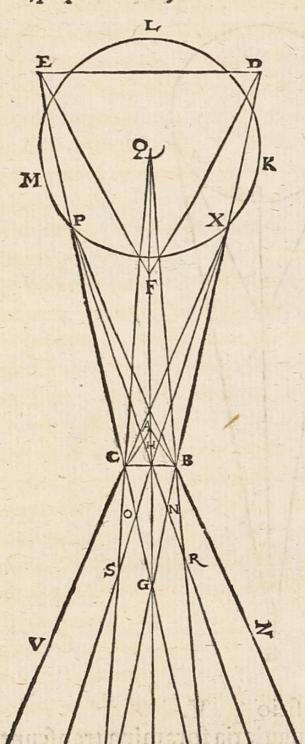
## Milestones of Science Books



## PERSPECTIVAE COMMUNIS

Ho medij pyramidaliter terminati, non sistunt ibi, sed intersecando se procedunt vltrà. Quando igitur radij per foramen incidunt angulare, qui producti in foramine veliuxta, se intersecant, incipiunt



dilatari: & siradij in fora mine se intersecantes ad eam distantiam in rectum producerentur, qua exalia parte Sol à foramine distat, patet quod dilata\_ rentur ad quantitate Solis. Quonia anguli ad vertice per XV. primi elemeto. rum sunt æquales, & lateraex viraque partepyra midis aqualia,necesse quo que erit per quartam primi Elementoru Euclidis bases aquales esse. Causam autem rotunditatis incide tiæ, diuersi diuersimode conati sunt assignare. Quidam simpliciter hoc Solis attribuunt rotunditati, quod sicut radij à Sole pro cedunt, ita rotuditas à rotunditate; & huius rei corecturam ex Solis Eclipsibus sumunt. Quando enim tempore Eclipsis Solis, in loco tenebroso per quodeu-

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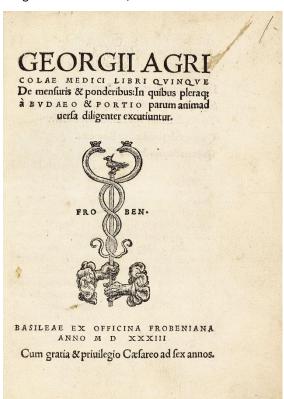
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## The Macclesfield copy

AGRICOLA, Georgius. Libri quinque De mensuris & ponderibus: In quibus plaeraque à Budaeo 1 & Portio parum animadversa diligenter excutiuntur. Basel: Froben, 1533. [9] 10-292 [4] pp. Text in Latin and Greek. Woodcut printers devices on title and final leaf verso, 5 large historiated woodcut initials, general index at end. Text generally crisp and clean, some ink annotations in contemporary hand (mostly shaved), small Macclesfield blindstamp to first 3 leaves. [Bound with:] II. NEMORARIUS, Jornanus [NEMORE, Jordanus de]. De ponderibus propositiones XIII. & earundem demonstrationes, multarumque rerum rationes sanè pulcherrimas complectens, nunc in lucem editus. (edited by Petrus Apianus). Nürnberg: Johannes Petreius, 1533. 16 unnumbered leaves. Woodcut device on title, woodcut initials, diagrams in text. Title and final page dust-soiled and stained, otherwise little agetoned only. [Bound with:] III. GRAHAM, George. An account of a comparison made by some gentlemen of the Royal Society, of the standard of a yard, and the several weights lately made for their use: with the original standards of measures and weights in the Exchequer, and with some others kept for public use at Guildhall, Founders-Hall, the Tower, & c. London: [Royal Society], 1744. [2], 17 [1] pp. Text crisp and clean. Three works in one volume. 4to (183 x 140 mm). Bound in 18th century half calf over marbled boards, spine with 5 raised bands, some gilt decoration and giltlettered red morocco label, red-dyed edges (slight rubbing to extremities, front board scratched). Provenance: South Library of the Count of Macclesfield (armorial bookplates to front pastedown and first flyleaf). An excellent copy. (#003116)

I. Adams A342; Dekesel A7; VD16 A908; Kress 38; Wellcome I, 58. RARE FIRST EDITION of Agricola's treatise on weights and measures, which became a standard text on the subject and an equally important book for the



history of economics, the monetary system and mathematics. "The work can hardly be called an arithmetic, but is a valuable book of reference on the history of ancient measures. The book is also valuable to the student of Roman and Greek numerals, and of the various symbols of measures. Such works explain the origin of certain systems of measures employed before the metric system developed, and of such symbols as are still used by apothecaries" (Smith, *Rara Arithmetica*, 171, for the Wechel/Paris edition later the same year).

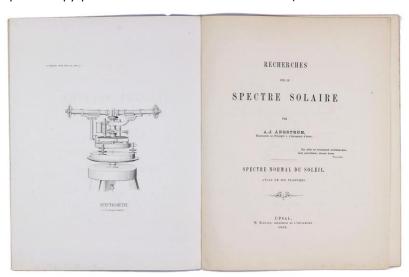
II: VD16 J937. VERY RARE FIRST EDITION. An important book in the early history of mechanics containing "the fundamental notion of statical moment and its application to the study of the angular lever and of the inclined plane." (Dr. Sarton). Jordanus de Nemore (fl. 13th century), also known as Jordanus Nemorarius and Giordano of Nemi, was a thirteenth-century European mathematician and scientist. The literal translation of Jordanus de Nemore (Giordano of Nemi) would indicate that he was an Italian. He wrote treatises on at least 6 different important mathematical subjects: the science of weights; 'algorismi' treatises on practical arithmetic; pure arithmetic; algebra; geometry; and stereographic projection. The medieval 'science of weights' (i.e.,

mechanics) owes much of its importance to the work of Jordanus. In his *Elementa super demonstrationem ponderum*, Jordanus introduces the concept of 'positional gravity' and the use of component forces. Pierre Duhem (in his *Origines de la statique*, 1905) thought that Jordanus also introduced infinitesimal considerations into statics in his discussion of 'virtual' displacements of objects in equilibrium. He proves the law of the lever by means of the principle of work. The *De ratione ponderis* also proves the conditions of equilibrium of unequal weights on planes inclined at different angles - long before it was re-established by Simon Stevin (with his clootcrans - "wreath of spheres" experiment) and later by Galileo. (Wikisource). This edition was published by Peter Apian in Nuremberg and contains 13 of Jordanus' propositions.

III. ESTC N47582. Separate edition, first published in Vol. 42 of *The Philosophical Transactions of the Royal Society London* in 1743, of a comparison of the various standards of weights and lengths used in France and England.

ANGSTRÖM, Anders Jonas. Recherches sur le Spectre Solaire. [Atlas contenant les longeurs d'onde des raies Frauenhofériennes données en 1/10,000000 de millimètre]. Uppsala: W. Schultz, 1868. Two parts comprising text volume and atlas folder with plates. Text volume: 4to (310 x 240 mm), Plates: oblong folio (320 x 500 mm). Text volume: [4], 42, xv [1] pp., lithographed frontispiece. Atlas volume: title leaf and 6 lithographed plates. Original publisher's printed wrappers to text volume (light chipping to spine ends). Plates unbound in custom made 20th century folder with original publisher's printed wrapper pasted as label on upper cover. Text with little age-toning, atlas title leaf with marginal soiling and browning and old repairs of marginal tears by tape, light marginal browning and dampstain to lower right corner of plates. (#002654)

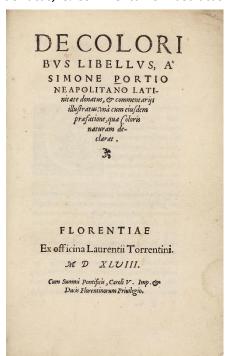
DSB I, p. 166; Norman 56; Honeyman 096. - RARE FIRST EDITION. The classic work on the solar system in which Angström demonstrated the presence of hydrogen and a number of other elements in the sun. Solar spectroscopy provided the first scientific evidence (other than the occasional meteorite) that the elements



known on earth are also present elsewhere in the universe. Angström also established a scale of wave-lengths for measuring spectral lines, replacing Kirchoff's arbitrary scale. Angström's system was based on a unit of one ten millionth of a millimetre, named the "Angström unit" in his honor. conducted detailed measurements of more than 1000 spectral lines. The plates are in effect a map of the solar spectrum, and show the radiation of the solar spectrum ranging from 0.8 to 0.4 micron and from red to purple colour. It identifies the particular

lines of manganese, aluminium and titanium. The lithographic plates are after R. Thalén (1827-1905), Angström's laboratory assistant. The lithographic frontispiece to the text volume is showing Angström's spectrometer. Some copies have a further 2 plates showing the ultraviolet spectrum, but the Norman, Gedeon, Green and Honeyman copies - like the present copy - do not have these.

**ARISTOTELES [THEOPHRASTUS]**. De coloribus libellus, a Simone Portio Neapolitano latinitate donatus, & commentariis illustratus: una cum eiusdem praefatione, qua coloris naturam declarat.

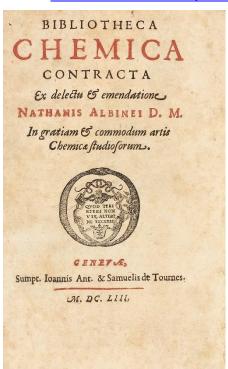


Florence: Lorenzo Torrentini, 1548. 4to (207 x 137 mm). 197 [1], [2, errata] pp. Text in Latin and Greek. Bound in contemporary limp vellum, spine titled in manuscript, ties gone (soiling, browning and minor spotting of vellum, old repair to spine, small hole in lower cover). Internally quite crisp and clean, small dampstain to fore-margin of first two gatherings, few pages with contemporary ink annotations, first flyleaf with long commentary in manuscript. A fine, widemargined copy. (#002939) € 3,300

Adams A 1787; Cranz (IA) 108.139; Graesse V, 419; Hoffmann I, 307, 4; Honeyman 143; Schweiger I, 52. FIRST EDITION of a work now attributed to Theophrastus being one of the earliest printed books on color, with the Latin translation and commentary by the Neapolitan physician and philosopher Simone Porzio. It is generally agreed that *De coloribus* was not written by Aristotle; but can now be ascribed to Theophrastus or Strato. There is no evidence upon which to determine the authorship. It probably emanates from one of the Peripatetic School. *De coloribus* outlines the theory that all colors (yellow, red, purple, green, and blue) are derived from mixtures of black and white. It had a pronounced impact on

subsequent color theories and remained influential until Isaac Newton's experiments with light refraction. The author states at the end of the book that he rather intends to provide data for a detailed examination into the scientific theory of color than to expound a complete thesis. He realised that the development of color in plants and animals depends to some extent on heat, suggesting that heat and moisture are the controlling factors. The treatise is therefore of more value as a collection of observed facts than for any theory of the origin and development of color in physical life. There is no knowledge of the part played by chemical action, but the author distinguishes primary and secondary colors and raises doubt whether black is a color at all.

4 <u>AUBIGNÉ DE LA FOSSE, Nathan de (AUBINEUS)</u>. Bibliotheca Chemica Contracta. Geneva:



Jean Antoine and Samuel De Tournes, 1653. 4 parts in one volume. 8vo (186 x 120 mm). [14], 77 [3]; 11 [5], 175 [3]; 9 [1], 179 [1]; [12], 83 [1] pp. General title-page printed in red and black and with printer's woodcut device, separate title-pages to parts II to IV, a few decorative headpieces and foliated initials, 4 blank leaves present. Near contemporary carta rustica, spine lettered in manuscript (little dust-soiling, corners bumped). All pages uncut and largly unopened. Text somewhat browned throughout, foxing and spotting, leaves somewhat frayed and dust-soiled in outer margins. Provenance: Giancarlo Beltrame Library. Text collated complete. (#003026)

Caillet 147; Duveen p.10; Ferchl 6; Ferguson I, 17. - FIRST EDITION of this important compilation of alchemical and hermetic works by Hermes Trismegistus, Augurello, Espagnet and Sendivogius as well as Albineus himself. The Collection comprises: I. Hermes Trismegistus, *Tabula smaragdina*; Augurelli, Giovanni Aurelio, *Chrysopoeia et vellus aureum*; D'Aubigné, Nathan, *Carmen aureum*. II. Sendivogio, Michaele, *Novum lumen chemicum* and *De sulphure tractatus*. III. D'Espagnet, Jean. *Enchiridion physicae restitutae*. IV. D'Espagnet, Jean, *Arcanum Hermeticae philosophiae opus*.

**BARKLA, Charles Glover**. A collection of 13 offprints and journal issues by Charles G. Barkla (Nobel Prize 1917), published between 1904 and 1929. Items have various states of preservation, wrappers mostly browned and dust-soiled and with occasional edge-chipping and folds, text generally very little browned, iron staples of Nature issues mostly rusty. (#003169) € 600 The collection comprises:

- Energy of secondary Röntgen radiation. Offprint from: Proceedings of the Physical Society of London.
   Vol. 19, May 1904, pp. 543-560. Publisher's printed wrappers. Ink stamp and bookplate of Reading University College.
- 2. Polarised röntgen radiation. Offprint from: *Philosophical Transaction of the Royal Society of London. Series A*, Vol. 204, No. A384, 1905, pp. 467-479. Publisher's printed wrappers.
- 3. Polarised röntgen radiation. Offprint from: *Proceedings of the Royal Society of London. Series A*, Vol. 77, No. 516, 1906, pp. 247-255. Publisher's printed wrappers.
- 4. Bakerian Lecture On X-Rays and the Theory of Radiation. Offprint from: *Philosophical Transaction of the Royal Society of London. Series A*, Vol. 217, No. A557, 1917, pp. 315-360. Publisher's printed wrappers. Minor edge chipping. Ex-libris stamp by E.K. Rideal on front cover.
- 5. BARKLA, C.G. & RHODA, R.C. Notes on X-ray scattering and on J Radiations. Offprint from: *The London, Edinburgh, and Dublin Philosophical Magazine and Journal of Science*, Vol. 45, April 1923, pp. 737-750. Publisher's printed wrappers. Ex-libris stamp by E.K. Rideal on front cover.
- 6. The "J" Phenomena and X-ray Scattering. Offprint from: *Nature*, Vol. 112, 1923, pp. 723-724. Ex-libris stamp by E.K. Rideal on front cover.
- 7. The "J" Phenomena and X-ray Scattering. In: *Nature*, Vol. 112, No. 2820, 1923, pp. 723-724. Entire number, stapled as issued.

- 8. The "J" Phenomenon in X-rays (Part I). Offprint from: *The London, Edinburgh, and Dublin Philosophical Magazine and Journal of Science*, Vol. 49, May 1923, pp. 1033-1055. Publisher's printed wrappers. Exlibris stamp by E.K. Rideal on front cover.
- 9. Some Recent Researches on X-Rays: the J-Phenomenon. In: *Nature*, Vol. 114, No. 2873, 1924, pp. 753-755. Entire number, stapled as issued.
- 10. BARKLA, C.G. & MACKENZIE, G.I. The Coherence of Superposed X-Radiations. In: *Nature*, Vol. 115, No. 2903, 1925, p. 942. Entire number, stapled as issued.
- 11. BARKLA, C.G. & KHASTGIR, S.R. In: *Nature*, Vol. 117, No. 2937, 1926, pp. 228-229. Entire number, stapled as issued.
- 12. BARKLA, C.G. & MACKENZIE, G.I. Notes on the superposition of X-rays and on scattering. The J phenomenon (Part III). Offprint from: *The London, Edinburgh, and Dublin Philosophical Magazine and Journal of Science*, Vol. 1, Feb. 1926, pp. 542-553. Publisher's printed wrappers. Ex-libris stamp by E.K. Rideal on front cover.
- 13. BARKLA, C.G. & SEN GUPTA, M.M. Note on superposed X-radiations. J-Phenomenon (Part IX). Offprint from: *The London, Edinburgh, and Dublin Philosophical Magazine and Journal of Science*, Vol. 7, April 1929, pp. 737-742. Publisher's printed wrappers.

Charles Glover Barkla (1877-1944) was a British physicist. From 1905 to 1909 he was a lecturer in physics and advanced electricity at the University of Liverpool, and in 1909, succeeded H. A. Wilson as Wheatstone Professor of Physics at the University of London. In 1913, Barkla accepted the Chair in Natural Philosophy at University of Edinburgh where he held the position until his death. He made significant progress in developing and refining the laws of X-ray scattering, X-ray spectroscopy, the principles governing the transmission of X-rays through matter, and especially the principles of the excitation of secondary X-rays. For his discovery of the characteristic X-rays of elements, Barkla was awarded the Nobel Prize in Physics in 1917.

