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

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New York International Antiquarian Book Fair
9-12 March 2017

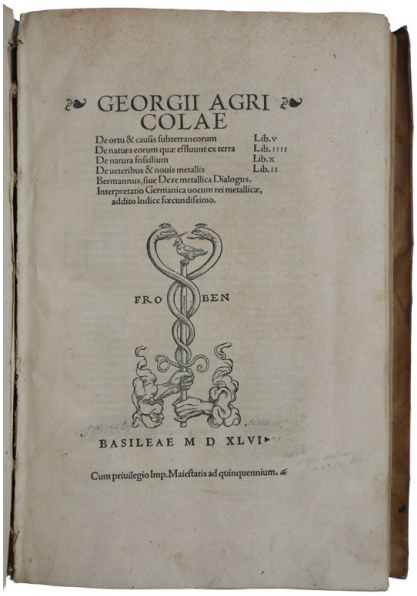
The descriptions in this list are abbreviated - full descriptions and additional images are available by following the url mentioned at the end of each item.

The first handbook of modern systematic mineralogy

1. AGRICOLA, Georg. *De ortu & causis subterraneorum ... De natura fossilium.* Basel: Hieronymus Froben, 1546.

$37,500

An exceptionally fine copy, completely untouched in its original binding, of 'the first handbook of modern systematic mineralogy' (*One Hundred Books Famous in Science* 2a). "Georgius Agricola (latinized from the German 'Georg Bauer') became interested in the theoretical and practical aspects of mining, metallurgy and geology after being appointed town doctor of Joachimsthal, a silver-mining community on the east side of the Erzgebirge mountains in what is now Czechoslovakia. He published his first work on mining, *Bermannns sive de re metallica dialogus*, in 1530, and followed it sixteen years later with this collection of five treatises on geology and metallurgy, including the first work on physical geology ("De ortu & causis subterraneorum"); the first systematic mineralogy ("De natura fossilium"); a work on subterranean waters and gases ("De natura eorum quae effluunt ex terra"); a treatise on references to minerals and mining in classical history ("Dc veteribus et novis metallis"); and a reprint of Bermannnus. "De natura fossilium," after De re metallica, must be considered Agricola's most important work; in it he rejected the traditional arbitrary alphabetical listing of "fossils" (i.e., stony substances dug from the earth), and attempted to classify them according to their physical properties" (Norman).


GEORGII AGRI COLAE

De ortu & causis subterraneorum Lib.v
De natura eorum quæ effluunt ex terra Lib.iiii
De natura fossilium Lib.x
De ueteribus & nouis metallis Lib.ii
Bermannus, siue De re metallica Dialogus.
Interpretatio Germanica uocum rei metallicæ, addito Indice fœcundissimo.

FRO BEN

BASILEAE M D XLVI

Cum priuilegio Imp. Maiestatis ad quinquennium.

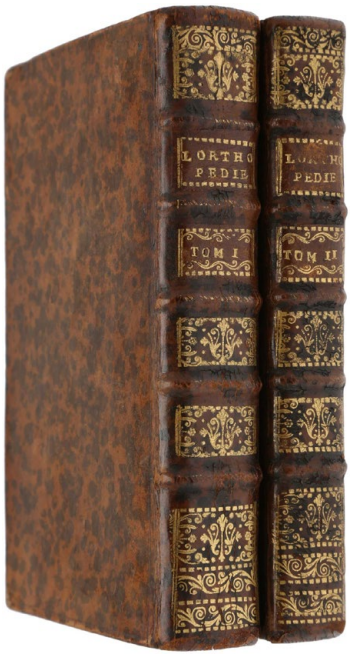
Grolier/Horblit 2a; Hoover 14; Norman 19; Stillwell *Science* 565. See PMM 79.

http://sophiararebooks.com/4140

The first book on orthopaedics

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

$16,000



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

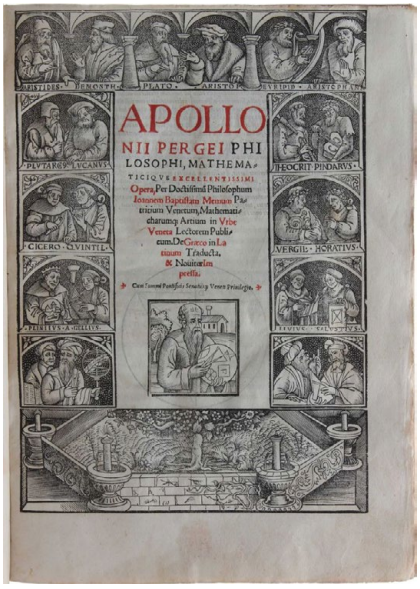
Grolier/Medicine 42; Lilly, *Notable Medical Books* 113; Norman 55; *Heirs of Hippocrates* 697; Garrison-Morton 4301.

http://sophiararebooks.com/3807

'One of the greatest scientific books of antiquity' (Stillwell)

3. APOLLONIUS OF PERGA. *Opera per doctissimum Philosophum Ioannem Baptistam Memum patritium Venetum, mathematicharumque artium in urbe Veneta lectorum publicum.* Venice: Bernardinus Bindonus, 1537.

$50,000



Very rare *editio princeps* of Apollonius' *Conics*, the basic treatise on the subject, "which recognized and named the ellipse, parabola, and hyperbola" (Horblit 4, on the later edition of 1566). This is one of the three greatest mathematical treatises of antiquity, alongside those of Euclid and Archimedes. This first edition is very rare, preceding by 29 years the Commandino edition of the same four books canonized by Horblit (and taken over by Dibner and Norman), and this first edition is known to have been used by Tartaglia, Benedetti and, however critically, Maurolico. Books I-IV were the only ones to survive in the original Greek; Borelli discovered Arabic versions of books V-VII and published them, in Latin translation, in 1661. "Apollonius (ca. 245-190 BC) was the last of the great Greek mathematicians, whose treatise on conic sections represents the final flowering of Greek mathematics" (DSB).

Only five copies located in America (Harvard, Louisville, MIT, UNC, Yale).

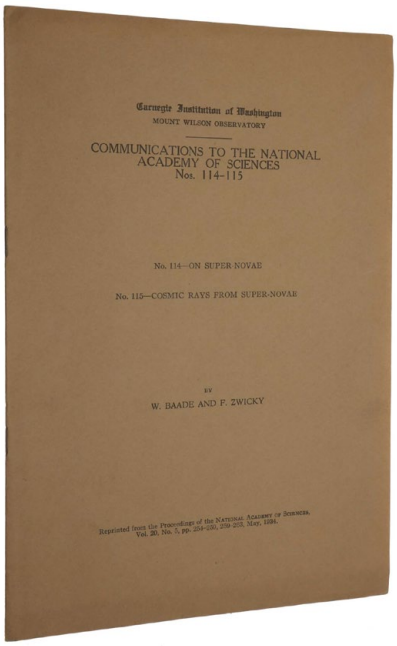
http://sophiararebooks.com/3075

Super-novae, neutron stars, and cosmic rays

4. BAADE, W. & ZWICKY, F. *On super-novae. [with:] Cosmic rays from super-novae. [Two papers contained in a single offprint from Proceedings of the National Academy of Sciences, Vol. 20, No. 5, May 1934.*

$950

First editions, offprint issues, of two of the most prescient papers in the history of astrophysics. "A pair of 1934 papers by Walter Baade and Fritz Zwicky first clearly defined the category of supernovae, with a handful of examples, including the AD 1054 event whose remnant is the Crab nebula. In addition, Baade and Zwicky proposed that supernovae were the main energy source for cosmic rays and that the energy source for supernovae was, in turn, the conversion of a normal star into a neutron star. These are essentially the modern views" (*Encyclopedia of Cosmology*). These papers probably also contain the first proposal of the idea of a neutron star, since "the belief that Lev Landau thought of neutron stars very shortly after Chadwick's discovery [of the neutron, in 1932] rested on an after-dinner talk by Leon Rosenfeld, more than forty years after the event, and falls afoul of records at the Niels Bohr Institute in Copenhagen, which show that Landau had already returned to Russia at the time mentioned by Rosenfeld. It is possible, therefore, that Baade and Zwicky were the inventors of the concept of neutron stars as well as of supernovae and the association between them" (*ibid.*).



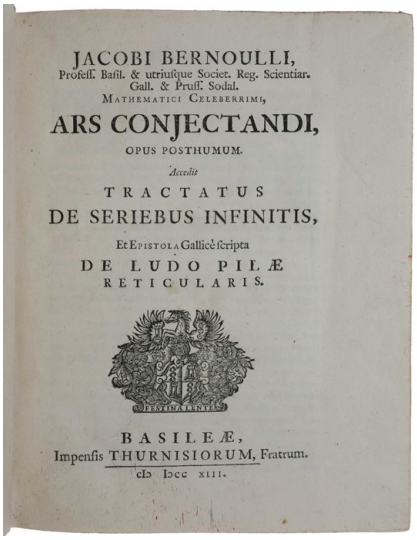
http://sophiararebooks.com/4030

The law of large numbers

5. BERNOULLI, Jacob. *Ars conjectandi.* Basel: Impensis Thurnisiorum Fratum, 1713.

$40,000

First edition, an exceptionally fine copy, rare in this condition. "Jakob 1 Bernoulli's posthumous treatise, edited by his nephew [Nicholas I Bernoulli], (the title literally means "the art of [dice] throwing") was the first significant book on probability theory: it set forth the fundamental principles of the calculus of probabilities and contained the first suggestion that the theory could extend beyond the boundaries of mathematics to apply to civic, moral and economic affairs.


JACOBI BERNOULLI,
Professf. Basil. & utriusque Societ. Reg. Scientiar. Gall. & Pruss. Sodal.
MATHEMATICI CELEBERRIMI,
ARS CONJECTANDI,
OPUS POSTHUMUM.
Accedit
TRACTATUS
DE SERIEBUS INFINITIS,
Et EPISTOLA Gallicè scripta
DE LUDO PILÆ
RETICULARIS.
BASILEÆ,
Impensis THURNISIORUM, Fratrum.
cIↃ IↃcc XIII.

The work is divided into four parts, the first a commentary on Huygens's *De ratiociniis in ludo aleae* (1657), the second a treatise on permutations (a term Bernoulli invented) and combinations, containing the Bernoulli numbers, and the third an application of the theory of combinations to various games of chance. The fourth and most important part contains Bernoulli's philosophical thoughts on probability: probability as a measurable degree of certainty, necessity and chance, moral versus mathematical expectation, a priori and a posteriori probability, etc. It also contains his attempt to prove what is still called Bernoulli's Theorem: that if the number of trials is made large enough, then the probability that the result will lie between certain limits will be as great as desired" (Norman). This was the first statement of the law of large numbers.

PMM 179; Dibner 110; Evans 8; Grolier/Horblit 12; Sparrow 21; Norman 216.

http://sophiararebooks.com/4063

Coloured catalogue of 2000 anatomical and pathological preparations

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

$18,500

First edition, extremely rare, of Bleuland's last work, the beautiful catalogue of the author's collection of more than 2000 anatomical and pathological preparations. "Jan Bleuland (1756-1838) taught anatomy, physiology and obstetrics to medical students, and to surgical apprentices and midwives surgery and obstetrics using the vernacular. He was personal physician to king Louis Napoleon. In the troublesome years 1811-1815, when the former university lead a poor existence, he did his utmost to preserve educational standards. Together with his very proficient collaborator Petrus Konig, he put together an anatomical collection of more than 2000 specimens. The collection was later acquired by the government for the Anatomical Museum in Utrecht, part of which is still on display. Bleuland wrote several superbly illustrated anatomical works" (de Moulin, *A History of Surgery: with Emphasis on the Netherlands*, p. 186). AE/RBH record only a single copy (1984); COPAC records copies at Royal College of Surgeons and Wellcome only.

http://sophiararebooks.com/3917

The birth of modern atomic physics

7. BOHR, Niels Henrik David. *On the Constitution of Atoms and Molecules, I-III.* London: Taylor & Francis, 1913.

$55,000

Extremely rare author's presentation offprints of his great trilogy, which constitutes the birth of modern atomic physics. "Bohr's three-part paper postulated the existence of stationary states of an atomic system whose behavior could be described using classical mechanics, while the transition of the system from one stationary state to another would represent a non-classical process accompanied by emission or absorption of one quantum of homogeneous radiation, the frequency of which was related to its energy by Planck's equation" (Norman). In the beginning of 1913 Bohr heard about Rydberg's remarkable discovery in spectroscopy. Rydberg's formula could represent the frequencies of the lines of the hydrogen spectrum in the simplest form in terms of two integers. As soon as Bohr saw this formula, he immediately recognized that it gave him the missing clue to the correct way to introduce Planck's law of quantum of action into the description of the atomic systems. The rest of the academic year was spent reconstructing the whole theory upon the new foundation and expounding it in a large treatise, which was immediately published as these three papers in the 'Philosophical Magazine'. It was in these papers that Bohr first gave his postulates of the orbital structure of the electrons and their quantized radiation. Bohr's atomic theory inaugurated two of the most adventurous decades in the history of science. In 1922 Bohr was awarded the Nobel Prize "for his services in the investigation of the structure of atoms and of the radiation emanating from them."

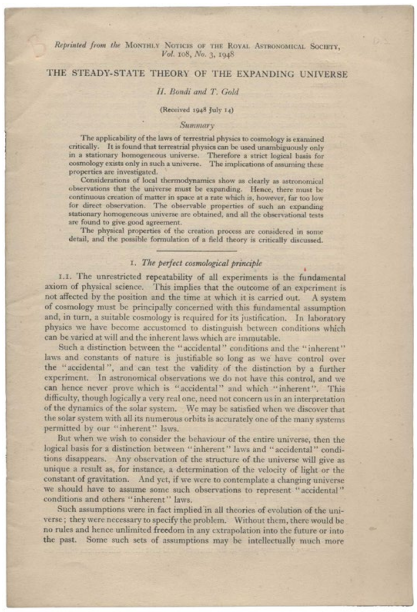
http://sophiararebooks.com/3293

The Steady State theory of the Universe

8. BONDI, Hermann & Thomas GOLD. *The Steady-State Theory of the Expanding Universe.* London: Monthly Notices of the Royal Astronomical Society, 1948.

$3,500

First edition, the extremely rare offprint, of the first published paper to propound the 'steady-state' model of the universe, according to which the universe is expanding but unchanging, with no beginning or end, and in which matter is continually being created throughout space so that its average density remains constant. Bondi, Gold and their colleague Fred Hoyle were led to steady state theory because of well-known problems associated with the then current evolving models of the expanding universe: such models predicted a cosmic age that was problematic (less than the known age of some stars), and they disliked Lemaitre's idea of a universe with an explosive beginning. Although the steady-state theory was eventually disproved by the discovery of the cosmic microwave background in the 1960s, "Steady state was of enormous importance in the history of astronomy, because it turned cosmology into a serious, observational part of science, by making predictions different from those of an evolutionary universe, for which Hoyle coined the name big bang" (DSB). In 2014 an unpublished manuscript was discovered, probably dating from early 1931, in which Einstein himself considered the possibility of a universe that expands but remains essentially unchanged, his 'cosmological constant' being responsible for the continuous creation of matter from empty space.



