

1609: A HISTORIC YEAR FOR ASTRONOMY



Partners for the International Year of Astronomy 2009



Changing times

Astronomy is a dynamic and ever-changing science, where new discoveries are regularly made. But some periods prove to eclipse others in terms of revolutionary discoveries.

1609 was one of those years. Scientists consider it to be vitally important in the history of astronomy.



Changing times

To mark the 400th anniversary, 2009 is the International Year of Astronomy, or IYA2009 for short.

To understand why we should take the time to remember the events of 1609 and early 1610, let's look at why it was such a significant period.

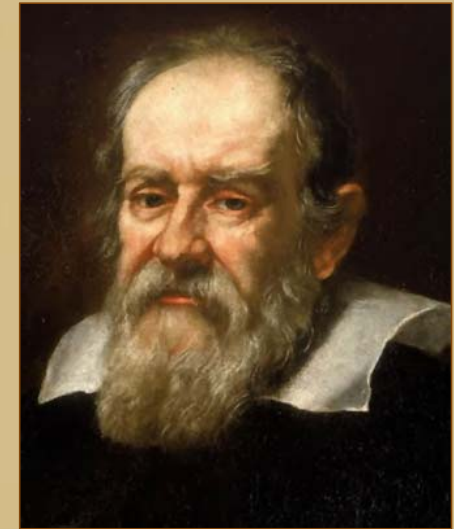


Galileo Galilei

In 1609, the Italian astronomer Galileo obtained descriptions of a new instrument – a telescope.

He demonstrated its benefits to merchants and seafarers, who appreciated being able to see land and other ships from great distances.

Galileo then thought to turn his telescope to the heavens...



Galileo and his telescope.

Images: Wikipedia & The Galileo Project

Galileo Galilei

Galileo studied the planet Venus using his telescope.

It was the first time that someone had peered at this world using an optical instrument. It was revealed that Venus has phases, much like our own Moon. Sometimes it was “full”, and sometimes crescent-shaped.

How could this be, if the Earth was at the centre of the Universe, as was generally accepted at the time?

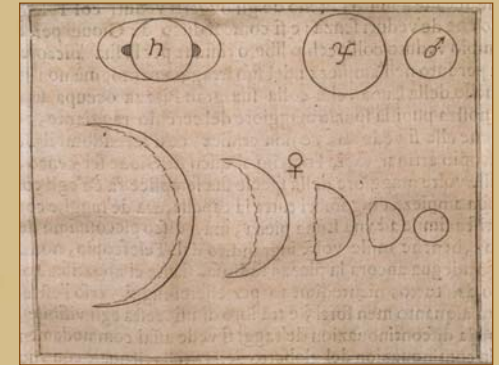


Image: Istituto e Museo di Storia della Scienza, Florence

The planets Saturn, Jupiter, Mercury and Venus (with its various phases), as they appeared to Galileo through his telescope.



Image: The Galileo Project

Galileo's sketches and observations of the Moon revealed that there were mountains on its surface.



Galileo Galilei

Galileo even used his telescope to project an image of the Sun, so he could safely observe it.

He saw dark sunspots on the solar surface. These changed over time, with new ones emerging while old ones disappeared.

This was at odds with the conventional view of the heavens being perfect and unchanging.



Galileo's drawings of the sunspots (from the *Istoria e Dimostrazioni*, Florence 1613).

Image: IYA2009 Secretariat

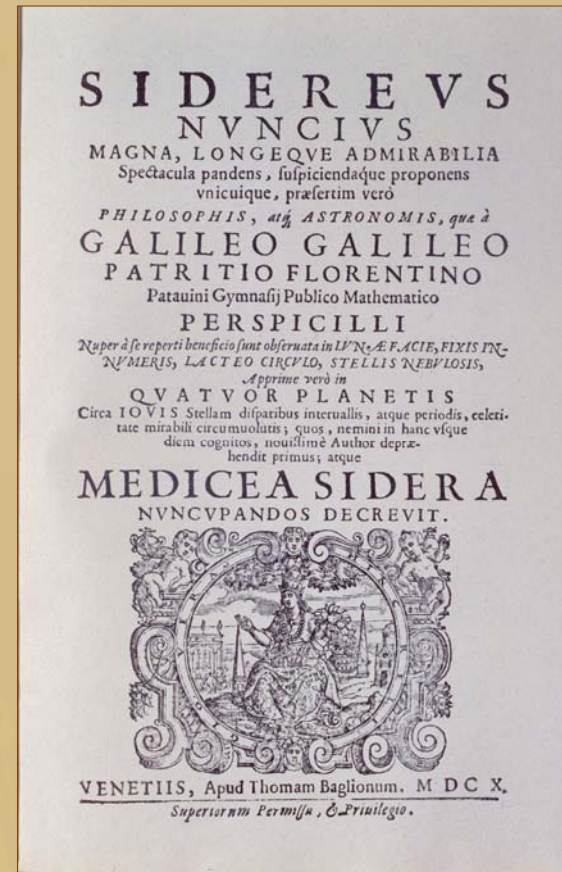


Galileo Galilei

In March 1610, Galileo published a short book called *Sidereus Nuncius* (Starry Messenger).

