Astronomy & cosmography

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How to determine the hour of the day astronomically: first description of the “horoscopion”

1. **APIANUS, Petrus.** Horoscopion Apiani generale dignoscendis horis cuiuiscunque. Ingolstadt, [the author], 1533. Small 2° (ca. 20 × 29 cm). Title printed in red and black with a large woodcut engraving showing Apianus’s scientific instrument described in this work, the “horoscopion”, several tables and 25 woodcut illustrations within the text (1 nearly full-page). Modern brown sheepskin with new pastedowns. € 6500

First edition of Apianus’s first full description of the “horoscopion”, a geometric quadrant which could be used as a scientific instrument for determining the hour of the day astronomically and for measuring distances, heights and depths. In this work, Apianus describes not only the instrument itself, but also the practical application of it. The work is divided into four parts. The first part is merely a description of the instrument, the second part is strictly astronomical, the third part is devoted to solving problems with measuring heights, distances and depths for objects abroad. He provides the reader with 28 exercises showing these various uses of the instrument, elegantly illustrated with woodcuts to clarify it. For example, he sets an example for measuring the depth of a well in exercise 12. After this follows the fourth section with 4 exercises and with insightful woodcuts, which demonstrates a curious method for the determination of time at night by using one’s hand and fingers as a quadrant in conjunction with the North Star.

This work was, just like all the other works of Apianus, very influential and can therefore be regarded as a treasure for 16th-century mathematical and astronomical knowledge.

Binding slightly rubbed, many wormholes throughout the whole book (sometimes affecting the text), a few small tears in the lower margin, last pages slightly waterstained, first endpaper a bit crinkled, but still a rare work in good condition.

Extensively illustrated classic of cosmography, geodesy, mensuration, perspective and optics

2. **APIANUS, Petrus and Gemma FRISIUS.** *Cosmographia.*

Antwerp, Jan Verwithagen (colophon printed by Verwithagen), 1574. 4°. With a large woodcut on the title-page (with a terrestrial globe and other instruments); 4 printed paper volvelles with moving parts and a woodcut sun dial with a string attached to its centre; a folding woodcut cordiform mappa mundi (block size 19 × 27.5 cm) with letterpress text in the margins; well over 100 further woodcut illustrations, diagrams, maps, etc., in the text. Recased in 17th-century(?) limp sheepskin parchment. € 12 500

A great and influential work on cosmography, perspective and many related subjects, in the original Latin, being Gemma Frisius’s extensively revised and expanded version of Petrus Apianus’s account of cosmography, providing readable explanations and numerous clarifying woodcut illustrations. Apianus and Frisius discuss latitude and longitude and their determination, the earth’s climatic zones, maps, surveying, triangulation, and give a brief description of the continents, including the New World. The illustrations include a folding cordiform world map. The ingenious volvelles with their moving dials and pointers clearly illustrate the position and movement of celestial bodies.

With a few small marginal tears, chips or excisions, one at the foot of the title-page very slightly affecting the border of the woodcut and one at the head of the title-page removing an old owner’s inscription, and browned water stains at the foot throughout and at the head of the last 5 quires.

Rare study describing a 622 AH (1225/26 CE) celestial globe with Cufic lettering, with 3 folding plates


Padua, Seminary printing office, 1790. Small 2° (21.5 × 29.5 cm). With 3 large folding engraved plates. Contemporary green half calf, gold-tooled spine, marbled sides.

First and only edition of a rare study describing and illustrating (with all elements needed to construction a 3D facsimile) one of the most splendid Islamic globes ever made, a celestial globe with Cufic lettering in the Borgia Museum at Velletri (now at the Museo Nazionale di Capodimonte in Naples). The Syrian mathematician Qaysar ibn Abu al-Qasim (1178/79–1251) made the bronze globe with inlaid silver and copper (22 cm diameter) in 622 AH (1225/26 CE) for the fourth Ayyubid Sultan of Egypt, al-Malik al-Kamil Muhammad (ca. 1177–1238).

The three folding plates show measured drawings (apparently original size, though without a scale) of the components of the celestial globe, with 1025 stars and 48 constellations, designed so that they could be cut out and assembled around a globe body: the first shows the meridian and horizon rings with 2 gnomon scales (for the base) and a small view of the assembled globe, the second shows the northern hemisphere and the third the southern hemisphere. Mediaeval Arabic astronomers used celestial globes to help solve various problems in astronomy far in advance of their European contemporaries. The seminary printing office in Padova, established 1684, had its own typefoundry and had non-Latin types (including Arabic) cut for its first books, published in 1685.

Old library shelfmark label on the inside of the front board. The hinges and the head and foot of the spine somewhat worn. Otherwise in fine condition.
Important history of ancient astronomy, with chapters on Egyptian, Chaldean and Persian astronomy


First edition of a history of astronomy from prehistoric times to the Alexandrian school in the third century BC, by Jean-Sylvain Bailly. It covers not only European and biblical sources but also the cosmographical concepts of Chinese, Egyptian, Persian and Chaldean astronomers. Some of the surviving artefacts that provided a basis for his studies are illustrated in the plates, which are designed to fold out so that one can view them while paging through the text.

