



SCIENCE & NAVIGATION

A Catalogue of 50 Rare Books and Curiosities



1. ADAMS, GEORGE, A FINE BRASS UNIVERSAL EQUINOCTIAL RING DIAL.

English, third quarter of the 18th century, signed "G Adams London," the meridian ring engraved with latitude scale 90-0-90 degrees, reverse with scale for determining solar altitude and zennith distance, equinoctial ring with obverse engraved with hour scale in Roman numerals, central bridge with pin-hole sliding over calendar and zodiac scales, 100 mm diam.

£4,000

George Adams was apprenticed to James Parker in 1724 and turned over to Thomas Heath in 1726, he was freed as a member of the Grocer's company in 1733 and the following year he was working in Fleet Street, London. his appointments include: Royal appointment to the Prince of Wales and George III, mathematical instruments maker to the Office of Ordnance and supplier of instruments to Christ's Hospital. Two of his sons were also mathematical instrument makers.



An Extremely Scarce Work On Navigation

2. **AGRIPPA, CAMILLO**, Nuove Inventioni di Camillo Agrippa Milanese.

FIRST EDITION, [4], 52, [2]pp., Sig. [2] A-G4, 2 engraved folding plates, one with skillful tear repairs, wood cut printers device to title, woodcut head-and-tail pieces, inhabited initials, contemporary vellum over boards, 4to, Rome, Presso a Domenico Gigliotti, 1595

£7,500

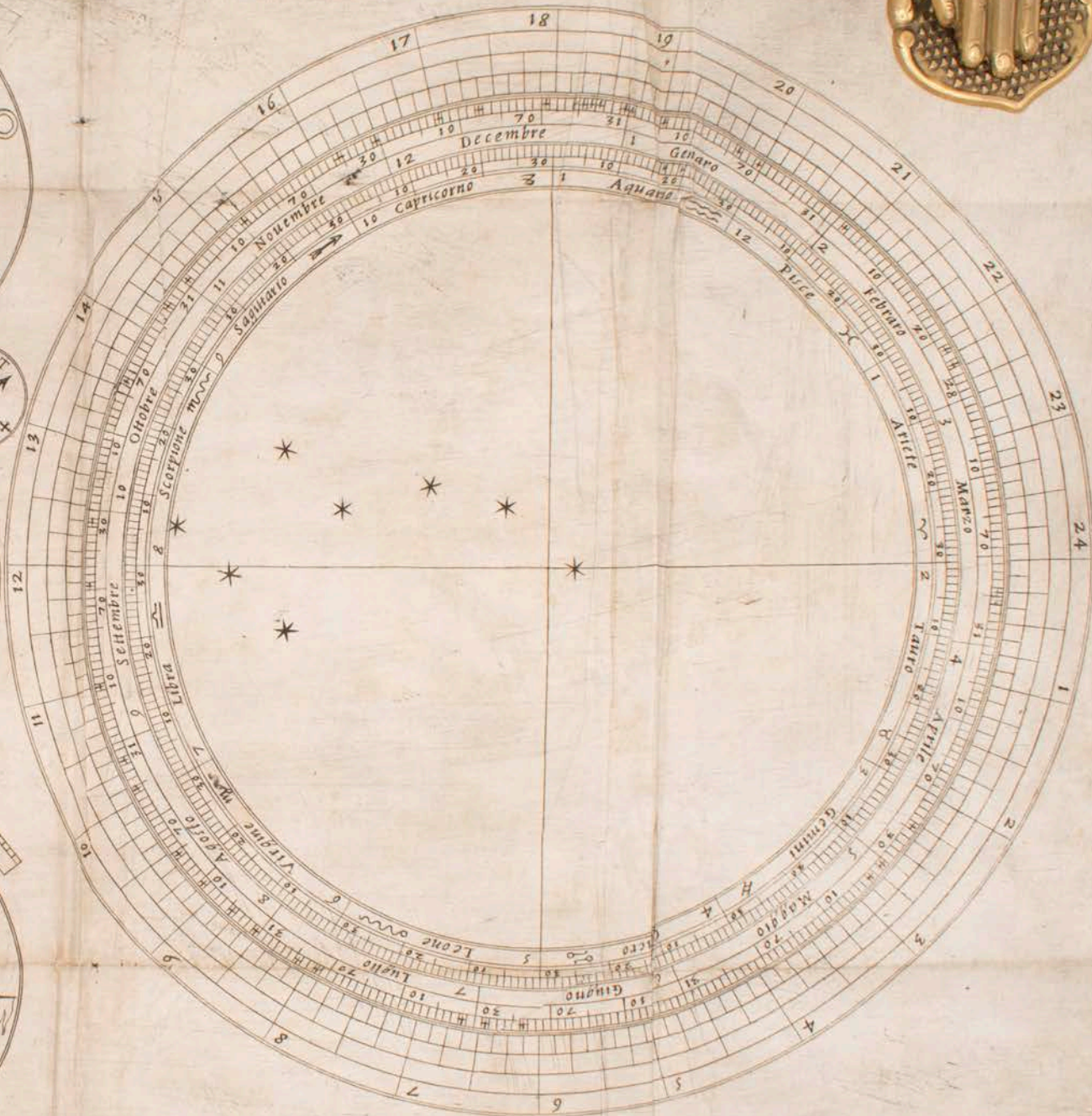
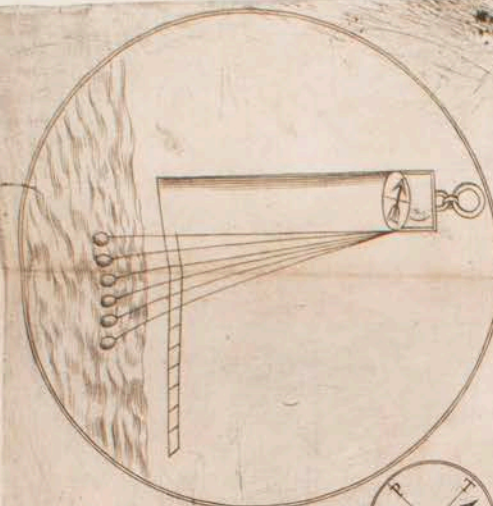
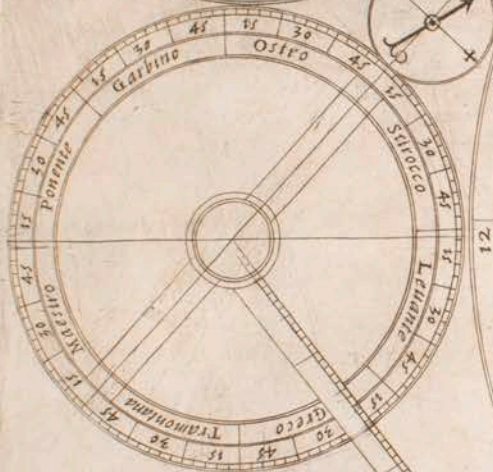
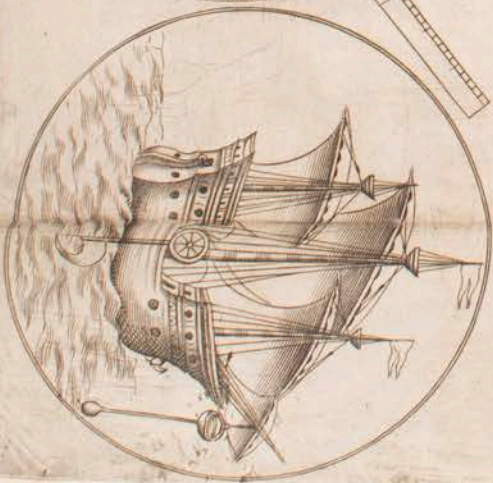
Camillo Agrippa (c. 1520–1600) was a sixteenth-century architect, engineer, and natural philosopher. Born in Milan, he spent the majority of his career in Renaissance Rome, where he was associated with Farnese and Medici circles and was also a member of the Confraternity of St. Joseph of the Holy Land, itself a centre for artisans and artists. Primarily known as an expert on fencing and swordsmanship, Agrippa used his knowledge of geometry to revolutionise techniques in this field.

In this work he applies his skills to the issue of navigation.

The copies at Harvard, Folger and the Smithsonian have two folding plates (present in this copy), however, the copies held at The National Maritime Museum & University of Kwazulu Natal Library have three. There is also a portrait frontispiece of the author that is not present in this copy.



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Highly Respected Work On Astronomy And Navigation

3. **APIANUS, PETRUS; FRISIUS, GEMMA**, *Cosmographicus liber Petri Apiani mathematici studiose correctus, ac erroribus vindicatus per Gemmam Phrysium*.

Sig. A-P4,Q6, 4 moveable volvelles, numerous wood cut text illustrations throughout of globes, astronomical instruments, calendars and volvelles, final leaf lower corner skillfully repaired, not affecting text, early vellum, remboitage, 4to, Antwerp, Gregoriu Bontiu, 1534

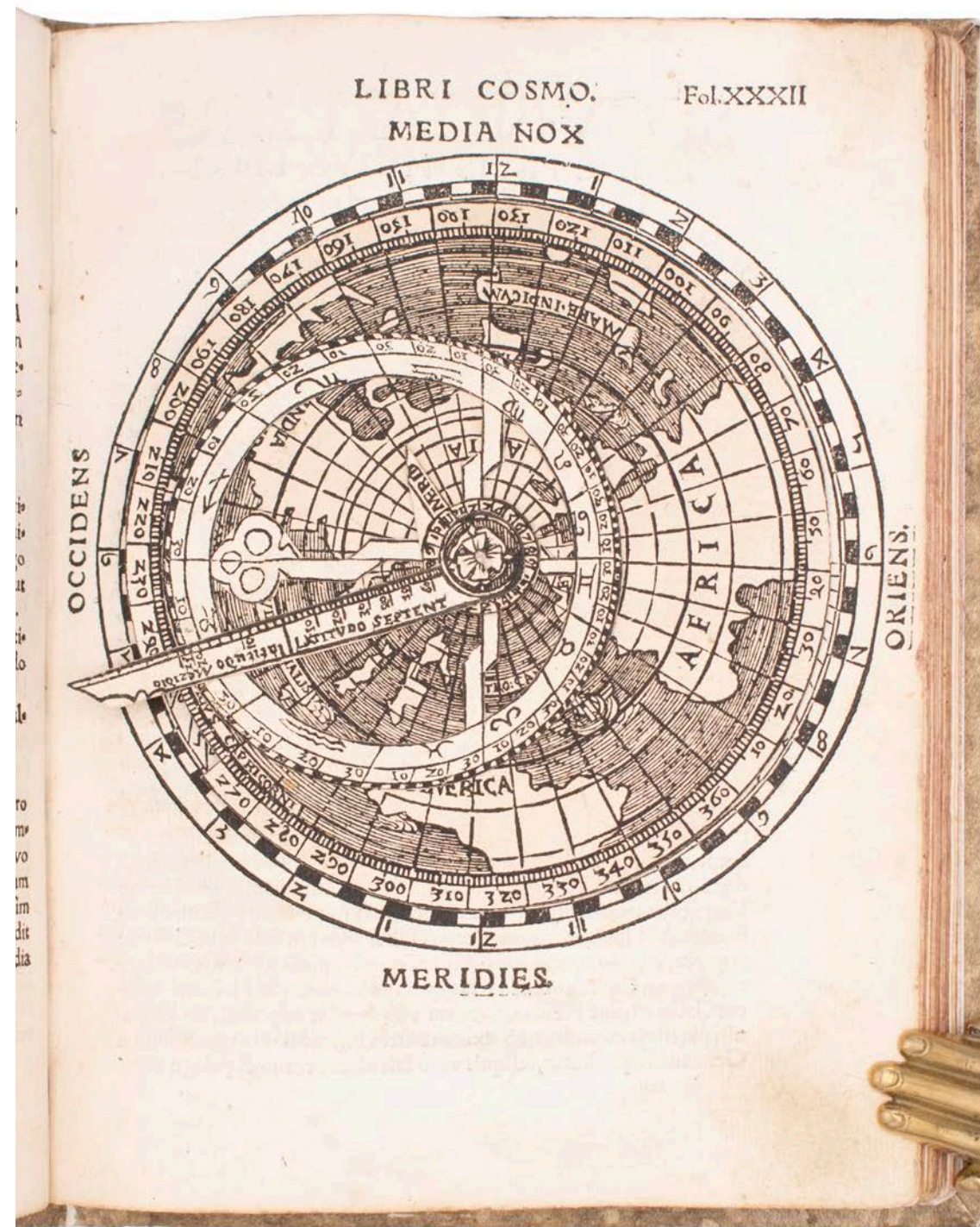
£8,500

First published in 1524, the *Cosmographia* provided a layman's introduction to a range of subjects including astronomy, geography, cartography, surveying, navigation and mathematical instruments. *Cosmographia* is divided into two main parts; one discussing the principles of cosmography, the other providing cosmographical data, e.g. a general geographical description of four continents, and a table of 1417 places with their coordinates.

Gemma Frisius produced a new edition of *Cosmographia* just five years after the original was published. In 1533, the original, corrected work was enlarged by the addition of two short works by Frisius; *De locorum describendorum ratione* (Concerning the method of describing places) and *De eorum distantijs inveniendis* (Concerning determining their distances). Gemma described the theory of trigonometric surveying and in particular it contains the first proposal to use triangulation as a method of accurately locating places. It was with Frisius's additions that the popularity of the *Cosmographia* soared.

The manual became a highly respected work on astronomy and navigation that was to see over forty reprints in 14 languages and that remained popular until the end of the 16th century. Although one of the reasons for the book's enormous popularity was undoubtedly its discussion of the newly discovered lands in the New World, available in all editions. Another was the book's inclusion of ingenious volvelles or paper devices which enabled one to solve practical mathematical problems relating to time-telling, the calendar, astronomy and astrology.

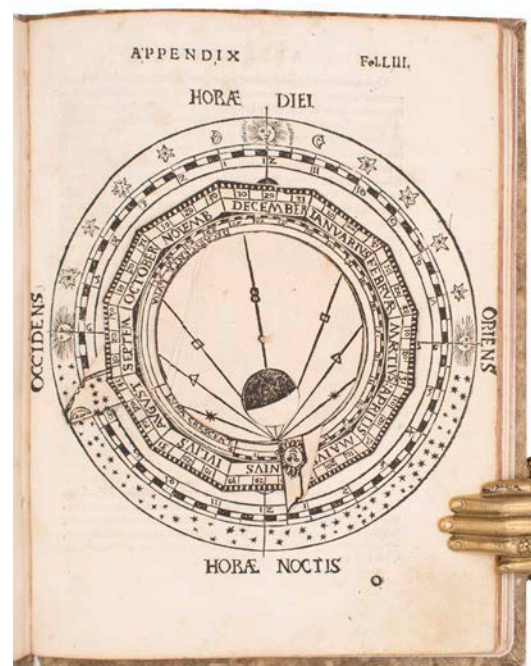
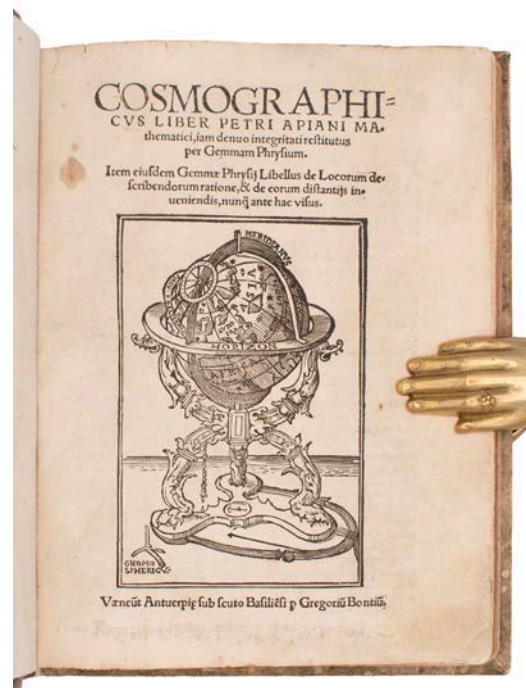
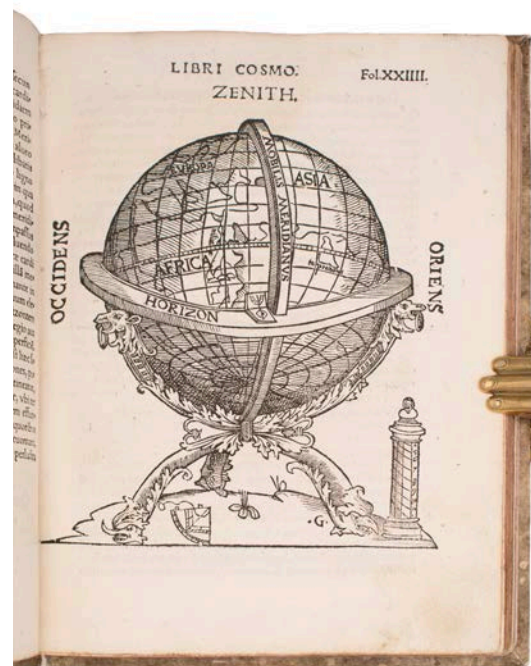
Regnier Gemma Frisius was born in 1508, and went on to become the leading theoretical mathematician in the Low Countries and also to become professor of medicine and mathematics at the University of Louvain. He was the first to describe how an accurate clock could be used to determine longitude. While still a student, Frisius set up a workshop to produce globes and mathematical instruments. Frisius created or improved many instruments, including the cross-staff, the astrolabe and the astronomical rings. In 1530 he produced a combined terrestrial and celestial globe, which was engraved by the



goldsmith Gaspar Van der Heyden and by the end of the year the globe could be bought from his workshops in Louvain. To supplement the globe he published in the same year in Antwerp the treatise *De Principiis Astronomiae Cosmographicae*. In the first part of it are explained geographical and astronomical terms such as latitude, longitude, meridian, poles, eclipses, signs of the zodiac etc. The second part gives instructions how the globe could be used while the third part vividly describes for the reader the peoples, geographical discoveries, navigation to the New World and the possible route to Cathay and many more distant lands.

He became noted for the quality and accuracy of his instruments, which were praised by Tycho Brahe, among others. His students included Gerardus Mercator (who became his collaborator), Johannes Stadius, John Dee, Andreas Vesalius and Rembert Dodoens.

(cf. G. Kish, *Medicina, mensura, mathematica: The Life and Works of Gemma Frisius*, Minneapolis, MN, 1967, *passim*). *Index Aureliensis* 106.444; J. Alden & D.C. Landis, *European Americana: a chronological guide to works printed in Europe relating to the Americas, 1493-1776*, (New York, 1980-1997), 550/3; F. van Otroy, *Bibliographie des oeuvres de Pierre Apian*, (Besançon, 1902), no. 38; F. van der Haegen & M.-Th. Lenger, *Bibliotheca Belgica. Bibliographie générale des Pays-Bas*, (Bruxelles, 1964), I, A-222; H. Röttel & W. Kaunzner, *Die Druckwerke Peter Apians*, in: "Peter Apian. Astronomie, Kosmographie und Mathematik am Beginn der Neuzeit", K. Röttel, ed., (Eichstätt, 1995), p. 263.



Photograph Album From The Third Bathysphere Expedition

4. [BEEBE, WILLIAM] BERMUDA DEEP SEA EXPEDITION, BATHYSPHERE, NONSUCH ISLAND - Photo Album 1930-1931

A collection of 163 small format black and white photographs of the research team and their work on land and sea, manuscript captions on verso, preserved in a photo album, 45pp., oblong folio, black wrapper, [1930-1931]

£6,000

The collection was compiled by Jackson Edwin Guernsey (1910-1998), a laboratory assistant on the expedition, while he was an undergraduate at Williams College. The photographs were taken during the third Bermuda Oceanographic Expedition, led by naturalist and explorer Charles William Beebe (1877-1962). William Beebe is regarded as one of the founders of the field of ecology, as well as one of the early 20th century's major advocates of conservation.

The New York Zoological Society funded Beebe's research in developing the Bathysphere, a vessel capable of exploring the ocean at great depths. Beebe's dives in the Bathysphere off the coast of Bermuda were the first time a biologist observed deep-sea animals in their native environment.

Although no descents in the Bathysphere were made during this expedition, due to the lack of extended periods of calm weather at sea, the expedition was still successful. Numerous new species were identified, including a deep sea eel with a scarlet light organ near the tail. An intensive study was made of the characters of sharks, with eleven Bermuda species differentiated. The most important discovery was that the bottom of the deep sea area under investigation was a submerged beach, with many corals, shells and pebbles brought up in the dredge.

The scientists, research assistants, and other contributors to the project are depicted working and socialising in this fascinating album. Almost all contributors, and often the photographers themselves are identified on the backs of the photos. Along with Guernsey and Beebe, we find photographs of Gloria Hollister, who set a world record for the deepest dive performed by a woman, on her thirtieth birthday in the bathysphere; John Tee-Van, a valuable member of Beebe's famed team for over 26 years; Jocelyn Crane, who studied crustaceans and specialized in fiddler crabs; natural history illustrator for the Zoological Society's Helene-Therese Tee-Van; Kathryn Leigh [aka Binx], who served as laboratory secretary; photographer Amos Burg who took 3500 feet of film during the expedition; Patten George, who died in Bermuda, aged 18, of appendicitis; Else Bostlemann, another artist, and many others.



Many interesting visitors were also photographed, including Professor A.L. Treadwell, head of the Zoology department at Vassar College; George Putnam, one of the most successful promoters in the US and widower to Amelia Earhart; and artist Philbrick Crouch. Several of the local people, along with animals and views of Nonsuch Island and Bermuda also appear throughout the album.

"Katherine Leigh (Binx) holding grapsus grapsus, the common land crab, tied to my water-string. On the eastern side of south point, nonsuch, bermuda. "Having nothing else to do" - we had taken a walk. June 29, 1931."

The captions on the backs do more than simply identify the contributor and photographer, they also recount the circumstances in which the photograph was taken: "Happy Hawkins, 16 years of age, dead drunk in front of his tent - the sun helped the whiskey. July 1931. Nonsuch Bermuda."

A charming and unique set of images from the earliest days of the development of the bathysphere.

Provenance: Jackson Edwin Guernsey (1910-1998) was raised in Shavertown, PA. After graduating from Williams College in 1931, he embarked on a career as a science teacher.



A Very Important Book In The History Of Navigation

5. BLUNDEVILLE, THOMAS, Mr. Blundevil his exercises containyng eight treatises, the titles wherof are set down in the next printed page. Which treatises are very necessary to be read and learned of all young gentlemen, that have not been exercised in such disciplines, and yet are desirous to have knowledge as well in cosmographie, astronomie, and geographie, as also in the arte of navigation ... To the furtherance of which art of navigation, the said Mr. Blundevil specially wrote the said treatises, and of meere good will doth dedicate the same to all young gentlemen of this realme.

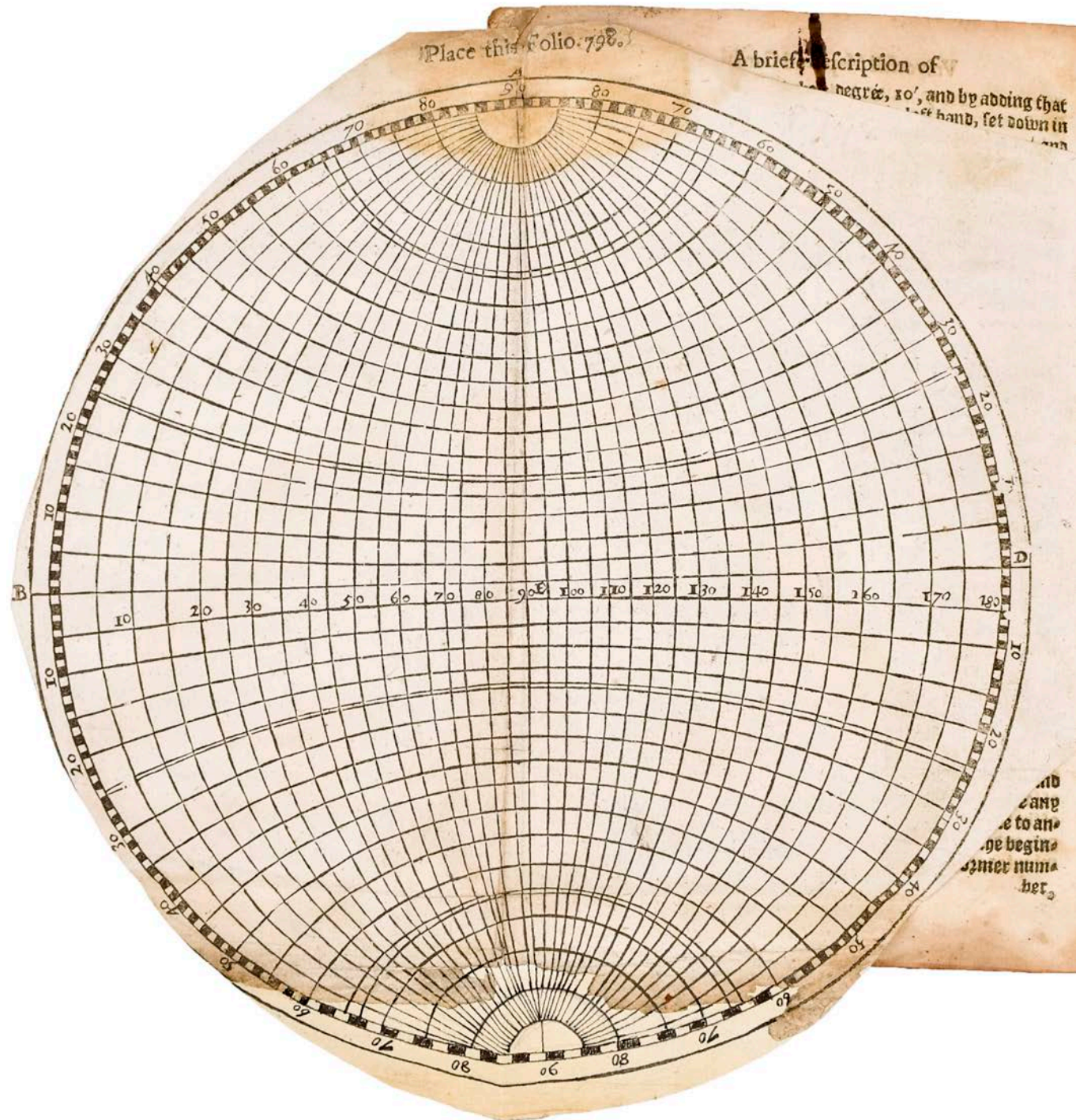
London, 1636: Printed by Richard Bishop, and are to be sold by Benjamin Allen at the signe of the Flowerdeluce in Popes-head Alley. The seventh edition, corrected and somewhat enlarged by Ro. Hartwell philomathematicus, Contemporary calf, rebacked.

"A briefe description of the tables of three speciaall right lines belonging to a circle, called sines, tangents, and secants", "A plaine description of Mercator his two globes", "A plaine and full description of Petrus Plancius his universall map", "A very briefe and most plain description of Mr Blagrave his astrolabe", and "A briefe description of universall maps and cards". Each have separate dated title page; "A plaine treatise of the first principles of cosmography" and "A nev and necessary treatise of navigation" each have separate title page; foliation and register are continuous. - "A briefe description of universal mappes and cards" was first published separately in 1589. With moveable volvelles on leaves 315, 720, 744.

£7,500

A very important book in the history of navigation 'The Exercises' described the world map of Petrus Plancius, Molyneux's large terrestrial globe, being the first globe to be made in England, the works of John Balgrave, Gemma Frisius, and the cross-staff of Thomas Hood.

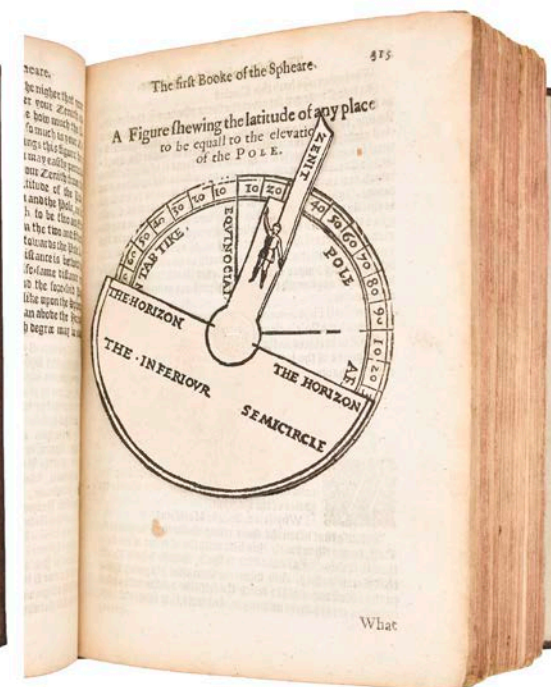
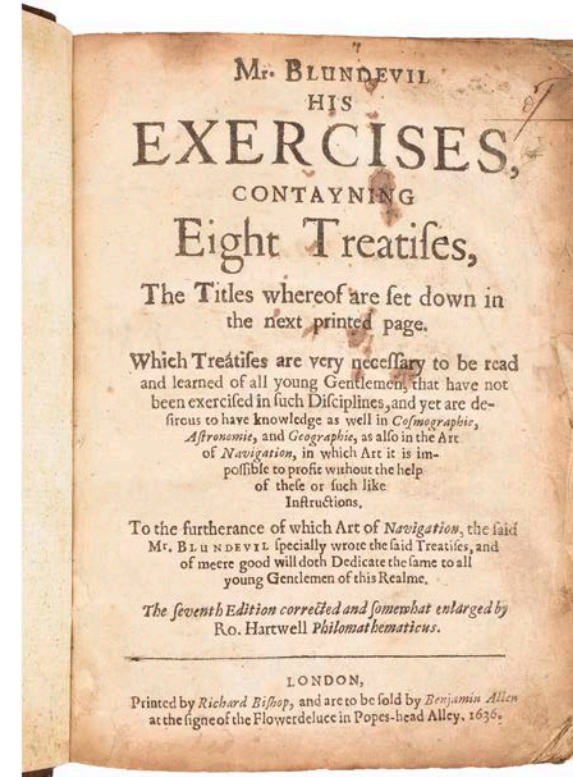
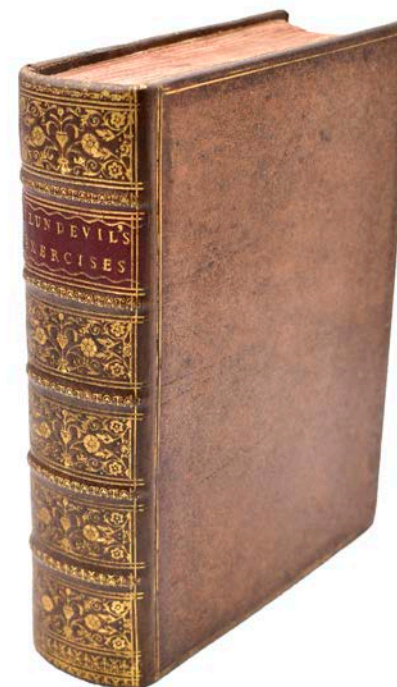
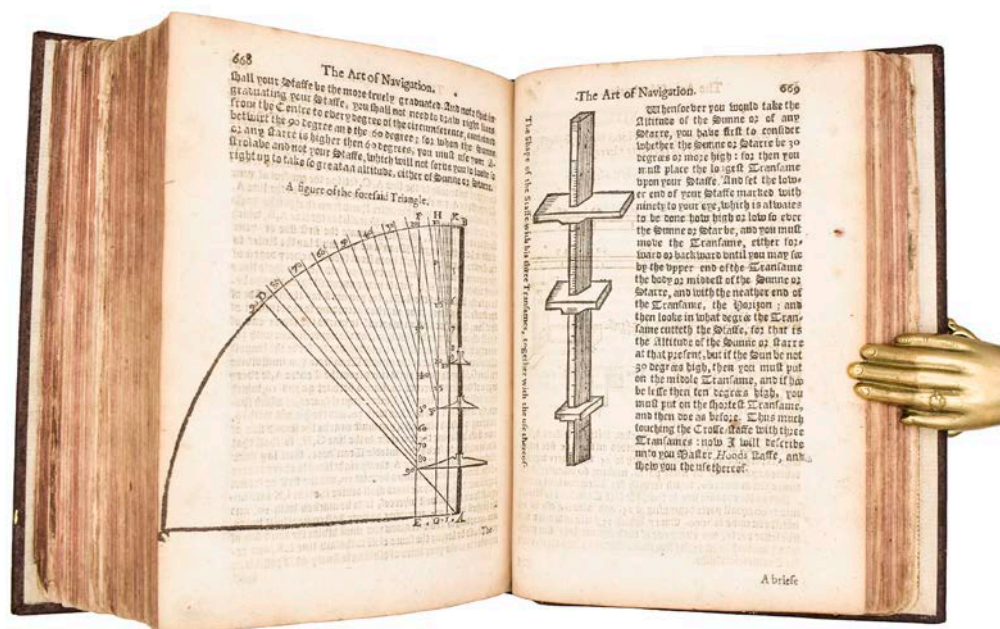
He first published his Exercises in six parts, containing a brief account of arithmetic, cosmography, the use of the globes, a universal map, the astrolabe, and navigation. The arithmetic is taken from Recorde, but to it are added trigonometrical tables (copied from Clavius) of the natural sines, tangents, and secants of all angles in the first quadrant; the difference between consecutive angles being one minute. These are worked out to seven places of decimals. This is the earliest English work



in which plane trigonometry is introduced. Later editions including this 1636 edition (from 1613 onwards) showed the circumnavigations of Francis Drake and Thomas Cavendish.

His circle of friends included Sir Nicholas Bacon and mathematicians and astronomers including John Dee, Edward Wright, Henry Briggs and William Gilbert.

In his 'Briefe Description of Universal Mappes and Cardes'. Blundeville had worked with William Barlow (magnetism and particularly compasses at sea) and others on the required scientific instruments and has been credited with the invention of the protractor - he described a semicircular instrument for measuring angles.



6. BOOTH, WILLIAM, A Miniature Portrait of JAMES FORBES [1809-1868] Scottish physicist and glaciologist.

Watercolour on ivory inscribed verso 'William Booth pinxit' dated 'London July 26th 1841'. The artist, Booth [1807-1845] was born in Scotland. Here, he paints the thirty-two year old Forbes in a tartan waistcoat. Black lacquer frame with gilt brass thistle and rose hanger. Aperture size approx 5cms x 4 cms, overall 10 cms x 8.5 cms.

£1,250

Forbes was born on 20 April 1809 at 86 George Street in Edinburgh, the fourth son of Sir William Forbes, 7th Baronet, of Monymusk and Pitsligo (1773–1828) and Williamina Belches of Invermay. His brothers were the advocate and agriculturalist Sir John Stuart Hepburn Forbes of Fettercairn and Pitsligo and the banker Charles Forbes.

He entered the University of Edinburgh in 1825, and soon afterwards began to contribute papers to the Edinburgh Philosophical Journal anonymously under the signature "Δ". At the age of nineteen he became a fellow of the Royal Society of Edinburgh, and in 1832 he was elected to the Royal Society of London. At this time he maintained correspondence with Sir David Brewster, who encouraged him to pursue an original research in science. A year later he was appointed professor of natural philosophy at the University of Edinburgh in succession to Sir John Leslie, and during his tenure of that office, which he did not give up till 1860, he not only proved himself an active and efficient teacher, but also did much to improve the internal conditions of the University. In 1859 he was appointed successor to Brewster in the principalship of the United College of St Andrews, a position which he held until his death at Clifton in 1868.

As a scientific investigator he is best known for his researches on heat and on glaciers. Between 1836 and 1844 he published in the Trans. Roy. Soc. Ed. four series of "Researches on Heat," in the course of which he demonstrated that tourmaline would polarise infrared thermal radiation, by transmission through a bundle of thin mica plates inclined to the transmitted ray, and by reflection from the multiplied surfaces of a pile of mica plates placed at the polarising angle, and also its circular polarisation by two internal reflections in rhombs of rock salt. His work won him the Rumford Medal of the Royal Society in 1838, and in 1843 he received its Royal Medal for a paper on the "Transparency of the Atmosphere and the Laws of Extinction of the Sun's Rays passing through it."

In 1846 he began experiments on the temperature of the earth at different depths and in different soils near Edinburgh, which yielded determinations of the thermal conductivity of trap-tufa, sandstone and pure loose sand. Towards the end of his life he was occupied with experimental inquiries into the laws of the conduction of heat in iron bars, and his last piece of work was to show that the thermal conductivity of iron diminishes with



increase of temperature.

