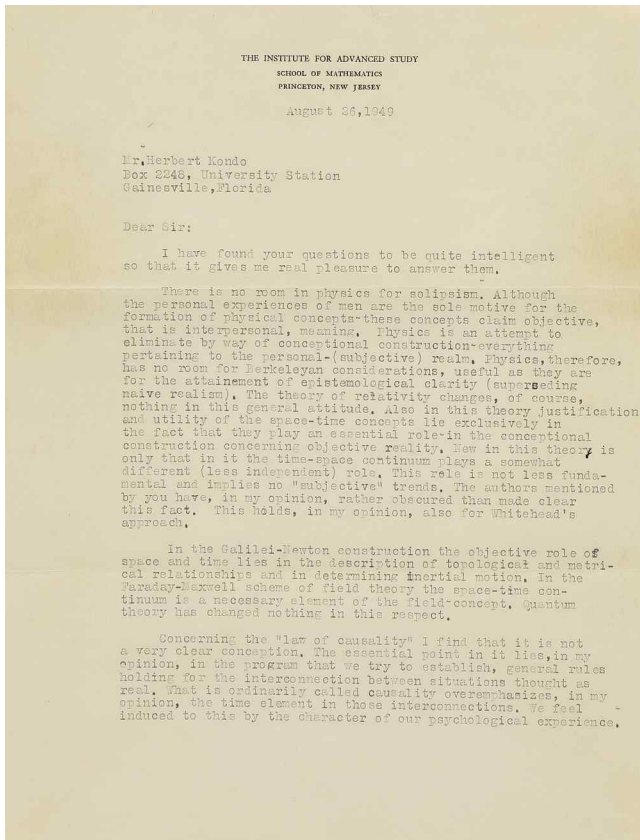


45 (DETAIL)

"Independence happens to be the first condition of a carefree existence."

ALBERT EINSTEIN

A. Einstein



### EINSTEIN, ALBERT

Typed letter signed to Herbert Kondo, Princeton, New Jersey, 26 August 1949.

2 pages (10 3/8 x 8 1/2 in.) signed "A. Einstein," in English, on letterhead of the Institute for Advanced Study School of Mathematics, Princeton, New Jersey, with typed envelope. Creases where previously folded.

AN EXCELLENT LETTER REGARDING EINSTEIN'S VIEWS ON PHILOSOPHY AS APPLIED TO PHYSICS, THE OBJECTIVE ROLE OF SPACE & TIME, THE IMPACT OF THE THEORIES OF RELATIVITY AND QUANTUM THEORY, AND THE PRINCIPLE OF CAUSALITY, REFERENCING FELLOW PHYSICISTS GALILEO, NEWTON, MAXWELL, & FARADAY, AS WELL AS PHILOSOPHERS WHITEHEAD & BERKELEY.

A lengthy response to an inquiry sent by Herbert Kondo asking Einstein to "clear up some problems" regarding the work of certain philosophers, esp. of George Berkeley, as relates to matters of physics. Einstein's direct and thoughtful response in part:

*"There is no room in physics for solipsism. Although the personal experiences of men are the sole motive for the formation of physical concepts — these concepts claim objective, that is interpersonal, meaning. Physics is an attempt to eliminate by way of conceptual construction — everything pertaining to the personal-(subjective) realm. Physics, therefore, has no room for the Berkeleyan considerations, useful as they are for the attainment of epistemological clarity (superseding naive realism). The theory of relativity changes, of course, nothing in this general attitude. Also in this theory justification and utility of the space-time continuum plays a somewhat different (less independent) role. This role is not less fundamental and implies no "subjective" trends. The authors mentioned by you have, in my opinion, rather obscured than made clear this fact. This holds, in my opinion, also for Whitehead's approach.*

*In the Galilei-Newton construction the objective roles of space and time lies in the description of topological and metrical relationships and in determining inertial motion. In the Faraday-Maxwell scheme of field theory, the space-time continuum is a necessary element of the field-concept. Quantum theory has changed nothing in this respect..."*

Herbert Kondo (1924-2012) worked as Senior Science Editor for the MacMillan Co, and later as the Editor-In-Chief for Grolier/Scholastic Publishing. He wrote numerous articles and books treating the history of science, including two on Einstein: *Adventures in Space & Time; the Story of Relativity* (1966) and *Albert Einstein and the Theory of Relativity* (1969).

#### REFERENCES

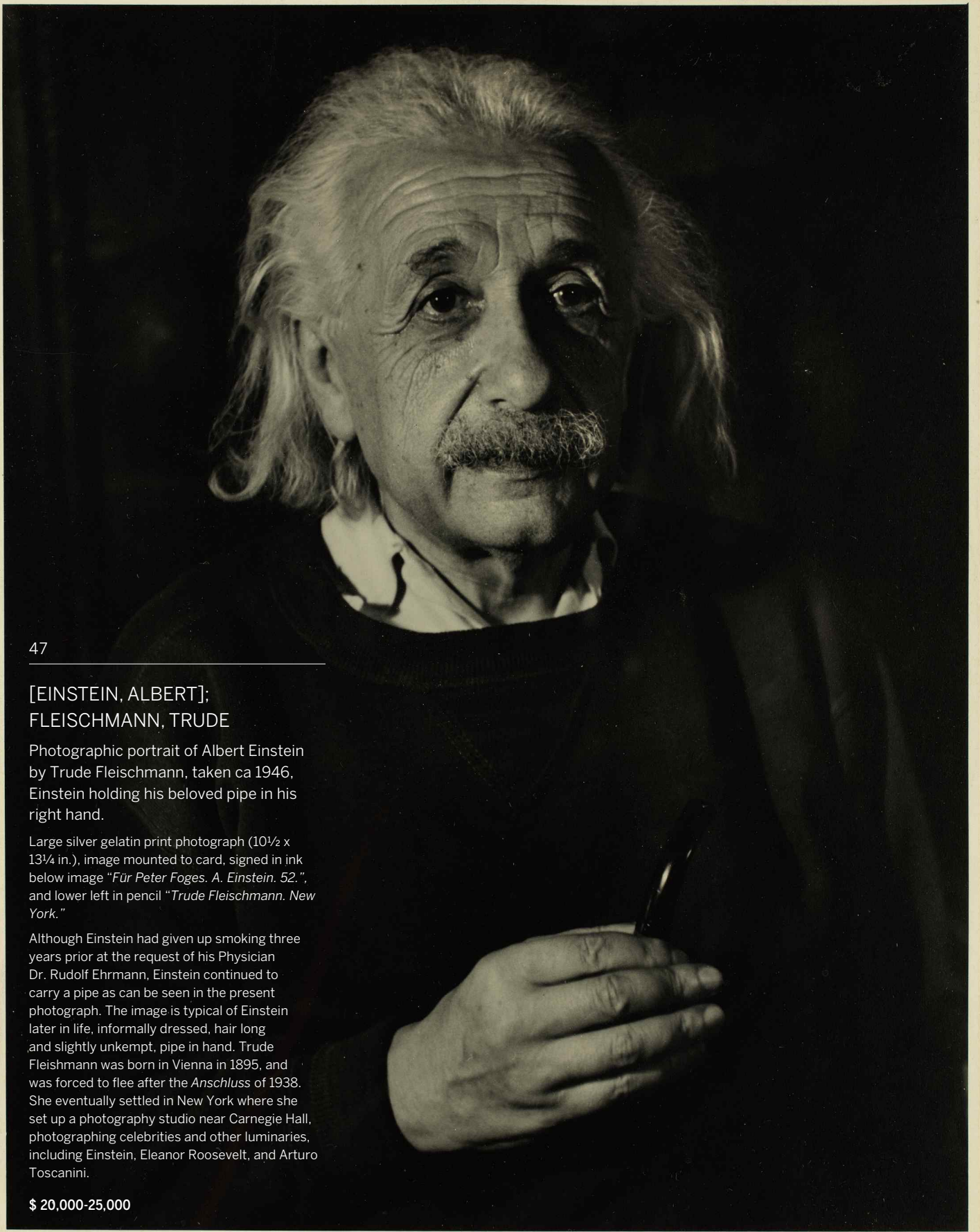
*Einstein Archives Online*, 14-300 in response to Kondo, Herbert 14-299

#### PROVENANCE

By descent to current owner.

**\$ 10,000-15,000**





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[EINSTEIN, ALBERT];  
FLEISCHMANN, TRUDE

Photographic portrait of Albert Einstein by Trude Fleischmann, taken ca 1946, Einstein holding his beloved pipe in his right hand.

Large silver gelatin print photograph (10½ x 13¼ in.), image mounted to card, signed in ink below image "Für Peter Foges. A. Einstein. 52.", and lower left in pencil "Trude Fleischmann. New York."

Although Einstein had given up smoking three years prior at the request of his Physician Dr. Rudolf Ehrmann, Einstein continued to carry a pipe as can be seen in the present photograph. The image is typical of Einstein later in life, informally dressed, hair long and slightly unkempt, pipe in hand. Trude Fleischmann was born in Vienna in 1895, and was forced to flee after the *Anschluss* of 1938. She eventually settled in New York where she set up a photography studio near Carnegie Hall, photographing celebrities and other luminaries, including Einstein, Eleanor Roosevelt, and Arturo Toscanini.

\$ 20,000-25,000

Trude Fleischmann  
New York

Für Peter Foges  
A. Einstein. 52.

November 29, 1952

Miss Linda Crouse  
1035 Fifth Ave.  
New York 28, N.Y.

Dear Miss Crouse:

Your questions are not at all silly. An object of not vanishing mass can approach but never reach the light velocity; the reason is that its kinetic energy must always be finite. In the remark in Mr. Jacks' book - as in many other publications - the concept mass is used in a rather misleading way. Mass should be used as a constant of the body in question and not as something depending from speed. The faulty application of the word stems from an illogical transference of Newton's law of motion to special relativity.

With kind regards,

sincerely yours,

*A. Einstein*

Albert Einstein.

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## EINSTEIN, ALBERT.

Typed letter signed to Miss Linda Crouse of New York, NY, November 29, 1952.

1 page (9 $\frac{7}{8}$  x 8 in.) signed "A. Einstein" in English, on personal stationary blind-stamped with Einstein's home address on Mercer Street Princeton, NJ; creases where previously folded, some toning to edges.

EINSTEIN SUCCINCTLY DESCRIBES DETAILS OF THE THEORY OF RELATIVITY. Penned just three

years before his death in 1955, Einstein writes in response to a curious young woman, who likely read comments that she found contradictory to Einstein's theory, as Einstein notes that "In Mr. Jacks' book... the concept mass is used in a rather misleading way." The letter reads in full:

"Dear Miss Crouse:

*Your questions are not at all silly. An object of not vanishing mass can approach but never reach the light velocity; the reason is that its kinetic energy must always be finite. In the remark of Mr. Jacks'*

*book — as in many other publications — the concept mass is used in a rather misleading way. Mass should be used as a constant of the body in question and not as something depending from speed. The faulty application of the word stems from an illogical transference of Newton's law of motion to special relativity."*

### PROVENANCE

Bloomsbury, 2015, lot 143

**\$ 30,000-40,000**



## EINSTEIN, ALBERT

Typed letter signed and note signed to Herbert Kondo, Princeton, New Jersey, 11 August, 1952.

2 pages on single sheet (11 x 8½ in.) signed "A. Einstein" in German, on letterhead of The Institute for Advanced Study, Princeton, New

Jersey, with typed envelope. Creases where previously folded, 1 autograph correction in Einstein's hand. Together with a typed note signed "A. Einstein" (6½ x 5½ in.) expressing his hope that Kondo will be able to have the letter translated into English, as well as a typed copy of Stachel's 1986 English translation. Crease where previously folded.

"Without [Faraday's] field and Maxwell's equations based on it, there would probably have been no special theory of relativity and certainly no general theory of relativity...the discovery of the concept of the field brought with it the most important modification of the basics of physics since Newton."

ALBERT EINSTEIN

"WITHOUT [FARADAY'S] FIELD AND MAXWELL'S EQUATIONS BASED ON IT, THERE WOULD PROBABLY HAVE BEEN NO SPECIAL THEORY OF RELATIVITY AND CERTAINLY NO GENERAL THEORY OF RELATIVITY...THE DISCOVERY OF THE CONCEPT OF THE FIELD BROUGHT WITH IT THE MOST IMPORTANT MODIFICATION OF THE BASIS OF PHYSICS SINCE NEWTON."

A fantastic letter from Einstein demonstrating his deep respect for the work of Maxwell and Faraday, while at the same time, in an oft-cited passage, expressing pessimism about the prospects for the field-theoretical approach. As translated by Stachel, in part:

"I agree with you completely when you see in the introduction of the concept of the field by Faraday one of the greatest creations of the scientific mind. Up to Faraday there existed apart from space only one fundamental concept from which one attempted to derive all phenomena: the material point..."

Faraday recognized intuitively that one needed a new concept for the natural representation of electromagnetic induction, namely the concept of the field...

This concept then provided the key to Maxwell's electrodynamics and especially to reducing light to electromagnetic fields in space. Without the concept of the field and Maxwell's equations based on it, there would probably have been no Special Theory of Relativity and certainly no General Theory of Relativity...

In present day physics, there is manifested a kind of battle between the particle concept and the field concept for leadership, which will probably not be decided for a long time. It is even doubtful if finally one of the two rivals will be able to maintain itself as a fundamental concept.

In any case, it seems to me that the discovery of the concept of the field brought with it the most important modification of the basis of physics since Newton."

Herbert Kondo (1924-2012) worked as Senior Science Editor for the MacMillan Co, and later as the Editor-in-Chief for Grolier/Scholastic Publishing. He wrote numerous articles and books treating the history of science, including two on Einstein; *Adventures in Space & Time*; *The Story of Relativity* (1966), and *Albert Einstein and the Theory of Relativity* (1969).

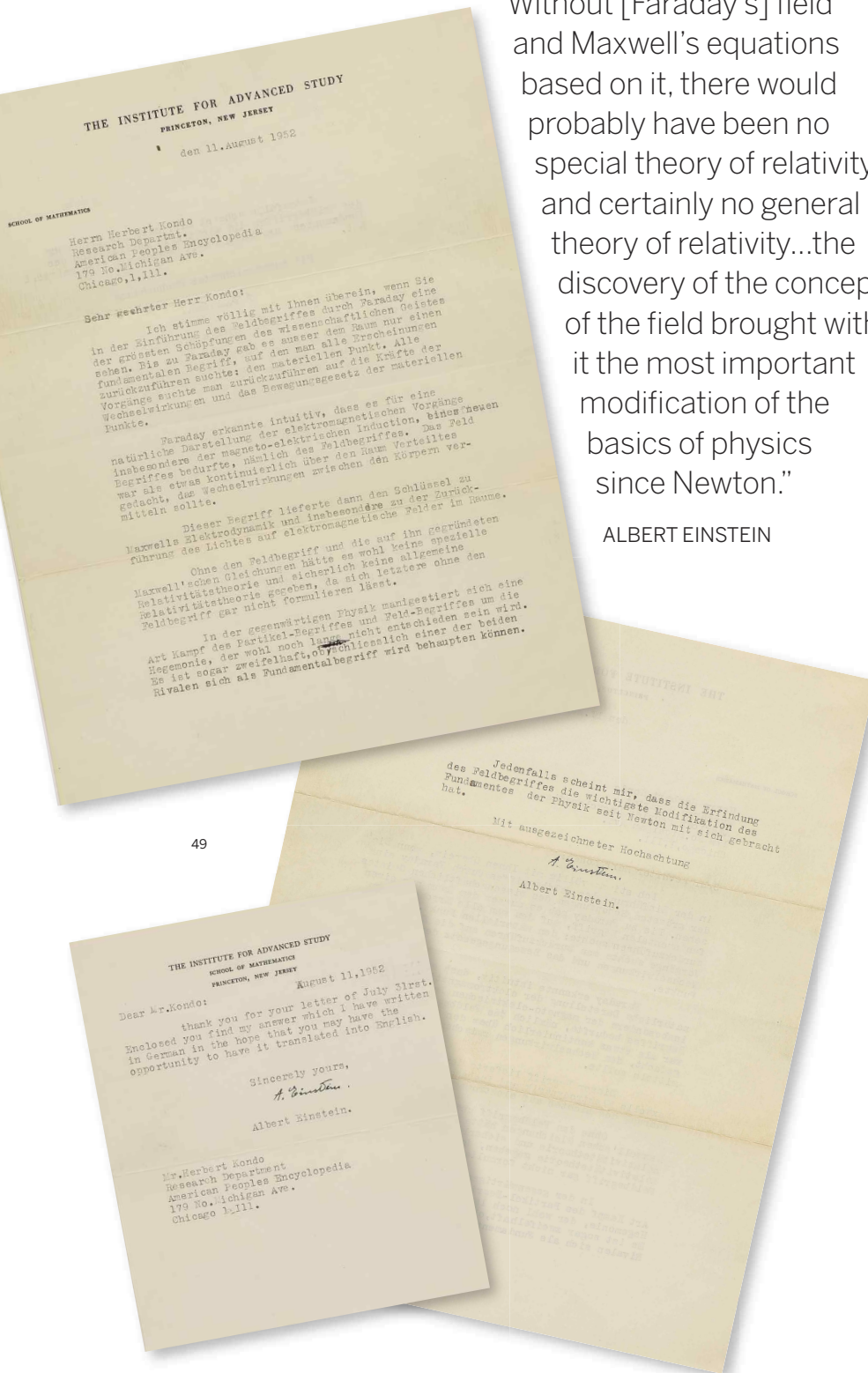
## REFERENCES

*Einstein Archives Online*, 14-303 in response to Kondo, Herbert 14-302; Beller, Cohen & Renn, *Einstein in Context*, p. 286; Colodny, *From Quarks to Quasars: Philosophical Problems of Modern Physics*, p. 380; Kennedy, *A Student's Guide to Einstein's Major Papers*, p. 281; Stachel, *Einstein B-Z*, p. 415

## PROVENANCE

By descent to current owner.

\$ 10,000-15,000



## [EINSTEIN, ALBERT]

A group of four photographs of Einstein circa 1955 in Princeton, New Jersey, by Sanford Roth

4 silver gelatin photographs (three approximately 14 x 11 in., and one 7 $\frac{7}{8}$  x 9 $\frac{3}{4}$  in.), one with the photographer's stamp on the verso. Some scattered minor edgewear and creasing, minor accretion to upper right corner of one print.

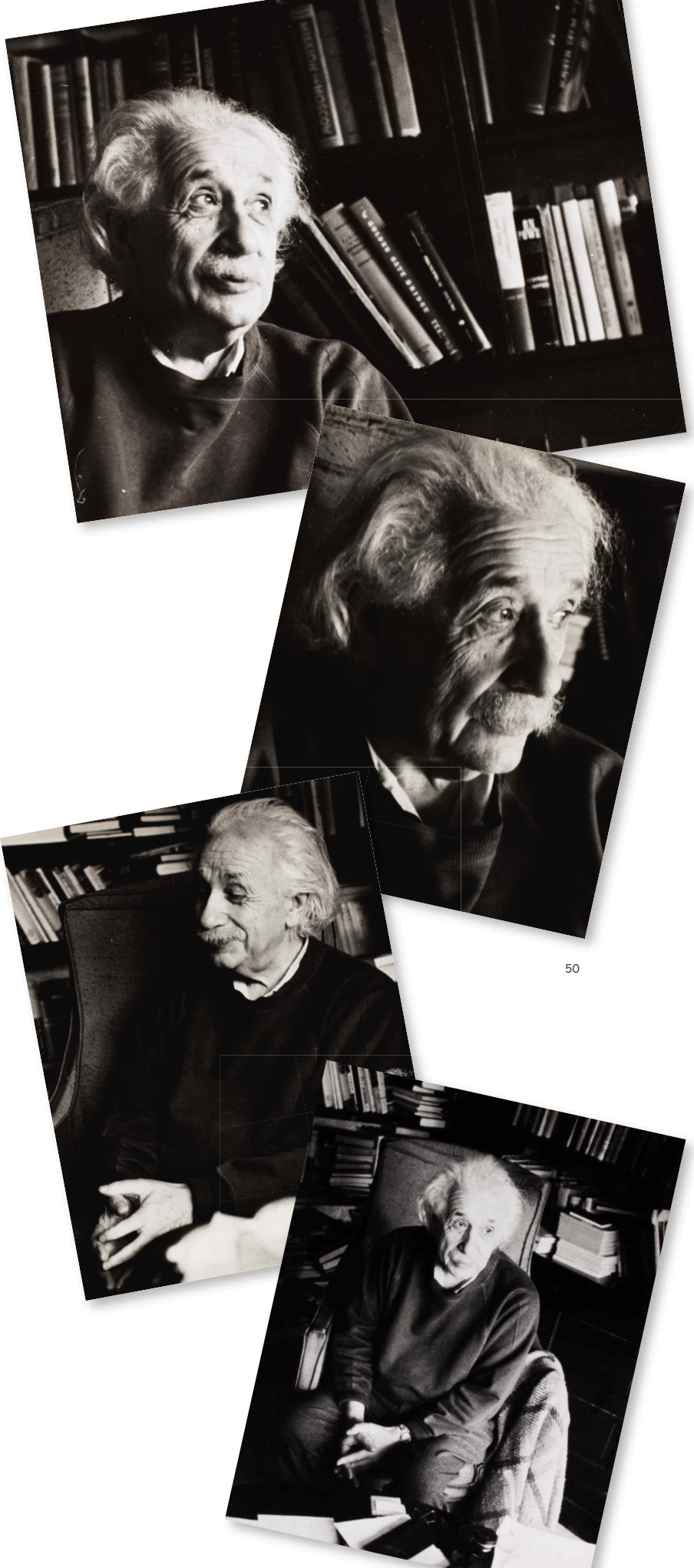
Sanford was a well-known portrait photographer, who achieved a kind of intellectual reputation, owing in part to his work photographing Albert Einstein and other eminent figures across disciplines, such as Edwin Hubble, Irène and Frédéric Joliet-Curie, Picasso, James Dean, Jean Cocteau, Georges Braque, and more. These poignant photographs capture an elderly Einstein near the end of his life as a member of staff at the Institute for Advanced Study at Princeton University.

One of the photographs included in this group was published in *Portraits of the Fifties. The Photographs of Sanford Roth* (San Francisco and New York: 1987, p. 33), where the photographer's wife Beulah Sanford recounted his experience photographing Einstein in detail: "Before they began, I was told, Professor Einstein cautioned Sandy to take no more than six pictures. Three hours passed as [the cultural anthropologist Ashley] Montagu and Einstein had a lengthy discussion about nuclear power and the world ... Finally Einstein turned to Sandy and said, "Roth, you are a naughty boy. You took more than six!" "Yes, I did," said Sandy, "but Professor, you should know that in order to get six good ones I had to take one hundred." Sandy was expecting Einstein's wrath. Instead he got the response, "You are right, Roth. It figures mathematically."