It outlined many of his observations, including those that contradicted established views of the Universe.

Galileo's scientific approach showed that accepted wisdom was outdated.



Frontispiece of Galileo's *Sidereus Nuncius* (Venice, 1610), the work that announced the sensational celestial discoveries made by Galileo thanks to the telescope.

Image: YA2009 Secretariat

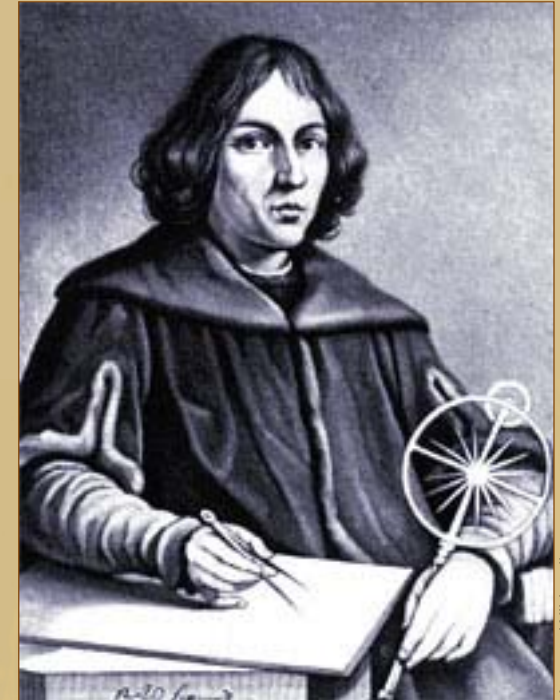


The Copernican Revolution

Perhaps Galileo's most important legacy is his observational and vocal support for Copernicus' view of a heliocentric system.

This claimed that the Earth orbits the Sun, and not the other way around.

Galileo's evidence of Jupiter's moons, craters on the Moon, and the phases of Venus backed this new theory. It was a milestone for modern science.



Many consider Copernicus' work as the beginning of modern astronomy.

Image: Wikipedia



Astronomia Nova

More support for the Copernican system came from the astronomer Johannes Kepler's book *Astronomia Nova*, published in 1609.

It was the culmination of a ten-year long observation programme studying the planet Mars.

Kepler plotted how Mars moved in the night sky, and related this to physical principles.



Kepler's work, describing the Universe with mathematics as well as observations, was revolutionary.

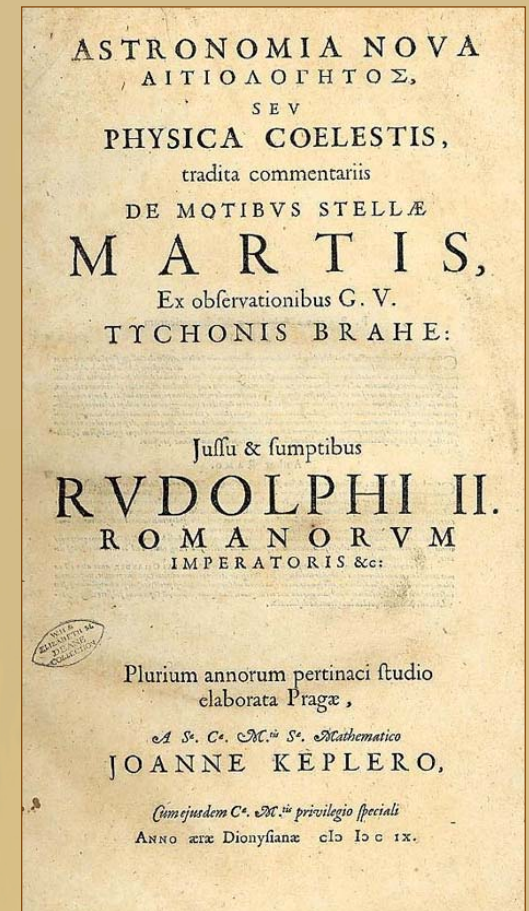


Astronomia Nova

Kepler's book was long but in-depth. His calculations were laid out in detail, so others could follow them a step at a time.