His attention was directed to the question of the flow of glaciers in 1840 when he met Louis Agassiz at the Glasgow meeting of the British Association, and in subsequent years he made several visits to Switzerland, where he was particularly impressed by Bernhard Studer's theories, and also to Norway for the purpose of obtaining accurate data. His observations led him to the view that a glacier is an imperfect fluid or a viscous body which is urged down slopes of a certain inclination by the mutual pressure of its parts, and involved him in some controversy with Tyndall and others both as to priority and to scientific principle. A notable defender of Forbes in this controversy was John Ruskin, the two having first met by coincidence in 1844 during a study tour of the Alps.

During these expeditions, he made many measurements of the boiling point of water at various altitudes. This data set, published in 1857, is often known in statistics as Forbes's data, its utility being that:

It illustrates how a curvilinear relationship between a dependent and independent variable can be transformed into a linear model by knowledge of the physical phenomenon observed.

It emphasises the importance of residuals analysis in linear regression as the residuals manifest an outlier that is not apparent in a visual inspection of the raw data.

Forbes was also interested in geology, and published memoirs on the thermal springs of the Pyrenees, on the extinct volcanoes of the Vivarais (Ardèche), on the geology of the Cuchullin and Eildon hills, etc. In addition to about 150 scientific papers, he wrote *Travels through the Alps of Savoy and Other Parts of the Pennine Chain, with Observations on the Phenomena of Glaciers* (1843); *Norway and its Glaciers* (1853); *Occasional Papers on the Theory of Glaciers* (1859); *A Tour of Mont Blanc and Monte Rosa* (1855). He was also the author (1852) of the "Dissertation on the Progress of Mathematical and Physical Science," published in the 8th edition of the *Encyclopædia Britannica*.

The Forbes River and Forbes Glaciers in New Zealand are named after him as is Aiguille Forbes between the Glacier de Saleina and the Glacier du Tour in the Mont Blanc massif.

James David Forbes was a devout Christian, as can be seen in the work "Life and Letters of James David Forbes" (1873), a compilation of personal letters written by Forbes, co-authored by John Campbell Shairp and Forbes's student Peter Guthrie Tait.

He died on 31 December 1868 and is buried in Dean Cemetery in Edinburgh. The grave is marked by a simple but large grey granite Celtic cross and lies on the south side of the main path just west of the roundel. His wife, Alicia Wauchope (1824–1885), is buried.

with him. His cousins were Scottish Episcopal Church leaders Alexander Penrose Forbes and George Hay Forbes. His son was the scientist George Forbes.



Bourne's Great Work on Navigation

7. **BOURNE, WILLIAM**, A Booke called the Treasure for traueilers, deuided into fiue Bookes or partes, containynng vary necessary matters, for all sortes of Trauailers, eyther by sea or by land

FIRST EDITION, [24], 29, [2], 25, [3], 22, [5], 21, [7], 5-16, [9], variant including fifth book, printers device to title, coat of arms of Sir William Wynter to title verso, final errata leaf with imprint, woodcut inhabited initials, woodcut text illustrations throughout, manuscript annotations throughout in an old hand, first and last few leaves soiled, a few leaves top corner repaired, rebound in contemporary calf, spine gilt, boards elaborately gilt, 4to, London, for Thomas Woodcocke, 1578

£35,000

Mathematician and innkeeper, William Bourne (1535-1582) spent time as a gunner in the Gravesend garrison of the Royal Navy. It was through this experience, along with contact with other seamen, that he gained the knowledge for the multiple important navigational manuals he wrote. With no formal education, Bourne is "the earliest unlearned English instructor and writer on mathematical practice known to us" ("Mathematical Practitioners", E G R Taylor). He is also credited with presenting the first design for a navigable submarine, although he never built it.

This work is divided into five parts containing mathematical instructions to calculate distances for navigation, with many diagrams throughout the text. Bourne was able to explain complicated technical matters for the common man. In the preface, Bourne gives advice to those who wish to travel, advocating that travel is advantageous to the commonwealth.

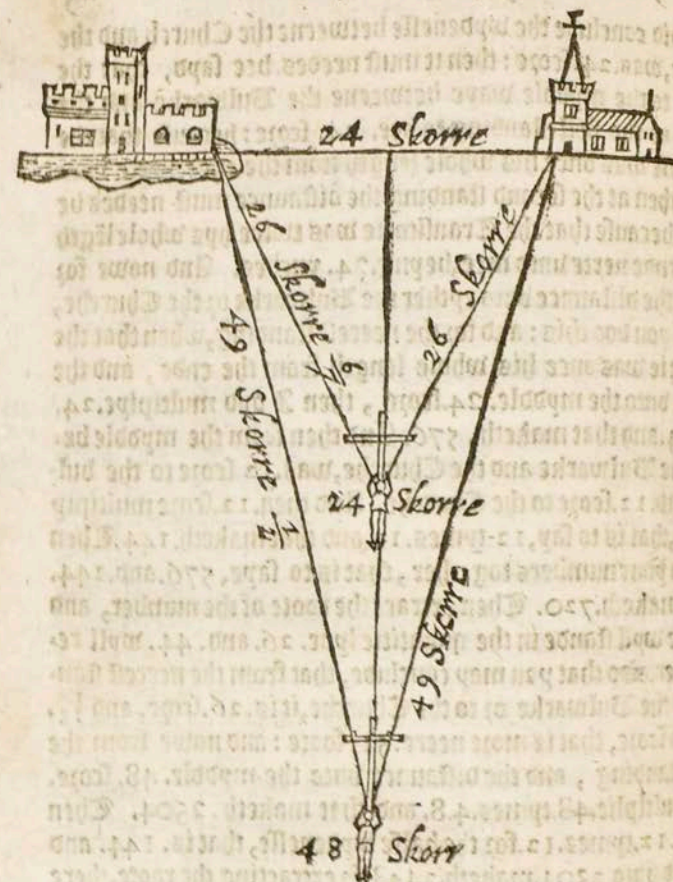
Published a year after Bourne's more famous work, 'Regiment for the Sea' (1574), based to a large extent on Eden's 'Arte of Navigation' (1561), itself a translation of Cortes' 'Arte de navigar'. Bourne's books were commercially successful and his patrons included Robert Dudley, Earl of Leicester; William Cecil, Lord Burghley; and Sir William Winter, master of the queen's ordnance and to whom this work is dedicated.

This is a scarce work in all its editions, including the 1641 edition, republished as 'A Mate for Mariners'.

Provenance: William John Mercer

[ESTC:S104686; STC2: 3432]

The first Booke



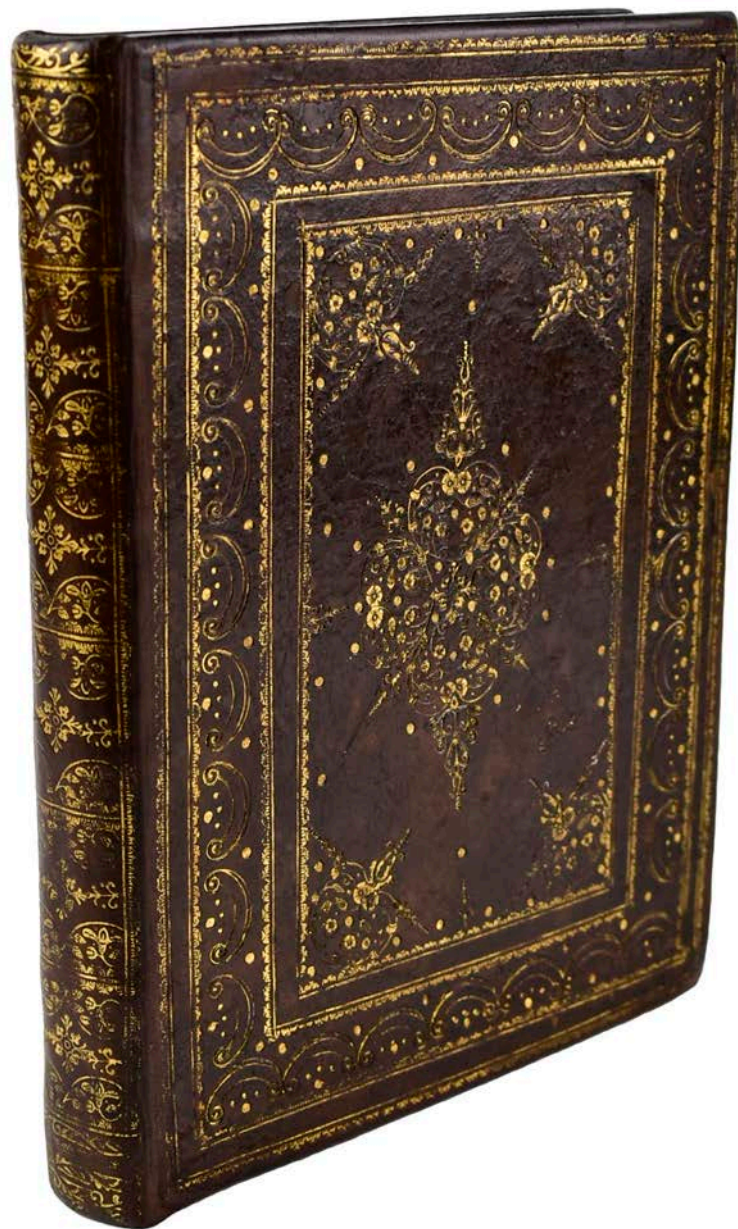
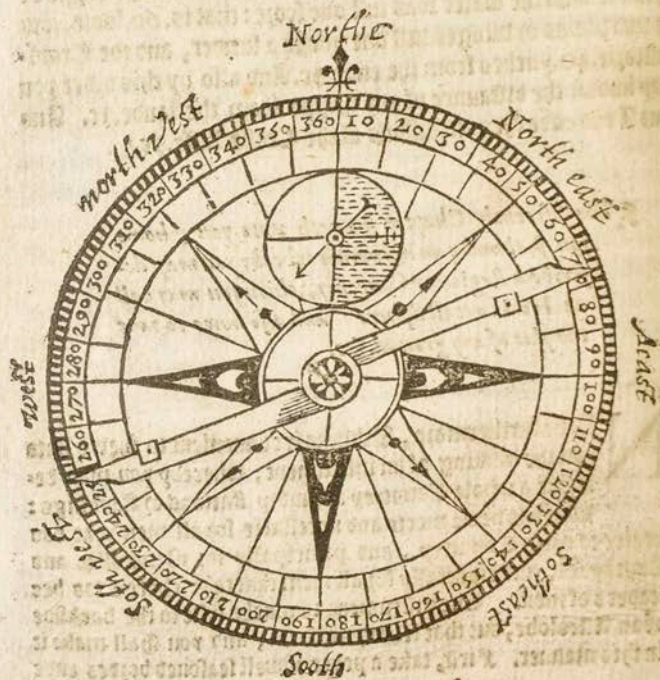
*The thirtieth Chapter sheweth howe to knowe the distaunces
vnto any marke with the crosse staffe, without the ex-
tracting of the roote, and also howe to take the height of
any thing with the crosse staffe.*

Nowe furthermore for your more ease, whensoever that you
woulde knowe howe farre it were to any marke or place by
the

The first Booke

The making of
an instrument
to describe a
Countrey.

of a foote square, & the make it round: or else you may make it in
metall, the larger the better, making it perfect rounde. And then
deuide the circumference or edge into, 360. degrees or equall
partes: and then in like manner deuide it into, 32. equall partes,
& name them as you do the, 32. poyntes of a sea mans Compasse,
and then make a hole in the center of the instrument, and the make
an Achelida with, 2. sightes, such a one as an Astrolabe hath in all
poyntes, and there make it fast with a pinne to the middle hole of
the instrument, and then in one of the sides eyther to the North or
South poynt, place a needle, such a one as a Dyall hath, and this
instrument is finished. As by this figure following is represente
ed.



Ground-Breaking Work In Navigational Table

8. BRIGGS, HENRY, Trigonometria Britannica: sive de doctrina triangulorum libri duo

FIRST EDITION, (edited by Henry Gellibrand). Gouda: Pieter Rammazeyn, 1633 folio (350 x 212mm.), half-title, complete with 272 pp. of tables, contemporary tree calf gilt, rebound, half-title restored at edge.

£2,850

This important work has the first complete set of Trigonometrical Tables.

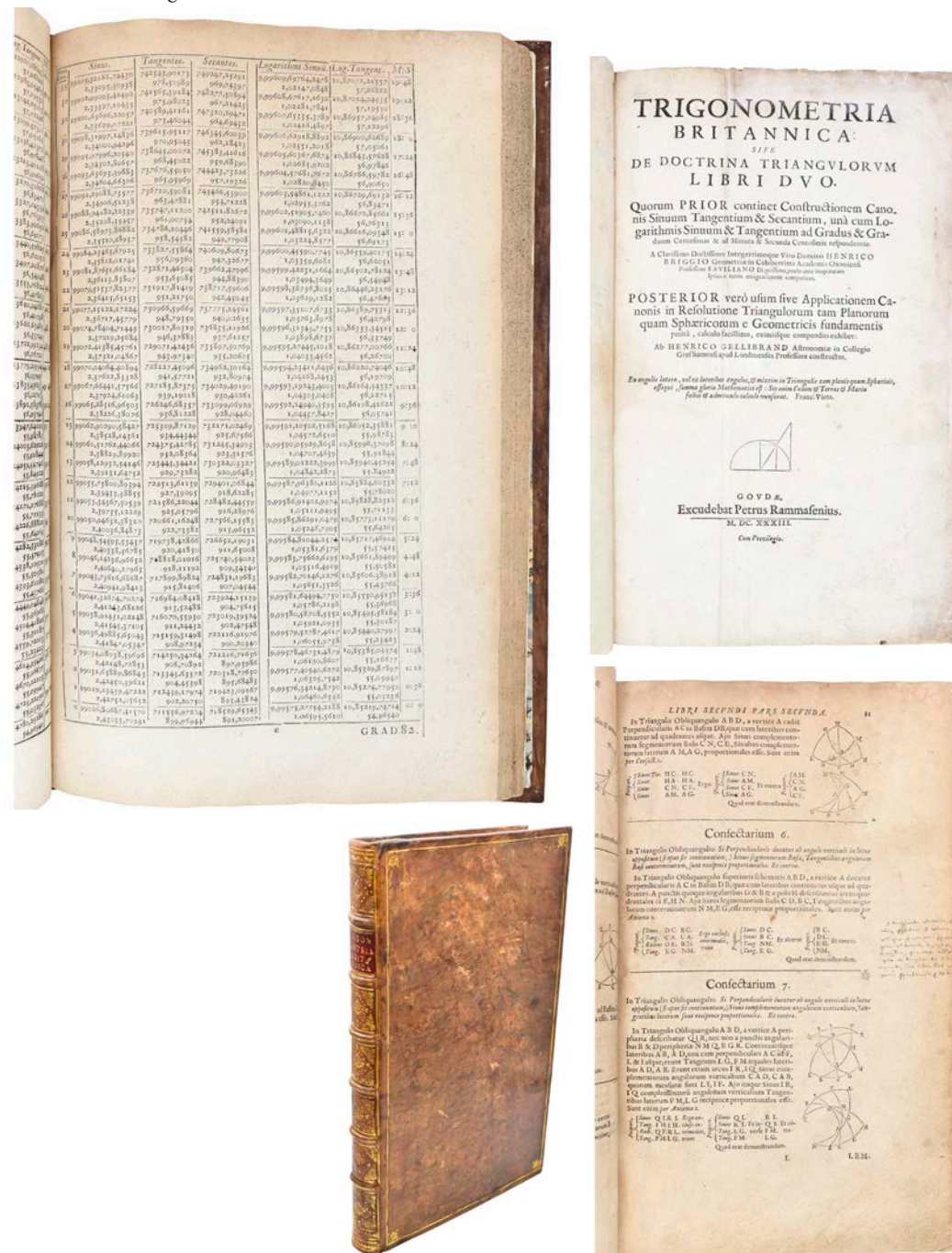
In circa 1577 Briggs entered St. John's College, Cambridge, where he received a bachelor's degree in 1581 and a master's degree in 1585. He was elected a fellow of St. John's in 1589 and a lecturer in mathematics and medicine there in 1592. While at St. John's, Briggs began research in astronomy and navigation with the mathematician Edward Wright.

In 1596 Briggs was appointed the first professor of Geometry at the newly opened Gresham College in London, and for more than two decades he was instrumental in establishing it as a major centre for scientific research and advanced mathematical instruction. Briggs also took an active part in bridging the gap between mathematical theory and practice. He instructed mariners in navigation, advised explorers on various proposed expeditions, and invested in the London Company (responsible for founding Jamestown, Virginia, in 1607). His publications from this period include A Table to find the Height of the Pole, the Magnetic Declination being given (1602) and Tables for the Improvement of Navigation (1610); he returned to the subject of exploration later with A Treatise of the Northwest Passage to the South Sea, Through the Continent of Virginia and by Fretum Hudson (1622).

In 1632, Henry Gellibrand, then the Professor of Astronomy at Gresham College, London, arranged for the publishing of the Trigonometria Britannica (T. B.) by Adrian Vlacq in Gouda the following year: the work consisted of two Books, and sets of tables of natural sines in steps of one hundredth of a degree to 15 places, as well as tables of tangents & secants to 10 places, together with their logarithms. The explanatory Book I was the last work of Henry Briggs (1599-1631), Savilian Professor of Geometry at Oxford, and was devoted mainly to the construction of his table of sines; while Book II, written by the youthful Gellibrand on the instigation of the dying Briggs, his mentor, contained instructions and examples on the use of logarithms in solving trigonometrical problems.

Henry Briggs should be remembered in the first place for his ground-breaking work in

navigational tables. In fact, he contributed more tables to Wright's 'On Certain Errors in Navigation', which were of an astronomical nature, since he was also an able astronomer.



One Of The Rarest Of Cameron's Portraits

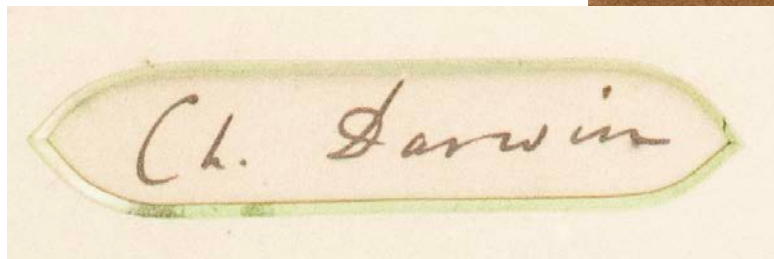
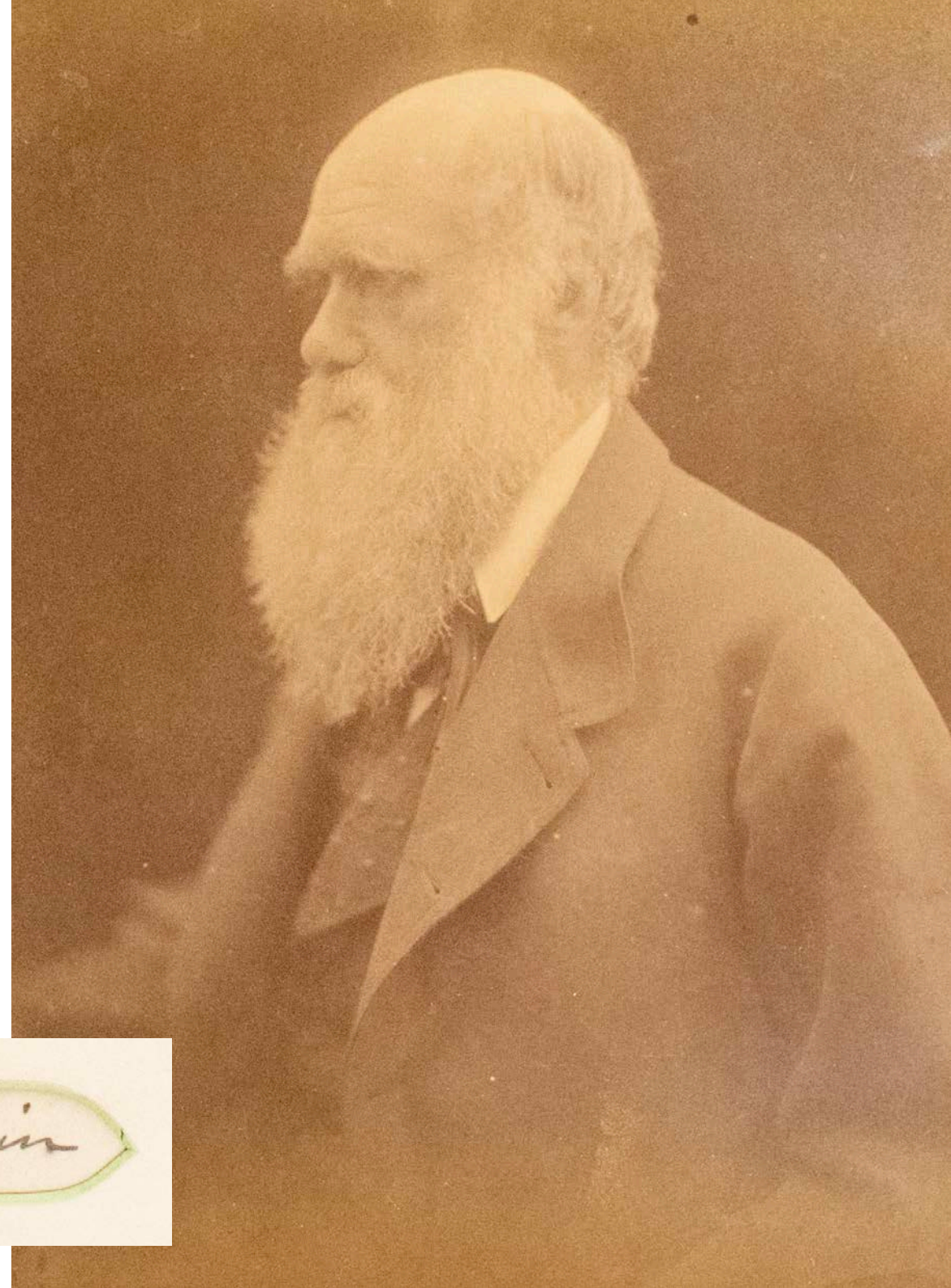
9. CAMERON, JULIA MARGARET, Portrait photograph of Charles Darwin,

near half-length, facing right, albumen print, signed by the photographer under image "From Life Registered Photograph (Copy Right)/ Julia Margaret Cameron", mounted on card (with embossed stamp of Colnaghi), image size 340 x 280mm., mount size 510 x 407mm., [Freshwater, I.O.W., copyright 23 July 1868]

£45,000

Julia Margaret Cameron took a series of photographic portraits of Darwin when he and his family rented Dumbola Lodge from in Freshwater from the photographer in the summer of 1868 during which time he enjoyed the company of other visitors such as Alfred Tennyson, Henry Wadsworth Longfellow, and Joseph Hooker. "Darwin left the Isle of Wight having been entirely charmed with Cameron's renowned wit and her photographic camera. That week she made four exposures of Darwin, which lend extraordinary depth of tone and detail to Darwin's increasingly well-known beard and penetrating gaze" ('Darwin's Photographic Portraits', Darwin Correspondence Project website).

Darwin was one of only a few sitters who actually paid for the photographs and he believed that Cameron's were the best photographs that had been taken of him.



A Consolidation Of Galileo's Work On The Compass

10. CASATI, PAOLO, *Fabrica, Et Uso Del Compasso Di Proportione, Dove Insegna À Gli Artefici Il Modo Di Fare In Esso Le Necessarie Divisioni, E Con Vari Problemi Usuali Mostra L'utilità De Questo Stromento*

FIRST EDITION. Bologna, Giovanni Battista Ferroni, 1664, 4to, title with woodcut device, woodcut diagrams, initials, head- and tail-pieces, 4 folding engraved plates, 2ff. errata at end, title with small paper overslip changing "Del Molto" to "Il Molto",

£1,250

Born in Piacenza to a Milanese family, he joined the Jesuits in 1634.

Casati was professor of mathematics at the Jesuit Collegio Romano and then at the university of Parma. This work, one of many that he wrote, is a consolidation of Galileo's work on the compass; it was reprinted three times before the end of the seventeenth century.

"...It not only contains good descriptions of usage, complete with many examples, but also discusses the manufacture of the device with two major foldout diagrams that could be used as patterns for the scales. Unlike many such works that state the method of usage but then give very simple problems involving triangles (for example), Casati provides the reader with realistic problems involving regular shapes" (Tomash & Williams, p.259).

Riccardi i, 271; Tomash & Williams C32],

Provenance: Grigorijs Vivvarellus (early ink signature to title).

FABRICA, ET VSO

Del Compasso di Proportione,

*Doue insegna à gli Artefici il modo di fare in esso
le necessarie diuisioni,*

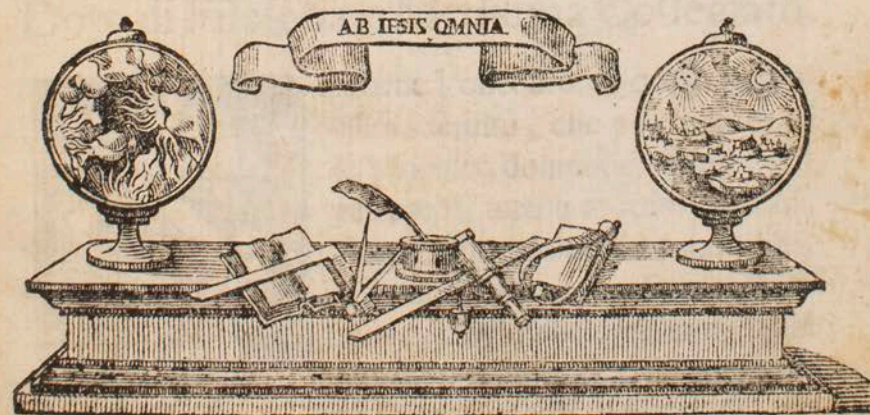
*E con varij Problemi vsuali mostra l'utilità
di questo Stromento,*

DEL MOLTO REV. P. PAOLO CASATI
della Compagnia di GIESV',

*Dando le ragioni, & apportando le dimostrazioni di tutte
le operationi nella Fabrica, e nell'Vso.*

OPERA VTILE

Non solo à Geometri, Agrimenfori, Architetti ciuili, e militari, Pittori,
Scoltori, & à tutti quelli, che vsano del Disegno, ma anche à Bom-
bardieri, Sergenti di Battaglia, Mercanti, & altri, per molte opera-
tioni Aritmetiche, fatte con grandissima facilità.



In Bologna, presso Gio. Battista Ferroni 1664. Con licenza de' Superiori.

California As An Island

11. CLUVER, PHILIP, *Introductio in omnem geographiam veterem aequae ac novam olim studio & opera Joh. Bunonis ... multis in locis emendata, memorabilibusque aucta ... in multis passim correctior curante J. Reiskio.*

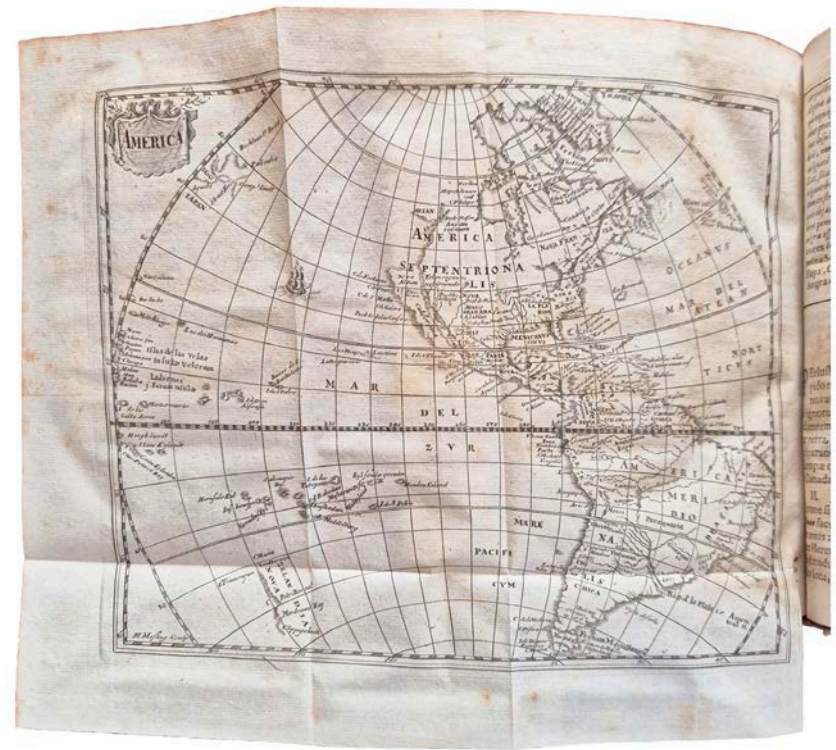
Wolfenbützel, CJ Bismarck, 1694. 4to, (220 x 180 mm), Contemporary Blind-Stamped Pigskin over Wooden Boards with two clasps, Engraved Allegorical and Printed Titles, 3 Engraved plates, 43 folding or double-page engraved maps and 2 folding Tables.

£3,000

The maps are re-engravings of the maps from the 1661 edition, some signed “sculps. H. Mosting” or “Herman Mosting sculpsit Lunaeb.”, the latter being documented in Lüneburg around 1685 (cf. Thieme-B. XXV, 192). There are 37 copper-plate engravings including the world map, maps of the continents (America, Africa, Asia, and Europe), and many regional European maps. Compared to the 1661 edition, this edition is supplemented with maps of the East Indies, Prussia, Sardinia/Corsica, and Sicily.

The map of America was derived from the Nicolas Visscher map of 1658, with a Briggs type island of California and no Great Lakes in North America. The interior rivers of South America are all connected to a large, spurious lake labeled Lago de los Xarzyes. A depiction of the discoveries of Maarten Gerritsz de Vries’ voyage appears in the waters north of Japan, and Abel Janszoon Tasman’s discoveries are shown in New Zealand. The map of Africa, *Africa, Antiqua, et Nova* is an interesting continental map that is very similar to Sanson’s *Africa Vetus*. Well engraved with few place names in the south and only the major river systems and mountains shown. The Nile originates from two large lakes well south of the Equator in the Ptolemaic style.

VD 17 23:299253W; Shirley 425; Alden-L. 694/35.



Rare Complete First Edition, First Issue

12. COLLINS, JOHN, *The Sector on a Quadrant. Or, A Treatise containing the Description and life of three several Quadrans; Each rendred many ways both General and Particular. Accomodated for Dyalling, for the resolving of all Proportions Instrumentally, and for the ready finding the Hour and Azimuth universally, in the equal Limb. Of great use to Seamen, and the Practitioners of Mathematics.*

London, Printed by J. Macock, 1658. 4to, First Edition, First Issue, 6 engraved plates, one folding, woodcut diagrams, 4to, 4 parts in 1, Contemporary polished calf.

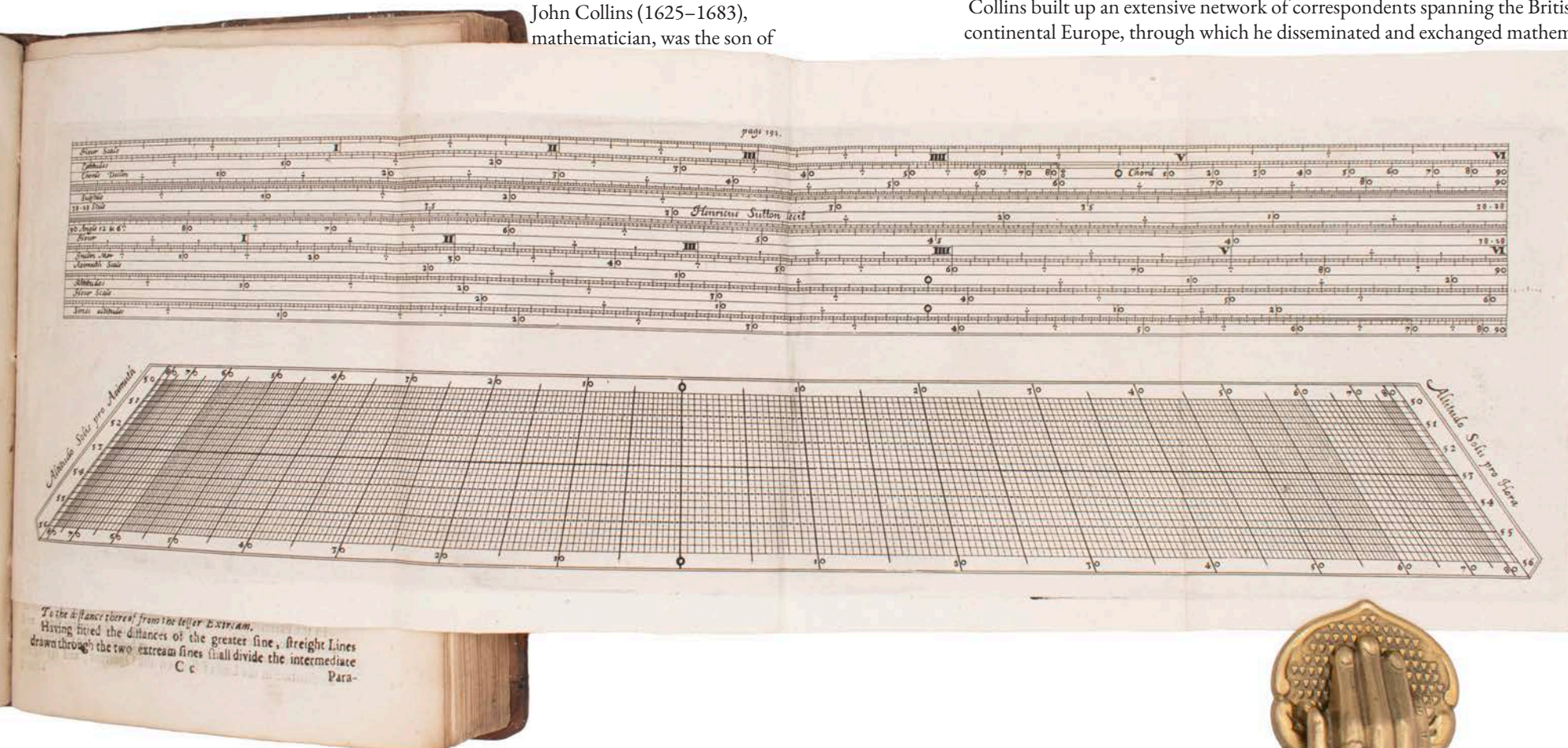
£10,000

Rarely found complete, in the first issue (with title dated 1658),

John Collins (1625–1683),
mathematician, was the son of

a nonconformist divine, and was born at Wood Eaton in Oxfordshire, 5 March 1625. Apprenticed at the age of sixteen to Thomas Allam, a bookseller, living outside the Turl Gate of Oxford, he was driven to quit the trade by the troubles of the time, and accepted a clerkship in the employment of John Marr, clerk of the kitchen to the Prince of Wales. From Marr he derived some instruction in mathematics, but the outbreak of civil war drove him to sea for seven years, 1642–9, most of which time he spent on board an English merchantman, engaged by the Venetians as a ship of war in their defence of Candia against the Turks. He devoted his leisure to the study of mathematics and merchants' accounts, and on leaving the service set up in London as a teacher. In 1652 he published 'An Introduction to Merchants' Accounts,' originally drawn up for the use of his scholars. He next wrote 'The Sector on a Quadrant, or a Treatise containing the Description and Use of three several Quadrants.' Also, an appendix touching 'Reflected Dyalling, from a Glass however posited' (London, 1658); and 'The Description and Uses of a general Quadrant, with the Horizontal Projection upon it Inverted' (1658).