This copy was originally owned by and bound for Bailly’s most important contemporary biographer, his friend Simon-Pierre Mérard de Saint-Just, who published Eloge historique de Jean-Sylvain Bailly (1794). His arms appear on the binding. In very good condition, with only a few minor spots. The binding also very good, only slightly worn around the corners and hinges. An important work on ancient astronomy, beautifully bound for the author’s biographer.

The most illustrious of all celestial atlases

5. BAYER, Johannes. Uranometria, omnium asterismorum continens schemata, nova methodo delineata, aereis laminis expressa. Ulm, Johannes Görlin, 1639. Folio (31.5 x 41 cm). With engraved architectural title-page and 51 full-page engraved star charts (with constellations) by Alexander Mair. Contemporary vellum. € 28 000

Famous first accurate celestial atlas by Johann Bayer (Rain 1572–Augsburg 1625), originally published at Augsburg in 1603, just before the invention of the first practical telescopes. It was the first of its kind and the first atlas to cover the entire celestial sphere. It represented a tremendous leap forward both aesthetically and for its astronomical content, opening a new age in the history of astronomy, and became the standard for all later celestial atlases. The beautiful engravings, together charting more than 2000 stars, were made by Alexander Mair (ca. 1562–ca. 1617).

With bookplate of M.A. Colson and manuscript owner’s entry facing title-page. With some slight staining on binding; plates bear traces of former center folds. Fine copy of an astronomical milestone.

"Making an end" to the superstitious belief in the devil and the apocalyptical meaning of comets

Amsterdam, Daniel van den Dalen, 1691–1693. With a full-page woodcut of the Oldenburg Horn.
With: (2) BEKKER, Balthasar. Ondersoek van de betekeninge der kometen, by gelegenheid van de gene die in de jaren 1680, 1681. en 1682. geschenen hebben.
Including: Berigt aangaande ‘t uitvinden der lengte van Oost en West, voorgegeven van Liewe Willems Graaf.
Amsterdam, Jan ten Hoorn, 1692. With a woodcut on the title-page, depicting a group of people doing astronomical research. 2 works in 1 volume, the first work in 4 parts. 4°. Contemporary calf, blind-ruled frames on the boards.

Convolute with the second editions of two works written by the famous Balthasar Bekker (1634–1698), most known for his “indecent” work De betoverde weereelde. In this treatise, Bekker takes a clear position against the apocalyptical meaning of comets. Although astronomy was developing in the 17th century, scholars found it hard to explain astronomical appearances such as comets. Even Newton and Halley felt urged to interpret comets in a theological way. For a long time, comets caused wild theories and superstition. De comets of 1680–1682 lead to several speculations on how to translate these comets as heralds of God’s wrath. Bekker challenged this idea, not by formulating a contra-hypothesis, but just by seeing comets as a purely natural phenomenon. Although this second work wasn’t as controversial as Bekker’s De betoverde weereelde, it shows the sceptical character of the Amsterdam preacher who never took the “truth” as it was told him for granted. Both works therefore are part of the 17th-century Dutch religious and scientific history, mirroring the views and opinions of people on these subjects.

With the certifying signatures of Bekker at the end of the preface of every part of Bekker’s Betoverde weereelde and an owner’s inscription on the last endleaf dated 9 May 1712. Without the portrait frontispiece of Bekker, which is often lacking. Binding worn around the edges, slightly waterstained throughout the book, some minor stains not affecting the text, but otherwise in good condition.

3 little-known works by Italian scientist on astronomy, hydrostatics and navigation

7. BRUNETTI, Francesco Saverio. Trattenimenti scientifici su la sfera, geografia istorica, meteore, ed astronomia. Rome, Bernabò and Lazzarini, 1754. With several woodcut illustrations in the text (including an armillary sphere), and an extra added folding engraved frontispiece.

With:

(2) BRUNETTI, Francesco Saverio. Trattenimenti scientifici su l’indrografia, nautica, blasone, statica, meccanica, architettura, pirotecnia, e suono. Roma, Bernabò and Lazzarini, 1755. With several woodcut illustrations in the text, and an extra added frontispiece (facsimile of an engraving?).

(3) BRUNETTI, Francesco Saverio. Macchina semplicissima per cui l’acqua da se stessa salice ad una data altezza. Rome, Bernabò and Lazzarini, 1747. With folding engraved plate as frontispiece. 3 works (the first in 2 parts) in 1 volume. 4°. Contemporary sheepskin parchment. € 4500

Three little-known scientific works by Francesco Saverio Brunetti, an Italian polymath and chaplain. The first work, divided into two parts, opens with a dialogue devoted to armillary spheres, followed by extensive chapters on the geography of the world, covering respectively Europe, Asia, Africa and America, concluded by a short dialogue on hydrography. The part on Asia includes chapters on the history and culture of the Ottoman Empire, Persia, Syria and Arabia. The second work, dedicated to the Irish-born Princess Cecilia Mahony (1741–1789), is divided into four dialogues, discussing navigation, (hydro)statics, architecture and fireworks. The third work describes a pulley for lifting water, apparently invented by the author. With bookplate of Royal Meteorological Society and deaccession ticket on paste-down. One leaf torn off, without loss of text, otherwise in very good condition.