Reprinted from the Monthly Notices of the Royal Astronomical Society, *Vol. 108, No. 3, 1948*

THE STEADY-STATE THEORY OF THE EXPANDING UNIVERSE

H. Bondi and T. Gold

(Received 1948 July 14)

Summary

The applicability of the laws of terrestrial physics to cosmology is examined critically. It is found that terrestrial physics can be used unambiguously only in a stationary homogeneous universe. Therefore a strict logical basis for cosmology exists only in such a universe. The implications of assuming these properties are investigated.

Considerations of local thermodynamics show as clearly as astronomical observations that the universe must be expanding. Hence, there must be continuous creation of matter in space at a rate which is, however, far too low for direct observation. The observable properties of such an expanding stationary heterogeneous universe are obtained; and all the observational tests are found to give good agreement.

The physical properties of the creation process are considered in some detail, and the possible formulation of a field theory is critically discussed.

1. *The perfect cosmological principle*

1.1. The unrestricted repeatability of all experiments is the fundamental axiom of physical science. This implies that the outcome of an experiment is not affected by the position and the time at which it is carried out. A system of cosmology must be principally concerned with this fundamental assumption and, in turn, a suitable cosmology is required for its justification. In laboratory physics we have become accustomed to distinguish between conditions which can be varied at will and the inherent laws which are immutable.

Such a distinction between the "accidental" conditions and the "inherent" laws and constants of nature is justifiable so long as we have control over the "accidental", and can test the validity of the distinction by a further experiment. In astronomical observations we do not have this control, and we can hence never prove which is "accidental" and which "inherent". This difficulty, though logically a very real one, need not concern us in an interpretation of the dynamics of the solar system. We may be satisfied when we discover that the solar system with all its numerous orbits is accurately one of the many systems permitted by our "inherent" laws.

But when we wish to consider the behaviour of the entire universe, then the logical basis for a distinction between "inherent" laws and "accidental" conditions disappears. Any observation of the structure of the universe will give as unique a result as, for instance, a determination of the velocity of light or the constant of gravitation. And yet, if we were to contemplate a changing universe we should have to assume some such observations to represent "accidental" conditions and others "inherent" laws.

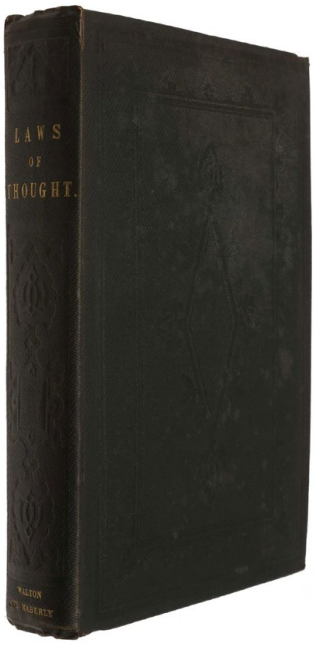
Such assumptions were in fact implied in all theories of evolution of the universe; they were necessary to specify the problem. Without them, there would be no rules and hence unlimited freedom in any extrapolation into the future or into the past. Some such sets of assumptions may be intellectually much more

http://sophiararebooks.com/4162

A fine copy, untouched in original publisher's binding

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

$30,000



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

OOC 224 (1st issue, re-backed); Erwin Tomasch B198 (2nd issue); Haskell Norman 266 (3rd issue).

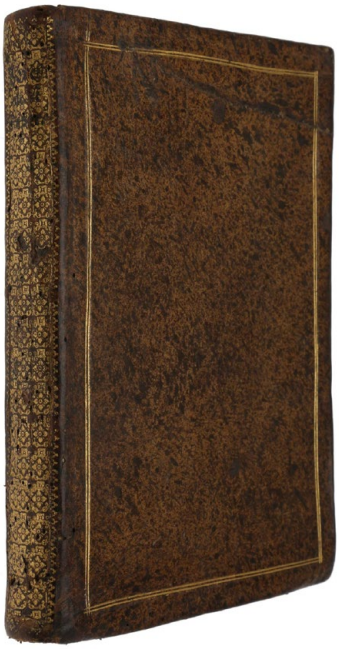
http://sophiararebooks.com/3906

The copy of Borelli's patron at the Tuscan court

10. BORELLI, Giovanni Alfonso. *De vi percussionis liber.* Bologna: Giacopo Monti, 1667.

$15,000

First edition, an extraordinary association copy, of the first published book on the laws of percussion, and containing important hitherto unpublished material from the lectures of Galileo and Torricelli. This copy was a gift from Prince Leopold of Tuscany, Borelli's patron at the Tuscan court. Probably under the influence of Borelli, Leopold, together with his brother Grand Duke Ferdinand, founded the *Accademia del Cimento* where Borelli first presented much of the experimental work on which this text is based. "In this, Borelli's first book on mechanics, he quotes Galileo's youthful work on percussion, the fourth *Dialogo*, and lectures by Torricelli. As well as the detailed discussion of impact, the book deals with the dynamics of falling bodies, vibration, gravity, fluid mechanics, magnetism, and pendular motion … he gives the name resilience for the first time to a number of problems now classed under this name" (Roberts & Trent). This is "the earliest book on the laws of percussion, which undoubtedly influenced John Wallis who, in 1668, published his discovery of the laws governing the percussion of non-elastic bodies, and Christiaan Huygens, who deals with the percussion of elastic bodies in his treatise *De motu corporum ex percussion*, published in 1669' (Zeitlinger I, 174). Borelli regarded this work, together with his *De motionibus naturalibus* (1670), as necessary preparation for his masterpiece, *De motu animalium* (1680-81), on which he had worked since the early 1660s.



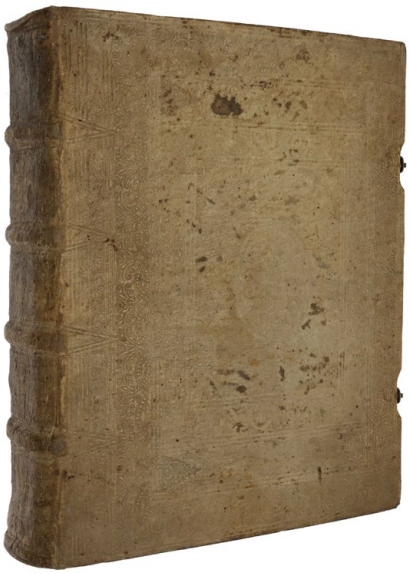
http://sophiararebooks.com/3935

PMM 203 - The birth of atomic physics

11. BOSCOVICH, Rogerius Josephus. *Philosophiae naturalis theoria redacta ad unicam legem virium in natura existentium.* Vienna: In Officina Libraria Kaliwodiana, 1758.

$150,000

An exceptionally fine copy, in contemporary blind tooled pigskin, of "Boscovich's masterpiece" (Norman), a work "now recognized as a fundamental influence on modern mathematical physics" (*Printing and the Mind of Man*), and a notorious rarity. Only two copies of this rare work have appeared at auction: 1. The Honeyman-Garden copy - this lacked the 16-page letter to Scherffer. 2. The Norman-Freilich copy - this had one gathering supplied from another, shorter, copy, and was in a 19th-century binding. OCLC locates US copies at Harvard, Yale, Chicago, Stanford, Indiana, Oklahoma, & Holy Cross. Of these, the Holy Cross copy is actually of the 1759 reprint and the Yale copy lacks the letter to Scherffer. "The first edition is very rare: there was no copy in Lancelot Law Whyte's Boscovich collection sold in our London rooms 1964; and indeed only one other copy can be traced in the auction records for more than thirty years" (Garden Sale, Sotheby's 1989).



PMM 203; Norman 277; Garden Sale 150; Freilich Sale 73; Honeyman Sale 427.

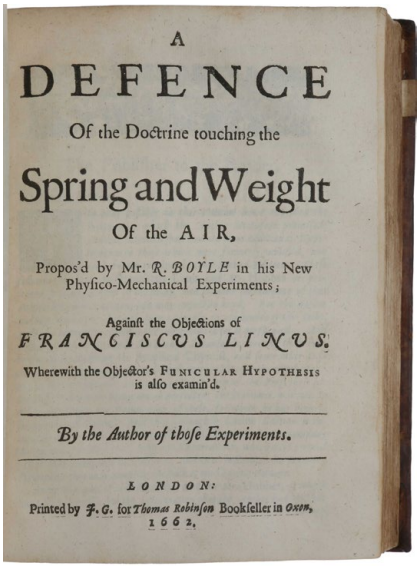
http://sophiararebooks.com/4128

PMM 143 - First appearance of Boyle's law

12. BOYLE, Robert. *New Experiments physico-mechanical, touching the Spring of the Air, and its Effects; A Defence of the Doctrine touching the Spring and Weight of the Air ... against the objections of Franciscus Linus; An Examen of Mr. T Hobbes his Dialogus Physicus de naturci aeris.* Oxford: H. Hall for T. Robinson, 1662.

$25,000

Second edition, which is the first edition to contain Boyle's law. A fine copy in contemporary English calf. This second edition is "particularly important for what Boyle called an 'hypothesis' but what we know as 'Boyle's Law': that the volume of air in a confined space varies inversely as the pressure. He demonstrated this by much experimental detail: with experiments on rarefaction performed by others, including Hooke, and on compression performed by himself" (PMM). Boyle's law is stated in the second part of this edition, his *Defence* against the attacks of Linus on the first edition of this work (1660). "In the first edition of the *New Experiments* (1660), Boyle had published his experiments proving that (1) air has weight and exerts pressure; (2) the phenomena associated with suction pumps and siphoning are caused by the evacuation of air; (3) air is necessary for life, flame and the transmission of sound; and (4) air is permanently elastic. These statements were attacked by many critics, whom Boyle refuted in an appendix to the second edition, a chapter of which describes the experimental attempts to measure atmospheric pressure that led to the formulation of Boylc's Law" (Norman).



A
DEFENCE
Of the Doctrine touching the
Spring and Weight
Of the AIR,
Propos'd by Mr. R. BOYLE in his New Physico-Mechanical Experiments;
Against the Objections of
FRANCISCUS LINUS.
Wherewith the Objector's FUNICULAR HYPOTHESIS is also examin'd.
By the Author of those Experiments.
LONDON:
Printed by J. G. for Thomas Robinson Bookseller in Oxon, 1662.

Dibner 142; Evans 28; Grolier/Horblit 15; PMM 143; Norman 300; Fulton 14.

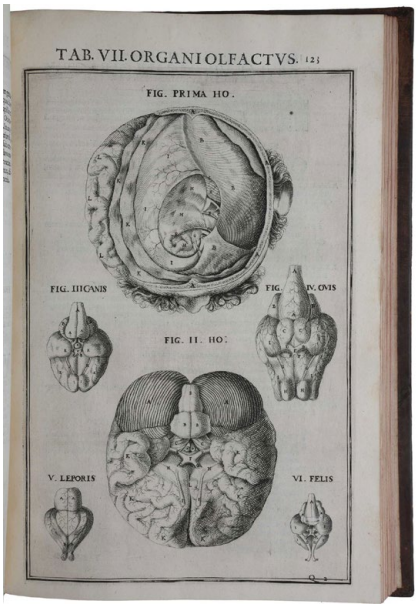
http://sophiararebooks.com/4154

A cornerstone in the history of comparative anatomy

13. CASSERI, Giulio Cesare. *Pentaestheseion, hoc est De quinque sensibus liber, organorum fabricam variis iconibus fideliter aere incisis illustratam, nec non actionem et usum, ...* Venedig: Misserino, 1609.

$45,000

First edition, exceptionally rare, of Casserius' second important contribution to the comparative anatomy not only of the ear and the vocal organs, as in his more common work of 1600/01 [*De Vocis Auditusque Organis*], but also of the other four sense organs and especially of the eye. The very fine anatomical plates for which this book is noted are both drawn and engraved by the Swiss artist Joseph Maurer, a pupil of Tobias Stimmer who lived in Casserius' house. The 12 plates pertaining to the ear are the same as those of Casserius' earlier work; they constitute "the first accurate pictorial presentation of the internal ear" (Sellers, *Annals of Otology* 68). Those dealing with the other four sense organs are new. Among them, in the particularly important section dealing with the eye and vision (pp. 257-346) are the first pictorial representations of the conjunctival glands, later known as the Meibomian glands (cf. Garrison-Morton 1481). All the plates, according to Choulant-Frank, "are done with unusual care and are anatomically exact." Casserius' anatomy of the sense organs is of great importance in medical history, since for the first time he adds to a complete account of each human organ a full study of the same organ in various animal forms. Choulant-Frank never saw a copy of this first edition, describing only the Frankfurt edition of 1622, with the same number of plates but "reduced and certainly executed by another artist. Some of them are even reversed and show much inferior workmanship".



http://sophiararebooks.com/3840

One of the most ambitious and detailed investigations in comparative anatomy

14. CASSERI, Giulio Cesare. *De vocis auditisque organis historia anatomica.* Ferrara: Baldinus, 1601 (Part II: 1600).

$25,000

First edition, and a very fine copy, of the most beautiful book ever published on the comparative anatomy of the ear and throat. "Like Fabrici, Casserio attempted to explain human anatomy by reference to the lower animals, and his *De Vocis*, containing the first comparative studies of the vocal and auditory organs, represents one of the sixteenth century's most ambitious and detailed investigations in comparative anatomy. The work is divided into two treatises--on the anatomy of the larynx and on that of the ear. In the first Casserio compared the human vocal apparatus to those of other mammals, birds, amphibians and insects. He recognized the larynx to be the principal organ of voice, gave the first precise description of the cricoid-thyroid muscles and accurately depicted the superior and inferior laryngeal nerves, which he correctly assumed to originate from cranial nerves. He also was the first to understand the complex sound-producing organs on the abdomen of the cicada. In the second treatise, Casserio provided the first detailed comparative account of the auditory ossicles, the first adequate description of the mammalian osseous labyrinth, and the first representation of the ear of the fish--this last all the more remarkable in that, up to this time, no one had believed that fishes possess a sense of hearing" (Norman).

Garrison-Morton 286; Grolier/Medicine 24; *Heirs of Hippocrates* 397; Norman 410.

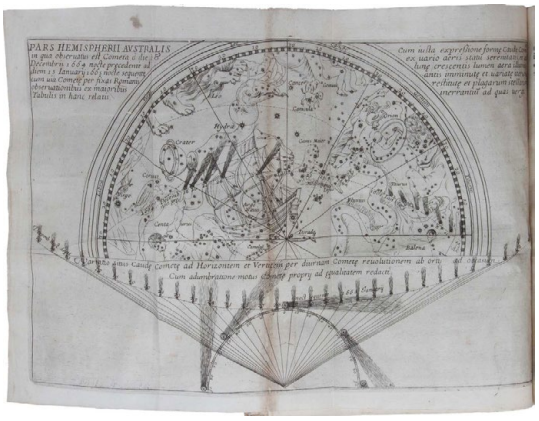
http://sophiararebooks.com/4017

Cassini's theory of comets

15. CASSINI, Giovanni Domenico. *Theoriae motus cometae anni MDCLXIV ea præferens, ... [bound with:] Lettere astronomische di Gio: Domenico Cassini al Signor Abbate Ottavio Falconieri sopra il ...* Rome: Fabio di Falco, 1665.