Collins built up an extensive network of correspondents spanning the British Isles and continental Europe, through which he disseminated and exchanged mathematical news

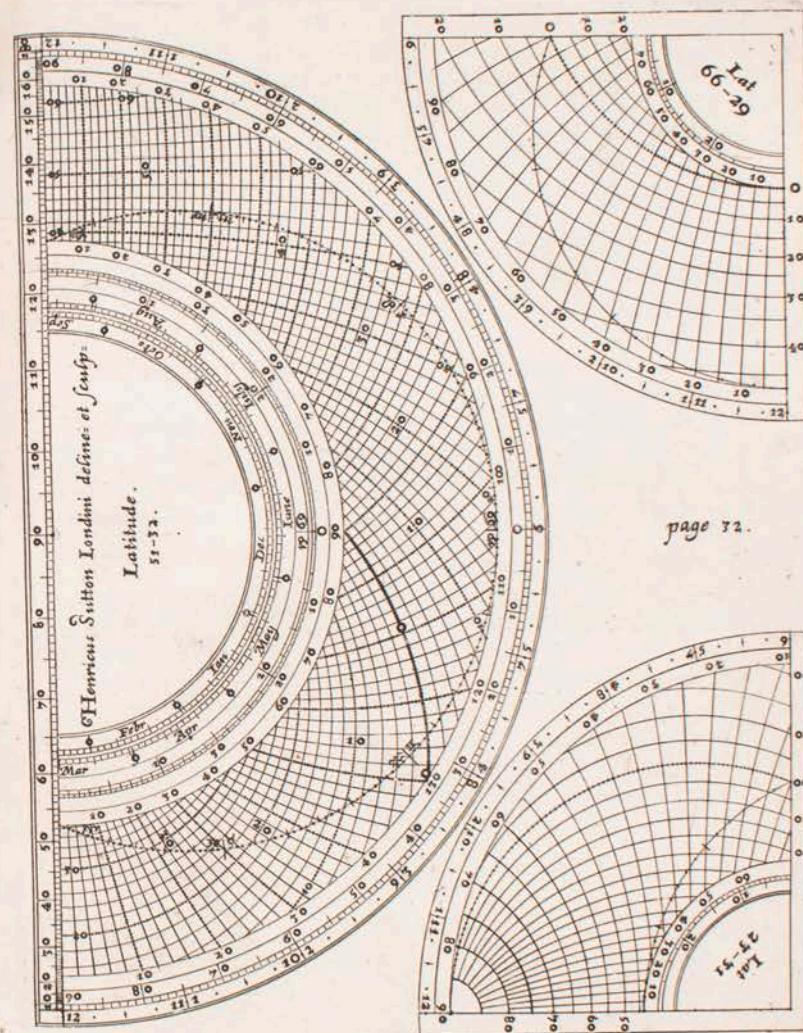
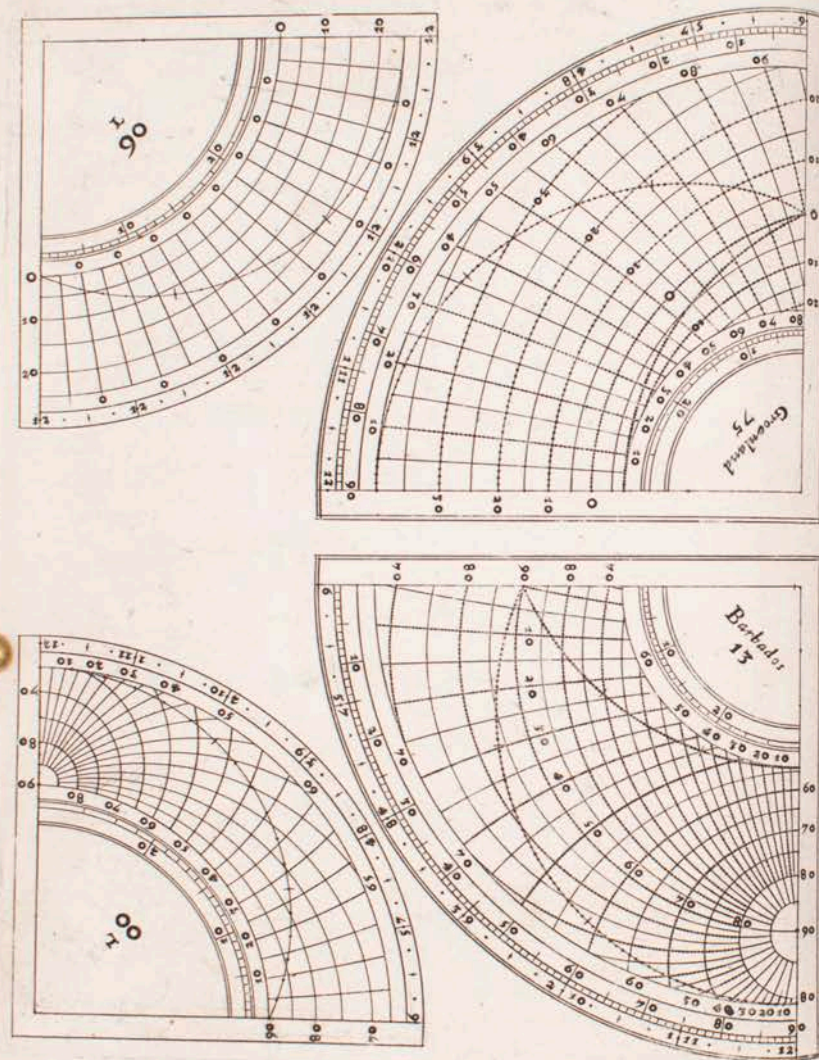


and procured the latest publications. Among the members of his epistolary circle were to be found John Pell, James Gregory, Wallis, Isaac Newton, G. W. Leibniz, and R. F. de Sluse. Such was the pivotal role he came to play in the scientific life of Restoration England, that contemporaries called him 'Mersennus Anglus'. His extensive collection of letters was seen by the Royal Society as an important source of evidence for establishing

Newton's claim in the priority dispute with Leibniz over discovery of the calculus

Wing C5381; Tomash & Williams C122

Provenance: Owen Phillips (ink name on title and B1); "John Carter att ye signe of ye Bible without Compter barr att ye corner of Essex Street" (ink inscription on rear pastedown).



*The Most Important Mediaeval Treatise On Agronomy Bound
With One Of The Most Enduring Of All Herbals*

13. [SAMMELBAND] CRESCENTIUS & LONITZER

CRESCENTIUS, PETRUS DE, De omnibus agriculturae partibus, & de plantarum animalibusq; natura & utilitatibus. XII. non minus philosophiae & medicinae, quam oeconomiae, agricolationis, pastionumque studiosis utiles,

Basel, Henricus Petrus, 1548, woodcut device on title and final leaf, dedication within woodcut architectural border, over 180 woodcut illustrations in the text, the printer's device, a very attractive binding in contemporary panelled calf, blind tooled borders with arabesque designs, spine gilt in compartments, leather gilt title-pieces.

£15,000

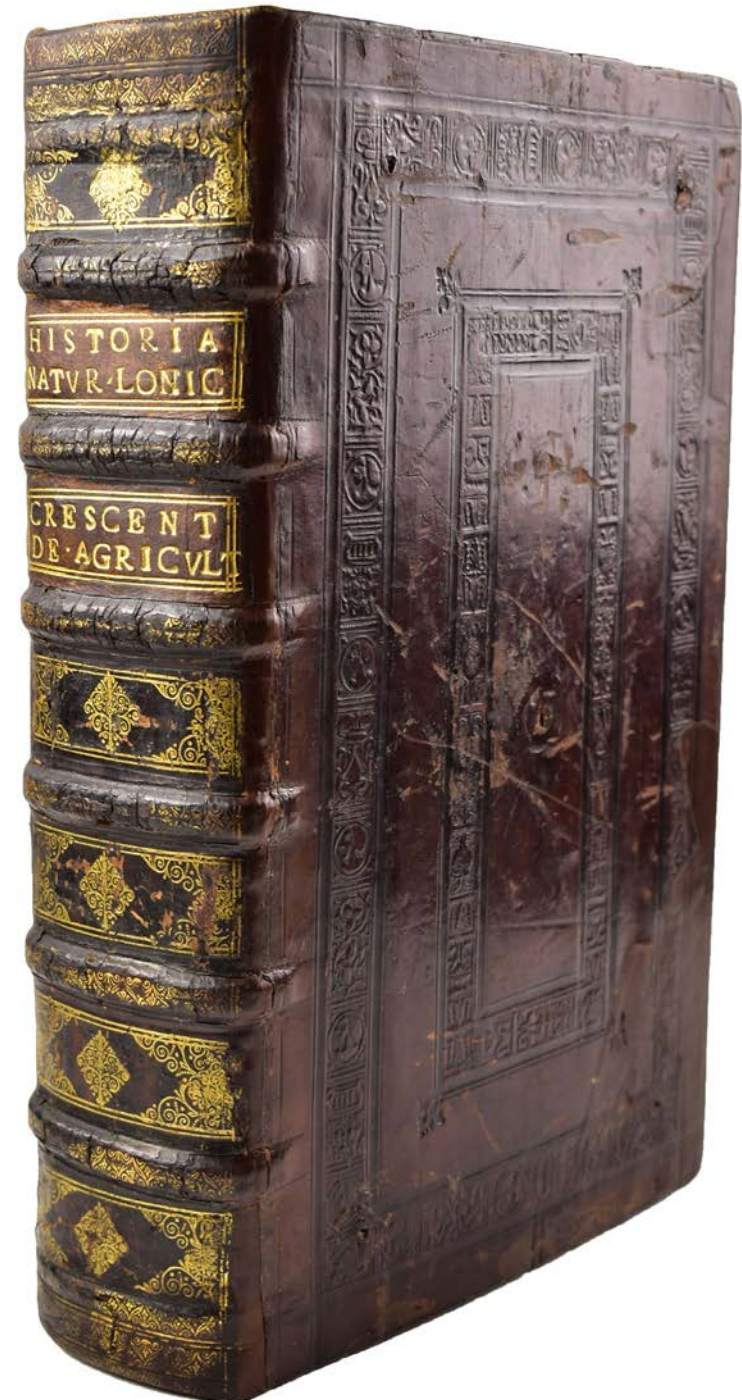
A well-illustrated edition of *Ruralia commoda*, the most important mediaeval treatise on agronomy, the first printed edition of which appeared in 1471. "The woodcuts of plants are finely cut, delicate and lively, and much in the character of the best done by Brunfels and Fuchs, though a good deal smaller" (Hunt).

Pietro de' Crescenzi was born in Bologna in about 1235; the only evidence for his date of birth is the annotation "septuagenarian" in the *Ruralia commoda*, dated with some certainty between 1304 and 1309. He was educated at the University of Bologna in logic, medicine, the natural sciences and law, but did not take his doctorate. Crescenzi practiced as a lawyer and judge from about 1269 until 1299, travelling widely in Italy in the course of his work.

In January 1274 he married Geraldina de' Castagnoli, with whom he had at least five children. She died in or shortly after December 1287. In January 1289 he married Antonia de' Nascentori, with whom he also had several children.

After his retirement in 1298 he divided his time between Bologna and his country estate, the Villa dell'Olmo outside the walls of Bologna. During this time he wrote the *Ruralia commoda*, an agricultural treatise based largely on classical and medieval sources, as well as his own experience as a landowner. It is not known when de' Crescenzi died. His last will is dated 23 June 1320; a legal document dated 25 February 1321 describes him as dead, at the age of almost ninety.

The *Ruralia commoda*, sometimes known as the *Liber ruralium commodorum* ("book of rural benefits"), was completed sometime between 1304 and 1309, and was dedicated to Charles II of Naples. King Charles V of France ordered a French translation in 1373. After circulating in numerous manuscript copies, Crescenzi's treatise became the first



printed modern text on agriculture when it was published in Augsburg by Johann Schussler in 1471. Some 57 editions in Latin, Italian, French, and German appeared during the following century, as did two editions in Polish.

The structure and content of the *Ruralia comoda* is substantially based on the *De re rustica* of Lucius Columella written in the first century AD, even though this work was not available to de' Crescenzi, and was known only in fragments until a complete version was discovered in a monastery library of Pollio Bracciolini during the Council of Constance, between 1414 and 1418. While de' Crescenzi cites Columella twelve times, all the citations are indirect, and taken from the *Opus agriculturae* of Palladius. Like the *De re rustica* of Columella, the *Ruralia comoda* is divided into 12 parts.

Adams C2930; Hunt 58

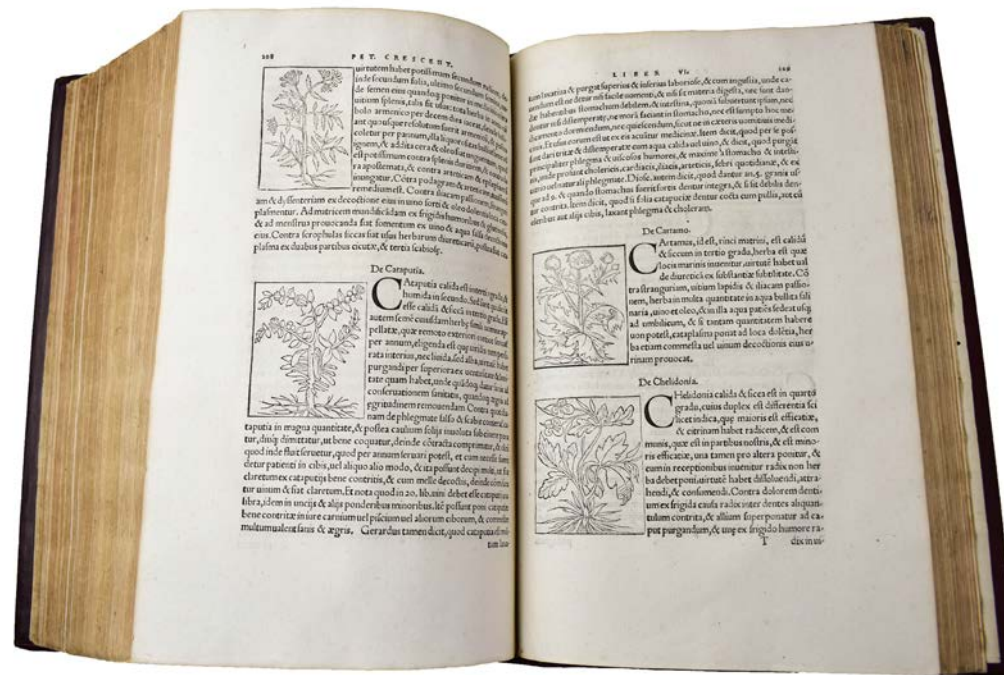


BOUND WITH

LONICERUS, ADAM, *Naturalis historiae opus novum : in quo tractatur de natura et viribus arborum, fruticum, herbarum, Animantiumque terrestrium, uolatilium & aquatiliu ...*

Christian Egenolff, Frankfurt, 1551. Folio, (330 x 240mm), [18], 352, [1] with over 900 woodcut illustrations.

Adam Lonicer (Lonitzer) (1528-1586) had studied in Marburg and Mainz before becoming professor of mathematics at the Lutheran University of Marburg. It was there that he received his medical degree and he later pursued a medical career as the city physician of Frankfurt. In 1554 (the same year as he received his medical degree), he married Magdalena Egenolph, the daughter of the controversial Frankfurt printer Christian Egenolph, who had been involved in one of the first copyright disputes – in this case over Egenolph's pirating of an edition of Brunfels' *Herbarum vivae eicones*. Figala (1973) points out that Egenolph specialized in the publication of herbals and whether it was a result of this or his own professional interests, Lonicer decided to produce one of his own. Lonicer's herbal proved to be the great printing success of the Egenolph firm: though by no means the most innovative of its kind, it proved to be one of the most enduring of all, and editions of it were still being produced in Germany in 1783.



As the title makes clear, Lonicer's herbal did not solely focus on plants but also included some descriptions of animals, birds, fish and metals: The divisions within the book mirrored those in the book of Genesis and it is therefore not surprising that Lonicer began his section on plants with the apple tree. His text was not original but was a version of the *Ortus sanitatis*, a medieval text which had been translated in the fifteenth century by a previous city physician at Frankfurt, Johann de Cuba.

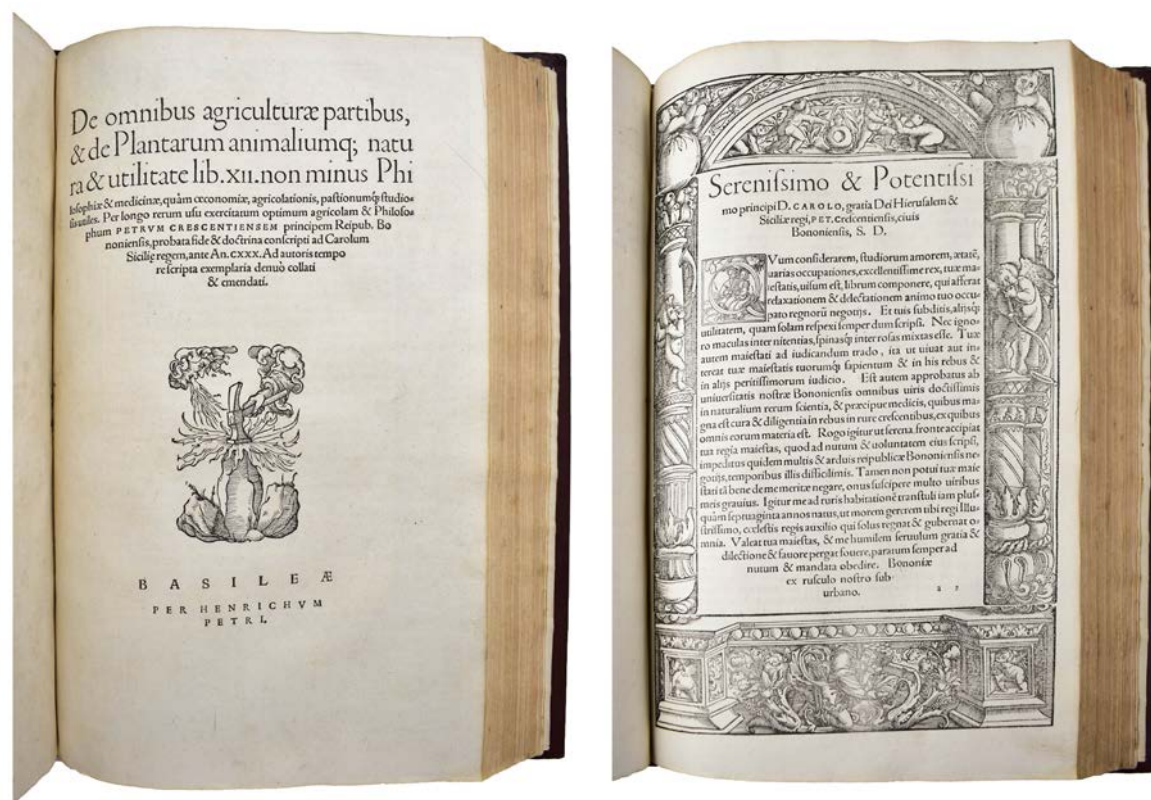
Lonicer's edition was not Egenolph's first venture with this text – he had previously published a version of it by yet another city physician of Frankfurt, Eucharius Rösslin, but it was his son-in-law's which was to prove the most effective. Just as Brunfels and Fuchs had produced the German names for plants, so too did Lonicer.

In Lonicer's *Naturae* is depicted *Paeonia officinalis* or the peony, a perennial herbaceous plant, a member of the Ranunculaceae family, which has been used for medicinal purposes for over 2000 years. Called after the Greek god Paeon or Paieon, the peony was probably the plant Paeon used to heal the war god Ares, wounded by the Greek, Diomedes, in Book V of the *Iliad*. Used by Hippocrates for treating epilepsy, Pliny describes both its magical and medical use: like the mandrake it was supposed to be only uprooted at night and had many mystical associations with the moon; medicinally it was used against insanity though according to John Gerard, Dioscorides recommended it for labour pains and childbirth while Galen added that it was useful in jaundice and kidney disorders. The roots and seeds were used with a necklace of single peony roots being particularly recommended for children to prevent convulsions, a practice which seems to have continued up to at least the end of the nineteenth century in West Sussex. Herbalists divided it into two species, male and female: the male was larger with less divided foliage and appearing to have stronger powers was preferred in most remedies. A recent review (Ahmad et al. 2012) of its medicinal uses and active constituents notes its use in Arab, Indian and Chinese medicine and in homeopathy and references some animal studies suggesting antihypertensive effects. However, severe adverse reactions have also been reported: thus the role of *Paeonia officinalis* L., if any, remains to be scientifically proven.

Lonicerus was the son of Johann Lonitzer, a philologist and professor at Marburg. He received his baccalaureate in 1540 and his master's degree in 1545. In the latter year he began teaching at the Gymnasium in Frankfurt, but he returned to Marburg of disorders caused by war. He studied medicine there and later in Mainz, where he was a private tutor in the home of a Dr. Osterod. In 1553 Lonicerus became professor of mathematics at Marburg, and in 1554 he received his medical degree. Also in 1554 he married the daughter of the Frankfurt printer Egenolph Magdalena; and following the death of Graff, the municipal physician of Frankfurt, in that year, he was appointed to the post. Lonicerus worked as a proofreader in the printing shop of his father-in-law, who specialized in the revision of old herbals (for example, those of Eucharius Rösslin and Dioscorides).

Lonicerus wrote extensively in many fields, including botany, arithmetic, history of medicine, and medicine, particularly public health books such as regulations for controlling the plague (1572) and regulations for midwives (1573). His herbals were so influential that in 1783 at Augsburg—almost 250 years after the first edition—KreuterBuch was still published. In addition, Linnaeus immortalized his name in the genus *Loniceria*.

Lonicerus based the first, Latin edition of his herbal on Rösslin's revision of the *Onus sanitatis* (1551), which contained many illustrations, most of them borrowed from Bock. The popularity of Lonicerus' herbal is shown by the many, steadily enlarged editions he brought out. Although the provision of plant names in German, Latin, Greek, French, Italian, and Spanish lends the herbal a scientific air, the inclusion of fabulous stories betrays its late medieval character. (For example, the formation of bezoars is attributed to the hardening of the tears of stags!) The herbal also lists animal and metallic medicaments and contains one of the earliest descriptions of local flora. In addition, the book distinguishes the deciduous trees from the conifers; the group composed of the yew, the cypress, the juniper, and the savin is contrasted with that containing the spruce and the fir. Lonicerus' son Johann Adam (b. 1557) edited his father's writings.



The Only Section Of Darwin's Big Book On The Origin Of Species Which Was Printed In His Lifetime

14. DARWIN, CHARLES (1809–1882). *The Variation of Animals and Plants under Domestication*

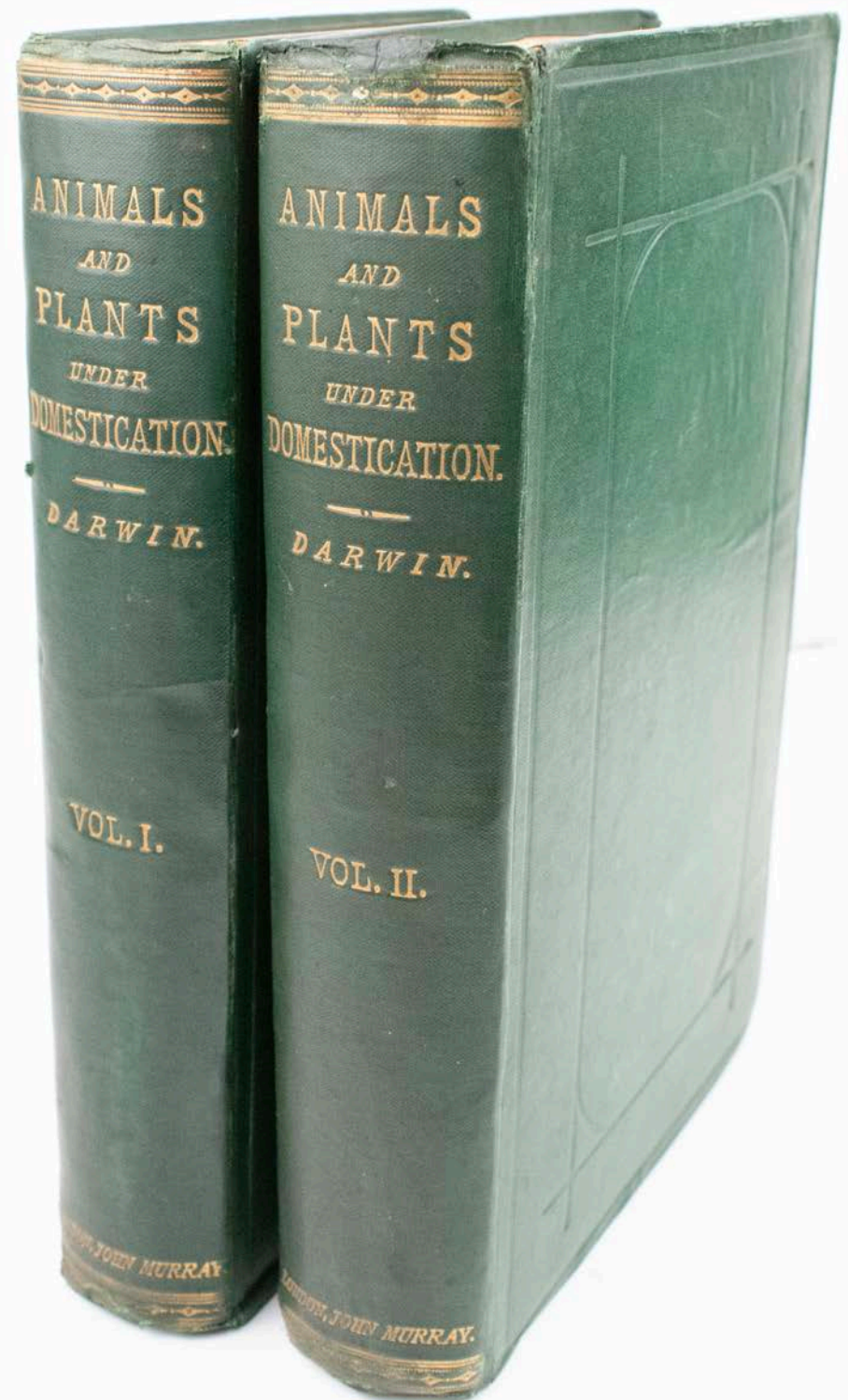
London John Murray 1868, 1868. 2 volumes. First edition, First issue, with five-line errata in Vol. I and seven-line errata in Vol. II, advertisements and 43 engraved illustrations. tall 8vo, original green cloth gilt lettered and decorated on the spines, decorated in blind on the covers. viii, 411, publisher's catalogue; viii, 486, ads.

£2,000

This work is 'the only section of Darwin's big book on the origin of species which was printed in his lifetime and corresponding to its first two intended chapters' (Freeman). This work is notable not only for Darwin's prodigious amassing of facts concerning artificial selection of traits to demonstrate an analogy for natural selection. It also advances his hypothesis of pangenesis and gemmules, as the agents of the inheritance of characteristics. The *Variation* 'contained his hypothesis of pangenesis, by means of which Darwin tried to frame an explanation of hereditary resemblance, inheritance of acquired characters, atavism, and regeneration. It was a brave attempt to account for a number of phenomena which were beyond the bounds of scientific knowledge in his day, such as fertilization by the union of sperm with egg, the mechanism of chromosomal inheritance, and the development of the embryo by successive cell division. His hypothesis of pangenesis could not therefore give a permanently acceptable account of the multitude of phenomena it was designed to explain. It was, however, a point of departure for particulate theories of inheritance in the latter nineteenth century' (DSB).

The first issue differs substantially from the second issue, which in fact is more a second edition, with major revisions to the text. The first issue was published in January, the second in February 1868. The two issues have considerable textual differences, but the easiest way to distinguish them is by the errata listed on p vi of vol I and viii of vol II: in the first issue five errata are listed in six lines in vol I and nine in seven lines in vol II, whereas in the second a single erratum is listed in vol I only. The publisher's binding also differs, the spines of the first having a one-line imprint, those of the second normally having a two-line imprint.

Freeman 877; Norman 597



15. DARWIN, CHARLES, Important letter to Sir John Harmer on Carnivorous Beetles

Autograph letter signed, concerning carnivorous beetles. Down, Beckenham, Kent, 13th September, 1881, 8vo (205 x 131mm), horizontal mailing folds, 1pp., in fine condition, signed "Charles Darwin"; with retained copy of Harmer's letter to Darwin, Wick, near Arundel, 1881, 8vo (205 x 130mm), horizontal mailing folds, weak at folds.

£12,500

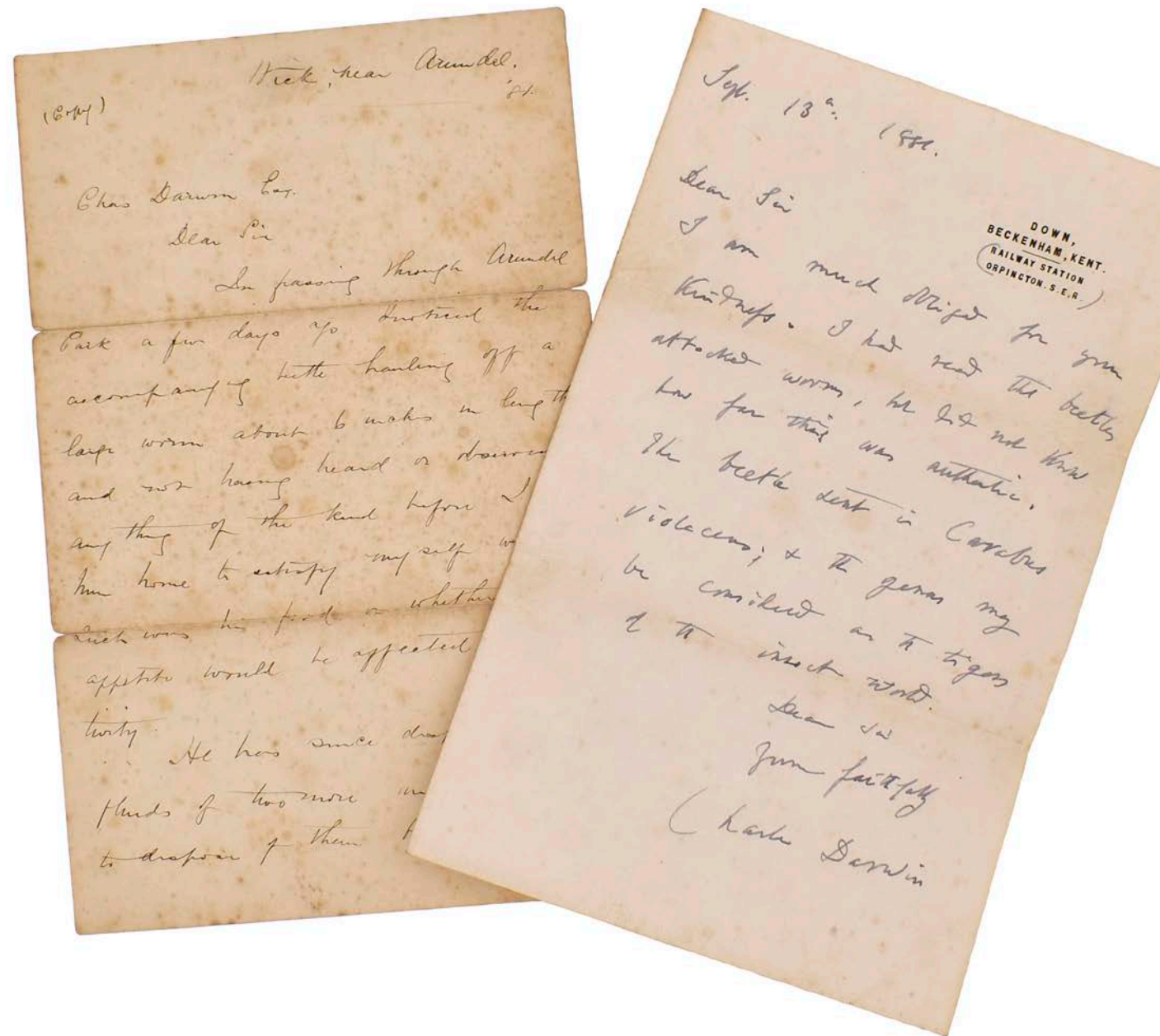
A fine unpublished letter to John Harmer, thanking him for his account of a beetle attacking a six-inch worm, and for the beetle itself, which Harmer had enclosed.

Harmer had captured the beetle in Arundel Park in Sussex, after witnessing the beetle attack the worm he writes "not having noticed any thing of the kind before I carried him home to satisfy myself whether such was his food or whether his appetite would be affected by captivity. He has since disposed of the fluids of two more which he cuts up in a very business like manner." Harmer fed it more worms, then sent it to Darwin in case there was "an element of interest in the circumstance".

Darwin's response reads "I am much obliged for your kindness. I had read that beetles attacked worms, but did not know how far this was authentic. The beetle sent is *Carabus Violaceus*; & the genus may be considered as the tiger of the insect world."

The posthumous revised edition of "The Formation of Vegetable Mould, Through the Action of Worms" (1882) notes that "the larger species of *Carabus* and *Staphylinus*... attack... [worms] ferociously". This observation is absent from the first edition of 1881, so it seems Harmer's efforts were put to good use.

Not in the Darwin Correspondence Project, but Harmer's letter to Darwin is (DCP-LETT-13332).



*An Attractive Copy Of The First Separate Issue Of
Darwin's Journal, His First Formal Publication
And A Classic Of Natural History Travel
Narrative*

16. DARWIN, CHARLES, *Journal of Researches into the Geology and Natural History of the various countries visited by H.M.S. Beagle...*

London, Henry Colburn, 1839, FIRST EDITION, FIRST ISSUE, publisher's cloth, rebaked replacing original spine. 8vo, uncut, pp xiv [i.e. xii] 615 [1, blank], Addenda 609-629, two folding charts (a little foxing to charts as usual), with 16 pp inserted publisher's advertisements dated August 1839, 8pp prospectus for other publications.

£15,000

First edition, first issue, an attractive copy of the first separate issue of Darwin's *Journal*, his first formal publication and a classic of natural history travel narrative. It was perhaps the most important scientific voyage ever undertaken, for it gave impetus and direction to all of Darwin's later research. 'The five years of the voyage were the most important event in Darwin's intellectual life and in the history of biological science. Darwin sailed with no formal scientific training. He returned a hard-headed man of science, knowing the importance of evidence, almost convinced that species had not always been as they were since the creation but had undergone change. He also developed doubts of the value of the Scriptures as a trustworthy guide to the history of the earth and of man, with the result that he gradually became an agnostic. The experiences of his five years in the Beagle, how he dealt with them, and what they led to, built up into a process of epoch-making importance in the history of thought' (Gavin de Beer in DSB).

The *Journal of Researches* was issued as part of the *Voyage of the Beagle* volumes and also as a separate book as above; this separate issue comprises sheets from the same print-run, but with cancel half-title and title-page. Both were published and available in June 1839.



*A Rare Edition Of An Important Practical Work By, Expert
Mathematician, Leonard Digges*

17. DIGGES, LEONARD, A Booke Named Tectonicon, Brieflie Shewing the Exact Measuring, and Speedie Reckoning All Manner of Land, Squares, Timber, Stone, Steeples, Pillers, Globes, &c.

London, 1605, 12mo [182 x 128mm], Contemp. calf, 2], 26 leaves. Two folding tables. Numerous woodcut illustrations in text.

£1,900

A rare edition of an important practical work on mensuration by Leonard Digges, an expert mathematician whose chief interest was in the application of that science to astronomy, surveying, military engineering, architecture, and scientific instruments.

Digges was part of the scientific circle of John Dee. It is difficult to establish Digges' Scientific Productions precisely because it was mostly published by his son, Thomas Digges, with his own work mixed in. However, Tectonicon, 1556, a surveying manual emphasizing practical mathematics, was all his.

Leonard Digges participated in Wyatt's rebellion against Mary. The rebellion was as much against Spanish interference as against Catholicism. He was attainted for treason as a result of Wyatt's rebellion, lost his estate, and in the last years of his life apparently tried to support himself partly through publication.

In Pantometria, Thomas Digges described his father's skill in optics.

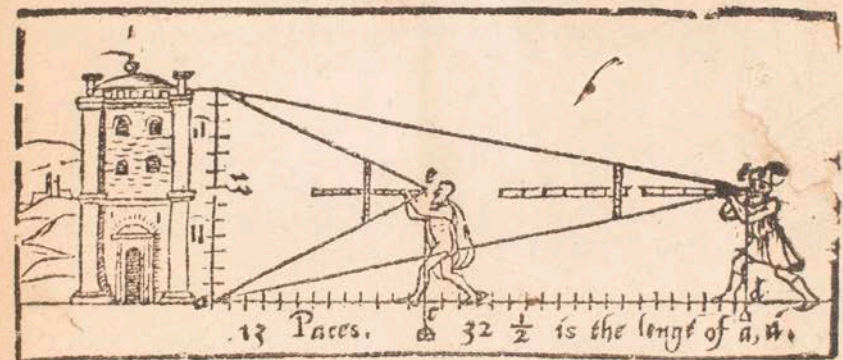
Digges' Prognostication, first published in 1553, apparently to earn money after he lost his estate, and then reprinted frequently until 1605, was an almanac with, among other things, astronomical information, for example on how to determine the hour at night from the stars, and information about instruments for observation.

Provenance: Harrison Horblit

A
**BOOKE NAMED
TECTONICON,**

Brieflie shewing the exact measuring, and speedie reckoning all manner of Land, Squares, Timber, Stone, Steeples, Pillers, Globes, &c. Further, declaring the perfect making and large use of the Carpenters Ruler, containing a Quadrant Geometrical: comprehending also the rare use of the Squire. And in the end a little Treatise adioyning, opening the composition and appliencie of an Instrument, called the profitable Staffe. With other things pleasant and necessarie, most conducibile for Surueyers, Landmeaters, Ioyners, Carpenters, and Mafons.

*Published by LEONARD DIGGES Gentleman, in
the yeere of our Lord, 1556.*



Imprinted at London by FELIX KYNSTON,
dwelling in Pater-noster row, ouer against the
signe of the Checker. 1605.

