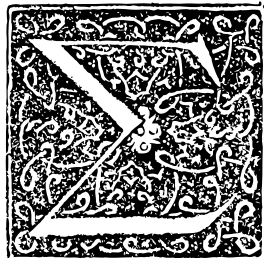


Rare and important books & manuscripts in science, by Christian Westergaard, M.Sc.



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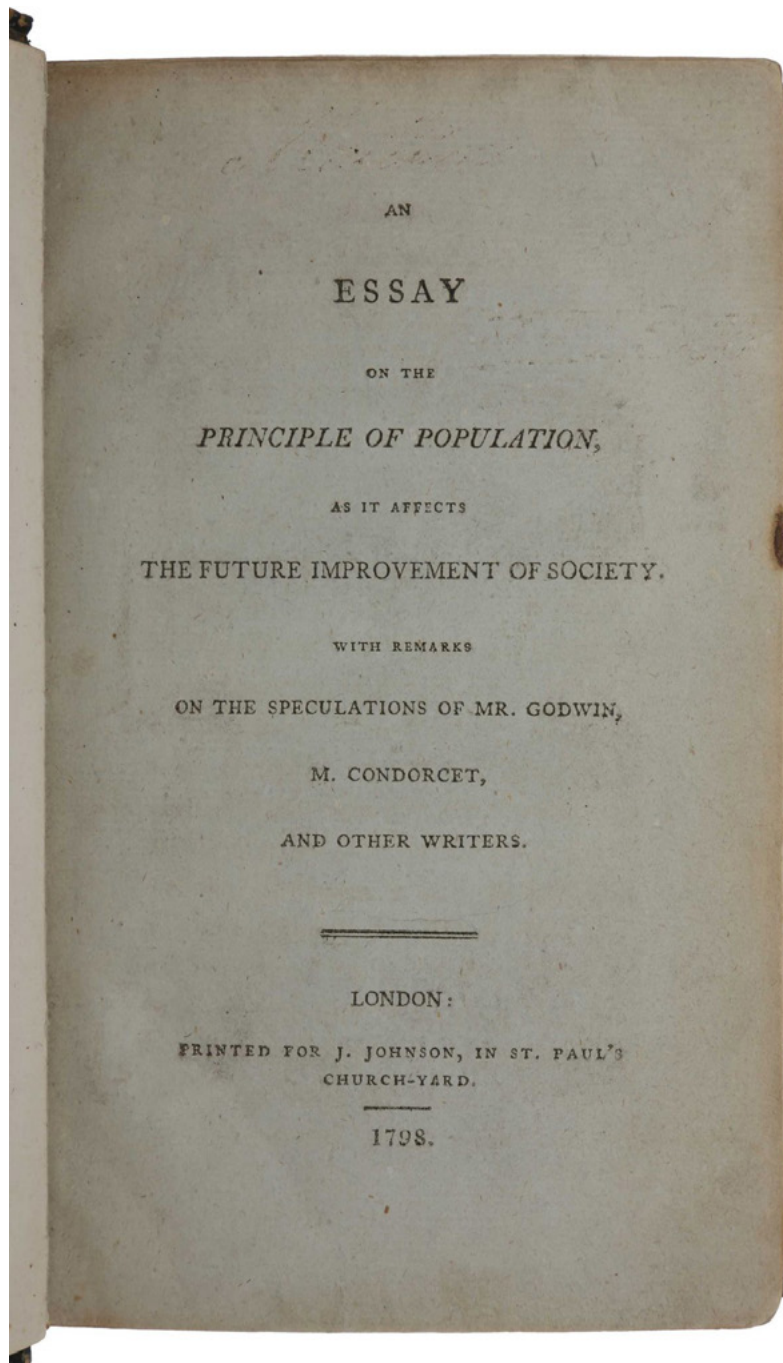
New York Antiquarian Book Fair
7-10 April 2016

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SOPHIA Σ RARE BOOKS

(The descriptions in this list are abbreviated; full descriptions are available)

The foundation of modern economics



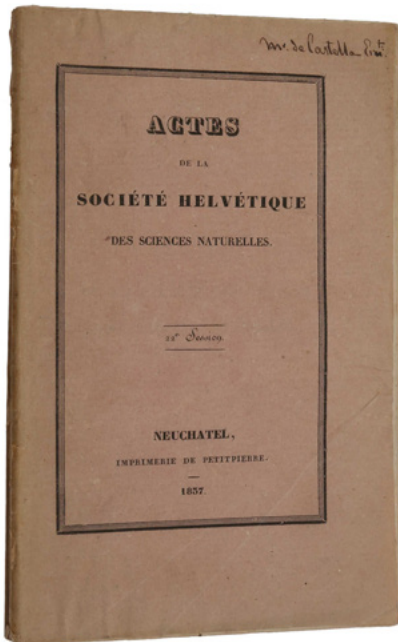
[**MALTHUS, Thomas Robert**]. *An Essay on the Principle of Population, as it Affects the Future Improvement of Society. With Remarks on the Speculations of Mr. Godwin, M. Condorcet, and Other Writers.* London: J. Johnson, 1798.

Item # 34

The ice-age hypothesis

1. AGASSIZ, Jean Louis Rodolphe. *Discours prononcé à l'ouverture des séances de la Société Helvétique des Sciences Naturelles, à Neuchâtel le 24 Juillet 1837*. Neuchatel: Petitpierre, 1837.

\$6,500



First edition, in the original printed wrappers, and a fine association copy, of Agassiz's celebrated first announcement of his 'Ice Age' hypothesis, which caused a revolution in geology. This precedes by three years his better-known and more detailed account in *Études sur les glaciers* (PMM 309). "The concept of the 'Ice Age' was remarkable for its breadth of generalization and for the exacting field study represented. Agassiz held that in the immediately recent past there had been an era during which large land masses over much of northern Europe were covered with ice. With the onset of warming periods, the recession of the ice was responsible for upheaval and subsidence. The marks of glaciers could be discerned in the scratched and polished rocks as well as in the configurations of the earth in glaciated regions. Glacial movement was responsible for modern geological configurations" (DSB). "Agassiz's observations were the beginning of modern glacial geology" (PMM). Although Agassiz's theory was initially met with opposition, it was "sufficient to convince such naturalists as Darwin and Lyell that Pleistocene glaciation was a primary mechanism in causing the geographical distribution and consequent genetic relationship of flora and fauna otherwise inexplicably separated by land and water masses" (PMM).

Provenance: ownership inscription on front wrapper of the physician François Antoine Ernest de Castella (1811-62), Neuchâtel member of the Swiss Society of Natural History; he is named frequently in the text among the reports of the Society's activities.

"The beginning of modern glacial geology" (PMM)

2. AGASSIZ, Jean Louis Rodolphe. *Études sur les Glaciers ... Ouvrage accompagné d'un Atlas de 32 Planches*. Neuchatel: Jent & Gassmann, 1840.

\$15,000



First edition of this "epoch-making work" (Lurie, *Louis Agassiz, A Life in Science*), "the great work of the founder of glacial geology" (Horblit), in which Agassiz put forward his revolutionary 'Ice Age' hypothesis. "Agassiz's observations were the beginning of modern glacial geology" (PMM). This copy is complete with the text volume (which is very often lacking), and the essential upper wrapper to the atlas volume containing a further illustration. "Agassiz published his famous *Études sur les Glaciers* at the end of 1840. This was the first major scientific publication that argued for the existence of an ice age in Earth history. Esmark, Venetz, and Charpentier had made the case for a much greater expanse of ice cover in the past, but they did not associate this with a glacial epoch of intense cold climate. Agassiz's monograph was lavishly illustrated with a wonderful series of lithographic prints ... As the first atlas of glaciers and glacial landforms, it became a remarkably influential work ... From 1840, Agassiz

became the main promoter of the glacial theory and it was his name that became indelibly linked to it" (Woodward, *The Ice Age: A Very Short Introduction*).



☛ Grolier/Horblit 1; PMM 309; Dibner 98; *En Français dans le Texte* 258; Norman 20.

The first book on orthopaedics

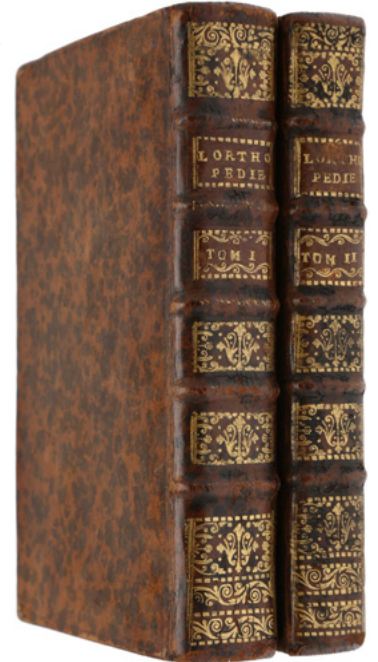
3. ANDRY, Nicolas. *L'orthopédie ou l'art de prevenir et de corriger dans les enfans, les difformités du corps.* Paris: Chez la veuve Alix; Lambert & Durand, 1741.

\$16,000



Rare first edition, and a very fine copy, of the “first book on orthopedics” (Garrison-Morton). A work “of supreme importance” (Bick). “Nicholas Andry coined the word *orthopaedics* in French as *orthopédie*, derived from the Greek words *orthos* (‘correct’, ‘straight’) and *paidion* (‘child’), when he published *Orthopedie* (translated as *Orthopaedia: or the Art of Correcting and Preventing Deformities in Children*) in 1741. Though as the name implies it was initially developed with attention to children, the correction of spinal and bony deformities in all stages of life eventually became the cornerstone of orthopedic practice” (Wikipedia).

☛ Grolier/Medicine 42; Lilly, *Notable Medical Books* 113; Norman 55; *Heirs of Hippocrates* 697; Garrison-Morton 4301.



Editio princeps of the greatest mathematician and physicist of antiquity

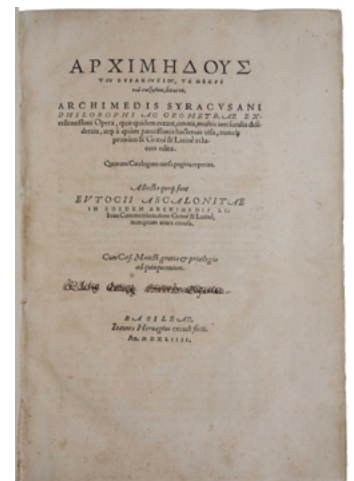
4. ARCHIMEDES of Syracuse. *Opera, quae quidem extant, omnia.* Basel: J. Hervagius, 1544.

\$110,000



An outstanding copy, in untouched contemporary binding, of the first complete edition of the greatest classical work on mathematics and physics – fully complete with both Latin and Greek text. Prior to this edition only two small tracts in Latin translation (1501 and 1503) and a partial translation (1543) had appeared. The publication of the present edition marked a decisive step forward in the history of mathematics in that it made Archimedes’ knowledge and sophisticated techniques readily available for study. “Archimedes – together with Newton and Gauss – is generally regarded as one of the greatest mathematicians the world has ever known, and if his influence had not been overshadowed at first by Aristotle, Euclid and Plato, the progress of modern mathematics might have been much faster. As it was, his influence began to take full effect only after the publication of this first printed edition which enabled Descartes, Galileo and Newton in particular to build on what he had begun” (PMM).

☛ PMM 72; Evans 2; Grolier/Horblit 5; Dibner 137; Sparrow 9; Norman 6



A new method of physical diagnosis – thoracic percussion

5. **AUENBRUGGER, Leopold.** *Inventum novum ex percussione thoracis humani ut signo abstrusos interni pectoris morbos detegendi.* Vienna: Typis Joannis Trattner, 1761.

\$20,000



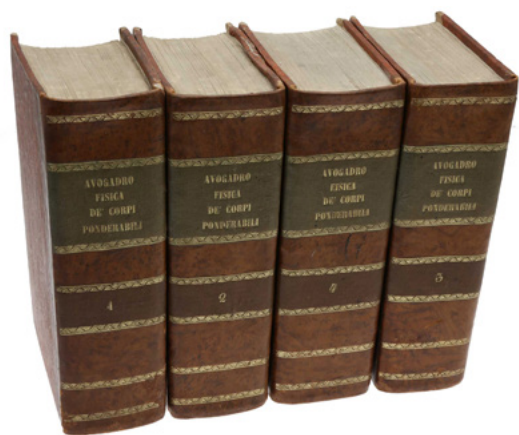
Very rare first edition, first issue, of one of the greatest of medical classics describing a new method of physical diagnosis - thoracic percussion, namely, tapping a patient's chest and determining from the resultant sound whether it was healthy or diseased, the "first advance in physical diagnosis since the age of Hippocrates ... The book remains one of the classics of medicine, anticipating the later developments in physical diagnosis of Rene Theophile Laennec and Wilhelm Roentgen in the nineteenth century and Willem Einthoven and Godfrey Hounsfield in the twentieth ... Two issues of Auenbrugger's book were printed in 1761, the first with leaf F8v blank and the second with errata on this page. A second edition was printed in 1763. In addition to the French translations, the book appeared in English in 1824 and in German in 1843" (Grolier Medicine).