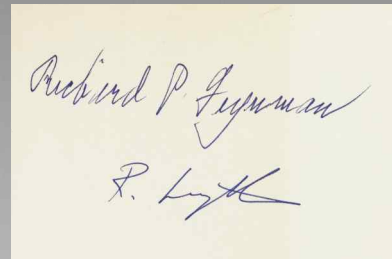
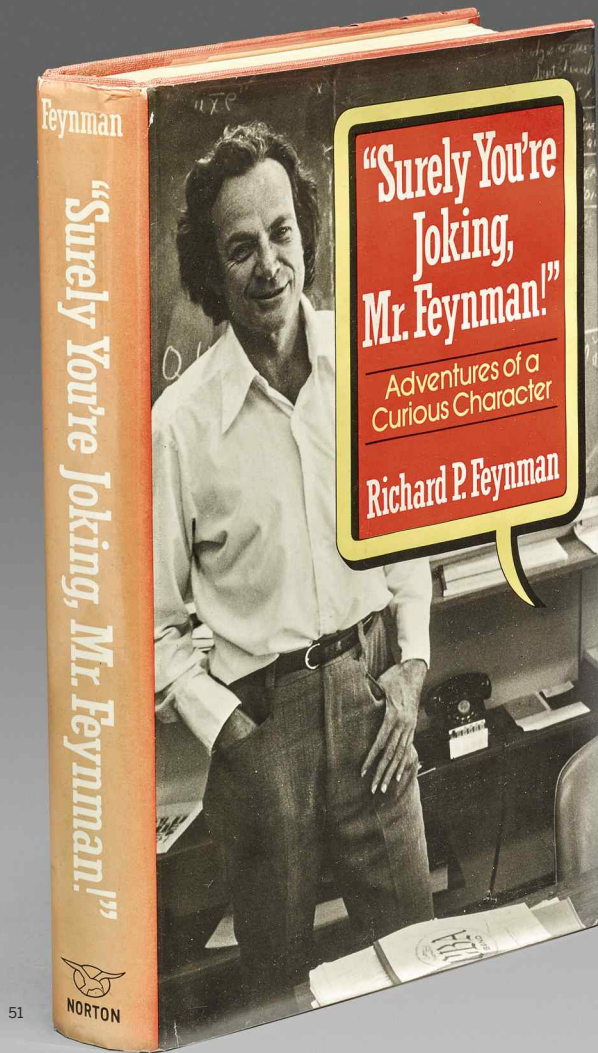
**PROVENANCE**

Sanford & Beulah Roth — Francesca Robinson Sanchez — Private Collection, ACQUISITION: Christie's London (13 December 2006, Lot 128)

**\$ 8,000-12,000**







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## FEYNMAN, RICHARD

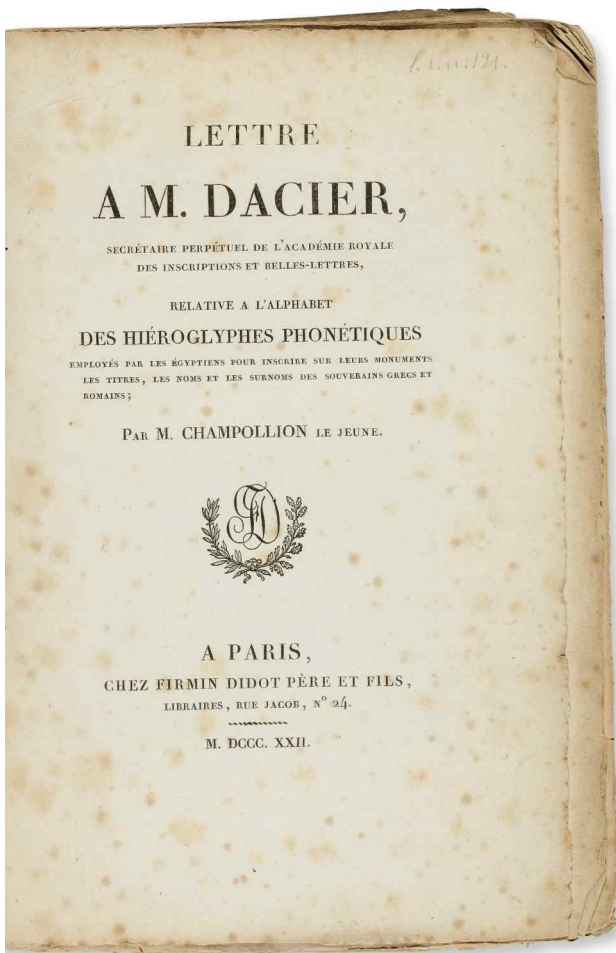
*"Surely You're Joking Mr. Feynman!" Adventures of a Curious Character. As Told to Ralph Leighton.* New York: W.W. Norton & Co., 1985.

8vo (8½ x 5½ in.), publisher's orange cloth & boards, in the original dust-jacket. Jacket price-clipped, spine panel sunned, otherwise near fine.

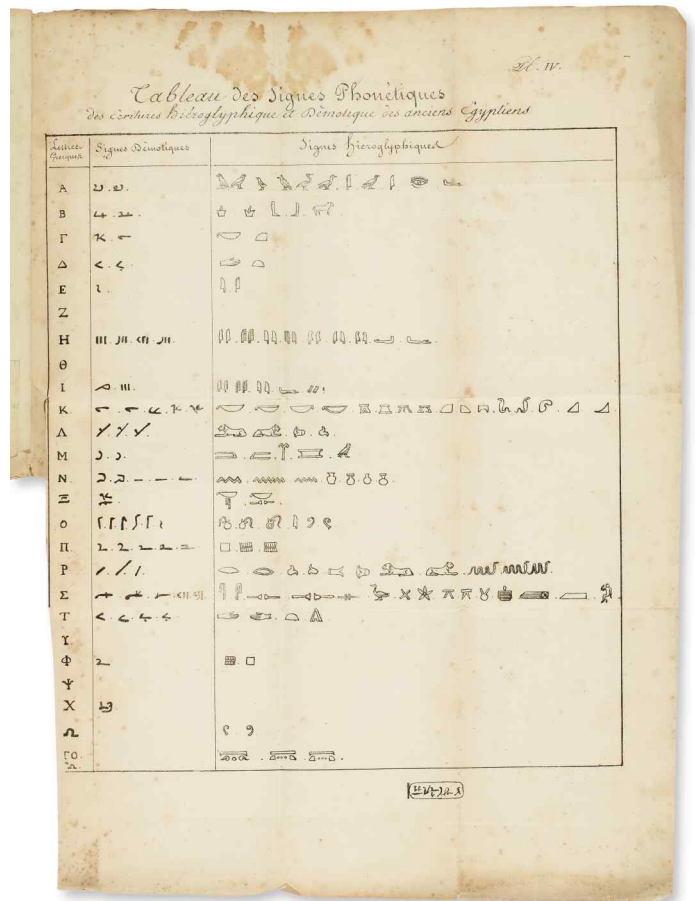
FIRST EDITION, FIRST PRINTING, SIGNED BY BOTH RICHARD FEYNMAN AND RALPH LEIGHTON ON FREE FRONT END-PAPER. An excellent memoir of the "Rock Star" of physics, *Surely You're Joking Mr. Feynman* was edited from taped conversations that Feynman had with his close friend and drumming partner Ralph Leighton. Feynman was notorious for refusing to sign copies of his book, reportedly telling his editor "I'm not going to go on TV and I'm not going to sign any books!" - signed copies are thus rare, and those signed by both Feynman and Leighton even more so.

"Richard Feynman, winner of the Nobel prize in physics in 1965, is one of the world's greatest theoretical physicists. As any reader of this book will discover, he is also a man who has fallen, often jumped, into adventure. Feynman's life has in fact been a series of combustible combinations, improbable happenings made possible by his unique mixture of high intelligence, unlimited curiosity, eternal skepticism, and raging chutzpah. Feynman is perhaps the only person in the history of the world to solve the mystery of liquid helium and to be commissioned to paint a naked (female) treader, to crack many of the most 'secure' safes at Los Alamos during development of the atomic bomb and to play a skillful frigdeira in a Brazilian samba band, to explain physics to 'monster minds' like Einstein, Von Neumann, and Pauli, and to accompany ballet on the bongo drums, to be judged both mentally deficient by a United States Army psychiatrist and worth of the Nobel Prize by the Swedish Academy..." (Book jacket)

\$ 12,000-18,000



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### CHAMPOLLION, [JEAN-FRANÇOIS]

*Lettre à M. Dacier... Relative à l'Alphabet des Hiéroglyphes Phonétiques Employés par les Égyptiens pour Inscrire sur leurs Monuments les Titres, les Noms et les Surnoms des Souverains Grecs et Romains.* Paris: Chez Firmin Didot, Père et Fils, 1822.

8vo (239 x 157 mm). Complete with half-title and 4 folding lithographic plates after Champollion. Original printed wrappers; uncut. Wrappers a bit soiled, spine repaired with Japanese tissue tape; interior foxed.

FIRST EDITION OF CHAMPOLLION'S DESCRIPTION OF HOW HE UNLOCKED THE SECRET OF THE EGYPTIAN HIEROGLYPHS. Based on a study of the Rosetta Stone, Champollion assigned phonetic values to twelve hieroglyphs, and tentatively associated the phonetic sounds of 17 Greek letters to 40 others. His work unlocked three and a half millennia of human history during one of its most glorious phases, and Champollion is now considered the founder of the scientific study of Egyptology. While others have theorized that the hieroglyphs may have phonetic values, Champollion was the first to be able to prove it. His first breakthrough came when he was able to decipher the names Thutmos and Ramses

written in hieroglyphs in temple cartouches. Champollion, unlike others before him, took a decidedly scientific approach in his attempts. "He attacked the questions of whether the system were symbolical, ideogrammatic, or phonetical, with a crucial hypothesis, formulated in December 1821. Returning to the Rosetta Stone, Champollion posited this hypothesis: If the signs are ideographs, and each sign represents a thing, an action or an idea, then there must be as many signs in the hieroglyphic text, since that portion was incomplete, only a portion of the text being extant. Instead, he counted 1,419. This meant that there was no way that each hieroglyph could be an ideograph." (Weissbach)

#### REFERENCES

Blackmer 306; Brunet III, De Ricci "Essai de bibliographie de Champollion le jeune" 23; *En français dans le texte* 234; Richard Parkinson, *Cracking Codes; The Rosetta Stone and Decipherment*. Berkeley: University of California Press, 1999; Muriel Mirak Weissbach, "Jean François Champollion and the True Story of Egypt". In: *21st Century Science & Technology* Winter 1999-2000.

**\$ 20,000-25,000**



KING, AUGUSTA ADA, COUNTESS OF LOVELACE

THE FIRST COMPUTER PROGRAMMER

Autograph letter signed "A.A. Lovelace," 1 p, 8vo (XXXX) (integral blank), Ashley Combe, Porlock, September 6, [ca. 1839]. Matted, glazed and framed to 390 x 545 mm. Creases where previously folded, small piece of paper loss to integral blank.

ADA LOVELACE, CREATOR OF THE FIRST COMPUTER CODE. ON THE "FATHER OF COMPUTING."

Ada writes to her friend, celebrated English journalist Albany Fonblanque (1793-1872), in full: "Have you forgotten your promise to come here? The weather seems now very tolerable (& sometimes really delightful). — Babbage is here. I hope you will come before he goes."

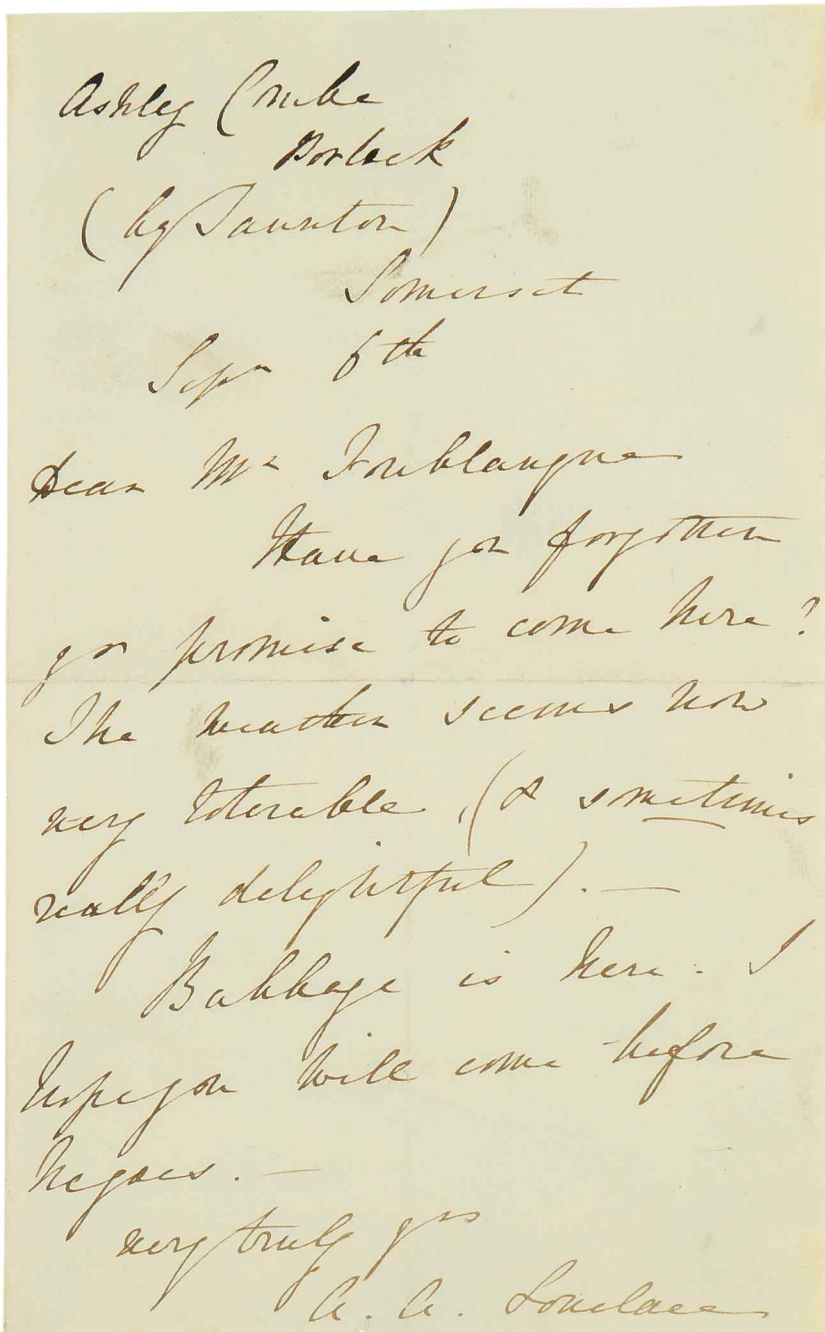
Ada Lovelace was the only legitimate child of the great English Romantic poet Lord Byron and his wife Anne Isabella Milbanke, Baroness Wentworth. She later married William King, the eighth Baron King, who was elevated to an earldom, making Ada the Countess of Lovelace. While she was the progeny of one of the most famous poets in history, it can be argued that her influence upon the world is far greater than her father's ever was. Having grown up without knowing her father, Ada's mother supplied her with a number of excellent tutors, including one in mathematics, which was highly unusual for a woman at the time. She proved to excel in this field, and continued studying mathematics through adulthood, receiving tutoring from the first professor of mathematics at the University of London, Augustus DeMorgan.

When she was just 18 years old and he was 42, Ada became friends with the famous Charles Babbage (1791-1871), who referred to her as the "Enchantress of Numbers." Fascinated with his *Difference Engine*, the first mechanical computer, she became involved with his plan for the *Analytical Engine*, offering him her services as a mathematician. At Babbage's suggestion, Ada executed a masterful translation of Luigi Menabrea's article on the *Analytical Engine*. She augmented the translation with notes that ended up being longer than Menabrea's paper, and which were later published in Taylor's *Scientific Memoirs* under her initials "AAL." In these notes, she describes an algorithm for Babbage's *Analytical Engine* which is considered to be the first algorithm ever specifically intended to be used on a computer. It is thanks to this work that she is recognized as being the first ever computer programmer.

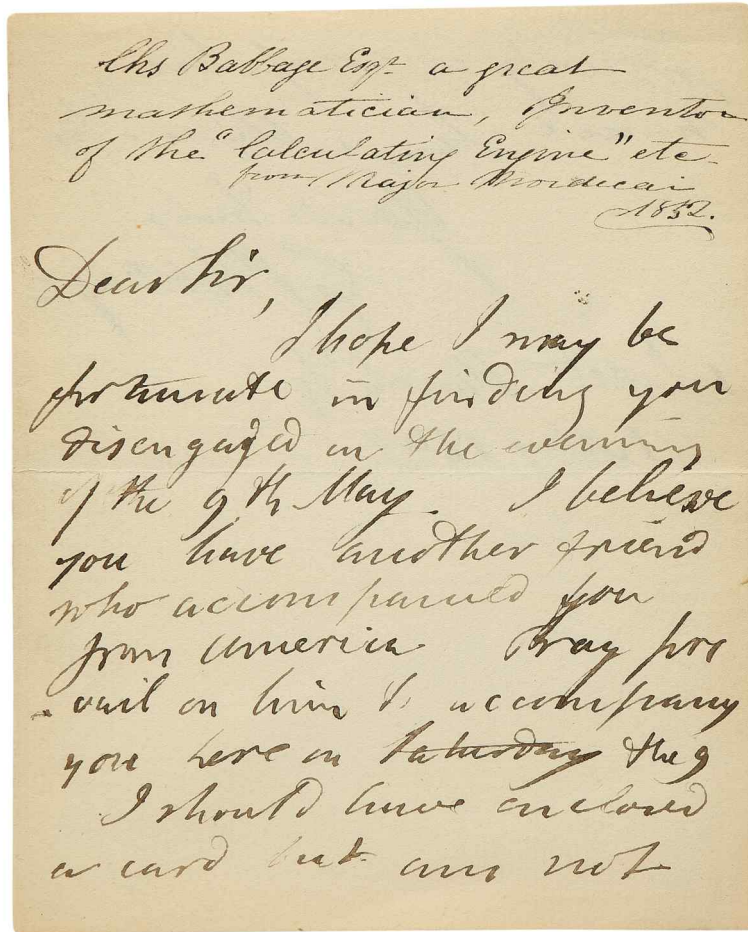
PROVENANCE

Christie's *The Origins of Cyberspace*, Feb 23, 2005, lot 31 — Bonham's 2015, lot 3

\$ 18,000-25,000



“The Father of Computing.”



Chs Babbage Esq: a great  
mathematician, Inventor  
of the "Calculating Engine" etc.  
from Major Mordecai  
1830.

Dear Sir,  
I hope I may be  
fortunate in finding you  
disengaged in the evening  
of the 9th May. I believe  
you have another friend  
who accompanied you  
from America. Pray for  
a word on him to accompany  
you here on Saturday the 9th.  
I should have enclosed  
a card but was not

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## BABBAGE, CHARLES

Autograph letter signed to Major Alfred Mordecai, 1 Dorset, Manch[ester] Sq[uaire], 1 May 1840.

2 pp on single sheet (122 x 99 mm) signed ("C. Babbage"), crease where previously folded. Docketed by Mordecai "Chs Babbage a great mathematician, inventor of the 'Calculating Engine' etc."

AN INVITATION FROM "THE FATHER OF COMPUTING" TO ONE OF HIS FAMED SALONS.

In part: "I hope I may be fortunate in finding you disengaged in the evening of the 9th May. I believe you have another friend who accompanied you from America. Pray do avail on him to accompany you..."

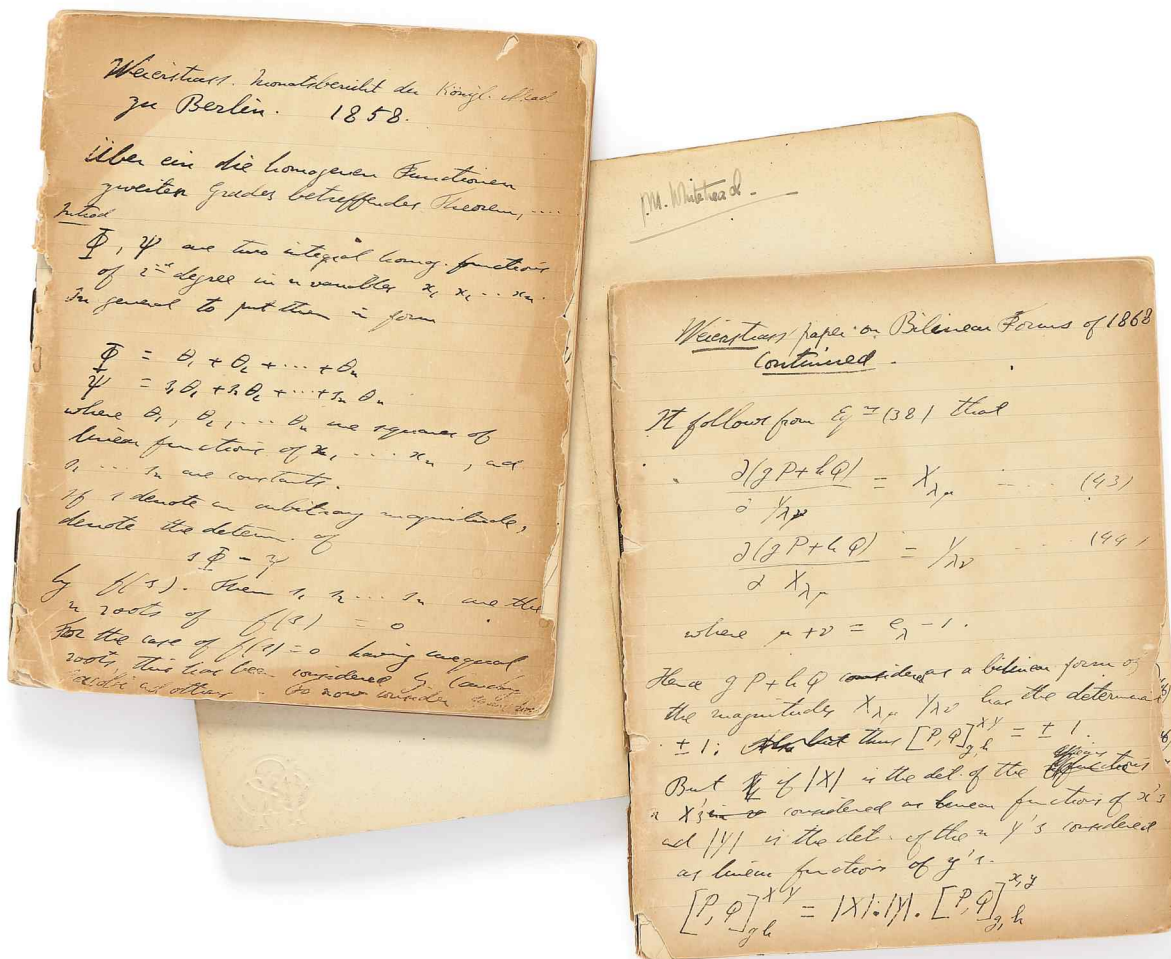
Charles Babbage, often referred to as the "Father of Computing," is credited with inventing the first mechanical computer, as well as with originating the concept of a programmable digital computer. Conceived in 1821, his *Difference Engine No. 1*, based on the mathematical principle of finite differences, and designed to tabulate and calculate polynomial functions, was the first complete design for an automatic calculating engine. His *Analytical Engine*, conceived in 1834, was a much more ambitious general-purpose programmable computing engine.

Babbage's salons were the hottest social event in London, and luminaries such as Charles Darwin, Michael Faraday, and Charles Dickens were regular attendees. It was at one of these salons that Babbage met Ada Lovelace, the brilliant mathematician and daughter of Lord Byron. He showed her his plans for his "difference machine," and a life-long friendship and collaboration ensued—Lovelace's creation of the very first computer code being just one result.

For Major Mordecai, an American who made major contributions to the development of American military munitions, such an invitation would have been the thrill of a lifetime.