∞ TABVLA RADICVM ∞

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1/4	44 1/2	44 3/4	45	45 1/4	45 1/2	45 3/4	46	46 1/4	46 1/2	46 3/4	47	47 1/4	47 1/2	47 3/4	48	48 1/4	48 1/2	48 3/4	49	49 1/4	49 1/2	49 3/4	50	50 1/4	50 1/2	50 3/4	51	51 1/4	51 1/2	51 3/4	52	52 1/4	52 1/2	52 3/4	53	53 1/4	53 1/2	53 3/4	54	54 1/4	54 1/2	54 3/4	55	55 1/4	55 1/2	55 3/4	56	56 1/4	56 1/2	56 3/4	57	57 1/4	57 1/2	57 3/4	58	58 1/4	58 1/2	58 3/4	59	59 1/4	59 1/2	59 3/4	60	60 1/4	60 1/2	60 3/4	61	61 1/4	61 1/2	61 3/4	62	62 1/4	62 1/2	62 3/4	63	63 1/4	63 1/2	63 3/4	64	64 1/4	64 1/2	64 3/4	65	65 1/4	65 1/2	65 3/4	66	66 1/4	66 1/2	66 3/4	67	67 1/4	67 1/2	67 3/4	68	68 1/4	68 1/2	68 3/4	69	69 1/4	69 1/2	69 3/4	70	70 1/4	70 1/2	70 3/4	71	71 1/4	71 1/2	71 3/4	72	72 1/4	72 1/2	72 3/4	73	73 1/4	73 1/2	73 3/4	74	74 1/4	74 1/2	74 3/4	75	75 1/4	75 1/2	75 3/4	76	76 1/4	76 1/2	76 3/4	77	77 1/4	77 1/2	77 3/4	78	78 1/4	78 1/2	78 3/4	79	79 1/4	79 1/2	79 3/4	80	80 1/4	80 1/2	80 3/4	81	81 1/4	81 1/2	81 3/4	82	82 1/4	82 1/2	82 3/4	83	83 1/4	83 1/2	83 3/4	84	84 1/4	84 1/2	84 3/4	85	85 1/4	85 1/2	85 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1/4	159 1/2	159 3/4	160	160 1/4	160 1/2	160 3/4	161	161 1/4	161 1/2	161 3/4	162	162 1/4	162 1/2	162 3/4	163	163 1/4	163 1/2	163 3/4	164	164 1/4	164 1/2	164 3/4	165	165 1/4	165 1/2	165 3/4	166	166 1/4	166 1/2	166 3/4	167	167 1/4	167 1/2	167 3/4	168	168 1/4	168 1/2	168 3/4	169	169 1/4	169 1/2	169 3/4	170	170 1/4	170 1/2	170 3/4	171	171 1/4	171 1/2	171 3/4	172	172 1/4	172 1/2	172 3/4	173	173 1/4	173 1/2	173 3/4	174	174 1/4	174 1/2	174 3/4	175	175 1/4	175 1/2	175 3/4	176	176 1/4	176 1/2	176 3/4	177	177 1/4	177 1/2	177 3/4	178	178 1/4	178 1/2	178 3/4	179	179 1/4	179 1/2	179 3/4	180	180 1/4	180 1/2	180 3/4	181	181 1/4	181 1/2	181 3/4	182	182 1/4	182 1/2	182 3/4	183	183 1/4	183 1/2	183 3/4	184	184 1/4	184 1/2	184 3/4	185	185 1/4	185 1/2	185 3/4	186	186 1/4	186 1/2	186 3/4	187	187 1/4	187 1/2	187 3/4	188	188 1/4	188 1/2	188 3/4	189	189 1/4	189 1/2	189 3/4	190	190 1/4	190 1/2	190 3/4	191	191 1/4	191 1/2	191 3/4	192	192 1/4	192 1/2	192 3/4	193	193 1/4	193 1/2	193 3/4	194	194 1/4	194 1/2	194 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1/4	266 1/2	266 3/4	267	267 1/4	267 1/2	267 3/4	268	268 1/4	268 1/2	268 3/4	269	269 1/4	269 1/2	269 3/4	270	270 1/4	270 1/2	270 3/4	271	271 1/4	271 1/2	271 3/4	272	272 1/4	272 1/2	272 3/4	273	273 1/4	273 1/2	273 3/4	274	274 1/4	274 1/2	274 3/4	275	275 1/4	275 1/2	275 3/4	276	276 1/4	276 1/2	276 3/4	277	277 1/4	277 1/2	277 3/4	278	278 1/4	278 1/2	278 3/4	279	279 1/4	279 1/2	279 3/4	280	280 1/4	280 1/2	280 3/4	281	281 1/4	281 1/2	281 3/4	282	282 1/4

18. DUJARDIN, PIERRE, A Very Fine Painted Wood and Gilt Brass Diptych Dial

Paris, c. 1630, 3in. (7.5cm.) long, unsigned and undated, leaf 1b with gilt painted floral decoration, gilt brass lunar volvelle with the hours alternatively polished and matt, painted red and blue lunar phase calendar, leaf 2a with gilt brass horizontal dial for 48° with hours alternatively polished and matt, four punched stars 16-point painted compass rose and blue needle, outer leaves with incised square decoration with gilt painted grooves to edges.

£18,000

Some sundials from this workshop are signed Pierre Dujardin, one in the Adler Planetarium, Chicago, and another at the Musée national de la Renaissance (dated 1627). Others are occasionally found with a punched mark RF (such as at the Museum of the History of Science, Oxford Inv. 67063). The present dial shares the decorations and style of this workshop, and the punched stars may represent a maker's mark.



Encyclopaedia Of Curiosities Found In America, The East And West Indies And China

19. ERASMUS, FRANCISCI, Ost- und West-Indischer wie auch Sinesischer Lust- und Stats-Garten

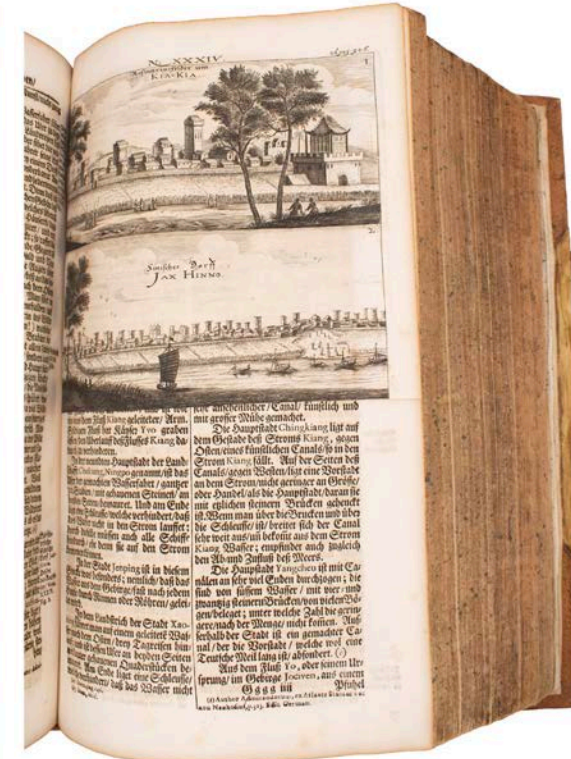
FIRST EDITION, 3 parts in one volume, [38], 1762, [36]pp., engraved half title and engraved coat-of-arms by C. N. Schurtz, engraved frontispiece, title in red and black, woodcut initials, head and tail-pieces, black letter, printed double-column, 65 copper engraved plates separated into 75 by binder and bound next to accompanying text, complete, some light foxing, worm holes to last few gathers, occasional very faint browning, new endpapers, later half leather over vellum, metal furniture and leather straps, red morocco label to spine, folio (323 x 203mm), Nuremberg: Endter Erben 1668

£3,500

First edition of this encyclopaedia of curiosities pertaining to America, the East and West Indies and China, with imaginative depictions of plants, animals, human habitation, historical scenes, ceremonies, and mythical creatures. The 65 engraved plates include many devoted to botanical subjects.

Francisci, an editor at Endters, is considered to be among the most influential figures in the German Baroque period. He was a polymath writer, and the work contains a six-page bibliography listing some 250 books consulted. Francisci is considered “the first German bookmaker by profession” (ADB VII, 207) and knew how to win a wide audience for his books through partly dubious means. His curious anthology offered here, whose scientific claim can rightly be doubted, deals in the first two parts with the natural history of the West and East Indies with imaginative representations of some mythical creatures and monsters that the German reader expected in a description of the distant lands. The third part is dedicated to America and China, and here too the author uses all kinds of curious details in his presentation of customs, forms of government and institutions, which also find their expression in the illustrations.

[VD17 23:231724G. Dünnhaupt II, 15. Hayn/Got. II, 350. Lipperheide Ci 36. Nissen BBI 648. Sabin 25463; Alden & Landis 668/61; Borba de Moraes I:323]



Provided Essential Navigational Information For Sailors

20. [INDIA] FINDLAY, ALEXANDER GEORGE, A Directory for the Navigation of the Indian Ocean, with Descriptions of its Coasts, Islands, etc., from the Cape of Good Hope to the Strait of Sunda and Western Australia, including also the Red Sea and the Persian Gulf; the Winds, Monsoons, and Currents, and the Passages from Europe to its various Ports.

London 1876, thick 4to, Original Cloth Gilt, Gilt Title on Upper cover 'Sailing Directory for the Indian Ocean' hinges repaired (2) xxxvi, 1215, 16 maps mostly folding, this edition is mispaginated there are no pp xi-xii in any 1876 copy of this work.

£2,250

Third and Enlarged Edition.

In 1876, A Directory for the Navigation of the Indian Ocean by Alexander George Findlay was a comprehensive guide for mariners navigating the Indian Ocean. It detailed coasts, islands, winds, monsoons, currents, and passages from the Cape of Good Hope to the Strait of Sunda and Western Australia, including the Red Sea and Persian Gulf. This third edition, published by Richard Holmes Laurie, provided essential navigational information for sailors of the time.

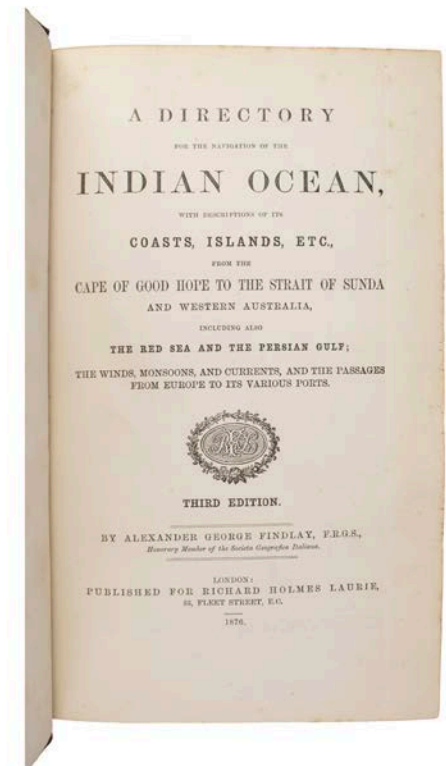
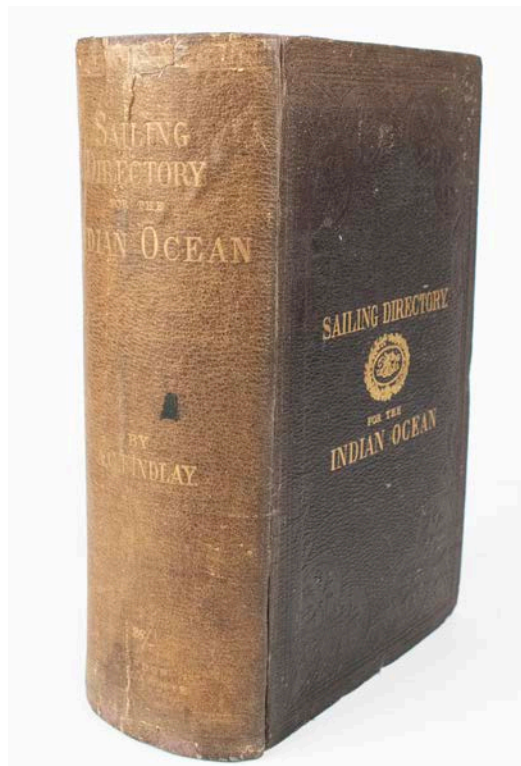
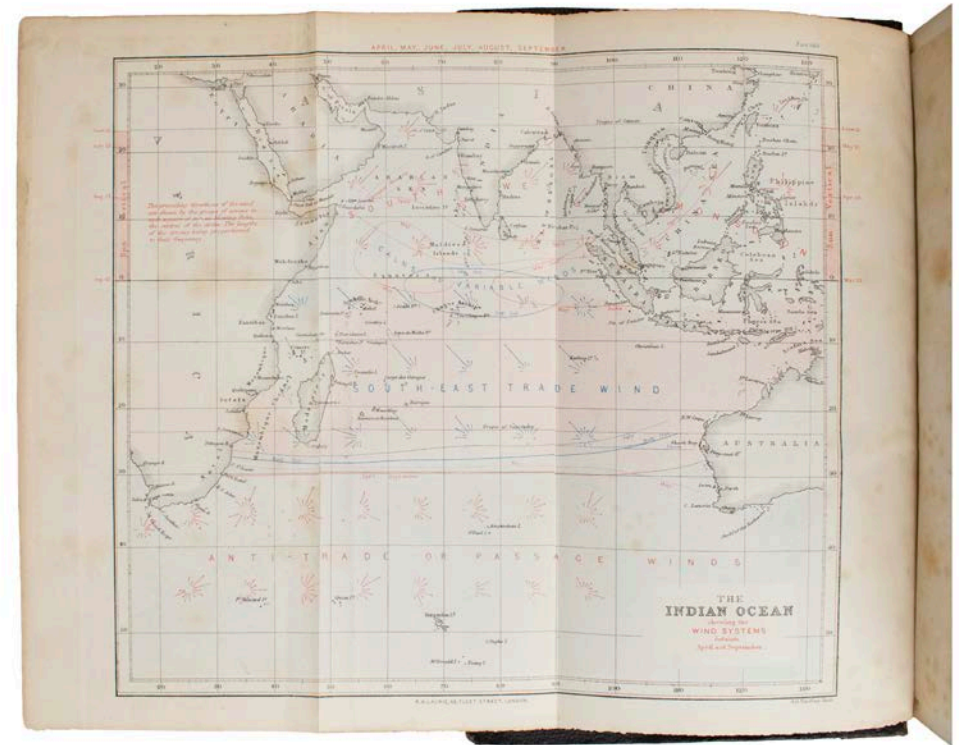
This work described in detail the Bay of Bengal, The Malabar Coast;

'The Red Sea', 'The Southern Coasts of Arabia' and 'The Persian Gulf' Sharjah ('Shargh'), Dubai ('Debay') and Abu Dhabi ('Abu Thabi') are all described, as is Al Bida and Doha ('Doheh') on the Qatar ('Kutr') coast, and there are quite long descriptions of Bahrain ('Bahrein') and Kuwait ('Koweit').

The general maps of the Indian Ocean depict currents and prevailing winds and monsoon directions. Some of the maps of individual islands derive from earlier surveys: the map of the Keeling Islands is that surveyed by Fitzroy and used in the Narrative of the Voyage of the Beagle.

"Between 1869 and 1875 Findlay [1812-1875] prepared and published six navigational directories which in text, maps, and diagrams documented the winds, currents, coastlines, and other information necessary for navigation in the major oceans of the world. The directories ran to several editions and were regarded as the standard authorities" (ODNB). His Indian Ocean directory was first published in 1866.

A friend of David Livingstone, Findlay took a keen interest in exploration in Africa, mapping routes taken by Burton and others.



Extremely Scarce First Edition Of The Most Important Work Of Eighteenth Century Astronomy

21. FLAMSTEED, JOHN, *Historiae coelestis libri duo quorum prior exhibet catalogum stellarum fixarum Britannicum novum & locupletissimum una cum earundem planetarumque omnium... observante J Flamsteedio in Observatorio Regio Grenovicensi continua serie ab anno 1676 ad annum 1705 completum.*

First Edition (one of only a few known copies).

London, J. Mathews, 1712, engraved frontispiece by George Vertue after J.B. Catenaro, engraved dedication by Guernier after Catenaro, engraved headpieces and 4 engraved plates, errata leaf at end, bound in contemporary panelled calf, hinges repaired but an excellent copy of this rare work.

£65,000

This is the most important work of eighteenth-century astronomy in the extremely rare first edition produced by Edmund Halley. The British Catalogue at the beginning of this work lists thousands of stars and was the most extensive and comprehensive list to date.

The latter part of Flamsteed's life passed in controversy over the publication of his excellent stellar observations. He struggled to withhold them until completed, but they were urgently needed by Isaac Newton and Edmond Halley, among others. Newton, through the Royal Society, led the movement for their immediate publication. In 1704 Prince George of Denmark undertook the cost of publication with the approval of Queen Anne and despite the Prince's death in 1708 and Flamsteed's objections, the incomplete observations were edited by Halley, and 400 copies were printed in 1712.

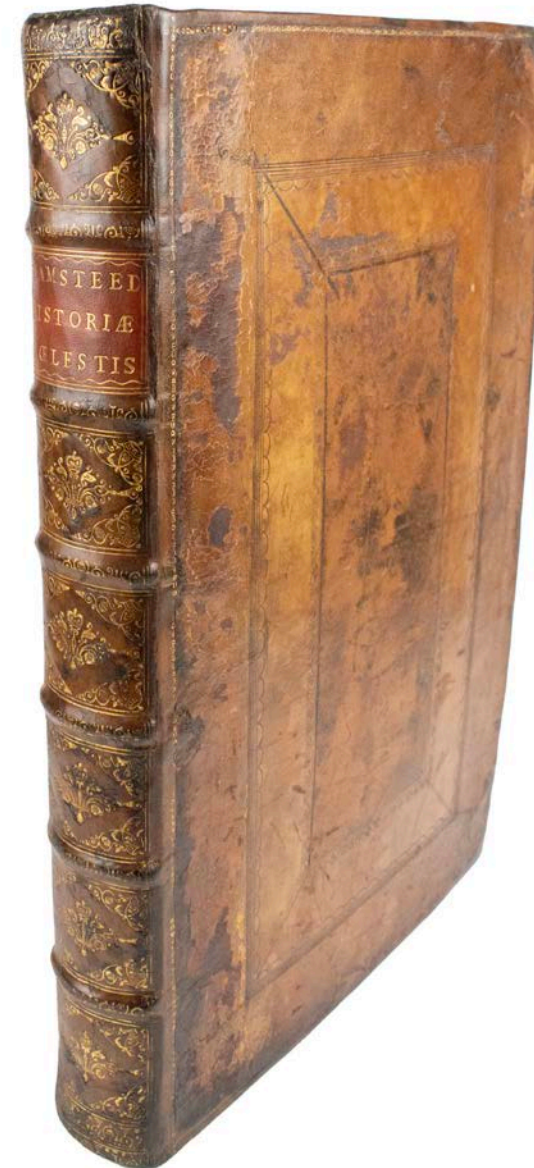
After the death of Queen Anne in 1714, Flamsteed managed to burn 300 of them. "I made a sacrifice of them to heavenly truth" (Bailey p. 101). He subsequently disposed of any other copies he came across.

England appointed its first Astronomer Royal, John Flamsteed, born in Denby, Derbyshire (1646-1719) in 1675. He lived and worked at the Royal Observatory, Greenwich, built by King Charles II of England in the same year and catalogued over 3000 stars. Flamsteed accurately calculated the solar eclipses of 1666 and 1668. He was responsible for several of the earliest recorded sightings of the planet Uranus.

As Astronomer Royal, Flamsteed spent some forty years observing and making meticulous records for his star catalogue, which would eventually triple the number of entries in Tycho Brahe's sky atlas. In 1725 Flamsteed's, *Historia Coelestis Britannica* was

published posthumously. It contained Flamsteed's observations and included a catalogue of 2,935 stars to much greater accuracy than any prior work. It was considered the first significant contribution of the Greenwich Observatory, and the numerical Flamsteed designations for stars that were added subsequently to a French edition are still in use.

Provenance: Derby Grammar School; Signature of J. Merrill, 15th June, 1722.



OBSERVATIONES LUNÆ.

ANNO CHRIST. 1676.		Empire per Horologium Regium Britannic.	Tempus per Analog. Co- m.	LUNÆ DISTANTIE à FIXIS.		Refectus per Motum per Circuli peripheriam Synodalem.	Temp. per Hic.	
Die. M.	h.	m.	s.	h.	m.	s.		
Mar. 8 7 59 30 30 40 35 20 37 30 38 55 39 20 8 06 40 04 08 11 35 15 05 30 Lunba Luna obfcuris clarioribus per rubam apparet, quæ adita iuxta cœquidistantiam 11^{ma} Arietis hinc Nerte totum erit, & Luna locis Tychonicis Turti 12^o 55, Autistic 27^o 28^o Hor. cœq. per Diurnitas. 15 30 21 10 11^o Arietis (Egævi) à limbo obfcuro — 6502 = 51 29 15 30 21 10 11^o Arietis à limbo lucido — 3972 = 44 30 15 30 21 10 11^o Arietis à limbo lucido — 4001 = 44 31 15 30 21 10 11^o Arietis à limbo infidore — 4280 = 35 30 Moon Diameter Lunam fufam humilioris exspectare Vapores nimbis & urbis fulgura per quos diatna non potui videre Fixas, etiam Luna Luna minimum diatna esse area, fed rubicundioris apparet. Circa undecimam Arietis alie plures fixas apparet, quarum una valde lucida quædam diametri Lunaris ab ea Boream versus apparet, revera ad Austrum dirigit. Mar. 9 Horæ fexta iuxta editas cœquidistantia Lunæ in eadem Longitudine cum 24^o Turti portant, Lunam Autistic à Fixa diſtans, 27^o 28^o circiter. Fixæ locis Tychonicis Turti 12^o 54, Autistic 27^o 28^o 1^o Bore. circa hinc, (Itæra) fixarum alie due apparet, et lucida fari, & exigua, quarum ab hac & à Luna loquentes Obſervato Diſtanti Fixæ Egævi, Turti A.								
6 16 35	6 21 35			Stella f. a capſis proxima		2437		27 28
22 10	28 10			a recta per capſas in		3300		04 07
25 30	30 30			recta per Capſas.				
36 05	39 05			Rebua iuxta ſuperat.		3135		25 41
38 35	43 35			a Capſa.		613		01 30
49 24	51 24			a recta per Capſas.		3105		25 40
49 42	54 42			à limbo lucido		3105		25 41
51 16	56 16			à limbo lucido		3140		25 42
7 00 57	7 05 57			b à limbo		2604		20 20
05 57	10 57				req.	3635		25 39
09 02	14 02				iter.	3649		25 40
14 44	19 44					3656		30 30
18 42	24 42			Luna Diameter		3386		25 41
23 06	28 06			b à limbo		3961		25 42
26 06	31 06			Stella f. à limbo proximo		3386		25 41
53 35	58 35				iter.	3961		25 42
8 20 46	8 25 46				iter.	3183		42 30
32 04	37 04				iter.	5215		42 30
44 57	49 57				iter.	6028		42 30
55 30	56 30				iter.	6143		42 30
59 43	59 43				deno.	6562		42 30
1 13 30	1 18 30			f à limbo denique		7278		42 30
19 59	24 59			Luna Diameter		8028		42 30
25 35	28 24				b f	1132		42 30
					b c, cir.	415		03 18

LUNÆ
DISTANTIÆ Æ FIXIS.

ANNO CRISTO 1676. 1677.	Tempus in Horologium Quilicium K. M. N.	Tempus in Horologium Astronic. Convent. K. M. N.	LUNÆ DISTANTIE A FIXIS			Distantia per Circuli peripher. Sperandica. Pars. per Mili.
			Pro correctione Horologii inter Astronomicæ ac æquæ.			
M ^r . 8			<i>Annus.</i>	<i>Alta. sup.</i>	<i>Err. Horolog.</i>	
	7 41 56	Canale Lunaris	33 30	7 47 00	+ 05 04	
	47 43		resp. 34 17	53 12	+ 04 52	
	8 03 01		36 58	8 10 49	+ 04 58	
	10 07		38 20	21 08	+ 04 08	
12	Martij 12 Die Solis vespere, pro Emendatione Horologii investiganda Altitudines Ob- servate sequentes.					
			<i>Annus.</i>	<i>Alta. sup.</i>	<i>Err. Horolog.</i>	
	10 59 47		37 28	10 07 21	- 02 36	
	11 27		37 58	10 54	- 02 33	
	16 47	Arcturi	38 26	11 02	- 02 41	
	19 12		38 51	16 44	- 02 38	
	11 13 22		39 08	16 35	- 02 37	
	46 50					
	Accipietur interea Luna ad interambulans distantiam a 2 ^o Geminarum, cujus locus Thiémisius tunc Cancrj 2 ^o 26', Latitudo 1 ^o 12' Meridionalis, cui circa motum nocturnum conjunctura erat, ad Austrum transiunt quæ sequentes observari interseperunt. Fixa Geminarum 4 ^a Bayeri.					
	10 25 14	Stella à Cupide infer.			5432	= 52 52
	30 39				5462	= 50 50
	41 16	Luna Diameter		resp.	5795	= 50 37
	45 19			resp.	5795	= 50 28
	49 44	Stella à Cupide infer.			5142	= 42 45
	10 55 54	11 02 21			4758	= 54 51
	12 26	16 52		iterum	5591	= 50 21
	46 01	45 28		iter.	3282	= 18 40
	55 51	51 10		denovo	1808	= 47 10
12	12 09 22	12 04 40			1826	= 44 32
	16 15	15 42				
	16 32	15 23				
	18 52	18 10				
	23 00	22 31				
	28 55	28 28				
	34 16	34 43		l'imbo	1754	= 19 04
	41 55	42 22		ad red. per Cupides	7051	= 08 25
	44 55	45 32		l'imbo	2145	= 18 25
	47 45	48 13		l'imbo	1650	= 13 12
	49 45	50 13		Luna Diameter	2050	= 21 23
	12 45	13 45			2821	= 20 24
D 12	Die Lunæ vespere, appulsi observari ad 28 ^o Geminarum, cujus locus Thiémisius tunc Cancrj 30 ^o 33' Latitudo 2 ^o 42' Meridionalis. Fixa Geminarum 6 ^a .					
	11 34 00	11 32 00	Luna Diameter		2745	= 30 47
	30 34	30 44	Lac. niger maj.	à Stella	0521	= 54 21
	12 25 12	11 24			5229	= 45 00
	34 19	32 19	Stella à limbo Luna remotio	resp.	5584	= 47 58
	40 50	38 50	à limbo laevo		5431	= 44 24
	57 35	55 35			4495	= 37 57
	59 35	58 35		intra	4495	= 35 19
	12 10 11	11 20	Fixa stella à Cupide infer.		1810	= 15 14
	52 20	50 22	Ereclata vidi & Lacus Niger Minoris Longitudinem à limbo laevo distan- tem.			

HISTORIÆ COELESTIS
LIBRI DUO

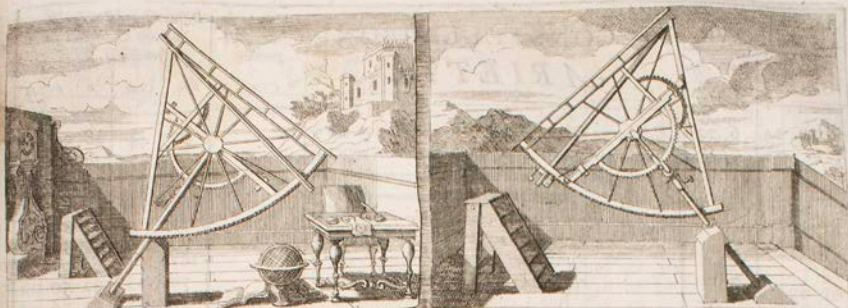
Quorum PRIOR Exhibet
CATALOGUM STELLARUM FIXARUM
BRITANNICUM
Novum & Locupletissimum

Una cum eandem
PLANETARUMQUE OMNIUM
OBSERVATIONIBUS.
Sextante, Micrometro, &c. habitis.

POSTERIOR
TRANSITUS SYDERUM
PER PLANUM ARCUS MERIDIONALIS
ET DISTANTIAS EORUM A VERTICE
Complectitur.

Observante JOHANNES FLAMSTEEDIO A. R.
In Observatorio Regio
G R E N O V I C E N S I
CONTINUA SERIE
Ab Anno 1676 ad Annum 1705 Completum.

L O N D I N I:
Typis J. MATTHEWS. MDCCXII.



22. [FOWLER, JOHN after], *English Brass Universal Equinoctial Ring Dial - In The Style Of John Fowler*

English, early 18th century, central bridge with double pin-hole gnomon sliding over calendar and zodiacal scales, outer meridian ring engraved with latitude scale 0-90-0-90-0 degrees, hours engraved in Roman numerals, 127mm diameter.

£5,500

A Fine Early 18th Century brass universal ring dial.

This dial is very simply engraved, with little decoration, but contains very careful work with accurately divided scales. Although not named, the engraving is in the style of John Fowler. John Fowler worked between 1721 and 1750 from The Globe, Sweeting's Alley by the Royal Exchange, London, and specialised in sundials and compasses. It demonstrates the austerity of English instruments at this time.



The First Latin Edition, Translated By Mathias Bernegger

23. GALILEO, GALILEI; BERNEGGER, MATHIAS [TRANSLATOR,
Systema cosmicum... in quo quatuor dialogis, de duobus maximis mundi
 systematibus, Ptolemaico & Copernicano, utriusque rationibus philosophicis ac
 naturalibus indefinite propositis, differitur

2 works in one, [16], 495, [24]p., engraved frontispiece, woodcut initials and headpieces,
 engraved portrait of Galileo, woodcut diagrams and illustrations, Zz2-3 transposed,
 engraved title slightly frayed, contemporary blind-ruled vellum, modern pastedowns, 4to
 (191 x 144mm), Strassburg, David Huatt for the Elzevirs, 1635.

£18,000

First published in Florence in 1632, *Systema comicum* was banned by the Catholic church and Galileo had been condemned for heresy by Urban VIII shortly after its publication. A surviving copy was smuggled out of Italy and made its way to Strassburg, where it was translated in Latin - the international language of science. Bernegger possibly acted on Galileo's request (via Elia Diodati), though Bernegger was careful not to imply that Galileo had any part in its publication. Due to pressure to get this work out, Bernegger was still translating when printing began. 600 copies were produced in its first run, a large amount for the time. A new frontispiece was designed, based on the Italian edition but changed to show Copernicus as a young man, representing a young science in contrast to the two ancients, Aristotle and Ptolemy.

In *Systema cosmicum...* Galileo explains how Copernicus's idea of heliocentric cosmology would work, but he makes the decision to frame it within a hypothetical context to try to avoid the Catholic church's ban on heliocentrism which came into effect in 1616. The work contains Galileo's entire body of research, which he uses to bolster his arguments against accepting the scientific authorities one is presented with, without any further observations and experimentations to justify those facts.

Bernegger includes an extract from Kepler's *In Martem* and a letter by the Carmelite friar Paolo Foscarini (translated by Diodati under a pseudonym), both of which were to support the notion that Copernicanism was not contrary to the Bible, as stated on the title-page

The Elzevirs were keen to publish works unacceptable within papal dominions; this translation made Galileo's work accessible to the whole of Europe.

[BOUND WITH]

Tractatus de proportionum instrumento, quod merito Compendium universae

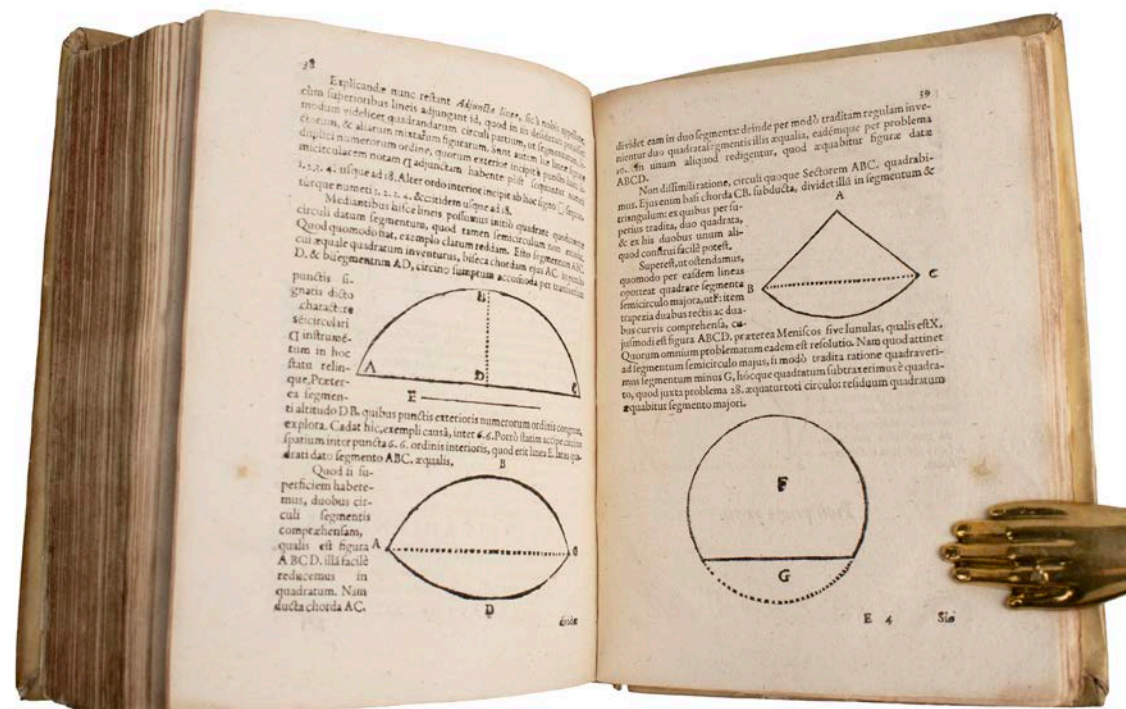
Geometriae dixeris... Editio secunda

[8], 104.p, woodcut of a sector on title-page, woodcut initials and diagrams, wood cut headpieces, lacking engraved plate, Strasbourg, David Hautt, 1635.

The *Tractatus de proportionum instrumento* is the second Latin edition describing Galileo's "proportion compass." This was the first device to perform arithmetic calculations by mechanical means. First published in Italian in 1606, Galileo's compass was a great improvement over earlier German models. Bernegger added his own extensive notes on the instrument, which was first printed in 1612. This 1635 edition was issued with a new title page and dedication. These two works are often found bound together.

Bernegger had previously translated into Latin Galileo's treatise on the proportional compass, adding his own extensive notes on the instrument, which was first printed in 1612; a reissue of that work, with a new title-page and dedication, is bound here after the *Systema Cosmicum*. These two works are often found bound together.

[Cinti 96; VD17 14:074200H & 12:155151T; Willems 426#]





SYSTEMA COSMICVM,
Authore
GALILÆO GALILÆI
LYNCEO, ACADEMIÆ PISANÆ
Mathematico extraordinario,

SERENISSIMO
MAGNI-DVCIS HETRVRIÆ
PHILOSOPHO ET MATHEMATICO
PRIMARIO:

In qua
QUATVOR DIALOGIS,
DE

Duobus Maximis Mundi Systematibus,
PTOLEMAICO & COPERNICANO,

Vtriusq; rationibus Philosophicis ac Na-
turalibus indefinite propositis,
discutitur.

Ex Italica Lingua Latine conuersum.

Accessit
Appendix gemina, qua SS. Scripturæ dicta
cum Terræ mobilitate conciliantur.

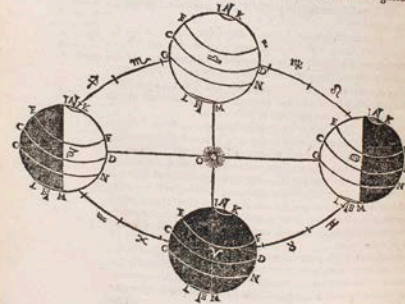
Accuravit
Augustus Trebec.
Imensis ELZEVIRIORVM,
Typi DAVIDIS HARTTI.

Anno 1633.

*Propositio
simpliciter
ma Coperni-
canum hypo-
thesi. Et
cum conse-
quentia ro-
pationum.*

Propositio hinc, ut ea quæ dicenda restant, clarius intelligen-
tur, figuram describemus ac initio signabimus circumferentiam circuli
quæ nobis representabit illam orbis magni descriptam in plato
Eclipticæ; hancq; diuidemus in quatuor partes æquales, cum dia-
metris. Capricornio, Cancro, Libra & Arietis, quæ eodē tem-
pore nobis representabunt quatuor puncta cardinalia, scilicet duo
solstitia & duo æquinoctia: & in centro huius circuli notabimus so-
lem O, fixum & immobilem.