Grolier, *One Hundred Books Famous in Medicine* 45; Lilly, *Notable Medical Books* 127; *Heirs of Hippocrates* 954; Norman 81; Garrison-Morton 2672.

The foundation work of physical chemistry

6. **AVOGADRO, Amadeo.** *Fisica de' Corpi Ponderabili ossia Trattato della Costituzione Generale de' Corpi del Cavaliere.* Turin: Stamperia Reale, 1837-1841.

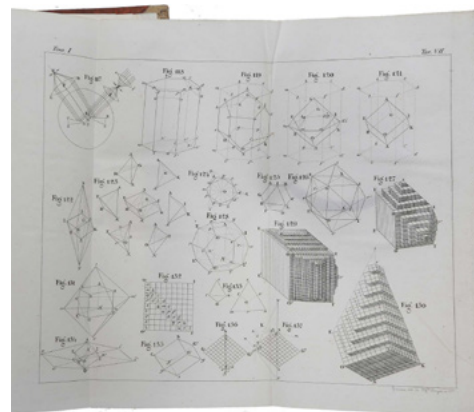
\$26,500



First edition, and a very fine copy, of one of the great rarities of chemistry. This monumental work is the only large-scale publication of Avogadro (1776-1856), famous for his eponymous hypothesis (1811) that equal volumes of all gases at the same pressure and temperature contain the same number of molecules. Although his molecular hypothesis is widely considered to be Italy's great contribution to chemistry in the 19th century, his 1811 memoir was largely ignored for another half century, partly because it was published first in Italian (when Italy was at the periphery of scientific research) and subsequently only in minor French, German and English scientific journals.

Emil Offenbacher, the distinguished dealer who specialized in chemistry, wrote (cat. 39, item 4, 1986) "a complete set [of the present work] is today of great rarity". ABPC/RBH list just four other copies between the Honeyman sale (1978) and the present copy.

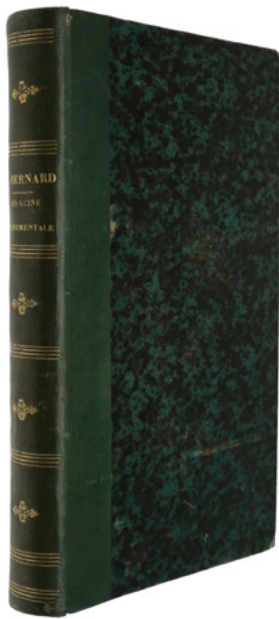
Norman 89; Honeyman 168; Sparrow, *Milestones of Science* 16 [1811 memoir].



“The greatest classic on the principle of physiological investigation” (G&M)

7. BERNARD, Claude. *Introduction à l'étude de la médecine expérimentale.* Paris; London; Madrid; New York; Leipzig: J.B. Baillière et fils; Hippolyte Baillière; C. Bailly-Baillière; Baillière Brothers; E. Jung-Treuttel, 1865.

\$2,500



First edition, the rare first issue by Crété, of Claude Bernard's most influential work (subsequent impressions from the stereotype plates were made by E. Martinet). “Probably the greatest classic on the principle of physiological investigation and of the scientific method as applied to the life science” (Garrison-Morton). “Intended as the prologue to a multi-volumes work on the principles of experimental medicine (which was never published), Bernard's masterly justification and exposition of the use of the experimental method in studying life phenomena has remained a classic of both scientific and experimental literature ... According to M. Roux-Dessarp, former president of Baillière et fils, the imprint of Crété on the verso of the half-title and at the foot of page 400 indicates a first impression. In the [three] copies owned by Dr. Norman, the Crété imprint accompanies Baillière's five-city imprint, while the Martinet imprint accompanies Baillière's three-city imprint [Paris-London-Madrid]” (Norman). Inserted in this copy is an autograph letter of recommendation from Bernard to an unnamed colleague on behalf of the son of his printer Baillière.

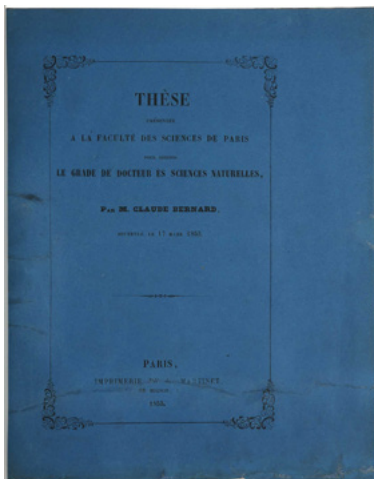


En francais dans le texte 288; Garrison-Morton 1766.501; Grmek 29; *Heirs of Hippocrates* 1797; Osler 1511; PMM 353; Waller 951; Norman 206.

Bernard's doctoral thesis on the gastric juice

8. BERNARD, Claude. *Recherches sur une nouvelle Fonction du foie, considéré comme organe producteur de matière sucrée chez l'homme et les animaux. Thèse ... pour obtenir le Grade de Docteur ès Sciences Naturelle. Soutenue le 17 mars, 1853.* Paris: Martinet, 1853.

\$13,500



First edition, extremely rare, of Bernard's doctoral thesis, a “remarkable exposition of the glycogenic function of the liver” (Horblit). This true first edition preceded by several months the far more common monograph issue published by Baillière. “As much through concrete discoveries as through the creation of new concepts, the work of Claude Bernard constitutes the founding of modern experimental physiology. His scientific career started with two series of precise and well delimited researches: on the one hand, the chemical and physiological study of gastric digestion, and on the other, experimental sections of nerves” (DSB). Bernard's doctoral thesis on the gastric juice published the first results of his experiments on the artificial ingestion of food substances. It linked two important discoveries: first, that when sucrose (a complex sugar) is injected into the bloodstream, it is eliminated in the urine, while injected glucose (a simple sugar) is retained in the organism; and second, that gastric juice transforms sucrose into physiologically usable sugar; i.e., one that, when injected, is not eliminated. This led to the realization that glucose and the other monosaccharides represent the

only physiologically useful sugars in the animal organism, and that gastric juice changes all other forms of carbohydrate into assimilable physiological sugar” (Norman). Only one copy of this issue on AE/RBH (Goldschmidt, 1938); COPAC records copies at BL, Natural History Museum and Royal Society only.

♣Horblit 11; *One Hundred Books Famous in Medicine* 67 Garrison-Morton 992.3; Grmek 1; Norman 200 (the later monograph edition); Olmsted & Olmsted, pp. 35-36.

Coloured catalogue of 2000 anatomical and pathological preparations

9. BLEULAND, Jan. *Otium academicum, continens descriptionem speciminum nonnullarum partium corporis humani et animalium subtilioris anatomiae ope in physiologicum usum praeparatarum, aliarumque, quibus morborum organicorum natura illustrator*. Utrecht: Joh. Altheer, 1828.

\$18,500



First edition, extremely rare, of Bleuland's last work, the beautiful catalogue of the author's collection of more than 2000 anatomical and pathological preparations. "Jan Bleuland (1756-1838) taught anatomy, physiology and obstetrics to medical students, and to surgical apprentices and midwives surgery and obstetrics using the vernacular. He was personal physician to king Louis Napoleon. In the troublesome years 1811-1815, when the former university lead a poor existence, he did his utmost to preserve educational standards. Together with his very proficient collaborator Petrus Konig, he put together an anatomical collection of more than 2000 specimens. The collection was later acquired by the government for the Anatomical Museum in Utrecht, part of which is still on display. Bleuland wrote several

superbly illustrated anatomical works" (de Moulin, *A History of Surgery: with Emphasis on the Netherlands*, p. 186). AE/RBH record only a single copy (1984); COPAC records copies at Royal College of Surgeons and Wellcome only.

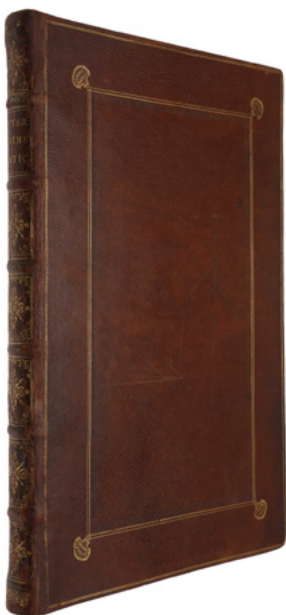


Wellcome II, 180; not in Waller.

Hero of Alexandria's Pneumatica and Automata

10. [BOIVIN, Jean, LA HIRE, Philippe de & THÉVENOT, Melchisédech (eds.)]. *Veterum mathematicorum Athenaei, Bitonis, Apollodori, Heronis, Philonis et Aliorum Opera: nunc primum edita, ex manuscriptis codicibus Bibliothecae Regiae*. Paris: Typographia Regia, 1693.

\$17,500



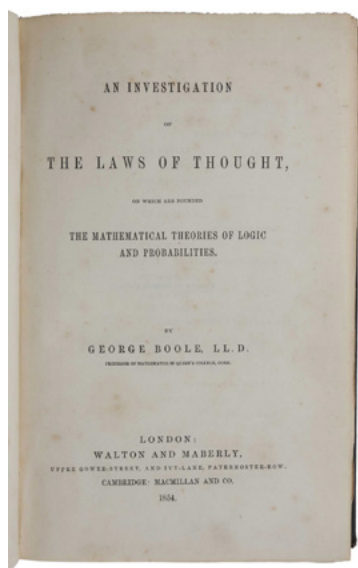
First edition, the very fine Macclesfield copy, of this collection of early Greek writings on technology, especially the military technology of the period. It contains the first edition of the Greek text of Hero of Alexandria's *Pneumatica* and *Automata*, and the first edition, in both Greek and Latin, of Biton's *Construction of War Machines and Artillery*. The present volume is one of three early publications of the French Academy of Sciences, grouped together as Dibner 84. "Printed at the royal press in small editions, they were intended as gifts for the King and Academy. In size, binding [some copies – e.g., Haskell Norman's – are bound in contemporary calf with the arms of Louis XIV blocked in gilt on the covers] and beauty of the plates, they are among the most sumptuous books in science" (Dibner). This is a rare book on the market, only 8 copies having appeared at auction in the last 40 years, including those of Honeyman (two copies), Stanitz, Norman, and Boas Hall. The Evelyn copy was sold at Christie's in 1977.



Boolean algebra

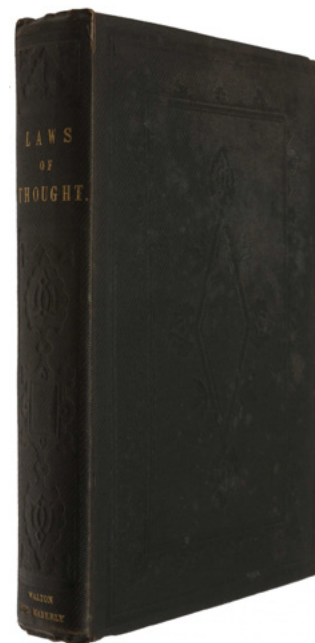
11. **BOOLE, George.** *An Investigation of the Laws of Thought, on which are founded the Mathematical Theories of Logic and Probabilities.* London, and Cambridge: Walton and Maberly; Macmillan & Co., 1854.

\$30,000



First edition, the rare first issue, of Boole's principal work, in which he gave the first detailed presentation of Boolean algebra. "Boole invented the first practical system of logic in algebraic form, which enabled more advances in logic to be made in the decades of the nineteenth century than in the twenty-two centuries preceding. Boole's work led to the creation of set theory and probability theory in mathematics, to the philosophical work of Peirce Russell, Whitehead, and Wittgenstein, and to computer technology via the master's thesis of Claude Shannon, who recognized that the true/false values in Boole's two-valued logic were analogous to the open and closed states of electric circuits" (Hook & Norman, *Origins of Cyberspace*, 224).

OOC 224 (1st issue, rebounded); Erwin Tomash B198 (2nd issue); Haskell Norman 266 (3rd issue).



'The plates are among the finest medical illustrations known' (Friedman)

12. **BRIGHT, Richard.** *Reports of Medical Cases, selected with a view of illustrating the symptoms and cure of diseases by a reference to morbid anatomy.* London: Richard Taylor, 1827-31.

\$68,500



A fine copy of Bright's most important work. The 47 large hand-coloured engraved "plates in Bright's Reports are among the most beautiful of medical illustrations" (Grolier/Medicine). Most were drawn by Frederick Richard Say, a distinguished portraitist whose portrait of Bright now hangs in the Royal College of Physicians of London. "In order to achieve the most poignant reproductions of his post-mortem material, Bright was probably required to bring Say to the autopsy room whenever a specimen of interest arose. Say presumably produced a water color

image of the specimen on the spot which was subsequently copied by the engraver" (Fine). Say's father William, who produced the majority of the plates, used mezzotint variously combined with line-engraving, stipple, and soft-ground etching to create the printed images.