\$ 2,500-3,500





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WHITEHEAD, ALFRED NORTH

AUTOGRAPH MATHEMATICAL MANUSCRIPT NOTEBOOKS, unsigned and undated, but ca 1900.

Two composition notebooks. 4to (202 x 160 mm). 50 ff each, written primarily on rectos, with a few notes on versos, each page with approx. 15-20 lines of manuscript. Ruled paper self-wrappers, first and last leaves toned and worn, some chipping to edges, corners worn, lower right corner of last 2 ff in vol. I missing with some loss to text. Fragile.

Two sequential notebooks, divided into three sections as follows:

- Part 1: 21 pp, on ff 1r-20r of first notebook. In black ink, written on versos. Treating Karl Weierstrass's 1858 *Über ein die homogenen Functionen zweiten Grades betreffen des Theorem*.
- Part 2: 64 pp, on ff 24r-50r of first notebook, and 1r-32r of second notebook. Treating Karl Weierstrass's 1868 *Zu theorie der bilinearen und*

*quadratischen Formen*. Part 3: 15 pp, on ff 34r-47r of second notebook. Treating Ferdinand Georg Frobenius' proof of Karl Weierstrass' theorem. Bound with: WHITEHEAD, J[essie] M[arie]. Autograph notebook signed, ("J.M. Whitehead"), 60 pp. Cloth-backed flexible boards. Consisting of class notes for librarian/archivist school, majority written in short-hand. The three housed together in a full calf clamshell.

THE ONLY KNOWN SURVIVING MATHEMATICAL MANUSCRIPT BY ALFRED NORTH WHITEHEAD. A GIANT OF 20TH CENTURY MATHEMATICAL LOGIC. Manuscript material by Whitehead has never come to public auction, and in fact, any manuscript material by him is of the utmost rarity, with even institutional holdings being very minimal.

It is common academic tradition to leave one's *Nachlass* to a favored graduate student or in a scholarly archive so that it may be available to future scholars. Leibniz, Wittgenstein, Nietzsche,

Freud, and Gauss are just a few examples of scholars who left behind extensive *Nachlässe*. Whitehead chose to eschew this long tradition, and upon his death, "His widow destroyed all of his manuscripts, as he had expressly desired." (ODNB) Whitehead had an almost fanatical belief in the individual's right to privacy, which would explain his wishes to have his papers destroyed; he rarely even wrote letters to friends or colleagues. In 2011, a 6-page letter from Whitehead was donated to the Library of Congress from the estate of Whitehead's former assistant. In honor of this most rare item, the Library of Congress held a symposium focusing "on the historical context of the letter and on Whitehead and his intellectual focus in a number of fields... Whitehead seldom corresponded with anyone, and a receipt of a letter by his friends or colleagues was described as 'rare and cause of a communal celebration'... Further, Whitehead's family carried out his instructions and destroyed his papers." ("Experts to Discuss Famed Mathematician and Philosopher Alfred North

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SOTHEBY'S

Whitehead and a Rare Piece of Correspondence at Symposium on Feb. 17," Library of Congress News, <https://www.loc.gov/item/prn-11-020/>)

In the present manuscript, likely written ca 1900, possibly in early preparation for his magnum opus, *Principia Mathematica*, Whitehead takes a deep look at several issues in mathematics, primarily in regards to bilinear forms, homogeneous functions, and quadratic forms, as discussed in the work of mathematicians Karl Weierstrass and Ferdinand Georg Frobenius, noting the work of others including George Salmon and August Leopold Crelle.

The first section, titled "Weierstrass Monatsberichte der Königl. Akad. zu Berlin. 1858" and subtitled "Über ein die homogenen Functionen zweiter Grades betreffen des Theorem" consists of an analysis and partial translation into English of Weierstrass' 1858 paper on homogenous functions and bilinear forms. Here, Whitehead translates the equations set forth in Weierstrass' paper, showing their proofs, often identifying limitations or lack of clarity to the notation, and expanding upon them. Whitehead often references the work of several other prominent mathematicians, applying their work to Weierstrass' equations. For example, on ff 7, Whitehead applies the theory of determinants set forth in George Salmon's 1876 work *Lessons Introductory to the Modern Higher Algebra*, to Weierstrass' equations (14)-(17) as follows:

"Now from the theory of determinants (of Salm. High Alg. §33)

$f(s)_{\alpha\beta}f(s)_{\alpha\gamma} - f(s)_{\alpha\alpha}f(s)_{\beta\gamma}$   
 $= \text{si} = \text{the product of } f(s) \text{ and an integer [a1] function of } s.$

Thus  $f(s_{\mu})_{\alpha\beta}f(s_{\mu})_{\alpha\gamma} = f(s_{\mu})_{\alpha\alpha}f(s_{\mu})_{\beta\gamma} \rightarrow (14)$

Also  $f(s_{\mu})_{\alpha\beta} = f(s_{\mu})_{\beta\gamma} \rightarrow (15)$

Hence from (14) and (15)

$\Phi_{\mu} \text{ is } Y_{\mu}^2$ , where  $Y_{\mu}$  is a linear function of  $\theta_1, \theta_2, \dots, \theta_n$

Thus if  $Y_{\mu} = \mu_{\alpha_1} \Phi_1 + \mu_{\alpha_2} \Phi_2 + \dots + \mu_{\alpha_n} \Phi_n \rightarrow (16)$

$$\left. \begin{aligned} \mu_{\alpha} \mu_{\alpha} &= \frac{f(s_{\mu})_{\alpha\alpha}}{f^1(s_{\mu})} \\ \mu_{\alpha} \mu_{\beta} &= \frac{f(s_{\mu})_{\alpha\beta}}{f^1(s_{\mu})} \end{aligned} \right\} \rightarrow (17)$$

Whitehead frequently expands and improves upon Weierstrass' work, notably for equations 24 & 25, in which Whitehead gives his own lengthy proofs, including a 3 page proof for (24) beginning: "To prove that  $\vartheta_{\mu}$  is a  $(\lambda-1)$  fold root of  $f_{\alpha\beta}(s)=0$ ." As well as another 3 page proof beginning "Now the roots of  $(1)=0$  are all real: this follows from the proof when the roots are all different... Hence  $(3)_{\alpha\gamma}$  is divisible by  $(s-s_{\mu})^{\lambda-1}$ . QED." Whitehead also makes alterations or improvements to Weierstrass' notation, such as on ff 42v "Note Weierstrass' notation is slightly altered here" or simply points out problems with the notations, such as on ff 46v "These are the forms of Eq [38] given by Weierstrass; but his notation is not explained very clearly."

Now from the theory of determinants (of Salm. High Alg. §33)  
 $f(s)_{\alpha\beta}f(s)_{\alpha\gamma} - f(s)_{\alpha\alpha}f(s)_{\beta\gamma}$   
 $= \text{the product of } f(s) \text{ and an integer [a1] function of } s.$   
 Thus  $f(s_{\mu})_{\alpha\beta}f(s_{\mu})_{\alpha\gamma} = f(s_{\mu})_{\alpha\alpha}f(s_{\mu})_{\beta\gamma} \rightarrow (14)$   
 Also  $f(s_{\mu})_{\alpha\beta} = f(s_{\mu})_{\beta\gamma} \rightarrow (15)$   
 Hence from (14) and (15)  
 $\Phi_{\mu} \text{ is } Y_{\mu}^2$ , where  $Y_{\mu}$  is a linear function of  $\theta_1, \theta_2, \dots, \theta_n$   
 Thus if  $Y_{\mu} = \mu_{\alpha_1} \Phi_1 + \mu_{\alpha_2} \Phi_2 + \dots + \mu_{\alpha_n} \Phi_n \rightarrow (16)$   
 $\mu_{\alpha} \mu_{\alpha} = \frac{f(s_{\mu})_{\alpha\alpha}}{f^1(s_{\mu})}$   
 $\mu_{\alpha} \mu_{\beta} = \frac{f(s_{\mu})_{\alpha\beta}}{f^1(s_{\mu})}$

But  $\sum A_{\alpha\beta} x_{\alpha} x_{\beta}$  is the value of  $\Phi$  when  $x_1, x_2, \dots, x_n$  subst. for  $x_1, x_2, \dots, x_n$ .  
 And by hypothesis  $\Phi$  cannot vanish when  $x_1, \dots, x_n$  simultaneously vanish which by hypothesis do not do. Hence the coefficient of  $(1-s_{\mu})$  does not vanish.  
 Also by taking the left hand side  $\frac{d}{ds} \frac{f(s)_{\alpha\beta}}{f^1(s)} = l_{\alpha\beta} (1-s_{\mu})^{l-1} + \dots$   
 But  $l_{\alpha\beta}$  may vanish. Hence  $l-1 \leq 2l$ . Hence  $l \geq -1$ . Hence  $f(s)_{\alpha\beta}$  is divisible by  $(1-s_{\mu})^{l-1}$ . QED.

Lehrbuch. Berliner Bericht 1868  
 In Theorie der bilinearen und 51) quadratischen Formen.  
 2n variablen, oder  $x_1, x_2, \dots, x_n$   
 Two bilinear forms  
 $P = \sum_{\alpha, \beta=1}^n A_{\alpha\beta} x_{\alpha} x_{\beta}$   
 $Q = \sum_{\alpha, \beta=1}^n B_{\alpha\beta} x_{\alpha} x_{\beta}$   
 The determinant of  $P, Q$  is written  $[P, Q]$ ; a homogeneous integral function of  $P, Q$  of the degree  $2l$ .  
 Exclude the particular case where the coefficients of this factor all vanish, and then  $[P, Q] = 0$  for all  $x_{\alpha}$ .



Note that there are number of  $\mathcal{I}_\lambda$ 's  
 (or of  $\mathcal{X}$ 's) in  $\Phi$  is  
 $e_\lambda^{(0)} = (\sum_{\lambda} X_{\lambda}^{(0)} / \lambda) e_\lambda^{(0)}$   
 $e_\lambda^{(1)} = (X_{\lambda}^{(1)} / \lambda^{(1)}) e_\lambda^{(1)}$   
 $e_\lambda^{(2)} = (X_{\lambda}^{(2)} / \lambda^{(2)}) e_\lambda^{(2)}$   
 $e_\lambda^{(k-1)} = (X_{\lambda}^{(k-1)} / \lambda^{(k-1)}) e_\lambda^{(k-1)}$   
 $e_\lambda$  is  $e_\lambda^{(0)} + e_\lambda^{(1)} + \dots + e_\lambda^{(k-1)} = e_\lambda$   
 where the power of  $e_\lambda$  is the power of  $(\lambda - \lambda)$  in  $S$ .  
 Have the total number of  $\mathcal{I}$ 's (or  $\mathcal{Y}$ 's) in  $\Phi$   
 is  $\sum_{\lambda=1}^n e_\lambda = n$ .  
 Since all the  $X$ 's and  $\mathcal{Y}$ 's in  $(X_{\lambda}^{(k-1)} / \lambda^{(k-1)}) e_\lambda^{(k-1)}$   
 also occur in  $(X_{\lambda}^{(k-1)} / \lambda^{(k-1)}) e_\lambda^{(k-1)}$ , - but in different  
 combinations - the same  $X$ 's and  $\mathcal{Y}$ 's had none  
 others - also occur in  $\mathcal{Y}$ .  
 N.B. one  $X$  and one  $\mathcal{Y}$  -  $(X_{\lambda}^{(k-1)} / \lambda^{(k-1)}) e_\lambda^{(k-1)}$  do not occur in  $(X_{\lambda}^{(k-1)} / \lambda^{(k-1)}) e_\lambda^{(k-1)}$ .

Thus from formula (25) we have at once  
 $\Phi = gP + hQ = \sum_{\lambda=1}^n \sum_{k=1}^{l_\lambda} (X_{\lambda}^{(k-1)} / \lambda^{(k-1)}) e_\lambda^{(k-1)}$   
 $\Psi = g'P + h'Q = \sum_{\lambda=1}^n \sum_{k=1}^{l_\lambda} (X_{\lambda}^{(k-1)} / \lambda^{(k-1)}) e_\lambda^{(k-1)}$   
 $+ \sum_{\lambda=1}^n \sum_{k=1}^{l_\lambda} c_\lambda (X_{\lambda}^{(k-1)} / \lambda^{(k-1)}) e_\lambda^{(k-1)}$   
 where  
 $\beta_\beta = \frac{\partial \Phi}{\partial y_\beta} = \sum_{\alpha} (g A_{\alpha\beta} + h B_{\alpha\beta}) x_\alpha$   
 $\gamma_\alpha = \frac{\partial \Phi}{\partial x_\alpha} = \sum_{\beta} (g A_{\alpha\beta} + h B_{\alpha\beta}) y_\beta$   
 $\frac{\partial \Psi}{\partial x_\alpha} = \frac{1}{\sqrt{c_\lambda}} \sum_{\beta=R}^n c_{\lambda\beta}^{(k-1)} (g \frac{\partial P}{\partial y_\beta} + h \frac{\partial Q}{\partial y_\beta})$   
 $\frac{\partial \Psi}{\partial y_\alpha} = \frac{1}{\sqrt{c_\lambda}} \sum_{\beta=R}^n c_{\lambda\beta}^{(k-1)} (g \frac{\partial P}{\partial x_\alpha} + h \frac{\partial Q}{\partial x_\alpha})$

The second section titled "Weierstrass. Berliner  
 Berichte 1868. Zu theorie der bilinearen und  
 quadratischen Formen" is the lengthiest. It  
 consists of an analysis and partial translation into  
 English of Weierstrass' 1868 paper on bilinear and  
 quadratic forms. Similar to what he did in the first  
 section, Whitehead here analyzes the equations  
 set forth in Weierstrass' above mentioned paper,  
 again adding, expanding, and noting limitations  
 or problems with Weierstrass' work. For example,  
 Whitehead takes a close look at Equations 38-48,  
 comparing equations 40 and 34 with 38 "Hence  
 by comparison with (40) and (34)... It has been  
 assumed that P and Q are such that the highest  
 power of each linear element of S which occurs  
 is the G.C.M..." and showing that equations  
 43-48 still hold. Whitehead then points out on  
 ff 5 of notebook 2 "The proof of this assumption  
 has been given much better by Frobenius in  
 Berliner Sitzungberichte, 1894, and the proof  
 originally given is now omitted."  
 The third section consists of an analysis and  
 partial translation into English of Frobenius'  
 proof of Weierstrass' theorem, as given in  
 Frobenius' 1894 paper *Über die Elementartheiler  
 der Determinanten*. Frobenius was a German  
 mathematician most known for his contributions  
 to the theory of elliptic functions, differential  
 equations, and to group theory. Frobenius was  
 a student of Weierstrass and was supervised  
 by him in 1870 at the University of Berlin. He

was later appointed to a teaching position at  
 the University which "...must ultimately have  
 been made possible due to strong support from  
 Weierstrass who was extremely influential, and  
 considered Frobenius one of his most gifted  
 students." (O'Connor & Robertson, *Ferdinand  
 George Frobenius*) Whitehead compares  
 Frobenius' proof to that of Weierstrass'  
 writing "Frobenius' Proof of Weierstrass'  
 Theorem that a set of mirrors of S can be  
 found of the... This is equivalent to the theorem  
 assumed by Weierstrass of Frobenius in "Über  
 die Elementartheiler der Determinanten -  
 Sitzungberichte der Akad. Zu Berlin. 1894."  
 Whitehead is best known for his early  
 mathematical work, most notably the *Principia  
 Mathematica* (1910-1913), a three-volume  
 work which he wrote with his former student  
 Bertrand Russell. It is now considered to be  
 one of the most important 20th century works  
 of mathematical logic. In their research for the  
 work "They arrived at the 'logistic' position, that  
 mathematics is a part of logic, so that a separate  
 philosophy of mathematics does not exist, a  
 view contradicting the Kantian doctrine that  
 mathematical proofs depend on *a priori* forms  
 of intuition. The investigation was published in the  
 three colossal volumes of *Principia Mathematica*  
 which appeared in 1910-13, and which formed  
 the greatest single contribution to symbolic  
 logic for the time." (ODNB) Weierstrass was

a great influence on Whitehead and Russell  
 in their formation of theories about logicism.  
 Written as a defense of logicism, the view that  
 some or all of mathematics can be reduced to  
 formal logic, the *Principia Mathematica* was  
 instrumental in developing and popularizing  
 modern mathematical logic. "The logicist thesis  
 appears to have been first advocated in the late  
 seventeenth century by Gottfried Leibniz. Later,  
 the idea was defended in much greater detail by  
 Gottlob Frege. During the critical movement of  
 the 1820s, mathematicians such as Bernardo  
 Bolzano, Niels Abel, Louis Cauchy, and Karl  
 Weierstrass succeeded in eliminating much of  
 the vagueness and many of the contradictions  
 present in the mathematics of their day."  
 (*Stanford Encyclopedia of Philosophy*) In the  
 late 1910s-20s, Whitehead shifted his focus to  
 the philosophy of science and metaphysics, and  
 to the concept of eliminating the infinitesimal.  
 Whitehead continued to be influenced by the work  
 of Weierstrass during this period, who was also  
 known for his work on the concept of eliminating  
 the infinitesimal, and as Bertrand Russell points  
 out in his *Introduction to Mathematical Philosophy*  
 (1919) "It has been thought ever since the time of  
 Leibniz that the differential and integral calculus  
 required infinitesimal quantities. Mathematicians  
 (especially Weierstrass) proved that this is an  
 error; but errors incorporated, e.g. in what Hegel  
 has to say about mathematics, die hard, and

philosophers have tended to ignore the work of such men as Weierstrass. Limits and continuity of functions in works on ordinary mathematics are defined in terms involving numbers. This is not essential as Dr. Whitehead has shown."

Weierstrass' influence is found in nearly all of Whiteheads' work, including in 1929 *Process and Reality. An Essay in Cosmology*. "The speculative philosophy that Alfred North Whitehead developed in *Process and Reality* is profoundly influenced by a mathematical assumption - namely, that 'there are no infinitesimals.'" (Lango, John *Whitehead's Actual Occasions and the New Infinitesimals*) In *Process and Reality*, in reference to measurement as a comparison of infinitesimals and the theory of extension, Whitehead writes "The answer to this problem is that there are no infinitesimals, and that therefore there can be no approximation to them. In mathematics, all phraseology about infinitesimals is merely disguised statement about a class of finites. This doctrine has been conclusive mathematical theory since the time of Weierstrass in the middle of the nineteenth century."

*Process and Reality* is considered "Whitehead's most comprehensive (but difficult to penetrate) metaphysical work. Together, his three books *The Concept of Nature* (1920), *Science and the Modern World* (1925), and *Process and Reality* (1929) provide a relatively complete statement of Whitehead's mature metaphysical system." (Stanford Encyclopedia of Philosophy)

**REFERENCES**

*Dictionary of Scientific Biography*, pp 302-308; Frobenius, Ferdinand Georg. "Über die Elementarteiler der Determinanten." In: *Sitzungsberichte der Königsliche Preussischen Akademie der Wissenschaften zu Berlin*, 1894, pp 31-44; Frobenius, Ferdinand Georg. "Über das Trägheitsgesetz der quadratischen Formen." In: *Sitzungsberichte der Königsliche Preussischen Akademie der Wissenschaften zu Berlin*, 1894, pp 407-431; Henry, Granville C. & Robert J. Valenza. "Whitehead's Early Philosophy of Mathematics." In: *Process Studies*, Vol. 22, Number 1, Spring, 1993, pp 21-36; O'Connor & Robertson, *Ferdinand George Frobenius*, <http://www-history.mcs.st-andrews.ac.uk/Biographies/Frobenius.html>; *Oxford Dictionary of National Biography*; Russell, Bertrand. *Introduction to Mathematical Philosophy*. London: George Allen & Unwin, 1920; Salmon, George. *Lessons Introductory to the Modern Higher Algebra*. Dublin: Hodges, Smith & Co, 1859; Weierstrass, Karl. "Über ein die homogenen Functionen zweiten Grades betreffendes theorem, nebst Anwendung desselben auf die theorie der kleinen Schwingungen." In: *Monatberichte der Akademie der Wissenschaften zu Berlin*, 1858, pp 207-220; Weierstrass, Karl. "Zur theorie der bilinearen und quadratischen Formen." In: *Monatberichte der Akademie der Wissenschaften zu Berlin*, 1856, pp 310-338; Whitehead, Alfred North. *An Introduction to Mathematics*. New York: H. Holt and Company, (1911).

**PROVENANCE**

Ex library of Alfred North Whitehead, found tied together with his daughter Jessie M Whitehead's notebook.

\$ 80,000-120,000

Following Proof of Weierstrass' theorem that  $S^1, S^2, \dots, S^{n-1}$  are essential problems that a set of minors of  $S$  can be found of the  $(n-1)$  order, viz. property that each contains the preceding one as a minor (and thus all the preceding ones), and also that each is of order  $n-1$  and by no higher divisible by  $S, S^2, \dots$ , with the power of appearance of the theorem this is equivalent to Weierstrass' theorem of Frobenius, *Sitzungsberichte der Akademie der Wissenschaften zu Berlin*, 1894. Prof. next p.p.