**BECCARIA, Giambatista**. Dell' elettricismo. Lettere di Giambattista Beccaria ... dirette al chiarissimo Sig. Giacomo Bartolomeo Beccari ... Coll' appendice di un nuovo fosforo descritto. Bologna: Colle Ameno, 1758. 4to (310 x 215 mm). [12], 378, [4] pp. Including woodcut pictorial initial,



woodcut head- and tailpieces, imprimatur and errata leaf at end. Bound in contemporary full vellum over boards, spine with red morocco label lettered in gilt, sprinkled edges (soiling and staining of vellum, wear to lower corners). Text generally bright and clean, minor faint spotting in places, a few marginal paper flaws. A fine, wide-margined copy. (#003127) € 2,500

Wheeler 392bis, Gartrell 31. RARE FIRST EDITION, and a continuation of Beccaria's contribution on athmosperic electricity *Dell' elettricismo artificiale* published 5 years before, in which he adopted Benjamin Franklins theory. Giovanni Battista Beccaria taught physics at the University of Turin from 1748. He introduced the study of Galileian experimental physics. He also studied and disseminated Newtonian physics and maintained a close correspondence with Benjamin Franklin. While personally interested in the study of electricity, he developed the theory of "revenge electricity", proved only by the work of Volta. As a result of his work and Franklin's discoveries, lightning rods were installed on St. Mark's Basilica in Venice and on the Duomo in Milan. Beccaria was also interested in geography, especially in measuring

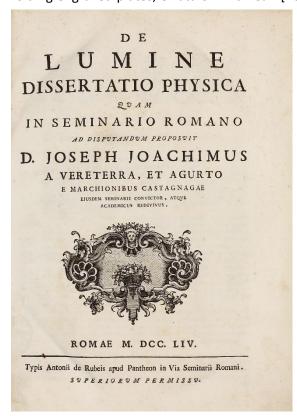
the degree of terrestrial meridian arc to be used as a basis for the calculation of the equatorial circumference and the crushing of the poles.

**BECCARIA, Giambatista**. Della elettricità terrestre atmosferica a cielo sereno, osservazioni. [Turin]: [printer unknown], [1775]. 4to (270 x 210 mm). [8], 54, [2] pp. Signatures: [pi]4 (A-G)4. With the first blank leaf [pi]1 and the final leaf of Imprimatur G4. Bound in 20th-century patterend paste paper boards. All pages untrimmed. Text very little browned only, occasional minor spotting, small wormtracks to last leaf (not affecting text). Provenance: Giancarlo Beltrame Library. (#003010) € 800

Wheeler Gift 450; Honeyman 256; Balbo 30. FIRST EDITION of Beccaria's short work on atmospheric electricity in fair weather. "This is the author's famous tract on the normal electricity of the atmosphere. Positive and negative electricity found, p. 4; observations on the electrical charges of clouds, p. 18; origin of atmospheric electricity, p. 32." (Wheeler Gift). This treatise was published not before 1775, as can be seen from the print signatures of the three epistles (p. 27, 45, 53). It was presumably published in Turin, as is derived from the imprimatur on G4r.

## Rare Sammelband with early theses by Boscovich and his students at Collegio Romano

**8** [BENVENUTI, Carlo]. I. De lumine dissertatio physica quam in seminario Romano ad disputandum proposuit d. Joseph Joachimus a Vereterra, et Agurto e marchionibus Castagnagae ejusdem seminarii convictor, atque academicus redivivus. Rome: Antonii de Rubeis apud Pantheon in via Seminarii Romani, 1754. [2], XCI [1] pp. Signatures: [pi]1 A-L<sup>4</sup> M<sup>2</sup>. Woodcut device to title-page, 2 folding engraved plates, errata on final leaf. [Bound with:] II. [BENVENUTI, Carlo]. Synopsis physicae



generalis quam in Seminario Romano ad disserendum proposuit d. Joseph Joachimus a Vereterra, et Agurto e Marchionibus Castagnagae ejusdem seminarii convictor, atque academicus redivivus. Rome: Antonii de Rubeis apud Pantheon in via Seminarii Romani, 1754. [2], LXXXI, [3] pp. Signatures: [pi]1 A-I<sup>4</sup> K<sup>5</sup>. Woodcut device to titlepage, 1 folding engraved plate, errata on final leaf. [Bound with:] III. **CANALI, Gioachino**. *De meteoris a* electricismo pendentibus dissertatio physica. Rome: Antonii de Rubeis in via Seminarii Romani, 1755. [3], 12-32, [2] pp. Signatures: B-D<sup>4</sup> (-A<sup>4</sup>). Half title only [lacking gathering a with the title and content list], one folding engraved plate. [Bound with:] IV. LEONORI, Luigi. De naturali electricismo ejusque ad auroram borealem applicatione dissertatio physica. [2], 11-30, [2] pp. Half title only [lacking gathering a with the title and content list], 1 folding engraved plate. [Bound with:] V. [BOSCOVICH, Roger Joseph]. De lentibus et telescopiis dioptricis dissertatio quam auspice s. Aloysio Gonzaga patrono suo beneficentissimo publice habuit in Seminario Romano marchio

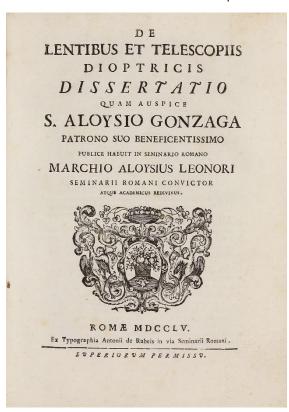
Aloysius Leonori Seminarii Romani convictor atque academicus redivivus. Rome: Antonii de Rubeis in via Seminarii Romani, 1755. [2] 3-58 [2] pp. Signatures: A-G⁴ H². Errata leaf at end, one folding engraved plate. 5 works in one volume. 4to (253 x 185 mm). Bound in contemporary full vellum, ink lettering to spine (soiling and spotting of vellum, wear to spine ends and upper corners), redsprinkled edges. Text quite crisp and clean with only very minor age-toning. Provenance: Giancarlo Beltrame Library. A fine copy. (#003041)

An important Sammelband of theses, all in FIRST EDITION, by Roger Boscovich and Carlo Benvenuti. These type of publications where printed in just a few copies and were not intended for the normal book market. "Although they are often catalogued under students' names, their real authors were the teachers, so they inform us of the ideas of persons who often published nothing on the subject concerned, and whose manuscript lecture notes, when they have been preserved, often deal with it in a brief or vague fashion. The theses were also a favourite channel for new or even unorthodox ideas. Accordingly they can reveal tensions within the Society that were usually removed from the eyes of the world, as well as tensions with other orders, which usually appeared only in the course of theological debate. Discussions of Boscovich's theory are not found primarily in theses on mathematics, the discipline he taught, but in those on philosophy, a discipline on which, according to conventions rooted in medieval gnosiology and epistemology, he lacked formal authority to speak ... Only a few analyses of Boscovich's ideas were published separately (mostly by enthusiastic supporters), a majority being inserted in various sections of general works. The fact that a new theory was

placed in the pigeonholes provided by an old pedagogical structure meant that some discussed it in sections on continuous entities, others in sections on the structure of matter, and still others in places concerning forces acting in nature or the existence of repulsive phenomena. In each case, some aspects of the theory were given more attention than others, and its inner structure was often represented inadequately." (J. B. Staudt, *The Jesuits II: Cultures, Sciences, and the Arts, 1540-1773*, Univ. of Toronto Press, 2006, p.409).

I. Carlo Benvenuti was a learned Jesuit, physician, and mathematician. He entered into the society of Jesuits at the age of sixteen, but did not take the four vows till eighteen years afterwards. He became professor of philosophy at Fermo, and next succeeded Boscovich in the mathematical chair of the Roman college. "His first scientific work was an Italian translation of Clairaut's *Geometry*, Rome, 1751; and he afterwards published two works, which gained him much reputation: I. *Synopsis Physicae generalis*, 1754, a thesis maintained by one of his disciples, the marquis de Castagnaga, on Benvenuti's principles, which were those of sir Isaac Newton and 2. *De Lumine dissertatio physica*, another thesis maintained by the marquis, 1754. By both these he contributed to establish the Newtonian system in room of those fallacious principles which had so long obtained in that college; but it must not be concealed that a considerable part of this second work on light, belongs to father Boscovich, as Benvenuti was taken ill before he had completed it, and after it was sent to press. After the expulsion of the Jesuits, there appeared at Rome an attack upon them, entitled *Riflessioni sur Gesuitismo*, 1772, to which Benvenuti replied in a pamphlet, entitled *Irrefiessioni sur Gesuitismo*; but this answer gave so much offence, that he was obliged to leave Rome and retire into Poland, where he was kindly received by the king, and became a favourite at his court. He died at Warsaw, in September, 1789." (Chalmers, *A new and general biographical dictionary*, vol. 5, 1812, p.1-2).

II. A rare and important work, being the first exposition of Boscovich's theory of forces, presented by his pupil Carlo Benvenuti. "In Benvenuti's *Synopsis* a certain passage was guaranteed by Boscovich himself, the one in which he first formulates and solves the problem of the equilibrium of four points... The attacks of the religious



superiors on Benvenuti's *Synopsis*, causing the removal of Benvenuti from the chair of metaphysics at the Roman College, was in reality a veiled attack on Boscovich's natural philosophy" (see I. Martinovic, *Early reception of Boskovic's natural philosophy: the 'Benvenuti case'*, Synthesis Philosophica 8, 1993, 307-333).

III. and IV. These two theses basically are a representation of Beccaria's ideas on Benjamin Franklin's discoveries on natural electricity and the aurora borealis.

V. The fifth work, *De lentibus et telescopiis dioptricis*, is an important dissertation by Roger Boscovich on dioptric lenses and telescopes together with information on the properties of light, Newton's theories, and the mathematical formulae for optical instruments. Our copy is of the rare first issue with the title page not mentioning Boscovich's name but that of Luigi Leonori, a student of Boscovich (a later issue has the title-page reset, see Backer-Sommervogel I, col. 784-5). Boscovich decided to publish this thesis under his student's name. On p. ix it is said that "matter is made up of indivisibles, that bodies do not tuch, and that both an attractive and a repulsive force exist" (J. B. Staudt, *The Jesuits II: Cultures, Sciences, and the Arts*, 2006, p.435). "In *De lentibus* Boscovich reveals himself to be a skilled experimenter, establishing

guidelines for achieving the optimal refraction of lenses when viewing celestial bodies" (Roberts & Trent, p. 45). Boscovich recognized that the development of better achromatic refractive telescopes required better and more detailed information about the optical properties of glass. References to Newton are found throughout this work. Riccardi I, 178:45.

#### Lise Meitner's Copy

**BORN, Max.** Der Aufbau der Materie. Drei Aufsätze über moderne Atomistik und Elektronentheorie. Berlin: Julius Springer, 1920. 8vo (206 x 139 mm), [6], 81 [1] pp. Including 36 illustrations in text. Contemporar half cloth, gilt-lettered spine (extremities rubbed, corners bumped). Text littled browned, title-page browned a bit stronger at outer margins, occasional minor spotting. Provenance: Lise Meitner (her signature in pencil on title page). (#003147) € 1,500

FIRST EDITION in book form of Max Born's study of the structure of matter. In his introduction, Born writes: The three essays that make up the contents of this little book have appeared in the journal *Naturwissenschaften* during the last year. They treat the same object, physical atomism, from different points of view; the first gives a general overview of modern atomic theory, while the others give priority to questions which I have tried to solve myself. The similarity of the subjects implies that some repetitions occur. A fusion of the three essays into



a summarized presentation seemed to me impossible, and not necessary, because the recently published book by A. Sommerfeld, *Atombau und Spektrallinien* (Braunschweig, Friedr. Vieweg & Sohn, 1919) shows the progress of the physical Atomic doctrine with great completeness and demonstrating in attractive, easy-to-handle form. The reprint of my essays should be of use to those who have no time to study the larger work of Sommerfeld. Born played an important role in the development of quantum mechanics. In 1926, together with Heisenberg and Jordan, he published the famous "three-man paper" *Zur Quantenmechanik II* which formed the theoretical basis for that science.

Lise Meitner (1878-1968) was an Austrian-Swedish physicist who worked on radioactivity and nuclear physics. Together with Otto Hahn and Otto Robert Frisch she led the small group of scientists who first discovered nuclear fission. Meitner spent most of her scientific career in Berlin, Germany, where she was a physics professor and a department head at the Kaiser Wilhelm Institute. She was the first woman to become a full professor of physics in Germany. She lost these positions in the 1930s because of the anti-Jewish Nuremberg Laws of Nazi Germany, and in 1938, fled to Sweden, where she lived for many years, ultimately becoming a Swedish citizen. Meitner received many awards and honors late in her life, but she and Otto Frisch, did not share the 1944 Nobel Prize in Chemistry for

the discovery of nuclear fission. The prize was awarded exclusively to her long-time collaborator Otto Hahn. In the 1990s, the records of the committee that decided on that prize were opened. Based on this information, several scientists and journalists have called her exclusion "unjust", and Meitner has received many posthumous honors, including naming chemical element 109 meitnerium in 1997. Despite not having been awarded the Nobel Prize, Lise Meitner was invited to attend the Lindau Nobel Laureate Meeting in 1962, where she also met Max Born. Max Born nominated Lise Meitner three time for the Nobel prize in physics, in 1954, 1964 and 1965. He received the prize in 1954 together with Walther Bothe.

## The famous "Three Man" paper

BORN, Max.; HEISENBERG, Werner & JORDAN, Pascual. Zur Quantenmechanik II. In: Zeitschrift für Physik. Vol. 35, pp. 557-615. Berlin: Julius Springer, 1926. 8vo (220 x 151 mm). Entire volume offered, viii, 954 pp. Contemporary half black library cloth with gilt-lettered spine (rebacked preserving the original spine), sprinkled edges. Text with very light age toning, but generally crisp, clean and free of markings. Provenance: TU Vienna (volume general title with library deaccession stamp). A very good copy. (#002928) € 1,200

FIRST EDITION OF THIS IMPORTANT PAPER IN THE DEVELOPMENT OF QUANTUM MECHANICS, forming the theoretical basis for that science. *Zur Quantenmechanik II* is the famous 'three-man' paper by Born, Heisenberg and Jordan that laid the foundations of quantum mechanics. Heisenberg received the Nobel Prize for physics in 1932 for his establishment of quantum mechanics.

## Early monograph on magnets and magnetism

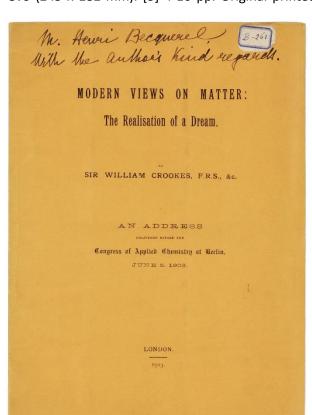


BRUNO, M. de. Recherches sur la direction du fluide magnétique. Amsterdam and Paris: chez Gastelier (Gouffier), 1785. 8vo (207 x 130 mm). viii, 206 pp., 8 (7 folding) engraved plates, half-title and errata, without the final blank N8. Bound in 20th century marbled boards, spine with gilt-lettered morocco label, new endpapers. Text and plates crisp and clean with only very minor occasional spotting. Old publisher's name Gouffier overpasted by printed paper slip. A near fine, wide-margine copy. (#002938) € 1,500

Honeyman 528; Wheeler-Gift I, 527. - FIRST EDITION of an interesting treatise on the magnet and magnetism. Little is known about the author who performed experiments to illustrate the direction of the "lines of force" of the magnet at its poles, both when resting by itself and when brought into proximity with other magnets; and again its behaviour when pivoted and used as a needle. The engraved plates show magnetic field lines. "An effort to show that the accepted theories in magnetism are untenable because based on erroneous or faulty experiments...The diagrams of the magnetic field are worthy of notice." (Wheeler-Gift). Very rare work. The last copy we can trace is the Honeyman copy sold in 1978 for GBP 220.