☛Grolier Medicine 60a; Lilly, *Notable Medical Books* 183; Norman 341; Garrison-Morton 2285 & 4206; *Heirs of Hippocrates* 1451. Fine, 'Pathological specimens of the kidney examined by Richard Bright,' *Kidney International* 29 (1986), pp. 779-83



The earliest treatise on modern economics

13. CANTILLON, Richard. *Essai sur la Nature du Commerce en Général*. London [but Paris]: Fletcher Gyles, 1755.

\$135,000



The exceptionally fine La Rochefoucauld-Liancourt copy in untouched armorial binding. Cantillon is the “founding father of modern economics” (Rothbard) and the *Essai* has been declared “more emphatically than any other single work, the cradle of political economy” (Jevons), and “the most systematic statement of economic principles before the *Wealth of Nations*” (Roll). It “is notable for its model building, its analysis of market forces and the role of the entrepreneur, its outline of the circular flow of income, and its monetary theory. Cantillon was the first real model builder in economics” (ODNB). The book was chosen among the 400 most influential books ever written in French in the 1990 exhibition at the Bibliothèque Nationale, *En français dans le texte*, no. 159. Provenance: A superb copy bound at the time for François-Alexandre-Frédéric, duc de La Rochefoucauld-Liancourt, with his coat of arms gilt on sides and the armorial engraved ex-libris

of the Bibliothèque de Liancourt. A philanthropist, traveller, and statesman, the Duke de La Rochefoucauld-Liancourt was one of the leading figures of the end of the 18th century. As a liberal, he participated in the French Revolution from the outset, remaining loyal to the King. He fled France and found refuge in England before travelling to the United States. Back in France after the Revolution, he continued to promote his liberal ideas, helping the poor and creating a school. Two other copies with the coat of arms of the La Rochefoucauld family have appeared on the market in the last twenty years; they both came from the La Roche-Guyon branch of the family, but this copy is the only one with the Liancourt ex-libris, stating its provenance. It is difficult to imagine a better copy.



Early anatomy of the sense organs

14. CASSERI, Giulio Cesare. *Pentaestheseion, hoc est De quinque sensibus liber, organorum fabricam variis iconibus fideliter aere incisus illustratam, nec non actionem et usum, discursu anatomico & philosophico accurate explicata continens*. Venedig: Misserino, 1609.

\$45,000



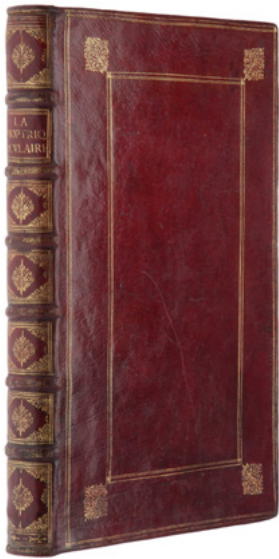
First edition, exceptionally rare, of Casserius’ second important contribution to the comparative anatomy not only of the ear and the vocal organs, as in his more common work of 1600/01 [*De Vocis Auditusque Organis*], but also of the other four sense organs and especially of the eye. The very fine anatomical plates for which this book is noted are both drawn and engraved by the Swiss artist Joseph Maurer, a pupil of Tobias Stimmer who lived in Casserius’ house. The 12 plates pertaining to the ear are the same as those of Casserius’ earlier work; they constitute “the first accurate pictorial presentation of the internal ear” (Sellers, *Annals of Otology* 68). Those dealing with the other four sense organs are new. Among them, in the particularly important section dealing with the eye and vision (pp. 257-346) are the first pictorial representations of the conjunctival glands, later known as the Meibomian glands (cf. Garrison-Morton 1481). All the plates, according to Choulant-Frank, “are done with unusual care and are anatomically exact.” Casserius’ anatomy of the sense organs is of great importance in medical history, since for the first time he adds to a complete account of each human organ a full study of the same organ in various animal forms. Choulant-Frank never saw a copy of this first edition,

describing only the Frankfurt edition of 1622, with the same number of plates but “reduced and certainly executed by another artist. Some of them are even reversed and show much inferior workmanship”.

'The most exhaustive treatise on lens making in the seventeenth century'

15. **CHERUBIN d'Orléans, Capuchin.** *La dioptrique oculaire, ou la théorique, la positive, et la mechanique de l'oculaire dioptrique en toutes ses espèces.* Paris: Thomas Jolly and Simon Benard, 1671.

\$28,500



Exceptional copy in contemporary red morocco of “the most exhaustive treatise on lens making in the seventeenth century. It is a six-hundred folio page long, comprehensive, cogently-argued treatise on telescope making. It contains an impressive amount of theoretical and practical, first-hand information on all of its facets — from explanations of the telescope’s working principles, to descriptions of lens grinding and polishing, to rules for the right distances between lenses, to methods to find the right apertures, to descriptions of the shapes and articulations of the wooden parts and bolts and screws needed to properly point a telescope to the skies, to the construction of tubes, and so on and so forth” (Albert et al, *The origins of the telescope*, pp. 289-291). “The French Capuchin friar Cherubin d’Orleans (1613-97), real name Michel Lassere, published a large volume in 1671 on optics, in which, among other subjects, he describes his invention of a rhombic pantograph apparatus attached to telescope and drawing board, by which accurate drawings of distant objects could be made” (Whittaker, *Mapping and naming the moon*, p. 76).



The foundation work of the science of acoustics

16. **CHLADNI, Ernst Flourens Friedrich.** *Die Akustik.* Leipzig: Breitkopf & Härtel, 1802.

\$15,000



First edition of the foundation work of the modern science of acoustics. “Chladni (1756-1827), professor of physics in Breslau, was the first to reduce the general association between vibration and pitch to a tabular basis, and thus to lay the foundation of the modern science of acoustics. His first results were first reported in *New Discoveries in the Theory of Sound*, 1787, and were greatly enlarged upon in *Acoustics*, 1802. He spread sand on plates made of metal and glass, which were fixed in clamps. He then applied a violin bow to the edge of each plate and recorded the patterns produced thereby in the sand. These figures are still known by Chladni’s name” (PMM).

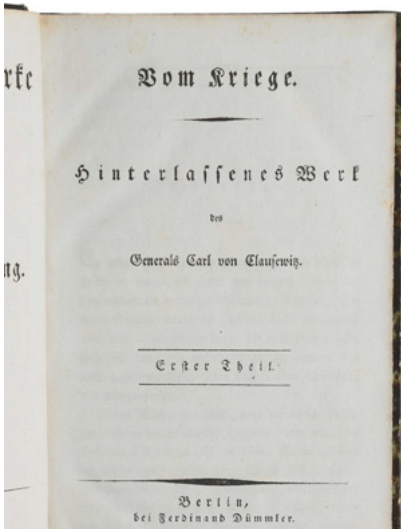
☛PMM 233b; Honeyman 688; Sparrow, *Milestones of Science* 38.



PMM 297 - The philosophy of war

17. **CLAUSEWITZ, Carl von.** *Hinterlassene Werke über Krieg und Kriegführung.* Berlin: Ferdinand Dümmler, 1832-1837.

\$65,000



Very scarce complete set of Clausewitz's writings on warfare, with all 10 volumes in fine contemporary uniform bindings, which includes the celebrated *Vom Kriege* (PMM 297), appearing in the first 3 volumes. "These thousand pages of 'On Warfare' occupy a unique position among military writings of any age and nation. The book is less a manual of strategy and tactics, although it incorporates the lessons learned from the French revolutionary and Napoleonic wars, than a general inquiry into the interdependence of politics and warfare and the principles governing either or both. War, Clausewitz maintained, must always be regarded 'as a political instrument'; for war, his most famous aphorism runs, 'is nothing but politics continued by different means'. Consequently, he scorns the notion of 'the harmful influence of politics upon the conduct of war', since blame, or praise, must be attached to politics itself. If the course of

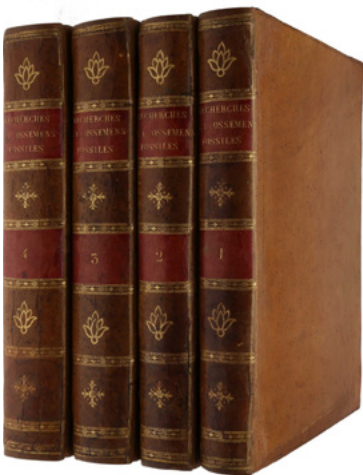


politics is sound, political influence on the conduct of war can only be advantageous: 'The French revolutionary victories over twenty years resulted mainly from the faulty politics of the opposing governments'... the book was published by his widow and won immediate recognition as the most profound exposition of the philosophy of war - a place that has never been disputed." (*Printing and the Mind of Man*).

The "inauguration of vertebrate paleontology" (Grolier/Horblit)

18. **CUVIER, Georges L.C., Baron.** *Recherches sur les ossemens fossiles de quadrupèdes, où l'on rétablit les caractères de plusieurs espèces d'animaux que les révolutions du globe paroissent avoir détruites.* Paris: Deterville, 1812.

\$15,000



First edition, the Haskell F. Norman copy, of the "inauguration of vertebrate paleontology" (Grolier/Horblit). "In the 1790s Cuvier began publishing a series of papers on fossils that laid the foundations of modern paleontology. These were reissued, in revised form, in *Ossemens fossiles*, prefaced by the important "Discours préliminaire," setting forth Cuvier's influential geological theory of "revolutions" in the earth's history (later given the misleading label of "catastrophism"), and by an enlarged version of Cuvier and Alexandre Brongniart's joint stratigraphical memoir, first published in 1808. Cuvier believed, in opposition to Lamarck, that species were fixed and basically inalterable – the idea of species transmutation was inadmissible, as every organism consisted of parts whose action and form were logically connected to the integration of the whole, and any modification would seriously endanger that necessary balance. His concept of geological "revolutions," which he believed to be a regular and

natural part of the earth's history, was used to explain the mass extinction of species from previous epochs" (Norman).



☞Dibner, *Heralds of science* 91; *En français dans le texte* 224; Grolier/Horblit 206; Nissen ZBI 1011; Norman 56 (this copy)

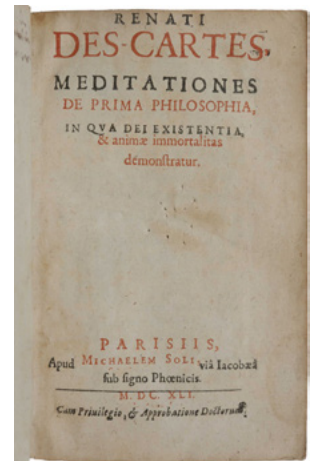
Descartes' masterpiece, the starting point of modern Western philosophy

19. DESCARTES, René; [MERSENNE, Marin, Editor]. *Meditationes de Prima Philosophia, in qua Dei Existentia et Animae et Animae Immortalitas demonstrator. venarum ostiolis.* Paris: Michael Soli [i.e. Soly], 1641.

\$125,000



Extremely rare first edition, in an unrecorded early (perhaps earliest) state, of the starting point of modern Western philosophy, a complement to his Discours, and “one of the most original achievements of philosophical literature” (Williams). It was also the foundation for Descartes’ natural philosophy – “When Descartes was on the verge of publishing the Meditations, in January 1641, he confided to Mersenne: ‘I may tell you, between ourselves, that these six Meditations contain all the foundations of my physics’” (Garber, p. 24). This copy is in an unrecorded early state. The title-page is without the vignette and with the printer’s name misspelled ‘Soli’; this was later corrected and a cancel title inserted with the vignette and the printer’s name spelled correctly (the red and black printing of the imprint is also misaligned in the first state of the title, and corrected in the second). Most copies are found with this cancel title-page, or occasionally both title-pages if the original was not removed (but such copies were, of course, issued after the title had been cancelled). In addition, on the last index leaf of this copy (p. [xxii]), both the last line of the index and the eight-line errata below ‘Finis’ found in other copies are omitted. We have not located any other copy of the book in this state. This is an exceedingly rare book (in any state) – Otegem locates only 34 copies, the majority in French institutions. Only three copies (one incomplete) are recorded at auction by ABPC in the last 40 years. OCLC lists four copies only (Yale, UCLA, Notre Dame and Nebraska).



📖 En français dans le texte 90.

The best edition of Decartes' Geometry - used by Newton

20. DESCARTES, René. *Geometria, à Renato Des Cartes anno 1637 Gallicè edita ; postea autem unà cum Notis Florimondi de Beavne, In Curia Blesensi Consiliarii Regii, Gallicè conscriptis in Latinam linguam versa, & commentariis illustrata ; operâ atque studio Francisci à Schooten, ...* Amsterdam: Elzevir, 1659-1661.

\$8,500



edition is held in Cambridge University Library (NQ.16.203).

