

# *Librairie Clavreuil*

## Bernard & Stéphane Clavreuil

**APIANUS, Petrus.** *Astronomicum Caesarum.* Ingolstadt, : at the Author's Press, 1540. Imperial-folio. 59 leaves with rich illustration in woodcut, all with fine workshop colouring: Title with border and large woodcut beneath, arms of Charles V and his brother Ferdinand of Spain on verso, text with 52 (41 full-page) astronomical cuts, 36 of them with astronomical paper instruments of which 21 contain 46 large and 12 small volvelles, also 25 covering disks (also counted as volvelles by some authorities); the text also with many instruments, comets, lunar eclipses &c.; final leaf with the author's small arms; all by Michael Ostendorfer. Also with 54 figured initials by Hans Brosamer. Contemporary blindstamped pigskin over wooden boards.

Houzeau & Lancaster, I, 567. Van Ortrooy, Bibliographie de l'œuvre de Pierre Apian, n° 112. M.B. Stillwell, *The Awakening Interest in Science during the First Century of Printing*, 19. D. Wattenberg, *L'Astronomicum Caesarum de Petrus Apianus*, Leipzig, 1969 (étude accompagnant l'édition fac-similé de l'exemplaire de Tycho Brahe). Owen Gingerich, *Rara Astronomica*, 14. Owen Gingerich, "Apianus's *Astronomicum Caesarum*", in : *Journal for the History of Astronomy*, 11, 1971, p. 168. DSB, I, 178-179; Gingerich, *Rara Astronomica*, 14-"At the end are found the first diagrams demonstrating that comets' tails point away from the sun." .

First edition, first of three issues, of what has been called "without doubt ... the most luxurious and intrinsically beautiful scientific book that has ever been produced" (Derek de Solla Price/Yale, in *Science*, 1967, 104).

Owen Gingerich only mentions 10 copies of this first issue with the small coat of arms. "The small round coat of arms is reserved for the deluxe edition, which is very beautiful with the planisphere having a dark blue background with gold stars, and all the large initials handsomely colored, and special paper." Gingerich.

This work, which took Apianus eight years to produce and was printed on his private press at Ingolstadt, is really as much a scientific calculating instrument as a book. Preceded only by Schöner's *Aequatorium* (1521) - a smaller work of such rarity as to be practicably unprocurable - the *Astronomicum* is the earliest instrument book to function not simply as an instructional handbook accompanying an instrument but as an actual working instrument, or set of instruments. For the dissemination of calculating technology in a standardized and reproducible form, Poulle has compared the appearance of 'paper instruments' to nothing less than the advent of printing (see *Les Instruments de la Théorie des planètes* I.83).

"The *Astronomicum* is notable for Apian's pioneer observations of comets (he describes the appearances and characteristics of six comets, including Halley's) and his statement that comets point their tails away from the sun. Also important is his imaginative use of simple mechanical devices, particularly volvelles, to provide information on the position and movement of celestial bodies."-D.S.B., I, p. 179.

Apianus (1495-1552), professor of mathematics at the University of Ingolstadt, was a pioneer in astronomical and geographical instrumentation.

"The 'Emperor's Astronomy' from the private press of Petrus Apianus is one of the great masterpieces of sixteenth-century printing. In this large folio volume the paper instruments



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found its supreme realization in a series of intricate volvelles, all hand-colored in the astronomer's Ingolstadt printing shop.

Before writing and crafting the *Astronomicum Caesareum*, Apianus had pioneered in publishing books filled with ingenious movable devices, the so-called volvelles. Half a dozen of his works were produced at his own press in the university town of Ingolstadt, where he was professor of astronomy. Production of the magnum opus must have taken the astronomer several years, for between 1534 and 1540 he published few other books. The great volume grew and changed in the course of the printing, eventually comprising fifty-five leaves, of which twenty-one containing moving parts and twelve more have index threads.

Among the variety of pages with moving parts come first and foremost a set of planetary equatoria, paper wheels for finding the places of the planets within the zodiac. Folios [B3] and FIII contain these devices. Embodying all the details of the geocentric Ptolemaic system, the volvelles and threaded charts provide a remarkably accurate graphical calculation of a planet's position. The single most impressive page is folio [E4], the mechanism for the longitude of Mercury, which contains nine printed parts plus a complex hidden infrastructure to allow movement around four separate axes. Rivaling this page in spectacular effect is the opening GIIIv-[G4] with a double cluster of lunar volvelles facing each other (...).

Throughout the initial part of his book, Apianus gives detailed instruction for the operation of the volvelles, using as his examples the birth dates of the Holy Roman Emperor Charles V and his brother Ferdinand I, the dedicatees. In the chapters immediately following, Apianus shows how to calculate eclipses, and in particular the partial lunar eclipse of 15 November 1500 in the year of Charles V's birth, the one preceding the birth of Ferdinand I on 15 October 1503, and the lunar eclipse of 6 October 1530, in Charles V's coronation year. Next Apianus turns to two ancient eclipses, one reported by Plutarch in the year in which Darius was defeated by Alexander the Great and the other reported by Pliny in the second century B.C. And then, in a pioneering use of astronomical chronology, he takes up the circumstance of several historical eclipses. This part concludes with several movable devices for an assortment of chronological and astrological inquiries. One of the most curious is a pair of volvelles for finding the hour of conception from the time of birth and the phase of the moon.

The second part of the *Astronomicum Caesareum* deals primarily with observational problems and their graphical solution. Although moving parts have not been included in its design, this section is not without interest, because it depicts for the first time the fact that comet tails point away from the sun. Among the five comets observed by Apianus in the 1530s and described here is the one now known as Halley's comet.

The final page of the Rosenwald copy contains Apianus's original coat of arms. As a result of this magnificent volume, Emperor Charles V granted the professor a new coat of arms. (Apianus printed a replacement page, which is found in some of the copies.) The emperor also bestowed some more unusual rewards on the astronomer for his typographic tour de force: the right to appoint poets laureate and to pronounce as legitimate children born out of wedlock (...).

Of the *Astronomicum Caesareum* (...) approximately 120 copies survive, probably the majority of the copies printed, since it is unlikely that anyone would throw away such a fascinating volume. Even in the sixteenth century it was a luxury book. Tycho Brahe records that



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he paid twenty florins for one (...). A few books printed after 1540 managed to include even more complex assemblies of paper disks, but none achieved the total elegance and splendor of this volume. A triumph of the printer's art, the *Astromicum Caesareum* truly remains an astronomy fit for an emperor." (Owen Gingerich, 1991).

A very fine complete copy of the book in its first issue (Schottenloher A): The last leaf with Apian's small coat-of-arms with a single-headed eagle in a laurel wreath, with 'INSIGNIA PETRI APIANI ....' printed on top and from types. In the second issue the inscription is below and in woodcut; while in later copies all this has been substituted by a full-page woodcut with Apian's new arms, given to him in 1541, the year after publication.

The book is very often found incomplete, - the copy from the Honeyman collection (I, 1978, lot 115) lacked 7 volvelles. of the large volvelles for leaf F2 in the present copy the second has erroneously been arranged under the larger third one. Ours is a perfectly complete copy, except for the pearls, including all volvelles, covering discs and 42 index threads. "In the majority of surviving copies the pearls are lost" (Gingerich, 1971, p. 172); from the maximum of 12 tiny pearls (as in the Schweinfurt and Munich copies) in our copy 4 have survived (on C4, F1, H1 and two on J2).



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