## Interesting association copy, inscribed by the author to Henri Becquerel

12 <u>CROOKES, Sir William</u>. Modern Views on Matter: The Realisation of a Dream. An Address Delivered Before the Congress of Applied Chemistry at Berlin, June 5, 1903. London: E.J. David, 1903. 8vo (245 x 182 mm). [3] 4-16 pp. Original printed orange wrappers (little dust soiled, two vertical



folds, paper sticker on front cover). Internally crisp and clean without stains or markings. Provenance: Henri Becquerel, inscribed in ink by the author on front cover "M. Henri Becquerel / With the author's kind regards." (#003167) € 3,200

FIRST EDITION of this physics paper by William Crookes. A REMARKABLE PRESENTATION COPY, linking two key figures of its time. Crookes (1832-1919), British chemist and physicist, and inventor of a high vacuum tube named after him, turned his attention to the newly discovered phenomenon of radioactivity in 1903. He achieved the separation from uranium of its active transformation product, uranium-X (later established to be protactinium). Crookes observed the gradual decay of the separated transformation product, and the simultaneous reproduction of a fresh supply in the original uranium. At about the same time as this important discovery, he observed that when "p-particles", ejected from radio-active substances, impinge upon zinc sulfide, each impact is accompanied by a minute scintillation, an observation which forms the basis of one of the most useful methods in the technique of radioactivity.

"In 1903, Crookes was invited to deliver an address in English [he did not speak German] before the Congress of Applied Chemistry at Berlin. He chose the subject, 'Modern Views on Matter: The Realisation of a Dream' He claimed that the dream just realised was essentially a British dream, comprising the resolution of chemical elements into simpler forms of matter or even refining them altogether away into etheral vibrations or electrical energy." E.E. Fournier d'Albe, The Life of Sir William Crookes, O.M., F.R.S., Cambridge Univ. Press, 2013, p.378). Crooke's address also gives an historical outline of the constitution of matter, especially on Radiant Matter, a term Crookes used to describe the fourth (or plasma-) state of matter. He also refers to Becquerel's discovery of radioactivity in his paper. Henri Becquerel shared the 1903 Nobel Prize in Physics with Pierre Curie and Marie Curie for the discovery of spontaneous radioactivity.

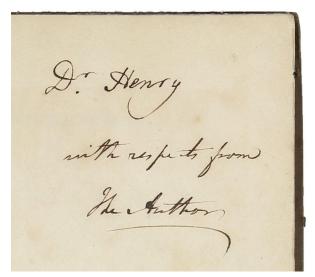
## Interesting association copy, dedicated to William Henry.

DALTON, John. Meteorological Observations and Essays. Manchester: Printed by Harrison and Crosfield for Baldwin and Cradock, London, 1834. 8vo (227 x 140 mm). xx, 244, [4] pp., including publishr's advertisements on final [4] pages. Original publisher's boards, printed paper label on spine (joints cracked and weakened, corners bumped). Pages opened but untrimmed. Text crisp and clean. Provenance: AUTHOR'S PRESENTATION COPY inscribed "Dr. Henry with respects from the Author" on front free endpaper; the library of Hugh Selbourne. Fine unsophisticated dedication copy. (#002478)

Wheeler Gift 582; Norman 574 (both for 1st ed). SECOND EDITION. This work, according to Dalton himself, "contained the germs of most of the ideas afterwards expanded by him into discoveries." (DNB V, 428-34). It contains a series of essays on barometric pressure, storm patterns, temperature, the aurora borealis, among other meteorological matters. Of importance is his observations on evaporation, including his theory that

diffusion of water vapor in the atmosphere was not a chemical process.

Dalton dedicated this copy to his colleague and close friend, William Henry (1775-1836). Henry is best known for the law named after him which states that the solubility of a gas is directly proportional to the partial pressure of that gas over the solution (Henry's law). Already in 1803, Dalton had formulated that each gas in a mixture of gases exerts a pressure proportionate to the percentage of the gas and independent of the presence of the other gases present (law of partial pressures). That combined into Dalton-Henry law, which says that, in dissolving a mixture of gases, a liquid will absorb as much of each gas in the mixture as if that were the only gas dissolved - a fundamental principle that has become important to dive physiology and medicine nowadays.



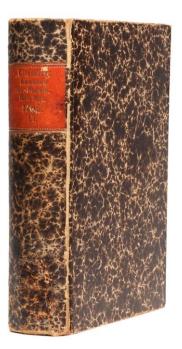
- DEWAR, James & FLEMING, John Ambrose. Collection of 12 offprints, mostly from the Proceedings of the Royal Society and Philosophical Magazine as listed below, FOUR WITH DEWAR'S PRESENTATION INSCRIPTIONS, on low-temperature physics, superconductivity, liquefaction of gases, etc. various places, 1892-1905. The collection includes most of Dewar's significant papers on the subject, including those which Dahl cites in the first chapter of his book. Several are presentation copies. All wrappers somewhat browned and dust-soiled, pages more or less age-toned. Housed in a custom clamshell box, gilt-lettered spine label. (#003149) € 1,500
  - 1. DEWAR, J. & FLEMING, J. A. On the electrical resistance of pure metals, alloys, and non-metals at the boiling-point of oxygen. Offprint from: *The London, Edinburgh, and Dublin Philosophical Magazine and Journal of Science*, Vol. 34, 1892, Issue 209 (October), pp. 326-337. Original orange wrappers.
  - 2. DEWAR, J. & FLEMING, J. A. Thermo-electric powers of metals and alloys between the temperatures of the boiling-point of water and the boiling-point of liquid air. Offprint from: *The London, Edinburgh,*

- and Dublin Philosophical Magazine and Journal of Science, Vol. 40, 1895, Issue 242 (July), pp. 95-119, 2 fold. plates. Original orange wrappers (upper detached).
- 3. DEWAR, J. & FLEMING, J. A. The variation in the Electrical Resistance of bismuth, when cooled to the temperature of solid air. Offprint from: *The London, Edinburgh, and Dublin Philosophical Magazine and Journal of Science*, Vol. 40, 1895, Issue 244 (Sept.), pp. 303-311, 1 fold. plate. Original orange wrappers.
- 4. DEWAR, J. New researches on Liquid air: Weekly evening meeting, Friday, March 27, 1896. Offprint from: *Proceedings of the Royal Institution of Great Britain*, 1896. 14 pp., 8 plates. No wrappers, stapled as issued. Presentation copy, signed "With Compliments"
- 5. DEWAR, J. & FLEMING, J. A. On the electrical resistivity of electrolytic bismuth at low temperature, and in magnetic fields. Offprint from: *Proceedings of the Royal Society of London* Vol. 60, 1896-1897, pp. 425-432. Original printed wrappers.
- 6. DEWAR, J. & FLEMING, J. A. Note on the Dielectric Constant of Ice and Alcohol at Very Low Temperatures. Offprint from: *Proceedings of the Royal Society of London.* Vol. 61, 1897, pp. 1-18. Original printed wrappers.
- 7. DEWAR, J. & FLEMING, J. A. On the Dielectric Constants of Certain Organic Bodies at and below the Temperature of Liquid Air. Offprint from: *Proceedings of the Royal Society of London.* Vol. 61, 1897, pp. 358-367. Original printed wrappers.
- 8. DEWAR, J. & FLEMING, J. A. On the Dielectric Constants of Metallic Oxides Dissolved or Suspended in Ice Cooled to the Temperature of Liquid Air. Offprint from: *Proceedings of the Royal Society of London.* Vol. 61, 1897, pp. 368-380. Original printed wrappers.
- DEWAR, J. & FLEMING, J. A. A Note on Some Further Determinations of the Dielectric Constants of Organic Bodies and Electrolytes at Very Low Temperatures. Offprint from: *Proceedings of the Royal Society of London.* Vol. 62, 1897-1898, pp. 250-266. Original printed wrappers. Presentation copy, signed "With the Authors Compliments"
- 10. DEWAR, J. Bakerian Lecture. The Nadir of Temperature, and Allied Problems... Offprint from: *Proceedings of the Royal Society of London*. Vol. 68, 1901, pp. 360-366. Original printed wrappers.
- 11. DEWAR, J. Presidential Address. Offprint from: *British Association For The Advancement Of Science, Belfast 1902.* pp. 1-47 [1]. Stapled as issued. Presentation copy, inscribed by Dewar.
- 12. DEWAR, J. The Absorption and Thermal Evolution of Gases Occluded in Charcoal at Low Temperatures. Offprint from: *Proceedings of the Royal Society of London*. Vol. 74, 1904-1905, pp. 122-127. Original printed wrappers.

Working at the Royal Institution, Dewar continued researches in gas liquefaction begun by Faraday, and was the first to liquefy hydrogen. He and Kamerlingh Onnes engaged in a long and heated competition (eventually won by Kamerlingh Onnes) over who would be the first to liquefy helium; however, Dewar's interest was not so much in the liquefaction of gases per se, but in the properties of matter at temperatures approaching absolute zero. "Joining forces with John A. Fleming of University College, London, Dewar began a systematic charting of the specific resistances of metals, alloys and nonmetals from the boiling point of water to the lowest point within reach [-197 degrees C.]" (Dahl, Superconductivity. Its historical roots and development from mercury to the ceramic oxides. New York: American Institute of Physics, 1992. p. 16). The temperature-resistance curves obtained in their investigations indicated "that the resistance for all pure metals converged downward in such a manner that electrical resistance would vanish at absolute zero" (DSB). Over the course of their investigations, Dewar and Fleming were able to gather accurate data on conduction, thermo-electricity, magnetic permeability and dielectric constants of metals and alloys from 200 degrees C. to minus 200 degrees C. Dewar's researches in low-temperature physics were greatly enhanced by his invention in 1892 of the vacuum-jacketed ("Dewar") flask, the most important device for preserving and handling materials at low temperatures. The collection includes Dewar's famous paper entitled "The Nadir of Temperature, and other problems" (1901). Various of the earliest papers in this group are co-authored with John Ambrose Fleming who later invented the thermionic valve or vacuum tube.

## Einstein's Annus Mirabilis papers

EINSTEIN, Albert. Über einen die Erzeugung und Verwandlung des Lichtes betreffenden heuristischen Gesichtspunkt, pp. 132-149; [bound with] Zur Elektrodynamik bewegter Körper, pp. 891-922; [bound with] Über die von der molekularkinetischen Theorie der Wärme geforderte Bewegung von in ruhenden Flüssigkeiten suspendierten Teilchen, pp. 549-560. In: Annalen der Physik, 4. Folge, Vol. 17 ( Paul Drude, editor), Leipzig: Johann Ambrosius Barth, 1905. 8vo (208 x 143 mm). Entire volume: viii, 1020 pp., 5 plates. Bound in contemporary marbled paper over boards, spine with



gilt-lettered red paper label (extremities of binding rubbed). Internally crisp and clean with no visible staining, foxing or marking. Provenance: Physikalisches Kabinett des königlichen Lyzeums Regensburg (small ink stamp to half-title and title verso; H. Wolfgang Bachmann (bookplate to front pastedown). A fine copy. (#002858) € 17,500

PMM 408, Dibner 167, Horblit 26b, Norman 689/690/691, Weil 6/8/9. - FIRST EDITIONS, journal issues, of the three most important early papers by Einstein. In the first paper, "Einstein suggested that light be considered a collection of independent particles of energy, which he called 'light quanta.' Such a hypothesis, he argued, would provide an answer to the problem of black-body radiation where classical theories had failed, and would also explain several puzzling properties of fluorescence, photoionization and the photoelectric effect" (Norman). It was for this paper, together with one on the photoelectric effect ("Zur Theorie der Lichterzeugung und Lichtabsorption"), published in 1906, that Einstein was awarded the Nobel Prize in Physics in 1921 (Norman 689; Weil 6). The second paper proved, according to Einstein himself, that "according to the molecular theory of heat, bodies of dimensions of the order of 1/1000 mm. suspended in liquid

experience apparent random movement due to the thermal motion of molecules. Such movement of suspended bodies has actually been observed by biologists who call it Brownian molecular movement" (quoted by R. W. Clark, Einstein, New York, 1984, p. 87). Experimental verification of the predictions made in this paper contributed to proving the physical reality of molecules (Norman 690; Weil 8). The third paper, on the electrodynamics of moving bodies, was Einstein's first statement of the special theory of relativity. In it he argued that all motion is relative to the inertial system in which it is measured, and that matter and energy are equivalent. As he himself remarked, "it modifies the theory of space and time" (quoted by Clark, p. 87).

**16 EINSTEIN, Albert & GROSSMANN, Marcel**. Entwurf einer verallgemeinerten Relativitatstheorie und einer Theorie der Gravitation. Offprint from: Zeitschrift für Mathematik und



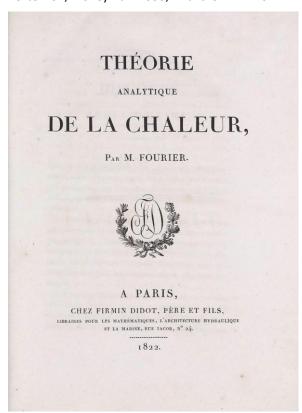
Physik, Bd. 62, 1913. Leipzig & Berlin: B. G. Teubner, 1913. 8vo (253 x 170 mm). 38 pp. Original publisher's printed wrappers (somewhat creased, edges slightly bumped, closed tear to lower wrapper, light marginal dust-soiling, old shelf-mark sticker on rear cover obscuring some advert text. Pages untrimmed and partially unopened. Text somewhat age-toned, slight creasing to first and final leaves. Provenance: Zisterzienser Abtei Himmerod (ink stamp " Conventus Himmerodensis" and manuscript shelf-mark to title-page). (#002957)

Norman 693; Weil 59a; DSB IV, p.332. FIRST EDITION, offprint issue, of Einstein's preliminary approach to the general theory of relativity. His old friend Marcel Grossman helped with the mathematics needed to represent Einstein's conception of gravity. "Principal work" (Weil). Contains: I. Physikalischer Teil von A. Einstein. II. Mathematischer Teil von M. Grossmann. The library of the Himmerod abbey was liquidated in 2015 and all items sold at auction.

## The first mathematical study of heat diffusion

FOURIER, Jean Baptiste Joseph. Théorie Analytique de la Chaleur. Paris: Firmin-Didot, 1822. 4to (254 x 200 mm). [4], xxii, 639 [1] pp., including half title and two engraved plates at end. Contemporary half leather over marbled boards, spine lettered and decorated in gilt (spine very little rubbed, head of spine chipped), endpapers and cut edges marbled. Internally clean and unmarked with only very minor age-toning to few leaves and very little spotting in places, small brown spot to half title and title page. A clean, crisp and well-margined copy of a milestone work in mathematics. (#002022)

Dibner 154; Sparrow 68; Norman 824; DSB V, pp. 93-99; Bibliotheca Mechanica, p.118; En Français dans le Texte 232; Honeyman 1358; Evans 37. - FIRST EDITION of the first mathematical study of heat diffusion,



originally presented as a paper to the Academie des Sciences in 1807. Fourier showed that heat diffusion was subject to simple observable physical constants that could be expressed mathematically. While Galileo and Newton had revolutionized the study of nature by discerning mathematical laws in the movement of solids and fluids, this approach had not been satisfactorily applied to the study of heat before Fourier. His work had major repercussions for the development of both physics and pure mathematics: first, he extended the range of rational mechanics beyond the fields defined in Newton's Principia, establishing an essential branch of modern physics. Secondly, his invention of unprecedentedly powerful mathematical tools for the solution of equations "raised problems in mathematical analysis that motivated much of the leading work in that field for the rest of the century and beyond" (DSB).

"Fourier's most celebrated work in which he succeeded in putting the science of heat on an analytical or mathematical basis" (Honeyman).

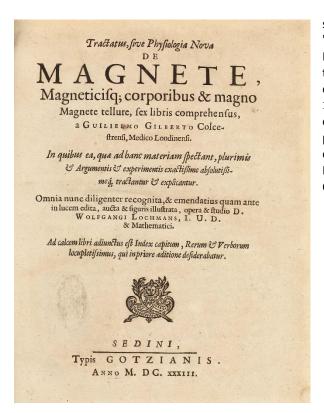
"Fourier's application of new methods of mathematical analysis to the study of heat extended rational mechanics to fields outside of those defined in

Newton's Principia, enabling the systematization of a wide range of phenomena. To further his study of heat, Fourier introduced the Fourier series and Fourier integrals." (Norman).

"Fourier's methods find their widest application to problems of vibration such as in heat, sound and in fluid motion" (Dibner).