These are for neither  $X$  nor  $Y$  is zero. Hence we can solve for the  $x$ 's in terms of the  $y$ 's and the  $g$ 's. Thus

$$x_\alpha = \sum_{\lambda, \nu} \frac{g_{\lambda\nu}}{\lambda} (\alpha, \lambda, \nu) x_\lambda x_\nu$$

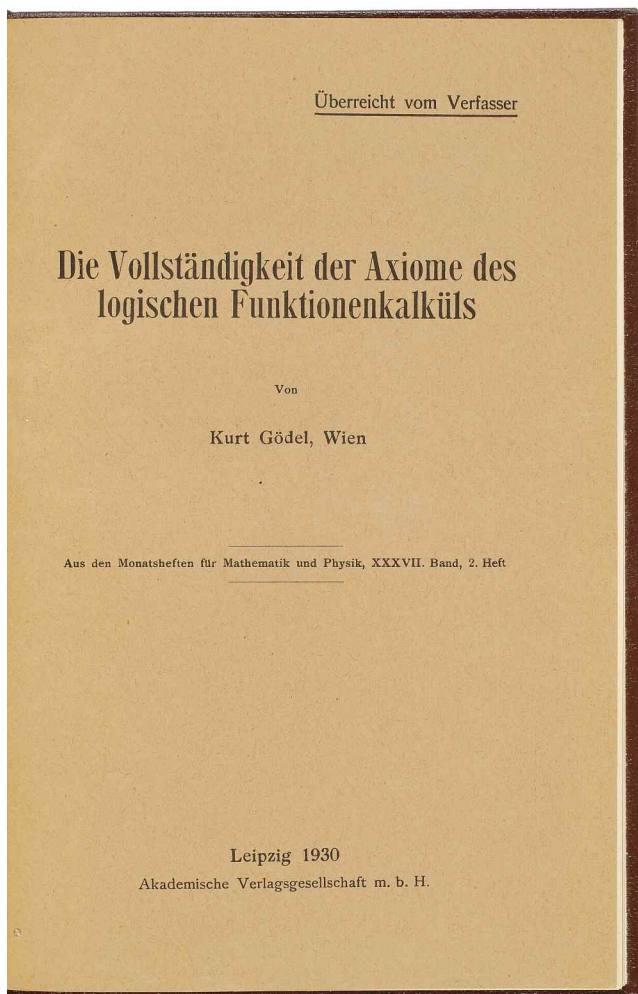
$$y_\beta = \sum_{\lambda, \nu} \frac{g_{\lambda\nu}}{\lambda} (\beta, \lambda, \nu) y_\lambda y_\nu \quad (45)$$

But  $\beta = (4, 3, 2, 1, 4, 1)$   
 $x_\lambda = \frac{2(g_{\lambda\mu})}{2 X_\lambda} = \frac{2g_{\lambda\mu}}{\beta + 1} \frac{2(g_{\lambda\mu})}{2 g_\mu}$   
 $y_\nu = \frac{2(g_{\lambda\mu})}{2 X_\nu} = \frac{2g_{\lambda\mu}}{2 - 1} \frac{2(g_{\lambda\mu})}{2 x_\mu}$

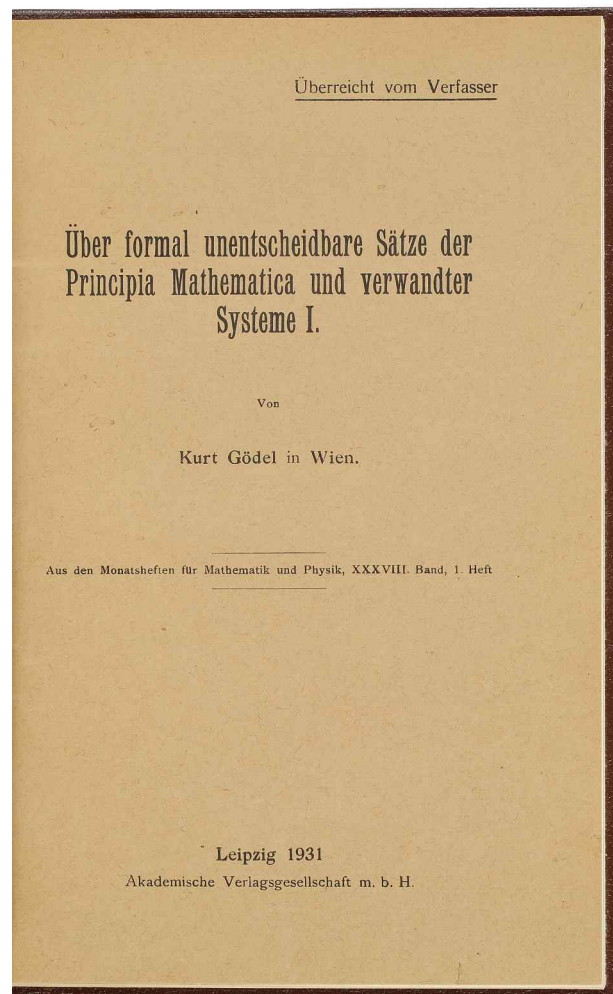
Hence for (45)  
 $x_\lambda = \sum_{\mu, \nu} \frac{g_{\lambda\mu}}{\beta + 1} (\beta, \lambda, \nu) \frac{2(g_{\lambda\mu})}{2 g_\mu} \frac{2(g_{\lambda\mu})}{2 x_\mu}$   
 $y_\nu = \sum_{\mu, \lambda} \frac{g_{\lambda\mu}}{2 - 1} (\alpha, \lambda, \mu) \frac{2(g_{\lambda\mu})}{2 g_\mu} \frac{2(g_{\lambda\mu})}{2 x_\mu}$   
 where  $\alpha + \mu + \nu = \beta - 1$

We have now often each linear factor is contained in all the linear factors. Let  $a\lambda + b\mu$  be any one of these linear factors and let  $\lambda_1, \lambda_2, \dots, \lambda_n$  be those values of  $\lambda$  for which  $a\lambda + b\mu = 0$ . [of note at end of previous in S. 64] and let  $e^{(1)}, e^{(2)}, \dots, e^{(n-1)}$  be the corresponding values of  $\lambda$ , so arranged that none of them is larger than the foregoing. If now  $k > r$ , then one of the  $k$  minors of form (57), at one ends in which  $m_\lambda$  for  $\lambda = \lambda_1, \lambda_2, \dots, \lambda_r$  has the unity, and this does not contain  $a\lambda + b\mu$ . Hence if  $k > r$





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## GÖDEL, KURT

“Die Vollständigkeit der Axiome des logischen Funktionenkalküls.” Offprint from: *Aus den Monatsheften für Mathematik und Physik*, Vol 37, part 1. Leipzig: Akademische Verlagsgesellschaft, 1930.

AND: “Über formal unentscheidbare Sätze der Principia Mathematica und verwandter Systeme I.” Offprint from: *Aus den Monatsheften für Mathematik und Physik*, Vol 38, part 1. Leipzig: Akademische Verlagsgesellschaft, 1931.

8vo (227 x 153 mm). Original tan printed wrappers, front wrappers each with printed presentation statement in German “*Überreicht vom Verfasser.*” A few light pencil notations in

second offprint, presumably in the hand of Eino Kaila (the original recipient of the offprints from Gödel). Light diagonal crease to upper corner of first offprint, some faint crinkling and some small spots to front wrapper of second offprint, but otherwise fine. Bound together in brown cloth. WITH: VON WRIGHT, Georg Henrik. Typed letter signed “George Henrik von Wright” in Swedish on Academy of Finland letterhead, stating that the two papers came from the estate of Finnish philosopher Eino Kaila, and that Wright, who was the first holder of the Swedish Chair of Philosophy and the University of Helsinki, was presenting these as a gift to his successor.

FIRST EDITION, AUTHOR'S PRESENTATION OFFPRINT ISSUES OF AMONG THE MOST REMARKABLE SCIENTIFIC ACHIEVEMENTS OF THE 20TH CENTURY - KURT GÖDEL'S FAMED INCOMPLETENESS AND COMPLETENESS THEOREMS.

In 1928, German mathematician David Hilbert, in his address to the International Congress of Mathematicians in Bologna posed three famous challenges to the mathematical community:

1. To prove that all true mathematical statements could be proven, that is, the completeness of mathematics.
2. To prove that only true mathematical statements could be proven, that is, the consistency of mathematics.
3. To prove the decidability of mathematics, that is, the existence of a decision procedure to decide the truth or falsity of any given mathematical proposition.

The first two questions of completeness and consistency were famously answered two years later by the Austrian logician Kurt in his “Über formal unentscheidbare Sätze der Principia Mathematica und verwandter Systeme I.” In this revolutionary paper, Gödel introduced his



Portrait of mathematician Kurt Gödel. (Photo by Alfred Eisenstaedt/The LIFE Picture Collection via Getty Images)

Incompleteness theorem, which “showed that even powerful logical systems could not hope to encompass the full scope of mathematical truth.” Gödel showed that, for any axiomatic system powerful enough to describe the natural numbers 1: If the system is consistent, then it cannot be complete, and 2: the consistency of the axioms cannot be proven within the system. Just a year earlier, Gödel had published “Die Vollständigkeit der Axiome des logischen Funktionenkalküls,” a concise version of his 1929 doctoral thesis, in which he gave the first proof of his Completeness theorem, showing that the axiomatic system of logic is complete.

The third problem posed by Hilbert became known as the *Entscheidungsproblem* [Decision Problem]. Alan Turing famously solved this problem in his landmark 1936 paper “On Computable Numbers, with an Application to the *Entscheidungsproblem*.” The process of doing so led to his development of a universal computing machine.

Known in English as “On formally Undecidable Propositions in Principia Mathematica and Related Systems I,” and “The Completeness of the Axioms of the Functional Calculus of Logic” the papers had an enormous impact on the fields of mathematics, computer science, and philosophy. Von Neumann said of them: “Kurt Gödel’s achievement in modern logic is singular and monumental. Indeed it is more than a monument, it is a landmark which will remain visible far in space and time. The subject of logic has certainly completely changed its nature and possibilities with Gödel’s achievement.” (Halmos)

The Finnish philosopher Eino Kaila (1890-1958) worked in the early 1930s in Vienna and became associated to the Vienna Circle of philosophers. He was greatly interested in logic, and was presented with the two offprints of Gödel’s two papers on Completeness and Incompleteness. After Kaila’s death, the offprints were given to Georg Henrik von Wright, the famous philosopher

who was successor to Ludwig Wittgenstein as professor at Cambridge University from 1948-52. Von Wright was the first holder of the Swedish Chair of philosophy at the University of Helsinki, and later a member of the Academy of Finland. He is one of the very few philosophers to whom a volume is dedicated in the *Library of Living Philosophers* series, a distinction often compared to the Nobel prize.

#### REFERENCES

Halmos, P.R. “The Legend of von Neumann.” In: *The American Mathematical Monthly*, Vol 80, No 4 (April 1973), pp. 382-394; *Origins of Cyberspace* 306

#### PROVENANCE

Kurt Gödel to Eino Kaila to George Henrik von Wright to the current owner.

**\$ 80,000-120,000**



## [EDISON, THOMAS ALVA]

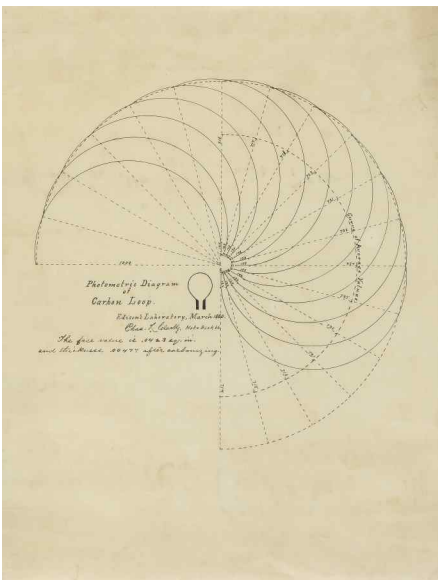
"Photometric Diagram of Carbon Loop."  
Schematic drawing and blueprint for  
carbon filament test, Menlo Park, New  
Jersey, March 1880

Pen and ink drawing on starched drafting linen:  
(15 $\frac{7}{8}$  x 12 $\frac{1}{8}$  in.) signed "Chas. L. Clarke" with  
manuscript caption. Mild soiling and a few spots;  
Blueprint: (15 x 11 $\frac{1}{4}$  in.) previously folded; both  
framed, matted, and glazed.

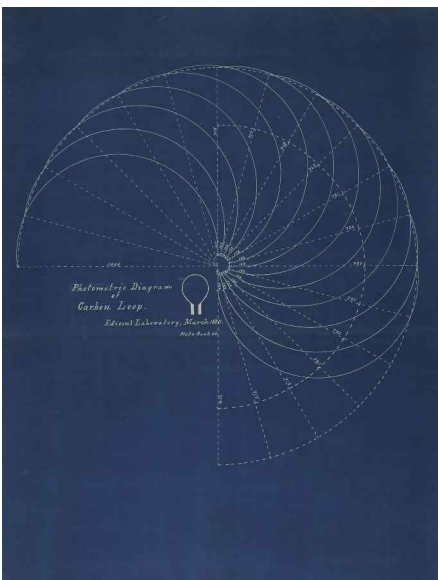
Thomas Edison was a genius in the practical  
application of scientific principles, and one  
of the most productive inventors of his time.  
Among his most important inventions were the  
carbon Microphone, the Record Player, and the  
Kinetoscope. His most significant contributions,  
however, were his development of the first  
commercially practical incandescent lamp and  
his design for a complete electrical distribution  
system for lighting and power, culminating in  
the installation in 1881 of the world's first central  
electric-light power plant in New York City.

Edison's first successful test of the light bulb was  
achieved on 22 October 1879 in his laboratory at  
Menlo Park, N.J. He filed for a U.S. patent on 4  
November for an electric lamp using "a carbon  
filament or strip coiled and connected ... to  
platina contact wires", and it was granted two  
months later. The schematic drawing on offer  
here comes from Notebook 66, as noted in the  
inscription, as was executed by Charles L. Clarke,  
one of Edison's most trusted engineers, and  
eventually Chief Engineer and first President of  
the Edison Electric Light Company.

**\$ 10,000-20,000**



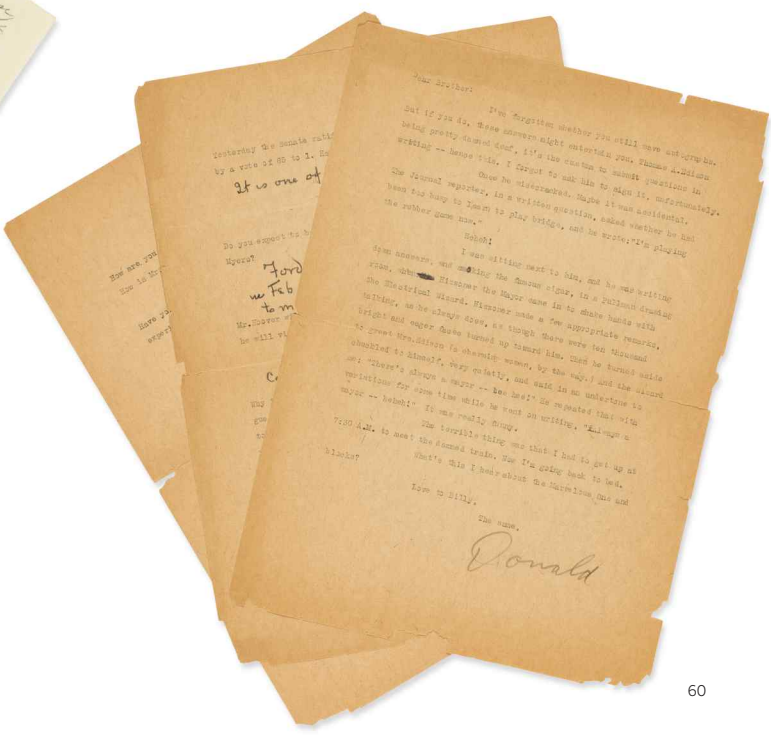
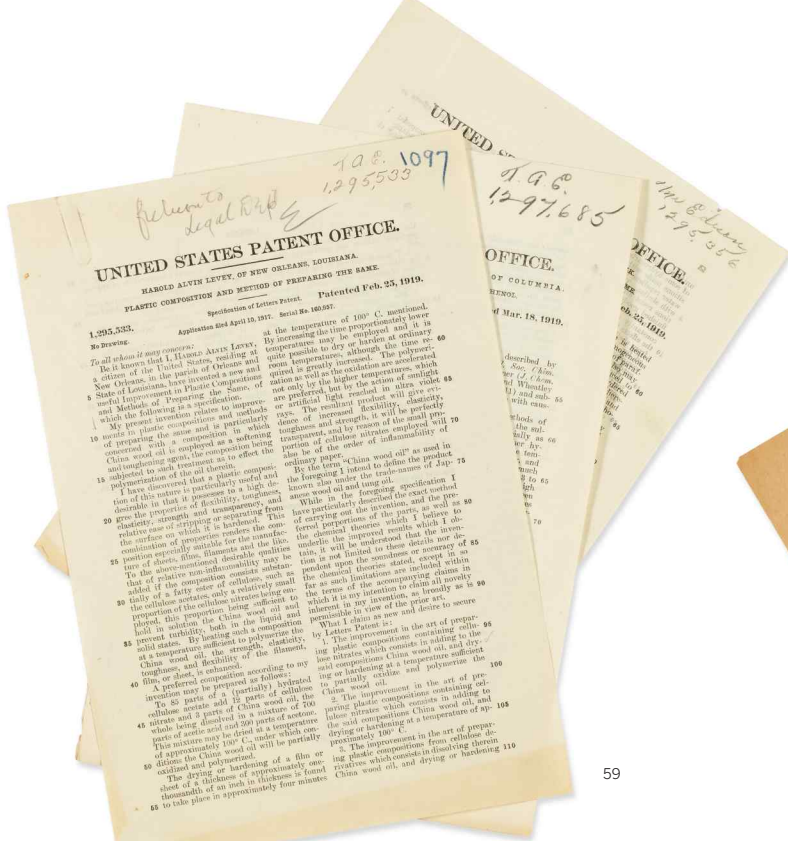
57



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58



58

[AUTOPHONE]

Stevens Autophone System, S. H. Couch Company, Boston, circa 1910

Oak case (14 x 9 x 5 in.), with original hardware, and brass number placard (179); some oxidation to metal components, general wear commensurate with age and use.

“MY GOD! IT TALKS!” — AN EARLY TWENTIETH-CENTURY COUCH PHONE, DEACCESSIONED FROM THE THOMAS EDISON BIRTHPLACE MUSEUM.

Edison’s greatest contribution to the development of the telephone — the carbon microphone — was completed in conjunction with his work with Western Union, and was ultimately the cause of a legal battle between the company and American Bell in 1877-78. As part of the settlement Western Union sold all their patents, including the rights to the Edison patent, to American Bell, which would go on to become the world’s largest telephone company.

While Alexander Graham Bell is often credited for inventing the telephone, it was Thomas Edison who famously suggested using the word “hello” as a greeting — a far cry from Bell’s resoundingly naval suggestion, “Ahoy.”

PROVENANCE

Ex collection Thomas Edison Birthplace Museum, Milan, Ohio

\$ 2,000-3,000

59

EDISON, THOMAS ALVA

Three patents, one with an autograph note, 25 February–18 March 1919

8 pp. overall (11¾ x 7¾ in.), first page of patent 1,295,533 signed in pencil “Return to Legal Dept. E.” Paperclip indentation to upper left corners, some toning to bottom margins, scattered annotations in pencil and crayon. Patent no. 1,297,685 stapled, with some residual rust.

THREE PATENTS FROM THE PROLIFIC INVENTOR, ONE BEARING HIS AUTOGRAPH NOTE.

Patent no. 1,295,533 is dated 25 February 1919, and is a patent for “Plastic Composition and the Method of Preparing the Same”. Included with this item are two other patents also dealing with plastic composition. Patent number 1,295,356, two pages in length, is dated 25 February 1919; patent 1,297,685 is four pages, dated 18 March 1919.

Edison was a prolific inventor, holding 1,093 U.S. patents in his name, as well as many patents in the United Kingdom, France, and Germany. More significant than the sheer volume of Edison’s patents was the widespread and lasting impact of his inventions: the incandescent light bulb (see lot 57), sound and motion picture recording, and many more.

\$ 2,000-3,000

60

EDISON, THOMAS ALVA

Typewritten Q&A with holograph answers [16 January 1929]

3 typed pp. (12¾ x 9 in.), about 60 words added in pencil in Edison’s holograph, with a typed cover page (signed “Donald”), from the interviewer. Evenly toned, formerly folded with some splitting to folds, slight irregular edges.

Edison’s answers to eight typewritten questions with a cover letter from his one-time interviewer, Donald: “Thomas A. Edison, being pretty damned deaf, it’s the custom to submit questions in writing — hence this. I forgot to ask him to sign it, unfortunately ... I was sitting next to him, and he was writing down answers, and smoking the famous cigar ...” While it is undated one question, which references the Kellogg Treaty, reveals the date to be January 16, 1929.

The questions address Edison’s late-career efforts on developing a domestic source for rubber, his views on the Kellogg–Briand Pact (“It is one of the things that will help”), and President-elect Hoover’s impending visit to his home in Fort Myers (“Don’t know he may come over.”) And he did indeed — Hoover, Henry Ford, and businessman Harvey S. Firestone reunited in Florida that February to celebrate Edison’s 82nd birthday and the 50th anniversary of the incandescent light bulb (see lot 57).

\$ 1,000-1,500



## THE FIRST ELECTRIC SOUND SYNTHESIZER

A Helmholtz Sound Synthesizer, manufactured in Chemnitz by Max Kohl after the design by Hermann von Helmholtz, ca 1905.

Wood, brass and steel sound synthesizer, signed "Max Kohl, Chemnitz, 1/8", 39½ x 29", mahogany base fitted with 11 steel tuning forks signed MK, each fork stamped with corresponding note and frequency in vs (vibrations per second, i.e. hertz). Forks 1-10 fixed between pairs of electromagnets and mounted vertically onto wooden platforms (numbered 1-10) along with brass Helmholtz resonators, each pair ranging in size according to their graduating frequencies, each platform with "Aus/Ein" [on/off] switch. 11th fork (marked UT<sub>2</sub> 256 vs) mounted horizontally onto wooden platform with electromagnetic coil mounted between tines, adjustable mercury cup below lower tine; one end of board fitted with 2 anodes and 2 cathodes for connection to external 20 volt power sources; other end of board fitted

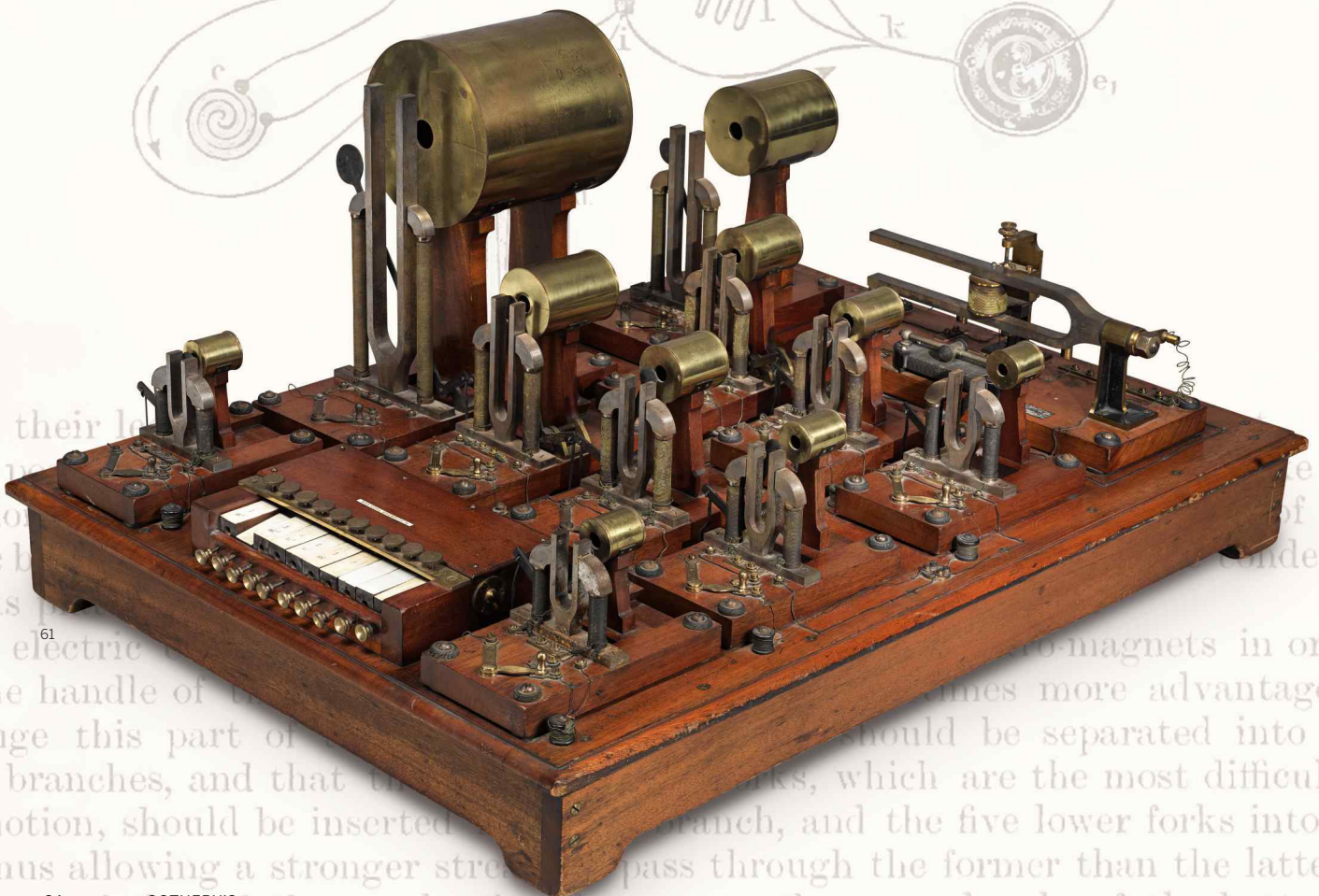
with keyboard of 10 keys (8 ivory, and 2 non-mammalian replacements), each corresponding to 1 tuning fork/resonator pair (UT<sub>2</sub> 256 vs; UT<sub>3</sub> 512 vs; SOL<sub>3</sub> 768 vs; UT<sub>4</sub> 1024 vs; MI<sub>4</sub> 1280 vs; SOL<sub>4</sub> 1536 vs; 1792 vs; UT<sub>5</sub> 2048 vs; RE<sub>5</sub> 2304 vs; & MI<sub>5</sub> 2560 vs). All 11 platforms connected together in series with wire filaments from the horizontal tuning fork.