Notemus iam circa quatuor puncta, Capricornium, Cancrum,
Libram & Arietem, tanquam centra, quatuor circulos æquales, qui
nobis representent terram diuersis temporibus ibi constitutam.
Quæ terra cum suo centro, anni spacio peragret totam circumferen-
tiam Capricorni, Arietis, Cancri & Libræ, progrediendo ab Occi-
dente versus Orientem, hoc est, secundum ordinem figurarum.



Describing And Illustrating The Construction Of Gallucci's Improved Armillary Sphere

24. GALLUCCI, GIOVANNI PAOLO, De fabrica, et usu hemisphaerii uranici... Quo instrumento nuper excogitato ea omnia observantur, quae in coelis phenomena dicuntur, una cum horis cuiuscunque generis per solem, lunam, & stellas, quae praesertim non multum ab eclyptica distant... Venice, Bernardo Basa, 1596

Quo instrumento nuper excogitato ea omnia observantur, quae in coelis phenomena dicuntur, una cum horis cuiuscunque generis per solem, lunam, & stellas, quae praesertim non multum ab eclyptica distant... Venice, Bernardo Basa, 1596

Folio (272 x 190 mm), ff 28, title printed in red and black and with large solar woodcut vignette, and numerous woodcut illustrations to the text; the copy otherwise clean and crisp, in old half calf over marbled boards.

£4,500

FIRST EDITION OF GALLUCCI'S RAREST WORK, DESCRIBING AND ILLUSTRATING THE CONSTRUCTION OF HIS IMPROVED ARMILLARY SPHERE, a kind of spherical astrolabe. The instrument, which originated in ancient Greece, passed through Arab cultures to Europe in the middle ages, and was developed by Renaissance scientists such as Gallucci and Tycho Brahe. It was both a model of the heavens and, as here, a calculating instrument for determining celestial motions and positions.

Gallucci presents a step-by-step guide to the construction of his armillary sphere. Each individual part of the instrument is described in detail and illustrated. A large woodcut on folio 9 depicts the assembled sphere. The second and third parts of the book describe the instrument's various applications. Gallucci provides a table of stars, their positions and their magnitudes for the determination of time and position.

Gallucci (1538 -1621) was a Venetian mathematician, cartographer, astronomer, and humanist. His is famous for, among other things, the first Copernican star atlas, his *Theatrum mundi*, published in Venice in 1588.

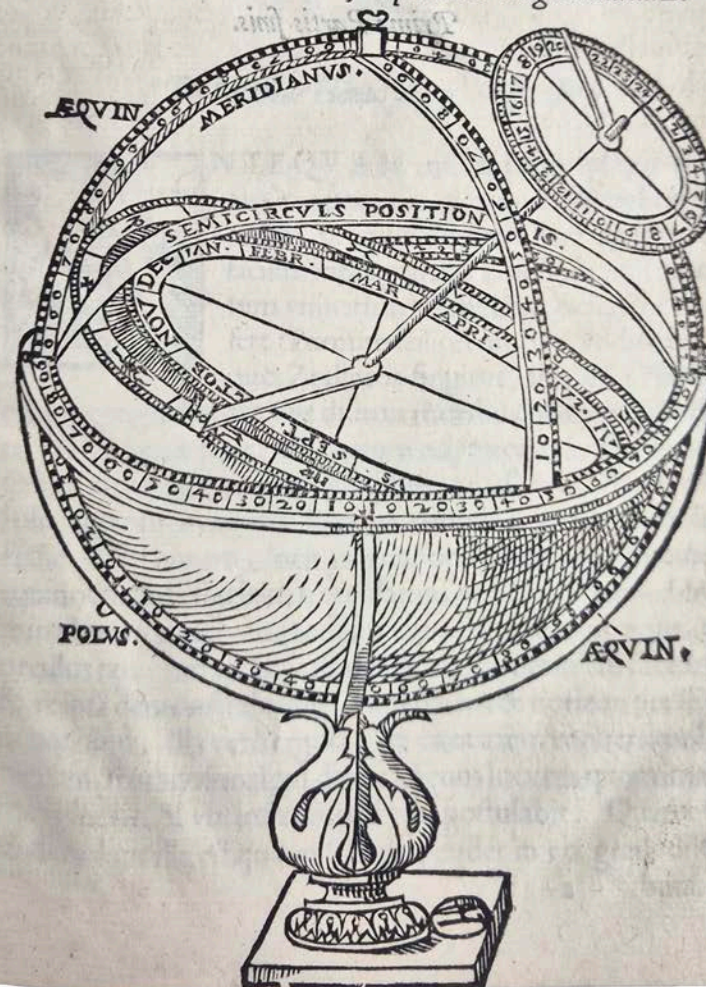
Adams G164; Riccardi I 567.1 transposes the date (1569 for 1596) and describes the work as quarto in format; OCLC records a single US location, at Brigham Young University

Pars Prima

9

stium æstivale sub grad. 66. cum dimidio, & brumale sub gradibus ijsdem in altera parte. Item semicirculus positionis debet alterum laterum habere ita accommodatum, ut perfectum semicirculum efficiat, qui respondeat cuspidibus eiusdem semicirculi, ut usum certum nobis præstet, quod item est animadvertendum in quarta altitudinis, ut scilicet alterum laterum, & zenith in horizontem cadat. Hac distantia adhibita minime verendum est, quò minus usum, & facilem hoc instrumentum nobis præstet.

Hemisphaerium ex omnibus suis partibus coagmentatum.



25. GUNTER, EDMUND, *The Works of Edmund Gunter: Containing the Description and the Use of the Sector, Cross-Staff, Bow, Quadrant, and other Instruments. With a Canon of Artificial Sines and Tangents to a Radius...* The uses whereof are illustrated in the Practice of Arithmetic, Geometry, Astronomy, Navigation, Dialling and Fortification. And some Questions in Navigation... Corrected by William Leybourn.

London: A.C. for Francis Eglesfield, 1673, 4to (198 x 154mm.), half-title, engraved additional title and 3 folding plates (one, at p.64, being a volvelle), woodcut diagrams and illustrations, 5Y1-2 bound between 2S1 and 2), fine panelled calf.

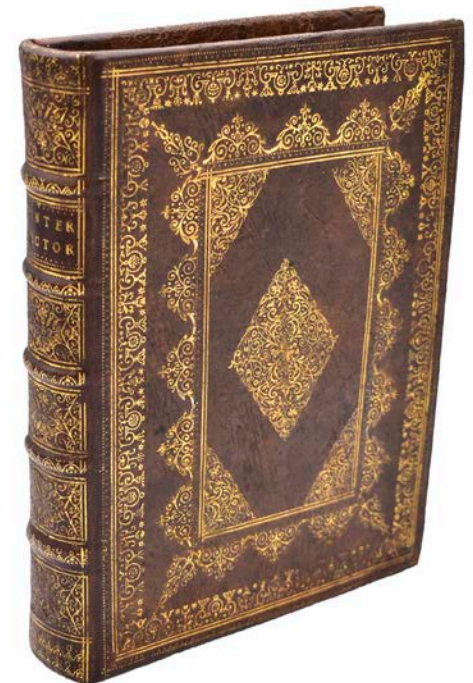
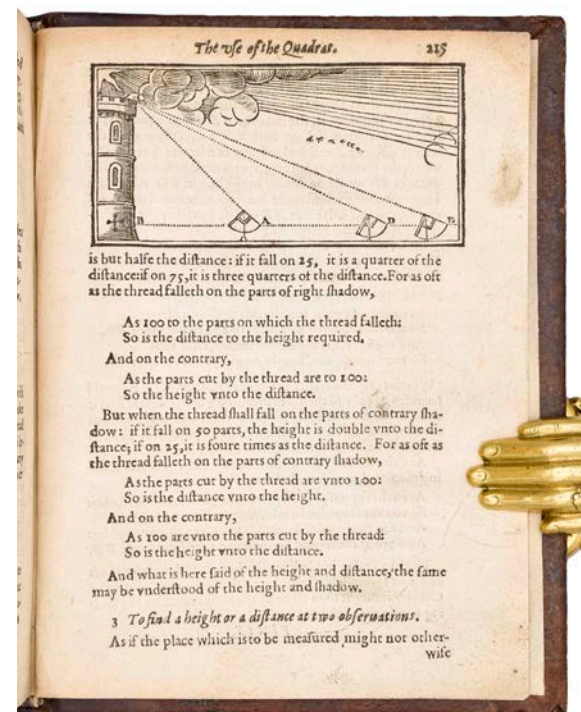
£3,800

Edmund Gunter is renowned for inventing numerous practical instruments for the use of Sailors.

In 1624 Gunter published the above collection of his mathematical works. One of the most remarkable things about this book is that it was written, and published, in English not Latin. It was a manual not for cloistered university fellows but for sailors and surveyors in the real world.

There is reason to believe that Gunter was the first to discover (in 1622 or 1625) that the magnetic needle does not retain the same declination in the same place at all times. By desire of James I he published in 1624 *The Description and Use of His Majesties Dials in Whitehall Garden*, the only one of his works which has not been reprinted. He coined the terms cosine and contangent, and he suggested to Henry Briggs, his friend and colleague, the use of the arithmetical complement (see Briggs *Arithmetica Logarithmica*, cap. xv.).

Gunter's quadrant is an instrument made of wood, brass or other substance, containing a kind of stereographic projection of the sphere on the plane of the equinoctial, the eye being supposed to be placed in one of the poles, so that the tropic, ecliptic, and horizon form the arcs of circles, but the hour circles are other curves, drawn by means of several altitudes of the sun for some particular latitude every year. This instrument is used to find the hour of the day, the sun's azimuth, etc., and other common problems of the sphere or globe, and also to take the altitude of an object in degrees.



26. HARRIS, JOSEPH, *The Description and Use of the Globes, and the Orrery, by which is prefixed By way of introduction, a brief account of the Solar System.*

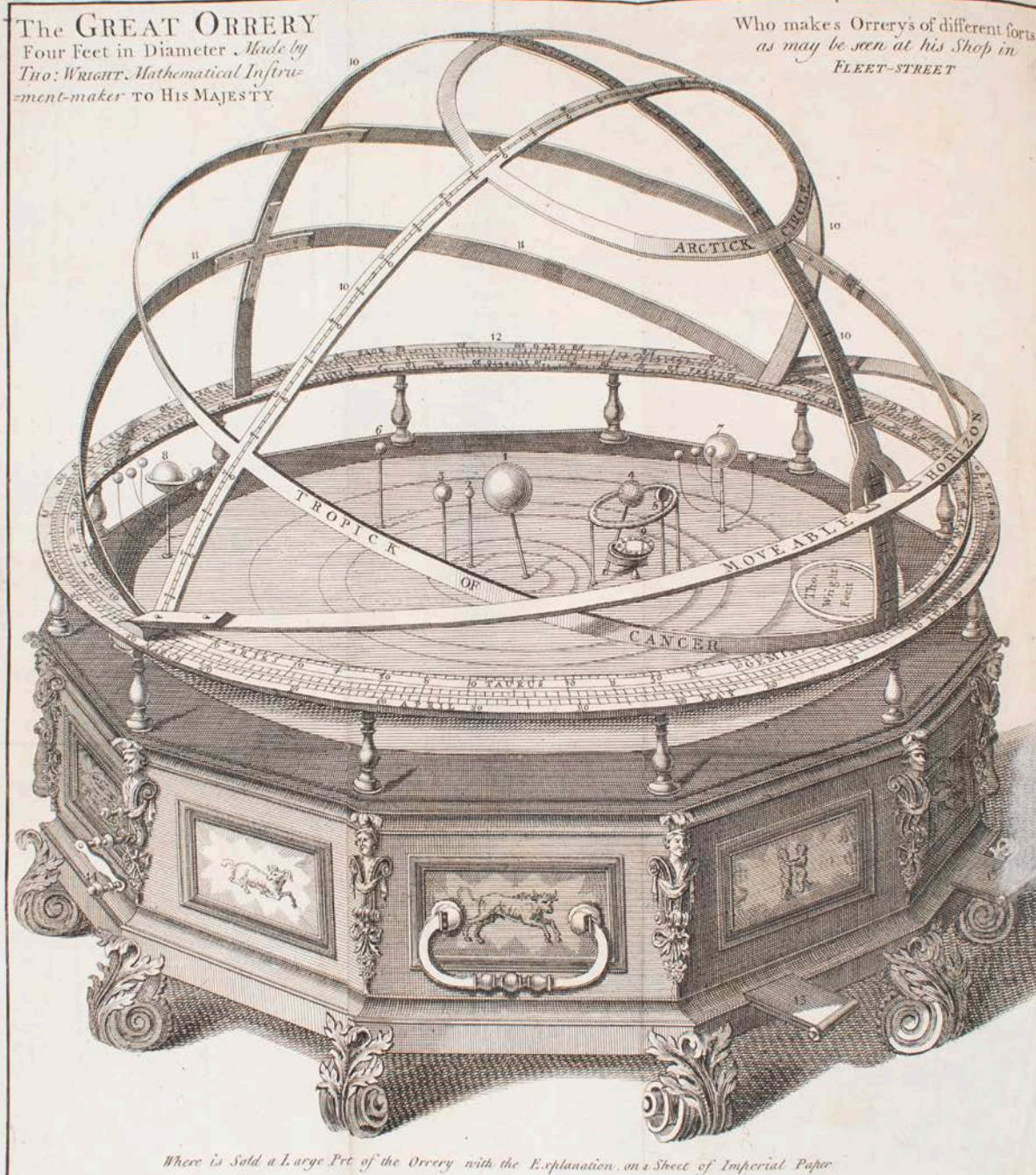
Thomas Wright and Richard Cushee, 1732, Second Edition, 8vo, Contemporary calf, gilt border, with 7 folding engraved plates including a large folding frontispiece of the Grand Orrery, woodcut decoration, woodcut initials, head- and tail-pieces, a fine copy in cloth case.

£750

In about 1724 Harris moved in with John Senex (1678-1740), notable chart- and map-maker. They co-operated to produce at least two star-maps, *Stellarum Fixarum Hemisphaerium Australe* and *Boreale*; in the plane of the equator; Harris name is writ large in the headline text, though the copyright remained in the hands of Senex, after his death his wife sold it. A copy of Harris's chart was in the library of Mme. Emilie du Chatelet, mistress and colleague of Voltaire, which may be the one now in the Bibliothèque Nationale de France and perhaps seized from her son's library when he was beheaded during the French Revolution. Although the pair of star maps in the plane of the equator are well represented in astronomy museums, there may also be a further pair in the plane of the ecliptic. It is likely that production of these charts was related to the premature, much contested and hotly resented publication by Halley and Newton of Flamsteed's long delayed observations of the stars.

In the *Australe* chart Joseph commemorates Polish astronomer Hevelius and King Jan III Sobieski's defeat of the invading Ottoman Turks in the 1683 Battle of Vienna, for the constellation Scutum is named Scutum Sobiescanum and illustrated with a glowing crucifix and the initials INRI. It is not easy to date the first publication of these charts, partly because the date 1690 too is large in the title and the facile tendency has been to take that as the publication date; but 1690 is before Harris was born and during the childhood of Senex. The most likely period for its creation is when Harris was working for John Senex, from January 1725 until he left on a voyage to Vera Cruz in June of that same year. When he returned from Vera Cruz in April 1728 Harris immediately started work on self-publishing his *Treatise of Navigation* and producing for Thomas Wright, instrument maker, his *Description and Use of the Globe*; and the Orrery. Wolfgang Steinicke in 'William Herschel, Flamsteed Numbers and Harris's Star Maps' says that these star-maps were still being relied on by William Herschel towards the end of the century.

[Tomash & Williams H22]



27. HATTON, EDWARD, A mathematical manual or delightful associate containing a description of the celestial globe . . . terrestrial globe, ... all kinds of maps etc.,

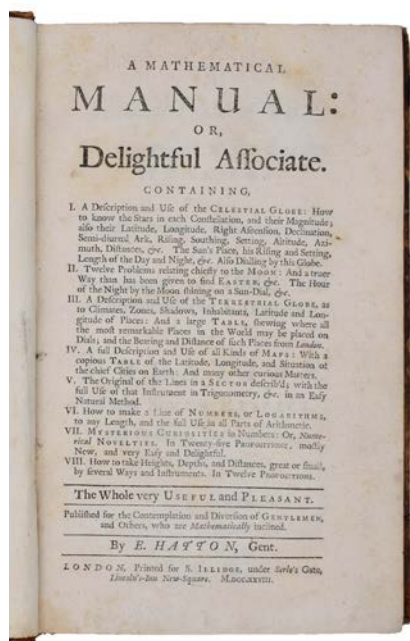
FIRST EDITION, S. Illidge, London, 1728, woodcut initials, head- and tail-pieces and diagrams, Contemporary panelled calf, preserved in custom box.

£750

An interesting work from an author who is known for his early survey of London. The Mathematical Manual includes: The description and use of the celestial globe; Astronomical problems, relating to the moon chiefly; containing rules for computing time; The description and use of the terrestrial globe; A description and use of maps; A description and use of the sector; The making, description, and use of the line of numbers, or logarithms, commonly called Gunter's-line; Mysterious curiosities in numbers; or, Numerical novelties; Instructions how to take heights, depths, and distances, several ways, great or small.

Provenance: John Rolle, 1st Baron Rolle (1750-1842, MP and subject of the satirical Rolliad); John Leigh Smeathman Hatton (1865-1933, mathematician and Principal of East London College) (bookplates)

[Tomash & Williams H77]



Henisch's Great Work On The Sphere, Astronomy And Exploration

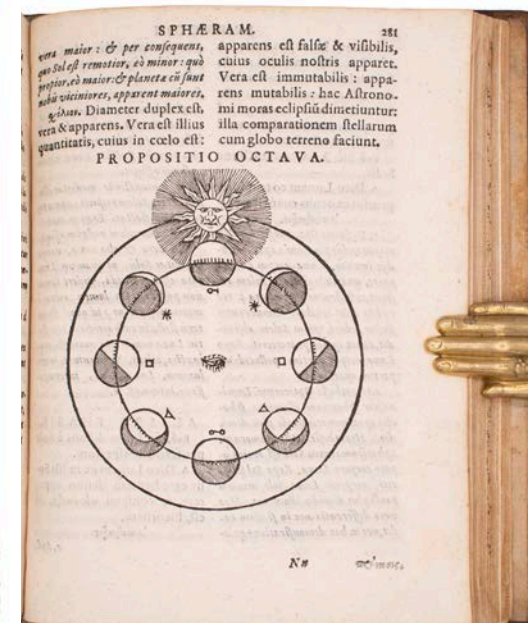
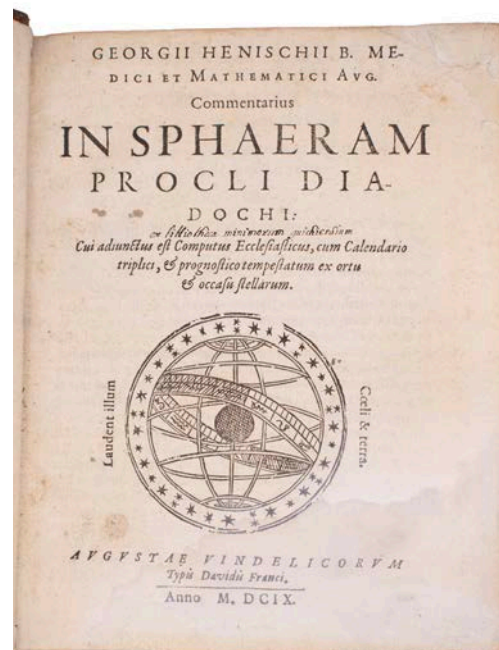
28. HENISCH, GEORG, Commentarius in sphaeram procli diadochi Cui adiunctus est Computus Ecclesiasticus, cum Calendario triplici, & prognostico tempestatum ex ortu & occasu stellarum.

FIRST EDITION, text of Proclus in parallel Greek and Latin, title with woodcut device, woodcut initials, 2 folding tables, errata f. at end, Contemporary French Olive Morocco, Gilt, Arms of Charles de Valois, Duc d'Angoulême to covers with addorsed C stamp in corners, triple gilt fillet border, spine gilt with smaller addorsed c stamp and gilt, 4to, Augsburg, David Franck, 1609

£6,500

Henisch's great work on the sphere, astronomy and exploration. Includes several mentions of America, Columbus and Vespucci.

Hieronymus Wolf recommended Henisch for the Protestant St. Anna Gymnasium in Augsburg, where he was professor of logic and mathematics from 1576-1617. He also taught in Hebrew, Greek, Latin and rhetoric, held the office of rector together with Simon Fabricius from 1580-93, was head of the city library at the same time and led a



medical practice until his death. Four times he was dean of the Augsburg medical college. He collected and organized the files of the Collegium medicum founded in 1582, thus laying the foundation for Augsburg's rich medical history.

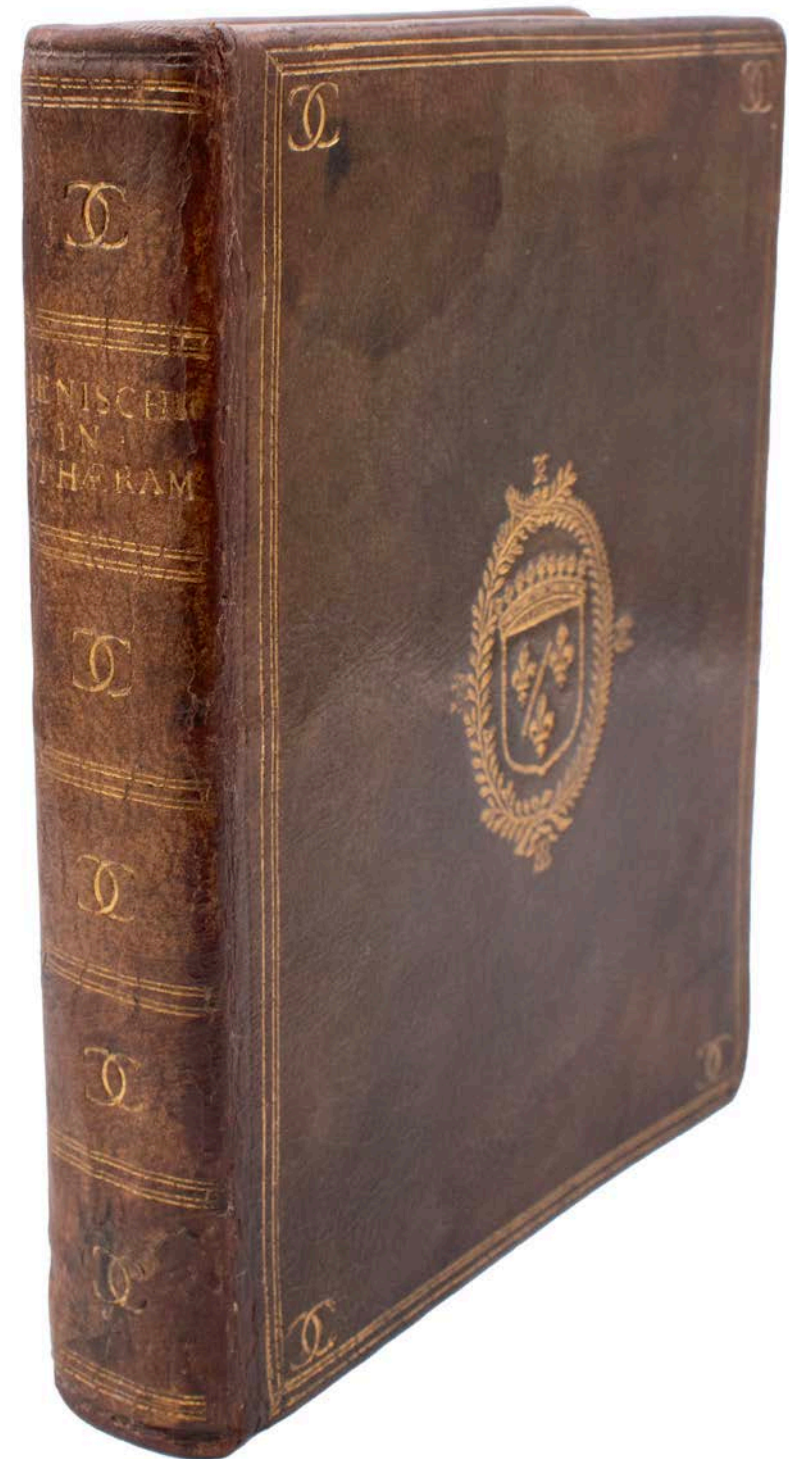
He also published the first printed catalogue of the city library in 1600; it is the oldest printed catalogue of a public library, an exemplary act. Henisch belongs to the late humanist group at the turn of the 16th to 17th centuries, which had an impact far beyond Augsburg. Its patron and moving force was the patrician Markus Welser. He was the mathematician and natural scientist, but also the Germanist of this group, a tolerant nature, whose friendly ties and scientific ties from the Jesuits mainly in Augsburg, Munich and Dillingen to Catholic and Protestant scholars in Germany, France, Italy and the Netherlands were enough. He participated with Welser and Hoeschel in the publishing house "Ad insigne Pinus", which started as a joint venture between the late humanists of Augsburg and ended as a defender of a Christian middle-class humanism in the service of the Counter-Reformation. In the merchant city of Augsburg, humanism was essentially focused on practical knowledge and results. H. met the wishes of the sober, calculating and counting bourgeoisie. His writings are strongly rational, his mind pushed for clear concepts and sensible methods. As a medical writer, he wrote a handbook and edited an edition of Aratus.

The study of the heavenly bodies and the firmament occupied him all his life. Every year he delivered a mathematical-astronomical calendar and published this important commentary on Proclus and the use of the Sphere. He treated geography as historical auxiliary science. The crown of the sciences was mathematics. He introduced arithmetic, geometry and astronomy to the students of the high school, and for practical reasons he enjoyed greater favour with the citizens than the philologists Hoeschel and Wolf.

Henisch is also the author of the first German dictionary that still serves well today. With his diligence and readiness, he managed to complete at least one volume from A-G. It is a comparative dictionary, in 10 languages: German, English, Bohemian (Czech), French, Greek, Hebrew, Italian, Polish, Spanish and Hungarian.

Provenance: Charles de Valois, duc d'Angoulême (1573-1650, natural son of Charles IX), arms on binding [his library was bequeathed by his son to the Minim convent of La Guiche in Lyon].

Tomash & Williams H103; VD17 23:289511T



29. LEOPOLD, DUKE OF AUSTRIA. *Compilatio Leupoldi ducatus austrie de astrorum scientia Decem continentis tractatus.*

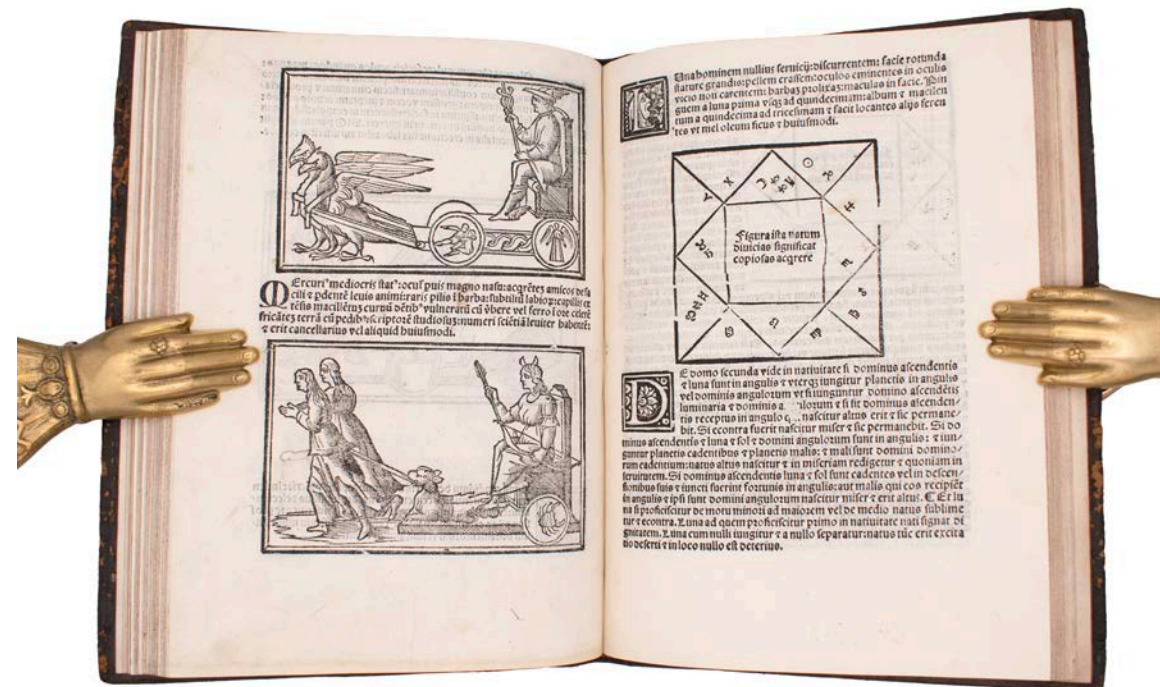
Venice: [Jacobus Pentius, for] Melchior Sessa and Petrus de Ravanis, 15 July 1520, 4to (210 x 150mm), Full Contemporary Calf, Gilt Device within gilt frame with ornate gilt cornerpieces, gilt border on upper and lower covers, rebaked replacing original spine, Large woodcut of an astronomer and Sessa's device on title, many woodcuts illustrating signs of the zodiac, gods of antiquity, celestial spheres, and astrological predictions, woodcut initials.

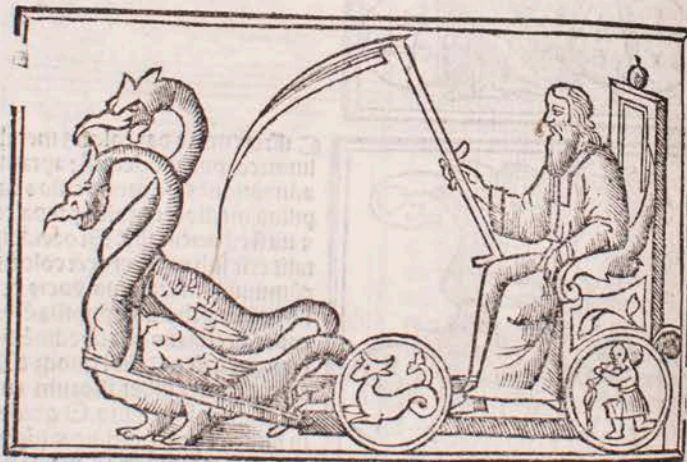
£6,500

A Fine Copy of the Second edition of the *Compilatio* by the 13th-century astronomer, Leopold of Austria. Primarily a work of astrology, the sixth book concerns meteorology both from a theoretical and a practical point of view, and thus includes, for example, folkloric methods of weather prediction.

Although virtually nothing is known of the author, the work was influential in the late Middle Ages, being cited by the great astronomer, Pierre d'Ailly, and admired by Regiomontanus, who proposed to edit an edition of the work.

Adams L-516; BLSTC Italian (assigning it to Pencio) p.375 (718.f.8); Sander 3948; Essling2081; Houzeau and Lancaster 4783.



[illegible]

Saturnus si fuerit dominus nati facit eum nigrum: infirmitate notatum: turpiter indurum et euntem: tempora notata: leuiter irascentem: turpem: cum rara barba: grauem: pigrum: raro et vix ridentem: coloris glauci: cum pilis asperis et multis: cum mala facie: semper artem dat grauem ut laborare oportet vineas terras et alia cum labore.



Tepiter pulcrum aspectum: crassa facie: amabilem: planis capillis: bonestum: oculis pulchris: duos dentes superiores maiores: religiosum: mature incedentem: compendium loquendi graues nequit ferre labores: amat leues vt tabulam cam/beat aut vendat: pannos laborat pulcros cum acu: bene scribit et studet: et si totus est super terram in natiuitate oratorem facit.

*Very Rare And Important Work Concerned With The Search
For The North-West Passage*

30. LINTON, ANTHONY (fl.1609). *Newes of the Complement of the Art of Navigation. And of the Mightie Empire of Cataia Together with the Straits of Anian.*

London: Felix Kyngston, 1609, Small quarto (185 x 135 mm). Title-page and text printed within double-rule border. Some almost invisible restoration to front free endpaper and a few leaves, Contemporary limp vellum; blue half morocco folding case.

£35,000

The First and only edition of this very rare and important work concerned with the search for the North-West Passage.

Rare English navigational work, with a discussion of Drake and Cavendish, as well as other early voyagers to America and the Pacific. Linton's work is an early example of the practical study of navigation and the measurement of longitude, and is one of the earliest English books dealing with navigation in the Pacific Ocean.

The work also includes an eccentric but early discussion of the Northwest Passage and the prospects of trade with China. Linton was chaplain to Charles, Lord Howard of Effingham, who served as High Admiral from 1585 to 1618, and he pays special attention to the travels of English explorers, singling out Drake and Cavendish: 'by Navigation, the huge convexitie of the whole world, within little more than these 30 years last past, hath been by our English nation twice sailed about. Once, by the worthie Sir Francis Drake Knight, and the second time by the worthie Thomas Candish Esquire, both passing thorow the Straits of Magellan, into the South Sea, and so coasting from thence the Westernne shore of the New World, unto California, passed from thence unto the Moluccan Ilands, and from thence by Iava, and by the Cape, De Bona Esperanza, and returned again alive into this Realme of England, with riches and reknowne.' Linton himself had just returned from a voyage to the north of Asia, and notes that he has added '50 or 60 degrees of good discoverie, unto the alreadie known longitude, comprehended between the Westernne coast of America... on the one side, and the Vaygatz, or Ile van Oranges, upon the North of Nova Zemla.'

This homage to the glorious art of "Navigation" includes historical notice of the earliest phase of English voyages of discovery, but also practical advice: 'the great part of the book is taken up with instructions how to find the longitude of any place "without the help of any Eclipse"' (Church). Of some interest are the numerous references to works with which Linton was evidently familiar, including an evidently careful reading of the second edition of Hakluyt and William Bourne's influential *Regiment for the Sea*, but also comments on the explorer Sir Humphrey Gilbert, the mathematician Thomas

**NEWE
OF THE COM-
PLEMENT OF THE ART
OF NAVIGATION.**

**AND OF THE MIGHTIE
Empire of *Cataia*.**

**TOGETHER WITH THE
Straits of *Anian*.**

By A. L.

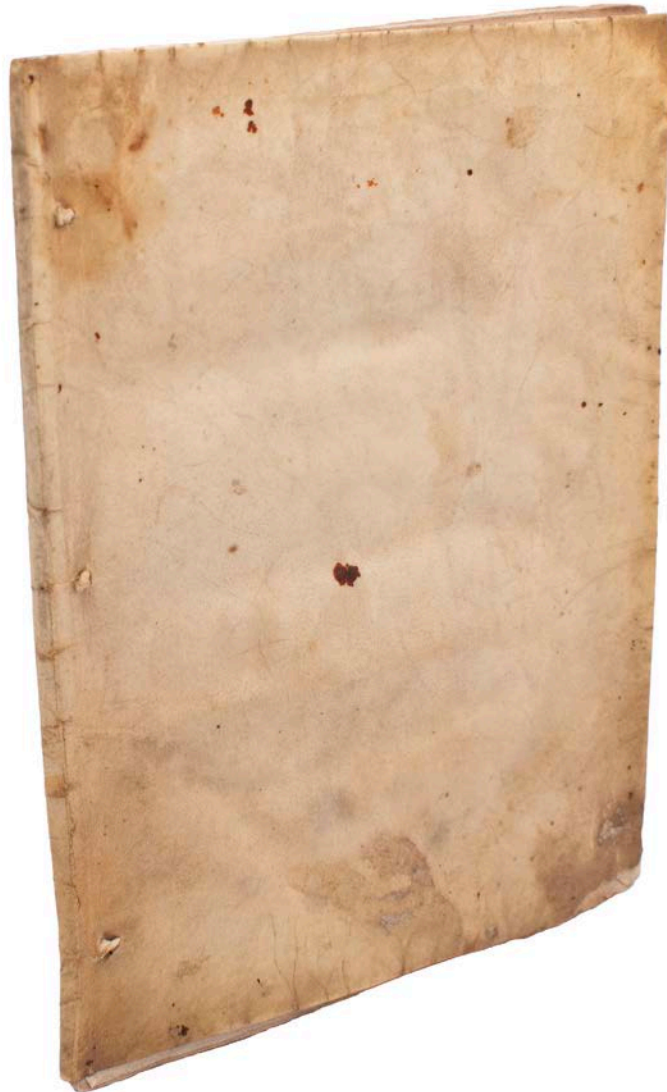
**The principall Contents whereof fol-
low in the next page.**



**AT LONDON,
Imprinted by FELIX KYNGSTON. 1609.**

Digges, the cartographer Edward Wright and the mapmaker Jodocus Hondius. There is also an important discussion of “our desired Cataia” (Cathay) and the Straits of Anian, the channel thought to be the key to the Northwest Passage, and of such importance that Linton announces that ‘if Archimedes in his daies had gotten it [the secret], he would have runne once againe out of his bathing tubbe, with his ioyful crie, I have found, I have found.’