GILBERT, William. Tractatus, sive physiologia nova de magnete, magneticisq(ue); corporibus & magno magnete tellure, sex libris comprehensus . . . Omnia nunc diligenter recognita . . . opera & studio W. Lochmans. Stettin: Gotzke, 1633. 4to (221 x 173 mm). [20], 232 (i.e. 233), [35] pp. Signatures: (...)⁴ A-2M⁴. Woodcut printer's device on title, 79 woodcut illustrations in text, 12 engraved plates (2 folding), woodcut initials and headpieces, index at end. Bound in Italian 18th century half vellum over xylographic paper (spine with sign of former bookplate, covers little soiled, corners bumped and scuffed), yellow-dyed edges. Light browning to text as usual (plates generally more heavily browned), occasional minor spotting, erased stamp on title. Provenance: private Italian collection. This copy has a valid export license from Italy. A very good, wide-margined copy. € 3,800

Norman 906 (1st Stettin edition); Dibner 54 (note); Wheeler-Gift 72a; Ekelof 64. - RARE THIRD EDITION of one of the most important works in the history of exact sciences, according to Norman much rarer than the first edition. "Gilbert's experiments in magnetism, and his use of such terms as 'electric force', 'electric attraction', and 'magnetic pole', are the basis of the growth of the field of electricity. This book is considered the first great



scientific work published in England" (Horblit 41). "Gilbert's book influenced Kepler, Bacon, Boyle, Newton and, in particular, Galileo, who used his theories to support his own proof of the correctness of the findings of Copernicus in cosmology" (PMM 107). "Wolfgang Lochmann of Stettin brought out an edition of *De Magnete* in 1628 which was the first one published abroad. This was followed by the present edition in 1633, which contains a preface by Lochmann; also the famous idyll of Claudin (4th Century) on the magnet" (Wheeler-Gift).

## Announcing the discovery of nuclear fission

19 <u>HAHN, Otto & STRASSMANN, Fritz</u>. Über den Nachweis und das Verhalten der bei der Bestrahlung des Urans mittels Neutronen entstehenden Erdalkalimetalle (and 5 further articles, see below); pp. 11-15. In: Die Naturwissenschaften. Vol. 27. Berlin, J. Springer, 1939. 4to (27:20,5 cm). With numerous illustrations in text; xviii, 862 pp. Title-leaf with library- and deaccession-stamp. Later cloth-backed boards. (#001724) € 750

PMM 422 (b); Poggendorff VIIa/2, 356 & 4, 568; Norman 963 Anm. - First printing of Hahn and Straßmann's famous paper on the discovery of nuclear fission. "In 1938 Hahn and Strassmann had demonstrated the presence of radioactive barium, lanthanum and cerium among the products of neutron bombardment of uranium, an observation that seemed to contradict all previous experiences of nuclear physics. The two men announced their puzzling findings in a paper, *'Ueber den Nachweis und das Verhalten...*', published in 'Naturwissenschaften' on 6 January 1939" (Norman). - Entire volume, comprising 5 other papers by Hahn and Straßmann.

## The invention of quantum physics

MEISENBERG, Werner. Über quantentheoretische Umdeutung kinematischer und mechanischer Beziehungen. In: Zeitschrift für Physik. Vol. 33, pp. 879-893. Berlin: Julius Springer, 1925. 8vo (220 x 151 mm). Entire volume offered, with 256 text illustr. and vii [1], 950 pp. Contemporary half black library cloth with gilt-lettered spine (rebacked preserving the original spine), sprinkled edges. Text with very light age toning, but generally crisp, clean and free of markings. Provenance: TU Vienna (volume general title with library deaccession stamp). A very good copy. € 2,500

PMM 417b; Poggendorff VI, 1070 - First edition of Heisenberg's groundbreaking paper announcing the invention of quantum mechanics, published in the "Zeitschrift für Physik" on July 25, 1925. - Entire volume, also includes two papers on quantum theory by Max Born and Pascal Jordan: "Zur Quantentheorie aperiodischer Vorgänge", pp. 479-508. (cf. DSB XV, 41).

## The first appearance of Heisenberg's Uncertainty Principle

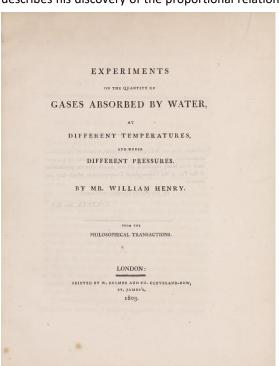
HEISENBERG, Werner. Über den anschaulichen Inhalt der quantentheoretischen Kinematik und Mechanik. In: Zeitschrift für Physik. Vol. 43, pp. 172-198. Berlin: Julius Springer, 1927. 8vo (224 x 153 mm). Entire volume, vii [1], 936 pp. Contemporary half black library cloth with gilt-lettered spine (extremities rubbed, minor repair of hinges at upper spine). Text with very light age toning, but generally crisp and clean, one gathering a bit loose but holding. Provenance: TU Vienna (library stamp and deaccession stamp to front pastedown, final page and general title). Still very good copy. (#002927)

PMM 417 (note); Poggendorff VI, 1070. - FIRST EDITION, Journal Issue. THE FIRST PRINTING OF HEISENBERG'S UNCERTAINTY PRINCIPLE, one of the most important and celebrated findings in modern physics. It was for this principle that Heisenberg was awarded the Nobel Prize in physics in 1932. The famous "Copenhagen Interpretation" of quantum theory, which provided a consistent and conclusive physical interpretation and finally destroyed our idea of a fully recognizable and calculable world. The blurring or indeterminacy relationship formulated here was of great importance for atomic physics, but also for ontology and epistemology. This volume also contain contributions by Enrico Fermi, N. v. Kolossowsky, J.R. Oppenheimer, Wolfgang Pauli, E. Wigner and others.

## Formulating Henry's Law - Exceptionally rare offprint issue

HENRY, William Charles. Experiments on the Quantity of Gases Absorbed by Water at Different Temperatures and under Different Pressures. Offprint from: Philosophical Transactions of the Royal Society of London, vol 93. London: Printed by W. Bulmer and Co., 1803. 4to (270 x 217 mm). [3] 4-16 pp. 1 engraved plate. Simple paper wrappers. Internally only little age-toned, occasional minor spotting. Provenance: W. Bruce Fye. Fixed to inner front wrapper is a paper slip bearing Henry's signature. (#003151) € 6,900

EXCEPTIONALLY RARE OFFPRINT OF THE FIRST APPEARANCE OF HENRY'S LAW. It is in this paper that Henry first describes his discovery of the proportional relationship between a gas absorbed in a liquid and the pressure of



the gas over the liquid, now known as *Henry's Law*. Significant in itself, Henry's discovery was also crucial to the development of his contemporary John Dalton's atomic theory (*The Origin of Dalton's Chemical Atomic Theory*, Isis, 1956).

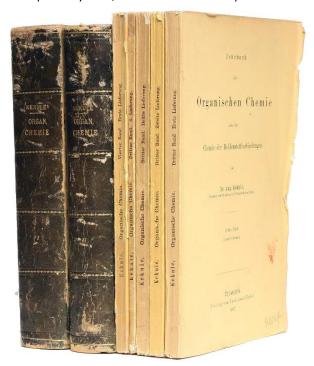
William Henry "was elected fellow of the Royal Society in 1808, and in 1809, the Royal Society awarded him the Copley Medal. Henry devoted much of his research time to chemistry, with an emphasis on the behavior of gases. He read one of his best-known papers to the Royal Society in 1802 and published it in 1803. The paper described his experiments on the amount of a gas absorbed by water at different tem- peratures and under different pressures. For example, he demonstrated that if a gas was compressed to twice the normal atmospheric pressure, twice as much was dissolved. These kinds of observation led to Henry's Law, which Linus Pauling rigorously defined in modern terms in General Chemistry: At Constant temperature, the partial pressure in the gas phase of one component of a solution is, at equilibrium, proportional to the concentration of the component in the solution, in the region of low concentration. This is equivalent to saying

that the solubility of a gas in a liquid is proportional to the partial pressure of the gas." (C. Pickover, *Archimedes to Hawking: Laws of Science and the Great Minds behind Them*. Oxford Univ. Press, 2008, p.186-7).

## Rare complete set of Kekulé's most important work on organic chemistry

KEKULÉ VON STRADONITZ, Friedrich August. Lehrbuch der organischen Chemie oder der Chemie der Kohlenstoffverbindungen. Erlangen and Stuttgart: Ferdinand Enke, 1861-1887. Part I to IV/1 bound in 7 volumes (all published). 4to (248 x 162 mm). ix [1], 766; viii, 744; iv (i.e. II), 1-250; iv, 251-490; II, 491-730; X, 731-837 [1]; II, 240 pp. Including half-title to part II, separate title-pages to parts I, II, and III/4, as called for, 3 plates in part II and several woodcut illustrations in part I and II. Part I and II bound in contemporary half calf with gilt-lettered spines (spines rubbed, extremities worn), parts III/1-4 and IV/1 in original printed wrappers and uncut, part III/1 largely unopened, some dust-soiling and minor chipping of wrappers, part IV/1 with old tape repair to spine. Text little agetoned, very minor occasional spotting, very light foxing to part III/1, a few pencil markings, two leaves in part I brown-stained, tear to p.39/40 of part III/1 not affecting text. Provenance: E. Börnstein (signature to first flyleaf in part I and II). All in all a near fine set, collated complete. € 5,000

Duveen 316 (vols. I-II only); Partington IV, pp. 533-65; DSB VII, pp. 280-3; Norman 1205 (wrong title, incomplete, lacking parts III/2 to IV/1, and 2nd edition of parts I and II only). - FIRST EDITION OF ALL PARTS, exceptionally rare, of Kekulé's most important work. "In 1865, in a paper read before the Paris Chemical



Society, Kekule announced his discovery of the ring structure of the benzene molecule, which had been revealed to him in his famous vision of long chains of carbon atoms twisting and curling like snakes in front of him until one gripped its own tail and whirled mockingly before his eyes" (Norman).

August Kekulé was less a practical chemist than more a theorist with contributions sometimes very speculative, but in his art of discussing chemical formulas painted on a piece of filter paper, he inadvertently became an excellent teacher. His field of work was and remained the carbon chemistry and the elucidation of the constitution of aromatic compounds. In 1858 he recognized (simultaneously with A. S. Couper) the quadrivalent nature of carbon and the presence of carbon-carbon bonds. In 1864 he set up the benzene theory with which he explained the hitherto enigmatic structure of benzene as a symmetrical ring consisting of six carbon atoms. This theory immediately gained great interest and approval. Above all, it has well served the chemical understanding industry in complex

compounds. Many of his students also became professors or were successful in the chemical industry.

Kekulé "was a key organizer of the 1860 Karlsruhe Congress, a meeting of European chemists where the present understanding of atomic weights was first agreed upon. In 1865 he published the first accurate analysis of the ring structure of benzene" (Duveen).

This extensive but unfinished work is rarely found complete, as it took three decades to publish the four volumes with the first fascicle printed in June 1859 and the final fascicle IV/1 in 1887.

## The foundation work on modern optics

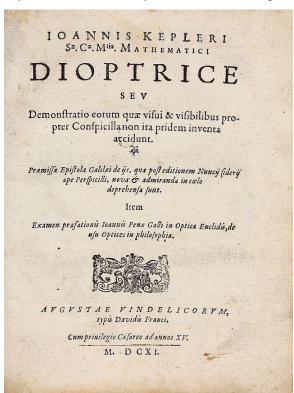
KEPLER, Johannes. Dioptrice seu Demonstratio eorum quse visui & visi-bilibus propter Conspicilla non ita pridem inventa accidunt; praemissa epistola GALILAEI de iis, quae post editionem Nuncii Siderii ope Per-spicilli . . . deprehensa sunt. 2 parts in one volume. Augsburg: David Frank, 1611. 4to (198 x 152 mm). [8], 28, 80, [4] pp., including errata and addendum leaf to fol. 27 at end, 2 tail pieces, and 42 woodcut diagrams in text. Signatures: )(4 a-c4 d2 A-K4 chi2. Text printed in Roman and italic type. pp. 15-27 with four letters of Galileo (13 Nov. 1610 - 26 March 1611) in Italian, with

Latin translation. Bound in antique-style three-quarter calf, spine with gilt-lettered morocco label and gilt ruling. Internally crisp and clean without visible staining or spotting, the title-page slightly dust-soiled and with a small nearly invisible flaw at the top gutter. Provenance: J.R.K. (tiny stamp "ex Coll. J.R.K." to rear pastedown); Hartung & Karl Auction (sold 1974, Lot 370). An exceptional copy with wide margins preserving all oversized diagrams unshaved (most copies known have at least two illustrations shaved). (#002859) € 43,000

Caspar 40; Zinner 4320; Cinti 31; Duncan 6961; Honeyman 1788; D.S.B. VII, p.299; PMM 112 (note).

FIRST EDITION OF THE FOUNDATION WORK ON MODERN OPTICS. In this work Kepler explained the theory of refraction by lenses, enlarged his system of geometrical and instrumental optics, and expounded the principle of the inverting telescope.

"Kepler obtained a telescope in 1610, a gift from Ernest, Archbishop of Cologne, and in his *Dioptrice* (1611), Kepler discussed its theory. In this work he enlarged upon his ideas on refraction and wrote about the anatomy



of the eye. He described, for the first time, the defect of spherical aberration and stated that it could be overcome by giving optical surfaces hyperboloidal forms ... He showed, also for the first time, that before an object can be seen distinctly, its image must be sharply formed on the retina" (King, *The History of the Telescope*, pp. 44-45).

"The immediate impact of Kepler's optical work was not great; but ultimately it changed the course of optics, especially after his Dioptrice (1611), which applied these principles to the telescope. 'Optical tubes' had been discussed in Giambattista della Porta's Magia naturalis (1589); but Kepler confessed that 'I disparaged them most vigorously, and no wonder, for he obviously mixes up the incredible with the probable.' Thus Kepler, who himself used spectacles, discussed lenses only in passing in his Astronomiae pars optica. Nevertheless, he had set forth the essential background by which the formation of images with lenses could be explained, and so he was able to complete his *Dioptrice* within six months after he had received Galileo's Sidereus nuncius (1610). With great thoroughness Kepler described the optics of lenses, including a new kind of astronomical telescope with two convex lenses. The preface declares,

'I offer you, friendly reader, a mathematical book, that is, a book that is not so easy to understand,' but his severely mathematical approach only serves to place the Dioptrice all the more firmly in the mainstream of seventeenth-century science." (D.S.B.)

In the long preface, Kepler comments on Galileo's recent discoveries made with the telescope and their importance in supporting the theories of Copernicus. The work also reprints a series of related letters from Galileo to Kepler, from 13 November 1610 to 26 March 1611.

The *Dioptrice* is Kepler's only work on optics. "In optics he gave a correct theory of vision, found that the velocity of light is infinite, came very near the correct Jaw of refraction, and described various forms of the newly invented telescope"- PMM 112 (note).

KERGER, Martin. De fermentatione liber physico-medicus. Cui de inseparabiltate formarum materialium & vita singularia sunt innexa. Omni perpetuis experimentis firmata. Wittenberg: Sumtibus haered. D. Tobiae Moevii, & Elerdi Schumacheri, typis Johannis Borckardi, 1663. 4to (195 x 155 mm). [8], 254 (i.e. 252), [16] pp. including final blank Ll4. Text in Latin with embedded German in blackletter type, floral woodcut initials, one woodcut diagram in text, index and errata leaf bound at end. Recently bound in fine brown half morocco, spine with 5 raised bands, gilt-decorated and gilt-

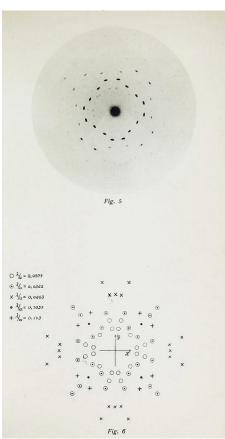
lettered in compartments, red-sprinkled edges, original Text browned throughout, occasional minor spotting, worming at upper margin of few leaves affecting about 4 letters of text. (#002985) € 2,000

NLM/Krivatsy 6348; Wellcome III, p.387. RARE FIRST EDITION. This alchemical treatise on fermentation by Martin Kerger (1622?-1691) is largely based on the doctrines of van Helmont and Willis. The Author has filled this work with chemical details and uses fermentation to explain digestion. In his book, Kerger also speculates about palingenesis, mentioning a resurrection experiment by Kenelm Digby.