A MAGNIFICENT EXAMPLE OF HERMANN VON HELMHOLTZ'S SOUND SYNTHESIZER, AN ELECTRONICALLY DRIVEN DEVICE USED FOR ARTIFICIALLY CREATING MUSICAL SOUNDS OF DIFFERENT TIMBRE, AND THE VOWELS OF THE HUMAN VOICE.

The Helmholtz Sound or Vowel Synthesizer was used to combine timbres of 10 harmonics to form the vowel sounds A, E, I, O, and U. Driven by an intermittent electrical current, the tuning forks were made to vibrate using electromagnets. The forks would generate a fundamental frequency and overtones which could then be combined. The keyboard controlled a series of round shutters which covered the aperture of each resonator. When one pressed a key, that shutter would move, allowing the waves from the tuning

fork to enter the resonator and produce a tone; the intensity could be adjusted by sliding the resonator closer to or farther from the fork.

With this device, Helmholtz showed that musical notes are composed of many different tones, and that the timbre of vowel sounds and musical notes is a result of their complexity. The device clearly demonstrated that the musical note not only contains "a simple 'fundamental' vibration... but also a 'harmonic series' of whole number multiples of this frequency called 'overtones'". Helmholtz proved, using this synthesizer, that it is the combination of overtones at varying levels of intensity that give musical tones, and vowel sounds, their particular sounds quality, or timbre." (Rees) Specimens of this device are extremely rare, with only one similar but smaller apparatus located in a US institution that we know of — we have not seen any others as large or finely made as this one. Max Kohl of Chemnitz is perhaps one of the most famous scientific instrument makers of the late 19th and 20th centuries. His work was distinguished by its exacting craftsmanship, and high quality materials.





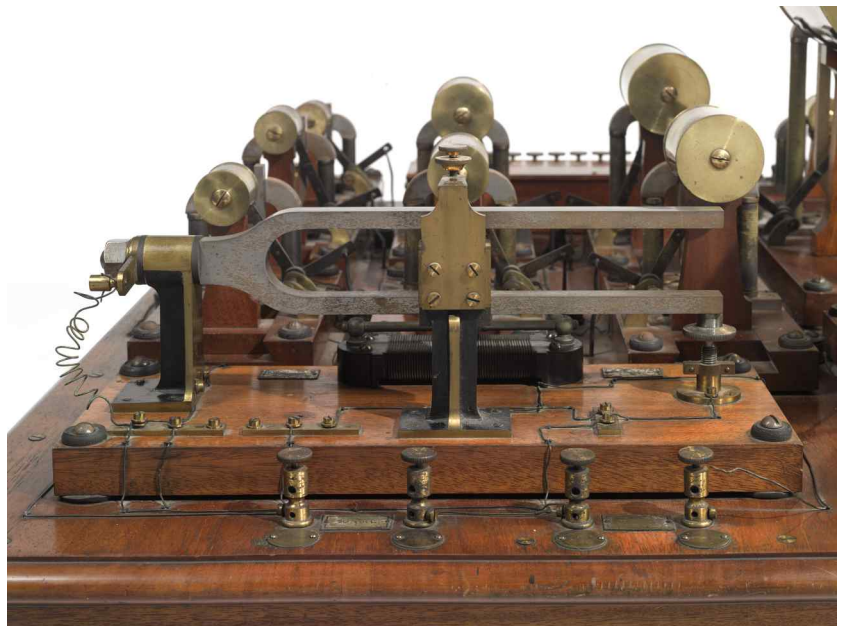


61 (DETAIL)

#### REFERENCES

For a detailed description of how to operate this apparatus see: Appendix VIII "Practical Directions for Performing the Experiments on the Composition of Vowels" in: Hermann von Helmholtz. *On the Sensations of Tone as the Physiological Basis for the Theory of Music*. London: Longmann, Greens & Co, 1885; David Pantalony. *Altered Sensations: Rudolph Koenig's Acoustical Workshop in Nineteenth-Century Paris*. New York: Springer Science, 2009; Torben Rees. "'Helmholtz's apparatus for the synthesis of sound: an electrical 'talking machine.''" Explore Whipple Collections, Whipple Museum of the History of Science, University of Cambridge, 2010 [<http://www.hps.cam.ac.uk/whipple/explore/acoustics/hermanvonhelmholtz/helmholtzssynthesizer/>, accessed 23 October 2017]; Max Kohl *Price List No. 50, Vols. II and III. Physical Apparatus. Vol. II*. Chemnitz, Germany: Max Kohl, 1909, item 53,586, p. 460.

• \$ 25,000-35,000



61 (DETAIL)



## [THEREMIN]

Teletouch Theremin Possibly built by Léon Theremin, circa 1937-1938

Walnut cabinet (44 x 20 x 12 in.), containing fixed stamped steel chassis, mounted horizontally, resonance coils mounted directly to top of chassis, behind sliding back panel in upper cabinet, original dark brown varnish finish, two metal antennae; separate power supply/amplifier chassis base cabinet; minor bumping and scratching to the cabinet, a few paint chips, original finish with the exception of one section of replaced decorative molding, several replaced wax capacitors with the newer ceramic components being fit inside the original paper sleeves to preserve the look of the original components.



62

MUSIC FROM THE ETHER – A FULLY RESTORED AND OPERATIONAL THEREMIN, POSSIBLY BUILT BY LÉON THEREMIN OR UNDER HIS INSTRUCTION AT THE TELETOUCH COMPANY.

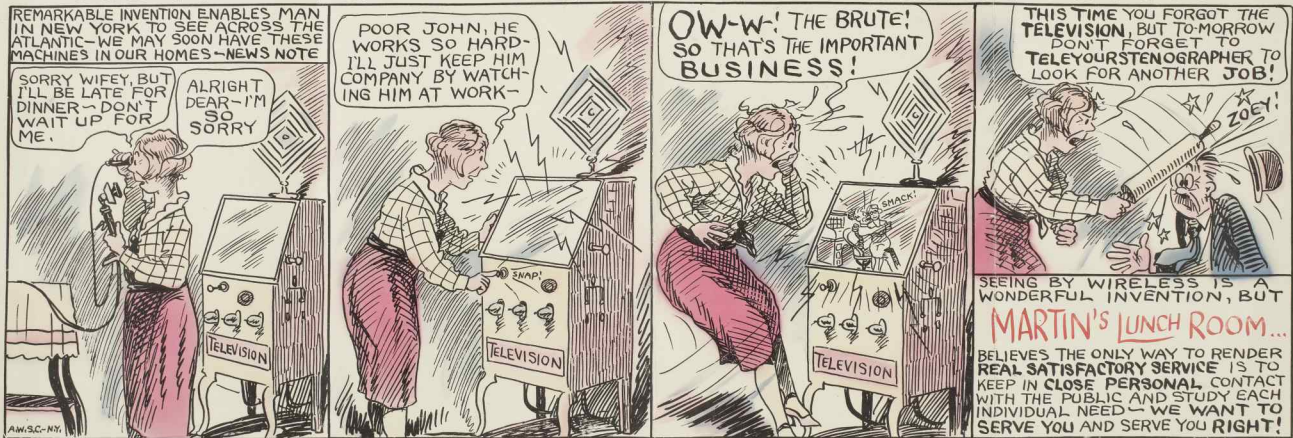
Léon Theremin — or Lev Sergeyevich Termen — was a Russian and Soviet inventor who laid the groundwork for the development of electronic music with his namesake invention, the theremin. Lev invented the instrument in the early 1920's while conducting research on proximity sensors for the Russian government. He presented it to Vladimir Lenin in 1922, who was so impressed with its futuristic sound and design that he sent the inventor on a promotional tour to demonstrate the instrument for audiences worldwide. Following a sensational reception in Europe, Theremin brought the device to the United States in 1928, where he debuted it at the Plaza Hotel and captivated audiences by extracting "music from the ether." On the heels of its New York debut, Theremin enjoyed a period of celebrity in America, and attracted the attention of Clara Rockmore, a violin-virtuoso who is widely credited with helping the instrument transcend its novelty status, and Lucie Rosen, who was a champion and patron of Theremin and his instrument.

After securing a patent for his invention in 1928, Theremin granted commercial production rights to RCA. It was not a commercially successful venture, and it is estimated that only about 500 instruments were made before RCA discontinued production circa 1930. At this time, Theremin had established the Theremin Studio and Laboratory and the Teletouch Company, and was engaged in the production of other wares, such as automatic door openers, fire alarms, and burglar alarms. Following RCA's abandonment, Teletouch began producing custom theremins to order. The instrument on offer here is one of one of perhaps ten known prototypes and soloist instruments built between 1928-1938 at his New York workshop. While there are no studio markings on the chassis or inside the cabinet, there are many hand-written notations (possibly in his holograph) and, perhaps most importantly, green-cloth insulated wire coils. Theremin-made instruments were distinguished by the use green silk or cotton-insulated wire for the electrical



62, DETAIL

# NOW THAT WE HAVE TELEVISION-



63

63

coils, a practice that had fallen out of use in the electronic industry at that time. The cabinet, which is characteristic of other Teletouch commissions, dates this theremin to circa 1937-1938, shortly before Theremin's abrupt return to the Soviet Union where, in a curious turn of events, he would end up designing listening devices in a Gulag laboratory and working for the KGB, before becoming a professor of physics at Moscow State University.

A theremin consists of two antennae, each of which has an electromagnetic field surrounding it. The hands of the musician create interference, which alter the surrounding electromagnetic fields, affecting volume and pitch, respectively. It has been called the easiest instrument to play, but the hardest to master. Rockmore articulated the necessary level of precision: "You must not only hit a note, but you must hit the center of it. You cannot register any of your internal emotion at all. You cannot shake your head, for instance, or sway back and forth on your feet. That would change your tone." The unmistakable sound of the Theremin can be heard across a vast swath of media, perhaps most famously in film scores in the 1940's and 50's — *Spellbound* (1945), *The Day The Earth Stood Still* (1951), and *Forbidden Planet* (1956), among others. Theremin and his invention also laid the groundwork for contemporary electronic music — Robert Moog, who created the first voltage-controlled synthesizer (the Moog synthesizer), began his career in 1954 by building theremins.

To view this machine in operation please visit [www.sothebys.com](http://www.sothebys.com)

## REFERENCES

*Theremin: Ether Music and Espionage*, by Albert Glinsky

\$ 20,000-30,000

## TELEVISION

*Now that We Have Television*. [New York]: A[rt]W[in] S[ervice] C[orp], ca 1929.

Broadside (25 x 10 in.), creases where previously folded.

A comical broadside issued by the Artwin Newscorp Company in 1929, depicting a housewife using a television, which had first been successfully demonstrated in 1927, to discover her husband's reason for working late at the office.

Nothing ignited imaginations like the invention of the television. It was envisioned by many to be a future two-way communication system, and in the minds of some, a surveillance tool. This idea can be seen in E.M. Forster's 1909 short story *The Machine Stops*, depicting a world in which humans live in total isolation from each other, communicating via television (the story in fact also eerily predicts the use of the internet and instant messaging), as well as later in George Orwell's 1984, in which television surveillance and totalitarian social control are combined to produce the spectre of "Big Brother."

## REFERENCES

Illustrated in: Corn, Joseph & Brian Horrigan. *Yesterday's Tomorrows. Past Visions of the American Future*. New York: Summit Books for the Smithsonian Institution Travelling Exhibition Service, 1984, p. 25

\$ 3,000-5,000



"I am sorry that I cannot tell you what you wish to know about the 'death dealing ray.' As a matter of fact, I know less about it than the newspaper writers seem to know."

DR. W.R. WHITNEY

Director of the General Electric Research Laboratory of General Electric in New York

## [DEATH RAY]

"Death Ray" Discovered! New York: Artwin Service Corp. ca 1920.

Broadside (26 x 19 in. to sight). Creases where previously folded, some light toning and crinkling to edges. Matted, glazed, and framed to 32½ x 25½ in. WITH: Typed letter signed "C.C. Bloch" from Rear Admiral C.C. Bloch of the US Navy, Chief of the Bureau of Ordnance to Dr. W.R. Whitney, Director of the General Electric Research Laboratory of General Electric in New York. 1 page (8 x 10½ in.) on Navy Department, Bureau of Ordnance letterhead stamped "Confidential" in red. May 27, 1924. Together with carbon copy Dr. Whitney's Response.

The "Death Ray" was a theoretical electromagnetic or particle beam weapon of the 1920s and 1930s. Nikola Tesla, Harry Grindell Matthews, Guglielmo Marconi and several others all claimed to have independently invented this spectacular weapon. The great H.G. Wells is credited with being the first to have imagined it however, placing the "Death Ray" in the hands of the invading Martians in his 1898 *War of the Worlds*. His terrifying weapon was likely inspired by the discovery of X-Rays by Wilhelm Röntgen in 1895 (for which he was awarded the very first Nobel prize in Physics).

This broadside captures the international fear and excitement ignited by the weapon, which many thought to be real thanks in large part to sensational accounts in the press. It depicts the inventor Harry Grindell Matthews shooting down an aeroplane with the "Death Ray" while J[ohn] Bull (as the personification of the UK), Uncle Sam, France, Italy, Spain, Japan, and Germany look on in astonishment.

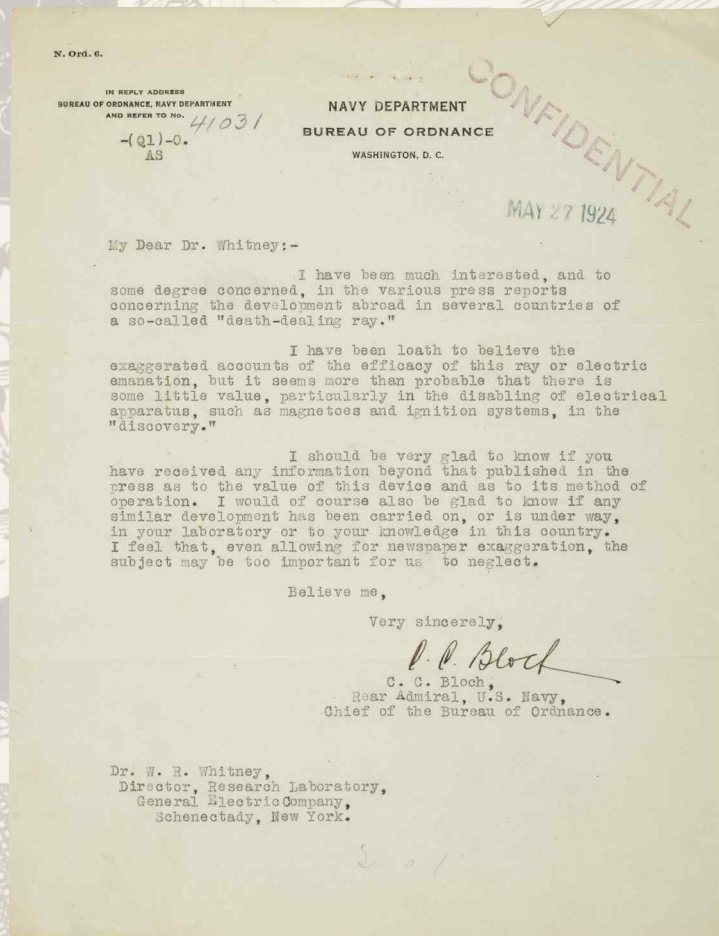
Rumors of the existence of the "Death Ray" swirled around for nearly two decades, and in the tense years following WWI, countries were keen to find technological advancements to improve their weaponry. Paranoia surrounding its development was at a peak in the interim years, and while the invention seemed very much like something straight out of science fiction, no country could afford to assume that another had not already developed it. This paranoia is perfectly evidenced in the accompanying letter sent from Rear Admiral C.C. Bloch of the US Navy to Dr. Whitney, head of the research lab at General Electric. In part:

*"I have been much interested, and to some degree concerned, in the various press reports concerning the development abroad in several countries of a so-called "death-dealing ray" ... I should be very glad to know if you have received any information beyond that published in the press as to the value of this device and as to its method of operation ... I feel that, even allowing for newspaper exaggeration, the subject may be too important for us to neglect."*

## REFERENCES

Illustrated in: Corn, Joseph & Brian Horrigan. *Yesterday's Tomorrows. Past visions of the American Future*. New York: Summit Books for the Smithsonian Institution Travelling Exhibition Service, 1984, p. 115

\$ 4,000-6,000





I'D LIKE TO HAVE A LITTLE MORE LIGHT ON THE SUBJECT

MON DIEU! ZE SPIRIT OF JULES VERNE RE-INCARNATED!

# "DEATH RAY" DISCOVERED!

**NEWS NOTE**  
U.S., ENGLAND AND FRANCE INTERESTED IN NEWLY DISCOVERED "DEATH RAY."  
WHAT IS THIS TERRIBLE, MYSTERIOUS FORCE, THAT CAN DESTROY BATTLESHIPS, BRING AIRPLANES CRASHING TO THE GROUND AND WIPE OUT WHOLE ARMIES AT A DISTANCE OF EIGHT MILES?

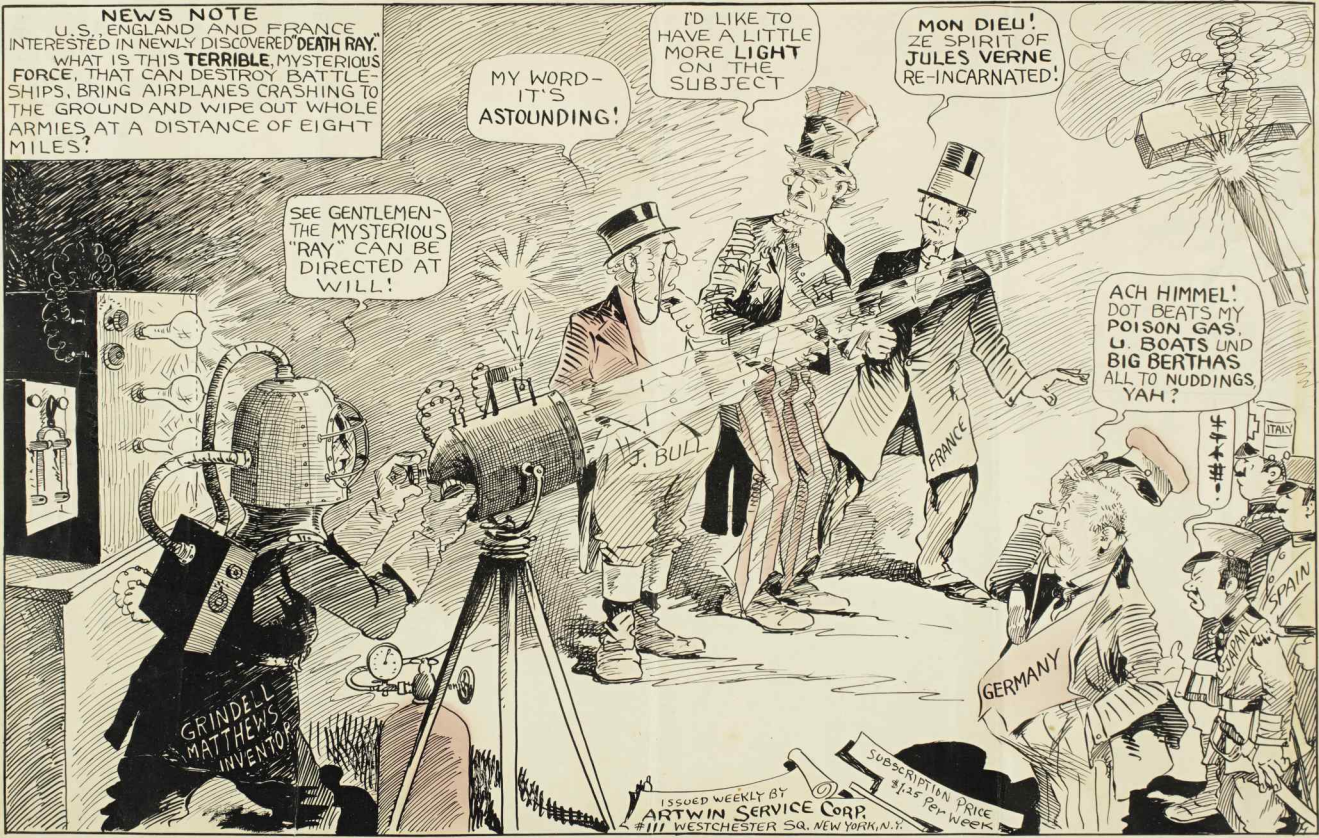
MY WORD - IT'S ASTOUNDING!

I'D LIKE TO HAVE A LITTLE MORE LIGHT ON THE SUBJECT

MON DIEU! ZE SPIRIT OF JULES VERNE RE-INCARNATED!

SEE GENTLEMEN - THE MYSTERIOUS "RAY" CAN BE DIRECTED AT WILL!

ACH HIMMEL! DOT BEATS MY POISON GAS, U. BOATS UND BIG BERTHAS ALL TO NUDDINGS YAH?