$42,500

First editions of these two exceptionally rare Cassini publications on the comet of 1664-5. Cassini observed the comet "in the presence of Queen Christina and formulated on this occasion a new theory (in agreement with the Tychonian system) in which the orbit of the comet is a great circle whose center is situated in the direction of Sirius and whose perigee is beyond the orbit of Saturn" (DSB). Cassini's detailed observations of the comet were made with a powerful new telescope. "Through his friendship with the famous Roman lensmakers Giuseppe Campani and Eustachio Divini, Cassini, beginning in 1664, was able to obtain from them powerful celestial telescopes of great focal length. He used these instruments— very delicate and extremely accurate for the time—with great skill, and made within several years a remarkable series of observations…" In the preface to the work Cassini describes the telescopes, and the first observations made with them. The large engraved plate depicts the course of the comet in the southern celestial hemisphere from December 13, 1664 through the middle of January, 1665. It also shows the appearance and direction of the comet's tail in a series of nightly dated observations. The second work, addressed to the archaeologist Falconieri, presents further observations on the comet, and Cassini remarks about the observations made by Auzout and Hevelius. OCLC: Brown (lacking plate) for the first work, and Brown, Cornell, Ohio State for the second work.



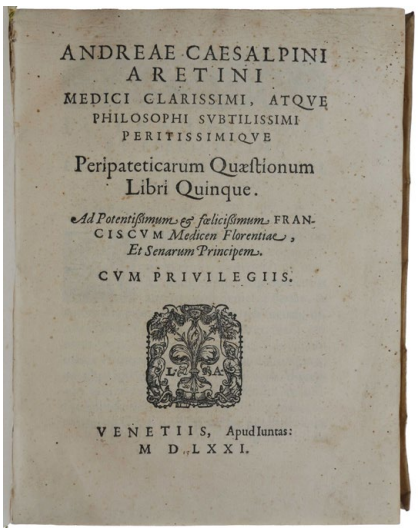
http://sophiararebooks.com/3076

The theoretical basis for Harvey's discovery of the circulation of the blood

16. CESALPINO, Andrea. *Peripateticarum Quaestionum Libri Quinque.* Venice: Giunta, 1571.

$140,000

First edition, and a beautiful copy in untouched contemporary vellum, of this very rare work which coined the phrase "circulation of the blood" (circulatio sanguinis, f. 111v) and provided the theoretical basis for Harvey's experimental and quantitative treatment in *De motu cordis* (1628). "Cesalpino preceded Harvey in the discovery of the concept of the circulation, and Harvey must have known of his ideas" (Garrison-Morton). "Cesalpino's most important medical studies concern the anatomy and physiology of the movement of the blood. He gave a good description of the cardiac valves and of the pulmonary vessels connected to the heart, as well as of the minor blood circulation; he also recognized that the heart is the center of the circulation of the blood and accepted the existence of the traditional synanastomoses of the arteries with the veins. He did not, however, discover the major circulation (first demonstrated in 1628 by William Harvey)" (DSB). "No-one who reads Cesalpino impartially can deny the eminent part that he played in the discovery of the circulation of the blood" (Castiglioni, p. 438). ABPC/RBH lists only three other copies in contemporary bindings sold at auction in the last 60 years: Norman copy, 1998, $36,800 ("title page stained at edges and with removed stamp"); Swann, 2001, $33,350 ("wormholes through front cover & blank outer margin of opening leaves, title page stamped"); Friedman copy, 2001, lot 29, $110,000 ("repaired tear to title page, spine head repaired, C4,5 guarded").

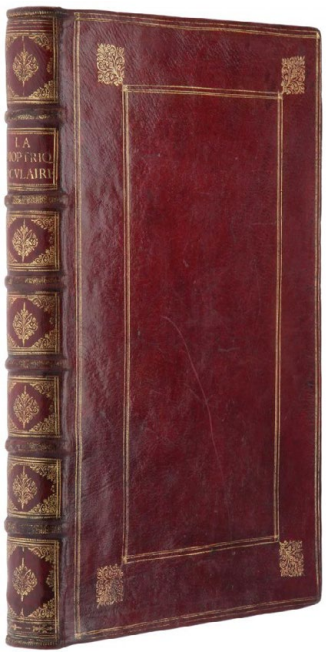

ANDREAE CAESALPINI
ARETINI
MEDICI CLARISSIMI, ATQVE
PHILOSOPHI SVBTILISSIMI
PERITISSIMIQVE
Peripateticarum Quæstionum
Libri Quinque.
Ad Potentissimum, & fœlicissimum FRANCISCVM Medicen Florentiae,
Et Senarum Principem.
CVM PRIVILEGIIS.
VENETIIS, Apud Iuntas:
M D LXXI.

Lilly, *Notable Medical Books* 45; Garrison-Morton 755; Norman 430.

http://sophiararebooks.com/4031

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

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



$25,000

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

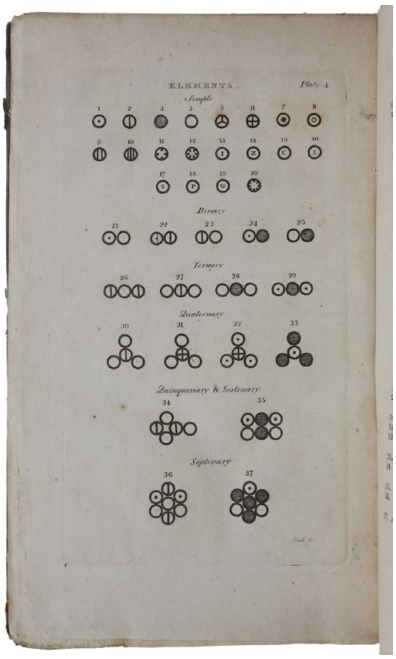
http://sophiararebooks.com/3486

PMM 261 - The atomic theory

18. DALTON, John. *A New System of Chemical Philosophy.* Manchester: Russell, 1808-1810-1827.

$50,000

First edition of Dalton's classic work on the atomic theory of matter, very rare when complete with all three parts in the original boards with the original printed spine labels. "Dalton reconstructed Newton's speculations on the structure of matter, and, applying them in a new form to chemistry, gave Lavoisier's reformation of that science a deeper significance" (PMM). "Dalton's chemical atomic theory was the first to give significance to the relative weights of the ultimate particles of all known compounds, and to provide a quantitative explanation of the phenomena of chemical reaction. Dalton believed that all matter was composed of indestructible and indivisible atoms of various weights, each weight corresponding toone of the chemical elements, and that these atoms remained unchanged during chemical processes. Dalton's work with relative atomic weights prompted him to construct the first periodic table of the elements (in Vol. I, pt. 1), to formulate laws concerning their combination and to provide schematic representations of various possible combinations of atoms. His equation of the concepts "atom" and "chemical element" was of fundamental importance, as it provided the chemist with a new and enormously fruitful model of reality" (Norman). "He developed a system of chemical symbols and a table [plate 4 in part 1] showing the relative weights of the atoms of a list of elements. From his principles he deduced the law of definite proportions and the law of multiple proportions" (Dibner).



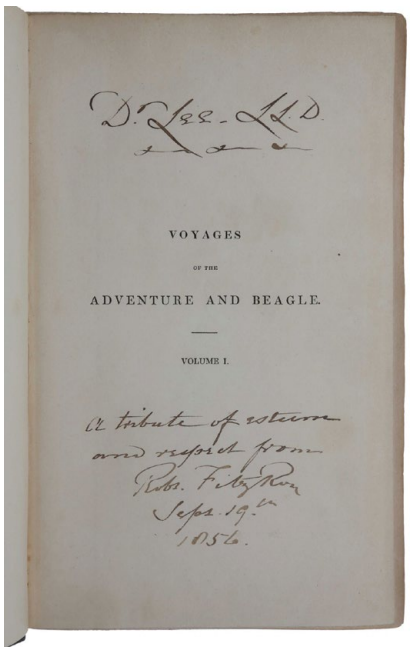
PMM 261; Grolier/Horblit 22; Dibner 44; Evans 54; Sparrow 47.

http://sophiararebooks.com/3950

Darwin's epochal voyage, inscribed by the Captain of the Beagle

19. DARWIN, Charles and Robert FITZROY. *Narrative of the Surveying Voyages of His Majesty's Ships Adventure and Beagle, between the Years 1826 and 1836, describing their Examination of the Southern Shores of South America, and the Beagle's Circumnavigation of the Globe.* London: Henry Colburn, 1839.

$195,000



First edition, an extraordinary presentation copy inscribed by the Commander of the *Beagle* Robert FitzRoy, the man who chose Darwin to accompany him on the epochal voyage. "The five years of the voyage were the most important event in Darwin's intellectual life and in the history of biological science. Darwin sailed with no formal scientific training. He returned a hard-headed man of science, knowing the importance of evidence, almost convinced that species had not always been as they were since the creation but had undergone change … The experiences of his five years in the *Beagle*, how he dealt with them, and what they led to, built up into a process of epoch-making importance in the history of thought" (DSB). The third volume comprises Darwin's own journal of his voyage in the *Beagle*, which is the first issue of his first published book. It is "is undoubtedly the most often read and stands second only to *On the Origin of Species* as the most often printed" (Freeman, 31). Only one other complete copy of the Narrative in its original binding and inscribed by FitzRoy has appeared at auction (Christie's, 2005, $60,752). A copy inscribed by FitzRoy but lacking one of the plates sold for $63,885 at Bonham's in 2013.

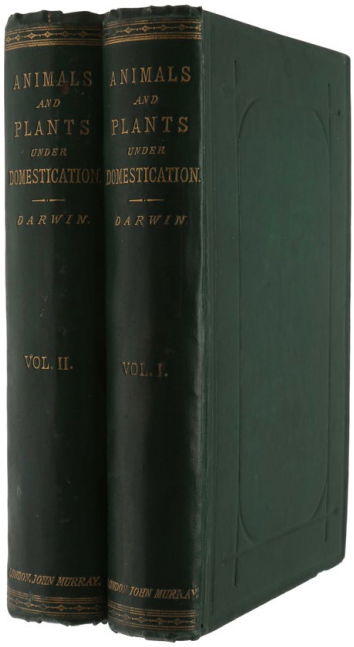
http://sophiararebooks.com/4042

First appearance of "Survival of the fittest", inscribed by Darwin

20. DARWIN, Charles. *The Variation of Animals and Plants under Domestication.* London: John Murray, 1868.

$35,000

First edition, first issue, presentation copy, trimmed for presentation in publisher's cloth, and with a slip of paper with inscription "From the Author" in Darwin's hand pasted to the front free endpaper. The term "survival of the fittest" (borrowed at Wallace's insistence from Herbert Spencer's 1866 *Principles of Biology*) first appeared in the *Variation* (vol. 2, p. 89), preceding its first use in the fifth edition of the *Origin of Species* (1869). "Its two volumes were intended to provide overwhelming evidence for the ubiquity of variation, although they would also incidentally answer Lyell and Gray, who maintained that variations had not occurred purely by chance but were providentially directed. Darwin showed that breeders indeed selected from a vast array of minute random variations. He gave numerous instances of the causes of variability, including the direct effect of the conditions of life, reversion, the effects of use and disuse, saltation, prepotency, and correlated growth. The *Variation* also addressed a key criticism of the *Origin of Species*: that it lacked an adequate understanding of inheritance" (ODNB). This work "contained his hypothesis of pangenesis, by means of which Darwin tried to frame an explanation of hereditary resemblance, inheritance of acquired characteristics, atavism, and regeneration. It was a brave attempt to account for a number of phenomena which were beyond the bounds of scientific knowledge in his day, such as fertilization by the union of sperm and egg, the mechanism of chromosomal inheritance, and the development of the embryo by successive cell division" (DSB).



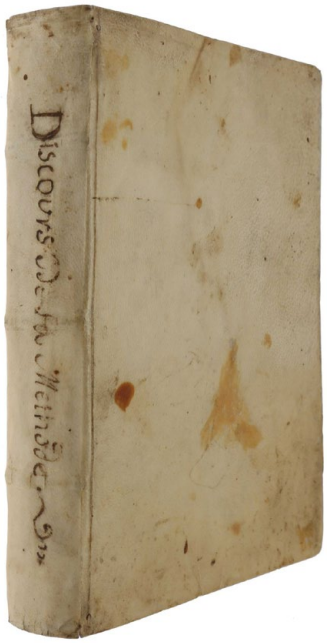
http://sophiararebooks.com/4100

PMM 129 - 'Cogito, ergo, sum'

21. DESCARTES, René. *Discours de la methode pour bien conduire sa raison, & chercher la verité dans les sciences. Plus la Dioptrique, les Meteores, et la Geometrie. Qui sont des essais de cete Methode.* Leiden: Jan Maire, 1637.

$125,000

First edition, a fine, large copy in untouched contemporary vellum, of Descartes' first and most famous work. Following the *Discours,* now celebrated as one of the canonical texts of Western philosophy, are three 'Essais', the last of which, *La Géométrie*, contains the birth of analytical or coordinate geometry, "of epoch-making importance" (Cajori, *History of Mathematics*, p. 174), designated by John Stuart Mill as "the greatest single step ever made in the progress of the exact sciences". It "rendered possible the later achievements of seventeenth-century mathematical physics" (Hall, *Nature and Nature's Laws* (1970), p. 91). The first of the Essais, *La Dioptrique*, contains Descartes' discovery of 'Snell's law' of refraction of light (earlier than Snell); the second, *Les Météores,* contains Descartes' explanation of the rainbow, based on the optical theories developed in the first Essai. "It is no exaggeration to say that Descartes was the first of modern philosophers and one of the first modern scientists ... Not least may be remarked his discussion of Harvey's discovery of the circulation of blood, the first mention of it by a prominent foreign scholar" (*Printing and the Mind of Man*).



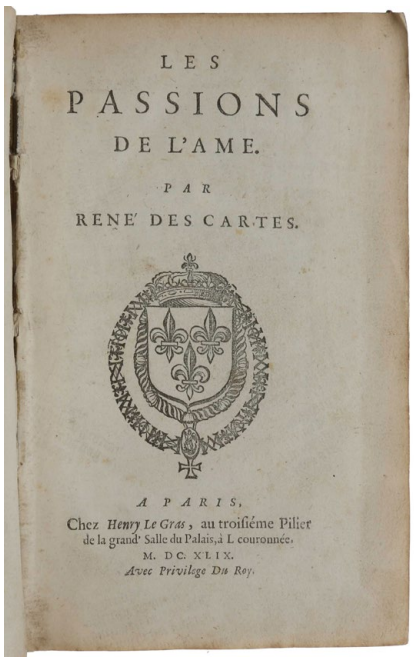
PMM 129; Grolier/Horblit 24; Dibner 81; Norman 621.

http://sophiararebooks.com/3990

A fine copy in untouched contemporary binding

22. DESCARTES, René. *Les passions de l'ame.* Paris: chez Henry Le Gras, 1649.

$18,500


LES
PASSIONS
DE L'AME.
PAR
RENE' DES CARTES.