Martin Kerger is disreputably noted for his accusations against the well-known Justina Siegemund, who practised midwifery in Liegnitz at the same time when he was the town physician. Siegemund had to deal with criticism and reproaches by Kerger who accused her in 1680 of the use of unsafe birthing practices. The conflict went to trial, with Kerger styling himself as the guardian of the midwife order, while Siegemund could bring in numerous witnesses, including women she cared for, husbands and other midwives who relieved her. In this difficult situation Friedrich Wilhelm Elector of Brandenburg called the now beyond city limits well-known midwife and appointed Siegemund court midwife of Chur-Brandenburg. This allowed her to escape the course of the legal proceedings.

## "One of the most beautiful discoveries in physics" (Einstein)

LAUE, Max von; FRIEDRICH, Walter; KNIPPING, Paul. Interferenz-Erscheinungen bei Röntgenstrahlen. Vorgelegt am 8. Juni 1912. / Eine quantitative Prüfung der Theorie für die Interferenz-Erscheinungen bei Röntgenstrahlen. Vorgelegt am 6. Juli 1912. In: Sitzungsberichte der Königlich Bayerischen Akademie der Wissenschaften, Mathematisch-physikalische Klasse, 1912, pp. 303-322 and 363-373. München: Verl. d. Königl. Bayer. Akad. d. Wiss., 1912. Large 12mo (220x142 mm). With 3 line block diagrams in text and 5 collotype plates (plates reinforced at gutter with white gaffer tape not affecting images). Whole volume: iv, 80, 620 pp., 11 plates and tables (2 folding). Contemporary half-cloth with shelf-mark to spine, general title page with 3 library stamps. Internally little age-toned (outer margins a bit stronger). Provenance: Institut für theoretische Physik, Frankfurt am Main (the institute at which Max von Laue was ordinarius professor for theoretical physics from 1914 to 1919). (#002092)



PMM 406a; Norman 1283 (offprint); D.S.B. VIII, p. 50. - FIRST EDITION. - Laue's Nobel Prize-winning report of "one of the most beautiful discoveries in physics" (Einstein). X-rays had been in wide use for years before their exact nature was elucidated by Laue, Max Planck's principal assistant and close colleague. "In the spring of 1912, Laue had the crucial idea of sending X-rays through crystals. At this time scientists were very far from having proven the supposition that the radiation that Roentgen had discovered in 1895 actually consisted of very short electromagnetic waves. Similarly, the physical composition of crystals was in dispute, although it was frequently stated that a regular structure of atoms was the characteristic property of crystals. Laue argued that if these suppositions were correct, then the behavior of X-ray radiation upon penetrating a crystal should be approximately the same as that of light upon striking a diffraction grating" (D.S.B.), an instrument used for calculating the wavelengths of light, inapplicable to X-rays because their wavelength is too short. An associate, Walter Friedrich, and Laue's student Paul Knipping began experimenting along these lines on April 12, 1912, and succeeded in producing a regular pattern of dark points on a photographic plate placed behind a copper sulfate cyrstal which had been bombarded with X-rays. Laue's second paper contains his complicated mathematical explanation of the effect, later known as the Laue-Friedrich-Knipping phenomenon. His discoveries earned Laue the Nobel Prize in physics for 1914.

This is the exceedingly rare journal issue, actually much rarer than the offprints (the last 5 copies at auction in the past 30 years have all been offprints issues). The rarity can be

explained not only by the low print-run of the journal, but also of its local character and low distribution level, with public libraries being the common subscribers.

**LAWRENCE, Ernest Orlando**. A collection of 10 offprints, journal issues, manuscripts and notes by Ernest O. Lawrence (Nobel Prize 1939) and co-workers, published between 1925 and 1941. Items have various states of preservation, wrappers mostly browned and dust-soiled and with occasional edge-chipping and folds, text generally very little browned. (#003168) € 1,200

## The collection comprises:

- 1. The photoelectric effect in potassium vapour as a function of the frequency of the light. Extract from: *The London, Edinburgh, and Dublin Philosophical Magazine and Journal of Science,* Vol. 50, August 1925, pp. 345-359. Without wrappers. Loosely attached is a 3-pages manuscript of notes on the photo-electric effect in K. vapor, in blue ink and with a diagram, probably in Ernest Lawrence's own hand
- 2. LAWRENCE, E.O. & BEAMS, J.W. On the Nature of Light. In: *Proceedings of the National Academy of Sciences of the United States of America*, Vol. 13, No. 4, April 1927, pp. 207-212. Entire number, original printed wrappers.
- 3. LAWRENCE, E.O. & EDLEFSEN, N.E. Photo-Ionization of the Vapors of Caesium and Rubidium. Offprint from: *Physical Review*, Vol. 34, No. 2, July 1929, pp. 233-242. Publisher's printed wrappers. And a duplicate.
- 4. LAWRENCE, E.O. & EDLEFSEN, N.E. Photo-Ionization of Potassium Vapor. Offprint from: *Physical Review*, Vol. 34, No. 7, Oct. 1929, pp. 1056-1060. Publisher's printed wrappers.
- 5. LAWRENCE, E.O. & EDLEFSEN, N.E. An Intense Source of Continuous Ultraviolet Light. Offprint from: *The Review of Scientific Instruments*, Vol. 1, No. 1, Jan. 1930, pp. 45-48. Publisher's printed wrappers.
- 6. LAWRENCE, E.O. & SLOAN, D.H. The Production of High Speed Canal Rays without the use of High Voltages. In: *Proceedings of the National Academy of Sciences of the United States of America*, Vol. 17, No. 12, Jan. 1931, pp. 64-69. Entire number, original printed wrappers. Library stamp on front cover.
- 7. SLOAN, D.H. & LAWRENCE, E.O. The Production of Heavy High Speed Ions without the use of High Voltages. Offrint from: Physical Review, Vol. 38, No. 11, Dec. 1931, pp. 2021-2032. Original printed wrappers. Stapled as issued.
- 8. LIVINGSTON, M.S.; HENDERSON, M.C. & LAWRENCE, E.O. Radioactivity Artificially Induced by Neutron Bombardment. In: *Proceedings of the National Academy of Sciences of the United States of America*, Vol. 20, No. 8, Aug. 1934, pp. 470-475. Entire number, original printed wrappers, stapled as issued.
- 9. The New Frontiers in the Atom. Original lithoprint manuscript of an address by Lawrence delivered at the Fiftieth Anniversary Celebration of Stanford University, June 16, 1941. 7 sheets, stapled. The address was also published in Science, Vol. 94, No. 2436, Sept. 1941, pp. 221-225.

Ernest Orlando Lawrence (1901-1958) was a pioneering American nuclear scientist and winner of the Nobel Prize in Physics in 1939 for his invention of the cyclotron. He is known for his work on uranium-isotope separation for the Manhattan Project, as well as for founding the Lawrence Berkeley National Laboratory and the Lawrence Livermore National Laboratory.

## Author's dedication copy to Gustav Wiedemann

MAYER, Julius Robert. Die Mechanik der Wärme in gesammelten Schriften. Stuttgart: Cotta, 1867. 8vo (211 x 135 mm). vi, [2], 194 (i.e. 294) pp. Contemporary half cloth, gilt-lettered spine (wear to extremities and corners, cloth at upper hinge partially split, spine ends slightly frayed). Light staining of title-page, minor foxing of first and final pages, otherwise quite crisp and clean. Provenance: Gustav Heinrich Wiedemann\*, presented to him by the author and inscribed "Herrn Prof. Wiedemann zum freundlichen / Andenken gewidmet / vom / Verfasser" on paper slip attached to front pastedown; Eilhard Wiedemann. (#002777)

Honeyman 2193; DSB IX, p.240; see also Dibner 157. - FIRST EDITION. The volume is a collection of the pioneering works of Julius Robert Mayer, one of the founders of thermodynamics. It includes his famous 'Bemerkungen über die Kräfte der unbelebten Natur' (Remarks on the Forces of Inorganic Nature) first

published in Liebig's Annalen der Chemie in 1842 and not printed in book form before. Mayer was the first to state the law of the conservation of energy, one of the most fundamental tenets of modern physics.

\*Gustav Heinrich Wiedemann (1826-1899), professor of physics in Leipzig, publisher of the famous German journal Annalen der Physik und Chemie from 1877. In 1842, still under Poggendorff's editorship, the epochmaking first publication of Mayer had been rejected for publication in this very journal. Under the pasted dedication slip is a damaged book mark by Eilhard Wiedemann (1852-1928), a son of Gustav Wiedemann, who had been Professor of Physics in Erlangen since 1886. Attached also is an envelope at the rear pastedown with three leaves typoscript about the provenance, J. R. Mayer and the family Wiedemann.

## From the library of Otto Hahn's Kaiser-Wilhelm-Institut

MEITNER, Lise; FRISCH, Otto Robert, et al. I: Disintegration of uranium by neutrons: a new type of nuclear reaction. - II: Physical evidence for the division of heavy nuclei under neutron bombardment (Frisch only). - Products of the fission of the uranium nucleus. - III: Liberation of Neutrons in the Nuclear Explosion of Uranium (Halban, Joliot, Kowarski). - IV: New products of the fission of the thorium nucleus (Meitner only). - pp. 239-240, 276, 470-471, 471-472 and 637-638. In: Nature. A Weekly Journal of Science. Vol. 143. London: Macmillan, 1939. 4to. Whole semi-annual volume, liv,1080, [40] pp. Half library cloth over marbled boards, spine lettered in gilt (light rubbing of boards and extremities, vertical crease in spine). Internally fresh and sound. Provenance: Kaiser-Wilhelm-Institut für Chemie (ink stamp to general title-page). Very good copy. (#002916) € 1,100

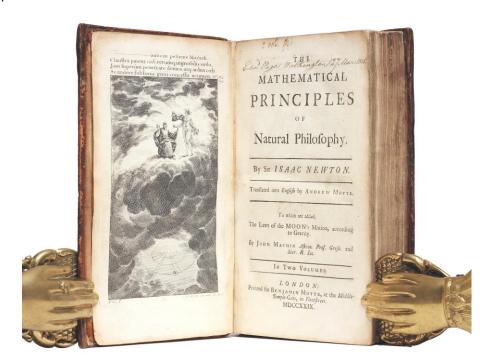
PMM 422 (b) (I) & (c) (II) & (d) (III); Norman 1487 (I), 845 (II) u. 1488 (IV). - First printing of four important papers on the phenomenon for which Frisch coined the term "nuclear fission". "Meitner calculated, using Einstein's mass-energy equivalence, the large amount of energy that would be released during the fission process. Frisch confirmed Meitner's calculations experimentally in January 1939" (Norman).

Our copy comes from the Library of the Kaiser-Wilhelm-Institut für Chemie in Berlin Dahlem, where Otto Hahn was director from 1928 to 1946. It was at this very institute on December 17, 1938 when Otto Hahn and Fritz Strassmann observed the fission of uranium nuclei for the first time in history. The teamwork of Otto Hahn (1879-1968), Lise Meitner (1878-1968) and Fritz Strassmann (1902-1980) led to this discovery, but only Otto Hahn received the Nobel prize in chemistry in 1944.

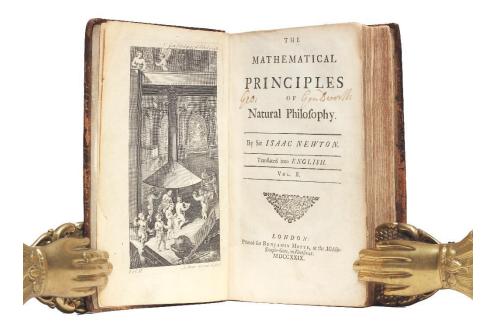
## Fine set in original bindings of the first edition of Newton's Principia in English

30 **NEWTON, Isaac.** The Mathematical Principles of Natural Philosophy. Translated by Andrew Motte. To Which are Added, the Laws of the Moon's Motion, according to Gravity. Two volumes. London: Benjamin Motte, 1729. Exceptional set in its original bindings, virtually untouched internally and complete in every respect. 8vo (198 x 118; 196 x 120 mm). Volume I with engraved frontispiece by A. Motte, [38], [1] 2-320 pp. and with 25 folding engraved plates (numbered I to XXV); volume II with engraved frontispiece by A. Motte, [2], 393, [13], viii, 71 [1] pp. and with 19 folding engraved plates (numbered I to XIX), 3 unnumbered additional folding engraved plates bound at the end, and 2 folding tables. Leaf a3 (pp. v-vi) is misbound before p. ii. In all, there are 2 frontispieces, 47 plates, 2 tables and 3 head-pieces by Motte, as called for. Both volumes are bound in contemporary calf and housed in a custom-made slipcase. All hinges are expertly restored (not rebacked). There is little gilt ruling to spines and boards. The spine ends are a bit scuffed and the spine, boards and extremities rather worn. Internally, both volumes are exceptionally crisp with only little occasional dust soiling or browning mostly at outer margins. The final plate XXV in volume I is creased, soiled and a bit frayed, the fore-edge of leaf K7 has a tear not affecting the text. The frontispiece of volume II has a tear at the fore-edge with little loss in blank margin, plate XII is a bit spotted, and there is an old repair of a short tear in plate XV. Otherwise, both volumes are in near fine condition, with full margins, and in its first bindings. Provenance: William Marrat\* (inscribed on front pastedown of vol. I "W. Marrat, Boston, 1808"), Edward Page, Walkington (inscribed on vol. I title-page dated 27 March 1815). Occasional pencil marginalia by a learned mathematician, possibly by William Marrat in volume I.

Geo(rge) Gouldworth (insribed on title-page of volume II, errata corrected in text by his hand). (#102406)

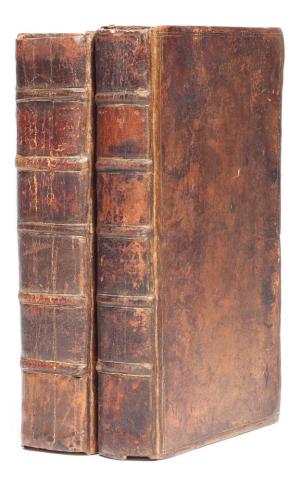


Babson 20; Norman 1587; PMM 161 (1st Lat. ed.); Wallis 23. - FIRST EDITION IN ENGLISH OF NEWTON'S *PRINCIPIA*, widely regarded to be the greatest work in the history of science. Motte's translation is highly regarded, and subsequent scholars have made revisions and corrections to the later editions, rather than undertake a new translation themselves. The first edition of Newton's *Principia* was in Latin, published in 1687. Two further London editions followed, in 1713 and 1726, in addition to a 1714 Amsterdam edition, before the revolutionary work (which Einstein described as "perhaps the greatest intellectual stride it has ever been granted for any man to make") became available to a wider lay audience with this handsomely printed English translation by Motte. It contains John Machin's attempt to rectify Newton's lunar theory, *The Laws of the Moon's Motion, according to Gravity*, here added to the end of the second volume. Motte's translation of Newton's *System of the World* occupies page 200 on in the second volume. Because the book saw wide circulation and is of enduring interest, with commensurately heavy use, copies as fresh as this in contemporary bindings are of genuine rarity.

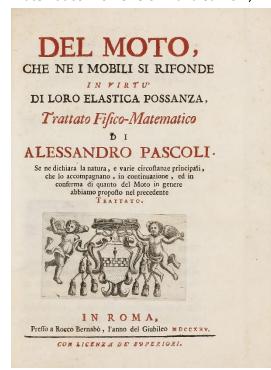


\*William Marrat (1772-1852) worked as a printer and publisher while at Boston, Lincolnshire. In 1811-12 he, in conjunction with Pishey Thompson, ran *The Enquirer, or Literary, Mathematical, and Philosophical Repository,* 

Boston. At other times Marrat was a teacher of mathematics, in Lincolnshire and elsewhere. He lived in New York from 1817 to 1820, and edited there *The Scientific Journal* (imprint "Perth Amboy, N. J. and New York", 1818, nine numbers). He returned to England and settled at Liverpool in 1821. George Boole taught at his school in 1833. From 1833 to 1836 Marrat was mathematical tutor in a school at Exeter. He was for fifty years a contributor to mathematical serials, including The *Ladies' Diary* and *The Gentlemen's Diary*, *The Receptacle, The Student*, and the *Leeds Correspondent*. His first book was *An Introduction to the Theory and Practice of Mechanics*, Boston, 1810, pp. 468. During 1814-16 he wrote *The History of Lincolnshire*, which came out in parts, and after three volumes had been published, it was stopped: Marrat alleged this was a consequence of Sir Joseph Banks's refusal to allow access to his papers. In 1816 his *Historical Description of Stamford* was published at Lincoln. An anonymous *Geometrical System of Conic Sections*, Cambridge, 1822, was ascribed to Marrat in the catalogue of the Liverpool Free Library. He compiled *Lunar Tables*, Liverpool, 1823, and wrote *The Elements of Mechanical Philosophy*, 1825. At this period he compiled the *Liverpool Tide Table*, and was a contributor to *Blackwood's Magazine*. (Wikipedia).