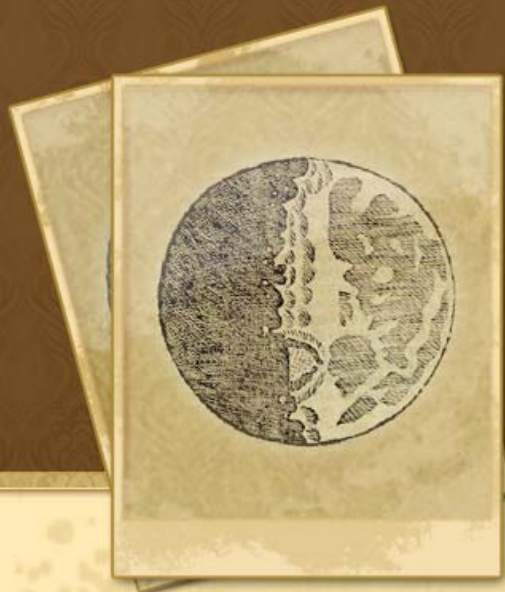
As with Galileo, scientific arguments were being used to debunk accepted yet inaccurate ideas.

Astronomia Nova also described two of the three now-famous "Kepler's laws of planetary motion." Kepler's book is celebrated as being a work of scientific revolution.



The title page of Kepler's *Astronomia Nova*.

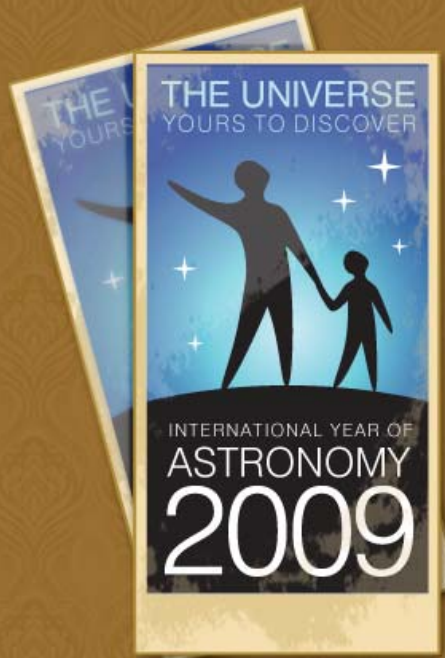
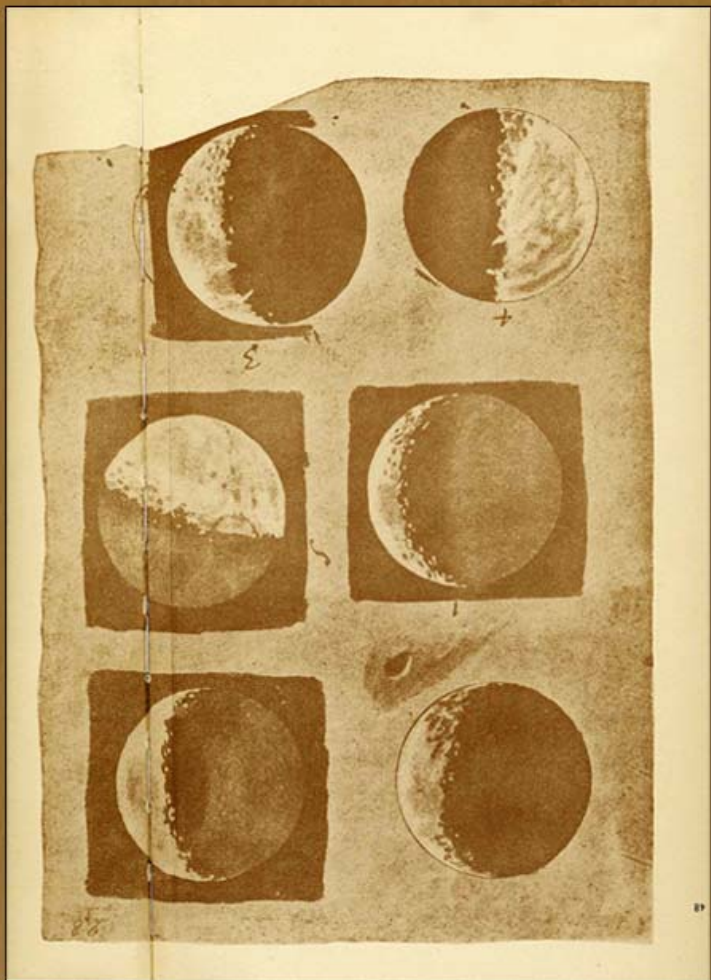
Image: Wikipedia



Looking to the future

1609 was a revolutionary year for astronomy, and the discoveries made then are still being felt today.

Maybe one day people will look back at all that occurred during the International Year of Astronomy 2009, and celebrate those achievements!



www.astronomy2009.org

IYA2009 Secretariat

ESO education and Public Outreach Department
 Karl-Schwarzschild-Strasse 2
 D-85748 Garching bei München
 Germany

Contact:

Pedro Russo
prusso@eso.org

Global Sponsors



Organisational Associates