[24], 180, 112: [8], 173, [3 blank]; 12 pp. Ad 1: Houzeau & Lancaster 9680; Riccardi I A – col 195; WorldCat (4 copies); not in Zinner; ad 2: Riccardi I A–col. 194; ad 3: WorldCat (6 copies); ad 1–3 not in Honeyman; Horblit; Wheeler Gift; for the author: Poggendorff I, col. 319. ☞ More on our website
8. **COPERNICUS, Nicolaus.** De revolutionibus orbium coelestium. Nuremberg, Johannes Petreius, 1543 [=Pelplin, Bernardinum, 2007].

(2) **HYGINUS, Gaius Julius.** Poeticon Astronomicon. Cologne, Johann Soter, 1534 [=Pelplin, Bernardinum, 2007].

(3) **PTOLEMY.** Almagest. Cologne, 1537 [=Pelplin, Bernardinum, 2007].

Small 2° (28 x 18 cm). Richly blind-tooled calf. Kept in wooden box. € 4500

Very well produced facsimile of the first edition of the seminal work on the heliocentric theory of the Renaissance astronomer Nicolaus Copernicus. It's a facsimile of the copy, now in the collection of the Copernicus University Library in Torun, which originally formed part of the Königsberg (Kaliningrad) Castle Library of Duke Albrecht of Prussia (1490–1568). The copy in Torun is “unannotated except for corrections from the errata leaf” and includes Gaius Julius Hyginus’ *Poeticon Astronomicon* and Ptolemaeus’s *Almagest*. Copy 76 of 100.

Fine copy.

*The original copy: Gingerich, pp. 167–168 (I.141). ☞ More on our website*
Key work by one of the best cosmographers of his time, describing also his famous pair of globes for Louis XIV

9. CORONELLI, Vincenzo, and Carlo MALAVISTA. Epitome cosmografica, o compendiosa introduttione all’ astronomia, geografia, & idografia, per l’uso, dilucidatione, e fabbrica delle sfere, globi, planisferi, astrolabi e tavole geografiche. Colonia [= Venice], Andrea Poletti, 1693. 8°. With an engraved allegorical frontispiece with the coat of arms of the Accademia Cosmografica degli Argonauti, 33 (of 37) engraved cosmographical and geographical plates, consisting of 31 double-folding plates with one plate with 2 movable volvelles (each with 3 moving parts) and two circular celestial folding plates, and several tables within the text. Later vellum, new endpapers and paste-downs, red edges. € 12 000

First edition of this richly illustrated scholarly publication of lectures held by the geographer and cosmographer Vincenzo Coronelli (1650–1718) at the cosmographic academy called the Accademia Cosmografica degli Argonauti, also known as the Argonauts and founded by himself in 1684. The present Epitome cosmografica is predominantly an expansion of lectures Coronelli gave before the Accademia Cosmografica, including one small treatise by Carlo Malavista, Dell’ excellenza, invenzione e progresso dell’ astronomia, as part of the preliminaries. He also describes some of the stunning globes which can be found across Europe and the construction of globes in general, to end with his own spectacular set of globes in the fifth chapter of book three, namely the ones he constructed for Louis xiv. This richly illustrated astronomical, geographical and cosmographical work is a great source for the late 17th-century knowledge concerning these scientific disciplines. Vincenzo Coronelli can be regarded as “one of the leading geographers and cartographers of the baroque period” (DSB III, p. 421). His Epitome is a compilation of all the geographical, cosmographical and astronomical knowledge that was important for him at that moment. It shows the content of his lectures at the Academia Cosmografica, but more and more it is an important work for the history of astronomy, geography and cosmography and for the history of globe-making by one of the best globe-makers at that moment.

Binding very slightly dust-soiled, lacking 2 circular folding celestial and 2 folding terrestrial maps of the western and eastern hemispheres, small tears in the margins of the preliminaries (some repaired), some small stains and a little foxing throughout the book, the circular folding plates a little frayed and a small tear in one of these plates, but otherwise in good condition and complete with all the double-page plates.

[1], [1 blank], [44], 420 pp., with the 33 plates bound between p. 208 and p. 209. Houzeau & Lancaster, 7009 (Malavista), 8006; Nordenskiold Collection 57 (28 plates only); Riccardi I, col. 374–375–1; Warner, The sky explored, p. 56; not in Honeyman; Zinner, Astrologische Instrumente; for Coronelli: DSB III, p. 421. ☞ More on our website
Past, present and future comets

10. DANNEWALDT, Mattias. Cometologia oder historischer Discurs, was von vielen hundert Jahren her auff cometische Erscheinungen sich begeben. Ingleichen deroelben kürziche Betrachtung und was etwa der im Decembr. dieses 1664sten Jahres entstandene Comet vor mathmatzliche Bedeutung nach sich ziehen möchte. Mit beygefügten Abrissen, wie er zu Augspurg, Nürnberg, Hamburg, und zu Leipzig gesehen worden. Darbey auch von den andern Cometen welcher den 22. Decembr. als eine Göttliche Zorn-Ruthe am hohen Himmel erschienen kürzlicher Bericht.


First edition of an astronomical work by Mattias Dannewaldt. The work consists of 4 chapters, the first chapter describes sightings of comets and the following disasters starting from the year 0, in the second chapter the author talks about the origin of comets, the third chapter is on the latest comet, the fourth chapter treats the possibilities for the future. Furthermore, a supplement is added with a description of the comet, as it was seen in Leipzig from December 22, and the following days. Paper slightly browned, otherwise in very good condition.

