

Who actually invented the astronomical telescope?



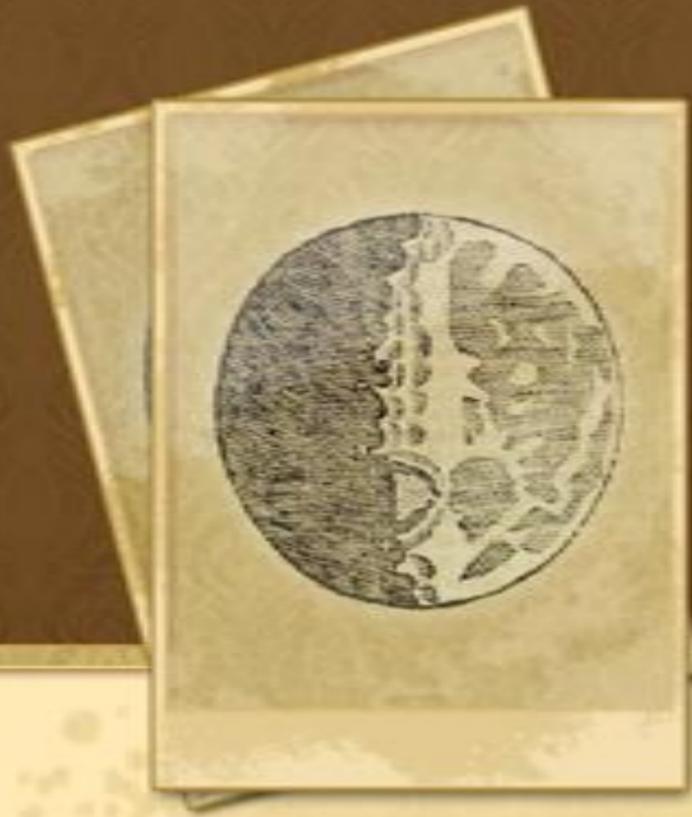
United Nations
Educational, Scientific and
Cultural Organization



International
Astronomical
Union

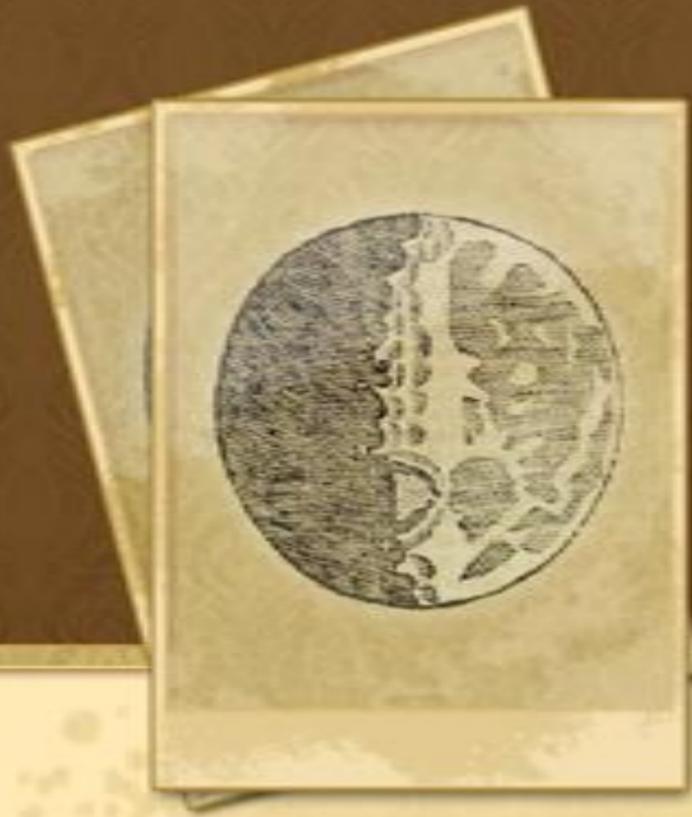
Partners for the International Year of Astronomy 2009