A PARIS,
Chez Henry Le Gras, au troisiéme Pilier
de la grand' Salle du Palais, à L couronnée.
M. DC. XLIX.
Avec Privilege Du Roy.

First edition of Descartes's important psychological treatise, one of his most influential works, and the last work published before his death in the following year. "*Les passions de l'ame*, which drew heavily on the then-unpublished *Traité de l'homme*, contains the application of Descartes's mechanistic physiology to the relationship between mind and body. Descartes made an essential distinction between the soul as the divinely-endowed seat of consciousness, will and rational thought, and the body as a machine or automaton subject to the laws of physics, and only indirectly controlled by the soul through the nerves. Using this dualistic model, he was able to make the important distinction between voluntary and involuntary actions, a distinction discussed further in the *Traité*. Descartes located the soul in the pineal gland, which thus served as the locus for interaction between soul and body; he had defined the pineal gland's function in the *Traité*, but Les passions de l'ame contains his first published account of it. The work also contains the first use of the word "reflex" in connection with the action of the nervous system" (Norman).

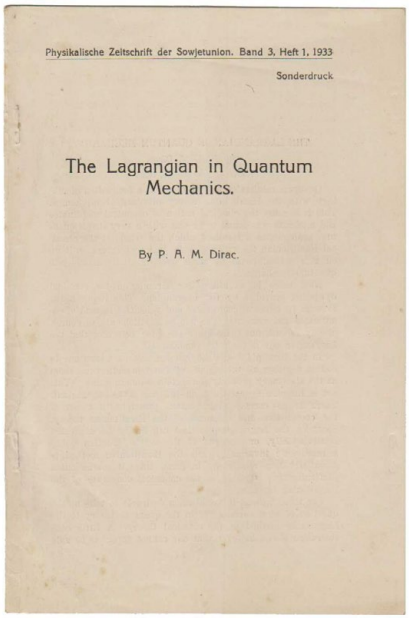
Norman 626.

http://sophiararebooks.com/4125

Led to Feynman's path-integral formulation

23. DIRAC, Paul Adrien Maurice. *The Lagrangian in Quantum Mechanics.* Charkow: Technischer Staatsverlag, 1933.

$8,500


Physikalische Zeitschrift der Sowjetunion. Band 3, Heft 1, 1933

Sonderdruck

The Lagrangian in Quantum Mechanics.

By P. A. M. Dirac.

Extremely rare offprint of this seminal paper which, in the hands of Richard Feynman, gave birth to the path-integral formulation of quantum mechanics and Feynman integrals. In his Nobel Lecture, Feynman described how he discovered a way to quantize a classical theory given by the principle of least action based upon a Lagrangian, rather than the usual approach via Hamiltonians. Feynman explained the problem to Herbert Jehle, whom he met by chance during a visit of Jehle to Princeton in 1947. Jehle pointed out that Dirac, in the present paper, had given "an infinitesimal time development operator involving the classical Lagrangian. Successive applications of this operator to the initial wave function generated the wave function at any later time, and the wave function was equivalent to finding the solution of the Schrödinger equation. To obtain the wave function after a finite time has elapsed, however, [Feynman realized that] one had to integrate over all possible paths containing two arbitrary space-time points. This, in fact, was the path-integral approach of Feynman" (Biogr. Mems Fell. R. Soc.Lond. 48 (2002), p. 107).

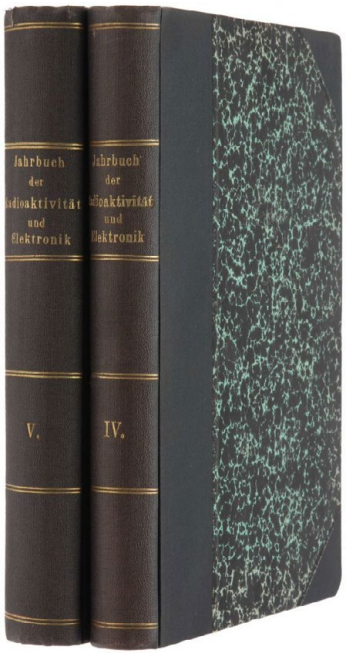
http://sophiararebooks.com/2920

E=mc² and the transition from special to general theory of relativity

24. EINSTEIN, Albert. *Über das Relativitätprinzip und die aus demselben gezogenen Folgerungen. [with:] Berichtigungen zu der arbeit "Über das Relativitätprinzip..."* Leipzig: S. Hirzel, 1907/1908.

$2,750

First edition of one of Einstein's most important works, "On p. 443 are probably the first explicit statements both of the equivalence of inertial and gravitational mass and of the equation for mass in terms of energy [$E=mc^2$] now regarded as the theoretical basis for the release of atomic energy" (Weil). In 1905, "Einstein said that all energy of whatever sort has mass. It took even him two years more to come to the stupendous realization that the reverse must also hold: that all mass, of whatever sort, must have energy. … With mass and energy thus wholly equivalent, Einstein was able in 1907, in a long and mainly expository paper published in the *Jahrbuch der Radioactivität* [the offered paper], to write his famous equation $E=mc^2$. … In presenting his equation in 1907 Einstein spoke of it as the most important consequence of his theory of relativity" (Hoffmann). "Of greatest importance is the last part of the paper which generalizes the principle of relativity from uniformly moving systems to uniformly 'accelerated' systems. … He introduces the principle of equivalence which claims that the problem of a uniform and stationary gravitational field on the one hand, and the system moving with a constant acceleration without any gravitation on the other hand, are physically indistinguishable situations." (Lanczos, *The Einstein Decade*, p. 153).



Weil *21; Boni 20; Plotnick 77; Stanitz 94.

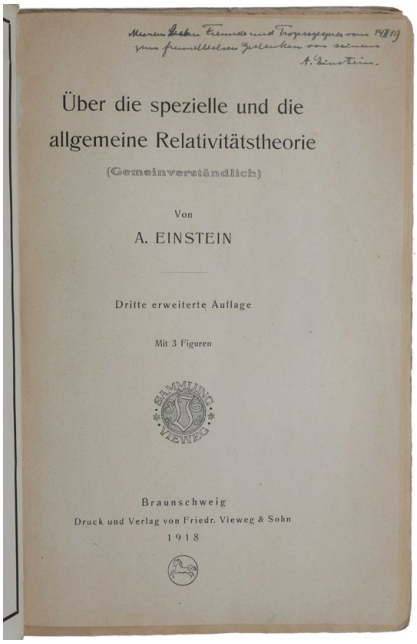
http://sophiararebooks.com/3554

Inscribed and signed by Einstein

25. EINSTEIN, Albert. *Über die spezielle und die allgemeine Relativitätstheorie.* Braunschweig: Vieweg & Sohn, 1918.

$28,000

Exceptionally rare presentation copy of the important third edition (see below) of his 'popular account' (Gemeinverständlich) of relativity theory, which remains one of the most lucid explanations of the special and general theories ever written. According to the preface (in the first edition dated December, 1916), its aim was to provide "an exact insight into the theory of relativity to those readers who, from a general scientific and philosophical point of view, are interested in the theory, but who are not conversant with the mathematical apparatus of theoretical physics… The author has spared himself no pains in his endeavor to present the main ideas in the simplest and most intelligible form, and on the whole, in the sequence and connection in which they actually originated". The work is divided into three parts: the first on special relativity, the second on general relativity, and the third on the application of relativity to cosmology. This third edition is important as it is the first to contain a discussion of the universe as a whole (sections 30-32), and also the first to contain the two appendices "Simple Derivation of the Lorentz Transformation" (as a supplement to section 11) and "Minkowski's Four-Dimensional Space ('World')" (as a supplement to section 17). *Provenance*: Inscribed Meinem Lieben Freunden und Prozessgegner zum freundlichen Gedanken von seinem A. Einstein in Einstein's hand on title and dated February 14, 1919.


Über die spezielle und die allgemeine Relativitätstheorie
(Gemeinverständlich)
Von
A. EINSTEIN
Dritte erweiterte Auflage
Mit 3 Figuren
Braunschweig
Druck und Verlag von Friedr. Vieweg & Sohn
1918

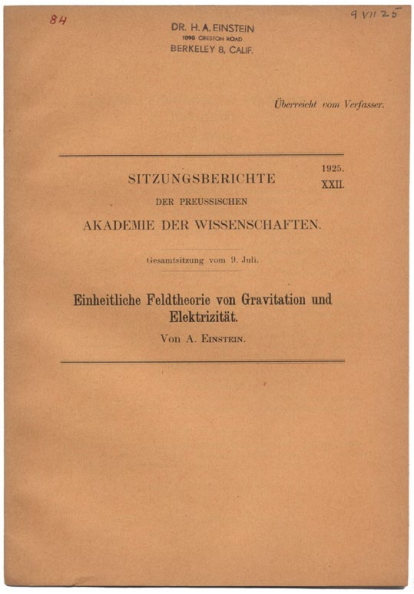
http://sophiararebooks.com/4145

Einstein's first original paper on unified field theory, author's offprint

26. EINSTEIN, Albert. *Einheitliche Feldtheorie von Gravitation und Elektrizität.* Berlin: Akademie der Wissenschaften, 1925.

$14,500

First edition, extremely rare author's presentation offprint - not to be confused with the common trade offprint - and the copy of his son Hans Albert, of Einstein's first original paper on unified field theory, and the first to use the term "Unified Field Theory" in its title. In the opening paragraph of this paper, Einstein wrote: "After incessant search during the last two years, I now believe I have found the true solution" (Pais, *Subtle is the Lord,* p. 343). The half-dozen papers Einstein had already written on unified field theory were reactions to the ideas of others, such as Eddington, Kaluza and Weyl; it was in this paper that Einstein put forward the first original approach of his own. Inspired by James Clerk Maxwell's success in finding a unified theory of electricity and magnetism, Einstein's work on unified field theory represents about a quarter of his entire research output and half his scientific production after 1920. Although he was ultimately unsuccessful, a similar vision was realized in the decades after his death in the construction of the 'standard model', a unified theory of electromagnetism with the weak and strong nuclear forces. No other copies of this author's presentation offprint in auction records (it was not in Einstein's own reference collection of offprints in the Richard Green Library).


DR. H. A. EINSTEIN
1090 CRESTON ROAD
BERKELEY 8, CALIF.
Überreicht vom Verfasser.
SITZUNGSBERICHTE
1925.
XXII.
DER PREUSSISCHEN
AKADEMIE DER WISSENSCHAFTEN.
Gesamtsitzung vom 9. Juli.
Einheitliche Feldtheorie von Gravitation und Elektrizität.
Von A. Einstein.

Boni 155; Weil 147.

http://sophiararebooks.com/4035

First treatise on mechanics using calculus methods

27. EULER, Leonhard. *Mechanica sive motus scientia analytice exposita...* Petersburg: Academy of Sciences, 1736.

$17,500

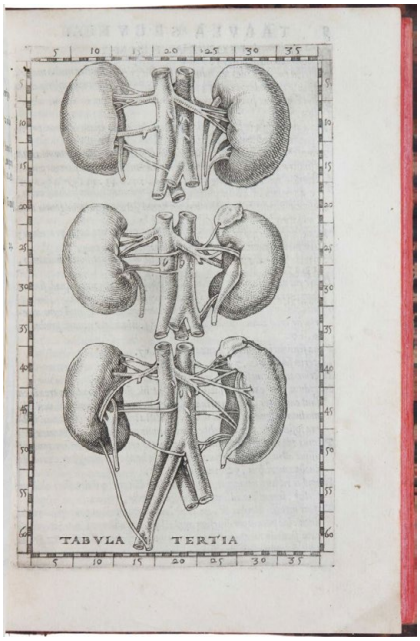
First edition. "The distinguishing feature of Euler's investigations in mechanics as compared to those of his predecessors is the systematic and successful application of analysis. Previously the methods of mechanics had been mostly synthetic and geometrical; they demanded too individual an approach to separate problems. Euler was the first to appreciate the importance of introducing uniform analytic methods into mechanics, thus enabling the problems to be solved in a clear and direct way. Euler's concept is manifest in both the introduction and the very title of the book, *Mechanica sive Motus Scientia analytice exposita*" (DSB). *Mechanica* won the praise of many leading scientists of the time: Johann Bernoulli said of the work that "it does honour to Euler's genius and acumen," while Lagrange in his own *Mécanique analytique* acknowledges Euler's mechanics to be "the first great work where Analysis has been applied to the science of motion."

http://sophiararebooks.com/3922

A founder of modern anatomy

28. EUSTACHIUS, Bartholomaeus. *Opuscula anatomica.* Venice: Vincentius Luchinus excudebat, 1564.

$50,000



First edition, very rare, of one of the most important of all anatomical books. It includes the first specific treatise on the kidney, the first account of the Eustachian tube in the ear, the first description of the thoracic duct, and the Eustachian valve, as well as the first systematic study of teeth. The fine etchings illustrating the edition "were the first eight in an intended series of forty-seven anatomical plates engraved by Giulio de' Musi after drawings by Eustachi and his relative, Pier Matteo Pini, an artist. These were prepared in 1552 to illustrate a projected book entitled *De dissensionibus ac controversiis anatomicis*, the text of which was lost after Eustachi's death. Had the full series of plates been published at the time of their completion, Eustachi would have ranked with Vesalius as a founder of modern anatomy" (Norman).

Grolier, *One Hundred Books Famous in Medicine* 21; *Heirs of Hippocrates* 322; Norman 739. Garrison-Morton 801.

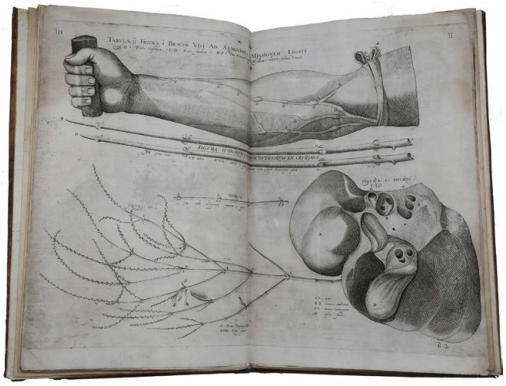
http://sophiararebooks.com/3555

'A crucial precursor of Harvey's discovery'

29. FABRICI, Girolamo. *De venarum ostiolis.* Padua: Lorenzo Pasquati, 1603.

$85,000

First edition "of the first systematic study of the structure, distribution and position of the venous valves. Although the valves of the veins had been observed previously by G.B. Canano and Amato Lusitano, Fabrici studied them anew on the basis of his own observations. Perhaps because he analyzed anatomical structures in terms of their purpose, he interpreted the function of the valves as slowing down the influx of blood in order to distribute it more evenly to the various parts of the body. Although Fabrici's analysis was in part erroneous, *De venarum ostiolis* became his most influential work, in that it inspired his student, William Harvey, to conceptualize the circulation of the blood" (Norman). "The sumptuously printed folios which Fabricius published in 1603-1604 were issued separately, and unbound. Though they escaped Choulant's notice, they are among the rarest and most beautiful works in the history of anatomical illustration. The plates are magnificent; in fact nothing on their scale had been seen since the days of Vesalius" (Franklin).