Richly illustrated 16th-century atlas on celestial and terrestrial physics and their influence on medicine

11. **GALLUCCI, Giovanni Paolo.** Theatrum mundi, et temporis in quo non solum precipuae horum partes describuntur, & ratio metiendi eas traditur, sed accomodatissimis figuris sub oculos legentium facile ponuntur. Venice, Giovanni Battista Somasco, 1588. 4°. With Somasco’s Sagittarius device on the title-page, 144 full-page woodcuts (particularly circular diagrams, dials and figures of the constellations, but also hemispherical and terrestrial maps and other cosmographical and astronomical figures), 1 large folding table (“Canon sexagenarius”), several full-page or smaller tables in-text and woodcut head – and tailpieces and initials. Contemporary overlapping vellum, (faded) manuscript title on spine. € 6000

First edition of Giovanni Paolo Gallucci’s *Theatrum mundi*, considered to be the first modern celestial atlas. This 16th-century atlas was the first to use the Copernican coordinates for the location of the stars. In six books, Gallucci provided his readers with a survey on terrestrial and celestial physics, beautifully illustrated with many woodcuts.

Gallucci dedicated his work to pope Sixtus V, who banned all astrological literature in 1586, trying to endow him to grant an astronomical observatory. Although Gallucci could not resist to draw some astrological implications from the constellations, he tried to write a pure astronomical treatise. He discusses planets and their qualities, their radiation, the influence of them exerted by particular positions in the zodiac, and distinguishing some zodiac signs as masculine or feminine, as commanding or obedient. To this astronomical treatise, he also added a medical note, when questioning the influence of constellations and the signs of the zodiac on the human body and therefore on the human health. Gallucci argued for using astrology in medicine, while warning physicians for being thoughtful and not overly reliant on it.

It is no surprise that this work is noted for its visual appeal. The first four books contain many circular diagrams and dials, but also two terrestrial maps (depicting Europe, Asia and Africa on one map and the Americas on the other) and depictions of the hell and its circles as inner portions of the earth, including limbo and purgatory, a wind rose and plates showing eclipses. Book five presents 48 maps showing Ptolemaic constellations and the related mythological illustrations drawn by the stars. With an owner’s inscription on the title-page. Binding a little stained, front hinge fully cracked and book block cracked into two parts. Lacking the moving volvelles. Slightly waterstained in the upper margin of the first few pages, with a tear in the lower margin of pp. 93–94, a few stains (sometimes affecting the plates), but otherwise in good condition and with the additional folding table “Canon sexagenarius”.

How to make a sundial, with 40 plates


With: (2) **GAUPP, Johannes.** Tabulae Gnomonicae, oder: Tafeln zur mechanischen Sonnen-Uhr-Kunst. Durch welche auff eine gantz leichte Weise, alle vorkommende Sonnen Uhren am allerichtigsten verzeichnet, auch andere nutzliche Auffgaben auffgelöset werden können. Lindau, Johann Conrad Gaupp for Johannes Gaupp, 1708. 2 works in 1 volume. 4°. Late 18th-century half vellum. € 5000

First edition, first issue, of an important handbook for making and using sundials, by Johannes Gaupp in Lindau. The 1711 and 1720 issues are less rare. The history, use and fabrication of sundials is very accurately and extensively described, profusely illustrated with many detailed and expertly engraved plates. The last two pages of the first work contain addenda and corrigenda. Although Zinner calls for the present 40 numbered plates and 9 unnumbered plates, the latter do not usually appear in the 1708 issue and were probably added to some copies later.

With library stamps. Some insignificant foxing and spotting. In good condition, with the title-page of the second work very slightly shaved (with the loss of one hyphen). The vellum of the spine is torn and repaired, but the binding is also generally good.

[22], 343, [1 blank], [2]; 80 pp. Bibliogr. générale de la mesure du temps, pp. 106–107 (ads 1 & 2); Berlin Kat. 1750 (ad 2), cf. 1749 (1720 issue of ad 1); Houzeau-Lancaster 15756 (ad 2), cf. 11579 (1711 & 1720 issues of ad 1); Zinner, p. 319 (ads 1 & 2).

☞ More on our website
Langres, Jean des Preyz, 1592. 4°. With a woodcut on the title-page showing an armillary sphere, 3 woodcut folding plates of respectively the solar system, a celestial map on two hemispheres and a (terrestrial) map of the world on two hemispheres, four woodcut maps within the text (also a map of Europe), many astronomical and cosmographical woodcut figures and tables within the text and woodcut head – and tailpieces and initials. 18th-century half brown sheepskin.

Rare French 16th-century astronomical, cosmographical and geographical work by Simon Girault. In this short treatise, consisting of three books presented in the form of a dialogue between Charles, the master, and Marguerite, his apprentice, several aspects of heaven and earth are discussed. The first book discusses celestial movements and circles, the second book treats more extensively the solar system, the quality of different planets, the size of the earth and its proportion and distance to the other celestial bodies. Girault also discusses why the sun appears to be larger in the winter than in the summer, explains something about eclipses and tells more about the directions and retrogrades of several planets. The third book is more on terrestrial topics. This richly illustrated work therefore not only clearly shows 16th-century thoughts on topics as cosmography and astronomy, but also on the interaction of astronomy and cosmography with geography and navigation.