ISSUED WEEKLY BY  
ARTWIN SERVICE CORP.  
#111 WESTCHESTER SQ. NEW YORK, N.Y.  
SUBSCRIPTION PRICE  
\$1.25 PER WEEK

*Have you discovered the values awaiting you here?*

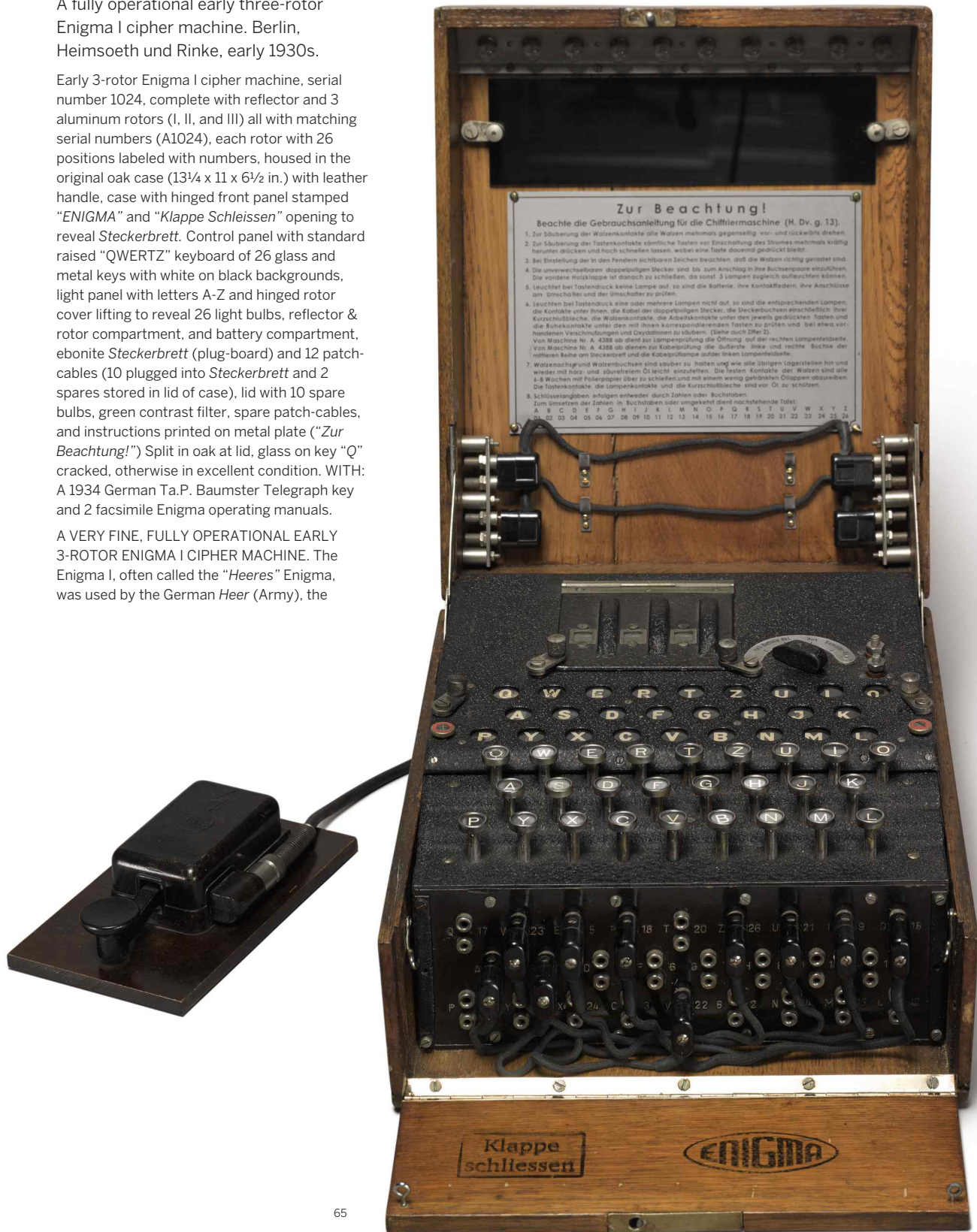


## ENIGMA I

A fully operational early three-rotor Enigma I cipher machine. Berlin, Heimsoeth und Rinke, early 1930s.

Early 3-rotor Enigma I cipher machine, serial number 1024, complete with reflector and 3 aluminum rotors (I, II, and III) all with matching serial numbers (A1024), each rotor with 26 positions labeled with numbers, housed in the original oak case (13¼ x 11 x 6½ in.) with leather handle, case with hinged front panel stamped "ENIGMA" and "Klappe Schleissen" opening to reveal *Steckerbrett*. Control panel with standard raised "QWERTZ" keyboard of 26 glass and metal keys with white on black backgrounds, light panel with letters A-Z and hinged rotor cover lifting to reveal 26 light bulbs, reflector & rotor compartment, and battery compartment, ebonite *Steckerbrett* (plug-board) and 12 patch-cables (10 plugged into *Steckerbrett* and 2 spares stored in lid of case), lid with 10 spare bulbs, green contrast filter, spare patch-cables, and instructions printed on metal plate ("Zur Beachtung!") Split in oak at lid, glass on key "Q" cracked, otherwise in excellent condition. WITH: A 1934 German Ta.P. Baumster Telegraph key and 2 facsimile Enigma operating manuals.

A VERY FINE, FULLY OPERATIONAL EARLY 3-ROTOR ENIGMA I CIPHER MACHINE. The Enigma I, often called the "Heeres" Enigma, was used by the German Heer (Army), the



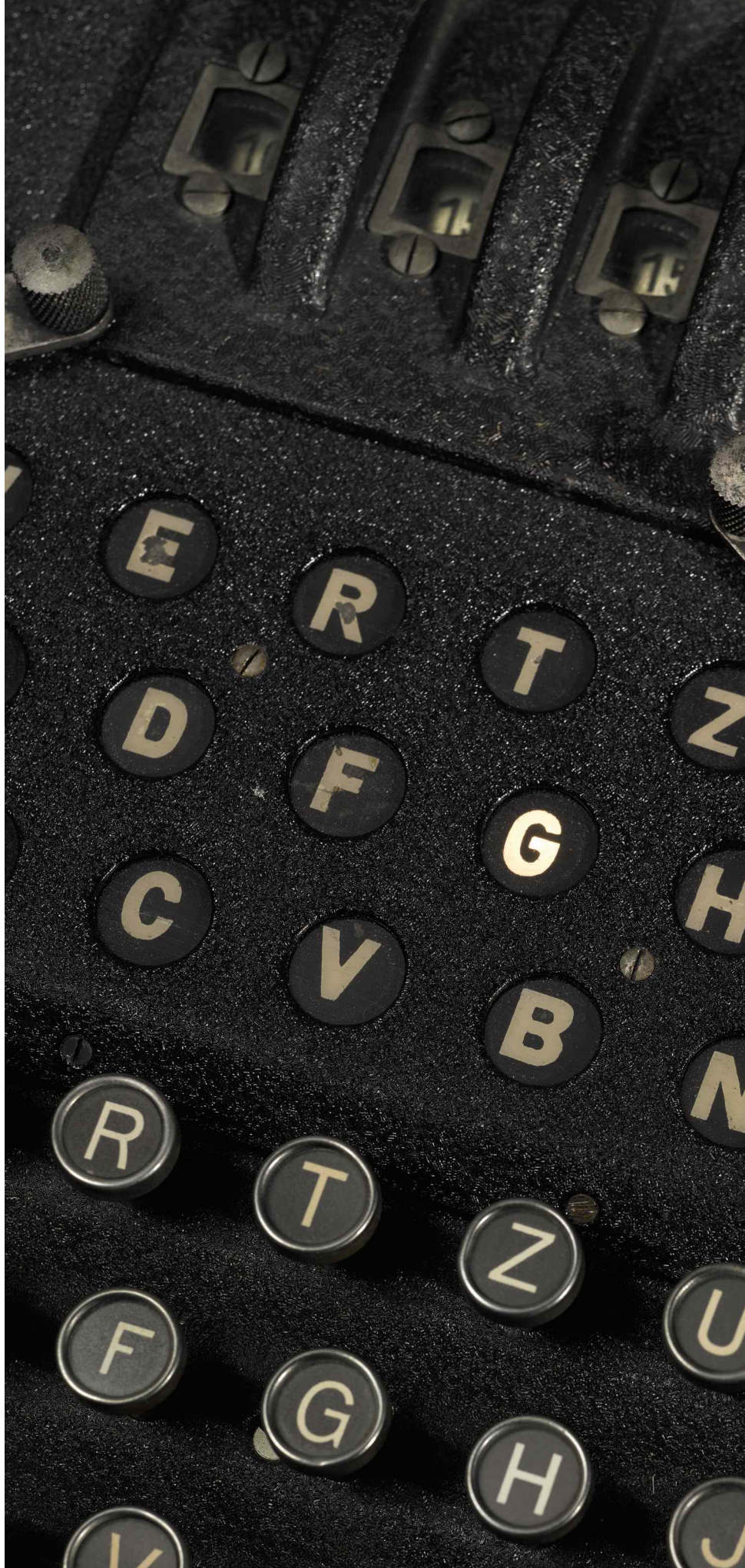


*Luftwaffe* (Air Force), and later, by the *Kriegsmarine* (Navy) before the introduction of the "M4" 4-rotor machine. The low serial number 1024 of the present machine indicated that it was manufactured in the early 1930s, making it among the very first Enigmas delivered to the German military as they built up their forces in violation of the Treaty of Versailles. Patented in 1918 by Arthur Scherbius, the Enigma machine uses three electromechanical cipher wheels, each with 26 contacts at either side. The three rotors would be placed in pre-arranged positions, and the user would then type in a plain text message using the keyboard. The machine would encipher the message, and each corresponding encoded letter would light up on the light panel. The enciphered message would then be sent to the receiving party, usually via Morse code. The receiving party would then decipher the message, using another Enigma machine with the rotors set to the same position as the first. The rotors of all Enigmas were interchangeable, and indeed, rotors were swapped out very frequently, so to find an Enigma with a set of rotors with matching serial numbers that also match the reflector is quite unusual.

The Enigma machine set a challenge that was answered by the remarkable team at Bletchley Park, whose achievements provide one of the most compelling stories of World War II. Breaking Enigma was the work of many, including Polish cryptographers who had already begun to decipher Enigma traffic before the war; naval forces who risked their lives capturing Enigma machines and code books; Alan Turing and other mathematicians with their revolutionary models for deciphering; Tommy Flowers and other mechanical geniuses who designed 'Colossus', the world's first programmable digital computer, at the GPO Research Centre at Dollis Hill in north west London; the hundreds of Wrens who operated the Bombes and, later, Colossus machines that made possible the daily decrypts. Their work saved countless lives and had an enormous impact on the submarine war in the Atlantic, the North African campaign, and the Normandy invasion; the work of Bletchley Park is often said to have shortened the war by two years. Furthermore, by coming to the understanding that to defeat Enigma it was necessary to mechanize much of the work of decryption, they helped to inaugurate the computer age.

To view this machine in operation please visit [www.sothebys.com](http://www.sothebys.com)

\$ 120,000-180,000





## SWISS ENIGMA K

A fully operational Swiss Enigma ("K") cipher machine. Berlin, Germany, Heimsoeth und Rinke, c 1939.

3-rotor Swiss ("K") model Enigma cipher machine, serial number K 767, complete with 3 aluminum rotors (I, II, & III) and *Umkehrwalze* (reflector) all with matching serial numbers (K 795), reflector and rotors with 26 positions for each letter of the alphabet; control panel with standard raised "QWERTZ" keyboard of 26 metal and glass keys in white on black backgrounds, combined rotor cover and light panel with letters A-Z, metal label reading "K 767", power source dial switch, and two nodes for connection to external power source, panel lifting to reveal 26 light bulbs, rotor & reflector compartment, and battery compartment. Housed together with attached external lamp panel with letters A-Z in the original extra-wide oak carrying case (15 x 11½ x 6 in.) with leather handle, lid of case with 10 spare bulbs, green contrast filter, and original paper instruction pamphlet printed in French & German. Together with original external power supply in its original oak case (7¾ x 4½ x 5¼ in.) with leather handle.

A VERY FINE, COMPLETE, AND FULLY OPERATIONAL EXAMPLE OF THE MOST FAMOUS ENIGMA K CIPHER MACHINE VARIANT, THE SO-CALLED "SWISS-K."

**\$ 70,000-100,000**

The Enigma K was an improved version of the 3-rotor Enigma D, which was supplied with an *Umkehrwalze* (reflector) and three rotors, all with 26 positions labelled with the letters of the alphabet (a convention that would also be used on the later 4-rotor "M4" Enigma). Developments started in 1927 to create improved versions of the commercial Enigma D, and apart from a few manufacturing modifications, the K is nearly identical to the D. Many Enigma K machines were built for German users, but they were also sold to foreign users. Modified versions were used during the Spanish Civil War from 1936-1939, and it was used by both the Swiss Army and the Italian *Supermarina* (Navy) during WWII.

The Swiss variant of the Enigma K came with an external lamp panel for an extra layer of security, as well as an external power supply. The Swiss re-wired the rotors and even modified the rotor turn-over system on some machines.

While the Enigma machines were manufactured in Germany, the external light panel and the custom extra-wide cases were manufactured in Switzerland. In 1940 the Swiss discovered that the French had intercepted some of their Enigma traffic. In response, the Swiss altered the stepping mechanism in their Enigmas, making the rightmost rotor stationary, and having the middle rotor step with every key press, while the reflector and left-most rotor following standard Enigma stepping. Despite this measure, along with regular re-wiring of their machines, allied code-breakers continued to intercept Swiss Enigma traffic. The Swiss had known since 1939 that the Germans were intercepting their Enigma traffic as well, and so the Swiss decided to develop their own machine known as the NEMA (*NEUE MACHINE*).

To view this machine in operation please visit [www.sothebys.com](http://www.sothebys.com)





Q W L  
A S D F G H J  
P Y X C V B N M

R D M C

hell Batterie dkl. aus Sammler 4V

1 2 3 4 5 6 7 8  
Q W E R T Z U I  
A S D F G H J  
P Y X C V B N M  
R 4 T 5 Z 6 U 7



FROM THE ESTATE OF DR. DAVID HAMER,  
NOTED HISTORIAN OF CRYPTOLOGY

## ENIGMA M4

A fully operational four-rotor ("M4")  
Kriegsmarine Enigma Cipher Machine.  
Berlin-Wilmersdorf, Germany, Heimsoeth  
und Rinke, 1944.

Four-rotor ("M4") Kriegsmarine Enigma cipher  
machine, serial number M77772, complete with  
Gamma rotor (M6927), 3 aluminum rotors (I,  
II, & V) with matching serial numbers (M8264),  
and C reflector (M18345), each rotor with 26  
positions labeled with letters. Housed in the

original oak case with metal handle (13½ X 11  
X 6¼ in.), hinged front panel opening to reveal  
ebonite *Steckerbrett* [plug-board], outside of  
case and inside of lid with matching metal plates  
reading "M 7772." Control panel with standard  
raised "QWERTZ" keyboard of 26 Bakelite keys  
in white on black backgrounds, lockable rotor  
cover, battery compartment and 4V power  
socket, keyboard with manufacturer's metal  
label reading "M77772/JLA/44," removable  
light panel with letters A-Z lifting to reveal 26  
light bulbs, *Steckerbrett* with 12 original patch  
cables (8 plugged into the *Steckerbrett* and 4  
stored in lid of case), lid with 10 spare bulbs,

green contrast filter, spare patch cables, and  
original paper instruction label with serial number  
in manuscript. WITH: Original German naval  
telegraph key, and two facsimile user manuals.

A VERY FINE AND FULLY OPERATIONAL  
EXAMPLE OF THE FAMOUS GERMAN FOUR-  
ROTOR ("M4") KRIEGSMARINE ENIGMA  
CIPHER MACHINE. THE RAREST AND MOST  
DESIRABLE OF ALL ENIGMAS, THE M4 WAS ONE  
OF THE HARDEST TO DECRYPT. VERY FEW M4  
MACHINES SURVIVED THE WAR, AND TO FIND  
ONE THAT IS COMPLETE AND STILL IN SUCH  
PRISTINE CONDITION, FULLY OPERATIONAL IS  
RARE INDEED.

**\$ 350,000-500,000**



67

The M4 Enigma machine was an electromechanical cipher machine specifically developed for use by the U-boat division of the German Navy (*Kriegsmarine*) for communication with the naval bases, where it played a pivotal role in the *Battle of the Atlantic*. Admiral Karl Dönitz, the commander of the U-boat fleet seriously doubted the security of the Enigma after several unexplained losses, and had the secret M4 model developed specifically for his fleet. The M4 was ready around May of 1941, and by February of 1942 all M4 machines had been distributed with the new operating procedures placed into effect.

While the codebreakers at Bletchley had been reading messages encrypted by the 3-Rotor machines for some time, the introduction of the M4 caught them completely off-guard, shutting them completely out, and it took them a full 9 months to catch up and solve the new code. Few Enigma machines survived the War intact: the Germans destroyed them as they retreated, and for decades after the war governments around the world kept close control over Enigma technology (indeed two of Turing's wartime papers on cryptography remained classified until 2012). So secure was the system believed to be

that some governments, unaware of the work of Bletchley Park, continued to use Enigmas after 1945.

The M4 was a variation of the 3-rotor Enigma I machine used by the *Wehrmacht* (German Army & Airforce). It accepted 3 standard rotors and a narrow fourth rotor in combination with a narrow reflector. The two narrow components allowed all four rotors to fit into a modified three-rotor Enigma chassis. It was issued with eight standard rotors, the first five having wiring identical to the rotors issued with the three-rotor Enigma-I. Two narrow fourth rotors, Beta and Gamma, were also issued with each machine. With the fourth narrow rotor in the "A" position, the M4 became functionally identical to and could communicate with the three-rotor Enigmas used by other branches of the military. With its stricter operating procedures and the ability to select from among 8 standard rotors and two thin fourth rotors gave the M4 a much higher level of security, foiling the Allies' previously successful decryption of the U-boat signals. It would take the codebreakers at Bletchley 10 months to break the new encryption. Compared with the more common 3-rotor Enigma, the M4 had

many significant differences beyond the added rotors. It had a different ring-setting mechanism on the rotors, a lockable rotor cover to keep the wheel settings secret, a removable lamp panel which allowed for the inclusion of a printer (*Schreibmax*), a power socket for an external power source, and a metal handle instead of the more fragile leather handle found on the 3-rotor machines. The M4 also had a removable top, and two metal bracket that allowed the machines to be lifted out of the compartments in the U-boat radio rooms.

M4 Enigma machines were produced in much smaller quantities than the three-rotor Enigma I machines. In addition, multiple M4 Enigmas were deployed with each U-boat and support ship, and the majority of these were lost when their boats were sunk in combat or scuttled by their crew at the end of the war. Furthermore, German Enigma operators were under strict orders not to allow the enemy to capture any Enigmas; this meant that many Enigmas were stripped of their rotors and destroyed, with many thrown into lakes or oceans to hide any remaining parts.

To view this machine in operation please visit [www.sothebys.com](http://www.sothebys.com)





## NEMA 45

A fully operational NEMA model 45 cipher machine. Uster, Switzerland, Zellweger A.-G., 1948.

Swiss NEMA Model 45 cipher machine, serial number 678, complete with 12 wheels consisting of: 1 rightmost red entry-wheel, or *Eintrittswalze* (ETW), 1 leftmost reflector wheel, or *Umkehrwalze* (UKW), and 6 pairs of wheels (A12, B13, C14, D15, E17, and F18), each consisting of 1 electrically wired coding wheel and 1 stepping wheel, all 12 with 26 positions for each letter of the alphabet. "QWERTZ" keyboard with 31 white on black bakelite keys consisting of the 26 letters of the alphabet, "BU" and "ZL" keys to toggle between letters and numbers, carriage return "WR" key, and two blank keys, plus metal space bar; combined rotor cover and light panel with letters A-Z, metal manufacturer's label reading "Zellweger A.-G. Apparate- u. Maschinenfabriken. Uster. Type: T-D No.: 678", metal power source toggle switch, two nodes for connecting external 4-volt power source, counter re-set lever, panel lifting to reveal 26 light bulbs, rotor & reflector compartment, and battery compartment. In the original locking metal carrying case with leather

handle (14¼ x 12¾ x 5¾ in.), case stenciled with "678" and "TD687," lid with paper label in French, German, and Italian ("*Ne délivrer qu'en cas de mobilisation de guerre!*"), inside of lid fitted with 16 spare bulbs, external lamp panel for extra security, mains cable with Edison fitting, contact brush, and the extra wheels E17 & F18. WITH: Original NEMA Instruction manual, printed in French & German.

A RARE, FULLY OPERATIONAL SWISS NEMA CIPHER MACHINE, ONE OF THE FEW "KRIEGSMOBILMACHUNGS-MASCHINE" RESERVED FOR USE IN WARTIME AND KEPT LOCKED AWAY IN MILITARY STORAGE. When the Swiss discovered that their Enigma traffic was being intercepted by both the Germans and the French, their they developed their own electromechanical wheel-based cipher machine known as the NEMA (*NEue Machine*). Between 1941-43, a team of mathematicians including Hugo Hadwiger, Heinrich Emil Weber, Paul Glu, and Captain Arthur Alder worked to develop the machine, with the first prototype being developed in 1944, and production starting in 1946, too late to assist the war efforts.

A total of 640 machines were built by the manufacturer, with numbers TD-100 to TD-199

being issued for use by the Foreign office, numbers TD-200 to TD-419 being used in training, and numbers TD-420 to TD-740 being Operational Machines reserved for use in war. The Operational Machines were slightly different in operation, with different notches on the stepping wheels, two extra wheels stored in the lid, and a paper label on the lid in French, German, and Italian indicating that they were only to be used in the event of war. The Swiss Army used the NEMA after WWII until it was replaced by other more advanced cipher machines, such as the Hagelin. The NEMA was officially declassified on July 9th, 1992.

To view this machine in operation please visit [www.sothebys.com](http://www.sothebys.com)

**\$ 15,000-20,000**



## HAGELIN CD-57

A fully functional Hagelin CD-57 pocket cipher device. Switzerland, Crypto Ag. Zug, 1957.

Mechanically operated pocket cipher machine in two-part military case variant (5½ x 3 in.) of drab-green die-cast aluminum, serial number 3003993, complete with 6 coding wheels (29, 31, 37, 41, 43, & 47) and rewinding crank housed in case lid. Hinged top lid with case lock, white on black input/output letter disk, crank insertion hole, and window revealing letter counter, case bottom with cipher tape holder, operating lever, and locking lever, the whole opening to reveal keying mechanism with input/output disc, and stack of 6 coding wheels on axle with drum locking lever.

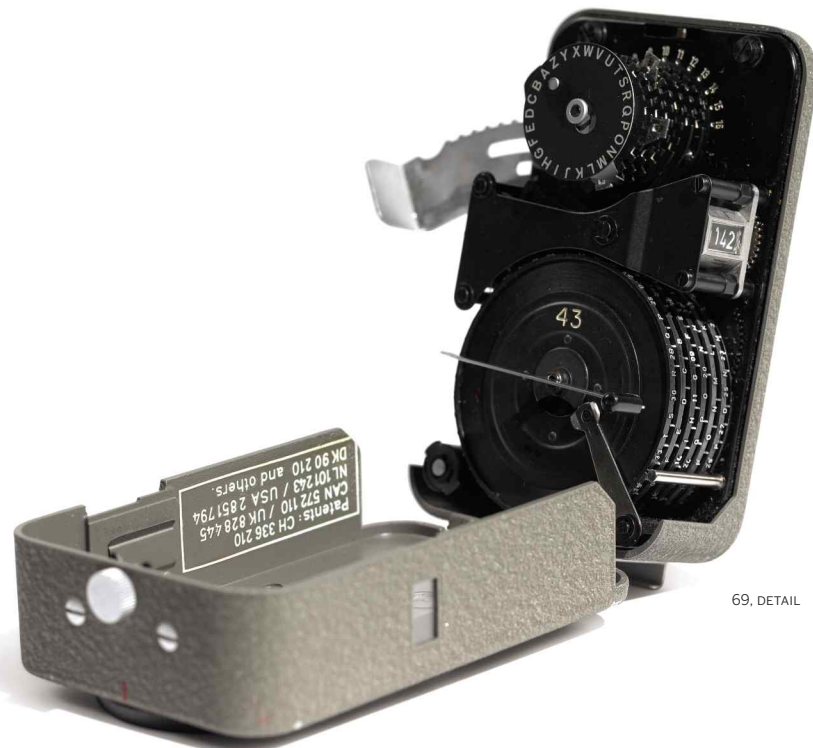
A FULLY FUNCTIONAL HAGELIN CD-57 POCKET CIPHER DEVICE. Developed by Boris Hagelin in 1957, the eponymous Hagelin CD-57 was a mechanically operated, pin-and-lug pocket cipher machine that remained in service until the mid 1970s. By secret arrangement with the United States National Security Agency, two primary versions of this device were made; the CD-57, made for use by NATO and NATO-friendly countries, and the CD-55, made for use by non-NATO countries. The two appeared identical, however the CD-55 was much easier to break; the CD-57, basically a pocket-version of Hagelin's unbreakable CX-52 desktop cipher machine, featured a highly improved stepping mechanism and could quickly be converted to an unbreakable one-time tape (OTT) cipher machine by replacing the 6-wheel stack with the so-called RT/CD (Random Tape) option and fitting the bottom of the case with a key tape cassette.

