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ABOUT THE COVER: GASPAR SCHOTT'S *CURSUS MATHEMATICUS*

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Gaspar (Kaspar) Schott (1608–1666) may have been the German Marin Mersenne (1588–1648) of his day, acting during at least part of his life as a clearing agent for scientists who wanted to check their own discoveries against those of others working in a similar field and disseminating information on the state of open questions. Born near Würzburg, Schott in his youth travelled to Italy where, after some time in Sicily, he moved on to Rome to work with the eminent Jesuit scientist, Athanasius Kircher (1602–1680). He later followed Kircher to France and eventually back to Würzburg when Kircher had joined the faculty of the university there. Like Kircher, Schott was a Jesuit priest and, again, like Kircher, he largely worked on problems more likely to be categorized today as lying in the realm of physics [2].

Schott was in his time well known for the many books he wrote on topics clearly placed in physics or in very applied mathematics. When he was not writing his own books, he was editing the work of Kircher and others. His own include *Magia universalis naturæ et artis* (1657) and the *Mechanica hydraulico-pneumatica* published that same year. These were followed by his *Physica curiosa* in 1662, the *Magia universalis* in revised form. And his *Organum Mathematicum* appeared in 1668.

More directly mathematical is Schott's *Cursus Mathematicus* (1662), of which there were multiple editions, and it is in the 1677 edition of this mathematical encyclopedia [1] that we find the remarkably extravagant frontispiece shown on the cover of this issue of the *Bulletin of the American Mathematical Society*. The text of this hefty folio volume begins with a standard survey of arithmetical and geometrical topics (a summary of Euclid's *Elements* followed by trigonometric tables) with extravagant engravings demonstrating the calculation of the heights of towers.

FIGURE 1. CLEAR COPY OF THE COVER. The frontispiece to the 1677 edition of Gaspard Schott's *Cursus Mathematicus*.

FIGURE 2. A fountain design with the double-headed eagle of the Hapsburgs.

Next we find formulas for calculating volumes (one for what appears to be a wine barrel), astronomical measurements (followed by a short section on astrology!), the application of geometry to measuring time, and geographical problems, often with illustrative engravings. These demonstrate variations on themes in “hydrographia”, “horographia” (design of sundials among other devices), mechanics (with lavish engravings showing the use of levers, screws, and balances), statics, and hydrostatics (showing elaborate designs of fountains, including, of course, one showing a double-headed eagle—most likely in honor of Leopold I, the Holy Roman Emperor, to whom the book is dedicated). There are chapters on optics and catoptrics (yes, some readers may need a dictionary for this one), military architecture and fortifications (a natural part of mathematics in the seventeenth century), tactics both defensive and offensive, harmony in music, and finally (and none too soon) coverage of algebra and logarithms, accompanied by tables.

FIGURE 3. The twelve floor tiles in the frontispiece illustrating mathematical theorems or topics described in the text of Schott's encyclopedia.

It is an impressive display of erudition and is foreshadowed by the elaborate frontispiece, the center of which shows a tablet with the title of the book (*Cursus Mathematicus*) followed by an allusion to the dedication that two pages later appears as “[To] Leopold I the ever august, pious, and wise Holy Roman Emperor of Germany, Hungary, Bohemia, Dalmatia, Croatia, and Slavonia.” This description of a benign Leopold I (1640–1705) was, as we recall from history, not very accurate. The real Leopold’s reign was beset by wars and rebellions, disastrous consequences from his rivalry with Louis XIV of France, and his fealty to the Jesuits. At the top of the engraving we see a presentation of the book to the emperor, accompanied by requisite putti, and with a page open to the title of the book. Below the presentation, and more interesting, is a strange chariot (with a panel giving the name of the author with the fact that he was a Jesuit) being pulled by a bear and a lion. The two wheels we can see are, on the left, the terrestrial sphere (showing the Mediterranean Sea, with Spain, Italy, Greece, Turkey, and North Africa clearly identifiable), and on the right the celestial sphere showing, some claim, stars including Ursa Major, also evident as a constellation on the back of the bear. The architecture of the piece is quite striking, a procession of trees proceeding from middle left to top right, with classical arches in the foreground. But most interesting for us is the set of twelve floor tiles showing mathematical ideas (at least as covered by the topics of this volume). At the center, front, is the Pythagorean theorem, but with others easily identified as a fortification (center), a lever on the left, as well as the path of a projectile, the mean proportional, the solar system, a sundial, We leave to the reader the challenge of identifying the subjects of all twelve tiles.

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