With manuscript inscriptions on the first free endpaper and on the title-page. Binding worn, corners bumped, some leather pieces on the spine loose, some (water)staining, slightly dust-soiled, with some small tears, mainly in the lower margin (some repaired) and a wormhole in the lower and one in the right margin. Otherwise still a rare work in good condition.

92 ll. BM STC French, p. 205; Brunet II, col. 1614 (note); Graesse III, p. 89; Houzeau & Lancaster 4962; Pettigree, French vernacular books 23076 & 23077; USTC 37546 (10 copies); not in Adams; Mortimer, French. ☞ More on our website
Scarce work on comets by Galileo’s successor, prompted by the spectacular comet of 1618

14. GLORIOSO, Giovanni Camillo. De cometis dissertatio astronomico-physica publice habita in gymnasio Patavino anno domini MDCXIX. Venice, Giovanni & Varisco Varisco, 1624. 4°. With numerous woodcut illustrations in the text (mostly diagrams). Contemporary limp sheepskin parchment. € 22 000

Rare treatise on comets by Giovanni Camillo Glorioso (1572–1643), who succeeded Galileo in the chair of mathematics in Padua in 1613. As the author explains in his preface, the publication was prompted by the appearance of the spectacular and unusually bright comet of November 1618, which was still visible in January 1619. Dedicated to Marino Gethaldo and divided into 5 “books”, it treats the astronomical theories of Copernicus, Brahe, Kepler, Galileo and others. “This scarce work is replete with curious information, and we find in it the mention of a sort of telescope (or perspicillum), used, it is said, by Pope Leo x at the beginning of XVIth century ...” (Libri Catalogue).

Some contemporary underscoring. In very good condition and with generous margins. Binding soiled, wrinkled and with a tear in the spine. An important treatise of comets, by Galileo’s successor at the University of Padua.

[8], “288” [= 290], [2] pp. Catalogue of the ... celebrated library of M. Guglielmo Libri (1861), 3087; De La Lande, p. 187; Riccardi I, col. 615; not in Houzeau & Lancaster. ☞ More on our website
How to construct sundials, with 21 engraved plates

15. **KNOOP, Johann Hermann.** Verhandeling van de sphaerische of klootsche zonne-wysers; namelyk, hoe men op een sphaera convexa, of ronde kloot, allerley zonnewysers meetkonstig beschryven kan. Leeuwarden, Jacques Alexandre de Chalmot, 1761. 8°. With 50 figures on 21 folding engraved plates by Jan Caspar Philips. Later half vellum, made from early materials. € 1250

First and only edition of an important work on spherical sundials by the Dutch mathematician Johann Hermann Knoop (1700–1769). It describes how to measure and construct different types of sundials, including one inside a hollow half sphere, and a “gnomic” armillary sphere. The plates, engraved by Jan Caspar Philips (1690–1775), depict these sundials. They are bound at the end of the text and can be folded out while consulting the text.

Knoop was curator of the gardens of Princes Maria Louisa in Leeuwarden, and taught mathematics in the same city.

With two small stamps and a shelf label on title-page. Title-page brownded and thumbed, with a water stain in the foot margin, margins slightly browned throughout, with a few small spots. Otherwise in good condition, wholly untrimmed and with most bolts unopened. Binding in very good condition.

[10], 244, [8] pp. Bierens de Haan 2521. ☞ More on our website
First edition of two of the most important works on twilight and optics


Lisbon, Ludovicus Rodericus, January 1542 (colophon). 4°. With woodcut allegorical and architectural title-page with putti and mythological women holding drapes hanging from an arch and the Royal Portuguese coat of arms at the foot, 40 woodcut (geometrical and optical) figures in text, Rodericus's large full-page emblematic woodcut printer's device (a dragon with the motto "Salus vitae" on a banderole) and many woodcut initials. Bound in a period-style Italian calf binding, gold-tooled spine, blind-tooled frames on front and back boards and gold-tooled centre-pieces on the front and back board with "Petri Nonii" on the front board and "MDXLI" on the back board. € 75 000

First edition of two of the most important and rarest scientific works on twilight and optics. The first is a work from Portuguese soil, written by the greatest Portuguese mathematician Pedro Nunez (1492–1577), who served as royal cosmographer at the court of João III. His *De crepusulis* discusses new solutions for problems concerning twilight (for example the shortest twilight) and the refraction of light, and announces his new instrument for measuring exceedingly small angles, now called a “nonius”.

The second work, also called *De crepusulis*, was according to the title-page written by the greatest Islamic physicist Ibn Al-Haytham (965–1039), living in the Arabian Peninsula, whose seminal work in optics broke with ancient Greek theories. In fact, the De crepusulis is now attributed to the great Andalusian father of spherical trigonometry and 11th-century mathematician and astronomer Abu 'Abd Allah Muhammad ibn Mu'adh, who was described by Averroës as “advanced and high-ranking” (Sabra, p. 85), but about whom is very little known. His work discusses the density of the atmosphere and establishes a relationship between atmospheric pressure and altitude. It also notes that twilight only ceases or begins when the sun reaches 19 degrees below the horizon. It was translated from Arab into Latin by Gherardo da Cremona (1114–1187), who brought Arabic science to the West. This work is one of the artifacts that the Islam civilisation made significant and crucial contributions to the accumulation of scientific knowledge in the pre-modern age during their golden age of Arabic science, although the Latin translations in this field only provide "a dim reflection of the true splendour of achievements" (Gerli, p. 804).