Grolier/Medicine 27b; Garrison-Morton 757; Norman 750; Waller 2886.

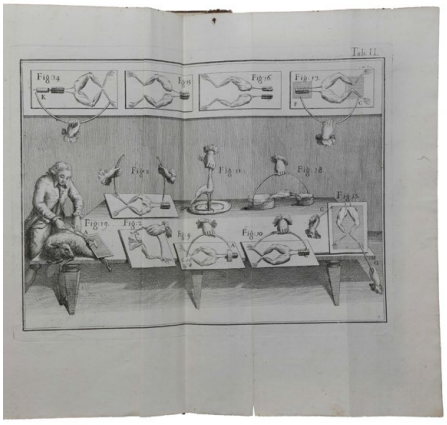
http://sophiararebooks.com/3909

'Inaugurated the modern epoch in electricity', inscribed presentation copy

30. GALVANI, Luigi. *De viribus electricitatis in motu musculari commentarius cum Joannis Aldini dissertatione et notis.* Modena: Societatem Typographicam, 1792.

$55,000

First edition in book form, and the first to contain the notes and commentary by Giovanni Aldini, Galvani's nephew and principal apologist, of this epoch-making work, one of the most important in the history of electricity. This is a superb presentation/association copy, inscribed by Aldini, of the first issue (with the letter 'E' in figure 22 uncorrected). Galvani believed that animals possess in their nerves and muscles a subtle fluid quite analogous to ordinary electricity. In the course of his experiments, Galvani hit upon by accident the phenomenon of 'galvanism', the production of an electric current between two metals in a moist environment. This discovery led directly, in the hands of Alessandro Volta, to the first source of a continuous electric current. Galvani first published his theory in one of the 'Opuscula' of the Proceedings of the Bologna Academy of Science (*De Bononiensi scientiarum et atrium instituto atque academia*, 7, pp. 363-418), where it aroused great interest and controversy. The offprint of this article, the first separate edition of the work, is known in only a dozen copies. Aldini published this edition with his extended notes and commentary, but with Galvani's text unchanged from its journal appearance. The engraved plates by Galvani's friend Jacobo Zambelli, which graphically illustrate Galvani's dissections and electrical apparatus, belong to the most famous of all illustrations in the history of biology. No other presentation copies of this book are located in auction records. Honeyman's is the only copy of the offprint recorded by ABPC/RBH (Sotheby's, 5 November 1979, lot 1428, $29,859).

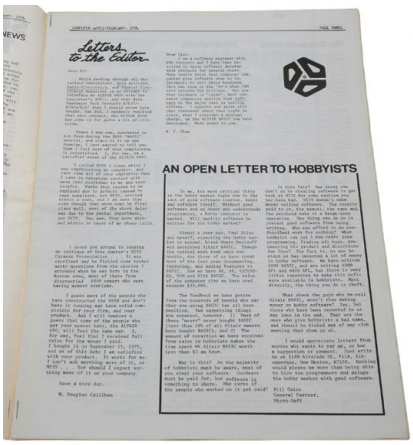


http://sophiararebooks.com/4141

Proprietary software

31. GATES, William Henry III [Bill]. *An open letter to the hobbyists.* Albuquerque, NM: Micro Instrumentation and Telemetry Systems, 1976.

$3,500


Letters to the Editor

AN OPEN LETTER TO HOBBYISTS

First edition, very rare, of this key document in the development of home computing, and Bill Gates' first clear published statement of what was to become Microsoft's hugely successful business model, the development and marketing of proprietary software. "On February 3, 1976 William Henry Gates III (Bill Gates), in his role as "General Partner Micro-Soft," Albuquerque, New Mexico, wrote An open letter to the hobbyists, making the distinction between proprietary and open-source software. Gates' one page letter was first published in Computer Notes, 1, #9 (February 1976). Computer Notes was the house journal of MITS, the company that developed the MITS Altair 8800 and licensed Micro-Soft's version of BASIC" (Jeremy Norman's historyofinformation.com).

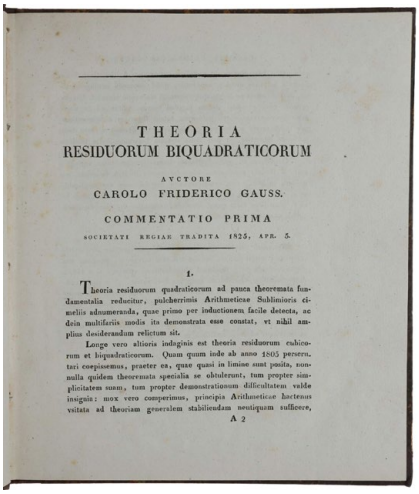
http://sophiararebooks.com/4163

Complex numbers and the Gaussian plane

32. GAUSS, Carl Friedrich. *Theoria residuorum biquadraticorum.* Göttingen: Dieterich, 1828 [- 1832].

$9,500

First edition, very rare separately-paginated offprint issues, of these two important papers, in which Gauss coined the term 'complex number' and introduced the complex plane now known as the 'Gaussian plane'. "The foundations of the theory of algebraic integers were laid by Gauss in his important work Theoria residuorum biquadraticorum, Commentatio II, which appeared in 1832, in which he considered the numbers $a + bi$ ($i = \sqrt{-1}$)" (Klein, p. 320). "In the *Disquisitiones* [*Arithmeticae*, 1801], Gauss gave the first rigorous proof of 'the gem of arithmetic' — the law of quadratic reciprocity. In a series of papers published between 1808 and 1817 Gauss worked on reciprocity laws for congruences of higher degree, and in two papers published in 1828 and 1832 stated the law of biquadratic [i.e., quartic] reciprocity" (Ewald, p. 306). "In the second part of his study of biquadratic residues (1832), [Gauss] argued that number theory is revealed in its "entire simplicity and natural beauty" (Sect. 30) when the field of arithmetic is extended to the imaginary numbers. He explained that this meant admitting numbers of the form $a + bi$. "Such numbers," he said, "will be called complex integers". More precisely, he went on in the next section, the domain of complex numbers $a + bi$ contains the real numbers, for which $b = 0$ and the imaginary numbers, for which b is not zero. Then, in Sect. 32, he set out the arithmetical rules for dealing with complex numbers. We read this as a step away from the idea that i is to be understood or explained as some kind of a square root, and towards the idea that it is some kind of formal expression to be understood more algebraically" (Bottazzini & Gray, p. 71).


THEORIA
RESIDUORUM BIQUADRATICORUM
AVCTORE
CAROLO FRIDERICO GAUSS.
COMMENTATIO PRIMA
SOCIETATI REGIAE TRADITA 1825, APR. 5.

1.

Theoria residuorum quadraticorum ad pauca theoremata fundamentalia reducitur, pulcherrimis Arithmeticae Sublimioris cimeliis adnumeranda, quae primo per inductionem facile detecta, ac dein multifariis modis its demonstrata esse constat, vt nihil amplius desiderandum relictum sit.

Longe vero aliioris indoginis est theoria residuorum cubicorum et biquadraticorum. Quam quum iode ab anno 1805 persentari coepissemus, praeter ea, quae quasi in limine sunt posita, nonnulla quidem theoremata specialia se obtulerunt, tum propter simplicitatem sumy, tum propter demonstrationum difficultatem valde insignia; nox vero comperimus, principia Arithmeticae hactenus vsitata ad theoriam generalem stabiliendam neutiquam sufficere,

A 2

http://sophiararebooks.com/4003

Refuting Copernicus, presentation copy

33. GRANDAMI, Jacques. *Nova demonstratio immobilitatis terrae petita ex virtut magnetica.* La Flèche: Griveau, 1645.

$30,000

Presentation copy of the first edition of this rare and richly illustrated Jesuit anti-Copernican tract by Jacques Grandami (1588-1672), rector of the Jesuit college of La Flèche, which was attended by both Descartes and Mersenne. In this work Grandami employs the 'magnetic philosophy' initiated by William Gilbert to refute the heliocentrist position. He also claims to have solved the problem of determining longitude at sea. In the first decades of the seventeenth century 'magnetic philosophy' was used both by heliocentrists and their opponents to support their positions, and Grandami had discussed his views with Descartes and Mersenne, as well as with Huygens, before the publication of this work. "In the seventeenth century debates over the Copernican hypothesis numerous astronomers used magnetism and magnetic theories of attraction to substantiate their theoretical arguments and experimental proofs. William Gilbert initiated the introduction of magnetism into astronomical debate and the analogy between magnets and celestial bodies was subsequently employed in various ways by the heliocentrists, including Kepler and Galileo. By calling up Gilbert's magnetic philosophy in support of Copernican astronomy, Kepler and Galileo influenced the course of astronomical debate by strengthening the analogy and by cementing together the two sciences of magnetism and celestial physics..." (Baldwin).

ABPC/RBH list only two copies sold since 1942: Honeyman 1979, £700 (cont. calf worn, one plate torn and repaired), this subsequently offered by Howell in 1981 for $3250; Christie's 2016, £7500 (modern binding, uncut).

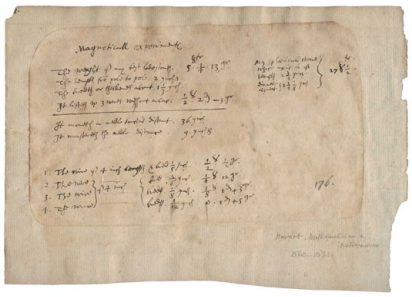
http://sophiararebooks.com/4171

Only manuscript by the 'English Galileo' to appear on the market

34. HARRIOT, Thomas. *'Magneticall experiments', autograph manuscript notes on a scientific experiment involving two magnets.*

$35,000

A record of an experiment by Thomas Harriot (c.1560-1621), one of the most important early English astronomers and mathematicians, often referred to as the 'English Galileo.' "The real greatness of Thomas Harriot has hitherto been grasped only by a small circle who study his manuscripts. These unique relics would, if published in his day, have placed him beside Galileo and Kepler" (Lohne). None of Harriot's scientific work was published in his lifetime, and although he left some 7000 folios of manuscript material, now held at the British Library and Petworth House, Sussex, we believe this to be the only autograph document by Harriot to have appeared on the market (no others are recorded by ABPC/RBH). Harriot gives the dimensions and weights of two magnets – 'my best lodestone' and 'my sphaericall stone' – before recording the results of some experiments using the former, including the weight of three wires it 'lifteth up', and at what distance it 'moveth' and 'mastereth' a needle (36 and 9 inches respectively). Below this are given the length, breadth and weight of four wires, presumably used in the experiment. Harriot's interest in magnetism goes back at least to his participation in Walter Ralegh's expedition to Virginia in 1585. On the voyage to Virginia Harriot is known to have made scientific observations that included noting the variation of the compass and measuring the magnetic north against the position of the pole star, work that was referred to by William Gilbert (1544-1603) in his seminal De Magnete (1600).



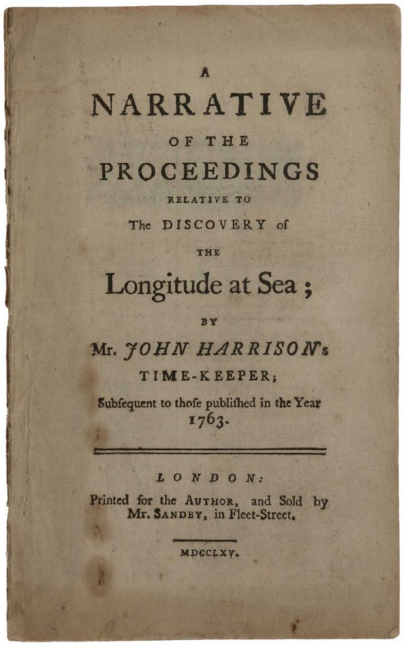
http://sophiararebooks.com/4164

Harrison's claim to the longitude prize

35. [HARRISON, John and James SHORT]. *A Narrative of the Proceedings relative to the Discovery of the Longitude at Sea; by Mr. John Harrison's Time-Keeper.* London: Printed for the Author, and Sold by Mr. Sandby, 1765.

$65,000

First edition of this extremely rare work in which Harrison defended the success of his chronometer H4, and staked his claim to be awarded the full "Longitude Prize" of £20,000. Harrison had been working on the problem of longitude for over three decades by the time he published this work, one of the most important of the pamphlets produced in the course of the longitude affair. H4 had first been properly tested in 1761, when Harrison's son William took it with him on a voyage to Jamaica in the ship Deptford for a sea-trial. Although the trial was a triumph that exceeded the demands of the Longitude Act, Harrison's claim to the Prize was not accepted, and he was forced to undertake another trial of H4 in 1764. Again accompanied by William, on this occasion H4 computed the longitude of Barbados within 9.8 geographical miles, exhibiting accuracy three times greater than that required by the Act. Despite this success, the board still refused to issue the award, in some part due to resistance from the Astronomer Royal Nevil Maskelyne... Faced with another refusal, Harrison had the present appeal to the Board of Longitude printed. The self-published pamphlet was presumably printed in an extremely limited edition for private circulation to members of the Board. The National Maritime Museum did not have a copy of the pamphlet until 2003. ABPC/RBH list only three copies in the past 40 years, including the Streeter copy (in a modern binding) (Christie's 16/17 April 2007, $114,000).


A
NARRATIVE
OF THE
PROCEEDINGS
RELATIVE TO
The DISCOVERY of
THE
Longitude at Sea;
BY
Mr. JOHN HARRISON's
TIME-KEEPER;
Subsequent to those published in the Year 1763.
LONDON:
Printed for the AUTHOR, and Sold by Mr. SANDBY, in Fleet-Street.
MDCCLXV.

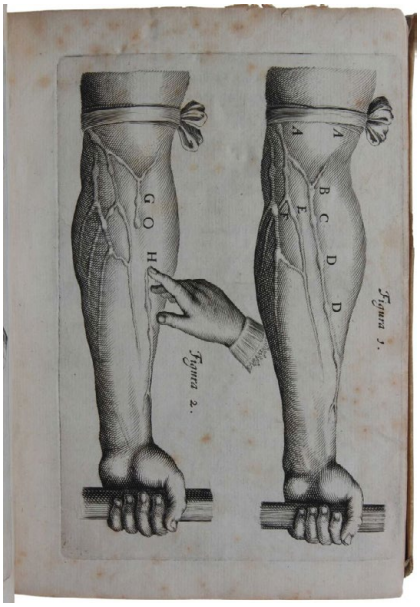
http://sophiararebooks.com/3952

The single most important and famous medical book ever published

36. HARVEY, William. *De motu cordis & sanguinis in animalibus, anatomica exercitation.* Leyden: Johann Maire, 1639.

$50,000

Third, but second complete, edition of the single most important and famous medical book ever published, containing Harvey's discovery and experimental proof of the circulation of the blood, which created a revolution in physiology comparable to the Copernican revolution in astronomy. Harvey's discovery was to become "the cornerstone of modern physiology and medicine" (Garrison-Morton). *De motu cordis* "is probably the most important book in the history of medicine. What Vesalius was to anatomy, Harvey was to physiology; the whole scientific outlook on the human body was transformed, and behind almost every important medical advance in modern times lies the work of Harvey" (*Heirs of Hippocrates*). This is the earliest edition that collectors can reasonably expect to obtain, the first edition (Frankfurt, 1628) being of the greatest rarity. The second edition (Venice, 1635), was fragmentary, lacking the plates, parts of the introduction and chapters I and XVI. In this edition, the publisher Maire restored these passages, included the illustrations, and also added the criticism and denials of James Primerose (Animadversiones, 1630) as a separate tract at the end of the book. The text of Harvey's treatise is printed passage by passage alternatively with the refutations of Parigiano. *Provenance*: S. Cunbert (ownership inscription "Bibliotheca medica 1722" on title); J.W.F. Stoll, Cologne 1796 (engraved bookplate); D. Lemberg, 1838 (owners name on title); Warren G. Smirl (his sale, Sotheby's London, 11 November 1994, lot 166, £18,400); Christie's New York, 14 April 2005, lot 120, $45,600).

