The spherical sundial, known from Greek antiquity, is sometimes credited as having been invented by Eudoxus of Cnidus or perhaps one of his pupils. It was also known in ancient China, though most likely from a few centuries later. It was used as a teaching device in Greece and as an observing instrument elsewhere; this was its function in China and also in the medieval Islamic world beginning in the eighth century. It came to Europe around 1000 as a result of efforts by the future Pope Sylvester II. It symbolizes the Earth-centered Universe, and it still serves as a very useful tool for understanding the heavenly motions that are visible with the naked eye.

English Franciscan priest Bartholomew (c. 1200–1274), who was connected to the universities in Paris and Oxford, authored an important work On the Properties of Things, which addressed theology, physiology, medicine, physics, and more in 10 books. It served as the first medieval encyclopedia and as a model of future encyclopedic efforts. Its enormous popularity can be recognized by its appearance in numerous manuscripts and translations throughout the medieval era. It first appeared in more than a dozen printed versions prior to 1500, including ones in English, French, and Spanish.

This manuscript fragment of Bartholomew’s encyclopedia features one of the earliest known illustrations of an armillary sphere, the iconic model of the medieval geocentric Universe. Along with the astrolabe, the armillary sphere was frequently included in portraits until the time of the Renaissance to convey wisdom, knowledge, and learning.
Johann Gottlob Rudolph (1721-1776) was a director of the Mathematisch-Physikalischer Salon in Dresden. There he also made several handsome telescopes, two of which are currently in the Salon's renowned collections, including one that is a stunning reflecting telescope covered in Meissen porcelain.

The illustrated example includes a main tube with four draws and an objective mount with lens and protective threaded-metal cover with slider.

Dresden, Germany, 1750-1760  M-446

The maker's signature, "J.G. Rudolph fecit Dresden, à long with its focal length ("5" in local text), engraved on the well-polished objective itself, the eyepiece does not survive.

The main tube and four draw ferrules are covered with gold-tooled light tan vellum, the rococo-scribed decoration consisting of stylized grotesque and floral motifs. The draw tubes are covered in blue paste paper that offers a striking contrast with the tan vellum.
Thomas Heath (b. 1714–1765) owned one of the many shops offering scientific instruments in 18th-century London. He began making instruments c. 1720 and established a family firm that sold devices made by other craftsmen as well, including sundials and surveying tools. Some of the makers who worked for Heath, such as George Adams, later established their own workshops and reputations.

By the early 18th century, the Copernican (Sun-centered) model of the Universe was widely accepted. Astronomers trained their telescopes on the Moon and the planets, looking for evidence that these other worlds might be similar to Earth. Models of the Universe became very popular and took many forms.

This large planetarium is also known as a grand orrery. It shows the planets known from antiquity but displayed in the new Copernican arrangement. Although it does not indicate their relative distances, an elaborate clockwork mechanism moves the planets at their correct relative speeds.

When built around 1740, this orrery included a 58 cm upraised central ring. It displayed the heliocentric solar system, which had been replaced in Catholic teaching in 1582 but was still used in England until 1712, when the calendar ring had to be altered. Albertus William Herschel discovered Uranus in 1781, and a skilled artisan added another outer ring to the orrery to show the new planet, labeled here as “Georgium Sidus” or King George’s star. By the time, or perhaps around 1797, the last of the six moons of Uranus featured here were added as well. Of these six, Herschel discovered two and named them so that he saw the other four.