With an owner's inscription at the head of the title-page and a handwritten impressum on the title-page in the same hand, three faint library stamps (two of a library in Douai) and with marks of an erased bookplate on the front pastedown. Binding very slightly worn around the spine, some small stains on the endpapers, but otherwise a beautiful copy in very good condition.

With the extremely rare woodblock-printed dials and pointers to construct the nocturnal and sundial-lunar dial

17. **PADOVANI, Giovanni.** Opera nuova ... tradotta di Latino in volgare, laqual dichiara l’uso del maraviglio so istrumenmo astronomico da lui intitulato horoscopio. ...

Verona, Paolo Ravagnano, 1560. 4°. With Ravagnano’s woodcut emblematic device on the title-page (a hand emerging from a cloud and holding a stalk with three lilies, the whole in an oval in a rectangular scrollwork cartouche, with the motto, “candidio animus”), a folding plate (oblong long 2°: 15.5 × 41.5 cm) containing 2 woodcuts (12.5 × 22 cm & 12 cm diameter with the 4.5 cm gnomon making it 14 × 13 cm) designed to be cut up to make the author’s “horoscopio” in the form of a volvelle and the sundial-lunar dial, 3 decorated woodcut initials (pictorial), planetary and zodiac signs, and numerous tables of numerical data. 19th-century(?) boards, covered with block-printed decorated paper (black on white).

The rare first significant publication (extremely rare with the folding woodcut plate) by the Veronese astronomer Giovanni Padovani (ca. 1512–ca. 1590), explaining the use of his “horoscopio”, also known as a nocturnal or a horologium nocturnum, which he presents as his new invention. The folding plate contains two woodcuts for the owner to cut out and assemble (they could be pasted on paperboard or thin wood) to make two astronomical instruments that allow one to determine time by the sun, moon or stars. The plate may have been an option for those who could afford it, but many owners no doubt removed it in order to use it, as intended. The entire plate is lacking in nearly all copies, including those of the British Library and the Biblioteca Nazionale Naples, viewable on the Internet. Giulia refers to “la figura incisa sul legno”, but we have seen only one clear reference to a copy that includes the plate, at the Biblioteca Nacional in Madrid: “[i] h. de grab. pleg.” (the Bibliothèque Nationale in Paris refers less clearly to “pièces limin.”, and the Cat. del. Servizio Bibl. Nazionale notes “ill.” but gives a link to the Naples copy without the plate). Neither Honeyman nor Houzeau & Lancaster mention the plate and Riccardi apparently knew it only from Giulia’s reference.

With a round 18th-century(?) armorial owner’s stamp the at the foot of the title-page (crowned arms in a laurel wreath, the crown perhaps a count’s and the bearing bendy, 3 dark and 4 light) and the small elegant owner’s label of Harrison Horblit (1912–1988) on the pastedown. With a few tiny brown speckles on the title-page and very minor foxing in an occasional leaf, but generally in fine condition, with the paper still crisp, and only slightly trimmed (a bit of one foredeckle surviving, about 2 mm trimmed at the head and probably not much more at the foot) giving generous margins. The pattern paper covering the later boards has torn along the front hinge. Important early treatise on the nocturnal, with the extremely rare folding plate containing two woodcuts.

[46], [2 blank] pp. Aked & Severino, Int. bibliog. of gnomonica, p. 344; BMC STC Italian, p. 483; Cat. Servizio Bib. Nat. (5 copies); EDIT 16, CNCE 37911 (7 copies); Giovan Battista Carlo Giulia, Tipografia Veronese (1871), ch. III no. XXXIX (p. 62); Honeyman 2578; Houzeau & Lancaster 4881 & 1568; Riccardi I.ii, col. 231; USTC 846031 (6 copies); WorldCat (8 copies); not in Zinner, Astronomische Instrumente; for background information: Günther Oestermann, “On the history of the nocturnal”, in: Bulletin of the Scientific Instrument Society” (2001), pp. 5–9. ☞ More on our website
Manuscript on spherical projection with attractive calligraphy and numerous diagrams

18. **ROBINSON, Frederick.** *The projection of the sphere.* (Great Britain?, 1797–1798). 4°. With 1 folding leaf with 13 diagrams, including 3 three-dimensional ones, numerous diagrams in text, some full-page, some with different colours of ink. Contemporary vellum, blind-stamped double fillets along edges. € 2750

Beautifully written and lavishly illustrated manuscript on trigonometry with calligraphic headings. The author opens with general definitions of different types of projections (pp. 1–4), and proceeds with discussing three types, orthographic (pp. 5–23), stereographic (pp. 24–73), and gnomonical (pp. 74–179). Each section starts with propositions followed by several trigonometrical problems. There are numerous accurately and finely drawn diagrams to illustrate the text. They are mostly small, but some are full-page. In some diagrams the author used coloured inks to highlight particular sections and/or lines. Three diagrams on the folding leaf have pasted parts that can be unfolded to create three-dimensional figures.