A fine copy of van Schooten’s important second edition of the *Geometria*, Descartes’s *magnum opus* (DSB), and one of the key texts in the history of mathematics. Descartes’ “application of modern algebraic arithmetic to ancient geometry created the analytical geometry which was the basis of the post-Euclidean development of that science” (PMM). It “rendered possible the later achievements of seventeenth-century mathematical physics” (M. B. Hall, *Nature and nature’s laws* (1970), p. 91). “The mathematical community learned about the wealth of Descartes’s new ideas through the works of van Schooten ... In the second edition the commentaries were enlarged, and van Schooten included the work by his students van Heuraet, Hudde, Huygens and de Witt. This edition served as the basic textbook for the generation that, in the last quarter of the century, took the lead in introducing differential and integral calculus” (Jahnke). Newton, in particular learnt his Descartes from this edition: “There can be no doubt that Newton read the *Géométrie* in Schooten’s second Latin edition” (Whiteside, *Papers* I, p. 7, n17). Newton’s own heavily annotated copy of this

‘A crucial precursor of Harvey’s discovery’

21. FABRICI, Girolamo (FABRICIUS AB AQUAPENDENTE, Hieronymus). *De venarum ostiolis.* Padua: Lorenzo Pasquati, 1603.

\$85,000



First edition, very rare first separate issue (see below), “of the first systematic study of the structure, distribution and position of the venous valves. Although the valves of the veins had been observed previously by G.B. Canano and Amato Lusitano, Fabrici studied them anew on the basis of his own observations. Perhaps because he analyzed anatomical structures in terms of their purpose, he interpreted the function of the valves as slowing down the influx of blood in order to distribute it more evenly to the various parts of the body. Although Fabrici’s analysis was in part erroneous, *De venarum ostiolis* became his most influential work, in that it inspired his student, William Harvey, to conceptualize the circulation of the blood” (Norman). “The sumptuously printed folios which Fabricius published in 1603-1604 were issued separately, and unbound.

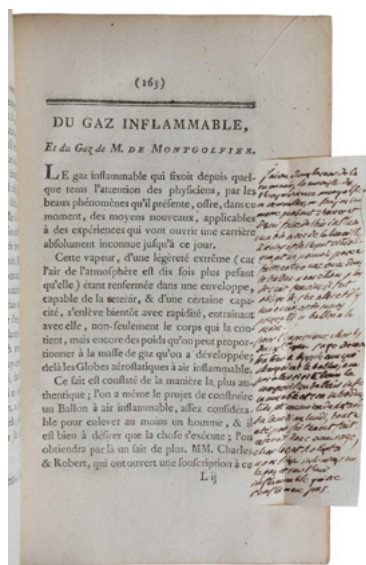
Though they escaped Choulant’s notice, they are among the rarest and most beautiful works in the history of anatomical illustration. The plates are magnificent; in fact nothing on their scale had been seen since the days of Vesalius” (Franklin). The work is most often found bound as part of Fabricius’ *Opera anatomica* (1625), without a separate title page. Franklin cites only the Royal College of Surgeons, the Royal College of Physicians, the Radcliffe Library (Oxford) and the New York Academy of Medicine – all copies bound up under the 1625 general title but with the 1603 title preserved – and a copy without separate title in the library of the Royal Society of Medicine. AE/RBH list only 6 copies since 1950.

☛Garrison-Morton 757; Grolier/Medicine 27B; Krivatsy 3831; Norman 750; Waller 2886.

‘The first serious treatise on aerostation’ (PMM)

22. FAUJAS DE SAINT-FOND, Barthélémy. *Description des expériences de la machine aérostatique de MM. de Montgolfier: et de celles auxquelles cette découverte a donné lieu: suivie de recherches sur la hauteur à laquelle est parvenu le ballon du Champ-de-Mars ... ouvrage orné de neuf planches en taille douce, représentant les diverses machines qui ont été construites jusqu’à ce jour.* Paris: [Chardon for] Cuchet, 1783.

\$12,000



First edition of “the first serious treatise on aerostation as a practical possibility” (PMM). The year 1783 marks the beginning of the history of flight, and the present work offers the first contemporary chronicle of the first aerial voyage. “French geologist and traveller Barthélémy Faujas de Saint-Fond published [the present work] from Paris in two volumes in 1783 and 1784. Saint-Fond’s work was the first full-length account of the historic experiments with balloon flight conducted by paper manufacturers Joseph-Michel and Jacques-Étienne Montgolfier in 1783” (historyofinformation.com).

☛PMM 229; Dibner, *Heralds of Science* 179; *En français dans le texte* 75; Norman 769; Sparrow, *Milestones of Science* 179; Tissandier 21; Brockett 302; Davy, *Interpretive History of Flight* 37-41.



The speakable and unspeakable in quantum mechanics - inscribed

23. FEYNMAN, Richard. *The Concept of Probability in Quantum Mechanics*. Berkeley: University of California, 1951.

\$12,000



First edition, extremely rare offprint, inscribed by Feynman, of this famous lecture in which Feynman for the first time argues the necessity for a ‘quantum probability’ (a well developed subject in its own right today), and sets out clearly his own interpretation of the meaning of quantum mechanics, particularly what John Bell later called ‘the speakable and unspeakable in quantum mechanics.’ All this is done through a brilliant analysis of the ‘double-slit’ experiment, in which electrons pass through two holes and then fall on a screen. His analysis later became famous when it was included in the Feynman *Lectures on Physics*, but this is its first appearance in print. No copies of this offprint located in institutional collections worldwide. Although signed works by Feynman occasionally appear on the market, they are almost always his popular autobiographical works; technical scientific works inscribed by Feynman are extremely rare in commerce (none are located in auction records).

‘The source of all modern methods in mathematical physics’

24. FOURIER, Jean-Baptiste-Joseph. *Théorie Analytique de la Chaleur*. Paris: Firmin Didot, 1822.

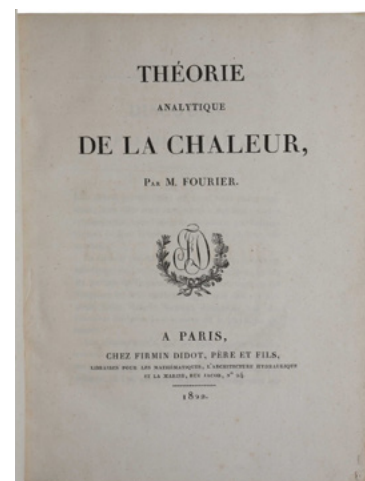
\$32,000



First edition of the first mathematical study of heat diffusion, the first major mathematization of a branch of physics outside mechanics. “This work marks an epoch in the history of both pure and applied mathematics. It is the source of all modern methods in mathematical physics ... The gem of Fourier’s great book is ‘Fourier series’” (Cajori, *A History of Mathematics*, p. 270). “In this groundbreaking study, arguing that previous theories of mechanics advanced by such outstanding scientists as Archimedes, Galileo, Newton and their successors did not explain the laws

of heat, Fourier set out to study the mathematical laws governing heat diffusion and proposed that an infinite mathematical series may be used to analyse the conduction of heat in solids: this is now known as the ‘Fourier Series.’ His work paved the way for modern mathematical physics” (Introduction to the 2009 reprint by Cambridge University Press). “There is no doubt that today this book stands as one of the most daring, innovative, and influential works of the nineteenth century on mathematical physics” (González-Velasco, p. 428).

☛ Dibner 154; Evans 37; Sparrow 68; *Landmark Writings in Western Mathematics* 26; Norman 824; *En Francais dans le Texte* 232.



Invention of the air pump and the first electric generating machine

25. **GUERICKE, Otto von.** *Experimenta Nova (ut vocantur) Magdeburgica de Vacuo Spatio.* Amsterdam: Johanned Jansson Waesberge, 1672.

\$57,500



First edition and a fine copy in contemporary binding. A book of prime importance in electrical discovery, air-pressure and the vacuum pump. "At Ratisbon in 1654 Guericke had performed one of the most dramatic experiments in the history of science, when, before the Imperial Diet, he showed how two teams of eight horses each could not separate a bronze pair of hemispheres from which he had exhausted the air" (Dibner, *Founding Fathers of Electrical Science*). To create the vacuum, Guericke invented the air-pump, and in a series of experiments that followed he demonstrated the weight and elasticity of air. The air-pump became of fundamental importance for the study of the physical properties of gases. Guericke also demonstrated electrical attraction and repulsion, the discharging power of points, and constructed the first electrical generator. "Guericke constructed a spherical rotor of sulphur mounted on a crank; its rotation and contact upon it generated the first visible and audible electric sparks" (*ibid.*). As the Wheeler Gift catalogue remarks, "this remarkable work

on experimental philosophy ranks next to Gilbert's in the number and importance of the electrical discoveries described." Guericke's experiments were motivated by his profound Copernican cosmological views on the nature and composition of space, which are fully set forth in the present work (see DSB).

☛Dibner 55; Evans 30; Horblit 44; Norman 952; Sparrow 99; Wheeler Gift 170.

'The most important book in the history of medicine'

26. **HARVEY, William.** *De motu cordis & sanguinis in animalibus, anatomica exercitatio: cum refutationibus Aemylii Parisani ... et Jacobi Primirosii; [Bound with:] ASELLI, Gasparo. De lactibus, sive lacteis venis, quarto vasorum masaraicorum genere.* Leyden: Johann Maire, 1639/1640.

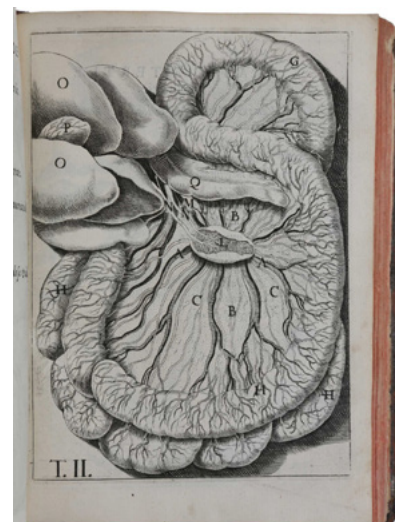
\$54,000



A very fine copy of the third, but second complete, edition of the single most important and famous medical book ever published, containing Harvey's discovery and experimental proof of the circulation of the blood, which created a revolution in physiology comparable to the Copernican revolution in astronomy. Harvey's discovery was to become "the cornerstone of modern physiology and medicine" (Garrison-Morton). *De motu cordis* "is probably the most important book in the history of medicine. What Vesalius

was to anatomy, Harvey was to physiology; the whole scientific outlook on the human body was transformed, and behind almost every important medical advance in modern times lies the work of Harvey" (*Heirs of Hippocrates*). This is the earliest edition that collectors can reasonably expect to obtain, the first edition (Frankfurt, 1628) being of the greatest rarity. The second edition (Venice, 1635), published with the *Exercitationes* of Emilio Parigiano was fragmentary, lacking the plates, parts of the introduction and chapters I and XVI. In this edition, the publisher Maire restored these passages and included the illustrations.

☛*Heirs of Hippocrates* 417 (this edition); Grolier/Medicine 27; PMM 127 (describing the first edition).



The Newton of mineralogy

27. HAÛY, Abbé René-Just. *Traité de Minéralogie*. Paris: Louis, 1801.

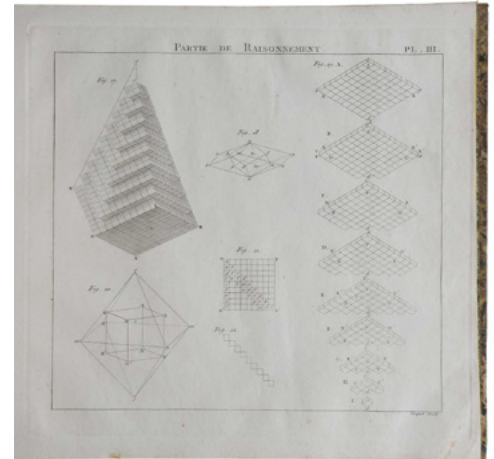
\$19,500



First edition, a beautiful set complete with the atlas, of the most important work by the “founder of the science of crystallography” (Horblit). “In 1795, Haüy began teaching courses in physics and mineralogy at the École des Mines and became a member of the newly founded Institut National des Sciences et des Arts, in the natural history and mineralogy section. In 1801, he published his main work, *Traité de Minéralogie*, the first volume of which presented his crystal theory; in the three subsequent volumes he expounded his system of mineral classification. In this work he revised the nomenclature of minerals” (DSB VI, p. 178). Of the present work Cuvier wrote: “He has made

of mineralogy a science just as precise and just as methodical as astronomy ... In a word we may say that M. Haüy is to Werner and Romé de l’Isle what Newton was to Kepler and Copernicus.”