Because of its easily concealable size, the CD-57 was popular with a number of intelligence agencies during the cold War, as well as with many European and other armies.

**\$ 2,500-3,500**

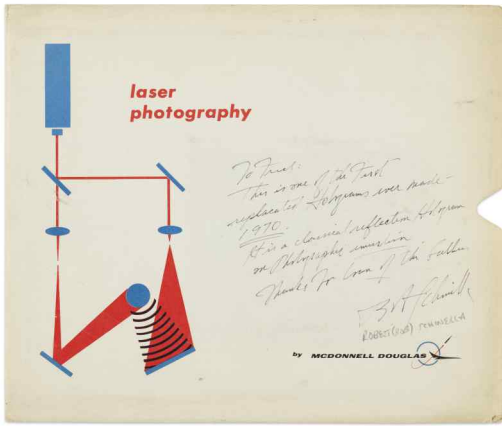


69



69, DETAIL





70



70

## [HOLOGRAPHY]

"That's Life" Hologram by McDonnell Douglas Electronics Company, 1970

Image-plane reflection hologram, silver halide emulsion on film (4 x 5 in.), mounted on cardstock with three identifying labels, housed in a printed McDonnell Douglas envelope; minor wear to envelope.

AN EARLY HOLOGRAM FROM ONE OF THE PIONEERS IN THE FIELD OF COMMERCIAL HOLOGRAPHY.

A hologram is a photographic recording of a light field, used to display and view a fully three-dimensional image under diffuse ambient light without the aid of any intermediate optics. The hologram on offer here depicts a man pushing a boulder, and is inscribed by a staff-member at McDonnell Douglas — Robert "Bob" Schinella — to Frederick C. Durant III: "*To Fred | This is one of the First replicated Holograms ever made - 1970. It is a classical reflection Hologram on photographic emulsion*".

McDonnell Douglas was a major aerospace manufacturing and defense contractor that provided air and spacecraft simulators for the Mercury and Gemini manned space programs. Its subsidiary, McDonnell Douglas Electronics Company, housed a pulsed-laser holography laboratory until 1973, when when the corporation decided that the market for holograms was proving too elusive to pursue any further.

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## PROVENANCE

Ex Frederick C. Durant III

\$ 1,200-1,800

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## MAGNAVOX SATELLITE PHONE

An MX2020 model Satellite Phone. Deer Park, New York, Magnavox, 1990.

A large metal, fabric, & plastic portable satellite phone and radio transceiver, serial number 1671, with large 25-pin D-sub male/female cable & power cable in original locking wheeled Magnavox carrying-case with large yellow & black labels reading "T. Alden. Sat Phone."

While the Magnavox MX2020 model portable satellite telephone seems like a beast in comparison to today's micro-technology, it was an incredible device for its time. Used to provide fax, telephone and data communications from anywhere in the world, it could be connected to computers, encryption devices, remote radio repeaters, and could be used to transmit and receive slow scan video. When unpacked and assembled it stood on four legs which unfolded from the body, along with an umbrella antenna. Made to withstand the elements in areas where regular and cellular signals were not available, it was resistant to high winds, sand, rain, and snow and would operate in extreme temperatures ranging from -40° Fahrenheit.

## PROVENANCE

Formerly property of the American Broadcasting Corporation (ABC)

\$ 2,000-3,000

END OF SALE



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Unless otherwise agreed by Sotheby's, all property must be removed from our premises by the purchaser at his expense not later than 30 calendar days following its sale. Buyers are reminded that Sotheby's liability for loss or damage to sold property shall cease no later than 30 calendar days after the date of the auction. If any applicable conditions herein are not complied with by the purchaser, the purchaser will be in default and in addition to any and all other remedies available to us and the Consignor by law, including, without limitation, the right to hold the purchaser liable for the total purchase price, including all fees, charges and expenses more fully set forth herein, we, at our option, may (x) cancel the sale of that, or any other lot or lots sold to the defaulting purchaser at the same or any other auction, retaining as liquidated damages all payments made by the purchaser, or (y) resell the purchased property, whether at public auction or by private sale, or (z) effect any combination thereof. In any case, the purchaser will be liable for any deficiency, any and all costs, handling charges, late charges, expenses of both sales, our commissions on both sales at our regular rates, legal fees and expenses, collection fees and incidental damages. We may, in our sole discretion, apply any proceeds of sale then due or thereafter becoming due to the purchaser from us or any affiliated company, or any payment made by the purchaser to us or any affiliated company, whether or not intended to reduce the purchaser's obligations with respect to the unpaid lot or lots, to the deficiency and any other amounts due to us or any affiliated companies. In addition, a defaulting purchaser will be deemed to have granted and assigned to us and our affiliated companies, a continuing security interest of first priority in any property or money of or owing to such purchaser in our possession, custody or control or in the possession, custody or control of any of our affiliated companies, in each case whether at the time of the auction, the default or if acquired at any time thereafter, and we may retain and apply such property or money as collateral security for the obligations due to us or to any affiliated company of ours. We shall have all of the rights accorded a secured party under the New York Uniform Commercial Code. You hereby agree that Sotheby's may file financing statements under the New York Uniform Commercial Code without your signature. Payment will not be deemed to have been made in full until we have collected good funds. Any claims relating

to any purchase, including any claims under the Conditions of Sale or Terms of Guarantee, must be presented directly to Sotheby's. In the event the purchaser fails to pay any or all of the total purchase price for any lot and Sotheby's nonetheless elects to pay the Consignor any portion of the sale proceeds, the purchaser acknowledges that Sotheby's shall have all of the rights of the Consignor to pursue the purchaser for any amounts paid to the Consignor, whether at law, in equity, or under these Conditions of Sale.

**10. Reserve** All lots in this catalogue are offered subject to a reserve, which is the confidential minimum hammer price at which a lot will be sold. No reserve will exceed the low presale estimate stated in the catalogue, or as amended by oral or posted notices. We may implement such reserve by opening the bidding on behalf of the Consignor and may bid up to the amount of the reserve, by placing successive or consecutive bids for a lot, or bids in response to other bidders. In instances where we have an interest in the lot other than our commission, we may bid up to the reserve to protect such interest. In certain instances, the Consignor may pay us less than the standard commission rate where a lot is "bought-in" to protect its reserve.

**11. Tax** Unless exempted by law, the purchaser will be required to pay the combined New York State and local sales tax, any applicable compensating use tax of another state, and if applicable, any federal luxury or other tax, on the total purchase price. The rate of such combined tax is 8.875% in New York City and ranges from 7% to 8.625% elsewhere in New York.

**12. Export and Permits** It is the purchaser's sole responsibility to identify and obtain any necessary export, import, firearm, endangered species or other permit for the lot. Any symbols or notices in the sale catalogue reflect Sotheby's reasonable opinion at the time of cataloguing and are for bidders' general guidance only; Sotheby's and the Consignor make no representations or warranties as to whether any lot is or is not subject to export or import restrictions or any embargoes.

**13. Governing Law and Jurisdiction** These Conditions of Sale and Terms of Guarantee, as well as bidders', the purchaser's and our respective rights and obligations hereunder, shall be governed by and construed and enforced in accordance with the laws of the State of New York. By bidding at an auction, whether present in person or by agent, order bid, telephone, online or other means, all bidders including the purchaser, shall be deemed to have consented to the exclusive jurisdiction of the state courts of, and the federal courts sitting in, the State of New York. All parties agree, however, that Sotheby's shall retain the right to bring proceedings in a court other than the state and federal courts sitting in the State of New York.

**14. Packing and Shipping** We are not responsible for the acts or omissions in our

packing or shipping of purchased lots or of other carriers or packers of purchased lots, whether or not recommended by us. Packing and handling of purchased lots is at the entire risk of the purchaser.

**15. Limitation of Liability** In no event will our liability to a purchaser exceed the purchase price actually paid.

**16. Data Protection** Sotheby's will use information provided by its clients (or which Sotheby's otherwise obtains from eBay, Invaluable or other sources relating to its clients) for the provision of auction and other art-related services, loan services, client administration, marketing and otherwise to manage and operate its business, or as required by law, in accordance with Sotheby's Privacy Policy. This will include information such as the client's name and contact details, proof of identity, financial information, records of the client's transactions, and preferences. Some gathering of information about Sotheby's clients will take place using technical means to identify their preferences in order to provide a higher quality of service to them. Sotheby's may also disclose the client information to other Sotheby's Companies and/or third parties acting on their behalf to provide services for these purposes.

Sometimes, Sotheby's may also disclose this information to carefully selected third parties for their own marketing purposes. If you do not wish your details to be used for this purpose, please email [enquiries@sothebys.com](mailto:enquiries@sothebys.com).

If the client provides Sotheby's with information that is defined by European data protection laws as "sensitive", the client agrees that it may be used for the purposes set out above.

In the course of these disclosures, personal data collected in the European Economic Area may be disclosed to countries outside the European Economic Area. Although such countries may not have legislation that protects a client's personal information, Sotheby's shall take great care to keep such information secure and in accordance with European data protection principles. By agreeing to these Conditions of Sale, the client is agreeing to such disclosure.

Please be aware that Sotheby's may film auctions or other activities on Sotheby's premises and that such recordings may be transmitted over the Internet via Sotheby's website, the eBay website, the Invaluable website and other Online Platforms. Telephone bids may be recorded.

Under European data protection laws, a client may object, by request and free of charge, to the processing of their information for certain purposes, including direct marketing, and may access and rectify personal data relating to them and may obtain more information about Sotheby's data protection policies by writing to Sotheby's, 34-35 New Bond Street, London W1A 2AA, or 1334 York Avenue, New York, NY 10021. Attn: Compliance, or emailing [enquiries@sothebys.com](mailto:enquiries@sothebys.com). Sotheby's use of information collected about eBay users may differ and is governed by the terms of

the eBay Privacy Policy and Sotheby's on eBay Live Auction Platform Privacy Policy, which can be found on the Sotheby's on eBay Live Auction Website. Sotheby's use of information collected about Invaluable users may differ and is governed by the terms of the Invaluable Privacy Policy and Sotheby's on Invaluable Online Platform Privacy Policy, which can be found on the Sotheby's on Invaluable Live Auction Website.

## TERMS OF GUARANTEE

As set forth below and in the Conditions of Sale, for all lots Sotheby's guarantees that the authorship, period, culture or origin (collectively, "Authorship") of each lot in this catalogue is as set out in the BOLD or CAPITALIZED type heading in the catalogue description of the lot, as amended by oral or written salesroom notes or announcements. Purchasers should refer to the Glossary of Terms, if any, for an explanation of the terminology used in the Bold or Capitalized type heading and the extent of the Guarantee. Sotheby's makes no warranties whatsoever, whether express or implied, with respect to any material in the catalogue other than that appearing in the Bold or Capitalized heading and subject to the exclusions below.

In the event Sotheby's in its reasonable opinion deems that the conditions of the Guarantee have been satisfied, it shall refund to the original purchaser of record the hammer price and applicable Buyer's Premium paid for the lot by the original purchaser of record.

This Guarantee is provided for a period of five (5) years from the date of the relevant auction, is solely for the benefit of the original purchaser of record at the auction and may not be transferred to any third party. To be able to claim under this Guarantee of Authorship, the original purchaser of record must: (i) notify Sotheby's in writing within three (3) months of receiving any information that causes the original purchaser of record to question the accuracy of the Bold or Capitalized type heading, specifying the lot number, date of the auction at which it was purchased and the reasons for such question; and (ii) return the Lot to Sotheby's at the original selling location in the same condition as at the date of sale to the original purchaser of record and be able to transfer good title to the Lot, free from any third party claims arising after the date of such sale.

Sotheby's has discretion to waive any of the above requirements. Sotheby's may require the original purchaser of record to obtain at the original purchaser of record's cost the reports of two independent and recognized experts in the field, mutually acceptable to Sotheby's and the original purchaser of record. Sotheby's shall not be bound by any reports produced by the original purchaser of record, and reserves the right to seek additional expert advice at its own expense. It is specifically understood and agreed that the rescission of a sale and the refund of the original purchase price paid (the successful

hammer price, plus the buyer's premium) is exclusive and in lieu of any other remedy which might otherwise be available as a matter of law, or in equity. Sotheby's and the Consignor shall not be liable for any incidental or consequential damages incurred or claimed, including without limitation, loss of profits or interest.

## ADDITIONAL TERMS AND CONDITIONS FOR LIVE ONLINE BIDDING

The following terms and conditions (the "Online Terms") provide important information related to live online bidding via BIDnow, eBay, Invaluable, and any other Online Platform through which bidding is made available ("Online Platforms").

These Conditions are in addition to and subject to the same law and our standard terms and conditions of sale, including the authenticity guarantee and any other terms and are not intended in any way to replace them. By participating in this sale via any Online Platform, you acknowledge that you are bound by the Conditions of Sale applicable in the relevant sale and by these additional Conditions.

1. The procedure for placing bids via Online Platforms is a one-step process; as soon as the "Bid Now" button is clicked, a bid is submitted. By placing a bid via any Online Platform, you accept and agree that bids submitted in this way are final and that you will not under any circumstances be permitted to amend or retract your bid. If a successful bid is sent to Sotheby's from your computer, phone, tablet, or any other device, you irrevocably agree to pay the full purchase price, including buyer's premium and all applicable taxes and other applicable charges.

2. If you have the leading bid, it will be indicated on the screen with the statement "Bid with you" (on BIDNow) or "You're the highest bidder" (on eBay) or "Bid with you" (on Invaluable). If a bid is placed online simultaneously with a bid placed by a bidder in the room or on the telephone (a "floor" bid), the "floor" bid generally will take precedence; the auctioneer will have the final discretion to determine the successful bidder or to reopen bidding. The auctioneer's decision is final.

3. The next bidding increment is shown on the screen for your convenience. The auctioneer has discretion to vary bidding increments for bidders in the auction room and on the telephones, but bidders using Online Platforms may not be able to place a bid in an amount other than a whole bidding increment. All bidding for this sale will be in the domestic currency of the sale location, and online bidders will not be able to see the currency conversion board that may be displayed in the auction room.

4. The record of sale kept by Sotheby's will be taken as absolute and final in all disputes. In the event of a discrepancy between any online records or messages provided to you and the record of sale kept by Sotheby's, the record of sale will govern.

5. Online bidders are responsible for making themselves aware of all salesroom notices and announcements. All salesroom notices will be read by the auctioneer at the beginning, where appropriate, or during the sale prior to a relevant lot being offered for sale. Sotheby's recommends that online bidders log on at least ten minutes before the scheduled start of the auction to ensure that you have heard all announcements made by the auctioneer at the beginning of the sale.

6. Sotheby's reserves the right to refuse or revoke permission to bid via Online Platforms and to remove bidding privileges during a sale.

7. Purchase information shown in the "Account Activity" section of BIDnow, the "Purchase History" section of the "My eBay" page on eBay and the "Account Activity" section of the "My Invaluable" page on Invaluable is provided for your convenience only. Successful bidders will be notified and invoiced by Sotheby's after the sale. In the event of any discrepancy between any online purchase information and the invoice sent to you by Sotheby's following the respective sale, the invoice prevails. Terms and conditions for payment and collection of property remain the same regardless of how the winning bid was submitted.

8. Sotheby's offers online bidding as a convenience to our clients. Sotheby's will not be responsible for any errors or failures to execute bids placed via Online Platforms, including, without limitation, errors or failures caused by (i) a loss of connection to the internet or to the BIDnow, eBay, Invaluable or other Online Platform software by either Sotheby's or the client; (ii) a breakdown or problem with the BIDnow, eBay, Invaluable or other Online Platform software; or (iii) a breakdown or problem with a client's internet connection, mobile network or computer. Sotheby's is not responsible for any failure to execute an online bid or for any errors or omissions in connection therewith.

9. Live online bidding via all Online Platforms will be recorded.

10. In the event of any conflict between these Online Terms and Sotheby's Conditions of Sale and Terms of Guarantee, Sotheby's Conditions of Sale and Terms of Guarantee will control.

11. In the event of any conflict between these Online Terms and any term in any agreement between the User and eBay, these Online Terms will control for purposes of all Sotheby's auctions.

12. In the event of any conflict between these Online Terms and any term in any agreement between the User and Invaluable, these Online Terms will control for purposes of all Sotheby's auctions.



## BUYING AT AUCTION

The following will help in understanding the auction buying process as well as some of the terms and symbols commonly used in an auction catalogue. All bidders should read the Conditions of Sale and Terms of Guarantee in this catalogue, as well as the Glossary or any other notices. By bidding at auction, bidders are bound by the Conditions of Sale and Terms of Guarantee, as amended by any oral announcement or posted notices, which together form the sale contract among Sotheby's, the seller (consignor) of the lot and any bidders, including the successful bidder (purchaser).

### 1. SYMBOL KEY

#### □ Reserves

Unless indicated by a box (□), all lots in this catalogue are offered subject to a reserve. A reserve is the confidential minimum hammer price at which a lot will be sold. The reserve is generally set at a percentage of the low estimate and will not exceed the low estimate of the lot. If any lots in the catalogue are offered without reserve, such lots will be designated by a box (□). If every lot in a catalogue is offered without a reserve, the Conditions of Sale will so state and this symbol will not be used for each lot.

#### ○ Guaranteed Property

The seller of lots with this symbol has been guaranteed a minimum price from one auction or a series of auctions. This guarantee may be provided by Sotheby's or jointly by Sotheby's and a third party. Sotheby's and any third parties providing a guarantee jointly with Sotheby's benefit financially if a guaranteed lot is sold successfully and may incur a loss if the sale is not successful. If the Guaranteed Property symbol for a lot is not included in the printing of the auction catalogue, a pre-sale or pre-lot announcement will be made indicating that there is a guarantee on the lot.

#### △ Property in which Sotheby's has an Ownership Interest

Lots with this symbol indicate that Sotheby's owns the lot in whole or in part or has an economic interest in the lot equivalent to an ownership interest.

#### ⇒ Irrevocable Bids

Lots with this symbol indicate that a party has provided Sotheby's with an irrevocable bid on the lot that will be executed during the sale at a value that ensures that the lot will sell. The irrevocable bidder, who may bid in excess of the irrevocable bid, may be compensated for providing the irrevocable bid by receiving a contingent fee, a fixed fee or both. If the irrevocable bidder is the successful bidder, any contingent fee, fixed fee or both (as applicable) for providing the irrevocable bid may be netted against the irrevocable bidder's obligation to pay the full purchase price for the lot and the purchase price reported for the lot shall be net of any such fees. If the irrevocable bid is not secured until after the printing of the auction catalogue, Sotheby's will notify bidders that there is an irrevocable

bid on the lot by one or more of the following means: a pre-sale or pre-lot announcement, by written notice at the auction or by including an irrevocable bid symbol in the e-catalogue for the sale prior to the auction. If the irrevocable bidder is advising anyone with respect to the lot, Sotheby's requires the irrevocable bidder to disclose his or her financial interest in the lot. If an agent is advising you or bidding on your behalf with respect to a lot identified as being subject to an irrevocable bid, you should request that the agent disclose whether or not he or she has a financial interest in the lot.

#### ∨ Interested Parties

Lots with this symbol indicate that parties with a direct or indirect interest in the lot may be bidding on the lot, including (i) the beneficiary of an estate selling the lot, or (ii) the joint owner of a lot. If the interested party is the successful bidder, they will be required to pay the full Buyer's Premium. In certain instances, interested parties may have knowledge of the reserve. In the event the interested party's possible participation in the sale is not known until after the printing of the auction catalogue, a pre-sale or pre-lot announcement will be made indicating that interested parties may be bidding on the lot.

#### ⊙ Restricted Materials

Lots with this symbol have been identified at the time of cataloguing as containing organic material which may be subject to restrictions regarding import or export. The information is made available for the convenience of bidders and the absence of the symbol is not a warranty that there are no restrictions regarding import or export of the Lot; bidders should refer to Condition 12 of the Conditions of Sale. Please also refer to the section on Endangered Species in the information on Buying at Auction.

#### Ⓜ Monumental

Lots with this symbol may, in our opinion, require special handling or shipping services due to size or other physical considerations. Bidders are advised to inspect the lot and to contact Sotheby's prior to the sale to discuss any specific shipping requirements.

#### 💎 Premium Lot

In order to bid on "Premium Lots" (💎 in print catalogue or ✦ in eCatalogue) you must complete the required Premium Lot pre-registration application. You must arrange for Sotheby's to receive your pre-registration application at least three working days before the sale. Please bear in mind that we are unable to obtain financial references over weekends or public holidays. Sotheby's decision whether to accept any pre-registration application shall be final. If your application is accepted, you will be provided with a special paddle number. If all lots in the catalogue are "Premium Lots", a Special Notice will be included to this effect and this symbol will not be used.

### 2. BEFORE THE AUCTION

**The Catalogue** A catalogue prepared by Sotheby's is published for every scheduled

live auction and is available prior to the sale date. The catalogue will help familiarize you with property being offered at the designated auction. Catalogues may be purchased at Sotheby's or by subscription in any categories. For information, please call +1 212 606 7000 or visit sothebys.com. Prospective bidders should also consult sothebys.com for the most up to date cataloguing of the property in this catalogue.

**Estimates** Each lot in the catalogue is given a low and high estimate, indicating to a prospective buyer a range in which the lot might sell at auction. When possible, the estimate is based on previous auction records of comparable pieces. The estimates are determined several months before a sale and are therefore subject to change upon further research of the property, or to reflect market conditions or currency fluctuations. Estimates should not be relied upon as a representation or prediction of actual selling prices.

**Provenance** In certain circumstances, Sotheby's may print in the catalogue the history of ownership of a work of art if such information contributes to scholarship or is otherwise well known and assists in distinguishing the work of art. However, the identity of the seller or previous owners may not be disclosed for a variety of reasons. For example, such information may be excluded to accommodate a seller's request for confidentiality or because the identity of prior owners is unknown given the age of the work of art.

**Specialist Advice** Prospective bidders may be interested in specific information not included in the catalogue description of a lot. For additional information, please contact either a Sotheby's specialist in charge of the sale (all of whom are listed in the front of the catalogue), or Sotheby's Client Services Department. You may also request a condition report from the specialist in charge.

**The Exhibition** An exhibition of the auction property will be held the week prior to the auction on the days listed in the front of the catalogue. There you will have the opportunity to view, inspect and evaluate the property yourself, or with the help of a Sotheby's specialist.

**Salesroom Notices** Salesroom notices amend the catalogue description of a lot after our catalogue has gone to press. They are posted in the viewing galleries and salesroom or are announced by the auctioneer. Please take note of them.

**Registration** Sotheby's may require such necessary financial references, guarantees, deposits and/or such other security, in its absolute discretion, as security for your bid. If you are not successful on any lot, Sotheby's will arrange for a refund (subject to any right of set off) of the deposit amount paid by you without interest within 14 working days of the date of the sale. Any exchange losses or fees associated with the refund shall be borne by you. Registration to bid on Premium Lots must be done at least 3 business days prior to the sale.