The note on the inside front cover reads “Frederic Robinson, December 19th 1797.” We were unable to find any information on Robinson. A pencil note on the inside of the back cover states that he was an English professor for mathematics, who lived from 1746 till 1825.

Folding leaf torn along fold, hardly affecting illustration. Page 4 with a minor hole very slightly affecting text. A good copy of a manuscript textbook on trigonometry with attractive calligraphy and diagrams.

[2], 179, [1] pp. More on our website
First edition of an Italian work on physics in the wake of Galileo’s trial

19. ROSSETTI, Donato. Antignome fisico-matematiche con il nuovo orbe, e sistema terrestre. Livorno, Giovanni Vincenzo Bonfigli, 1667. 4°. With 66 woodcut diagrams and other illustrations in text. Contemporary limp sheepskin parchment, with 2 fastenings made from loops of braided cord on the front cover but only traces of thongs on the back. € 7500

Rare first edition of a handbook of physics, including optics, mechanics, fluid dynamics and cosmography, illustrated with numerous woodcut diagrams and other illustrations in the text. It was written by Donato Rossetti, professor of natural philosophy at Pisa, in the wake of Galileo’s 1633 trial for promoting the heliocentric theory of the solar system. Rossetti later became tutor in mathematics to the Duke of Savoy and professor of mathematics at Turin. The book is a refutation of Geminiano Montanari’s Pensieri fisico-matematici (Bologna 1667). In the period shortly after Galileo, experimentalists like Montanari (1633–1675) engaged in a battle against the more mystical views of scientists such as Rossetti. With an early Italian owner’s inscription on the title-page. In very good condition, with only a couple small marginal holes in the title-page. The parchment has a couple stains and a couple holes in the spine, but is otherwise very good.

xii, 179, [1] pp. BMC STC Italian, p. 796; Poggendorff II, col. 700; Riccardi I, R-col. 394; Thorndike VII, p. 583; not in Honeyman. ☞ More on our website
Practical application of Copernicus, with many appealing woodcuts

20. SANTBECH, Daniel. Problematum astronomorum et geometricorum sectiones septem...

Basel, Henrichum Petri, 1561. Folio in 6s. With numerous woodcut illustrations in the text. Re-used vellum from an earlier musical manuscript. € 7000

First separately published edition of a mixed work on the application of mathematics in astronomy, warfare, navigation and more. It is well illustrated with many woodcut illustrations in the text, depicting the zodiacs, sundials, cannons and geometrical schematics. The author, Daniel Santbech, leans on the work of Copernicus, mentioning him many times. Very little is known about the mathematician Santbech, according to the title-page he was from “Noviomagus”, which was commonly used for Nijmegen.

With a stamp on the title-page: “Königliche Kreisbibliothek Augsburg”. Title-page slightly soiled, otherwise in very good condition and in an interesting binding.

[20], 294, [1], [1 blank] pp. Erwin Thomas Library R61; Houzeau-Lancaster 2509; VD16 S1646; Zinner 2273. ☞ More on our website
First edition in the original Greek of the oldest treatise on spherical geometry

21. THEODOSIUS. Sphaericorum libri tres, nunquam antehac graece excusi.
Paris, André Wechel, 1558. Small 4° (21 × 14 cm). With woodcut publisher’s Pegasus device on title-page (repeated on last page), numerous woodcut mathematical diagrams in text, woodcut headpieces and decorated initials. 18th-century tanned sheepskin, gold-tooled spine and board edges. € 9500

First bilingual edition of the oldest treatise on spherical geometry, providing the first edition of the original Greek and the first Latin edition to be translated directly from the Greek. It was composed by the Greek mathematician and astronomer Theodosius, perhaps around the year 100 BC, and edited by Jean Péna (1528–1558?), mathematician at the Collège Royale. The Greek text and very extensive notes, also in Greek, occupy the first half of the book, while the Latin translation of both text and notes (and repeating the woodcut diagrams) occupies the second half. The first two Latin editions (Venice 1518 and Vienna 1529) were translated from Arabic translations of the Greek, so the present book was a watershed in the development of Greek scholarship. Since spherical geometry was essential to the development of astronomy, it also set the stage for the Renaissance revolution set in motion by Copernicus, Galileo and others. On top of that it was a monument to the golden age of French typography.

With the owner’s inscription of the magistrate and engineer Thomas de Scorbiac (1614–1690). In very good condition. Although binding shows some surface damage, cracks in the hinges and restorations, it remains structurally sound. In very good condition. Although binding shows some surface damage, cracks in the hinges and restorations, it remains structurally sound.

Beautifully illustrated astronomy and more by “the most important Italian thinker of his times”

22. **VENETUS, Paolo Nicoletti [and Restoro d’AREZZO]**. *Summa philosophie naturalis ... una cum libro de compositione mundi qui astronomie ianua nuncupari potest ...* [at the head of the page:] Primus liber incipit De compositione mundi.