**PASCOLI, Alessandro**. *Del moto che nei mobili si rifonde per impulso esteriore Trattato Fisico-Matematico*. Rome: Gio. Maria Salvioni, 1723. [28], 208 pp., including half-title, title-page printed in

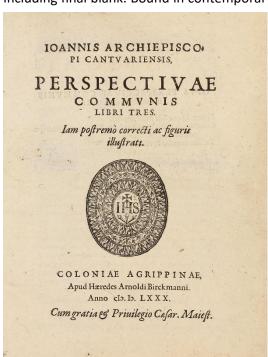


red and black and with copper-engraved allegorical vignette, copper-engraved headpieces, woodcut initials and 7 folding engraved plates. Signatures: [a]4 b4 c6 (A-2C)4. [Bound with] Del moto, che ne i mobili si rifonde in virtu di loro elastica possanza, trattato fisicomatematico. . ., in continuazione. . . Rome: Rocco Bernabò, 1725. [8], 106, [2] pp., title-page printed in red and black and with copper-engraved allegorical vignette, copper-engraved headpieces, woodcut initials and 2 folding engraved plates. Signatures: a4 (A-M)4 N6. Two works in one volume. 4to (231 x 175 mm). Contemporary vellum, spine lettered in ink (light soiling, lower corners bumped), sprinkled edges. Text very little browned, occasional minor spotting, small wormtrack to blank fore-margin of a few leaves in first work, short nick to fore-edge of few leaves in second work. A very good copy. Provenance: Giancarlo Beltrame Library. (#003024) € 1,500

Riccardi I, 248:2-3 ("buona edit."), RARE FIRST EDITION of both works in which the Perugian physician and anatomist

Pascoli (1669-1757) proposes his theory of motion. The work attracted the attention of Francesco Bianchini, who wrote an eulogistic letter which is printed in the preliminaries.

**PECKHAM, John**. Perspectivae communis libri tres. Iam postremo correcti ac figuris illustrati. Cologne: Agrippinae, apud haeredes A. Birckmanni, 1580. 4to (194 x 152 mm). [1], 47 (i.e. 46), [1] leaves. Title with woodcut printer's device, several woodcut illustrations in text. Signatures: A-M<sup>4</sup>, including final blank. Bound in contemporary limp vellum, front board lettered in manuscript (vellum



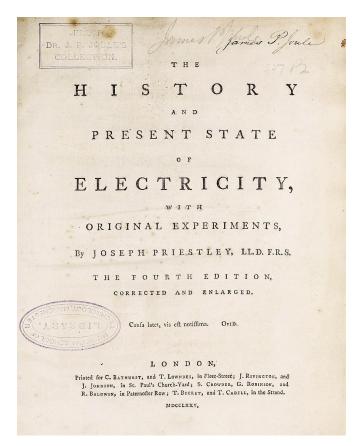
soiled and stained, ties gone, boards somewhat bowed). Text generally crisp and clean with only very minor spotting in places. Near fine copy. (#002937) € 2,900

VD 16, J 679; Adams P-536; Houzeau-Lancaster 1714; DSB X, p.476. - First Cologne edition by Birckmann. "The Perspectiva communis was the most wideley used of all optical texts from the early 14th until the close of the sixteenth century, and it remains today the best index of what was known to the scientific community in general on the subject." (DSB). It was written in about the 1270s and proved very influential; the first printed edition appeared around 1482 by Petrus de Corneno in Milan. John Peckham, English theologian, mathematician, and physicist, was a member of the Franciscan order, and became Archbishop of Canterbury from 1279-1292. "His 'Perspectiva Communis' is ... divided in three parts, of which the second and third deal respectively with reflection and refraction ... Peckham's Optics was largely derived from Ibn al-Haitham (Alhazen c. 965-1039; 'one of the greatest students of optics of all times'). Hence it is not surprising to find in it references to

the camera obscura, even as we find them in the contemporary works of Bacon and Witelo. There is a description of the eye, and the printed editions contain a diagram of it which was probably the earliest to appear in print." (Sarton: *Hist. of Science*, II, p. 1029).

## James Prescott Joule's copy bearing his signature

PRIESTLEY, Joseph. The History and Present State of Electricity, with Original Experiments. The fourth edition, corrected and enlarged. London: Printed for C. Bathurst, and T. Lowndes, J. Rivington, and J. Johnson, etc., 1775. 4to (262 x 205 mm). [4], xxxii, 691 [1], iii, [9] pp., including index, catalogue of books by Priestley, and 8 folding engraved plates. Late 19th-century green cloth library binding, gilt shelf mark stamp '537 P2' on lower spine (boards spotted and soiled, some wear to spine ends and corners, upper hinge split at head, hole in cloth at upper board). Text and plates with minor occasional spotting, some marginal dust-soiling, otherwise quite crisp and clean. Closed tear in blank lower margin of leaves D2 and P4. Provenances: James Prescott Joule (his signature and ink stamp 'Prof. Dr. J. P. Joule Collection' to title page and preface leaf i; Manchester Municipal School of Technology Library (old ink stamps to title-page, verso of plates and a few text pages elsewhere). Deaccessioned as doublet from the library. A fine, unmarked and wide-margined copy. € 6,500



Wheeler-Gift 453 (this edition); Norman 1748; Crook, p.157; Gartrell 443; Mottelay, p. 227 (for first edition 1767). - THE RARE FOURTH EDITION and an interesting association copy linking two prominent British Scientists. Books bearing Joule's signature are exceedingly rare on the market.

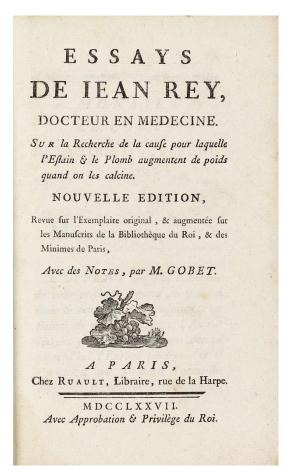
Priestley's first scientific work was the first extensive history of previous electrical discoveries as well as being an assessment of contemporary electrical studies. During his lifetime it went through five English editions and was translated into Dutch, French and German. Priestley's "account favored Franklin's one-fluid theory, but was otherwise fairly impartial... Priestley was also the first historian of electricity. He was encouraged to write the History by his friend Benjamin Franklin, who helped corrects its proofs". (Norman 1748).

It is little surprising to see a copy of Priestley's book as having been part of Joules library. Priestley's text became the standard history of electricity for over a century; Alessandro Volta (who would go on to invent the battery), William Herschel (who discovered infrared radiation),

Henry Cavendish (who discovered hydrogen) and certainly also Joule relied upon it. Joule is best remembered for his thermodynamical studies, where he analysed the nature of heat and established its relationship to mechanical energy. His efforts had great influence on the theory of the conversation of energy (the first law of thermodynamics). He collaborated with Lord Kelvin on the formulation of the absolute scale of temperature, and conducted extensive research on magnetostriction; a property of ferromagnetic materials that makes them modify their shapes when exposed to a magnetic field. He was the first scientist to identify this property in 1842. He established the relationship between the flow of current through a resistance and the heat dissipated, which was later termed as Joule's law. He is also credited with the first-ever calculation of the velocity of a gas molecule. The derived unit of energy or work, the Joule, is named after him. Joule was given the Copley Medal, an award that Priestley received almost 100 years before.

## Anticipating Lavoisier's findings by some 150 years

REY, Jean. Essays de lean Rey, docteur en médecine, sur la recherche de la cause pour laquelle l'estain et le plomb augmentent de poids quand on les calcine. Nouvelle édition revue et augmentée.
. . avec des Notes, par M. Gobet. Paris: Chez Ruault, 1777. 8vo (198 x 126 mm). xxxii, 216 pp. including half-title and two full-page engraved illustration. Bound in contemporary French mottled calf, plain spine with some gilt-decoration and red morocco lettering-piece, marbled endpapers, red-dyed edges (extremities of binding worn, upper corners heavily scuffed, joint cracked but holding firm, boards rubbed and little stained). Text little browned only, occasional minor spotting, two pages with ink annotations in contemporary hand. Provenance: ?Guiton (inscription on title-page). Very good copy in untouched original binding. (#002950)



Duveen p. 505; Honeyman 2628; Partington 2, p. 631-636. -RARE SECOND EDITION of Jean Rey's treatise that contains the first published observations on the increase of the weight of metals in calcination and the role air played in it (anticipating Lavoisier's own findings by some 150 years) as well as a refutation of the phlogiston theory. The impetus for the Essays was an enquiry by the Bordeaux apothecary Pierre Brun, as to why tin and lead increased in weight when heated. Lavoisier at first thought the work to be a forgery but by 1792 he wrote a highly appreciative account of it in his own Memoires de chimie. Rey's work first appeared in 1630 but was already so rare by the eighteenth century that Nicolas Gobet published a new edition augmented with a new preface, footnotes, and a letter by the chemist Pierre Bayen (who first drew attention to the Essays in 1775), correspondence between Rey and Mersenne; an essay on air by Moitrel d'Element, and extracts from Cherubin d'Orleans' essay on glass. By issuing this new edition, Gobet also intended to challenge the originality of Lavoisier's work. Rey was the author of other discoveries such as the Thermoscope, ancestor of the Thermometer. Of the first edition fewer than seven copies are known to exist; of the second edition, only one copy - the Honeyman copy sold at Sotheby's in 1980-- has appeared at American or English auctions. No more than seven copies have been recorded in American institutions. This work includes Père Moitrel d'Elément's Manière de rendre l'air visible (the manner of making air visible), bound at end.

## Rinaldini's opus magnum and of exceptional rarity with no copy in the US

RINALDINI, Carlo (RENALDINI). Naturalis philosophia. Tomus primus [-tertius] ... Corrigente Jo. Baptista Sanctio auctoris amanuensi. Padova: ex typographia Seminarii: Opera Joannis Cagnolini, 1693-1696. Three parts bound in two volumes. Folio (345 x 237 mm). [16], xxx, 518, [28] pp.; [12], 456, [22] pp.; [12], 260, [22], 280, [16] pp. Including half title and title-page to each part, titles printed in red and black and with woodcut vignette; general index and errata to part I, engraved portrait of Rinaldini in part I and III, Latin and Greek text in two columns, decorated woodcut initials and tailpieces, several woodcut illustrations and diagrams in text, lacking blank leaves \*\*4 in part I, c4 in part II, and b4 in part III. Contemporary vellum, spine titled in manuscript, red-dyed edges (spine of second volume repaired with new vellum, some soiling and rubbing). Text little browned only (several leaves of part III stronger), minor occasional spotting, about 3 cm of lower blank margin of first and third title-leaf cut off, old paper repair of tear in leaf Oo3 of part I and P4 of part II not affecting text, faint marginal dampstaining to few pages. Provenance: Giancarlo Beltrame Library. A very good and wide-margined copy, text collated complete. (#003029)

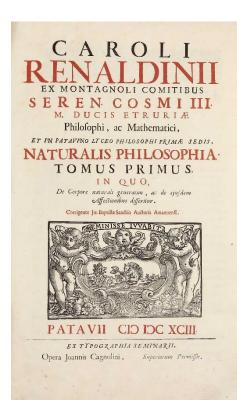


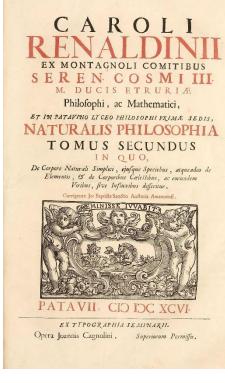
IMPOSSIBLY RARE FIRST EDITION of Rinaldini's opus magnum, his natural philosophy. Carlo Rinaldini (or Renaldini, 1615-1698), mathematician and Principal Lecturer of Philosophy at University of Pisa since 1644, professor of Philosophy at University of Padua since 1667, was one of the most productive scholars of the Accademia del Cimento. He was a close friend of Galileo at Pisa, and was the first to lecture there on his discoveries. In this important scientific work, dedicated to the Grand Duke of Tuscany, Cosimo III, he explains with philosophical arguments physical matter and forces of nature, planets, stars, zodiacal signs, the Earth and its elements, metals and various others chemical topics. In 1694 Rinaldini was the first to propose that the freezing and boiling points of water shall be used as fixed reference points on a universal scale for all thermometers. Such a thermometer is described in this work. "The need of a standard scale, easily made and based on constant phenomena that can be reproduced at will, was felt by all who used thermometers, and an important practical proposal to secure this desideratum was made in 1694 by Carlo Renaldini ... At that date, and in the eightieth year of his age, he published a work on natural philosophy, in which he suggested taking the melting-point of ice and the boiling-point of water for two fixed points of thermometer scales, and dividing the space between them into twelve equal parts. This truly admirable

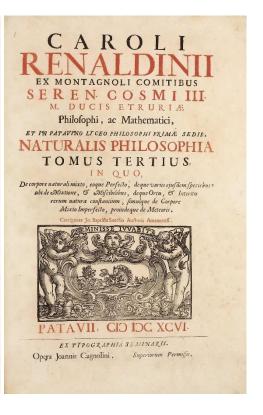
proposition was not appreciated by his contemporaries who did not wholly believe in the constancy of these temperatures, and it was forgotten by succeeding philosophers, thus delaying greatly accurate observations of temperature." (H.C. Bolton, *Evolution of the Thermometer*, 1900, pp. 56-7).

The work is of utmost rarity. Rare-book-hub records no complete set at auction at all. Further, OCLC/Worldcat list no copy in US.

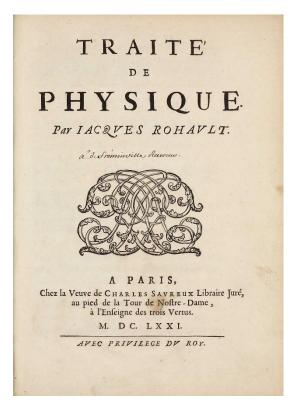
Volume titles are as follows: 1: Naturalis philosophia. Tomus primus, in quo, de corpore naturali generatim, ac de ejusdem affectionibus disseritur ... 2: Naturalis philosophia tomus secundus in quo, de corpore naturali simplici, ejusque speciebus, atque adeo de elementis, & de corporibus coelestibus, ac eorundem viribus, sive influxibus disseritur.... 3: Naturalis philosophia tomus tertius, in quo, de corpore naturali mixto, eoque perfecto, deque variis ejusdem speciebus, ubi de mixtione, & miscibilibus, deque ortu, & interitu rerum natura constantium, simulque de corpore mixto imperfecto, proindeque de meteoris. . .







ROHAULT, Jacques. Traité de Physique. Paris: Charles Savreux, 1671. Two parts in one volume, 4to (244 x 176 mm). [32], 378; 382, [6] (of [8]) pp. 3 engraved plates (2 folding) tipped to outer edges of pages, several woodcut diagrams in text, lacking final privilege leaf. Contemporary French speckled calf, boards and board-edges ruled in gilt, spine with 5 raised bands, gilt-lettered and gilt-tooled in compartments (rebacked, preserving most of original spine), all edges gilt. Text little browned, occasional very minor spotting, blank lower margin of final two leaves frayed and chipped not affecting text, a few annotations and markings in light pencil. Provenance: Edme de La Poix de Fréminville\* (signature to first title-page). Very good copy. (#002990)



The French physicist Rohault was born in Amiens in 1620 and died in Paris in 1675. "In 1671, Jacques Rohault published his Traité de physique, a textbook on physics relying on his weekly conferences held in Paris. A good mathematician and at the same time a curious experimenter, Rohault was one of the main Cartesian figures of his time. Connected to Parisian philosophical circles, Rohault was deeply concerned with the reception of Descartes' philosophical views. He was associated with Claude Clerselier and he encouraged Pierre-Sylvain Régis to spread Cartesianism in Toulouse. Performing experiments and using instruments in his observations, allowed for a very good reception of Rohault's natural philosophy in the late seventeenth century. Thus, his textbook on physics was quickly translated and disseminated across Europe." (M.Dobre, Cartesian Empiricisms, pp. 203-226. In: Studies in History and Philosophy of Science book series, AUST, vol. Rohault strongly recommended the use of experiments, discussing them in detail in his textbook. It deals with every part of physics known in his time and he elaborates on optics, mathematical astronomy, the tides, the air, minerals and metals and one of the most important sections is devoted to electric and magnetic phenomena. In 1672 Samuel Clarke translated Rohault's work as System of

*Natural Philosophy*, which was used as a university textbook for more than half a century. With numerous editions, it gained an independent status through its annotations that purported to correct it with reference to the theories of Isaac Newton.