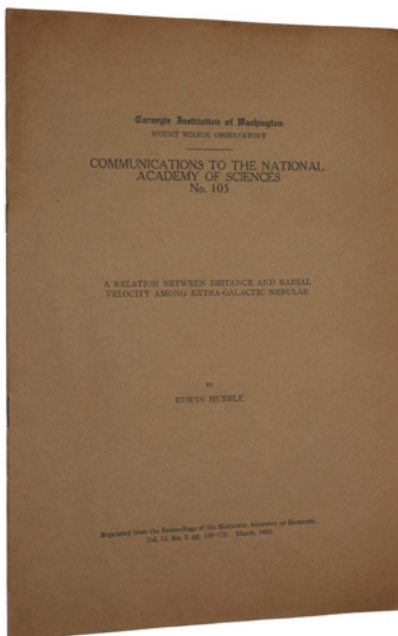
Freilich 232; Hoover 391 (lacking atlas); Honeyman 1627; Ward & Carozzi 1022; not in Norman.



The expanding universe

28. HUBBLE, Edwin. *A Relation between Distance and Radial Velocity among Extra-Galactic Nebulae*. Washington: National Academy of Sciences, 1929.

\$54,000

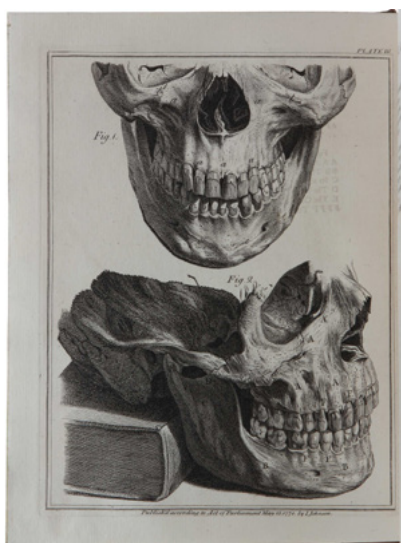


Extremely rare offprint, in the original printed wrappers, of Hubble’s landmark paper which “made as great a change in man’s conception of the universe as the Copernican revolution 400 years before” (DSB) and “is generally regarded as marking the discovery of the expansion of the universe” (*Biographical Encyclopedia of Astronomers*). It established what would later become known as Hubble’s Law: that galaxies recede from us in all directions and more distant ones recede more rapidly in proportion to their distance. “...the repercussions were immense. The galaxies were not randomly dashing through the cosmos, but instead their speeds were mathematically related to their distances, and when scientists see such a relationship they search for a deeper significance. In this case, the significance was nothing less than the realization that at some point in history all the galaxies in the universe had been compacted into the same small region. This was the first observational evidence to hint at what we now call the Big Bang” (Simon Singh, *Big Bang*).

'Basic to all modern dentistry'

29. HUNTER, John. *The Natural History of the Human Teeth*. London: J. Johnson, 1771.

\$12,500



An exceptionally fine copy of “the first scientific study of the teeth and basic to all modern dentistry” (*Heirs of Hippocrates*). “Hunter’s work on the structure and diseases of the teeth began a new era for dentistry in England, placing what had been an empirical art upon a basis of careful scientific observation, and providing a foundation for further research. In the *Natural history*, Hunter gave detailed accounts of the anatomy and physiology of the oral cavity and jaw, introduced the modern scientific nomenclature for the teeth, established the tooth’s construction of bone, pulp and enamel, and examined the processes of tooth development in fetuses and children” (Norman). “In a busy life devoted to research, teaching, and the practice of surgery, Hunter found time to study the structure, development, and diseases of the teeth and to collect and arrange a series of dental specimens... In [the present] book, Hunter classified the teeth in the system still used today and was the first to state definitely that the human teeth ‘are never more than thirty-two.’ He traced their development in the fetus and the child and established

their structure of pulp, bone, and enamel. At the end of the book are descriptions of devices to correct malocclusion and even suggestions for a method of transplantation” (Lilly).



☛Norman 1116; Lilly, *Notable Medical Books* 131; *Heirs of Hippocrates* 968; Garrison-Morton 3675.

'Extremely influential and widely read' (DSB)

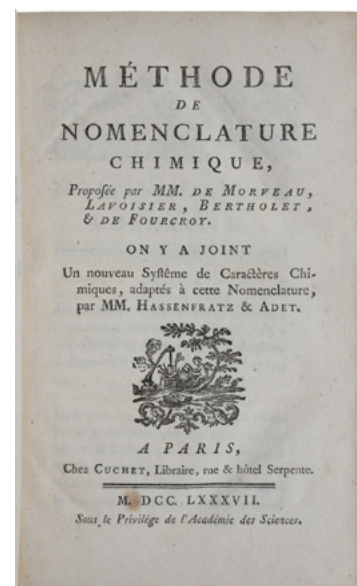
30. LAVOISIER, Antoine-Laurent, BERTHOLLET, Claude-Louis, FOURCROY, Antoine-François de, comte, & GUYTON de MORVEAU, Louis Bernard. *Méthode de nomenclature chimique, proposée par MM. de Morveau, Lavoisier, Berthollet, & de Fourcroy. On y a joint un nouveau système de caractères chimiques, adaptés à cette nomenclature, par MM. Hassenfratz & Adet*. Paris: Cuchet, 1787.

\$5,000



First edition, first issue, and a very fine copy. “The first salvo in Lavoisier’s campaign to convert the scientific world to his antiphlogistic “new chemistry” was this collaborative work by Lavoisier, Claude Berthollet, Antoine de Fourcroy and Guyton de Morveau. The new chemical nomenclature, originally developed by de Morveau before he had converted to anti-phlogisticism, was adopted by Lavoisier as a means for communicating his

new chemistry; its publication in the present work marked a complete break with the past” (Norman). “The *Nomenclature* was extremely influential and widely read” (DSB VIII: 80). This is the first of two issues published in the same year; the second issue has a woodcut floral ornament on the title and no colophon on page 314. There were few editions of this work because its contents were incorporated into Lavoisier’s *Traité de Chimie* (1789). An English translation was published in 1788.

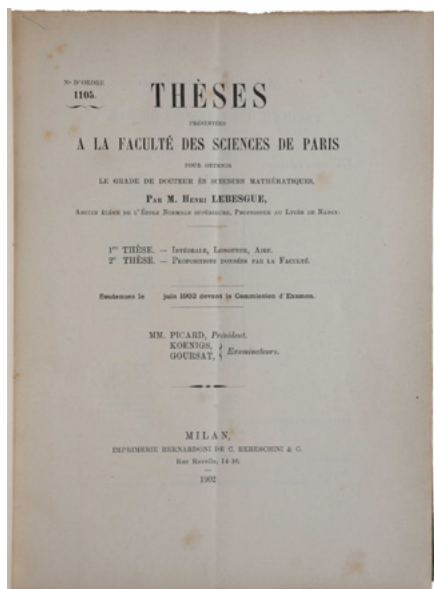


☛Sparrow, *Milestones of Science* 125; Norman 1291; Honeyman 1937.

Lebesgue's great thèse - the Lebesgue integral

31. **LEBESGUE, Henri Léon.** *Thèses présentés a la Faculté des Sciences de Paris pour obtenir le Grade de Docteur...1re Thèse. Intégrale, Longueur, Aire. 2e Thèse. Propositions données par la Faculté. [Bound with:] Sur une généralisation de l'intégrale définie.* Milan; Paris: Imprimerie Bernardoni de C. Rebeschini; l'Académie des Sciences, 1902; 1901.

\$7,500



Extremely rare first edition of “Lebesgue’s great thèse” (Burkill, p. 484), describing his new theory of integration, now known as the ‘Lebesgue integral,’ here bound with the even rarer offprint of the preliminary announcement of his results. “The Lebesgue integral is one of the great achievements of modern real analysis” (Britannica). “It cannot be doubted that this dissertation is one of the finest which any mathematician has ever written” (Burkill, ‘Henri Lebesgue 1875-1941,’ *Obit. Not. Fell. R. Soc.* 4 (1944)). “Lebesgue’s outstanding contribution to mathematics was the theory of integration that bears his name and that became the foundation for subsequent work in integration theory and its applications ... [In his doctoral thesis] Lebesgue began to develop his theory of integration which, as he showed, includes within its scope all the bounded discontinuous functions introduced by Baire” (DSB VIII, p. 110). Also bound into the present volume are seven other offprints and extracts related to integration theory, including an extract of Lebesgue’s paper ‘Sur les Séries trigonométriques,’ *Annales scientifiques de l’École Normale Supérieure* 20 (1903), 453-85, in which he applies his new theory of integration to Fourier series. OCLC locates no copies of the offprint and only two copies of the thesis in America; there are no copies of either in auction records.

16th century mathematics in a Roger Payne binding

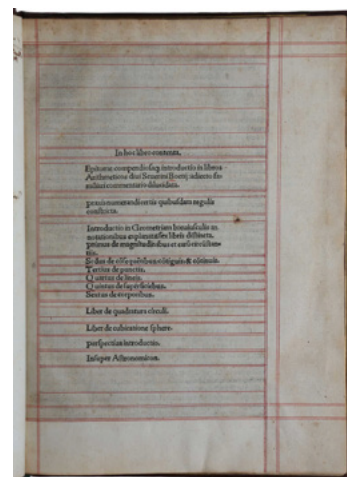
32. **LEFÈVRE D’ÉTAPLES, Jacques, BO[U]VELLES, Charles de, & CLICHTOVE, Josse.** *Josse. Epitome compendiosa[ue] introductio in libros arithmeticos divi Severini Boetii [Lefevre], adiecto familiari commentario dilucidata [Clichtove]. Introductio annotationibus explanata, sex libris distincta. Liber de quadratura circuli, liber de cubicatione sphaerae; perspectivae introductio [Bovelles]. Praxis numerandi certis quibusdam regulis constricta [Clichtove]. Insuper Astronomicon [Lefèvre].* Paris: H. Estienne & W. Hopyl, 27 June 1503.

\$20,000



First edition of this very rare collection of works, in an attractive Roger Payne binding. The individual works are all first editions with the exception of Lefèvre’s *Epitome* of Boethius’ *De arithmetica* (first, 1496) and an unattributed *Opusculum de p[r]axi numerorum quod Algorismum vovant*, actually the *Algorismus* of Sacrobosco (no earlier printing than this one in auction records). This latter text was the first to introduce Hindu-Arabic numerals into the European university curriculum, thereby greatly simplifying the procedures of practical calculation.

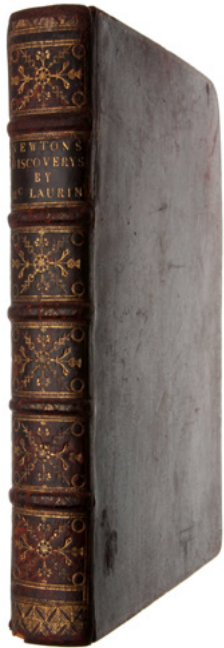
The geometrical part of the volume comprises several works of Bovelles (ca. 1479-1567), which deal with the classical problems of the quadrature of the circle and duplication of the cube, and contain a highly original study of stellated polygons. Bovelles also gives here the first published account of the cycloid, a curve that was to be of great significance in the seventeenth century development of mathematics leading up to the invention of calculus and for Huygens’ isochronous pendulum clock. The volume concludes with Lefèvre’s treatise on astronomy.



The leading authoritative statement of Newtonianism

33. MACLAURIN, Colin. *An Account of Sir Isaac Newton's Philosophical Discoveries, in Four Books.* London: Printed for the author's children and sold by A. Millar, et al., 1748.

\$3,500



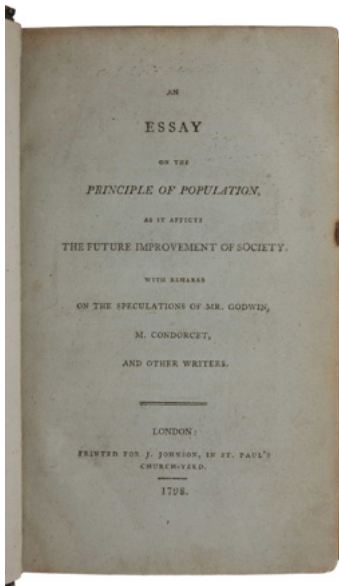
First edition, rare large-paper copy, of Maclaurin's statement of Newtonian theory, one of the three "most outstanding popular introductions to Newtonian science of the eighteenth century" (Cohen, *Franklin and Newton*, 1956, p. 209). "Though a number of other general expositions of Newton's thought were published during the eighteenth century, Maclaurin's *Account* has long been recognized as the leading authoritative statement of mainstream Newtonianism" (DNB). "Gifted with a genius for geometrical investigation second only to Newton's ... Maclaurin, the one mathematician of the first rank trained in Great Britain in the [18th] century, confirmed Newton's exclusive influence over British mathematics" (*ibid.*). After Newton's death in March 1727, his nephew-in-law John Conduitt started to collect materials for a biographical memoir of Newton and applied to several of Newton's contemporaries, including Maclaurin, for assistance. Although Conduitt's memoir never materialized, his request prompted Maclaurin to prepare an account not only of Newton's discoveries in astronomy, gravitation and mechanics, but also of the philosophical systems that preceded Newton's. "Only a few hours before his death he dictated the concluding passage of his work on Newton's philosophy, in which he affirmed his unwavering belief in a future life" (DSB VIII, p. 612). Maclaurin's pupil at Edinburgh, Patrick Murdoch (d. 1774), published the book by subscription for the benefit of Maclaurin's children, prefaced by a memoir of the author that is the chief authority for the life and writings of Maclaurin.

