

Galileo

Aristotle, an ancient Greek philosopher, believed that the Earth was the center of the universe, standing still as the Sun and stars traveled around it.

In 1543, over 1,500 years later, Nicholas Copernicus a Polish astronomer claimed that the Sun was at the center of the universe and that all celestial bodies, including Earth and its moon, revolved around it. During this time period a movement called the Reformation was sweeping across Europe. Galileo Galileo, a brilliant Italian mathematician, physicist, and astronomer set out to prove Copernicus was right.

Galileo was different than most people who were interested in explaining different phenomena. He not only made careful observations about what he saw but then designed experiments to prove or disprove his theories. It was Aristotle who had claimed that heavy objects fell to Earth faster than lighter ones. Galileo decided to prove that Aristotle was wrong. He dropped two balls of different weights at the same time from the same height at the top of a building. A crowd of students and professors watched the balls land together. Those who were loyal followers of Aristotle refused to believe what they saw. Galileo quickly made enemies by challenging a nearly 2,000 year old theory of Aristotle. Called, the father of modern science, Galileo was more interested in to bring to light truth about science, even though he was met with much resistance from university students he taught and colleagues he worked with. The most powerful resister to his discoveries, especially those related to astronomy, was the Catholic Church. High positioned churchmen, professors, and local princes thought that Church doctrine was more important than the truth about nature.

Galileo learned that a Dutch eyeglass maker, Hans Lippershey, had invented a 'spyglass'. With a tube and lenses, distant objects appear a little bigger and closer. Galileo was the first to make real efficient telescope and built a larger 'spyglass that enabled him to see an object thirty-three times larger than its actual size. A lifelong gazer of the night sky, he turned his 'spyglass' skyward -- something no one else had thought of doing.

As he observed the moon, Galileo was amazed when he saw mountains, valleys, and craters on its surface. This horrified the experts, among them Aristotelians who were certain it was a smooth, polished sphere. For the first time, he saw billions of stars that made up the Milky Way. It had been long thought that the Milky Way was an endless expanse in the sky made of a cloud of unknown material.

One night Galileo was observing Jupiter and saw near the planet four bright objects that no one had ever seen before. The next evening, he observed that they had changed positions. He realized they were Jupiter's own moons, traveling around the planet. Another important observation was watching the Sunlight on Venus move across the planet just as the light does on our moon. Its phases or changes from a full circle of light to a sliver of light were predictable.

Copernicus was correct. The Sun was at the center and the planets traveled around it. Earth was just another planet that, with its satellite, the Moon, traveled around the Sun.