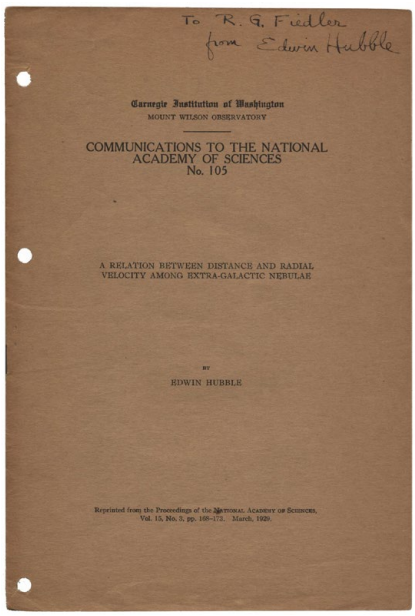


http://sophiararebooks.com/3607

Hubble's law and the expanding universe - inscribed presentation offprint

37. HUBBLE, Edwin. *A Relation between Distance and Radial Velocity among Extra-Galactic Nebulae.* [Washington, D.C.]: Carnegie Institution, 1929.

$125,000


To R. G. Fiedler
from Edwin Hubble

Carnegie Institution of Washington
MOUNT WILSON OBSERVATORY

COMMUNICATIONS TO THE NATIONAL ACADEMY OF SCIENCES
No. 105

A RELATION BETWEEN DISTANCE AND RADIAL VELOCITY AMONG EXTRA-GALACTIC NEBULAE

BY
EDWIN HUBBLE

Reprinted from the Proceedings of the National Academy of Sciences, Vol. 15, No. 3, pp. 168-173, March, 1929.

First edition, extraordinarily rare inscribed offprint, of Hubble's landmark paper, which "made as great a change in man's conception of the universe as the Copernican revolution 400 years before" (DSB). Even 'ordinary' copies of this offprint are very rare, but we have never seen nor heard of another inscribed copy. This paper "is generally regarded as marking the discovery of the expansion of the universe" (*Biographical Encyclopedia of Astronomers*). It established what would later become known as Hubble's Law: that galaxies recede from us in all directions and more distant ones recede more rapidly in proportion to their distance. "The repercussions were immense. The galaxies were not randomly dashing through the cosmos, but instead their speeds were mathematically related to their distances, and when scientists see such a relationship they search for a deeper significance. In this case, the significance was nothing less than the realization that at some point in history all the galaxies in the universe had been compacted into the same small region. This was the first observational evidence to hint at what we now call the Big Bang" (Singh, *Big Bang*). Hubble's "result has come to be regarded as the outstanding discovery in twentieth-century astronomy" (DSB).

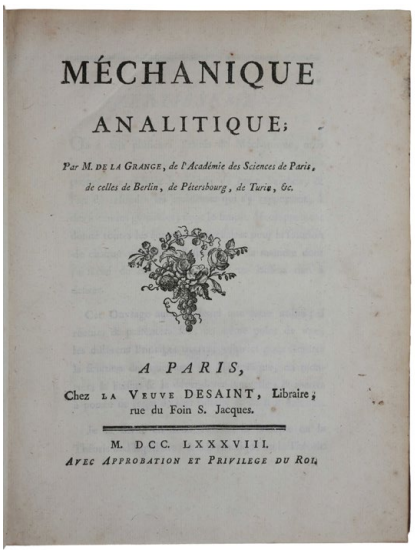
http://sophiararebooks.com/3988

Second only to Newton's Principia

38. LAGRANGE, Joseph Louis de. *Méchanique analitique.* Paris: Veuve Desaint, 1788.

$14,500

First edition, and a fine copy, of "perhaps the most beautiful mathematical treatise in existence. It contains the discovery of the general equations of motion, the first epochal contribution to theoretical dynamics after Newton's *Principia*" (Evans).


MÉCHANIQUE
ANALITIQUE;
Par M. de la Grange, de l'Académie des Sciences de Paris, de celles de Berlin, de Pétersbourg, de Turin, &c.

A PARIS,
Chez la Veuve DESAINT, Libraire, rue du Foin S. Jacques.

M. DCC. LXXXVIII.
Avec Approbation et Privilege du Roi.

"Lagrange's masterpiece, the *Méchanique Analitique* (Paris, 1788), laid the foundations of modern mechanics, and occupies a place in the history of the subject second only to that of Newton's *Principia*." "With the appearance of the *Mecanique Analytique* in 1788, Lagrange proposed to reduce the theory of mechanics and the art of solving problems in that field to general formulas, the mere development of which would yield all the equations necessary for the solution of every problem ... [it] united and presented from a single point of view the various principles of mechanics, demonstrated their connection and mutual dependence, and made it possible to judge their validity and scope." (DSB). "In the preface of the book La Grange proudly points to the complete absence of diagrams, so lucid is his presentation. He regarded mechanics (statics and dynamics) as a geometry of four dimensions and in this book set down the principle of virtual velocities as applied to mechanics." (Dibner).

Grolier/Horblit 61; Evans 10; Dibner 112; Sparrow 120; Norman 1257.

http://sophiararebooks.com/4069

Lansbergen's astronomical tables - competition for Kepler's Tabulae Rudolphinae

39. LANSBERGEN, Philippus van. T*abulae motuum coelestium perpetuae...* Middelberg: Zacharias Roman, 1788.

$8,500

First edition, very rare, of Lansbergen's astronomical tables. Lansbergen was a staunch Copernican, and "complained with justification that the Church opposed the heliocentric hypothesis on theological grounds alone, without examining the evidence and the scientific arguments in its support" (Heninger). Lansbergen could not, however, accept Johannes Kepler's elliptical orbits, upon which Kepler had based his own Rudolphine Tables published five years earlier. Lansbergen attacked Kepler in his early works, and produced these rival tables which were founded on a more traditional epicyclic theory. Lansbergen's tables were simpler than Kepler's and were widely used by astronomers throughout the 1630s. The brilliant young English astronomer Jeremiah Horrocks bought a copy of Lansbergen's *Tabulae* in 1635 (when he was 16) and noted that Lansbergen had predicted a transit of Venus in 1639, whereas Kepler had predicted Venus would pass below the Sun. Horrocks recalculated Lansbergen's tables and found there would indeed be a transit of Venus, which he was the first to observe. ABPC/RBH list only a single copy of Lansbergen's tables in the last fifty years.

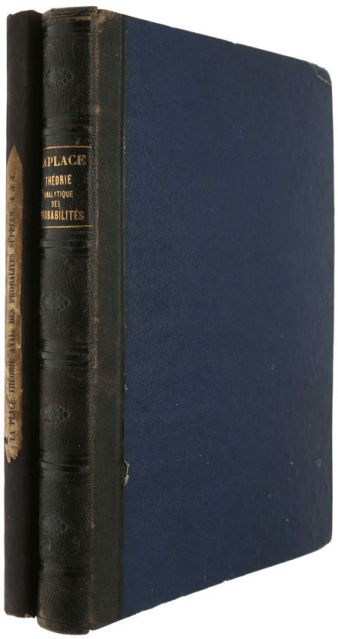
http://sophiararebooks.com/4061

A landmark in probabilty - complete with all supplements

40. LAPLACE, Pierre Simon. *Théorie Analytique des Probabilités. Paris: Courcier, 1812. [With:] Supplément a la Théorie Analytique des Probabilités [1816]; Deuxième Supplément 1818; Troisième Supplément [1819]; Quatrième Supplément [1825].*

$32,000

First edition, very rare, accompanied by all four supplements (the fourth supplement is especially rare), of "the most influential book on probability and statistics ever written" (Anders Hald), which John Herschel called 'the *ne plus ultra* of mathematical skill and powe'. "In the *Théorie* Laplace gave a new level of mathematical foundation and development both to probability theory and to mathematical statistics... [It] emerged from a long series of slow processes and once established, loomed over the landscape for a century or more." (Stigler). "It was the first full–scale study completely devoted to a new specialty... [and came] to have the same sort of relation to the later development of probability that, for example, Newton's *Principia* had to the later science of mechanics" (DSB). "The *Théorie* contains, besides an introduction, two books and four supplements: Book I. *Du calcul des Fonctions génératrices*; Book II. *Théorie générale des Probabilités*; first supplement, composed in 1816. *Sur l'Application du calcul des Probabilités à la philosophie naturelle*; second supplement, composed in 1817. *Sur l'Application du calcul des Probabilités aux opérations géodésiques...*; third supplement, composed in 1819. *Application des formules géodésiques de Probabilité à la Méridienne de France*; [fourth supplement, composed in 1825]" (Hoefer). ABPC/RBH list only one copy of this first edition sold at auction since Honeyman, and that copy lacked the fourth supplement (Sotheby's, 11 December 2007, $25,000). The Honeyman copy had only the first supplement.

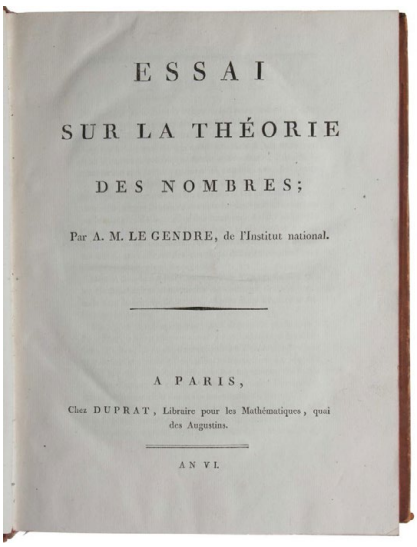


http://sophiararebooks.com/4159

First book entirely dedicated to number theory

41. LEGENDRE, Adrien Marie. *Essai sur la theorie des nombres.* Paris: Duprat, 1797/1798.

$4,000



ESSAI

SUR LA THÉORIE

DES NOMBRES;

Par A. M. LE GENDRE, de l'Institut national.

A PARIS,

Chez DUPRAT, Libraire pour les Mathématiques, quai des Augustins.

AN VI.

A fine copy of the first book entirely dedicated to number theory. The work contains Legendre's discovery of the law of quadratic reciprocity, which Gauss referred to as the 'golden theorem' and for which he published six proofs in his *Disquisitiones arithmeticae* (1801). "The theory of numbers in the eighteenth century remained a series of disconnected results. The most important works in the subject were Euler's *Anleitung zur Algebra* (1770) and Legendre's *Essai sur la théorie des nombres* (1798)." (Kline). "Legendre was one of the most prominent mathematicians of Europe in the 19th Century… His texts were very influential. In 1798 he published his *Theory of Numbers*, the first book devoted exclusively to number theory. It underwent several editions, but was soon to be superseded by Gauss' *Disquisitiones arithmeticae*.

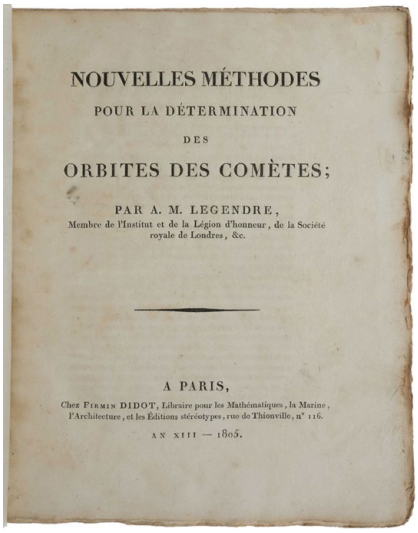
Norman 1325; Parkinson *Breakthroughs* 231.

http://sophiararebooks.com/3414

The method of least squares

42. LEGENDRE, Adrien Marie. *Nouvelles méthodes pour la détermination des orbites des comètes.* Paris: Didot, 1805.

$6,750



NOUVELLES MÉTHODES

POUR LA DÉTERMINATION

DES

ORBITES DES COMÈTES;

PAR A. M. LEGENDRE,

Membre de l'Institut et de la Légion d'honneur, de la Société royale de Londres, &c.

A PARIS,

Chez FIRMIN DIDOT, Libraire pour les Mathématiques, la Marine, l'Architecture, et les Éditions stéréotypes, rue de Thionville, n° 116.

AN XIII — 1805.

First edition, first issue of the invention of the method of least squares, "the automobile of modern statistical analysis" and the origin of "the most famous priority dispute in the history of statistics" (Stigler, *A History of Statistics*). "The great advances in mathematical astronomy made during the early years of the nineteenth century were due in no small part to the development of the method of least squares. The same method is the foundation for the calculus of errors of observation now occupying a place of great importance in the scientific study of social, economic, biological, and psychological problems. Gauss says in his work on the *Theory of Motions of the Heavenly Bodies* (1809) that he had made use of this principle since 1795 but that it was first published by Legendre. The first statement of the method appeared as an appendix entitled "Sur la méthode des moindres quarrés" in Legendre's *Nouvelles méthodes pour la détermination des orbites des comètes,* Paris 1805" (Wolberg, 'The Method of Least Squares,' in *Designing Quantitative Experiments*, 2010).

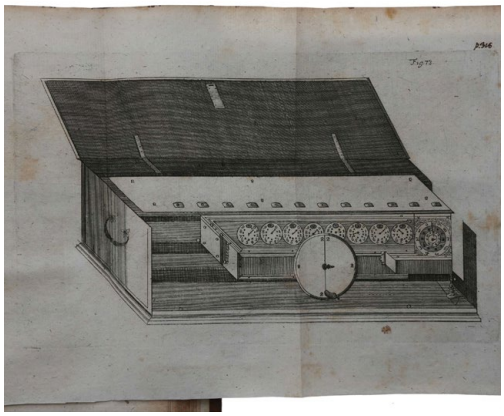
http://sophiararebooks.com/4038

A milestone in the history of computing

43. LEIBNIZ, Gottfried Wilhelm. *Brevis descriptio machinae arithmeticae, cum figura.* Berlin: Papen, 1710.

$40,000

First edition, rare, of Leibniz's description of his famous calculating machine, the first stepped-drum calculator, and the first machine that could perform multiplication and division. "Leibniz studied Morland's and Pascal's various designs and set himself the task of constructing a more perfect and efficient machine. To begin with, he improved Pascal's device by adding a stepped-cylinder to represent the digits 1 through 9 … In 1694, Leibniz built his calculating machine, which was far superior to Pascal's and was the first general purpose calculating device able to meet the major needs of mathematicians and bookkeepers" (Rosenberg). "[He] invented a device now known as the Leibniz wheel and still in use in some machines. The mechanism enabled him to build a machine which surpassed Pascal's in that it could do not only addition and subtraction fully automatically but also multiplication and division. Leibniz's device enabled his machine to perform the operation of multiplication automatically by repeated additions. His idea was apparently re-invented in 1820 by Charles Xavier de Colmar" (Goldstine). Although Leibniz demonstrated his machine before the Royal Society and elsewhere, no description of it appeared in print until in the present form. It is contained in the first volume of the journal of the Berlin Academy of Science, which Leibniz founded. Although the volume is naturally present in some institutional holdings, it is absent from many, and is very rare on the market.