### 3. DURING THE AUCTION

**The Auction** Auctions are open to the public without any admission fee or obligation to bid. The auctioneer introduces the objects for sale — known as "lots" — in numerical order as listed in the catalogue. Unless otherwise noted in the catalogue or by an announcement at the auction, Sotheby's acts as agent on behalf of the seller and does not permit the seller to bid on his or her own property. It is important for all bidders to know that the auctioneer may open the bidding on any lot by placing a bid on behalf of the seller. The auctioneer may further bid on behalf of the seller, up to the amount of the reserve, by placing responsive or consecutive bids for a lot. The auctioneer will not place consecutive bids on behalf of the seller above the reserve.

**Bidding in Person** If you would like to bid, you must register for a paddle upon entering the salesroom. The paddle is numbered so as to identify you to the auctioneer. To register, you will need a form of identification such as a driver's license, a passport or some other type of government issued identification. If you are a first-time bidder, you will also be asked for your address, phone number and signature in order to create your account. If you are bidding for someone else, you will need to provide a letter from that person authorizing you to bid on that person's behalf. Issuance of a bid paddle is in Sotheby's sole discretion.

Once the first bid has been placed, the auctioneer asks for higher bids, in increments determined by the auctioneer. To place your bid, simply raise your paddle until the auctioneer acknowledges you. You will know when your bid has been acknowledged; the auctioneer will not mistake a random gesture for a bid.

If you wish to register to bid on a Premium Lot, please see the paragraph above.

All lots sold will be invoiced to the name and address in which the paddle has been registered and cannot be transferred to other names and addresses. Sotheby's reserves the right to refuse to accept payment from a source other than the buyer of record.

**Absentee Bidding** If it is not possible for you to attend the auction in person, you may place your bid ahead of time. In the back of every catalogue there is an absentee bid form, which you can use to indicate the item you wish to bid on and the maximum bid you are willing to make. Return the completed absentee bid form to Sotheby's either by mail or fax. When the lot that you are interested in comes up for sale, a Sotheby's representative will execute the bid on your behalf, making every effort to purchase the item for as little as possible and never exceeding your limit. This service is free and confidential. For detailed instructions and information, please see the Absentee Bid Form and Guide for Absentee Bidders instructions at the back of this catalogue.

**Telephone Bidding** In some circumstances, we offer the ability to place bids by telephone live to a Sotheby's

representative on the auction floor. Please contact the Bid Department prior to the sale to make arrangements or to answer any questions you may have. Telephone bids are accepted only at Sotheby's discretion and at the caller's risk. Calls may also be recorded at Sotheby's discretion. By bidding on the telephone, prospective buyers consent thereto.

**Online Bidding** If you cannot attend the auction, it may be possible to bid online via BIDnow, eBay, Invaluable or other Online Platforms for selected sales. This service is free and confidential. For information about registering to bid via BIDnow, please see [www.sothebys.com](http://www.sothebys.com). For information about registering to bid on eBay, please see [www.ebay.com/sothebys](http://www.ebay.com/sothebys). For information about registering to bid on Invaluable, please see [www.invaluable.com/invaluable/help.cfm](http://www.invaluable.com/invaluable/help.cfm). Bidders utilizing any online platform are subject to the Online Terms as well as the relevant Conditions of Sale. Online bidding may not be available for Premium Lots.

**Employee Bidding** Sotheby's employees may bid in a Sotheby's auction only if the employee does not know the reserve and if the employee fully complies with Sotheby's internal rules governing employee bidding.

**US Economic Sanctions** The United States maintains economic and trade sanctions against targeted foreign countries, groups and organizations. There may be restrictions on the import into the United States of certain items originating in sanctioned countries, including Burma, Cuba, Iran, North Korea and Sudan. The purchaser's inability to import any item into the US or any other country as a result of these or other restrictions shall not justify cancellation or rescission of the sale or any delay in payment. Please check with the specialist department if you are uncertain as to whether a lot is subject to these import restrictions, or any other restrictions on importation or exportation.

**Hammer Price and the Buyer's Premium** For lots which are sold, the last price for a lot as announced by the auctioneer is the hammer price. A buyer's premium will be added to the hammer price and is payable by the purchaser as part of the total purchase price. The buyer's premium will be the amount stated in the Conditions of Sale.

**Currency Board** As a courtesy to bidders, a currency board is operated in many salesrooms. It displays the lot number and current bid in both U.S. dollars and foreign currencies. Exchange rates are approximations based on recent exchange rate information and should not be relied upon as a precise invoice amount. Sotheby's assumes no responsibility for any error or omission in foreign or United States currency amounts shown.

**Results** Successful absentee bidders will be notified after the sale. Absentee bidders will receive a list of sale results if they enclose a stamped self-addressed envelope with their absentee bid form. Printed lists of auction prices are available at our galleries approximately three weeks following

each auction and are sent on request to catalogue purchasers and subscribers. Results may also be obtained online at [sothebys.com](http://sothebys.com).

**International Auctions** If you need assistance placing bids, obtaining condition reports or receiving auction results for a Sotheby's sale outside the United States, please contact our International Client Services Department.

#### 4. AFTER THE AUCTION

**Payment** If your bid is successful, you can go directly to Post Sale Services to make payment arrangements. Otherwise, your invoice will be mailed to you. The final price is determined by adding the buyer's premium to the hammer price on a per-lot basis. Sales tax, where applicable, will be charged on the entire amount. Payment is due in full immediately after the sale. However, under certain circumstances, Sotheby's may, in its sole discretion, offer bidders an extended payment plan. Such a payment plan may provide an economic benefit to the bidder. Credit terms should be requested at least one business day before the sale. However, there is no assurance that an extended payment plan will be offered. Please contact Post Sale Services or the specialist in charge of the sale for information on credit arrangements for a particular lot. Please note that Sotheby's will not accept payments for purchased lots from any party other than the purchaser, unless otherwise agreed between the purchaser and Sotheby's prior to the sale.

**Payment by Cash** It is against Sotheby's general policy to accept single or multiple related payments in the form of cash or cash equivalents in excess of the local currency equivalent of US \$10,000. It is Sotheby's policy to request any new clients or purchasers preferring to make a cash payment to provide: verification of identity (by providing some form of government issued identification containing a photograph, such as a passport, identity card or driver's license), confirmation of permanent address and identification of the source of the funds.

**Payment by Credit Cards** Sotheby's accepts payment by credit card for Visa, MasterCard, and American Express only. Credit card payments may not exceed \$50,000 per sale. Payment by credit card may be made (a) online at <https://www.sothebys.com/en/invoice-payment.html>, (b) by calling in to Post Sale Services at +1 212 606 7444, or (c) in person at Sotheby's premises at the address noted in the catalogue.

**Payment by Check** Sotheby's accepts personal, certified, banker's draft and cashier's checks drawn in US Dollars (made payable to Sotheby's). While personal and company checks are accepted, property will not be released until such checks have cleared, unless you have a pre-arranged check acceptance agreement. Application for check clearance can be made through the Post Sale Services.

Certified checks, banker's drafts and cashier's checks are accepted at Sotheby's discretion and provided they are issued by a reputable financial institution governed by anti-money laundering laws. Instruments not meeting these requirements will be treated as "cash equivalents" and subject to the constraints noted in the prior paragraph titled "Payment By Cash".

**Payment by Wire Transfer** To pay for a purchase by wire transfer, please refer to the payment instructions on the invoice provided by Sotheby's or contact Post Sale Services to request instructions.

**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 picked up or delivered in New York State, regardless of the state or country in which the purchaser resides or does business. Purchasers who wish to use their own shipper who is not a considered a "common carrier" by the New York Department of Taxation and Finance will be charged New York sales tax on the entire charge regardless of the destination of the property. Please refer to "Information on Sales and Use Tax Related to Purchases at Auction" in the back of the catalogue.

**Collection and Delivery**  
Post Sale Services  
+ 1 212 606 7444  
FAX: + 1 212 606 7043  
[uspostsaleservices@sothebys.com](mailto:uspostsaleservices@sothebys.com)

Once your payment has been received and cleared, property may be released. Unless otherwise agreed by Sotheby's, all purchases must be removed by the 30th calendar day following a sale.

**Shipping Services** Sotheby's offers a comprehensive shipping service to meet all of your requirements. If you received a shipping quotation or have any questions about the services we offer please contact us.

**Collecting your Property** As a courtesy to purchasers who come to Sotheby's to collect property, Sotheby's will assist in the packing of lots, although Sotheby's may, in the case of fragile articles, choose not to pack or otherwise handle a purchase.

If you are using your own shipper to collect property from Sotheby's, please provide a letter of authorization and kindly instruct your shipper that they must provide a Bill of Lading prior to collection. Both documents must be sent to Post Sale Services prior to collection.

The Bill of Lading must include: the purchaser's full name, the full delivery address including the street name and number, city and state or city and country, the sale and lot number.

Sotheby's will contact your shipper within 24 hours of receipt of the Bill of Lading to confirm the date and time that your property can be collected. Property will not be released without this confirmation and your shipper must bring the same Bill of Lading that was faxed to Sotheby's when

collecting. All property releases are subject to the receipt of cleared funds.

Please see the Conditions of Sale for further details.

**Endangered Species** Certain property sold at auction, for example, items made of or incorporating plant or animal materials such as coral, crocodile, ivory, whalebone, tortoiseshell, rhinoceros horn, rosewood, etc., irrespective of age or value, may require a license or certificate prior to exportation and additional licenses or certificates upon importation to another country. Sotheby's suggests that buyers check on their government wildlife import requirements prior to placing a bid. Please note that the ability to obtain an export license or certificate does not ensure the ability to obtain an import license or certificate as well as any other required documentation. In the case of denial of any export or import license or of delay in the obtaining of such licenses, the purchaser is still responsible for making on-time payment of the total purchase price for the lot.

Although licenses can be obtained to export some types of endangered species, other types may not be exported at all, and other types may not be resold in the United States. Upon request, Sotheby's is willing to assist the purchaser in attempting to obtain the appropriate licenses and/or certificates. However, there is no assurance that an export license or certificate can be obtained. Please check with the specialist department or the Shipping Department if you are uncertain as to whether a lot is subject to these export/import license and certificate requirements, or any other restrictions on exportation.

**The Art Loss Register** As part of Sotheby's efforts to support only the legitimate art market and to combat the illegitimate market in stolen property, Sotheby's has retained the Art Loss Register to check all uniquely identifiable items offered for sale in this catalogue that are estimated at more than the equivalent of US\$1,500 against the Art Loss Register's computerized database of objects reported as stolen or lost. The Art Loss Register is pleased to provide purchasers with a certificate confirming that a search has been made. All inquiries regarding search certificates should be directed to The Art Loss Register, First Floor, 63-66 Hatten Garden, London EC1N 8LE or by email at [artloss@artloss.com](mailto:artloss@artloss.com). The Art Loss Register does not guarantee the provenance or title of any catalogued item against which they search, and will not be liable for any direct or consequential losses of any nature howsoever arising. This statement and the ALR's service do not affect your rights and obligations under the Conditions of Sale applicable to the sale.



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## SELLING AT AUCTION

If you have property you wish to sell, Sotheby's team of specialists and client services representatives will assist you through the entire process. Simply contact the appropriate specialist (specialist departments are listed in the back of this catalogue). General Inquiries Department or a Sotheby's regional office representative for suggestions on how best to arrange for evaluation of your property.

**Property Evaluation** There are three general ways evaluation of property can be conducted:

### (1) In our galleries

You may bring your property directly to our galleries where our specialists will give you auction estimates and advice. There is no charge for this service, but we request that you telephone ahead for an appointment. Inspection hours are 9:30 am to 5 pm, Monday through Friday.

### (2) By photograph

If your property is not portable, or if you are not able to visit our galleries, you may bring in or send a clear photograph of each item. If you have a large collection, a representative selection of photographs will do. Please be sure to include the dimensions, artist's signature or maker's mark, medium, physical condition and any other relevant information. Our specialists will provide a free preliminary auction estimate subject to a final estimate upon first-hand inspection.

### (3) In your home

Evaluations of property can also be made in your home. The fees for such visits are based on the scope and diversity of property, with travel expenses additional. These fees may be rebated if you consign your property for sale at Sotheby's. If there is considerable property in question, we can arrange for an informal "walkthrough."

Once your property has been evaluated, Sotheby's representatives can then help you determine how to proceed should you wish to continue with the auction process. They will provide information regarding sellers' commission rates and other charges, auction venue, shipping and any further services you may require.

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## SOTHEBY'S SERVICES

Sotheby's also offers a range of other services to our clients beyond buying and selling at auction. These services are summarized below. Further information on any of the services described below can be found at [sothebys.com](http://sothebys.com).

**Valuations and Appraisals** Sotheby's Valuations and Appraisals Services offers advice regarding personal property assets to trusts, estates, and private clients in order to help fiduciaries, executors, advisors, and collectors meet their goals. We provide efficient and confidential advice and assistance for all appraisal and auction services. Sotheby's can

prepare appraisals to suit a variety of needs, including estate tax and planning, insurance, charitable contribution and collateral loan. Our appraisals are widely accepted by the Internal Revenue Service, tax and estate planning professionals, and insurance firms. In the event that a sale is considered, we are pleased to provide auction estimates, sales proposals and marketing plans. When sales are underway, the group works closely with the appropriate specialist departments to ensure that clients' needs are met promptly and efficiently.

**Financial Services** Sotheby's offers a wide range of financial services including advances on consignments, as well as loans secured by art collections not intended for sale.

**Museum Services** Tailored to meet the unique needs of museums and nonprofits in the marketplace, Museum Services offers personal, professional assistance and advice in areas including appraisals, deaccessions, acquisitions and special events.

**Corporate Art Services** Devoted to servicing corporations, Sotheby's Corporate Art Services Department can prepare appraisal reports, advise on acquisitions and deaccessions, manage all aspects of consignment, assist in developing arts-management strategies and create events catering to a corporation's needs.

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## INFORMATION ON SALES AND USE TAX RELATED TO PURCHASES AT AUCTION

To better assist our clients, we have prepared the following information on Sales and Use Tax related to property purchased at auction.

### Why Sotheby's Collects Sales Tax

Virtually all State Sales Tax Laws require a corporation to register with the State's Tax Authorities and collect and remit sales tax if the corporation maintains a presence within the state, such as offices. In the states that impose sales tax, Tax Laws require an auction house, with a presence in the state, to register as a sales tax collector, and remit sales tax collected to the state. New York sales tax is charged on the hammer price, buyer's premium and any other applicable charges on any property picked up or delivered in New York, regardless of the state or country in which the purchaser resides or does business.

### Where Sotheby's Collects Sales Tax

Sotheby's is currently registered to collect sales tax in the following states: California, Colorado, Connecticut, Florida, Illinois, Maryland, Massachusetts, Minnesota, Missouri, New Jersey, New York, Ohio, Pennsylvania, Texas and Washington. For any property collected or received by the purchaser in New York City, such property is subject to sales tax at the existing New York State and City rate of 8.875%.

**Sotheby's Arranged Shipping** If the property is delivered into any state in which Sotheby's is registered, Sotheby's is required by law to collect and remit the appropriate sales tax in effect in the state where the property is delivered.

**Client Arranged Shipping** Property collected from Sotheby's New York premises by a common carrier hired by the purchaser for delivery at an address outside of New York is not subject to New York Sales Tax, but if the property is delivered into any state in which Sotheby's is registered, Sotheby's is required by law to collect and remit the appropriate sales tax in effect in the state where the property is delivered. New York State recognizes shippers such as the United States Postal Service, United Parcel Service, FedEx, or the like as "common carriers". If a purchaser hires a shipper other than a common carrier to pick up property, Sotheby's will collect New York sales tax at a rate of 8.875% regardless of the ultimate destination of the goods. If a purchaser utilizes a freight-forwarder who is registered with the Transportation Security Administration ("TSA") to deliver property outside of the United States, no sales tax would be due on this transaction.

### Where Sotheby's is Not Required

**to Collect Sales Tax** Sotheby's is not required to collect sales tax on property delivered to states other than those listed above. If the property is delivered to a state where Sotheby's is not required to collect sales tax, it is the responsibility of the purchaser to self-assess any sales or use tax and remit it to taxing authorities in that state.

Sotheby's is not required to collect sales tax for property delivered to the purchaser outside of the United States.

### Restoration and Other Services

Regardless of where the property is subsequently transported, if any framing or restoration services are performed on the property in New York, it is considered to be a delivery of the property to the purchaser in New York, and Sotheby's will be required to collect the 8.875% New York sales tax.

**Certain Exemptions** Most states that impose sales taxes allow for specified exemptions to the tax. For example, a registered re-seller such as a registered art dealer may purchase without incurring a tax liability, and Sotheby's is not required to collect sales tax from such re-seller. The art dealer, when re-selling the property, may be required to charge sales tax to its client, or the client may be required to self-assess sales or use tax upon acquiring the property.

**Local Tax Advisors** As sales tax laws vary from state to state, Sotheby's recommends that clients with questions regarding the application of sales or use taxes to property purchased at auction seek tax advice from their local tax advisors.

### Photography:

Scott Elam  
Jen Fong  
Peter Kutscher  
Glenn Steigelman  
Ellen Warfield





## GUIDE FOR ABSENTEE AND TELEPHONE BIDDERS

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If you are unable to attend an auction in person, you may give Sotheby's Bid Department instructions to bid on your behalf by completing the form overleaf. This service is confidential and available at no additional charge.

### General

This service is free and confidential.

Please record accurately the lot numbers, descriptions and the top hammer price you are willing to pay for each lot.

We will try to purchase the lot(s) of your choice for the lowest price possible and never for more than the maximum bid amount you indicate.

"Buy" or unlimited bids will not be accepted.

Alternative bids can be placed by using the word "OR" between lot numbers. Then if your bid on an early lot is successful, we will not continue to bid on other lots for you. Or, if your early bids are unsuccessful, we will continue to execute bids for alternative lots until a bid is successful.

Bids must be placed in the same order as in the catalogue.

The form should be used for one sale only – please indicate the sale number, title and date on the form.

Please place your bids as early as possible, as in the event of identical bids the earliest received will take precedence. Wherever possible bids should be submitted at least twenty-four hours before the auction.

Where appropriate, your bids will be rounded down to the nearest amount consistent with the auctioneer's bidding increments.

Absentee bids, when placed by telephone, are accepted only at the caller's risk and must be confirmed by letter or fax to the Bid Department on +1 212 606 7016.

Please note that the execution of written bids is offered as an additional service for no extra charge at the bidder's risk and is undertaken subject to Sotheby's other commitments at the time of the auction; Sotheby's therefore cannot accept liability for error or failure to place such bids, whether through negligence or otherwise.

Successful bidders will receive an invoice detailing their purchases and giving instructions for payment and clearance of goods. Unsuccessful bidders will be advised.

Please note Sotheby's reserves the right to refuse to accept payment from a source other than the buyer of record.

All bids are subject to the conditions of sale and terms of guarantee applicable to the sale printed in the sale catalogue. Buyer's premium in the amount stated in paragraph 3 of the Conditions of Sale in the back of the sale catalogue will be added to the hammer price as part of the total purchase price, plus any applicable sales tax.

In the event that you are successful, payment is due immediately after the sale unless otherwise agreed in advance. Payment may be made by bank transfer, credit card (which may be subject to a convenience fee), check or cash (up to US\$10,000). You will be sent full details on how to pay with your invoice. It is against Sotheby's general policy to accept single or multiple related payments in the form of cash or cash equivalents in excess of US\$10,000.

It is Sotheby's policy to request any new clients or purchasers preferring to make a cash payment to provide: proof of identity (by providing some form of government issued identification containing a photograph, such as a passport, identity card or driver's license) and confirmation of permanent address.

We reserve the right to seek identification of the source of funds received.

### Data Protection

Sotheby's will use information provided by its clients (or which Sotheby's otherwise obtains from eBay or other sources relating to its clients) for the provision of auction and other art-related services, loan services, client administration, marketing and otherwise to manage and operate its business, or as required by law, in accordance with Sotheby's Privacy Policy. This will include information such as the client's name and contact details, proof of identity, financial information, records of the client's transactions, and preferences. Some gathering of information about Sotheby's clients will take place using technical means to identify their preferences in order to provide a higher quality of service to them. Sotheby's may also disclose the client information to other Sotheby's Companies and/or third parties acting on their behalf to provide services for these purposes.

Sometimes, Sotheby's may also disclose this information to carefully selected third parties for their own marketing purposes. If you do not wish your details to be used for this purpose, please email enquiries@sothebys.com.

If the client provides Sotheby's with information that is defined by European data protection laws as "sensitive", the client agrees that it may be used for the purposes set out above.

In the course of these disclosures, personal data collected in the European Economic Area may be disclosed to countries outside the European Economic Area. Although such countries may not have legislation that protects a client's personal information, Sotheby's shall take great care to keep such information secure and in accordance with European data protection principles. By agreeing to these Conditions of Business, the client is agreeing to such disclosure.

Please be aware that Sotheby's may film auctions or other activities on Sotheby's premises and that such recordings may be transmitted over the Internet via Sotheby's website, the eBay website and other Online Platforms. Telephone bids may be recorded.

Under European data protection laws, a client may object, by request and free of charge, to the processing of their information for certain purposes, including direct marketing, and may access and rectify personal data relating to them and may obtain more information about Sotheby's data protection policies by writing to Sotheby's, 34-35 New Bond Street, London W1A 2AA, or 1334 York Avenue, New York, NY 10021, Attn: Compliance, or emailing enquiries@sothebys.com. Sotheby's use of information collected about eBay users may differ and is governed by the terms of the eBay Privacy Policy and Sotheby's on eBay Live Auction Platform Privacy Policy, which can be found on the Sotheby's on eBay Live Auction Website.

### Important

Please note that the execution of written and telephone bids is offered as an additional service for no extra charge, and at the bidder's risk. It is undertaken subject to Sotheby's other commitments at the time of the auction. Sotheby's therefore cannot accept liability for failure to place such bids, whether through negligence or otherwise. All bids will be executed and are accepted subject to the "Conditions of Sale" and "Terms of Guarantee" printed in the catalogue for the sale. Please note that a buyer's premium in the amount stated in paragraph 3 of the "Conditions of Sale" in the back of the sale catalogue will be added to the hammer price as part of the total purchase price, plus any applicable sales tax.

### New Clients

Please note that we may contact you to request a bank reference. In addition Sotheby's requires a copy of government issued photo ID in order to generate a new account. If you have opened a new account with Sotheby's since 1 December, 2002, and have not already done so, you will be asked to present appropriate documentation confirming your identity before your lots or sale proceeds can be released to you.

### For Written/Fixed Bids

- Bids will be executed for the lowest price as is permitted by other bids or reserves.
- "Buy" or unlimited bids will not be accepted and we do not accept "plus one" bids. Please place bids in the same order as in the catalogue.
- Always indicate a "top limit" — the amount up to which you would bid if you were attending the auction yourself.
- Alternative bids can be placed by using the word "or" between lot numbers.
- Where appropriate your written bids will be rounded down to the nearest amount consistent with the auctioneer's bidding increments.

### For Telephone Bids

Please clearly specify the telephone number on which you may be reached at the time of the sale, including the country code. We will call you from the saleroom shortly before your lot is offered.

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CHEMNITZ 1/s.







Sotheby's EST. 1744

Collectors gather here.