The telescope has revolutionised science and astronomy

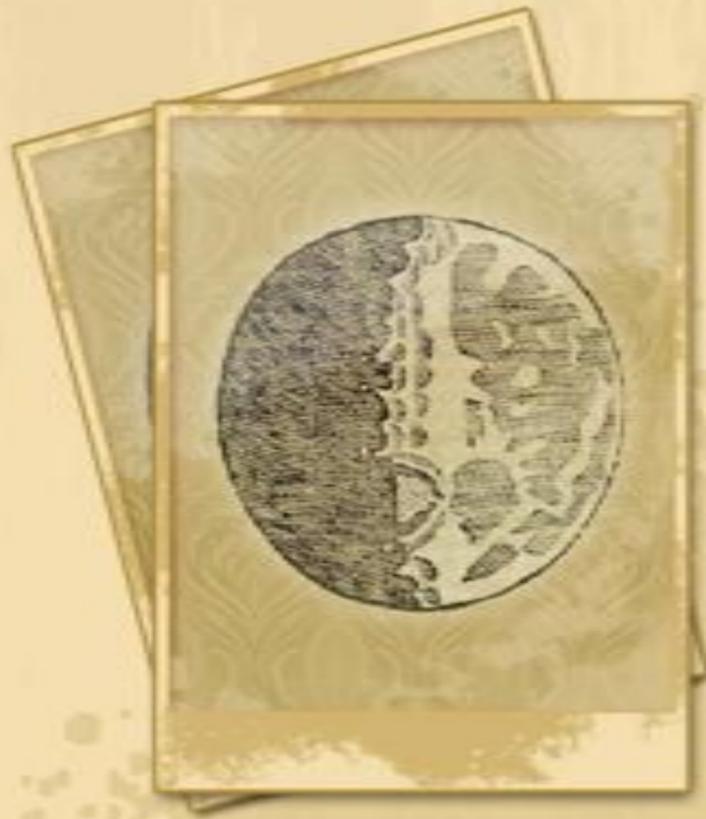
From the moment the telescope was turned towards the heavens it has been an instrument that has shown us our origins and our fate.



The telescope has revolutionised science and astronomy

It has allowed us to see back in time whilst also showing us, through the study of planetary nebulae, what our Solar System will look like in the future.

For centuries, it has been disputed exactly who was first to use the telescope to observe the heavens.



Who were the key players in the early development of the telescope?



Image: Wikipedia

The astronomer Johannes Hevelius viewing through an early telescope.

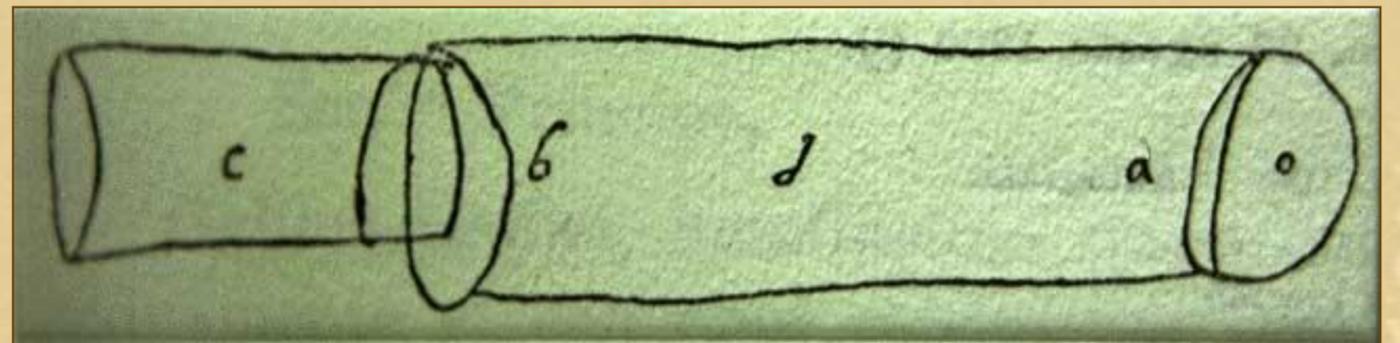
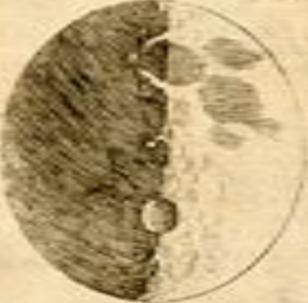


Image: American Institute of Physics

The earliest known illustration of a telescope. Giovanbattista della Porta included this sketch in a letter written in August 1609.