☛ Babson 85; Gray 112; Macclesfield 1285

The foundation of modern economics

34. [MALTHUS, Thomas Robert]. *An Essay on the Principle of Population, as it Affects the Future Improvement of Society. With Remarks on the Speculations of Mr. Godwin, M. Condorcet, and Other Writers.* London: J. Johnson, 1798.

\$225,000



First edition, rare, of this foundation work of modern economics, and the seed for Darwin's theory of natural selection. "Malthus' *Essay* was a crucial contribution to Darwin's thinking about natural selection when he returned in 1836 from the *Beagle* voyage. In July 1837 Darwin began his "Note book on Transmutation of Species," in which he wrote: "In October 1838, that is, fifteen months after I had begun my systematic enquiry, I happened to read for amusement "Malthus on Population," and being well prepared to appreciate the struggle for existence ... it at once struck me that under these circumstances favourable variations would tend to be preserved and unfavourable ones to be destroyed. The result would be the formation of a new species" (*Life and Letters*, I, 83). Later, in the *Origin of Species*, he wrote that the struggle for existence "is the doctrine of Malthus applied with manifold force to the whole animal and vegetable kingdoms; for in this case there can be no artificial increase of food, and no prudential restraint from marriage" (p. 63). "Without doubt the great watershed in the development of Darwin's evolutionary theory came with his reading of Malthus. Not only did Malthus provide a vital missing element, but it served to precipitate other, equally necessary, elements into their proper place in Darwin's thought. With but the one notable exception of 'divergence',

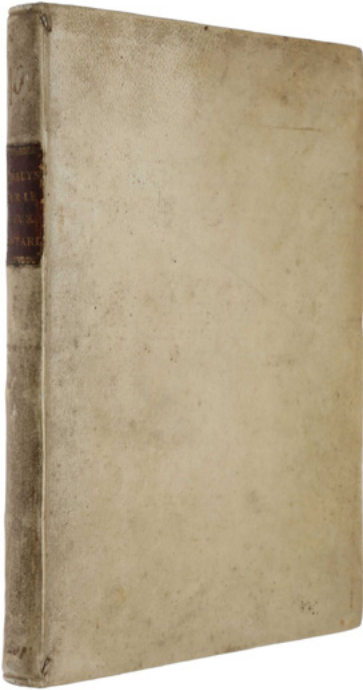
from 1838 onwards Darwin was able to work with a clear formulation of his theory of natural selection" (Vorzimmer, 'Darwin, Malthus, and the Theory of Natural Selection,' *Journal of the History of Ideas* 30 (1969), p. 542). AE/RBH list only nine copies in non-rebacked contemporary bindings in the last 40 years.

☛ Norman 1431; PMM 251; Garrison-Morton 1693; Kress B 3693;

The first separately published textbook of probability

35. [MONTMORT, Pierre Rémond de]. *Essay d'Analyse sur les Jeux de Hazard*. Paris: J. Quilau, 1708.

\$12,000



First edition, and a fine copy, of the first separately published textbook of probability. “In 1708 [Montmort] published his work on Chances, where with the courage of Columbus he revealed a new world to mathematicians” (Todhunter, *History of the Theory of Probability*, p. 78). “The *Essay* (1708) is the first published comprehensive text on probability theory, and it represents a considerable advance compared with the treatises of Huygens (1657) and Pascal (1665). Montmort continues in a masterly way the work of Pascal on combinatorics and its application to the solution of problems on games of chance. He also makes effective use of the methods of recursion and analysis to solve much more difficult problems than those discussed by Huygens. Finally, he uses the method of infinite series, as indicated by Bernoulli (1690)” (Hald, *A History of Probability and Statistics and their Applications before 1750*, p. 290). “Montmort’s book on probability, *Essay d’analyse sur les jeux de hazard*, which came out in 1708, made his reputation among scientists” (DSB). Based on the problems set forth by Huygens in his *De Ratiociniis in Ludo Aleae* (1657) (published as an appendix to Frans van Schooten’s *Exercitationum mathematicarum*), the *Essay* spawned Abraham de Moivre’s two important works *De Mensura Sortis* (1711) and *Doctrine of Chances* (1718), as well as Jacob I Bernoulli’s celebrated *Ars Conjectandi* (1713). ABPC/RBH list just two copies of this first edition.

A founding work of modern geology

36. MURCHISON, Sir Roderick Impey. *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.

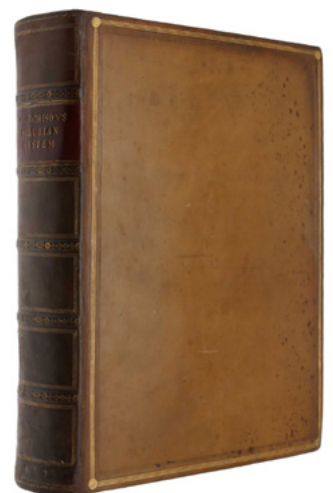
\$13,000



First edition, complete with the very rare hand-coloured engraved folding three-sheet geological map. This work is considered to be Murchison’s masterpiece, placing him among the founders of modern geology. For the first time, the succession of fossiliferous formations below the Old Red Sandstone was shown in great detail: their fossils were enumerated, described, and figured. This work made it possible to trace fossils back millions of years, thus giving new insight into the formation of the Earth and its various living organisms. “Although the map is a rarity today, every copy of the text was published with a map” (Thackray, ‘Murchison’s Silurian

System (1839),’ *Journal of the Society for the Bibliography of Natural History* 9 (1978), p. 69). “Murchison’s work was primarily responsible for undermining Lyell’s ‘steady-state’ uniformitarianism: the uniformity of the Silurian fauna demonstrated the greater uniformity of the global climate in Silurian times, and the temporal sequence of fossil faunas and floras over all stratigraphical systems supported a directional interpretation of the history of life” (Norman).

✚Dibner, *Heralds of Science* 97; Norman 1569; Ward & Carozzi 1620



The first edition in English of the Principia

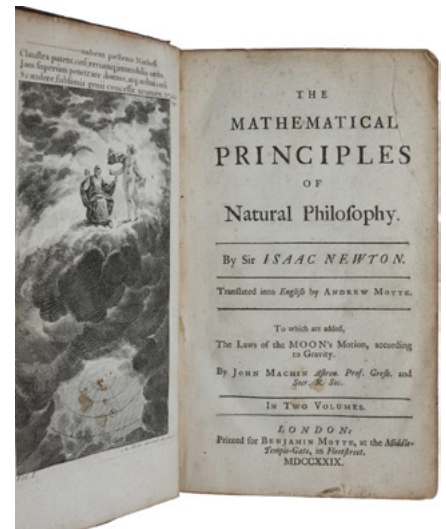
37. NEWTON, Isaac. *The Mathematical Principles of Natural Philosophy*. London: Benjamin Motte, 1729.

\$85,000



First edition in English of the *Principia*, bound in contemporary calf (not rebacked). The first edition was published in Latin in 1687 and “is generally described as the greatest work in the history of science. Copernicus, Galileo and Kepler had certainly shown the way; but where they described the phenomena they observed, Newton explained the underlying universal laws. The *Principia* provided the greatest synthesis of the cosmos, proving finally its physical unity. Newton showed that the important and dramatic aspects of nature that were subject to the universal law of gravitation could be explained, in mathematical terms, with a single physical theory. With him the separation of the natural and supernatural, of sublunar and superlunar worlds disappeared. The same laws of gravitation and motion rule everywhere; for the first time a single mathematical law could explain the motion of objects on earth as well as the phe-

nomena of the heavens. The whole cosmos is composed of inter-connecting parts influencing each other according to these laws. It was this grand conception that produced a general revolution in human thought, equaled perhaps only by that following Darwin’s *Origin of Species*” (PMM 161). Although this book appears in the rooms with some regularity, only six other copies in contemporary bindings which, like the present copy, were not rebacked, have appeared at auction in the last 35 years, the last being Doyle, November 25, 2013, lot 463, \$68,750.



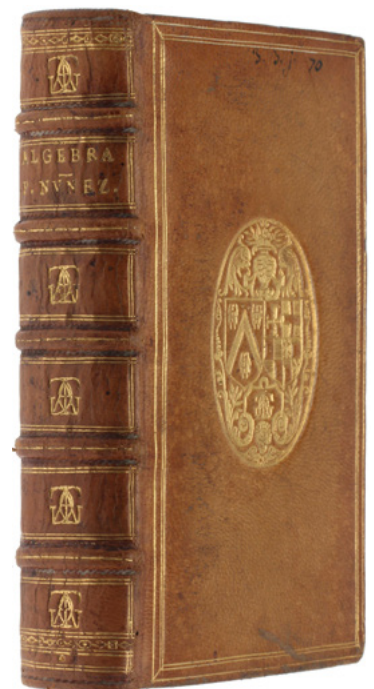
Algebra for navigators, by the greatest Portuguese mathematician

38. NUÑEZ, Salaciense Pedro. *Libro de algebra en arithmetica y geometria*. Antwerp: heirs of Arnold Birckman, 1567.

\$52,000

Exceptionally fine copy, bound in citron morocco for Jacques-Auguste de Thou (1553-1617), of this rare and celebrated treatise on algebra. “Considered the greatest of Portuguese mathematicians, Nuñez reveals in his discoveries, theories, and publications that he was a first-rate geographer, physicist, cosmologist, geometer and algebraist” (DSB). Only three other copies have appeared at auction in the last 50 years. J.A. de Thou assembled one of the greatest libraries of his time. Thou’s library later became the property of Jean-Jacques Charron, marquis de Ménars (1643-1718) before being sold off in 1789. “Both as Royal Cosmographer under King John III (the Pius) of Portugal and as professor of mathematics at the University of Coimbra, Nuñez gave instruction in the art of navigation to those associated with Portugal’s merchant and naval fleets. His *Libro de algebra* provided the mathematical underpinnings of that instruction — and much more — adopting Pacioli’s abbreviated notational style and treating the solution not only of linear and quadratic equations but also that of a cubic equation of the type $x^3 + cx = d$ following the spectacular mid-sixteenth-century work of the Italians Niccolo Tartaglia and Girolamo Cardano” (Katz & Parshall, *Taming the Unknown*, p. 205).

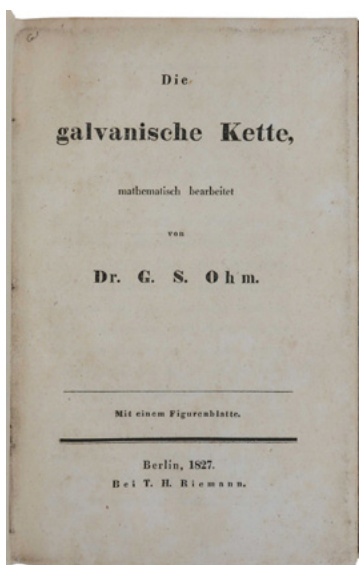
☛ Frank Streeter 392; Macclesfield 1548; Honeyman 2354; Peeters-Fontainas 845 (this copy).



Ohm's law

39. OHM, Georg Simon. *Die galvanische Kette, mathematisch bearbeitet*. Berlin: J.G.F. Kniestädt for T.H. Riemann, 1827

\$29,500



First edition, very rare complete copy, of “Ohm’s great work” (DSB), containing the fully-developed presentation of his theory of electricity, including Ohm’s Law. The present copy not only retains the errata leaf R1, often lacking, but also the one-leaf publisher’s list R2, which is almost always missing (the Dibner, Horblit/Evans, Norman, Waller and Wellcome copies, and the copy described by Grolier Science, all lack it). “Ohm’s great contribution – ‘The Galvanic Chain Mathematically Calculated’ – was to measure the rate of current flow and the effects of resistance on the current. ‘Ohm’s law’ – that the resistance of a given conductor is a constant independent of the voltage applied or the current flowing (that is, $C = E/R$, where C = current, E = electromotive force and R = resistance) – was arrived at theoretically by analogy with Fourier’s heat measurements (1800-14)” (PMM). Although copies of this book appear with some regularity on the market, we have found only three absolutely complete copies, as here, at auction since 1938. The Elihu Thomson copy, sold Christie’s New York, 1999 (\$11,500), was subsequently offered by Jonathan Hill, who wrote (Cat. 131, No. 71), “I have had a good number of copies of this book and this is the first to have the leaf of ads”.