(D.W. Waters, *The Art of Navigation in England in Elizabethan and Early Stuart Times*, p.274). Church 343; JCB II, 63; Sabin 41385 (never having seen a copy).



Important Voyages of Naturalist, and Darwin's Associate, T. H. Huxley

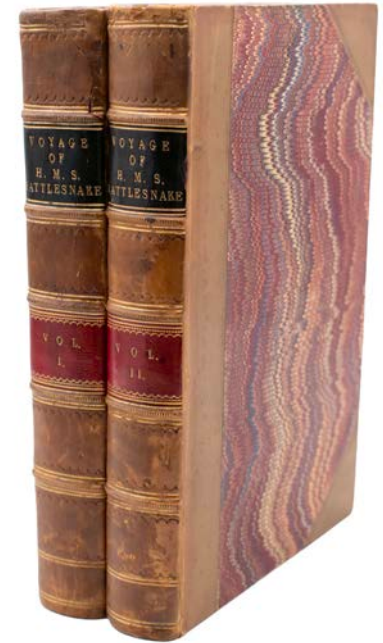
31. MACGILLIVRAY, JOHN. Narrative of the voyage of H.M.S. Rattlesnake, commanded by the late Captain Owen Stanley ... during the years 1846-50, including discoveries and surveys in New Guinea, the Louisiade Archipelago, etc. To which is added the account of Mr E. B. Kennedy's expedition for the exploration of Cape York Peninsula.

London, 1852. First Edition, Two volumes octavo, folding engraved map, 13 lithographed plates (some tinted), after T.H. Huxley and others, Contemporary half calf, contrasting labels, Slight foxing, a very good set. Scarce.

£2,800

The last and most difficult to find of the great exploration journals published by Boone during the heroic age of Australian exploration. The voyage of the Rattlesnake was one of the important series of scientific and hydrographical voyages to chart the coasts of Australia and New Guinea, continuing the work of Stokes on the Beagle, and Blackwood on the Fly and Bramble. The book is also of great value for its reprinting of William Carron's extremely rare account of the tragic Kennedy expedition. It was the Rattlesnake which transported Kennedy and his large party to their point of departure on the Queensland coast. A number of the plates are after drawings by the famous scientist and colleague of Darwin, T.H. Huxley, who accompanied the expedition.

Ferguson, 11972; Wantrup, 145.



*The First Practical Treatise On Navigation Published By The
Royal Examiner Of Spanish Sailing-Masters And Pilots Of The
West Indies*

32. MEDINA, PEDRO DE, L'Art del Navegar In Laqual Si Contengonolere
gole, dechiarationi, Secreti, & auisi, alla bon navigation necessarii.

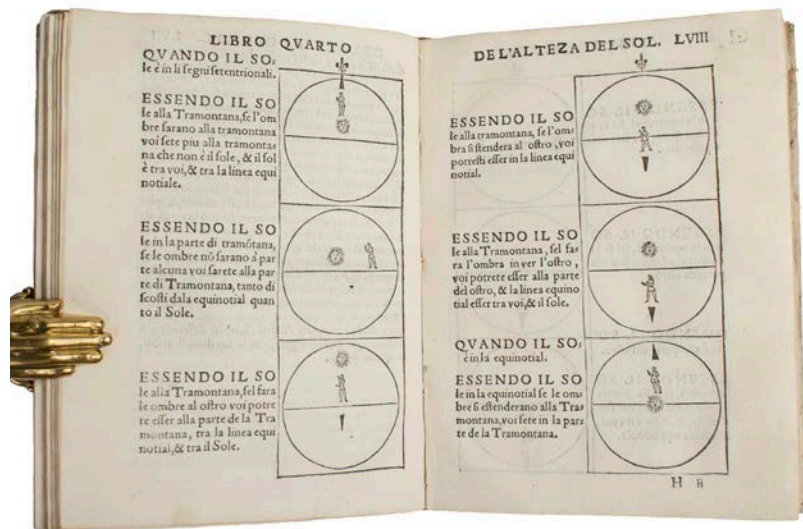
Venice: Aurelio Pincio for Giovanni Battista Padrezano, 1554, 4to (230 x 153mm),
Contemporary limp vellum, remains of early paper label with manuscript title on spine,
title in manuscript along the top and lower edges

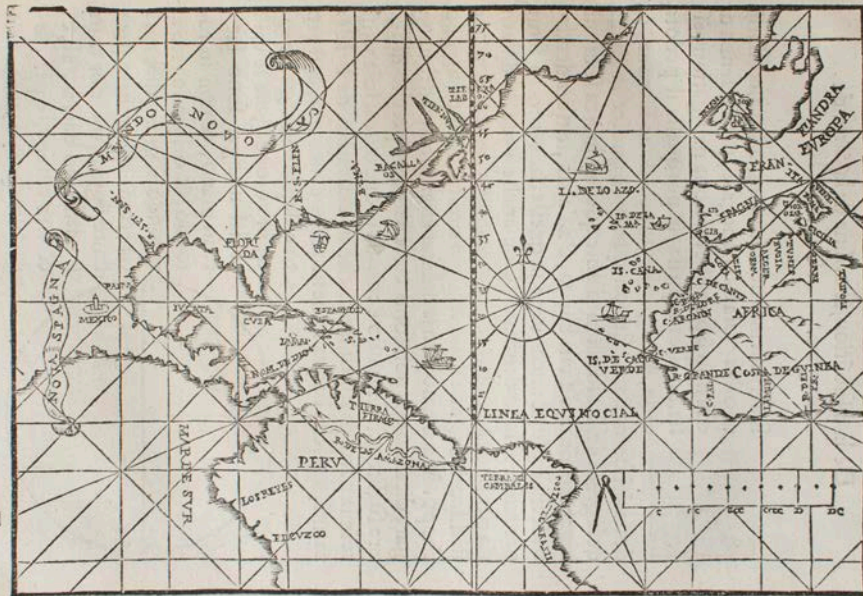
Beautiful large woodcut depicting several different types of sailing vessel on the title-
page, repeated on C1r, full-page woodcut map of Europe, Africa and the New World, by
G.B. Pedranzo after Medina, on E1r, numerous woodcut illustrations, including a large
woodcut at the beginning of each of the 8 books, historiated initials, with the blanks b4
and R10.

£10,000

A BRIGHT AND ATTRACTIVE COPY OF THE FIRST PRACTICAL TREATISE
ON NAVIGATION PUBLISHED BY THE ROYAL EXAMINER OF SPANISH
SAILING-MASTERS AND PILOTS OF THE WEST INDIES.

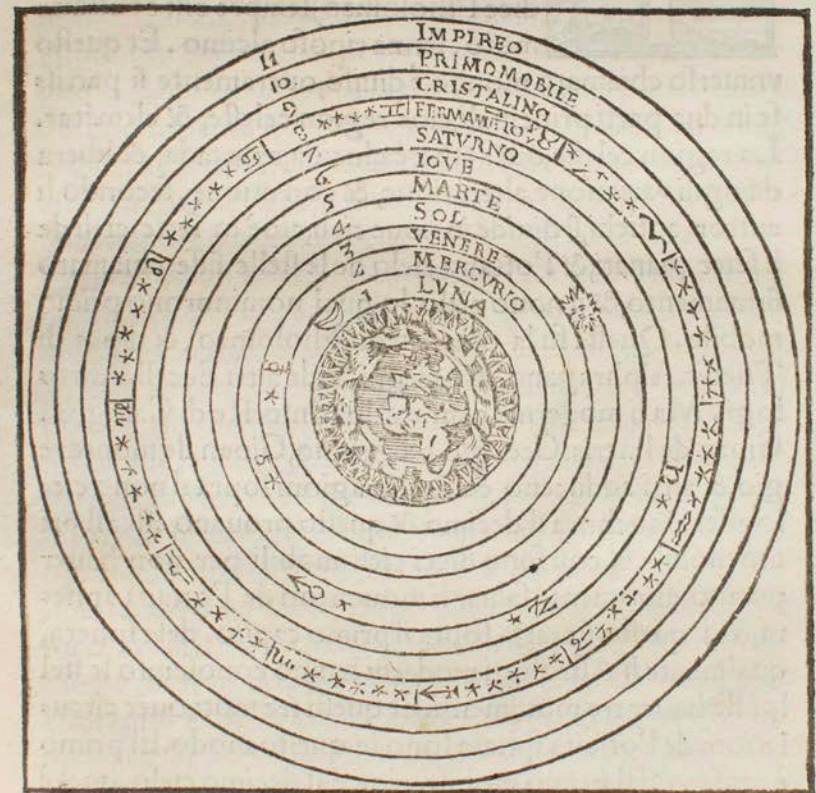
First Italian edition, first issue with the title-page dated 1554, first published in Valladolid
in Spain in 1545, 'Medina's Arte del navegar' was the first practical treatise on navigation,
and the first pilot to provide reliable information on the navigation of American waters.





LIBRO PRIMO

DEL MONDO, ET DE LA SVA COMPO- SITIONE.



The fine and attractive world map is a reduced version of the one first published in 1545 although it extends further to the north, west and south. includes the coastlines of the New World from Labrador in the north to Brazil in the south, with Florida, the mouth of the Mississippi and the area around the gulf of St. Lawrence. Medina's "knowledge of the New World was first hand, having travelled with Cortes. Later he held the position of debriefing the returning crews from their voyages. The map depicts the trade routes to and from Spain and her possessions by the use of ships heading south westerly on the outward-bound journey and returning via the Gulf Stream to the north-east. The Papal demarcation line dividing the Americas between Portugal (the land to the east) and Spain (to its west) runs vividly through the map, illustrating for the first time the future influence that the former was to have over the country we know of as Brazil. Central America and particularly the Isthmus of Panama are shown remarkably accurately, and the Yucatan is shown correctly as a peninsular" (Burden). The other fine illustrations in the text include a man using an astrolabe in a series of woodcuts showing how to apply the sun's seasonal declination from different parts of the earth's surface (cf. Stimson, *The Mariner's Astrolabe*, p.577). In 1548, Medina was appointed cosmographer to Emperor Charles V. The Institute of Naval Architects was founded 1860 in London "to advance the art and science of ship design".

Provenance: Institute of Naval Architects

Burden 21; Harvard Italian 300; Sabin 47346.

*“Probably The Greatest Work Ever To Be Published Embodying
The Results Of A Single Piece Of Research By One Man.”*

33. MURCHISON, RODERICK IMPEY, SIR (1792-1871). The Silurian System, Founded on Geological Researches in the Counties of Salop, Hereford, Radnor, Montgomery, Caermarthen, Brecon, Pembroke, Monmouth, Gloucester, Worcester, and Stafford; With Descriptions of the Coal-Fields and Overlying Formations,

London: John Murray, 1839. with The Silurian Region and Adjacent Counties of England & Wales Geologically Illustrated. London: J. Gardner, [1839]. Engraved map in 3 large sections with linen backing.

FIRST EDITION, 3 volumes, large 4to (260 x 330mm), half calf, map in slip-case. with 56 plates, views and maps, including 12 hand-coloured geological profiles, numerous text illustrations.

With the Rare and Important Hand-Coloured Geological Map on Three Sheets.

£9,500

“THE GREATEST WORK EVER TO BE PUBLISHED EMBODYING THE RESULTS OF A SINGLE PIECE OF RESEARCH BY ONE MAN. This work detailed and established practically the whole succession of the stratigraphical formations and their fossil contents (and associated igneous rocks) of what we now know as the Ordovician and Silurian systems, in their type areas” (Challinor 141).

Sir Roderick Impey Murchison, born in Tarradale, Ross-shire, Scotland is the geologist who first established the geologic sequence of Early Paleozoic strata (the Paleozoic Era began 542 million years ago and ended about 251 million years ago)

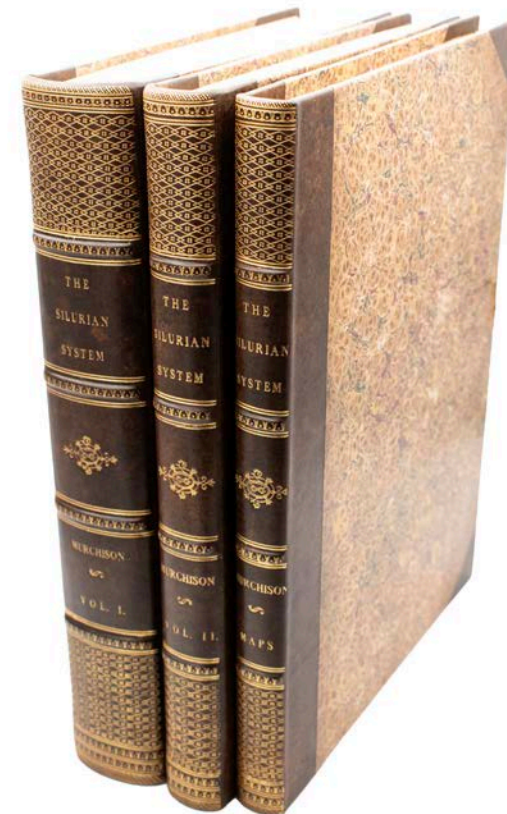
In 1831 he was elected president of the Geological Society, after serving as secretary for five years. In that same year he began his studies of the Early Paleozoic rocks in South Wales. His findings were embodied in the monumental work The Silurian System (1839). Following the establishment of the Silurian System, Murchison and Sedgwick founded the Devonian System, based on their research of the geology of southwestern England and the Rhineland. Murchison then went on an expedition to Russia and wrote, with others, The Geology of Russia in Europe and the Ural Mountains (1845). In 1841 he proposed the establishment of the Permian System (strata 299 million to 251 million years old), based upon his Russian explorations.

Murchison was knighted in 1846, and in 1855 he was appointed director general of the Geological Survey of Great Britain and director of the Royal School of Mines and the

Museum of Practical Geology, London. He prepared successive editions of his work Siluria (1854; 5th ed. 1872), which presented the main features of the original Silurian System together with information on new findings. In addition, he fought unsuccessfully against the splitting of his original Silurian System into three parts: the Cambrian Period (about 542 million to 488 million years ago), the Ordovician Period (about 488 million to 444 million years ago), and the Silurian Period (about 444 million to 416 million years ago).

In 1871 he founded a chair of geology and mineralogy at the University of Edinburgh, and in his will he provided for the establishment of the Murchison Medal and Geological Fund, to be awarded annually by the Geological Society. Among the Subscribers were Charles Darwin and Sir John Herschel.

Nissen ZBI 2944. BM(NH) III, 1380; Challinor 141; Dibner Heralds 97; Norman 1569; J.C. Thackray ‘R.I. Murchison’s Silurian System (1839)’ in J. Soc. Bibliophy nat. Hist. (1978) 9 (1): 61-73; Ward & Carozzi 1620.



The Greatest Work In The History Of Science

34. NEWTON, ISAAC, Philosophiæ Naturalis Principia Mathematica

Second Edition, [28], 484, [8]pp., folding engraved plate of cometary orbit, numerous woodcut text diagrams, copper engraved printers vignette to title, bookplate to title (Janos Torok), early ownership inscription to title ("Andw. Bryson 1780" and "Robert Duk[e]"), leaf 3Q2 is a cancel, cannot determine if leaf 2G4 is a cancel, later half calf over marbled boards, marbled endpapers, all edges marbled, 4to, Cambridge, 1713

Preface by Roger Cotes. Tribute by Edmund Halley.

£50,000

Second edition of Newton's Principia Mathematica, "the greatest work in the history of science" (PMM).

The Principia Mathematica is Newton's magnum opus, where he collects his discoveries in mechanics and mathematical calculus and where he exposes his theory of motion and gravitation. This work marked a turning point in the history of science and is considered, by many, as the most important scientific work in history. It is the first to feature Newton's famous additions concerning the theory of the motion of the moon and planets, along with many other important corrections and additions. At the end of 1709 Newton delivered the corrected text to his editor Roger Cotes. This second edition appeared in Cambridge in 1713 and in Amsterdam in 1714, twenty-six years after the first. It had five substantial changes, including additional examples of comets, reflecting Halley's efforts on the subject during the intervening years. This edition was edited by Roger Cotes, "whose preface rigorously attacks the Cartesian philosophy then still in vogue at universities, and refutes an assertion that Newton's theory of attraction is a causa occulta, is of great historical importance" (Sotheran 3257). Newton personally presented a copy from this edition to Queen Anne.

This is one of approximately 750 copies of the second edition printed by Cornelius Crownfield for the University of Cambridge (see Babson).

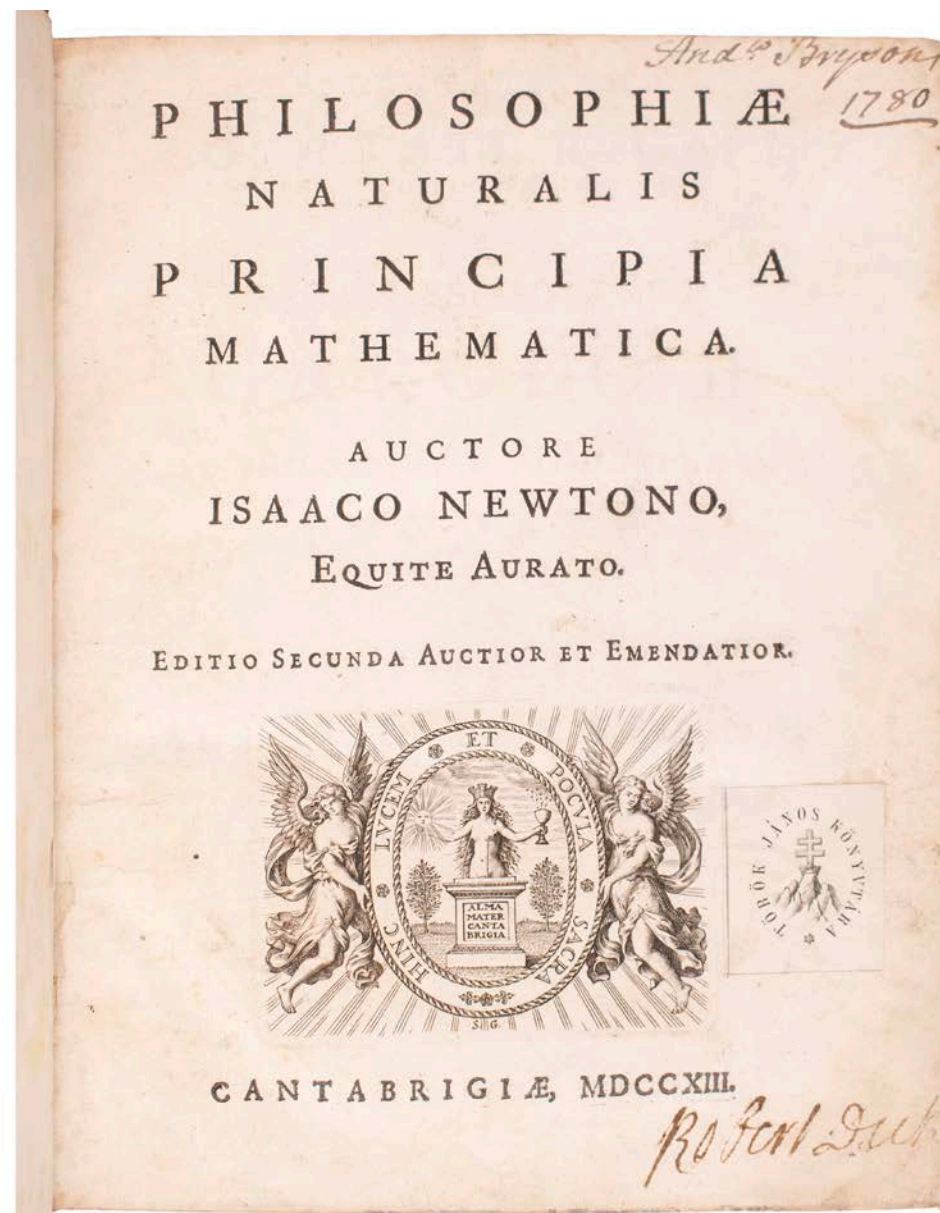
Provenance:

Janos Torok was an important Hungarian publicist and book collector of the 19th century, primarily gathering books to help establish a "Bibliotheca Hungarica" to shed light on Hungary's role in European intellectual history, focusing on books printed in Hungary, in Hungarian, and about Hungary, along with numerous choice editions of the most important books in history, especially focusing on researchers of natural science. His library consisted of about 8,000 works in nearly 12,000 volumes, in addition

to over 2,000 pamphlets and was purchased by Dr. Schlauch Lorincz, Bishop of Szatmar, for 20,000 Hungarian forints in 1874.

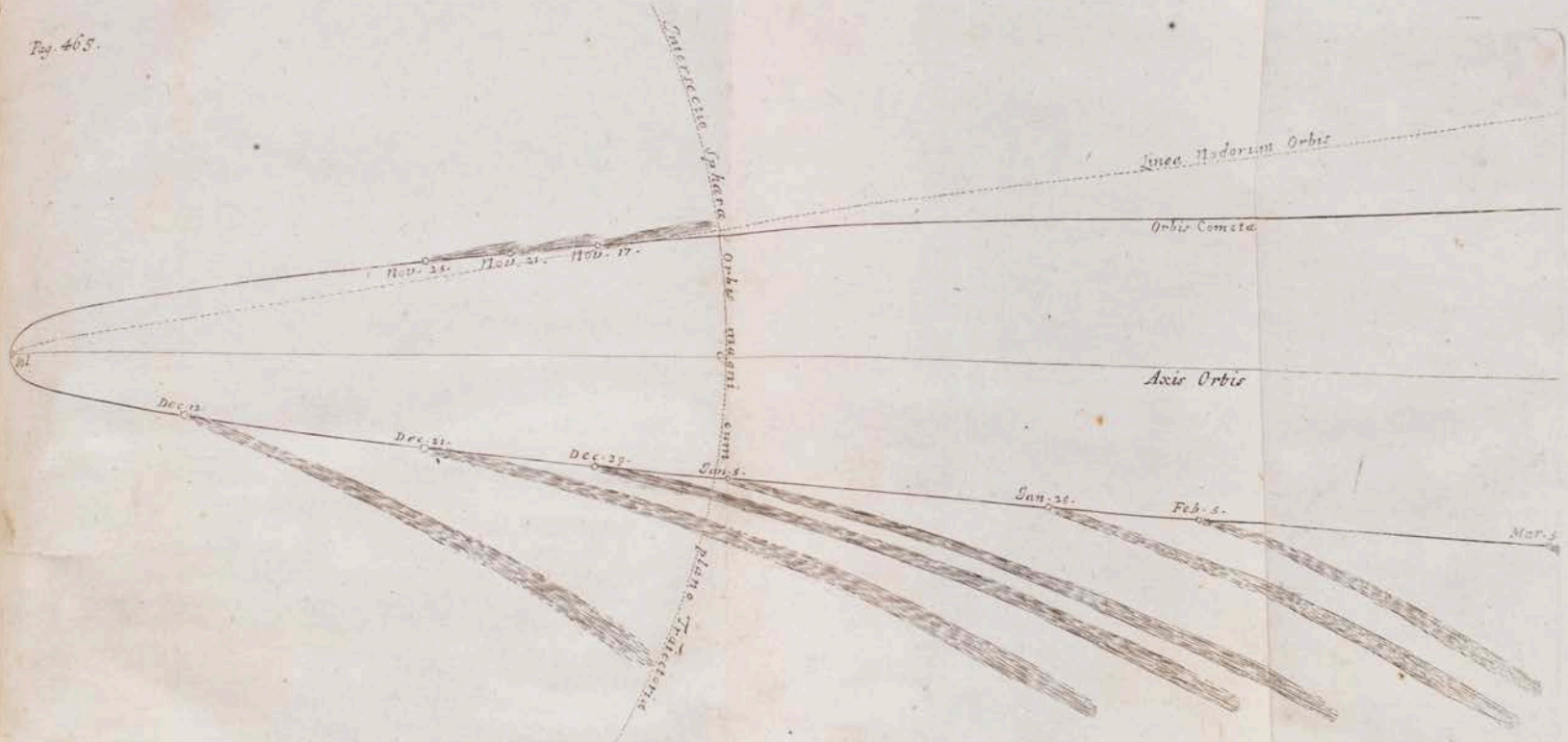
Professor George Starr Collection.

[Printing and the Mind of Man 161 (1st edition); Babson 12; Sotheran 3257]



LIS
 in mente No-
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 se adco um
 bolem deho-
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 rabolica de-
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 ruere solent
 rationes sunt
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 tamum Eclips-
 ecuit non in
 cipio Capri-
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 x in quibus
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 o accelerato,
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Fig. 465.



*First Continental Edition Of The Most Important Work On
Mathematics*

35. NEWTON, ISAAC, Philosophiae Naturalis Principia Mathematica. Editio
Ultima Auctior et Emendatior

Second edition, title in red and black, engraved device to title, 1 double page copper plate,
numerous text illustrations, [4], b-c4, d2, A-3P4, 3Q2, [1], dedication to King Charles
II, old ownership notes to pastedown, lacking front free endpapers, contemporary calf,
strapwork with blindstamped floral decorative border, blind stamped monogrammed
device "IHS", 4to, Amsterdam, Sumptibus Societatis, 1714

£16,500

"Following Galileo's pioneering investigations of motion and its mathematical analysis,
and the important contributions of Descartes and Huygens, the seventeenth century
scientific revolution culminated in Newton's massive achievements in gravitational
dynamics and astronomy" (PMM).

The Principia Mathematica is Newton's magnum opus, where he collects his discoveries
in mechanics and mathematical calculus and where he exposes his theory of motion
and gravitation. This work marked a turning point in the history of science and is
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Halley's efforts on the subject during the intervening years. This edition was edited by
Roger Cotes, "whose preface rigorously attacks the Cartesian philosophy then still in
vogue at universities, and refutes an assertion that Newton's theory of attraction is a
causa occulta, is of great historical importance" (Sotheran 3257).



36. NORWOOD, RICHARD, *The Sea-Man's Practice, Containing a Fundamental Problem in Navigation Experimentally Verified; Namely Touching the Compasse of the Earthe and Sea and the Quantity of a Degree in our English Measures.*

Tenth edition, woodcut initials, decorations, illustrations and tables, occasional ink notes in a contemporary hand to margins, faint stamp to title and foot of 3 or 4 other ff., contemporary panelled calf, gilt, rebaked, small 4to, by W. Godbid, for Benjamin Hurlock, and are to be sold at his shop on London Bridge, near Thames-Street, 1672.

£5,000

The tenth edition of this important mariner's guide book first published in 1637, the penultimate before Norwood's death.

All editions are rare, ESTC lists the BL copy only of this edition.

The Seaman's Practice found an immediate following as an aid to navigators. It went through seventeen editions and was still in print twenty-five years after Norwood's death in Bermuda following a frustrating period of habitation on the island from 1638 that was blighted by poor relationships with his neighbours and the hovering threat of witchcraft accusations. The book's importance reached beyond the sea-faring community, and it was to prove an inspiration to, amongst many others, the young Isaac Newton

One of the most influential mathematicians of the second quarter of the seventeenth century. However, it was Richard Norwood's contact with mariners that inspired him to go to sea although, following severe sea-sickness, he soon became more interested in the mathematics of seamanship than traversing the ocean himself, although he did travel to Bermuda to test (with disappointing results) a diving bell based on Halley's design. Deprived of a hoped-for fortune from pearls, he accepted an invitation to survey the country.

After returning to London and to teaching, he had been tutor to, amongst others, Henry Mainwaring, Norwood set about seeking to fill holes in navigational knowledge that he had found frustrating throughout his voyages. In the years following 1623 he set about, and succeeded to an unprecedented extent, a series of impressive mathematical research projects. These included establishing the length of a nautical mile and, most impressively, following a painstaking two years of practical trigonometry, the length of one degree of the Earth's meridian, thereby making it possible to calculate the distance round the whole world. His figure worked out at 110.72 kilometres per degree of arc. He was accurate to within a kilometre.

Wing N1361

THE
**SEA-MAN'S
PRACTICE,**
CONTAINING
A FUNDAMENTAL PROBLEM
IN
NAVIGATION,

Experimentally verified;

NAMELY,

**Touching the Compass of the EARTH
and S E A, and the Quantity of a Degree
in our English Measures.**

**Also, an exact Method or Form of keeping a
Reckoning at S E A in any kind or manner of Sailing.**

**With certain TABLES and other RULES Useful in
Navigation; As also in the Plotting and Surveying of Places.
The Latitude of the Principal Places in ENGLAND.
The finding of Currents at S E A, and what Allowance is to be
given in respect of them.**

THE TENTH EDITION.

By **RICHARD NORWOOD**, Reader of the *Mathematicks*.

L O N D O N,

Printed by *W. Godbid*, for *Benjamin Hurlock*, and are to be sold at his
Shop on *London Bridge*, near *Thames-Street*. 1672.

Owen On The Archeopteryx - Presentation Copy

37. OWEN, RICHARD (ET AL.) A Collection of papers of Ornithological Interest

£3,500

OWEN, RICHARD, III. On the Archeopteryx of von Meyer, with a description of the Fossil Remains of a Long-tailed species, from the Lithographic Stone of Solenhofen.

FIRST EDITION, caption title, 33-47pp., 4 engraved plates, including 1 large folding,

33-47pp., Philosophical Transactions of the Royal Society of London, 1863

This paper describes a single, well-preserved fossil of an Archeopteryx, found in the Solenhofen limestone deposits of Germany. The Archaeopteryx fossil is particularly important because it possesses both bird-like (feathers) and reptile-like (long bony tail, teeth) characteristics. This combination of features made it a key piece of evidence in the debate about the evolution of birds from reptiles.

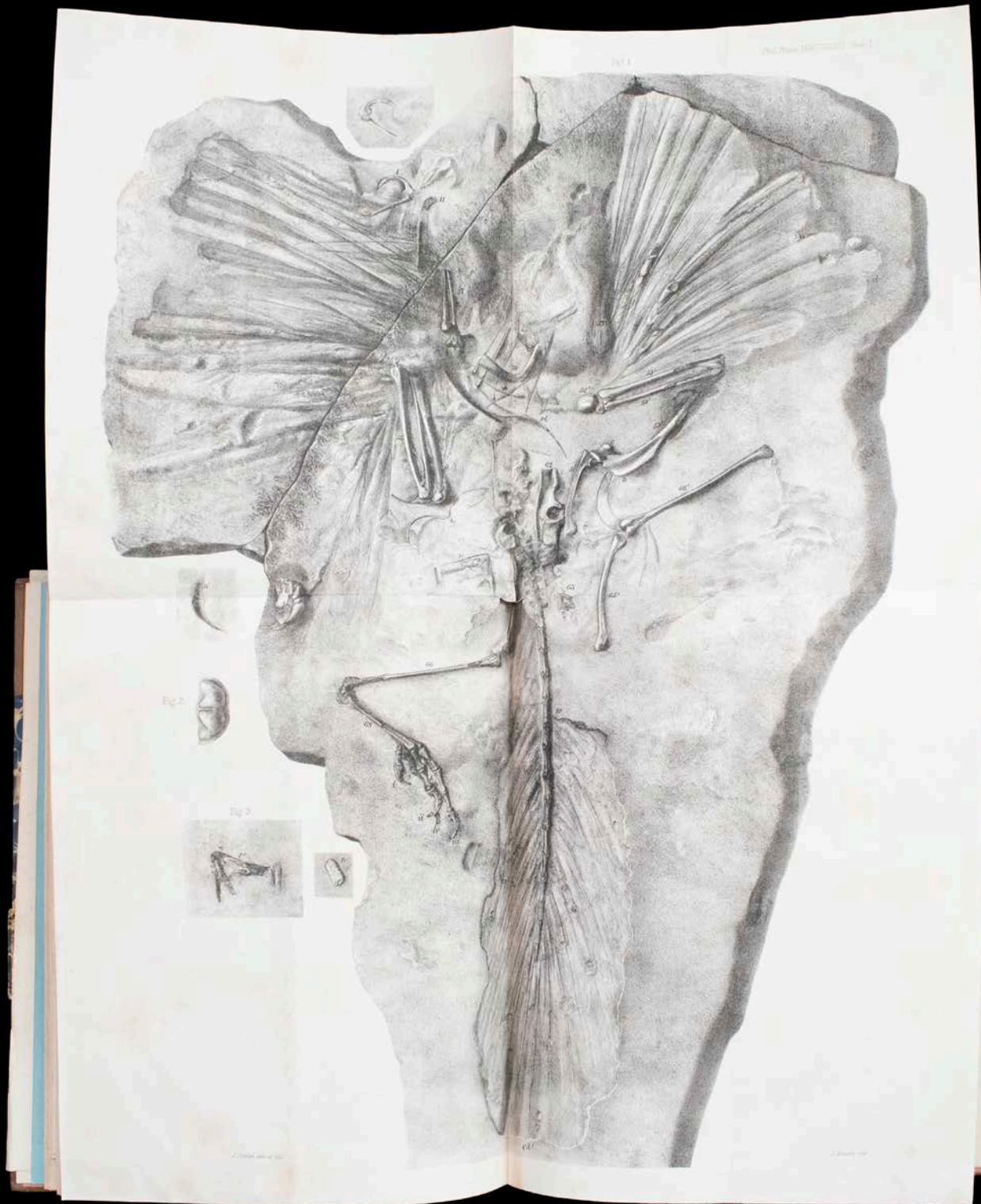
Owen was the leading comparative anatomist and palaeontologist of his time, best known for coining the word dinosaur. While Owen acknowledged the unique nature of the fossil, he ultimately classified it as a bird, emphasizing its bird-like features. Owen was criticised for being too biased in his description of the specimen as a bird, rather than being well-balanced and objective. This stance was influenced by his anti-evolutionary views at the time.

[with]

OWEN, RICHARD, VIII. Description of the Skeleton of the Great Auk, or Garfowl (*Alca Impennis*, L.)

FIRST EDITION, PRESENTATION COPY, caption title, inscribed by author above title (reads "John Henry Geurney Esq. with the Authors best respects."), 317-335pp., two engraved folding plates, The Transactions of the Zoological Society of London, 5, January 1865

This work details the skeletal structure of the Great Auk, an extinct flightless



bird. The work focuses on the osteology, or bone structure, of the Great Auk, providing a comprehensive description of its physical characteristics based on available remains.

The Great Auk, once a common seabird in the North Atlantic, became extinct in the mid-19th century. Owen's work is a valuable resource for understanding its anatomy and contributes to our knowledge of this unique bird.

[with]

GURNEY, J.H., XXIV. Remarks on *Aquila desmursii*.

365- 366, 1 hand coloured engraved plate

FIRST EDITION, caption title, 365-366pp, 1 hand coloured engraved plate, The Transactions of the Zoological Society of London, 4, 1862

Remarks provides observations on the *Aquila desmursii*, which is better known as Bonelli's eagle.

John Henry Gurney (1819-1890), an amateur ornithologist, published a number of articles in The Zoologist on the birds of Norfolk. Gurney also collected birds of prey, publishing Part I. of his Descriptive Catalogue of this collection in 1864.

It is to Gurney that the previous work was inscribed.

[WITH]

YARRELL, WILLIAM, XVII. On the Habits and Structure of the Great Bustard (*Otis tarda* of Linnaeus).

FIRST EDITION, caption title, 155-160pp, vertical fold lines, Transactions of the Linnean Society of London, 21, June 1853

William Yarrell (1784-1856) was a prolific writer and naturalist, admired by his contemporaries for his precise scientific work. His A History of British Birds became a standard reference work for British ornithologists.

This paper details the Great Bustard's behaviour and physical characteristics, but it also provides an insight into the scientific study of birds in the 19th century.

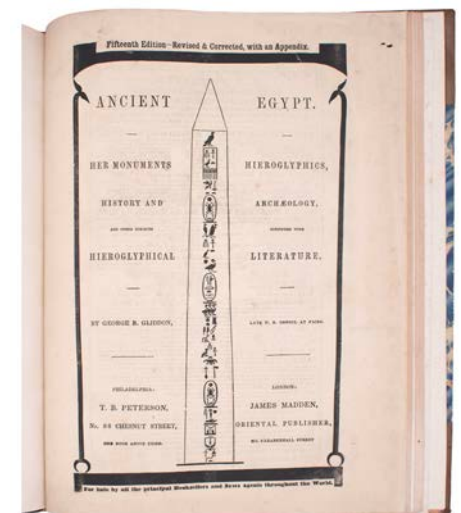
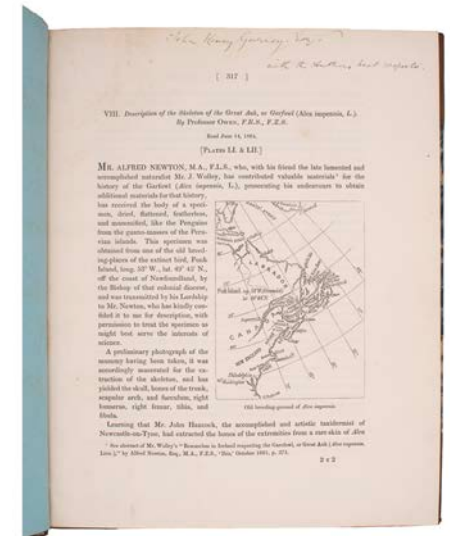
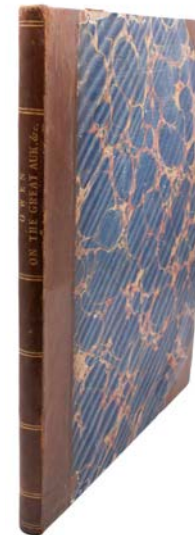
[WITH]

GLIDDON, GEORGE R. Ancient Egypt. Her Monuments, Hieroglyphics, History

and Archeology, and Other Subjects Connected With Hieroglyphical Literature.