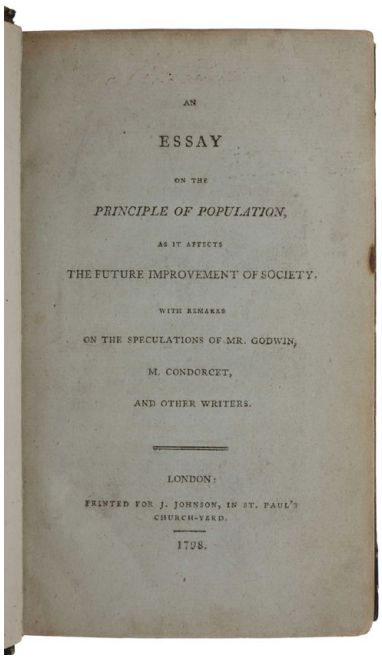
http://sophiararebooks.com/3941

PMM 251 - Population and subsistence

44. [MALTHUS, Thomas Robert]. *An Essay on the Principle of Population...* London: J. Johnson, 1798.

$225,000

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



AN

ESSAY

ON THE

PRINCIPLE OF POPULATION,

AS IT AFFECTS

THE FUTURE IMPROVEMENT OF SOCIETY.

WITH REMARKS

ON THE SPECULATIONS OF MR. GODWIN,

M. CONDORCET,

AND OTHER WRITERS.

LONDON:

PRINTED FOR J. JOHNSON, IN ST. PAUL'S CHURCH-YARD.

1798.

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

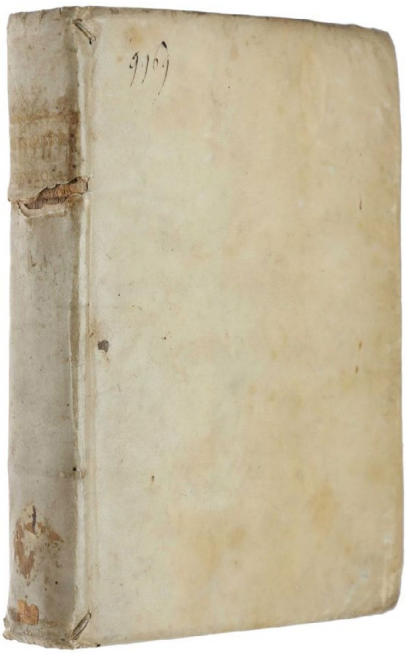
http://sophiararebooks.com/3905

Anticipating Newton and Leibniz

45. MENGOLI, Pietro. *Geometriae Speciose Elementa.* Bologna: Giovanni Battista Ferroni, 1659.

$22,500

Extremely rare first edition, a fine copy from the library of Pietro Riccardi, of this important work on limits of geometrical figures. In this work Mengoli "set up the basic rules of the calculus thirty years before Newton and Leibniz. Both of these were influenced by his contribution, in the case of Leibniz the influence was direct as he read Mengoli's work while in the case of Newton he knew of it indirectly through studying Wallis." (MacTutor). "In the 'Geometriae speciosae elementa' (1659), Mengoli set out a logical arrangement of the concepts of limit and definite integral that anticipated the work of 19th-century mathematicians. In establishing a rigorous theory of limits, he considered a variable quantity as a ratio of magnitudes and hence needed to consider only positive limits. He then made the following definitions: a variable quantity that can be greater than any assignable number is called 'quasi-infinite'; a variable quantity that can be smaller than any positive number is 'quasi-nil'; and a variable quantity that can be both smaller than any number larger than a given positive number a and greater than any number smaller than a is 'quasi-a.' Using these precise concepts of the infinite, the infinitesimal, and the limit, and working from simple inequalities valid between numerical ratios, he demonstrated the properties of the limit of the sum and the product, and showed that the properties of proportions are conserved also at the limit. The proofs obtain when such limits are neither 0 nor ∞ for this case Mengoli set out the properties of the infinitesimal calculus and the calculus of infinites some thirty years before Newton published them in his 'Principia.' OCLC records just one copy in the US.



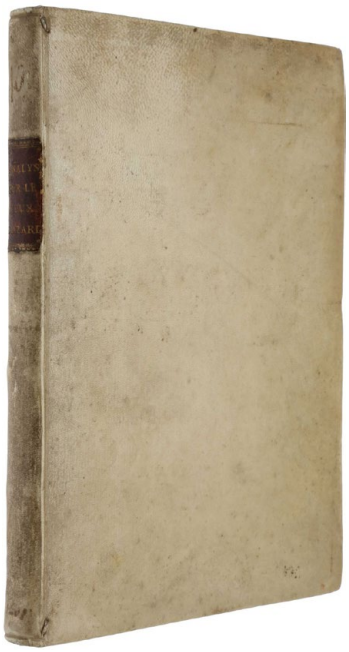
http://sophiararebooks.com/3668

The first separately published textbook of probability

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

$12,000

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



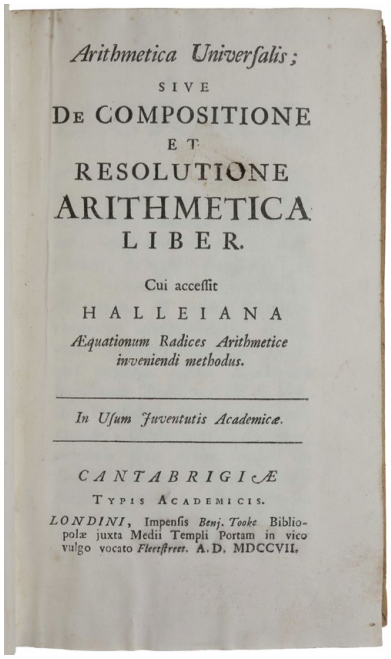
http://sophiararebooks.com/3894

Newton's most often read and republished mathematical work

47. NEWTON, Isaac. *Arithmetica Universalis; sive de Compositione et Resolutione Arithmetica Liber.* Cambridge / London: Typis Academicus / Benjamin Tooke, 1707.

$22,000

First edition of Newton's treatise on algebra, or 'universal arithmetic,' his "most often read and republished mathematical work" (Whiteside). "Included are 'Newton's identities' providing expressions for the sums of the *i*th powers of the roots of any polynomial equation, for any integer i [pp. 251-2], plus a rule providing an upper bound for the positive roots of a polynomial, and a generalization, to imaginary roots, of René Descartes' Rule of Signs [pp. 242-5]" (Parkinson, p. 138). About this last rule for determining the number of imaginary roots of a polynomial (which Newton offered without proof), Gjertsen (p. 35) notes: "Some idea of its originality … can be gathered from the fact that it was not until 1865 that the rule was derived in a rigorous manner by James Sylvester." The final chapter, on the extraction of roots, is by Edmund Halley.



Arithmetica Universalis;
SIVE
DE COMPOSITIONE
ET
RESOLUTIONE
ARITHMETICA
LIBER.
Cui accessit
HALLEIANA
Æquationum Radices Arithmetice inveniendi methodus.

In Usum Juventutis Academicæ.

CANTABRIGIÆ
TYPIS ACADEMICIS.
LONDINI, Impensis *Benj. Tooke* Bibliopolæ juxta Medii Templi Portam in vico vulgo vocato *Fleetstreet*. A.D. MDCCVII.

Babson 199; Wallis 277.

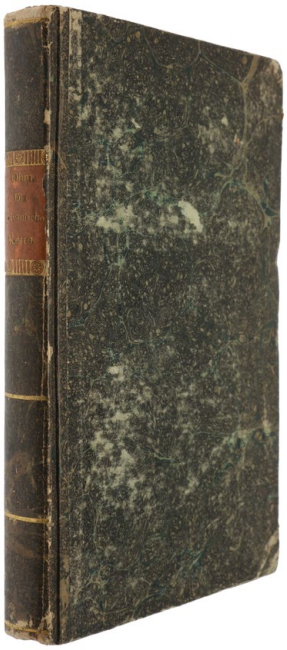
http://sophiararebooks.com/4064

PMM 289, an exceptionally fine copy

48. OHM, Georg Simon. *Die galvanische Kette, mathematisch bearbeitet.* Berlin: T.H. Riemann., 1827.

$34,500

First edition, very rare complete copy, and in what is probably the original publisher's boards, of "Ohm's great work" (DSB), containing the fully-developed presentation of his theory of electricity, including Ohm's Law. The present copy not only retains the errata leaf R1, often lacking, but also the one-leaf publisher's list R2, which is almost always missing (the Dibner, Horblit/Evans, Norman, Waller and Wellcome copies, and the copy described by Grolier Science, all lack it). "Ohm's great contribution 'The Galvanic Chain Mathematically Calculated' was to measure the rate of current flow and the effects of resistance on the current. 'Ohm's law' that the resistance of a given conductor is a constant independent of the voltage applied or the current flowing (that is, C = E/R, where C = current, E = electromotive force and R = resistance) was arrived at theoretically by analogy with Fourier's heat measurements (1800-14)" (PMM). Although copies of this book appear with some regularity on the market, we have found only three absolutely complete copies, as here, at auction since 1938. The Elihu Thomson copy, sold Christie's New York, 1999 ($11500), was subsequently offered by Jonathan Hill, who wrote (Cat. 131, No. 71), "I have had a good number of copies of this book and this is the first to have the leaf of ads". Tickets of of the publisher T.H. Riemann to the front paste-down.



Dibner 63; Horblit 81; Norman 1607; PMM 289; *Milestones of Science*, 154.

http://sophiararebooks.com/4160

The first book devoted exclusively to the structure of an animal other than man

49. RUINI, Carlo. *Dell' Anotomia e dell' infermita del cavallo.* Bologna: Heirs of Giovanni Rossi, 1598.

$95,000

First edition, the highly scarce first issue, of "one of the great rarities of early zootomical literature" (Cole), with illustrations considered comparable to those in Vesalius' *Fabrica*."The unusual rarity of the first edition [i.e., first issue] might be partially explained by the fact that a portion of the sheets of the first edition were reissued the following year by Gaspare Bindoni in Venice. Copies of this second issue, which is also rare, contain a cancel title and a different dedication leaf, changing the dedication to Ceìsar, Duke of Vendôme, natural son of Henri IV" (Norman). "His book is the first devoted to the anatomy of an animal, and is one of the finest achievements of the heroic age of Anatomy" (Singer). "At the hands of Ruini the subject of equine anatomy jumped at a single bound from the blackest ignorance to relative perfection, the degree of which it is difficult to exaggerate" (Smith). "As the author of the first book devoted exclusively to the structure of an animal other than man, Ruini ranks among the founders of both comparative anatomy and veterinary medicine" (Norman).

Provenance: From the library of Jean Blondelet. "Jean Blondelet was probably the greatest, but least known, French collector of rare medical and scientific books in the 20th century." (Jeremy Norman).

Dibner 186 (second issue); GM 285; Mortimer (Italian) 448; Norman 1858.

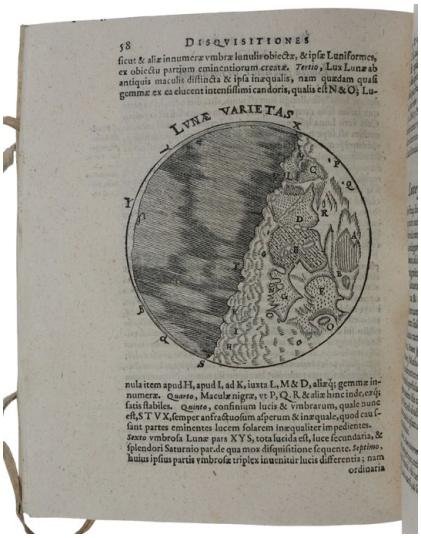
http://sophiararebooks.com/3989

The earliest detailed map of the moon and the first illustration of a telescope

50. SCHEINER, Christoph. *Disquisitiones mathematicae, de controversiis et novitatibus astronomicis.[Bound after:] TANNER, Adam. Astrologia Sacra.* Ingolstadt: Eder for Elisabeth Angermaria, 1614 & 1615.

$48,000

First edition, in a beautiful contemporary binding, of Scheiner's very rare work containing the second earliest map of the moon – but the first to give topographical details – as well as the first illustrations of a telescope. It builds upon Scheiner's 1612 discovery of sunspots, made using a telescope he built himself, which led to his famous controversy with Galileo. This work discusses almost all the astronomical issues then current, especially those brought about by the newly invented telescope. There is an extensive argument against the notion of an infinite universe, illustrated by a striking full-page woodcut on p. 17 of 'Chaos infinitum ex atomis' surrounding the sphere of fixed stars. This is followed by a detailed examination of the Copernican heliocentric theory, as well as the Tychonic system, which he supported, and that of Fracastoro; the systems are illustrated by three large diagrams. Then follow discussions of the moon (including its 'secondary light'), the sun (with a full examination of sunspots), and the planets. On p. 58 is an extraordinary map of the moon, with craters and other features labelled and listed, including Mare Crisium, Mare Tranquilitatis, Mare Foecunditatis, Mare Nectaris and the crater Aristoteles. The only earlier maps of the moon are those published in Galileo's *Sidereus Nuncius* (1610), but these are "apparently but schematic views of what Galileo saw with his telescope, for none of the features recorded on them can be identified with certainty with any known formation" (Kopal).



http://sophiararebooks.com/4126

An important work in the history of the telescope

51. SCHYRLAEUS DE RHEITA, Anton Maria. *Oculus Enoch et Eliae, sive radius sidereomysticus...* Antwerp: Hieronymus Verdussen, 1645.