\* Edme de La Poix de Fréminville (1683-1773), French lawyer and the so-called "prince de feudiste." Deriving from a Burgundy merchants family and small seigniorial and royal officers, he became a notary in 1713 and settled in Marcigny. Quickly, de Fréminville carved himself a good reputation in the operations of renovation of the burrows (cadastres seigneuriaux) and in the defense of the feudal causes . In 1725, he became lieutenant-bailiff of the Marquisate of La Palisse, then, in 1733, bailiff, a position he held until 1765. Leaving La Palisse, Edme de La Poix de Freminville went to live in Lyon where he died in 1773. Fréminville is known for several treaties of feudal and seigniorial law published during the years 1740-1760, notably the "Dictionnaire ou traité de la police générale des villes." Until the French Revolution he remained one of the most read jurists of his time.

ROHAULT, Jacques. Traité de Physique. Not after 1672, not before 1671. BOUND MANUSCRIPT of the Standard work of the time in physics, created not more than one year after publication of the first book edition. 546 numbered text pages plus 6 pages of content list. The text ist not a word-by-word copy of Rohault's Traité. Devided in 4 chapters, it contains about 70% of the text of the print edition. Since Rohault's textbook was widely used by students of the time, it is likely that the manuscript was created as a teaching aid. It is written in black ink in a neat and accurate hand and contains several illustrations which are also found in the printed version. Bound in contemporary calf, spine with gilt-lettered label, marbled endpapers, old (18th century?) rebacking and leather reinforcement of corners, some rubbing of boards and extremities, single wormhole in

upper board. A torn portion of the second leaf of contents is repaired with little loss of text. The text pages are lightly browned with occasional minor spotting and faint dampstaining to first leaves only. The final text leaf is stained and somewhat frayed at fore-margin. Provenance: D. A. Lemaigre (signed and dated 1672 on last page of contents), another (illegible) signature to the final page. Very good condition. (#002764) € 5,000

The French physicist Rohault was born in Amiens in 1620 and died in Paris in 1675. "In 1671, Jacques Rohault published his Traité de physique, a textbook on physics relying on his weekly conferences held in Paris. A good mathematician and at the same time a curious experimenter, Rohault was one of the main Cartesian figures of his time. Connected to Parisian philosophical circles, Rohault was deeply concerned with the reception of Descartes' philosophical views. He was associated with Claude Clerselier and he encouraged Pierre-Sylvain Régis to spread Cartesianism in Toulouse. Performing experiments and using instruments in his observations, allowed for a very good reception of Rohault's natural philosophy in the late seventeenth century. Thus, his textbook on physics was quickly translated and disseminated across Europe." (M.Dobre, Cartesian Empiricisms, pp. 203-226. In: Studies in History and Philosophy of Science book series, AUST, vol. 31).

Rohault strongly recommended the use of experiments, discussing them in detail in his textbook. It deals with every part of physics known in his time and he elaborates on optics, mathematical astronomy, the tides, the air, minerals and metals and one of the most important sections is devoted to electric and magnetic phenomena.

In 1672 Samuel Clarke translated Rohault's work as System of Natural Philosophy, which was used as a university textbook for more than half a century. With numerous editions, it gained an independent status through its annotations that purported to correct it with reference to the theories of Isaac Newton.



**SAUSSURE**, Horace Benedict de. Essais sur l'Hygromètrie. Neuchatel: Samuel Fauche pere et fils, 1783. 8vo (220 x 148 mm). xii, 524 (i.e. 506) pp., 2 folding engraved plates and 11 tables (8 folding, 4 within pagination), some mispaginations (pp. 129-130, 155, 164-172 omitted). Signatures: a4 (A-2H)8 2I5. Contemporary brown wrappers, spine with ink-lettered paper label (heavy chipping and wear to spine, some fraying and dust-soiling of outer page margins, rear wrapper chipped),



protected in custom-made slip case. Scattered marginal spotting, occasional toning. All pages uncut. Text and plates quite crisp and clean, only very minor occasional spotting or soiling, two leaves (Aa2, Gg7) with closed tears without loss of text (one repaired). Provenance: Lagarde (cancelled ink inscription dated 1799 on titlepage); Giancarlo Beltrame Library; pencil notes to half-title. A very good unsophisticated copy, collated complete. (#003047) € 1,000

Norman 1894; Sparrow, *Milestones of Science Books* 174; Roller-G. II, 398. - FIRST (OCTAVO) EDITION of a collection of 4 essays dealing with the hair hygrometer invented by Saussure, general principles of hygrometry and evaporation, and related meteorological experiments. Content: I. Description d'un nouvel hygometre comparable. II. Theorie de l'hygrometrie. III. Theorie de l'evaporation. IV. Application des theories precedentes a quelques phenomenes de la meteorologie.

"Saussure, the Alpine explorer, founded hygrometry, the branch of physics that deals with the measurement of the humidity of air and gases. He invented the hair hygrometer - the only type of absorption hygrometer widely used in meteorology - and he was the first to prove that air expands and decreases in specific weight as its moisture content increases. This work describes Saussure's pioneering experiments with his new instrument as well as its application to meteorology." (Norman). In 1783 this work appeared simultaneously in octavo and quarto format, but by tradition the quarto format edition has been considered first.

## One of just a few copies signed by Smyth of the rare lithoprint version

**39** <u>SMYTH, Henry DeWolf</u>. A General Account of the Development of Methods of Using Atomic Energy for Military Purposes under the Auspices of the United States Government 1940-1945. Written



at the request of Major General L. R. Groves United States Army. Publication authorized as of August 1945. Washington DC: War Department, 1945. Preface dated July 1, 1945. 4to (263 x 199 mm). [8], I:1-19 [1], II:1-10, III:1-7 [1], IV:1-15 [1], V:1-9 [1], VI:1-14, VII:1-15 [1], VIII:1-17 [1], IX:1-13 [1], X:1-10, XI:1-13 [1], XII:1-12, XIII:1-3 [1], A1:1-6, A2:1-2, A3:1-3 [1], A4:1-5 [1], A5:1 [1]. Leaf IV-9/10 a dublicate. With the printed version of page VI-12. Original printed cream paper wrappers, staple-bound as issued. Front wrapper somewhat buckled at edges and with light water, a few leaves with short tear to blank fore-margin, otherwise clean and unmarked. Added is the first printed edition of the General Account by the Government Printing Office, Washington DC (Coleman No. 5), stapled and pasted into printed cardboard case as issued, 8vo (229 x 148 mm), vii, 182 pp. The set is housed in a custom-made clamshell box. A fine copy. (#002249) € 7,500

PMM 422e; Norman 1962; Coleman, The "Smyth Report": a Descriptive Check List, No. 3. This is the rare lithoprint version of the Smyth Report on the creation of the atomic bomb and one of Henry DeWolf Smyth's own copies, signed by him on the title page, complete and in original wrappers, one of only 1000 copies printed,

accompanied by a copy of the first printed edition of this work in octavo format (Coleman No. 5).

The Smyth Report is renowned for its "remarkably full and candid account of the development work carried out between 1940 and 1945 by the American-directed but internationally recruited team of physicists, under the code name 'Manhattan District,' which culminated in the production of the first atomic bomb" (PMM).

This is a copy of the lithoprint version, preceding the first printed edition and intended for press release distribution immediately after the atomic bombings of Hiroshima and Nagasaki in August of 1945. The lithoprint version was produced from stencils made by several typewriters in the Adjutant General's Office, along with a virtually unobtainable 12-chapter mimeograph version (Coleman No. 1) and a very small number of 'ditto' printings with text in purple (Coleman No. 2), sent out to project leaders and a few others belonging to the Manhattan District work. All copies of the mimeograph version were probably destroyed. It is not yet determined if the Ditto version precedes the Lithoprint version or not, and it might be just a proof copy.

This copy includes the secret page VI-12 which is left blank in most copies, because it deals with production rates of plutonium. Since the leaves were gathered for binding in great haste and under tight security, surviving copies often contain missing and/or repeated leaves. No leaves are missing in this copy.

**STRUTT, John William, third BARON RAYLEIGH & STRUTT, Robert, fourth BARON RAYLEIGH.** Extensive collection of 25 offprints and journal papers by John William Strutt and his eldest son, Robert, published between 1878 and 1942. Various states of preservation, wrappers mostly browned and dust-soiled and with occasional edge-chipping, text generally little browned. (#001908) € 1,500

## The collection comprises:

- 1. The Explanation of Certain Acoustical Phenomena. Offprint from: *Proceedings of the Royal Institute of Great Britain*, 1878, 7 [1] pp. Stapled as issued.
- 2. Diffraction of Sound. Offprint from: *Proceedings of the Royal Institute of Great Britain*, 1888, 12 pp. Stapled as issued.
- 3. BRAMWELL, F. & RAYLEIGH. Interference Bands and their Applications. Offprint from: *Proceedings of the Royal Institute of Great Britain*, 1893, 7 [1] pp. Stapled as issued.
- 4. Argon. Offprint from: *Proceedings of the Royal Institute of Great Britain*, 1895, 14 pp. Stapled as issued.
- 5. More about Argon. Offprint from: *Proceedings of the Royal Institute of Great Britain*, 1896, 10 pp. Stapled as issued.
- 6. BRAMWELL, F. & RAYLEIGH. The Limits of Audition. Offprint from: *Proceedings of the Royal Institute of Great Britain*, 1897, 2 pp.
- 7. Transparency and Opacity. Offprint from: *Proceedings of the Royal Institute of Great Britain*, 1899, 4 pp.
- 8. Flight. Offprint from: *Proceedings of the Royal Institute of Great Britain*, 1900, 2 pp.
- 9. On the least potential difference required to produce discharge through various gases. Offprint from: *Philosophical Transactions of the Royal Society Series A*, Vol. 193, 1900, pp. 377-394. Publisher's printed wrappers.
- 10. On the conductivity of gases under the Becquerel Rays. Offprint from: *Philosophical Transactions of the Royal Society Series A*, Vol. 196, 1901, pp. 507-527. Publisher's printed wrappers.
- 11. Polish. Offprint from: *Proceedings of the Royal Institute of Great Britain*, 1901, 8 pp., 4 plates. Stapled as issued.
- 12. Drops and Surface Tension. Offprint from: *Proceedings of the Royal Institute of Great Britain*, 1903, 1 [1] p.
- 13. On the acoustic shadow of a sphere. Offprint from: *Philosophical Transactions of the Royal Society Series A*, Vol. 203, 1904, pp. 87-110. Publisher's printed wrappers.
- 14. On the Dynamical Theory of Gratings. In: *Proceedings of the Royal Society, Series A*, Vol. 79, No. A532, 1907, pp. 399-416. Entire Number in publisher's wrappers.
- 15. Helium and Radio-activity in Rare and Common Minerals. In: *Proceedings of the Royal Society, Series A*, Vol. 80, No. A542, 1908, pp. 572-594. Entire Number in publisher's wrappers.
- 16. Colours of Sea and Sky. Offprint from: *Proceedings of the Royal Institute of Great Britain*, 1910, 7 [1] pp. Stapled as issued.
- 17. Bakerian Lecture A Chemically Active Modification of Nitrogen, Produced by Electric Discharge. In: *Proceedings of the Royal Society, Series A*, Vol. 85, No. A577, 1911, pp. 219-229. Entire Number in publisher's wrappers.

- 18. On the Self-Induction of Electric Currents in a Thin Anchor-Ring. In: *Proceedings of the Royal Society, Series A*, Vol. 86, No. A590, 1912, pp. 562-570. Entire Number in publisher's wrappers.
- 19. Fluid Motions. Offprint from: *Proceedings of the Royal Institute of Great Britain*, 1914, 14 pp. Stapled as issued.
- 20. The Glow of Phosphorus. In: *Nature*, Vol. 114, No. 2869, 1924, pp. 612-614. Entire number, stapled as issued.
- 21. Some Recent Work on the Light of the Night Sky. In: *Nature*, Vol. 122, No. 3070, 1928, pp. 315-317. Entire number, stapled as issued.
- 22. Some Recent Work on the Light of the Night Sky. In: *Nature*, Vol. 122, No. 3071, 1928, pp. 351-352. Entire number, stapled as issued.
- 23. Fluorescent and phosphorescent excitation of mercury vapour by the resonance frequency and by lower frequencies. Offprint from: *Proceedings of the Royal Society, Series A*, Vol. 125, 1929, 23 [1] pp., 2 plates. Publisher's printed wrappers. Ex-libris stamp by E.K. Rideal on front cover.
- 24. Optical Contact. Offprint from: *Proceedings of the Royal Institute of Great Britain*, 1936, 14 pp. Stapled as issued.
- 25. A Memorial Lecture Sir Joseph J. Thomson, Given at the Royal Institution Theatre on April 16th, 1942. Offprint from: *Journal of the Chemical Society*. July, 1942, pp. 467-474.

TOALDO, Giuseppe. Del Conduttore Elettrico Posto nel Campanile di S. Marco in Venezia Memoria, in cui Occasionalmente si Ragiona dei Conduttori che Possono Applicarsi ai Vascelli, ai Magazzini da Polvere, ed Altri Edifizi. Venice: Con Licenza de' Superiori, 1776. 4to (271 x 194 mm). [6], vii-xxxvii [3] pp. Signatures: [A]4 (B-E)4. Frontispiece engraving on A2v depicting the Venetian tower of San Marco, engraved allegorical illustration on title, fine engraved headpieces and historiated initials, first and final blanks, A1 and E4, present. Bound in later boards coated with xylographic paper (some browning, light chipping to upper spine). Text generally clean and crisp, some marginal dampstaining (stronger to final pages), blank leaves torn and stained. Provenance: Giancarlo Beltrame Library. Still very good copy, collated complete. (#003009) € 600

RARE FIRST EDITION of a treatise covering the electrical conductors and especially the protection of San Marco tower.

## The only work by Torricelli published during his lifetime

**TORRICELLI, Evangelista**. Opera Geometrica [De sphaera et Solidis Sphaeralibus; De Motu Gravium; De Dimensione Parabolae]. Florence: Amadoro Massa & Lorenzo de Landis, 1644. 3 parts in



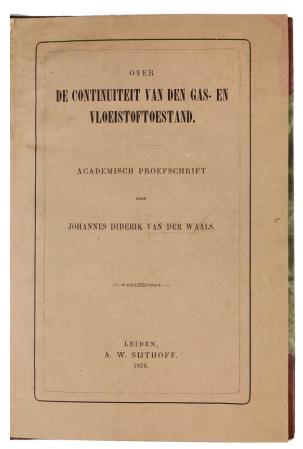
one, 4to. (220x158 mm), [2], [2:blank], [1-2] 3-243 [1], [1-2] 3-115 (i.e. 151) [1] pp., general half-title, part I title with imprint, section titles to parts II & III, dedication to Grand Duke Ferdinand II de' Medici, part III separately signed & paginated with separate dedication to Prince Leopold de' Medici, imprimatur leaf at end, numerous small woodcut diagrams, one full-page engraving, letterpress tables, numerous mispaginations. Internally clean and unspotted, light browning (mainly marginal), contemporary vellum with old ms. mathematical notations on covers. (#001794)

Honeyman VII 2991; Norman 2086; PMM 145; Riccardi II 542; Carli-Favaro 43 (204); Cinti 226 (114). - FIRST EDITION of the only work published during Torricelli's lifetime. A brilliant mathematician, Torricelli was Galileos assistant and companion during the last two years of the elder scientist's life, and he succeeded Galileo in the post of grand ducal mathematician. In his Opera geometrica, published at the expense of Grand-Duke Ferdinand II, Torricelli elucidated and diffused the difficult geometry of Cavalieri (see lot 359), thereby gaining himself widespread recognition throughout

Europe. The first part, compiled around 1641, 'studies figures arising through rotation of a regular polygon inscribed in or circumscribed about a circle around one of its axes of symmetry... Torricelli. . .classifies such rotation solids into six kinds, studies their properties, and presents some new propositions and new metrical relations for the round bodies of elementary geometry.. As Torricelli acquired increasing familiarity with the method of indivisibles, he reached the point of surpassing the master - as Cavalieri himself said' (DSB). In the second section, De moto gravium, Torricelli continued Galileo's study of the parabolic motion of projectiles. The treatise includes several significant contributions to mechanics, the calculus and ballistics. It also 'refers to the movement of water in a paragraph so important that Ernst Mach proclaimed Torricelli the founder of hydrodynamics' (DSB). This states 'Torricelli's theorem' in which Torricelli determined that the efflux velocity of a jet of liquid spurting from a small hole at the bottom of a vessel is equal to that which a single drop of the liquid would have if it could fall freely in a vacuum from the level of the top of the liquid.