Paper cover, advertisement on verso, caption title, 66pp., text in two columns, text illustrations, London, James Madden, Oriental Publisher, n.d. (c.1850s).

George R. Gliddon (1809-1857) was an English-born American Egyptologist. He created interest in the field of Egyptology through his lectures in the United States, including the Panorama of the Nile with Egyptian mummies. He also worked as a United States vice-consul in Egypt and assisted Muhammad Ali Pasha's plans to modernize Egypt by attaining sugar, rice, and other mills from the United States.



Manuscript Pilot Of Hms Pallas

38. MANUSCRIPT PILOT AND NAVIGATOR'S LOG FOR USE ABOARD HMS PALLAS 1766 - 1782. UNDER CAPTAIN RICHARD KING AND CAPTAIN THOMAS SPRY.

Folio (350 x 260mm), original full vellum, over 200 ll (400 pp) including blanks, a little worn, some worming throughout the volume, heaviest to the last third of the manuscript, this does not affect the text that is legible throughout, secured in a half vellum box, vellum label to upper cover.

£18,000

AT SEA - SAILING DIRECTIONS FOR ENTERING THE PORTS, HARBOURS AND BAYS FROM CADIZ IN SPAIN TO WEST FLORIDA, PORT ROYAL IN THE WEST INDIES AND THEN TO WEST AFRICA. THIS PILOT DESCRIBES NAVIGATING THE NUMEROUS PORTS AND HARBOURS VISITED BY THE PALLAS.

The Countries and Ports Visited are as follows. Erratic dating:

ALMEIRA BAY 1766-GUADALUPE 1766- ELBA 1766-MALAGA BAY 1767 -
ALGIERS 1767-MINORCA 1767- GENOA 1767- MARSEILLES- VILLA FRANCE
1768-CADIZ 1768 - GIBRALTER 1768- COSICA 1768- SARDINIA 1768-
MAGDALEN ISLANDS GULF OF ST LAWRENCE 1769- NEWFOUNDLAND
1769 - PRINCE RUPERT'S BAY 1770-PORT ANTONIO JAMAICA 1772- PORT
ROYAL JAMAICA 1773- PORT ROYAL GULF 1770 - HISPANIOLA 1770-CUBA
1770-SPANISH MAIN 1772- TORTUGAS 1772- WEST FLORIDA 1773- PORT
ROYAL 1782- ANTIGUA 1782-TENERIFFE 1775- GAMBIA 1775- SIRRA LEONE
1775- COAST OF AFRICA 1775

HORATIO NELSON was one of the crew in 1774.

HMS Pallas was one of the three 36-gun Venus-class fifth-rate frigates of the Royal Navy. She was launched in 1757 and initially served in Sir Edward Hawke's fleet blockading the coast of France where she fought at the Raid on Cherbourg and in the Battle of Bishops Court.

On May 3, 1776 Pallas began her second transatlantic crossing, arriving at Port Royal, Jamaica on June 21st without notable incident. She remained moored in Port Royal harbour until July 6th when she sailed with the frigate Maidstone, and 22 sail of merchant vessels bound north up the American coast but the convoy was forced to return to Port Royal. By July 10th, the fleet had grown to include Pallas, Maidstone, the

Port Royal Harbor

In Running down from the Gallies towards Port
Royal Run about N.W. or N.N.W. till you make Plum Point
then bring the Magazine of Fort Charles at Port Royal on the Highest
part of Salt Pan Hill and keep it South. Untill you come near Gun Key
that lies nearest to Port Royal, and haul close round it, untill you bring
the outer point of Gallies Hill on the Middle of Gun Key and run with
that mark till Port Royal Church is on the West corner of the Fort.
then haul to the Northward. But do not haul too near Port Royal for
fear of the old Fort your marks to keep clear of it, is Rock fort just
opposite the Northward the top of Fort to the Northward of the Finga
Wharf or yard. When in the Harbor you may Anchor where you
Please

The marks above are for the Middle Channel or
between the two knowles.

Before you come the length of the East
most Middle and Plum point you have Soundings on a bank from
10 to 8 fathoms from that you will Deepen your water to 18 or 20 fathoms
then you are between the Middle ground and Plum Point.

To Sail out thro' the South Channel.

To keep clear of the Western Middle, keep the
Church on the West corner of the Fort untill you open a Starrock on
Hatchway with the Wind of Salt Pan Hill, or bring Gallies point on
Line Key, then you may haul up S.E. or S.W. for the Channel untill
you bring the Church on the East corner of the Fort and keep that
mark South untill you open Gallies point of the Southernmost
Key then you may haul up S.E. or S.W. as you are then clear

West Florida packet, and 105 merchant vessels. Further delayed by a shortage of water, the convoy did not sail until late September.⁴⁶ On October 1st Pallas liberated the Anne, an English vessel bound from Dominica to London that had been taken by an American privateer. On October 3rd Pallas and Maidstone chased off what appeared to be an American privateer and on October 12th the convoy entered St. Lawrence harbour, Newfoundland, and came to anchor. On October 29th they sailed with a convoy bound for England arriving at Spithead on November 17th without any notable incidents being recorded in the logbooks. However, other documents make it clear that the crossing was anything but uneventful. They were plagued by poor weather, hounded by American privateers and Captain Cornwallis complained bitterly of the poor discipline of the convoy. Only 44 of the merchantmen arrived in England in convoy with Pallas.

She later served for a number of years in the Mediterranean Sea before moving to serve off the coast of Africa between 1774 and 1776 where she protected the isolated British colonies. In 1778 she joined the Newfoundland Station and participated in the attack on Saint Pierre and Miquelon.

On June 17, 1779, Pallas departed Spithead in company with Cameleon sloop escorting a convoy of 28 sail bound for Jamaica. They sailed south through the Bay of Biscay and along 130 the Portuguese coast calling at the island of Madeira on July 3rd and continuing on to Port Royal arriving on August 25th, arriving too late to participate in the Battle of Grenada on July 6th. For the next twenty-one months Pallas patrolled the Caribbean around Port Royal interdicting American and French ships in the region. During this period, either alone or in company with other Royal Navy warships, Pallas was involved in the taking of at least eight prizes, including an American ship. There is no suggestion in the logbooks that Pallas participated in the Battle of Martinique on April 17, 1780. It was probably during this extended period in warmer waters that the teredo infestation established itself in Pallas hull.

In 1783 she was beached on São Jorge Island after she was found to be heavily leaking; she was burned there on 24 February.

To Sail from Portroyal

You run along the Island to the West end distance about 40 Leag. From thence N.W. by N. 56 Leag. Lies the Grand Comains which are Low you may either make them or not as you please.

From thence to Cape Corrientes you will

Steer between the N.W. and N.W. by N. 56 Leag.

Before you come to Cape Corrientes. You will some times see at a great distance Treble Hill upon the

Isle of Pines. After which you will see the Westernmost High land upon the South Side of Cuba which you will just have lost sight of when you come a breast of Cape Corrientes. The Cape is Low

and forms a Deep Bay. Where after rain you may get water that lodges in the Cavities of Rocks. As you haul round the Cape you will have Soundings

25 fms a Mile off and see a Black Bluff about three Miles from the Cape, if you want water you must send your Boats to look for it. If there has been rain you may find it off

a Black Point about half way between the Cape and Bluff. The bank in general Lays a very little way off the Shore and is quite steep the ground Land mixt with Coral Rocks

and for the most part the Bank does not lay more Cables Length from the Shore so that it is by no means a Desirable Place. You may go beyond the Black Bluff to the Head of

Remarks on the Coast of

From St. Joseph's Bay to the East end of Rose Island, the Course along Shore is $WNW\frac{1}{2}N$. 16 or 18 Leags. In Sailing from the Eastward and before you come to the East end of Rose Island, You will see a small hill, Amongst the Trees that looks like a White House, to the Westward of which is Rose Bay, From the East end of Rose Island your Course is $WNW\frac{1}{2}N$. as far to the Westward as the Mississippi. Rose Island is in Length about $1\frac{1}{2}$ Leagues.

St. Joseph's Bay

Lays about $ENE\frac{1}{2}E$. 16 or 18 Leags. from the East end of Rose Island, and about WNW . 4 or 6 Leags. from Cape St. Blaise, and it Runs in SE . If you bring the point of the Bay to bear ENE or $N\frac{1}{2}E$. Steer East for the first Bar, on which you have 23 feet, after you are past that you will have 4, $4\frac{1}{2}$, 5, and 6 fms. Close to the Shore then steer along shore giving it a birth of about a cable and half you will be Right in the Channel near the Point, lays the Inner Bar, on which there is 15 feet. The Channel near the Point is very narrow. Not being above half a Mile from the Barbours Harbours side going in, keep a cables length from the White water and you are in the Best of the Channel after you have past the Point you have 5, 5 $\frac{1}{2}$ and 6 fath. Good ground.

West Florida. April. 1773.

From St. Joseph's Bay (or a little to the Westward) Steer South untill Cape St. Blaise bore ENE . had from 5 to 11 fms. Afterwards Steer SE . about 5 Miles, had from 11 to $12\frac{1}{2}$ fms. Then Steer $SE\frac{1}{2}S$. 4 Miles, very Irregular Soundings 9, 7, 8, 9 to $6\frac{1}{2}$ fms. Steer SE . one Mile, 8, 7, $7\frac{1}{2}$ to 7 fms. Cape St. Blaise bore then $N\frac{1}{2}E$. 4 or 5 Leags. Could just see it from a Frigate's Deck. Steer South about 2 Miles had the same irregular Soundings from $8\frac{1}{2}$ to $6\frac{1}{2}$ fms. At the same time saw the Shoal very near us to the Eastward. Steer SE . about 5 Miles had from 2 to $14\frac{1}{2}$ fms. Was then without the Shoals.

Of Wood, Water, Provisions, &c.

Fine Contemporary Colour

39. REGIOMONTANUS, JOHANNES MULLER (1436-1476). *Kalendarius Teütsch*.

Augsburg: [J. Sittich], January 1514. Quarto (210 x 155mm). Title within four-part woodcut border, 87 woodcuts, 10 of these large including 1 full page lunar figure, numerous initials, all in bright contemporary hand-colour, with working volvelles. Contemporary quarter pigskin over wooden boards.

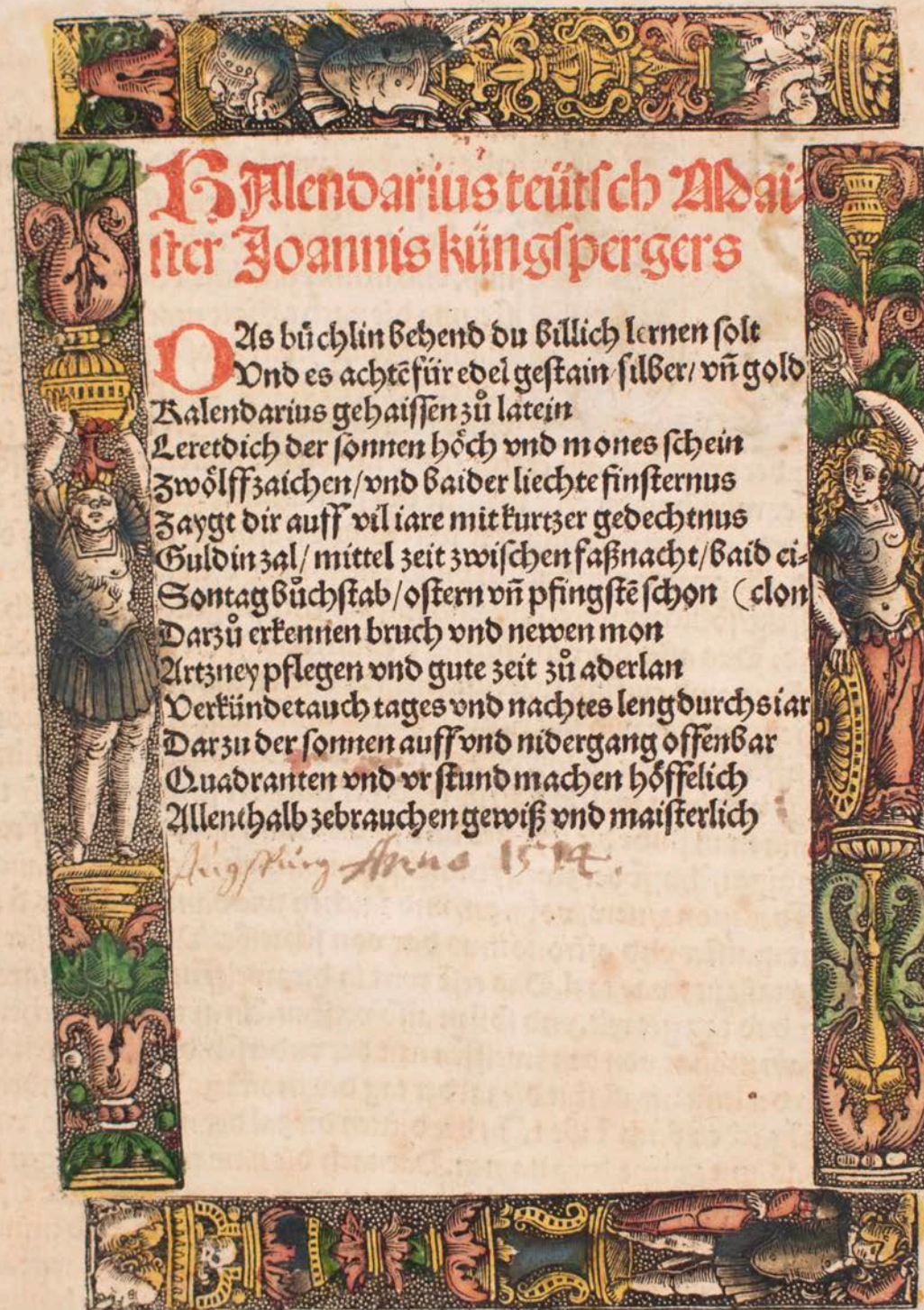
A Rare, Richly Coloured Illustrated Calendar from the Augsburg Renaissance.

£28,000

Printed calendars and almanacs became extremely popular in the fifteenth century and provided ordinary people with the basic knowledge required to plan their daily routines. The market for calendars was first tapped by Gutenberg, who published a calendar which calculated the times of new and full moons and planetary positions, with readings every two to three days. All earlier calendars, however, were superseded by those of Regiomontanus (1436-1476) whose calculations were far more accurate; he recorded several eclipses of the moon and his interest led him to make the important observation that longitude at sea could be determined by calculating lunar distances. Outstanding also is his observation of a comet in 1472, 210 years before it was "first" seen by Halley.

One of the foremost scholars in mathematics and astronomy during this period, Regiomontanus was professor of astronomy at the University of Vienna before being appointed astronomer to King Matthias Corvinus of Hungary. With funds from his patron and fellow scientist Bernard Walther, he built an observatory in Nuremberg in 1471, and in 1472 erected his own private press in order to publish his discoveries satisfactorily. One of the first to realize the impact printing would have in disseminating scientific knowledge, Regiomontanus' printing output included the first edition of his Calendar. His press was maintained until 1475 when he was summoned to Rome by Pope Sixtus IV to assist in the reform of the Calendar; his death at the age of 40 a year later brought his work to a premature end, a great loss to the developing science of astronomy.

Provenance: 'Augsburg Anno 1514' (inscription on title) – contemporary annotations, including receipts in a 16th century hand in German -- 'Carl Schnizlein gekft 1858' (Adalbert Carl Friedrich Hellwig Conrad Schnizlein (1814-1868, German botanist and pharmacist; inscription on front pastedown).



vnd ist das hie oben sein figur vnd aspect an dem himel
Von Cassiopeia



Cassiopeia ist ain pild des himels in dē fische an dē end vnd bey dem Aries vnd hat vil stern vnder den seind ruy sparsibiles. Ir schickung wirt also gesagt. In dē haupt ain. auff yeder achsel ain. auff der rechte pußt ain. auff der linken hüft zwen. auff dem knye ain. auff dem gerechte fuß ain. auff dē stül zwen vñ auff dē füs schämel zwen. Wer vñ der dem zaychen empfange oder geborn wirt der wirt habe ain hüpsches anlit vñ ist vnkeusch dur stig vnd reich vnd ist frölichen vnd ains jäligen lebens bis das sein leben ain ende soll nemen. aber er stirbt aines bösen todes also er wirt erntidet die kele ab geschnitten oder verdürbt in ainem vngewitter. Vnd ist das da oben sein figur vnd aspect an dem himel

Von Pelagus oder Alleras



Alleras od pelagus od eger vespertin das spucht das abent pferd ist ain pild des himels in Capricorno vnd hat vil stern vnder den seind ruy sparsibiles. Ir schickung wirt also gesagt. bey yedē nassloch ain. an dē wang ain. bey yedem or ain. an dē halß vier der erst größer. auff der schultern ain. auff dem rügē ain. an der pußt ain. bey dē nabel ain. auff yedē knye ain vñ in yeder kniehöge ain. Wer vnder dē zaychen empfange oder geborn wirt der wirt allwegē weit schwaissig vñ ist dürstig frölich vñ reich vñ ist fast glücklich vñ im ist wol mit vn

all chait. vñ er ist ainē andernbinstbar. vñ ist waidelich vñ erber vñ rain vñ ist roemiger wort. vñ ob er nit stübt so küpt er zū groffen eren vñ weidige. Vñ ist od zū ainē ampt. vñ das da obē stat ist sein figur vñ aspect an dem himel
Das ander roß



Quis secundus das ander opferde ist ain pild des himels zwischen Gemini vñ Cancro vnd hat vil stern vnder den seind sibenzehē sparsibiles die man we nig sicht darumß das sy tunnckel seind. Ir schickung wirt also gesagt. In dem haupt sind oben zwe in yedem flugell zwen. an yedem fuß ainer. Wer da empfangen oder gebore wirt vnder dem zaych n der ist allwegen reich vñ nit arm vñ kumpt zū groffen eren vñ wird gkalt vñ wirt weit schwaissig vñ lebt zeitlichen wol vñ wirt allzeyt von allen leuten lieb gehabt vnd ist erber vñ schemig. vñ frösam. vñ das hie oben ist sein figur vnd aspect an dem himel

Von dem Andromeda



Andromeda ist ain pild des himels in Aquario dem ende vnd anfang der vische vnd hat vil stern vnder den seind ruy sparsibiles. Ir schickung wirt also gesagt. In dem haupt ain. schönen stern. auff yeder achsel ain. an yedē slobogen ain. auff yeder hand ain. an der hant vier. auff der gürtel drey. auff yedem knye ain. vñ auff yedem fuß zwen. Wer vñ der dem zaychen empfange oder geborn wirt der wirt

Finely Decorated Cylinder Dial

40. REIFF, GOTTFRIED, Painted Wood Pillar Dial

Turned wood pillar with removable top for story the hinged brass gnomon, painted with a rural landscape with a seated couple in 18th century dress, hour lines from V-XII and 1-7, lower edge with calendar scale and zodiac signs, signed in manuscript 'Gottfried Reiff fec Nurib', 125 x 40 x 40mm, Nuremberg, mid-18th century.

£5,500

This vertical cylindrical sundial, also known as a travelling dial, pillar dial, or more commonly, the Shepherd's dial, was one of the most widely used dials in the world. It comprises a wooden cylinder covered by a varnished paper. A central cylindrical hole holds the cylindrical capital that carries the gnomon, which folds away. Vertical declination lines, numbered according to date, run along the bottom of the dial. The hour-lines are drawn across the declination parallels from right to left with bold lines for the hours and dotted lines for the half-hours.

Provenance:

Harriet Wynter Ltd. 1995



The Honeyman Copy

41. SCHOENER, JOHANN, Opera mathematica

First Edition, 3 parts in 1 volume, Contemporary blind-tooled pigskin over wooden boards, covers within two blind-stamped rolls, outer roll dated 1541 and depicting the Crucifixion, David, the Resurrection, and St. John, inner roll dated 1556 and showing Lucretia, Caritas, and Justicia, later stamp of Schola Altenburgensis printed in gold in centre of upper cover and in black on lower cover, some minor abrasion to binding, spine slightly chipped at head, corners lightly rubbed, folio (306 x 201mm.), Nuremberg, J. Montanus & U. Neuber, 1551.

£65,000

Collation: 6, 4, A-Z6, Aa-Cc6, Dd-Ee8, Ff-Mm6, Nn8; a-h6, i8, including errata, colophon and final blank leaf, but lacking 2 other blanks, Roman and Greek type, title printed in red and black with two large woodcut ornaments, woodcut printer's device at end, woodcut portrait of the author on 4v, numerous woodcuts and diagrams, 4 full-page woodcuts, including terrestrial globe, celestial globe and planisphere, complete with eleven diagrams with working volvelles (some with original threads), woodcut initials, generally very fine, wide-margined copy, title gutter reinforced.

Rare and important work with a most distinguished provenance, in excellent condition and in its strictly contemporary binding. The Honeyman copy of the first edition of the collected works by Johann Schöner, mathematician, astronomer, cartographer, and scientific instrument maker from Karlstadt, in Bavaria.

The First Edition of Schöner's most important work, his collected Astronomical works published after his death in 1547. This includes the *Aequatorium Astronomicum* of 1521 the earliest works to contain moveable discs. This original edition, of which there is only one surviving copy, published on his own press at Bamberg, was the inspiration for Peter Apian's extraordinary *Astronomicum Caesareum* of 1540.

'Schöner assembled a printing shop in his house in Bamberg. He himself set the type, carved the woodblocks for the illustrations, and bound the finished product. He also made his own globes and astronomical instruments.' DSB

Johann Schöner, astrologer, astronomer, geographer, physician and author of forty-six books on these subjects was born in Karlstadt, Franconia in 1477 and received an education at Erfurt. He later taught at the Melanchthon Gymnasium in Nuremberg where he constructed a celestial globe for the Duke of Saxony, Johann Friedrich the Magnanimous (1503- 1554). This globe was constructed with the help of Georg Spalatin and represents a revision and correction of the known earlier globes. His terrestrial



globe of 1515, after Martin Waldseemüller was the first printed globe to name the recently discovered continent of America, and his globe of 1524 was the first to describe Ferdinand Magellan's circumnavigation.

Schoner's celestial globe of 1533 is the oldest surviving printed celestial globe and is on display at the Science Museum in London. He is considered the most influential early globe maker, establishing Nuremberg as the European centre of the craft and creating the idea of pairing celestial and terrestrial globes.

The Opera Mathematica opens with two extensive treatises, 'Isagodes Astralogiae Iudiciariae' and the 'Tabulae Astronomicae'. The four following treatises concern the composition and use of celestial and terrestrial globes. Schoner's star catalogue, in the section 'Coelestis Globi Compositio' is an adaptation of the star list published in 1543 by Nicolaus Copernicus in his 'De Revolutionibus'. The section 'De Usu Globis Terrestribus' contains a splendid engraving of the author's globe of 1520.

The text refers to the voyages of Vespucci and mentions that the upper Indies had been named 'Americus' after him. The voyages of Columbus, Marco Polo, Ferdinand Magellan are discussed and Schoner also mentions Cuba, Florida, Mexico, Darien, Jamaica and North America, referred to as Paria. Three chapters of this work are given entirely to discoveries in the Western Hemisphere, among them 'Brasiliae novae terrae annotation.'

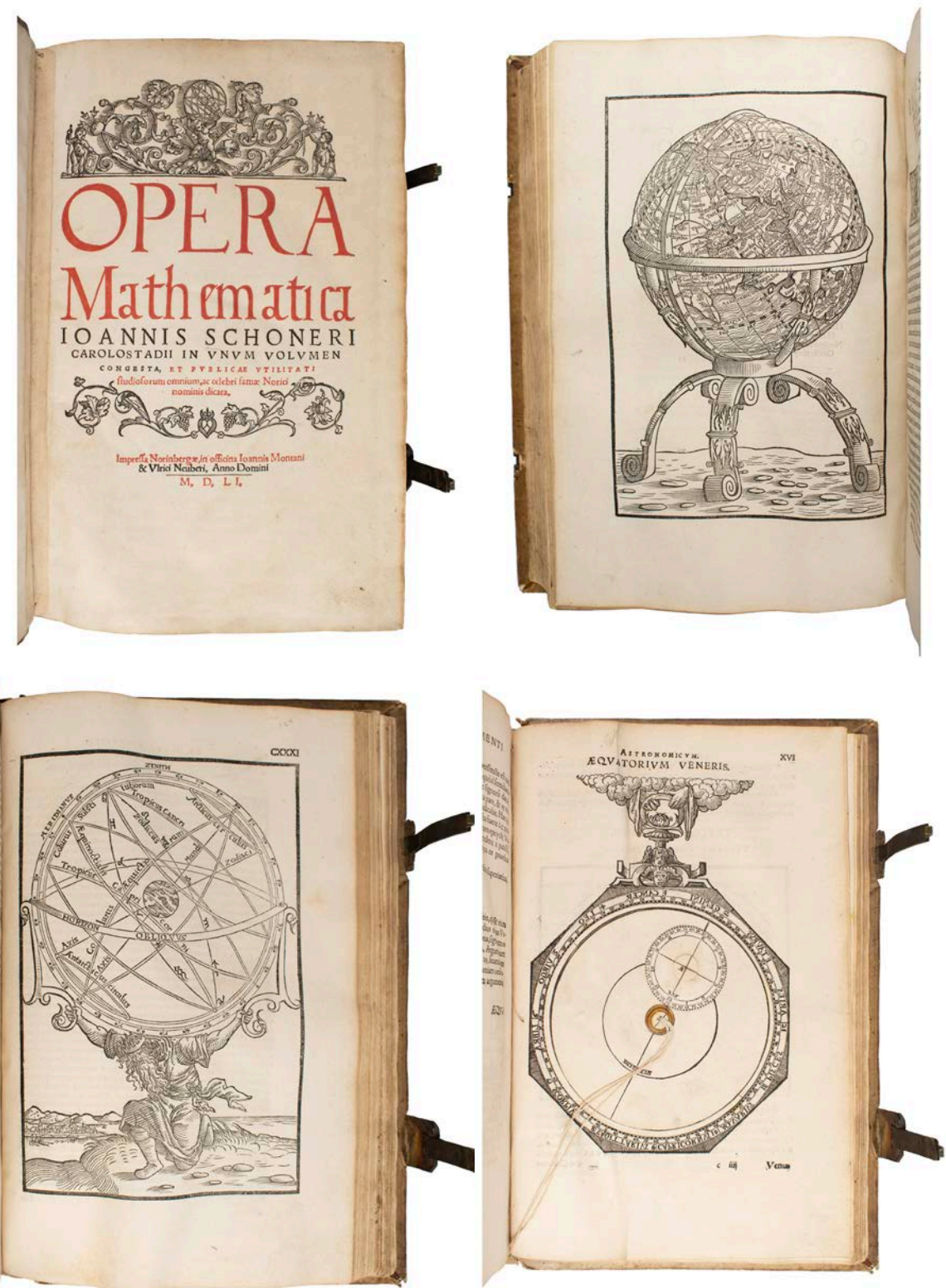
The Opera Mathematica is Schoner's 'magnum opus' encapsulating all his theories and most important works.

Perhaps the most influential of the Renaissance scholars, he is responsible for sending the Wittenberg professor, Rheticus to visit Copernicus and was instrumental in the publishing of 'De Revolutionibus'.

The first printed celestial globe was made in Schoner's workshop in 1515 and he is remembered as one of the most important sixteenth century astronomers and globe makers. A crater on Mars is named in his honour.

This is a particularly splendid copy of the 'Opera Mathematica', a work that is exceedingly scarce and the few copies that have appeared in the last hundred years have often lacked the important volvelles. This copy is exceptionally complete and includes all the volvelles, some still with their original threads.

Provenance: from the library of the Latin school in Altenburg, Germany (stamp on the binding 'Biblioth. Schol. Altenburgensis'); the English politician and book collector Sir Robert Leicester Harmsworth (1870-1937; his sale at Sotheby's London, 9 February 1953, lot 9605); Robert Honeyman IV (1897-1987; see The Honeyman Collection of



Scientific Books and Manuscripts. Volume vii. Printed Books S-Z and Addenda, Sotheby's New York, 19-20 May 1981, lot 2802A); Astronomy & Science Books from The Library of Martin C. Gutzwiller, lot 175.

Literature: Adams S-678, 685; VD16 S-3465; Alden 551/35; BEA, pp. 1027-1028; Houzeau - Lancaster 2388; Sabin 77806.



42. SPEKE, J.H. CAPTAIN, JAMES AUGUSTUS GRANT. and OLIVER (DANIEL, editor), Botany of the Speke and Grant Expedition. An Enumeration of the Plants Collected during the Journey of the Late Captain J.H. Speke and Captain (Now Lieut-Col.) J.A. Grant from Zanzibar to Egypt.

Published by Linnean Society Volume XXIX, 1875, Folio, Contemporary half calf gilt, 190 pp.; with folding coloured lithographic map, 136 plates of African flora by Walter Hood Fitch.

£450

In the introduction, Grant notes that in 1860, when appointed to accompany Speke to the sources of the Nile, "...it occurred to me that many a pleasant hour might be spent in collecting plants and seeds while traversing the country to be explored... I purchased some drying-paper and a couple of books for notes... Captain Speke thought it far too cumbrous for such a journey, but readily yielded to my wish to have it. He afterwards saw with me how the plants were appreciated when we took them to Kew upon our return... Would that my poor friend had survived to see the present result!"

These plates, produced from 'actual specimens', are the work of the prominent botanical illustrator Walter Hood Fitch and show 'either new species or such as had never been figured abroad or at home, the object being to present what was of the greatest interest to the botanist' (Introduction p.7).

Nissen BBI 1468; cf. Stafleu & Cowan III, 7057.



W.H. Fitch del et lith.

Vitis Grantii. Baker

J.N. Pichon imp.

TRANS. LINN. SOC. VOL. XXIX. TAB. 23.

An Important Experiment in The Treatment Of Typhus

43. SMYTH, JAMES CARMICHAEL, An Account of the Experiment Made at the Desire of the Lords Commissioners of the Admiralty, on board the Union Hospital Ship, to Determine the Effect of the Nitrous Acid in Destroying Contagion, and the safety with which it may be employed.

FIRST EDITION, folding plan of the ship, trimmed, occasional light staining, contemporary marbled boards, rebaked in calf, handsomely gilt, 8vo, London, for J. Johnson, 1796.

£450

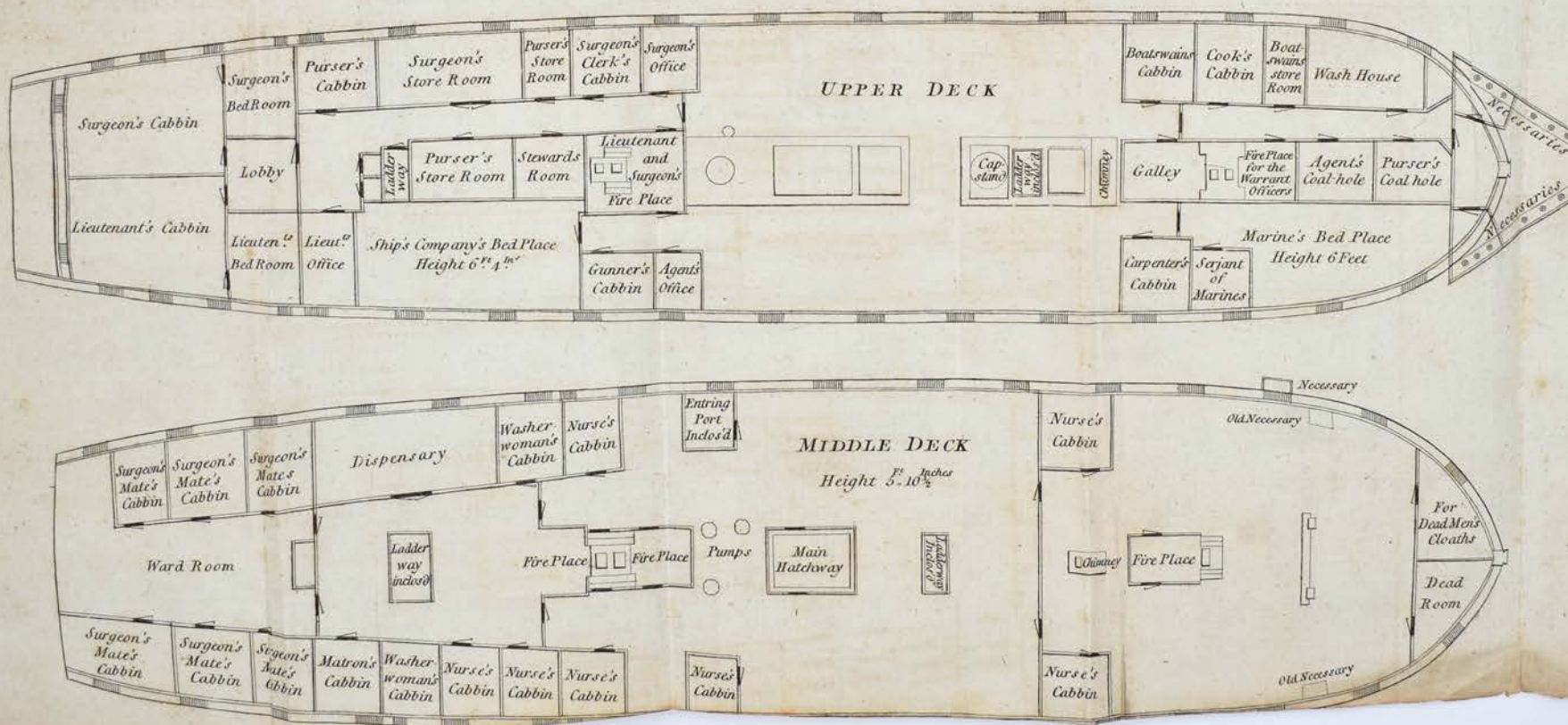
An account of an important experiment led by Dr. James Carmichael Smyth, which was requested by the Lord Commissioners of the Admiralty.

Smyth, a physician, spent his career pioneering the use of nitrous acid gas to prevent the spread of disease. He has written several treatises advocating for this method, along with several other medical matters.

In 1780 Smyth was appointed by the Government to take charge of a prison and hospital in Winchester, where he used nitrous acid gas to suppress the spread of the malignant typhus raging there. The treatment worked and the hospital and prison were soon brought to a comparatively healthy condition.

The government then ordered the experiment accounted for in this work. This experiment was deemed so conclusive parliament voted to award Smyth £5,000. He was elected Fellow of the Royal Society and appointed physician extraordinary to King George III.

PLAN of the UNION as fitted for an HOSPITAL SHIP.



44. SNEL, WILLEBRORD, Eratosthenes Batavus de Terrae Ambitus Vera Quantitate, a Willebrodo Snellio

FIRST EDITION, 12 unnumbered pages, including title page with laurel wreath with latin motto, pp.263, (1), several engraved diagrams, 1 full page engraving (p.168) for the “Dutch triangulation”, occasional manuscript annotations in an early hand, contemporary vellum, manuscript title to spine, 8vo, Apud Iodocum Hondium a Colster; Excudebat Georgius Abrahama a Marsse, Leiden, 1617.

£3,500

FIRST EDITION of this very important work, the foundation of modern geodesy and of great importance for the history of navigation. In this work, Snel outlines the principles of a new method for determining the length of the meridian arc by triangulation. From the average of these measurements, Snel calculated that the length of a degree is 352.347 feet, a more accurate calculation than any previous attempt.

Snel also solved the so-called “three-point recession” problem, giving it its name. The work is attributed to Erastotene, famous for its measurement of the circumference of the earth.

In 1609 Willebrord Snell published his first major work, a study of the conic sections of Apollonius of Perga; among the many works he also published a book on navigation, *Tiphys Batavus* (1624) in which, among other things, he explained the mathematical theory of the rhumb line (loxodrome), the shortest distance between two points on earth, represented by the projection of Mercator as a straight line, a theory without the explanation of Mercator on his world map (*Tiphys* was the helmsman of the Argonauts). Snel is best known by posterity for the discovery of the “Snell law”, according to which the relationship between the sines of the angles of incidence and refraction is a constant. The manuscript in which he formulated this law has never been published and is now lost; the law was first published by Descartes in his *Discours* (1637), for which some accused Descartes of plagiarism.