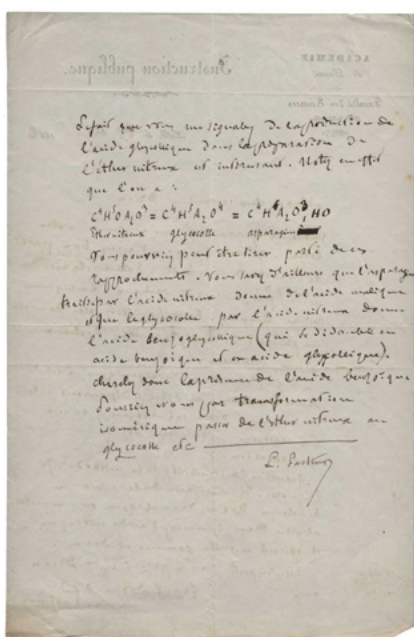
☛Dibner63; Horblit 81; Norman 1607; PMM 289; Sparrow, *Milestones of Science*, 154; Wheeler Gift Cat. 835.

Pasteur writes on isomerism

40. PASTEUR, Louis. *Autograph letter signed (“L. Pasteur”), in French, Lille, 25 December, 1856, to Charles Alexandre Drion.*

\$14,000

An important letter (in fact, two letters in one), with significant scientific content, both bearing on his work on isomerism and molecular chirality.



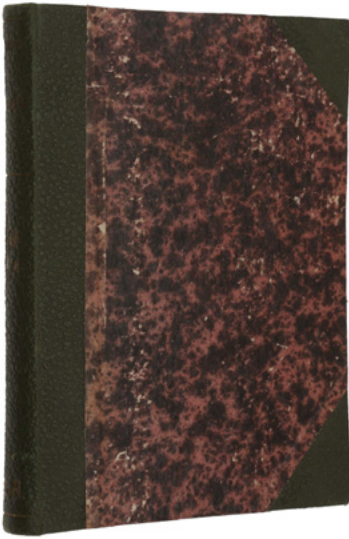
“Pasteur rose to the status of a national hero during his lifetime. However, perhaps surprisingly, Geison, a historian who has made a detailed study of Pasteur’s life and work, is able to state: ‘His contributions to basic science were extensive and very significant, but less revolutionary than his reputation suggests. Pasteur’s most profound and most original contributions to science [i.e. these are the ones in the field of molecular chirality and crystallography] are also the least famous, and they came at the very outset of his career.’ Bernal, a crystallographer, concurs ‘... his first and in some ways his greatest scientific discovery’” (Flack, *Louis Pasteur’s discovery of molecular chirality*).

The recipient of this letter, Charles Alexandre Drion (1827-63), was educated at the Ecole Normale Supérieure, graduating in 1847. From 1854 to 1859 he was Professeur de Physique at the Lycée de Versailles. He earned his doctorate in 1859 with a thesis entitled ‘Recherches sur la dilatabilité des liquides volatils.’ The following year he was appointed Chargé de Cours at the University of Besançon, rising to professor in 1862.

Pavlov's dogs

41. PAVLOV, Ivan Petrovitch. *Lektsii o rabotie glavnikh pishtshevaritelnikh zhelyos.* St. Petersburg: I. N. Kushnereff & Ko., 1897.

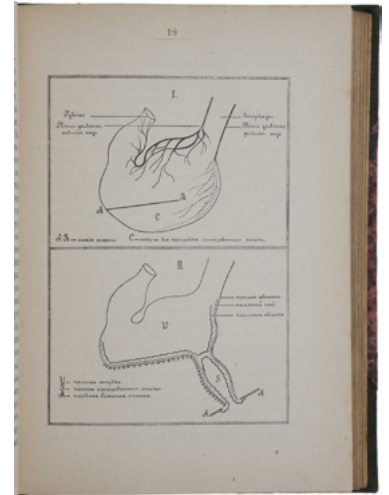
\$20,000



A fine copy, in contemporary Russian binding, of this famous work on digestive juices by the demonstrator of the 'conditioned reflex'. "Mouthwatering is a familiar experience and may be induced without the sight or smell of food. The sounds of a table being laid for lunch in another room may induce salivation in man, and the rattle of a dish in which its food is usually served will cause similar reaction in a dog. "By detailed analysis of such facts as these Pavlov made great contributions to our knowledge of the physiology of digestion in a series of lectures delivered in St Petersburg and published in the following year [i.e., the offered work]. In the course of these lectures he described the artificial stomach for dogs used by him to produce for the first time gastric juices uncontaminated by food. Further experiments led him to the conclusion that salivation and the flow of gastric juice ensuing upon the sight or smell of food was due to a reflex process. This simple form of reaction he called first a 'psychic', later an 'un-conditioned', reflex. Reflex

action was familiar to physiologists, but it had never been invoked to explain such a complicated process ..." (PMM).

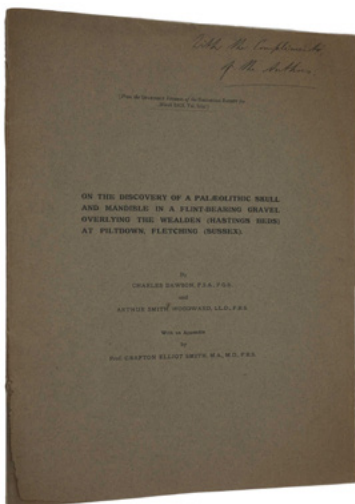
PM 385; Grolier/Horblit 83; Dibner 135; Grolier/Medicine 85; Lilly, *Notable Medical Books* 24.



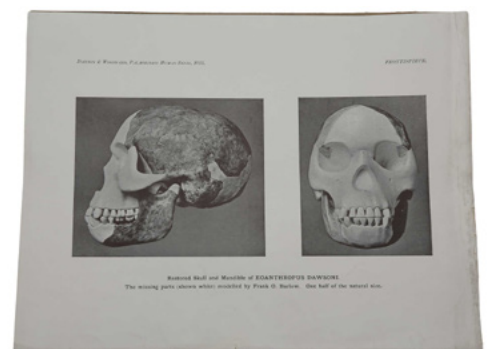
The missing link?

42. [PILTDOWN MAN] DAWSON, Charles and SMITH WOODWARD, Arthur. *On the Discovery of a Palaeolithic Skull and Mandible in a Flint-bearing Gravel overlying the Wealden (Hastings Beds) at Piltdown, Fletching (Sussex). With an Appendix by Prof. Grafton Elliot Smith.* London: Longmans, Green & Co., 1913.

\$8,500



First edition, offprint issue, with presentation inscription, of the first published report of the 'discovery' of 'Piltdown Man', the so-called missing link between ape and man, presented to the Geological Society on 18 December 1912. Forty years later Piltdown Man was shown to be a fake, a human skull with the jawbone of an orang-utan, and it remains one of the most intriguing and notorious scientific hoaxes of all time. Only one copy of this offprint has appeared at auction in the last twenty years, and that copy lacked the frontispiece (Richard Green Library, Sotheby's New York, 17 June 2008, lot 283, \$6000). OCLC lists two copies only: Field Museum of Natural History, Chicago (lacking frontispiece) and Ibero-Amerikanisches Institut, Berlin (with the frontispiece). Not in COPAC.



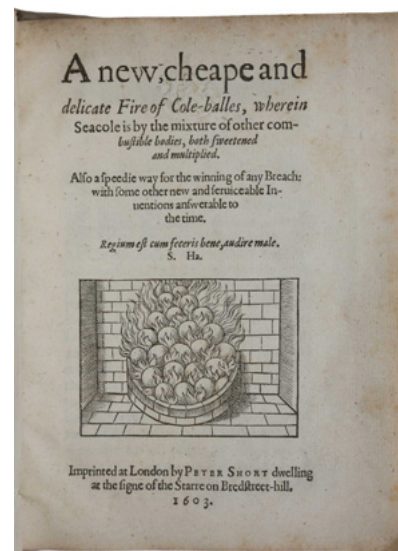
Making coke from coal - essential to the industrial revolution

43. PLAT, Sir Hugh. *A new, cheape and delicate Fire of Cole-balles, wherein Seacole is by the mixture of other combustible bodies, both sweetened and multiplied.* London: Peter Short dwelling at the signe of the Starre on Bredstreet-hill, 1603.

\$12,500



First edition, the superb Macclesfield copy bound in contemporary vellum gilt, of this important work by “Elizabethan London’s most curious student of nature” (Harkness, p. 8), which first introduced the process of making coke from coal, a technological innovation that proved crucial in the industrial revolution. This is an extremely rare book – indeed, this is probably the only surviving perfect copy (see below). “The technique of making coke from coal [was] suggested in 1603 by Hugh Plat as a process similar to making charcoal from wood” (Osborne, p. 234). “Coke’s superior crushing strength allowed blast furnaces to become taller and larger. The ensuing availability of inexpensive iron was one of the factors leading to the industrial revolution” (Newgera, p. 89). “Plat’s approach to his many collaborators and the natural knowledge they shared with him was rigorous, and prefigures in

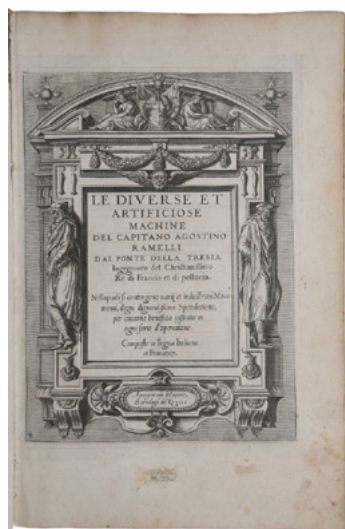


significant ways ... the scientific method” (Harkness, p. 214). “ESTC locates copies at British Library [lacks A1], Bodleian [lacks A1, ex Juel-Jensen], Birmingham University [lacks A1]; Marsh’s Library Dublin [missing], Glasgow University [apparently lacking one leaf – presumably A1 - as pagination is given as 30 pp.], Folger [sheet A frayed, affecting title & text; ex Sion College], Huntington [lacks A1]; no other copy located in auction records.”

An exceptionally fine copy with distinguished provenance

44. RAMELLI, Agostino. *Le diverse et artificiose machine.* Paris: for the author, 1588.

\$280,000



First edition of one of the most important books on the science and technology of machines in the renaissance, and one of the most famous illustrated books of the sixteenth century – a tour de force of book design. This is a splendid copy in contemporary French gilt vellum, ruled in red, and entirely untouched. We are not aware of a copy of similar quality on the market since the Norman-Freilich copy (sold Sotheby’s 2001, \$291,750). *Provenance:* Françoise d’Espinay de Bretagne, first wife of Henri de Schomberg, comte de Nanteuil (1604 gift inscription on front free endpaper); Princes of Liechtenstein (stamp on title); Otto Schäfer (sold Sotheby’s 1995, £38,900). A fundamental book in the history both of technology and of book design, and “one of the most elegantly produced of all technological treatises” (Norman). The scientific import of Ramelli’s work resides in his demonstration of “the unlimited possibilities of machines. For example, the dozens of water-powered pumps and mills shown in his treatise clearly demonstrated that non-muscular power could be substituted for horse- or human-power in any mechanical task requiring continuous or repetitive application of force, and the portrayal of over twenty

types of water pump ... destroyed the notion that there were necessary limits to the configuration or arrangement of a machine” (*ibid.*)



☛ Dibner 173; Norman 1777; Mortimer French 452; Wellcome 5323; Adams R52; Cockle 788.

Pioneering work on neurophysiology – extremely rare

45. **ROLANDO, Luigi.** *Saggio sopra la vera struttura del cervello dell' uomo e degli animali e sopra le funzioni del sistema nervosa.* Sassari: Nella Stamperia da S.S.R.M. Privilegiata, 1809.

\$22,000



First edition, extremely rare, of this pioneering work on neurophysiology, anticipating many of the discoveries made by Flourens fifteen years later. OCLC locates four copies in America. “Rolando was the first to demonstrate that the cerebellum was not the ‘seat of life.’ In his publication of 1809 he maintained that the cerebellum was responsible for movements ... Rolando was a brilliant and diligent observer. He was the first to describe the substantia gelatinosa (which today bears his name) in the posterior horn. And his experiments in decerebrated animals convinced him that the hemispheres are responsible for higher functions such as the will and judgement ... Finally, Rolando was the first to detect consistency in the arrangement of the cortical gyri. Even up to the 1860s these seemed to many a mere chaos. To Rolando these convolutions could be “reduced to

regular and specific shapes and positions.” He found the central gyri to be constant features and described the fissure centralis, a structure that has become firmly linked with Rolando’s name up to the present day” (Sammet, p. 405).” [Rolando’s] findings, and his theory that the cerebellum functioned as a whole, were described in a book that he engraved, printed and bound himself in 1809. His *Saggio*, however, had a very limited printing and was not widely disseminated. The limited availability of Rolando’s findings proved to be significant because his experiments remained largely unknown to the wider scientific community for a number of years” (Finger, *Origins of Neuroscience*, p. 212).

☛ Garrison-Morton 1388.