## Laying the foundations for modern molecular physics

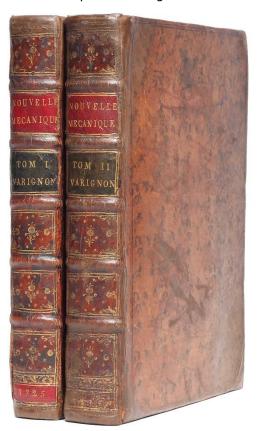
VAN DER WAALS, Johannes Diderik. Over de continuiteit van de gas- en vloeistoftoestand. Academisch Proefschrift . . . aan de Hoogeschool te Leiden. Leiden: A. W. Sijthoff, 1873. 8vo (220 x 155 mm). viii, 134, [2] pp., including half-title, one folding lithographed plate, and errata leaf. 20th-century half calf over marbled boards, spine lettered and decorated in gilt (light rubbing to extremities). Original printed wrappers bound in. Faint spotting on the plate, wrappers slightly dust-soiled, but otherwise a fresh and bright copy. Provenance: Torsten Malmberg (bookplate to front pastedown); illegible inscription on half-title. (#003104) € 8,000



DSB XIV, p.109-11; Stanitz 80; not in Norman. EXCEPTIONALLY RARE FIRST EDITION of Van der Waals' doctoral dissertation on gas and fluid states which laid the foundations for modern molecular physics, a work which, in the words of James Clerk Maxwell, "at once put his name among the foremost in science." Van der Waals, the son of a carpenter, was because of his modest circumstances a relatively slow developer as a professional scientist: he returned to university at the age of thirty, after years spent as a primary and secondary-school teacher. Shortly after the appearance of his dissertation, however, he was promoted to the chair in physics at the newly founded university of Amsterdam, where he was succeeded, on his retirement in 1907, by his son. In 1910 he was awarded the Nobel Prize in Physics. "On the basis of his knowledge of the work of Clausius and other molecular theorists, he wrote his dissertation, 'Over de continuiteit' ... Using rather simple mathematics, the dissertation gave a satisfactory molecular explanation for the phenomena observed in vapors and liquids by Thomas Andrews and other experimenters... This was one of the first descriptions of a collective molecular effect" (DSB). At the time van der Waals wrote his thesis, the molecular structure of fluids had not been accepted by most physicists, and liquid and vapor were often considered as chemically distinct. It was this thesis that affirmed the

reality of molecules and allowed an assessment of their size and attractive strength. His new formula revolutionized the study of equations of state. By comparing his equation of state with experimental data, Van der Waals was able to obtain estimates for actual molecule sizes and the strength of their mutual attraction. The effect of Van der Waals' work on molecular physics in the 20th century was direct and fundamental. By introducing parameters characterizing molecular size and attraction in constructing his equation of state, Van der Waals set the tone for modern molecular science. This work is a great rarity with no copy recorded at auction in the past 20 years.

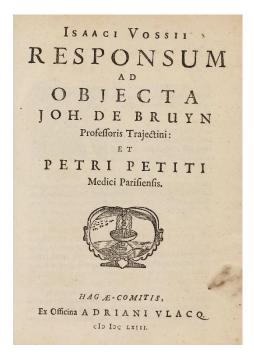
VARIGNON, Pierre. Nouvelle mecanique ou statique, dont le projet fut donne en M. DC. LXXXVII. Ouvrage posthume de M. Varignon, des Academies Royales des Sciences de France, d'Angleterre et de Prusse, lecteur du Roy en philosophie au College royal, et professeur des mathematiques au College Mazarin. Paris: Claude Jombert, 1725. Two parts bound in two volumes.



4to (254 x 187 mm). [28], 387 [1]; [4], 478, [2] pp. 65 engraved folding plates (including additional plate 49bis), woodcut device on title-pages, woodcut initials, head- and tailpieces, without the engr. portrait of the author present in some copies Bound in contemporary French mottled calf, spines with 5 raised bands, compartments giltdecorated and with gilt-lettered red and green spine labels, red-dyed edges, marbled endpapers (slight rubbing, minor repair to hinges, spine ends and corners). Text and plates generally crisp and clean with only little age-toning and very minor occasional spotting, light occasional dampstaining mainly to blank margins of text and plates (final two plates in vol. II affected stronger), gutter of first title page with tear and paperreinforcement. Still very good copy. (#002988) € 1,600

Sotheran I 5041; Roberts & Trent, *Bibliotheca mechanica*, p.338; Honeyman 3033; DSV XIII, p. 585. FIRST EDITION, FIRST ISSUE, with the dedicatory epistle to the Académie Royale, but without the (second issue's) frontispiece portrait. Our copy has the extra plate 49bis found only in some copies. The most important work by Pierre Varignon, professor of mathematics at the Collège Mazarin and Collège Royal, posthumously published since he had died in 1722. First announced in Varignon's *Projet d'une nouvelle mechanique* of 1687, but left unfinished at his death.

While the text was prepared for publication by Fontenelle and Camus, the dedication and preface are those prepared by Varignon himself. The work contains in the second volume, p. 174, Bernoulli's famous letter to him, written in 1717, and formulating Bernoulli's principle of virtual velocities, which he had developed since the publication of the *Projet*. "In this matter Varignon deserves credit on two counts: for preparing the way for and eliciting Bernoulli's statement, and for attempting to provide the broadest justification of the principle. Thus the period between the *Projet* of 1687 and the *Nouvelle mechanique* witnessed the development of what appeared a century later to be the very foundation of classical mechanics" (DSB).

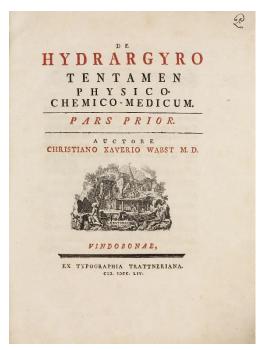


VOSSIUS, Isaac. Responsum ad objecta Joh. de Bruyn, Professoris Trajectini: et Petri Petiti, Medici Parisiensis. Den Haag: Adrian Vlacq, 1663. 4to (179 x 135 mm). 104 pp. Title with woodcut device, a few woodcut diagrams in text, two large decorative initials. Later simple paper wrappers, marbled edges. Text little browned throughout, a few light pencil markings, erased ownership signature on title. Very good copy. (#002971) € 1,500

Poggendorff II, 1235. FIRST EDITION of Vossius' response to the objections of Johannes de Bruyn (1620-1675) and Pierre Petit (1617-1687) against his 1662 published theory of light, *De lucis natura et proprietate* (see Willems 1296 and Rahir 1334). Vossius (or Voss), born in Leyden and resident in England from 1670, became a canon of the royal chapel at Windsor, despite his philosophical doubts (Charles II is reputed to have remarked of him that he would believe anything if only it were not in the Bible). He was a versatile scholar who published on many subjects including poetry, history and science, including *De lucis natura*, which is directed against the predominant Cartesianism and includes the

first printed account of Snel's law of refraction of light rays. Snel formulated this law around 1621 after extensive study of Kepler and Risner, and through their works Ibn al-Haytham and Witelo.

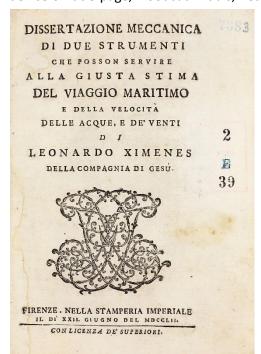
## The first monograph on the element mercury



WABST, Christian Xaver. De hydrargyro tentamen physico-chemico-medicum. Pars prior (all publised). Wien: Trattner, 1754. 4to (290 x 223 mm). [8], 218 pp. Title page printed in red and black and with engraved vignette, engraved headpiece on page 1. Bound in contemporary calf, spine richly gilt decorated, blind ruling to boards, all edges dyed red (slight wear to extremities, boards scratched, corners little bumped). Text clean and crisp throughout. A fine, wide-margined copy in untouched original binding. (#003165) € 1,500

NLM/Blake 478; Hoover 852; Krieg, MNE II, p. 335; not in Duveen. – RARE FIRST AND ONLY EDITION. The first monograph on mercury or quicksilver. It treats deposits, ore mining, extraction and purification of the metal, its chemical and physical properties as well as its applications in chemistry, medicine and physics etc. The beautiful title vignette shows a mining scene, the head vignette the use of mercury in the laboratory of the alchemist and the doctor.

**XIMENES, Leonardo**. Dissertazione meccanica di due strumenti che possono servire alla giusta stima del viaggio maritimo e della velocita delle acque. . . Florence: nella Stamperia Imperiale, 22 June 1752. 8vo (179 x 129 mm). xxiii [1], 124 pp. Signatures: [par]12 (A-G)8 H6. Woodcut printer's device on title-page, woodcut initials, head- and tailpieces, 4 folding engraved plates. Contemporary

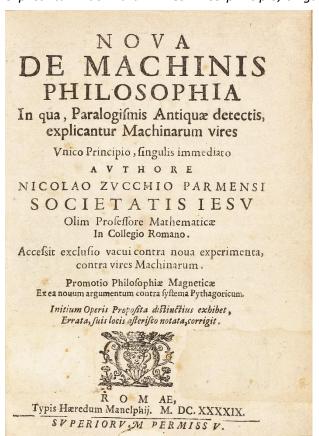


mottled goatskin, spine with gilt decoration and lettering, blind-ruled boards (extremities rubbed, corners bumped), red-dyed edges. Text quite crisp and clean with only very minor spotting in places, faint dampstain to gutter of titlepage, fraying to fore-edge of one plate. Provenance: Antonianum Univ. Coll. (red ink stamp to p.19, erased stamp and shelf marks on title-page); Provenance: Giancarlo Beltrame Library. Very good copy, collated complete. (#003025) € 1,800

Riccardi I, 634:5. - RARE FIRST EDITION of Ximenes treatise on hydraulics which contains a description of his improved instruments for measuring water flow velocity and sea drift. In this work, he illustrates two mechanical devices conceived and constructed by him: the 'stadera a molla' (spring strut) and the 'tamburo con ruote a ventola' (drum with fan wheels), two instruments able to determine the variation of the speed of a fluid in different layers (superficial, intermediate and deep). These hydrometric techniques, developed by him undoubtedly constituted a considerable contribution to the development of the new physical discipline.

- **ZEEMAN**, **Pieter**. A group of 13 offprints by P. Zeeman (Nobel Prize 1902) and co-authors, 1894 to 1936, one with signed presentation inscription to upper wrapper. Various states of preservation, wrappers mostly browned and dust-soiled and with occasional edge-chipping, text generally little browned. Front wrappers mostly with shelf marks and ink stamps. (#003166) € 600
  - 1. The phase in the case of polar reflexion from cobalt and nickel and the angle of reversal of the null rotation according to theory and experiment. Offprint from: *Communications from the Laboratory of Physics at the University of Leiden by Heike Kamerlingh Onnes*, No. 10, 1894. 7 [1] pp., 1 plate. Publisher's printed wrappers. Ink stamp by Royal Society Mond Laboratory Cambridge.
  - 2. Measurements concerning Kerr's phenomenon with normal polar reflection from iron and cobalt. / On the determination of the optical constants of magnetite. Offprint from: *Communications from the Laboratory of Physics at the University of Leiden by Heike Kamerlingh Onnes*, No. 15, 1895. 29 [1] pp., 1 fold. plate. Publisher's printed wrappers. Ink stamp by Royal Society Mond Laboratory Cambridge.
  - 3. COHN, E. & ZEEMAN, P. Observations concerning the propagation of electrical waves in water. Offprint from: *Communications from the Laboratory of Physics at the University of Leiden by Heike Kamerlingh Onnes*, No. 21, 1895. 14 pp. Publisher's printed wrappers. Ink stamp by Royal Society Mond Laboratory Cambridge.
  - 4. Measurements concerning the influence of a magnetization, perpendicular to the plane of incidence on the light reflected from an iron mirror. Offprint from: Communications from the Laboratory of Physics at the University of Leiden by Heike Kamerlingh Onnes, No. 29, 1896. 13 [1] pp. Publisher's printed wrappers (edge chipping of front wrapper). Ink stamp by Royal Society Mond Laboratory Cambridge.
  - 5. *Recent Progress in Magneto-Optics*. Weekly evening meeting, Friday, March 30, 1906. Offprint: Royal Institution of Great Britain. 12 pp, 8 plates. Stapled as issued
  - 6. Spektralanalytische Untersuchung der magnetische Felder auf der Sonne. Offprint from: *Physikalische Zeitschrift*, Vol. 9, No. 23, 1908, pp. 834-835. Original publisher's wrappers (heavily chipped at outer margins). Inscribed by Zeeman on front wrapper.
  - 7. The law of shift of the central component of a triplet in a magnetic field. Offprint from: *Proceedings of the Meeting of Thursday December 24, 1908, Koninklijke Akademie van Wetenschappen TE Amsterdam.* July 1909, pp. 473-477. Original publisher's wrappers.
  - 8. Changement de longueur d'onde de la raie médiane d'un triplet dans un champ magnétique. Offprint from: *Archives Néerlandaises des Sciences Exactes et Naturelles*, serie II, tome XIV, 1909, 12 pp., 1 plate. Original publisher's wrappers (rear wrapper detached). And a duplicate.
  - 9. BAKKER, C.J.; DE BRUIN,T.L. & ZEEMAN, P. The ZEEMAN-effect of the spectrum of ionized Argon (Ar II). Offprint from: *Proceedings of the Koninklijke Akademie van Wetenschappen TE Amsterdam*. Vol. 31, no. 7, 1928, 20 pp., 1 plate. Original publisher's wrappers.
  - 10. ZEEMAN, P. & RISCO, M. Experimental verification of the principle of Doppler-Fizeau for light. Offprint from: *Proceedings of the Koninklijke Akademie van Wetenschappen TE Amsterdam*. Vol. 32, no. 9, 1929, 5 [1] pp. Original publisher's wrappers.
  - 11. ZEEMAN, P.; BACK, E. & GOUDSMIT S. Zur Hyperfeinstruktur des Wismuts. Offprint from: *Zeitschrift für Physik*, Vol. 66, Issue 1-2, 1930, 12 pp. Original publisher's wrappers.
  - 12. ZEEMAN, P. & DE GIER, J. A new isotope of Argon. Offprint from: *Proceedings of the Koninklijke Akademie van Wetenschappen TE Amsterdam*. Vol. 37, no. 3, 1934, 4 pp., 1 plate. Original publisher's wrappers.
  - 13. DE GIER, J. & ZEEMAN, P. An Eighth Isotope of Molybdenum. Offprint from: *Proceedings of the Koninklijke Akademie van Wetenschappen TE Amsterdam*. Vol. 39, no. 3, 1936, 4 pp., 1 plate. Original publisher's wrappers.

**49 ZUCCHI, Niccolo**. Nova de machinis philosophia: in qua, paralogismis antiquae detectis, explicantur machinarum vires vnico principio, singulis immediato. Rome: heirs of Manelfo Menelfi,



1649. 4to (195 x 144 mm). [12], 227, [1] pp. Woodcut initials, several woodcut illustrations in text. Early 20th-century simple cardboard binding (age toning, browned endpapers), marbled edges. Text little unevenly browned throughout (few pages stronger), occasional minor spotting, title page with two cut-outs (not affecting text and repaired with paper). Provenance: Giancarlo Beltrame Library. (#003022) € 2,500

Riccardi II, 671:2b; Sommervogel VIII 1526-247. - SECOND EDITION (first under this title), with additions, of Zucchi's work on classical mechanics, terrestrial and solar magnetism and the vacuum. The first edition was published in 1646 under the title "Machinarum omnium vires ad unum et aeque primum in singulis principium revocandi nova methodus" and is of exceptional rarity with the only known copy in the British Library. Zucchi, from Parma, taught at the Jesuit College in Rome, of which he became rector and colleague of Athanasius Kircher.

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