While medieval alchemy focused on transforming common materials into precious ones, like silver or gold, science focused on explaining the natural world. The move between the two was a gradual one. Unlike alchemists, scientists performed experiments and observations in a methodical, replicable manner in order to prove their hypotheses. The scientific method that arose in this period is central to science practice today.

Accurate measurements and improved tools were vital. With the invention of the pendulum clock in 1656, timekeeping became increasingly accurate. Makers of clock movements worked with furniture makers to create timepieces that were both precise and fashionable.

Despite the advances in science, many early discoveries were actually made by alchemists. This print at the right depicts a German alchemist discovering the element phosphorus in 1669. Another German alchemist, Johann Friedrich Böttger (1682–1719), and scientist Ehrenfried Walther von Tschirnhaus (1651–1708) discovered the process of creating true porcelain, which had been a tightly held secret in China. Through experimentation, they hit upon the exact combination of kaolin clay, quartz, and alabaster. This discovery resulted in the Meissen Factory’s creation in Germany, the first porcelain manufacturers outside China. With successes born of the scientific method, former alchemists continued to adopt scientific processes. (CONTINUED ON BACK)
Optical tools allowed investigation of formerly unknown worlds, from vast skies to microscopic cells. Important tools, already in use in the Islamic world by the 900s, later traveled into Europe. Roger Bacon (1214–1294) described using a telescope in 1267. His model was improved by others, most notably Galileo Galilei (1564–1642) who was famous for arguing Earth’s place in the solar system.

With improved tools, scientists were able to observe unidentified phenomena. Dutch scientist Anton van Leeuwenhoek (1632–1723) developed powerful lenses used in telescopes by astronomers who created highly accurate charts for sea navigation. In 1665, Robert Hooke (1635–1703) looked through a microscope and discovered that plants were made of cells.

In the 1600s and 1700s, even non-scientists collected and used optical tools. The wealthy, great patrons of science collected tools such as telescopes and microscopes either for their novelty or to do their own research. Madame de Pompadour, mistress of Louis XV, had two telescopes and most likely a microscope. These tools would be finely decorated, such as the museum’s gilt bronze Microscope, shown here.