The Caesarean section

46. **ROUSSET, François.** *Traite nouveau de l’Hysterotomotokie, ou Enfantement Caesarien.* Paris: Denys du Val, 1581.

\$18,500



Very rare first edition of the work which coined the term ‘Caesarean section’ and was the first to advocate its use, in appropriate circumstances, on a living woman. Only three copies located in auction records, two of which were in modern bindings. This copy is beautifully bound in contemporary vellum gilt and ruled in red throughout. “As the earliest advocate of caesarean section on a living woman (in cases where no other means of delivery appeared possible), François Rousset, a 16th-century French physician, defied conventional medical wisdom. His contemporaries expected caesareans to be performed if the mother had died during the labour,

in order to allow the fetus a chance of survival, but it was widely assumed that to perform a caesarean on a living woman would be to condemn her to certain death. Hence Rousset’s treatise on the subject, published in French in 1581, and then in Latin translation from 1586, provoked almost universal scepticism, yet also exercised a marked fascination. Despite the fact that as a physician (rather than a surgeon) he had never performed the operation himself, he had witnessed some rare deliveries by caesarean, collected other case histories and reflected on analogous operations, before presenting his research in [the present work]” (Valerie Worth-Stylianou, ‘Caesarean Birth: The work of François Rousset in Renaissance France,’ *Wellcome History*, 15 December 2010).

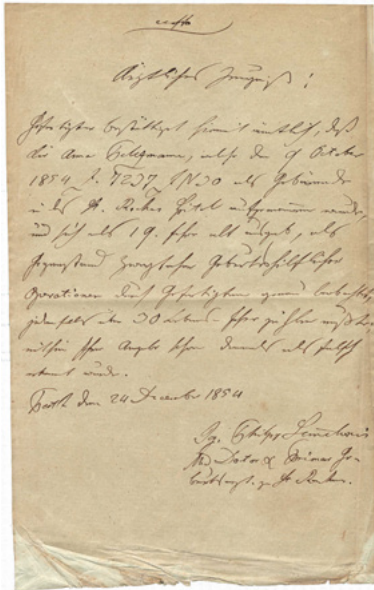
☛ Garrison-Morton 6236; Wellcome 5593.



One of a handful of autograph manuscripts

47. SEMMELWEIS, Ignaz Philipp. *Extremely rare autograph document in Semmelweis' hand, from his time at the St. Rochus Hospital in Pest where he eliminated childbed fever, medical testimony regarding a female patient, signed and dated 24. December 1854.*

\$42,000



Extraordinarily rare autograph manuscript. Despite the wide interest there has been for more than a century in Semmelweis' work and personality, there are still today extremely few examples of autograph material by him. In their 1968 article on Semmelweis manuscripts, Antall, Harko, and Vida note: "He left only few manuscripts; the first drafts of his published works are irretrievably lost. In 1940 György Korbuly summarized the number of the discovered Semmelweis manuscripts and he stated in his article: 'if we inquire, how many manuscripts of Semmelweis we know today, the reply is expressively depressing. We know today only 5 original letters of him'". (*Semmelweis Ignac összegyűjtött keziratai*, Budapest 1968). The authors continue to mention that since 1940 some new Semmelweis manuscripts had come to light in London and Budapest, but that still in 1966 when Ákos Palla described a newly discovered document he estimated a total number of documents known worldwide to be 20-30. We cannot locate any other autograph material in the auction records. This large and impressive document (380 x 240 mm) is a medical testimony written by Semmelweis when he was primary obstetrician at the St. Rochus Hospital in Pest. The patient, Anna Petermann, claimed when she was hospitalized for birth on 9 October 1854, that she was 19 years of age. Due to two obstetric surgeries, however,

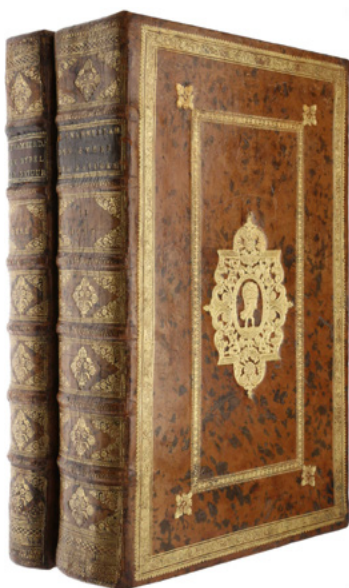
Semmelweis realized that the patient must be at least thirty. The document is signed with a large and bold signature by Semmelweis "Ig. Philipp Semmelweis, Med Doctor & Primar-Geburtsarzt zu St. Rochus" and dated "Pest den 24 December 1854".

18th century anatomy bound by 'The Necklace Bindery'

48. SWAMMERDAM, Jan. *Bybel der Natuuere...* Leiden: Isaak Severinus, Boudewyn & Pieter Vander Aa, 1737-38.

\$38,000

First edition, a magnificent copy in a spectacular contemporary binding from "The Necklace Bindery", of "the finest collection of microscopical observations ever produced by one worker. The book is consulted by naturalists to this day. Some of the figures have never been excelled" (Singer).



Binding: Spectacular contemporary marbled calf from "The Necklace Bindery" at Leiden (so called by Storm van Leeuwen because of the characteristic rectangular border surrounding the central cartouche on the covers), "one of the most distinguished Leiden workshops of the 18th century [that] played a decisive role in the field of luxury binding", spine richly gilt in compartments all edges gilt. See *Dutch Decorated Book-binding in the Eighteenth Century*, 2006, II-A, p. 260-278.

☛ Dibner, *Heralds of Science* 191; Norman 2037. Sparrow, *Milestones of Science* 187



Coined the term 'neurology'

49. **WILLIS, Thomas.** *Cerebri anatome: cui accessit nervorum descriptio et usus.* London: Typis Ja. Flesher, Impensis Jo. Martyn & Ja. Allestry, 1664.

\$42,000



First edition, first issue, and an exceptionally fine copy, of “the most complete and accurate account of the nervous system which had hitherto appeared, and the work that coined the term ‘neurology’ (GM). “Thomas Willis was one of a number of remarkable scientists and doctors who flourished at Oxford in the mid-seventeenth century. Dispersed among the colleges of Oxford, these talented investigators coalesced into a loosely organized “club” or invisible college that helped define and disseminate a new experimental philosophy and that served as the informal prototype of the Royal Society. The legacy of William Harvey was crucial to science and medicine in Oxford, and anatomical investigations were central to programs of research in these subjects; as a physician and one of the charter members of the Oxford club, Willis played a leading role in shaping those programs. His *Cerebri anatome* remapped the brain and described the cranial, spinal, and involuntary nervous systems so accurately and thoroughly

that it remained the standard work in its field until well into the nineteenth century. Willis himself was probably the first to use the term ‘neurology.’” (Grolier/Medicine).

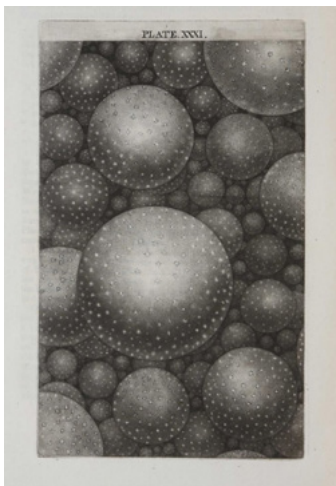


☛ Grolier, *One Hundred Books Famous in Medicine* 32A; Lilly, *Notable Medical Books* 77; Norman 2243; Garrison-Morton 1378; *Heirs of Hippocrates* 538.

The nature of the Milky Way explained

50. **WRIGHT, Thomas.** *An original theory or new hypothesis of the universe.* London: Printed for the Author, and sold by H. Chapelle, 1750.

\$52,000

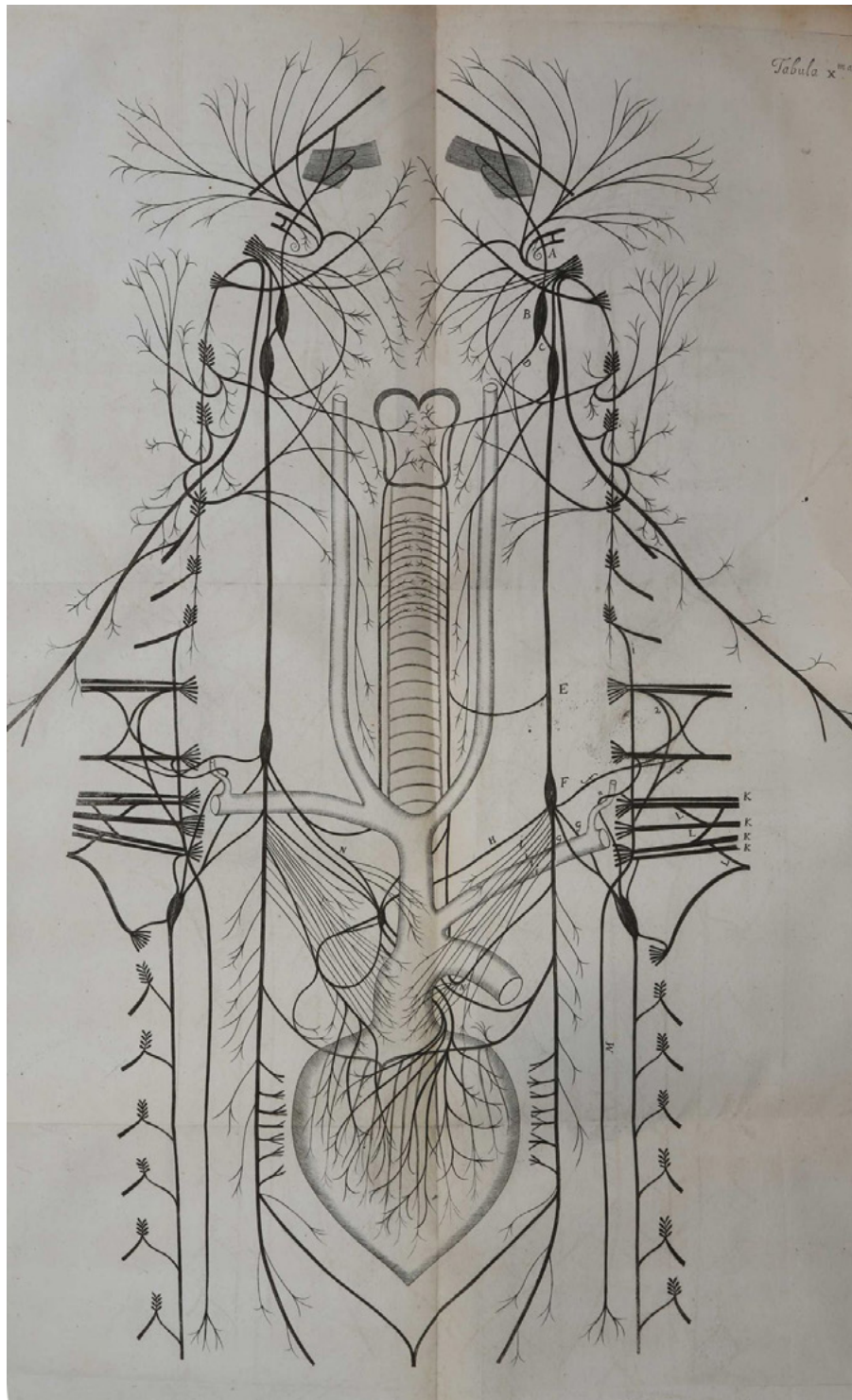


Exceptionally fine copy of this extraordinary book, remarkable not only for its prophetic views on cosmology, but also for its mezzotint plates which have an almost surreal beauty not found in any other astronomical work. This is an outstanding copy, free of the foxing that normally affects this book, and in a beautiful, unrestored contemporary English binding in almost perfect condition. “For the first time in the history of astronomy the view is expressed here that the fixed stars are not distributed at random in space, but mainly concentrated in a flat disc” (Paneth). He also speculates on the nature of nebulae. “The dawn of extragalactic astronomy can be attributed to the year 1750, in which Thomas Wright speculated that some of the nebulae observed in the sky were not actually part of the Milky Way, but rather independent Milky Ways themselves” (Beckman & Shrader). “These views were more than 150 years ahead of their time and did not become accepted by the scientific community until they were substantiated by observational evidence in the

1920s” (*Biographical Dictionary of Scientists*). Wright also suggested that the rings of Saturn consisted of a multitude of unconnected particles, each revolving independently round the planet: in 1859, James Clerk Maxwell demonstrated this as the only scientifically tenable theory against the rival hypotheses of fluid or solid rings.

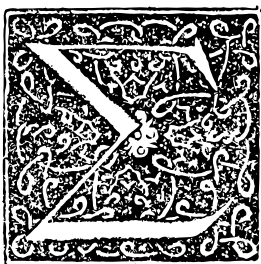
☛ Norman 2265; Honeyman 3143; *Parkinson, Breakthroughs*, 1750.





WILLIS, Thomas. *Cerebri anatome*, 1664

49



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