Commander J.B. Hewson, *A History of the Practice of Navigation*, Glasgow, 1963, p.158: “His figure. showed the great error in the popular figure of 300,000 feet, which up to then was used by navigators.

One navigator, at all events, was quick to see the advantage of using the lately calculated and more accurate figure and used it upon his voyage to discover the North West Passage, in 1633. This was Captain Thomas James, after whom the bay to the south east of Hudson’s Bay was named. In the account of his ‘Strange and Dangerous Voyage’, as he described it, he related how, before leaving Bristol, he caused many small glasses to be made, whose part of time he knew with accuracy, and marked off the log like in

accordance with Snellius’s measure of feet to one degree”.

[Wheeler Gift 55; Honeyman 2864; Norman 1963; DSB XII, 500]

ERATOSTHENES
BATAVVS

De Terræ ambitus vera
quantitate,

A
WILLEBRORDO SNELLIO,

Διὰ τῶν ἑξ ἀποσημάτων με-
τρεσῶν διοπτρῶν,

Suscitatus.



LVGDVNI BATAVORVM,
Apud IODOCVM à COLSTER
Ann. cIo Io c xvii.

45. SOUTH, JAMES, On the Extensive Atmosphere of Mars. In a Letter to His Royal Highness the Duke of Sussex, K.G., President of the Royal Society.

4pp., 15-17p., unbound, stitch marks in left margin, 4to, from Philosophical Transactions from the Royal Society of London, 1832.

£500

Sir James South, a British astronomer, wrote this paper to argue for the lack of atmosphere on Mars using first hand evidence. He witnessed a star go behind the planet Mars, but the star did not show an atmosphere, which would have been visible if one existed. South ends his paper:

"...I can arrive at no other conclusion than that either some physical change has occurred in the "Extensive Atmosphere of Mars," or that the accuracy of the observations of Cassini and of Roëmer must be regarded as untenable"

South originally trained as a chemist, then as a surgeon, before finally turning to astronomy. In 1821 he was elected a Fellow of the Royal Society of London, and was joint founder of the Astronomical Society of London, later becoming the Royal Astronomical Society.

South and John Herschel jointly produced a catalogue of 380 double stars in 1824, re-observing many of the double stars that had been discovered by William Herschel. South then continued and observed another 458 double stars over the following year.

Craters on Mars and the Moon are named in his honour.

[15]

II. *On the extensive Atmosphere of Mars. In a Letter to His Royal Highness the DUKE OF SUSSEX, K.G., President of the Royal Society. By Sir JAMES SOUTH, F.R.S.*

Read December 13, 1832.

THROUGH the kindness of your ROYAL HIGHNESS I had some time since the honour of calling the attention of astronomers to the "Extensive Atmosphere of Mars"—to the observations of those great men, from which its existence was inferred,—and I showed that they were either unsupported by, or were at variance with my own. Still, however, as the observations, of which mine seemed subversive, were bequeathed us by astronomers, to whom astronomy owes deep and lasting obligations, respect due to their memory demanded that I should rather enforce the necessity of further observations than treat the matter as actually decided.

This night has put me in possession of fresh evidence, and I lose no time in forwarding it to Your ROYAL HIGHNESS, in the hope that it may have the honour (should you, as President of the Royal Society, think it worthy,) of being presented by you for insertion in those journals, which contain so rich a mine of astronomical truths.

During twilight, in the field of the large Equatorial*, I saw a star of the

* This instrument, the design and work of Messrs. TROUGHTON and SIMMS, was executed by them in preference to the one hinted at by me, in a note appended to page 4 of the Phil. Trans. for 1826. It was erected in my observatory in the early part of the last year, and I fondly hoped, that long ere now I should have had the gratification of presenting an account of it to the Royal Society.

To my inexpressible grief, however, owing to its unfitness for the purposes for which it was designed, not only have fourteen months of a life advanced beyond its prime, been of necessity employed otherwise than in prosecuting those inquiries for which alone such an instrument was wanted; but at the present moment, as to when it will be fit for use, I have not data for offering even a conjecture.

In the mean time, fearing lest it should ultimately prove a total failure, during the last autumn I visited the Imperial Observatory of Dorpat, and I feel it due to the memory of the late Mr. FRAUNHOFER to hand down an apology through the same channel which conveyed the insinuation contained in the note before alluded to; inasmuch as a fortnight's residence under the roof of our celebrated



variety of celestial calculations, all for the Netherlands' latitude of 52 degrees.

With letterpress instructions by Calman on a separate printed slip at the right. The sky image 32.5 cm in diameter; the whole chart with the letterpress slip as mounted 56 x 66.5 cm. A string serves as a pointer for aligning the scales in the stationary and rotating parts. Coloured by a contemporary hand.

The chart is here in its third state, but we have located no complete example of any earlier version. The Boerhaave Museum in Leiden has the chart without volvelle or instructional text, published by Doncker, but the 1664 edition described in Doncker's advertisement clearly included the volvelle and instructional text. Perhaps the surviving chart is the 1684 version mentioned but not seen by Bierens de Haan, who provides neither a detailed description nor a source for his information. They and the present version (printed from Doncker's plate c. 1722) seem to have appeared only as separate publications, hence their great rarity.

The circular border around the sky image and the outer part of the volvelle include scales with several kinds of data so that the chart can be used for various purposes. one can use the string to align the time in the volvelle with the date in the border of the chart, so that the part of the sky visible at that moment appears inside the volvelle. The chart with its volvelle, scales and string can also be used to calculate times for the rising and setting of constellations at various dates (or to calculate the present time based on the position of the stars). Fifty-three constellations are numbered quarter by quarter (15, 9, 14 and 15), with a Dutch key identifying them in each corner. Calman's instructional text, printed letterpress on a separate slip (495 by 185 cm) and mounted to the right of the chart itself, describes the different scales, etc., then presents nine "proposals" (giving examples of the use of the chart).

In the plate of the star chart itself is engraved, "Auct. J. Stampioen. 't Amsterdam by Iochem Hasebroek" but Hasebroek's name is larger and in a different style than the rest of the lettering, and one can see traces of an earlier name under it. Although the older name cannot be deciphered, one can see that "Hendrick Doncker" would fit (with traces of the h and Do, and marks where the ascenders to the d, k and k would have been), making it clear that the present chart is printed from Doncker's original plate. Calman advertised his Amsterdam boarding school for calligraphy, mathematics, etc. in 1722, and Hasebroek (1682- 1756) is recorded as a sea chart publisher and instrument maker from 1714 to 1743.

Koeman IV, p. 5 (no location noted; cf. p. 153); Warner, *Sky Explored*, p. 260, no. 1c (no location noted; cf. p. 247); Alder Planetarium on-line database A-259; cf. Bierens de Haan 4516 (1684 ed., not seen: see his *Bouwstoffen II*, pp. 386 & 429 note 5); E.O. van Keulen et al., "In de Gekroonde Lootsman," item 4 & illustration between pp. 64 & 65 (1680/1696 Vooght/Van Keulen ed.); not in BMC Printed Maps; Zinner, *Astron. Instrumente*; NCC/Picarta; OCLC WorldCat

46. STAMPPIOEN, Jan Jansz the Younger - M. CALMAM, Onderwys in 't Regte Gebruyk van het Hemels-Plyn strekkende tot nut en vermaak der liefhebbers

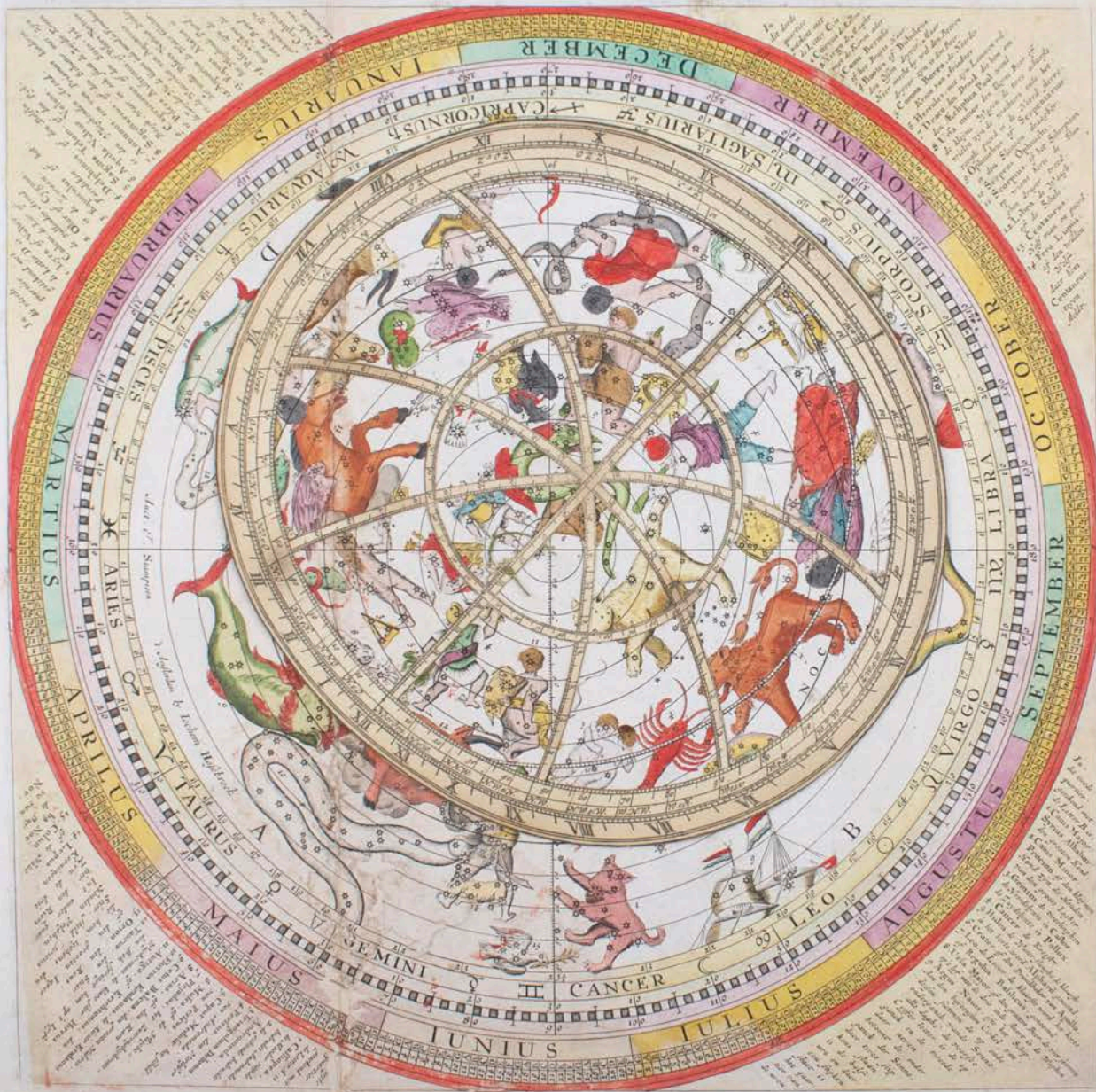
Published by Jochem Hasebroek, Amsterdam, [c. 1722]

£7,500

Large engraved celestial chart with a rotating printed paper ring (volvelle or rete) on an off-centre axis to indicate the part of the sky visible at any date and time and to make a

VAN DE VERDELING

De naam der pastoor
 ten 300000 fr. en 500000 fr. a roodi voor 't begin en eynde der Schiering.
 Tot dat vore der we wafteide getroyd verlaant bekennen, verlyen introyde U.E. en jongen Friend.
 MARTE CALMAN,
 Lector der U. School, abbe.
 Amsterdam, by JOACHIM HASEBROEK, Boekverkooper en Grondpionier der Nieuwening Stree.
 in der Suurman Gemeenschap.



47. WALES, WILLIAM & BAYLY, WILLIAM, The Original Astronomical Observations, made in the course of a Voyage towards the South Pole, and Round the World, In His Majesty's Ships the Resolution and Adventure.

FIRST EDITION

London: W. and A. Strahan, 1777, 4to (288 x 223mm.), engraved map and 3 plates, all folding or double-page, contemporary russia gilt, restored.

£18,000

William Wales and William Bayly were appointed by the Board of Longitude to accompany James Cook on his second voyage of 1772–75, with Wales accompanying Cook aboard the Resolution. Wales' brother-in-law Charles Green, had been the astronomer appointed by the Royal Society to observe the 1769 transit of Venus and had died during the return leg of Cook's first voyage.

The primary objective of Wales and Bayly was to test Larcum Kendall's K1 chronometer, based on the H4 of John Harrison. Wales compiled a log book of the voyage, recording locations and conditions, the use and testing of the instruments entrusted to him, as well as making many observations of the people and places encountered on the voyage. The Original Astronomical Observations was published at the expense of the Board of Longitude.

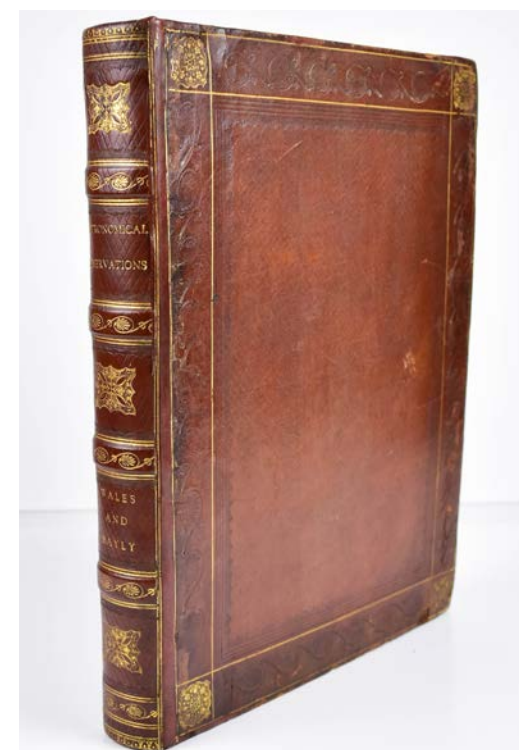
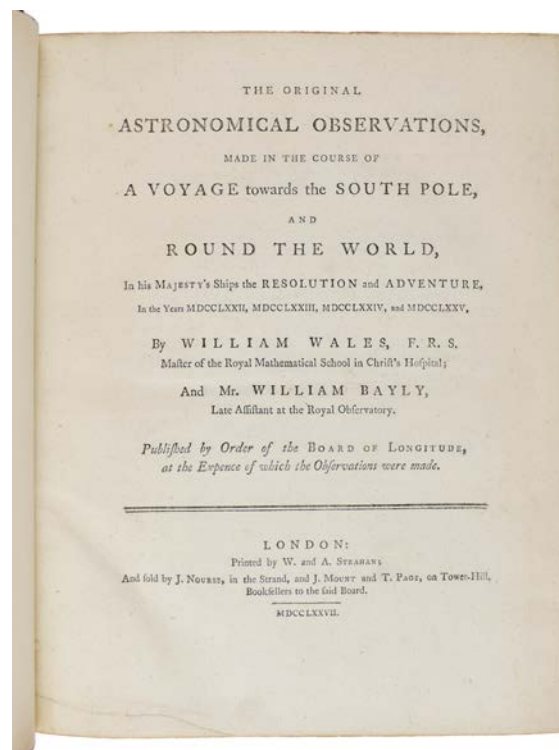
Following his return, Wales was commissioned to write the official astronomical account of Cook's first voyage in 1778. Wales sailed with Cook on all three of his voyages

He became Master of the Royal Mathematical School at Christ's Hospital and was elected a Fellow of the Royal Society in 1776. Amongst Wales' pupils at Christ's Hospital were Samuel Taylor Coleridge and Charles Lamb.

He was nominated by the First Lord of the Admiralty, Earl Spencer, and his appointment confirmed 5 December 1795. He was appointed as Secretary of the Board of Longitude in 1795, serving in that position until his death in 1798.

Cox I, 61

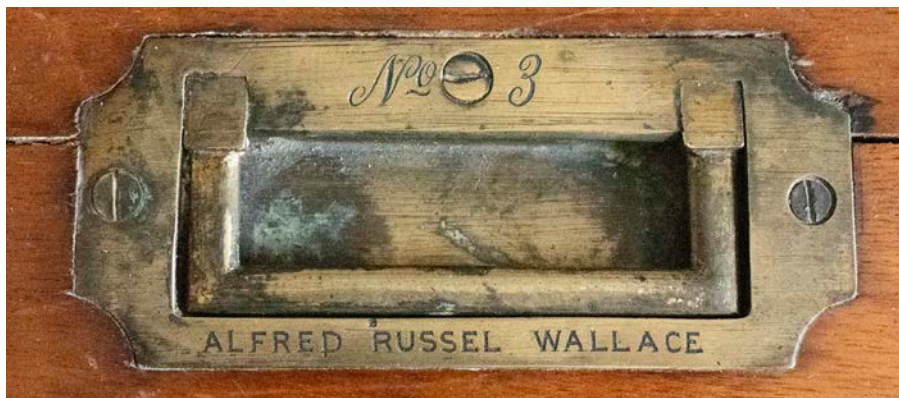
The image shows an open manuscript of 'The Original Astronomical Observations'. The left page, numbered 272, is titled 'ASTRONOMICAL OBSERVATIONS' and contains a table with columns for 'Time by Watch', 'Apparent Time', 'Longitude', 'Latitude', and 'Remarks'. The right page, numbered 273, is titled 'ON BOARD THE RESOLUTION' and contains a similar table. Both pages include handwritten entries and some marginal notes. The manuscript is bound in a dark, worn cover with gold tooling.





« Témête from Naples by W. H. Baily »

Engraved by J. B. B. B. B.



Alfred Russel Wallace Specimens Cabinet

48. WALLACE, ALFRED RUSSEL, A French Polished Specimens Cabinet with Brass Handle Engraved ALFRED RUSSEL WALLACE No.3

English, c 1870-80, 33 cm Tall, Glazed Door, Plinth Base with Large Accessories Drawer, 16 Sliding Specimens Drawers and One Deep Drawer with ivory decoration.

£12,500

Extremely scarce cabinet with contemporary engraved signature of Wallace.

Although there are no natural history samples it is likely this cabinet was used to display beetles and similar creatures.

There does not seem to be any records of Wallace's library bookcases or cabinets only the occasional photograph illustrating his study. One photograph illustrates the reverse of a small cabinet on his desk that could be this one.

Alfred Russel Wallace (1823-1913) was a man of many talents - an explorer, collector, naturalist, geographer, anthropologist and political commentator.

Most famously, he had the revolutionary idea of evolution by natural selection entirely independently of Charles Darwin.

Wallace was born in Usk - now in Monmouthshire. After leaving school he worked at his brother's surveying firm until he was hired as a teacher in Leicester in 1844. That year he formed a friendship with a local man and keen naturalist, Henry Walter Bates.



Bates introduced Wallace to the methods and delights of collecting beetles. Four years later the pair headed for the Amazon, having been inspired by stories of discovery in the New World and Oceania.

Wallace and Bates arrived at the mouth of the Amazon in Brazil in 1848. Their aim was to investigate the origin of species. They financed the trip by collecting specimens and selling them.

After a short time exploring together, the two men split up in order to cover more ground. Wallace went north by river, collecting in areas previously unexplored by European naturalists. He amassed thousands of animal specimens, mostly birds, beetles and butterflies. After more than four years collecting, Wallace sailed back to England, but disaster struck on the high seas. The ship caught fire in the Atlantic and sank, along with virtually all his specimens and field notes. Fortunately, the crew and passengers were rescued by a passing ship.

Wallace began his travels through the Malay Archipelago - now Malaysia and Indonesia - in 1854.

While Indigenous and enslaved peoples' contributions to natural history have often been overlooked by history, unusually for this time period, Wallace acknowledged his local guide, a Malay teenager named Ali. Wallace wrote about their relationship in his biography, both about their collecting endeavours and how they supported each other. Over a period of eight years, Wallace accumulated an astonishing 125,660 specimens, including more than 5,000 species new to western science.

In 1858, while feverish and confined to his hut on the island of Ternate - now in Indonesia - Wallace had a realisation. He came to understand how species evolved - they changed because the fittest individuals survived and reproduced, passing their advantageous characteristics on to their offspring. He noticed a striking pattern in the distribution of animals around the archipelago. He proposed an imaginary line dividing the region in two parts. Later known as Wallace's Line, this marked the boundary between the animal life of the Australian region and that of Asia.

Wallace immediately wrote to Charles Darwin.

Darwin had been working on the very same theory for 20 years, but was yet to publish. He sought the advice of his friends, who determined that the ideas of both men would be presented at a meeting of the Linnean Society. Darwin's masterpiece, *The Origin of Species*, came out the following year.

From that time on, Darwin overshadowed Wallace and it has usually been his name alone associated with the theory of evolution by natural selection.

Wallace expressed no resentment at this - in fact he was Darwin's greatest admirer. His role in the matter, and Darwin's support, ensured his entry to the highest ranks of the



*Important Work On Witchcraft And Demonology, And A
Precursor Of Modern Psychiatry*

49. WEIR, JOANNE [WEYER, JOHANN], De Praestigiis Daemonum, Et Incantationibus ac ueneficiis, libri V. recogniti, & ualde aucti. Authore Ioanne Vviero Graviano, illustrissimi ducis Cliuiae, Iuliae, &c. medico. Praeter locupletem accessionis cumulum, ut lectoris memoriae consuleretur, in capita quoque iam sectus est quilibet liber: cuius argumentum in praefatione comperies. Accesit index amplissimus.

Second edition, 565, [lxviii] pp., late 17th century annotations to flyleaf and title, occasional underlining, last ten index pages with a single, small worm hole, 17th century limp vellum, yapped edges, two leather straps (perished), 8vo (165 x 108mm), Basilaе, Ioan Oporin, 1564.

£10,000

“Those who err should be brought gently home, not incarcerated with punitive ferocity.”

Johann Weyer, a respected Lutheran physician at the court of William III, was one of the first to protest against the persecution of witches. He is considered “the founder of medical psychiatry” (Garrison-Morton), and a human rights defender avant la lettre. He published on rare diseases and sexual abuse. Weyer influenced contemporaries such as Michel de Montaigne and later thinkers such as Victor Hugo, Karl Marx and Sigmund Freud. After studying at the University of Paris, Weyer apprenticed under Agrippa of Nettesheim from 1530 to 1534. The poetic, mysterious and liberal-minded Agrippa was also an outspoken critic of witch persecution.

Weyer sought to derogate the law concerning witchcraft prosecution, using two forms of thinking. He argued that those accused of practising witchcraft were mentally ill - suffering from “melancholia” - and the confessions they made were actually delusions of the mind. By arguing that the moral weakness in women made them easy prey to Satan’s temptations, Weyer started one of the most vigorous and enduring controversies surrounding demonology and the witch in the early modern period. Weyer powerfully argues the case for leniency to the repentant and eloquently rejects the assimilation of witchcraft to heresy. He insisted that women were neither helped nor healed by torture or burning, but that they rather needed the healing power of prayer, religious instruction, medical intervention, and meditative isolation. He bolstered this attack on realist demonology with medical authorities as well as his own clinical experience as a practising physician. Whilst he is right to insist on the relevance of medical diagnosis in many cases of witchcraft, medicine was then too primitive to suggest convincing explanations. Weyer’s most important contribution in the field of medical diagnosis may be the understanding that undernourishment was the cause of much witchcraft melancholia.

DE
PRAESTIGIIS
DAEMONVM, ET INCAN-
tationibus ac ueneficijs, Libri V. reco-
gniti, & ualde aucti.

Authore IOANNE VVIERO GRAVIANO,
Illustrissimi Ducis Cliuiae, Iuliae,
&c. Medico.

Praeter locupletem accessionis cumulum, ut
lectoris memoriae consuleretur, in Capita
quoque iam sectus est quilibet Liber;
cuius Argumentum in Prae-
fatione comperies.

Accesit INDEX amplissimus.

Nolite uos consortes esse demoniorum.

1. Corinth. 10.

Resistite diabolo, & fugiet a uobis.

Iacobi 4.

Qua in albona v. Ralt 1 in ind. Cata. Logia.
Recd: 22: 18. Sent: 27: 18.

Cum Cæs. Maiest. gratia & priui-
legio, ad sexennium.

BASILEAE, PER IOAN-
nem Oporinum. 1564.

Medical and juridical objections often went hand in hand. Weyer challenged demonologists on a legal terrain, attacking the prosecution's reliance on a confession, the point where demonology's theoretical and practical endeavours converged. Weyer attempts to demolish various witch confessions, notably he publicly attacked the trials of the Wurttemberg preachers, attesting they were illegal, since the death penalties could be imposed only in cases of maleficent magic, not for mere fantasies. Weyer was careful to specify that he did not doubt the reality of witchcraft, but only its relevance to the majority of prosecutions.

Weyer has become a symbol of courage and lucidity in the face of intolerance and ignorance, but he was not quite as radical as it would seem. Despite Weyer's appeal for a greater tolerance towards alleged witches, he also wants greater severity towards male magicians, who Weyer perceived as actual practitioners of natural or demonic magic. It has been suggested that in its very conception, this work is an ideological attack on Catholic idolatry and superstition, rather than a radical stand against the cruel persecution of witches.

The reaction to *De Praestigiis Daemonum* was formidable. Weyer had chosen to publish his book precisely at the moment when the witch-craze, after a long lull, was beginning again. That, indeed, was what had provoked him to write. But this Erasmian Platonist was no longer heard by a generation that had repudiated Erasmus. A fellow physician might hail him as a prophet of enlightenment, but his other readers thought differently. Weyer was told by his friends that his book must be destroyed or rewritten; by his enemies that he was a lunatic.

Yet Johann Weyer shaped opposition to witch hunting for generations. Demonologists who wrote after him took care to demolish his arguments, and Bodin's famous *Demonomanie de sorciers* includes a lengthy rebuttal of *De praestigiis*. Yet as they engaged with Weyer's ideas, their own thought was shaped by his.

Only three auction records in the last 50 years.

[ADB XLII, p. 266; Garrison-Morton 4916; Robbins (1972), *Encyclopedia of Witchcraft*; Thorndike, L. (1941). *A History of Magic and Experimental Science*, pp. 515-516.; *Witchcraze, Terror and Fantasy in Baroque Europe*, Roper, 2004; *Witches, Devils, and Doctors in the Renaissance*: Johann Weyer, Mora, 1991; *The Oxford Handbook of Witchcraft in Early Modern Europe and Colonial America*, 2013; *Ideas and Cultural Margins in Early Modern Germany*, 2009; *The Damned art : essays in the literature of witchcraft*, 1977]



The Most Important And Most Influential English Book On The Art Of Navigation

50. WRIGHT, EDWARD. Certain Errors in Navigation, Detected and Corrected by Edw:Wright with many additions that were not in the former editions.

London: Joseph Moxon, 1657. Small 4to (210 x 160mm) Finely engraved title, incorporating a world map on Mercator's projection; large folding map of the Azores, 4 folding plates of instruments, diagrams etc.& 27 woodcut illus., many of instruments, in the text, pp. (26), 224, 110,(2), Contemporary panelled calf gilt, rebacked, some marginal damp stains towards the end of the volume, otherwise this is a crisp, unpressed copy.

£65,000

Third edition, corrected and enlarged, of the most important and most influential English book on the art of navigation, "a book that set the seal on the supremacy of the English in the theory and practice of the art of navigation at this time. It contained a brilliant summary of all the chief contemporary practices of navigation together with a critical examination of their faults, and either the actual means for eliminating them or else sound guidance on the measures necessary to do away with them...

"Wright's Certain Errors was so packed with learning, was such an able survey of navigation practice at the close of the sixteenth century, and by its chart projection introduced such order out of the former cartographical confusion, that it and his other work merit fuller attention than can be devoted to it in a survey of this scope." Waters, *The Art of Navigation in England*, pp. 219-20.

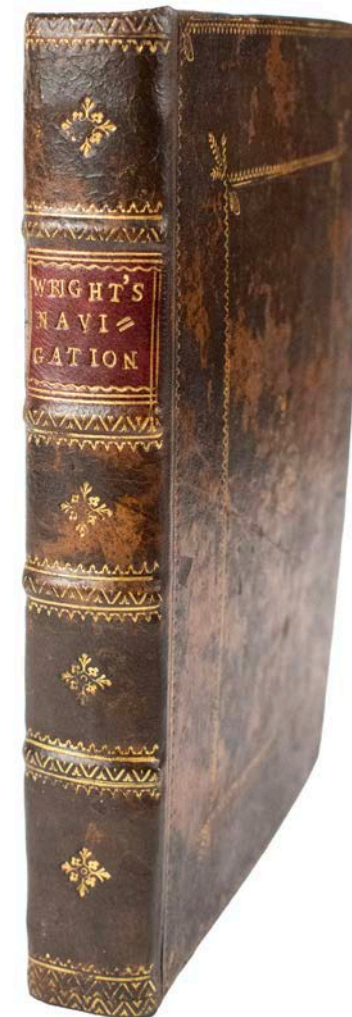
The first edition, which appeared in 1599, caused a "revolution in navigational science, which for the first time [Wright] based firmly on mathematical principles...His fame chiefly rests on his tables of the construction of maps using 'Mercator's projection' ... Wright also formulated instructions for the use of the compass and the cross-staff, made improvements in navigational instruments and gave tables of magnetic declinations." *Printing & the Mind of Man* 106-(1st ed. of 1599).

This edition is important: "What made this edition...into a navigation manual suitable for all seamen was the inclusion [for the first time] of a translation made by a friend, of a standard Spanish navigation manual of 1588, Zamorano's *Compendio del Arte de Navegar*." Waters, p. 317.

As usual without the large World map showing Cumberland's route to and from the Azores by William Kip. This map is usually missing. Shirley, in his *Mapping of the World*, 272, speculates that its great size and possible incompleteness could explain why the world map is rarely found bound with the book.

Edward Wright (1561 -1615) English mathematician and cartographer noted for his mathematical basis of the Mercator projection. He set out a reference table giving the linear scale multiplication factor as a function of latitude, calculated for each minute of arc up to a latitude of 75°. This was in fact a table of values of the integral of the secant function, and was the essential step needed to make practical both the making and the navigational use of Mercator charts.

Wright was born at Garveston and educated at Gonville and Caius College, Cambridge, where he became a fellow from 1587 to 1596. In 1589 the College granted him leave after



Elizabeth I requested that he carry out navigational studies with a raiding expedition organised by the Earl of Cumberland to the Azores to capture Spanish

galleons. The expedition's route was the subject of the first map to be prepared according to Wright's projection, which was published in *Certaine Errors* in 1599. The same year, Wright created and published the first world map produced in England and the first to use the Mercator projection since Gerardus Mercator's original 1569 map.

Not long after 1600 Wright was appointed as surveyor to the New River project, which successfully directed the course of a new man-made channel to bring clean water from Ware, Hertfordshire, to Islington, London. Around this time, Wright also lectured mathematics to merchant seamen, and from 1608 or 1609 was mathematics tutor to the son of James I, the heir apparent Henry Frederick, Prince of Wales, until the latter's very early death at the age of 18 in 1612. A skilled designer of mathematical instruments, Wright made models of an astrolabe and a pantograph, and a type of armillary sphere for Prince Henry. In the 1610 edition of *Certaine Errors* he described inventions such as the "sea-ring" that enabled mariners to determine the magnetic variation of the compass, the sun's altitude and the time of day in any place if the latitude was known; and a device for finding latitude when one was not on the meridian using the height of the pole star.

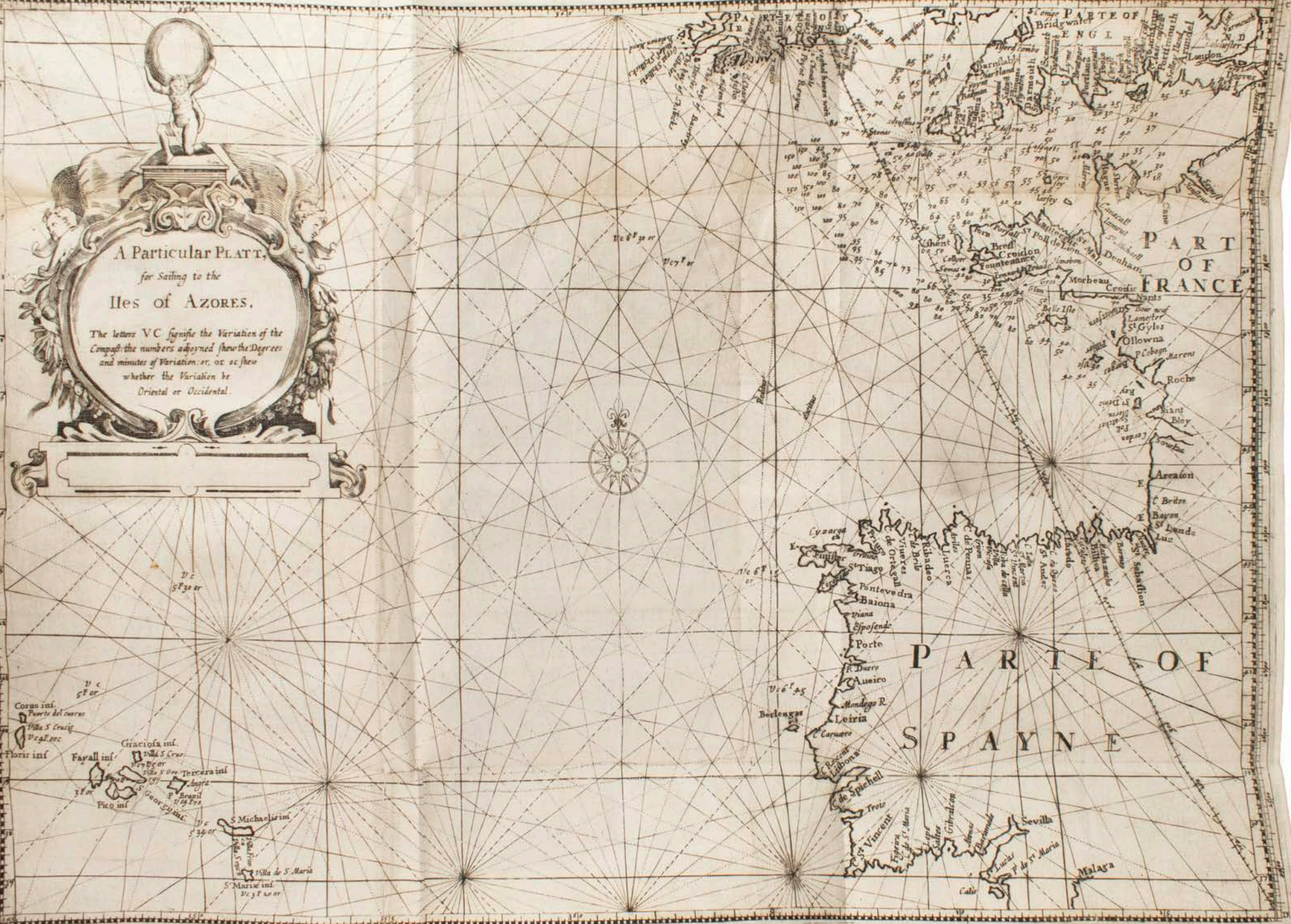
Apart from a number of other books and pamphlets, Wright translated John Napier's pioneering 1614 work which introduced the idea of logarithms from Latin into English. This was published after Wright's death as *A Description of the Admirable Table of Logarithmes* (1616). Wright's work influenced, among other persons, Dutch astronomer and mathematician Willebrord Snellius; Adriaan Metius, the geometer and astronomer from Holland; and the English mathematician Richard Norwood, who calculated the length of a degree on a great circle of the earth using a method proposed by Wright.

Joseph Moxon (1627-1691) was an English printer and instrument maker. His father was also a printer, and took Moxon to see Bibles being printed in the Low Countries when he was young. Moxon and his brother James became leading printers of mathematical and scientific texts, as well as globe and instrument makers. In spite of his Puritan upbringing, Moxon was appointed Hydrographer to Charles II following the Restoration. He produced the first English language dictionary devoted to mathematics, and in 1678 became the first tradesman to be elected as a Fellow of the Royal Society. Moxon theorized that the Arctic was ice free, and warmed by 24 hours of sunlight in the summer. He also speculated that Arctic ice was created near land, and that if one sailed far enough northwards, one would be free of northern land masses and, subsequently, ice, which led him to believe that the Northwest Passage would be found by sailing near the North Pole. These views later influenced Daines Barrington and Samuel Engel, whose refinement of Moxon's ideas would in turn influence Captain Cook's Third Voyage in search of the Northwest Passage.



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for Sailing to the
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and minutes of Variation: or, as shew
whether the Variation be
Oriental or Occidental.





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