Paris, Jean Lambert (colophon: printed by Thomas Kees, 14 November 1513). Small 4° (28 × 20.5 cm). With 55 woodcut illustrations in the text, including 12 northern and 12 southern pictorial constellations with stars. Flexible wrap-around paperboards (ca. 1750?), sewn on 3 tanned leather supports. € 18 000

First edition of one of the best early attempts to give a scientific account of astronomy, cosmography, geology, meteorology, tides, springs and rivers, by Paolo Nicoletti Venetus (ca. 1369/70–1429), edited by Jean Dullaert of Ghent (ca. 1470–1513). The book is also a splendid display of the woodblock cutter’s art. In addition to the many astronomical diagrams and an armillary sphere, it shows 24 pictorial constellations with stars, 12 for the northern hemisphere and, more unusually, 12 for the southern hemisphere.

Venetus joined the Augustinians at Venice at age 14, then studied in Oxford and Padua, continuing as a lecturer there, in Bologna and elsewhere, and wrote his *Summa philosophiae naturalis* in 1408. While Veneto’s *Summa naturalium Aristotelis*, a commentary on Aristotle, first published at Venice in 1476, was published at Venice under the present title in 1503, it is a completely different work, so Dullaert’s present edition is the first edition of the present text. Venetus based his book largely on Restoro or Ristoro d’Arezzo, *Composizione del mondo*, written ca. 1282, and it is sometimes regarded as a Latin translation of that (Italian) work, but the ideas circulated via Dullaert’s present edition of Veneto’s text until d’Arezzo’s Italian text was published in 1859.

Although Thomas Kees printed the book it was a joint venture with at least six other Paris booksellers, so he changed the imprint and publisher’s device during the press-run to make 6 or 7 simultaneous issues of the present edition.

With a few minor spots and smudges, but still in very good condition and with generous margins (some deckles preserved at the fore-edge). An important compendium of scientific knowledge about the earth and the heavens, especially valuable for its astronomical information and beautiful, sometimes fantastic woodcuts.

[35], [1 blank] pp. Moreau II, 679 (7 copies of 5 issues, not distinguished); USTC 20912 (citing Moreau); cf. Houzeau & Lancaster 2272 (other issue); not in Adams; Mortimer, French, for the author: https://plato.stanford.edu/entries/paul-venice. ☞ More on our website
Early work of one of the greatest French mathematicians


Third edition of one of the first scientific works of the greatest French mathematician of the 16th century, François Viète (1540–1603). Viète graduated in 1560 from the University of Poitiers with a law degree. “In 1564, Viète accepted a position in the household of the prominent family of Jean de Parthenay and his wife, Antoinette d’Aubeterre. In fulfilment of his responsibilities as tutor for their daughter Catherine, he wrote a collection of essays on various scientific subjects.” (Bradley). The present compilation of three of these works first appeared posthumously in 1637, based on Viète’s manuscript, under the title Principes de cosmographie…, the three essays forming the three divisions of the book, on the geocentric universe, geography, and astronomy.

It includes a section covering the geography of the Arabian peninsula (pp. 96–97), naming: Bahrain, Mecca, Aden, Ormuz etc.

With owners’ inscriptions (one dated 1657) and library stamps. Browned and with mostly marginal, water stains throughout. A reasonable copy. Binding still good.

First edition of a classic illustrated account of the construction of sundials, including the large folding woodcut

24. **VIMERCATI, Giovanni Battista.** Dialogo della descrittione teorica et pratica de gli horologi solari. ... Con due tavole, ... Ferrara, Vakente Panizza, 1565. 4°. With the woodcut crowned coat of arms of the dedicatee, Alfonso II d’Este, Duke of Ferrara, on the title-page, a folding woodcut sundial (a whole oblong sheet: 29 × 36.5 cm), 30 full-page woodcut illustrations on integral leaves, a woodcut headpiece and 3 woodcut decorated initials (2 series, the larger 43 mm with city or architectural views) plus 1 repeat, and tables of data. 17th-century(?) limp parchment. Rebacked. € 6500

First edition of a detailed and well-illustrated treatise on the construction of sundials. After briefly discussing the theory of sundials and the various sorts, it provides practical instructions for making sundials on horizontal and vertical planes and even a cylindrical one on the surface of a column. Since Vimercati was concerned partly with sundials on buildings and in gardens, which were often on a large scale, he provides an unusually large sundial in the folding woodcut (printed image 28 × 36 cm) and describes a simple means of enlarging it to any size by placing it on a table with two gnomons, one on the scale of the original and another on the scale of the intended enlargement.

With an early owner’s inscription struck through at the foot of the title-page. With unobtrusive repairs to the last leaf, and small ink stains on a couple pages, but still in good condition. First edition of influential instructions for constructing sundials, including the large folding woodcut lacking in some copies.

[8], 108, 117–171, [1 blank] pp. Adams V807; BMC Italian, p. 727; EDIT 16, CNCE 28345; Mortimer, Italian 541 (noting only 29 full-page woodcuts); Riccardi I.i, col. 601; Turner, Of time and measurement, p. 178; USTC 863410; Zinner, Astronomische Instrumente, p. 606; not in Houzeau & Lancaster. ☞ More on our website
More books, maps, manuscripts and prints related to astronomy & cosmography available at our websites:

www.forumrarebooks.com/category/science_technology/astronomy_mathematics.html

www.asherbooks.com/category/science_technology/astronomy_mathematics.html