$58,500

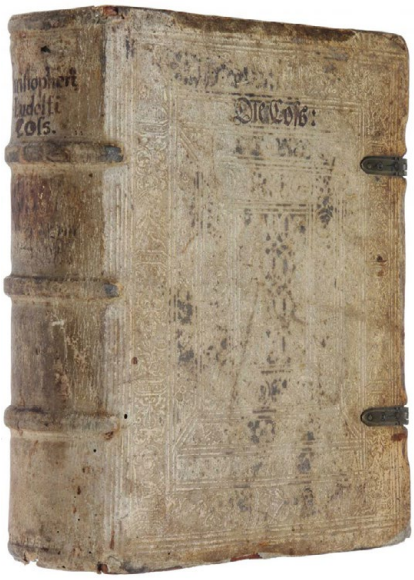
First edition of this very rare and influential work in the history of the telescope, a remarkable copy, uncut in the original interim boards. Rheita "introduced a number of crucial improvements in his work, leading to a real breakthrough in telescope design. First, Rheita suggested a new and much better method of polishing lenses, leading to a strong reduction of deviations; secondly (and even more importantly), he found that a compound ocular, composed of three or four lenses, resulted in a much better quality than using only a single (compound) ocular" (Van Helden). "This new polishing technique, together with the compound eyepiece, allowed for longer and longer telescopes, and the astronomical discoveries that went along with it, during the second half of the 17th century… Rheita's design of telescopes became known throughout Europe, mostly through telescopes produced by Wiesel in Augsburg." (*Biographical Encyclopedia of Astronomers*). "We can consider Schyrl de Rheita and Johannes Wiesel as the founders of technical optics. Only with the new manufacturing technology, which they developed, did the telescope change from an imperfect device into an efficient instrument of research" (Willach). The only other copies recorded by ABPC/RBH in the last 50 years are the Honeyman and Macclesfield copies (the latter sold Sotheby's, October 25, 2005, lot 1849, £21,600 = $38,119).

http://sophiararebooks.com/4027

With numerous contemporary annotations

52. STIFEL, Michael. *Die Coss Christoffs Rodolff; mit sch"nen Exempeln der Coss durch Michael Stifel gebessert und sehr gemehrt.* K"nigsberg: Alexandrum Behm von Lutomysl, 1553.

$22,500



A magnificent copy, in contemporary blind stamped pigskin and heavily annotated, of the first edition Stifel's Coss. "This work did for Germany what Cardan's and Tartaglia's did for Italy" (Smith). This is the first edition by Stifel of Rudolff's Behend vnnd Hubsch Rechnung durch die kunstreichen regeln Algebre so gemeincklich die Coss genennt warden (Strasbourg, 1525), the first German book on algebra, usually referred to simply as the Coss. Rudolff's book having become unavailable, Stifel took on the task of producing a new version, not only reproducing Rudolff's text in its entirety, but adding commentary and additions of his own, which more than doubled the length of the book (Rudolff's 208 pages grew to 494 in Stifel's edition). Stifel's work served for at least the next 150 years as the principal text from which many mathematicians learned their algebra, including Frans van Schooten (1615-1660) (DSB XII: 205) and, as late as the eighteenth century, Leonhard Euler (1707-1783); in fact, it formed the basis of Euler's own algebra textbook, Vollständige anleitung zur Algebra (1770) (see below). "[Stifel] was, in fact, the greatest German algebraist of the sixteenth century" (DSB).

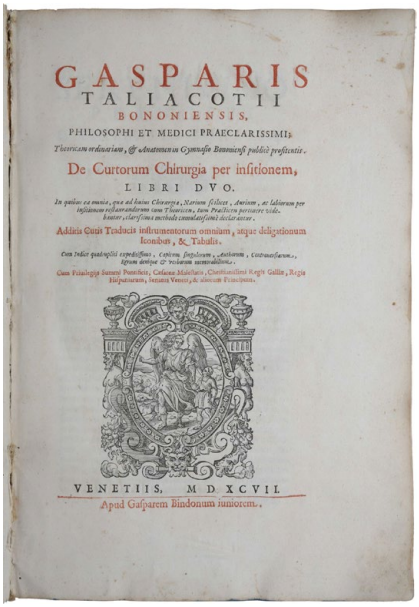
http://sophiararebooks.com/3207

One of five known large and thick paper copies

53. TAGLIACOZZI, Gaspare. *De curtorum chirurgia per insitionem, libri duo.* Venice: Gaspare Bindoni, 1597.

$125,000

First edition, first issue, one of five known large and thick paper copies, of the first book devoted entirely to plastic surgery. Only two of these are in private hands: the present copy, in a contemporary binding, and the Norman copy, which is an ex-library copy in modern binding. "This work,'"Concerning the surgery of the mutilated by grafting,' is a classic in the history of plastic surgery and is especially noteworthy for its description of rhinoplasty. Rhinoplasty had been practiced in ancient India and, in the thirteenth century, by a family of itinerant Sicilian surgeons who kept the operation a family secret. The volume is divided into two parts: the first, "Theory of the art of plastic surgery," is about the structure, function, and physiology of the nose; and the second part, "Practice of the art," describes and illustrates the instruments and operative procedures for restoration of the nose, lip, and ear. Tagliacozzi also fully discussed the complications, such as hemorrhage and gangrene, that often occurred during these operations. The numerous full-page woodcuts are well-executed and illustrate many of the techniques described in the text. The immediate popularity of the work caused it to be pirated by another Venetian printer" (*Heirs of Hippocrates*). Rhinoplasty was much in demand in the sixteenth century and later, both as a remedy for the grotesque deformity of 'saddle nose' caused by syphilis, and for injuries resulting from duels.


GASPARIS
TALIACOTII
BONONIENSIS,
PHILOSOPHI ET MEDICI PRAECLARISSIMI,
Theoricam ordinariam, & anatomen in Gymnasio Bononiensi publicè profitentis.
De Curtorum Chirurgia per insitionem,
LIBRI DVO.
Addita Cuiusdam Traducis instrumentorum omnium, atque delineationum Iconibus, & Tabulis.
VENETIIS, M D XCVII.
Apud Gasparem Bindonum iuniorem.

GM 5734; *Heirs of Hippocrates* 379; Mortimer (Italian) 488; Norman 2048.

http://sophiararebooks.com/3995

Renaissance ballistics: 7 copies in US, the majority incomplete

54. TARTAGLIA, Niccolò. *Three bookes of colloquies concerning the arte of shooting.* London: Harrison, 1588.

$48,500

First edition in English, very rare with all the plates, of the first three books of Tartaglia's 1546 *Quesiti et Inventioni Diverse*, dealing with ballistics and expanding and correcting the treatment in his 1537 *Nova Scientia*, the first systematic treatise on the subject. The appendix of the translator Cyprian Lucar is compiled from writings on gunnery by contemporary authors. "Tartaglia proved both mathematically and experimentally that the trajectory of a missile fired from a cannon was a curved line throughout, thus contradicting the 'impetus' theory derived from Aristotle's *Physics*, which stated that a projectile's trajectory was described by two straight lines united by a curved line (Tartaglia was the first Renaissance scientist to point out serious flaws in the *Physics*). Tartaglia demonstrated that from the beginning of its flight, a projectile was affected by gravity, which, along with wind resistance, caused its forward velocity to lessen while increasing the speed of its fall. Tartaglia also observed a relationship between the speed of projection and the speed of fall: the greater the initial speed, the less the gravitational influence. Through experimentation, he determined that the maximum cannon range, at any given initial speed, was obtained with a firing elevation of forty-five degrees" (Norman). Designed as a handbook for practicing military men, copies of this work were often damaged through use, perhaps in the field, and few complete examples survive. ABPC/RBH list only three other copies, and no other complete copy since 1968. OCLC lists seven copies in US, the majority incomplete.


OF COLLOQVIES. 5

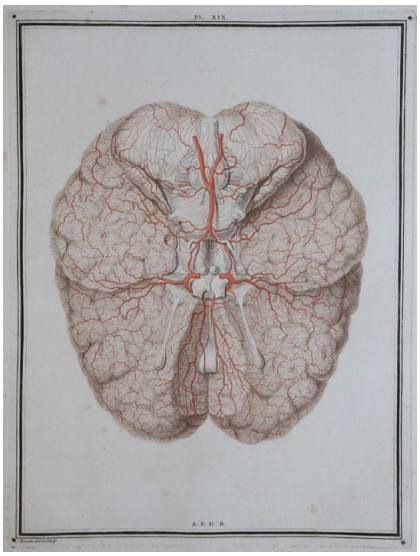
http://sophiararebooks.com/4103

Most accurate neuroanatomical work produced before microscopic staining techniques

55. VICQ D'AZYR, Félix. *Traité d'anatomie et de physiologie, avec des planches coloriées représentant au naturel les divers organes de l'homme et des animaux ... Tome premier [all published].* Paris: François Ambroise Didot l'aîné, 1786.

$45,000

First edition, uncut in a contemporary binding, and very rare when complete, of the "most accurate neuroanatomical work produced before the advent of microscopic staining techniques" (GM). "Vicq d'Azyr, the eminent French anatomist and neurologist, has been called the greatest comparative anatomist of the eighteenth century. A highly successful physician, he numbered Marie Antoinette among his patients. Vicq d'Azyr's descriptions of the gross morphology of the brain were among the most accurate of his day and he identified many of the cerebral convolutions as well as various internal structures of the brain for the first time. Although Vicq d'Azyr intended his *Traité d'anatomie et de physiologie* (Paris, 1786-9) to be a multi-volume set, only one volume was published. It contained all of his important neuroanatomical studies and was one of the finest works on the subject to appear before the advent of microscopy. The atlas' sixty-nine plates included thirty-four hand-colored aquatints with individual outline plates drawn and engraved by Alexandre Briceau (fl. 1765), the noted Paris engraver, from gross dissections of human brains which had been fixed in alcohol, such fixatives as formalin and other chemicals not yet being used" (*Heirs of Hippocrates*). The Haskell F. Norman copy, in a modern binding, made $23,000 (Christie's, 1998).



http://sophiararebooks.com/4005

Large paper copy

56. VOLTAIRE, François-Marie Arouet. *Éléments de la Philosophie de Neuton,* Amsterdam: Etienne Ledet, 1738.

$12,000

First edition, first issue, extremely rare large and thick paper copy, and in a beautiful contemporary binding, of Voltaire's only scientific work. "Owing to Descartes' great influence and Newton's dispute with Leibnitz, the spread of his [Newton's] thought on the continent took about fifty years. One of his greatest champions in France was Voltaire (1694-1778), whose *Éléments de la Philosophie de Neuton*, 1738, was widely read" (PMM). Voltaire "presented Newton as the discoverer of the true system of the world and the destroyer of the errors of Cartesianism" (Norman). The work is dedicated to Voltaire's mistress, the Marquise du Châtelet, who provided the first French translation of Newton's *Principia*. Two issues of this first edition are known, printed for the publishers Etienne Ledet and Jacques Desbordes, of which the Ledet issue is generally accepted to be the first. ABPC/RBH list only two large paper copies in the last 80 years. One of these was the Norman copy, the second (Desbordes) issue, in a later binding and described as being 'large and thick paper' in the Norman library catalogue, although it only measured 215 x 132 mm, compared to 227x137 mm for the present copy.

Babson 120; Wallis 155; Norman 2165.

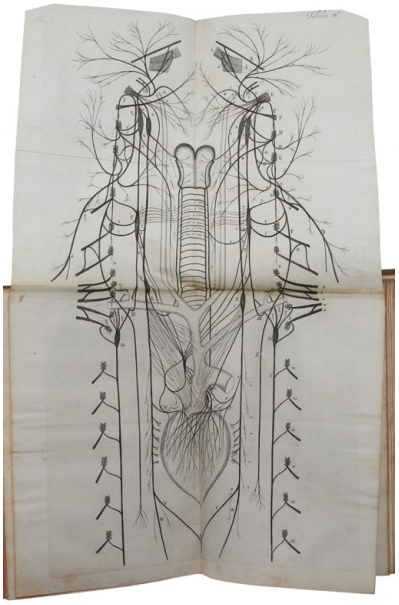
http://sophiararebooks.com/4104

A founding work of neurology

57. WILLIS, Thomas. *Cerebri anatome: cui accessit nervorum descriptio et usus.* London: Ja. Flesher for Jo. Martyn and Ja. Allestry, 1664. [Bound with:] SEBISCH, Melchior. *Dissertatio de senectutis.* Strasbourg: Eberhard Welpen, 1645.

$42,000

First edition, first issue, and a magnificent copy, of the "most complete and accurate account of the nervous system which had hitherto appeared, and the work that coined the term 'neurology'" (GM). "Dissatisfied with the imperfect and fragmentary descriptions in earlier accounts of the brain, Willis devised a comprehensive and comparative program of brain dissections, which he carried out with the aid of his pupils Christopher Wren, Richard Lower and Thomas Millington — one of the earliest examples of collaborative scientific research in England. Willis classified and described ten pairs of cranial nerves, six of which are still recognized, and was the first to grasp the physiological significance of the 'circle of Willis,' the circle of anastomosed arteries at the base of the brain by which full circulation to all parts of the brain can be maintained even when the carotid or vetebral arteries are blocked." (Norman). *Provenance*: From the library of Charron de Ménars (d. 1669). This great library, which included the greater part of the library of Jacques-Auguste de Thou, was acquired by Cardinal de Soubise. Inscribed by Soubise in black ink. Engraved bookplate with signature of Fr.-J. Moreau, professor at the Faculty of Medicine of Paris (1788-1862); ink stamp of Dr. Alexis Moreau. From the library of Jean Blondelet.



Grolier/Medicine 32a; Lilly, *Notable Medical Books* 77; Norman 2243.

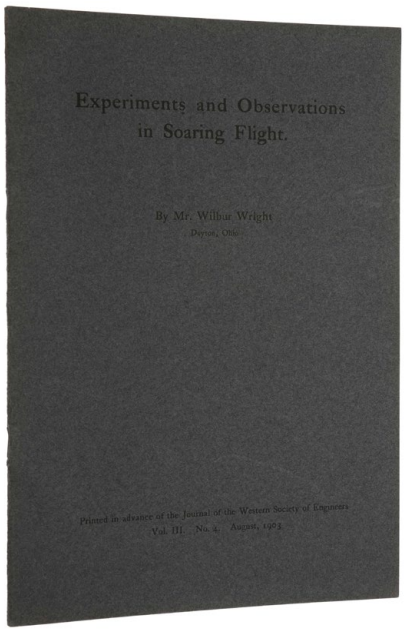
http://sophiararebooks.com/4169

An extremely fine copy

58. WRIGHT, Wilbur. *Experiments and Observations in Soaring Flight.* [Chicago: 1903].

$25,000

First edition, the rare offprint issue, and a virtually mint copy, of Wilbur Wright's second report of his and Orville's flying experiments. This is the first account of the Wrights' experiments with motorized gliders. The brothers made their first powered flight (852 feet in 59 seconds) on 17 December 1903, six months after this report was read before the Western Society of Engineers. "Of the work described in their second paper Wilbur later testified in 1912: 'This was the first time in the history of the world that lateral balance had been achieved by adjusting wing tips to respectively different angles of incidence on the right and left side …We were the first to functionally employ a movable vertical tail in a flying aeroplane. We were the first to employ wings adjustable to respectively different angles of incidence in a flying aeroplane. We were the first to use the two in combination in a flying aeroplane'" (Norman 2267). "There was slight public interest but in 1908 they won the Michelin trophy in Paris and in the following year contracted to supply an airplane for the U. S. Army. The flight by Bleriot across the English Channel in 1909 brought the world's attention to the possibilities of flight, and in a few years man rose to the use of the air as an additional medium of transportation" (Dibner).



Dibner 185 (journal issue); Norman 2267.

http://sophiararebooks.com/4144