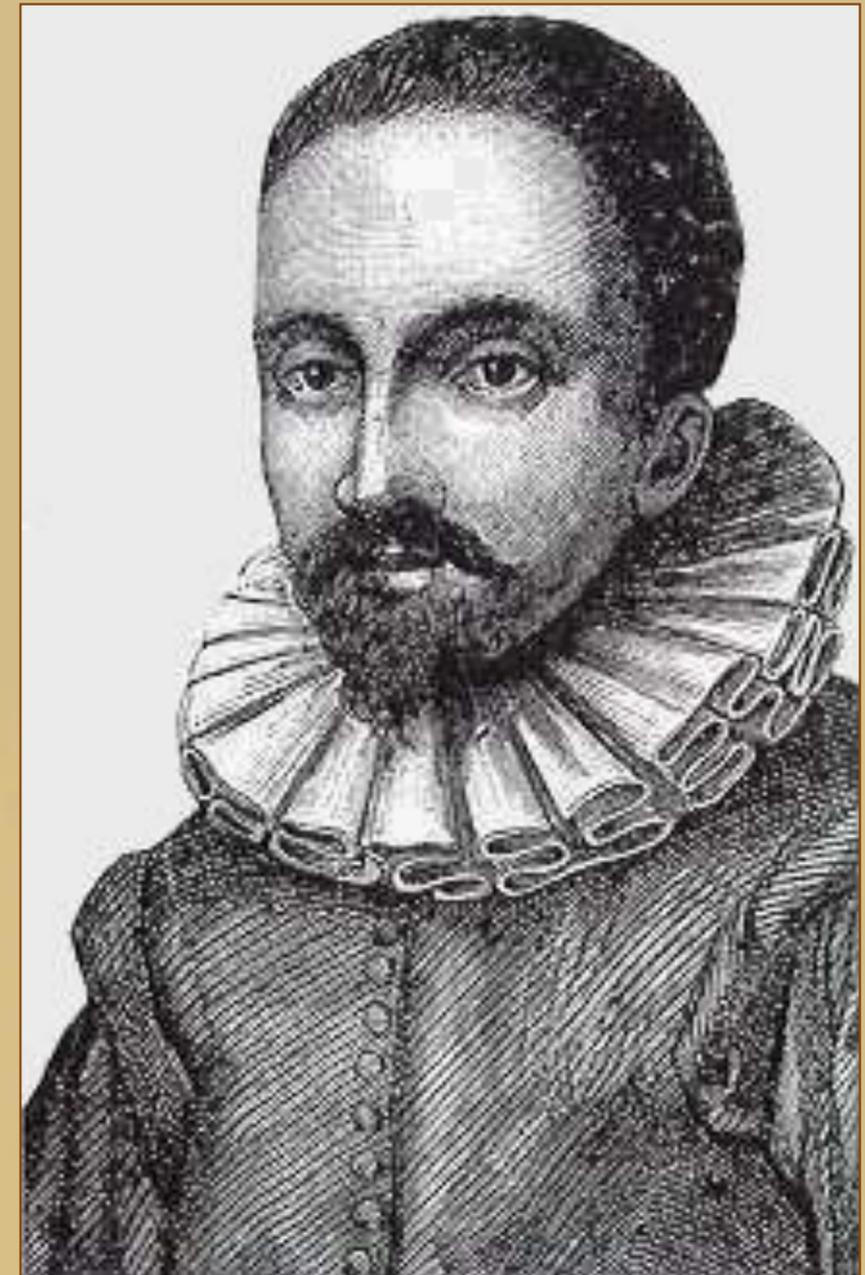
Hans Lipperhey (1570-1619)

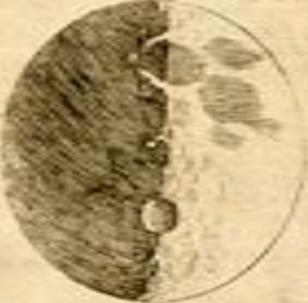
The earliest telescopes used lenses made of glass. Such lenses were first made in around 1350.

It was **Hans Lipperhey** who first presented the telescope as we know it today.

It is recorded in a letter written on 25 September 1608 that Lipperhey had invented a 'device' that could magnify a view so that, according to the letter:

“All things at a very great distance can be seen as if they were nearby, by looking through glasses which he claims to be a new invention.”





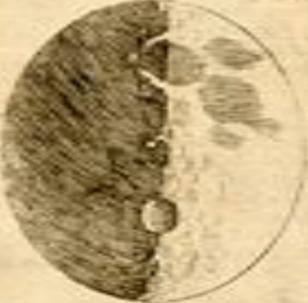
Hans Lipperhey (1570-1619)

Lipperhey was a spectacle maker from West Germany. He is credited with inventing the telescope we know today.

Lipperhey (also known as Lippershey) was born in Wesel. He was a gifted spectacle maker based in the Netherlands. On 2 October 1608 he applied for a patent for the telescope that he claimed to have invented. The application was denied, but news of the invention soon spread across Europe.

After Lipperhey's patent application was made several other people claimed to have invented the telescope, but Lipperhey's application still stands today as the first recorded design for a telescope.





Sacharias Janssen (1585 – 1632)

Sacharias Janssen was a spectacle maker in Middelburg, and a colleague and competitor of Lipperhey.

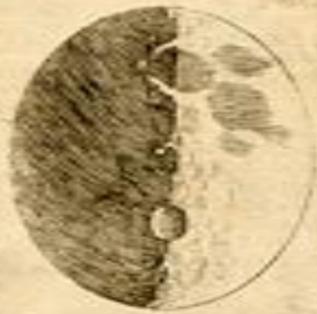
Janssen is one of the two possible inventors of the telescope.

He is rumoured to have built a preliminary telescope before the year 1600... but there is no documentary evidence confirming this.



Image: American Physical Society

Thomas Harriot (1560 – 1621)



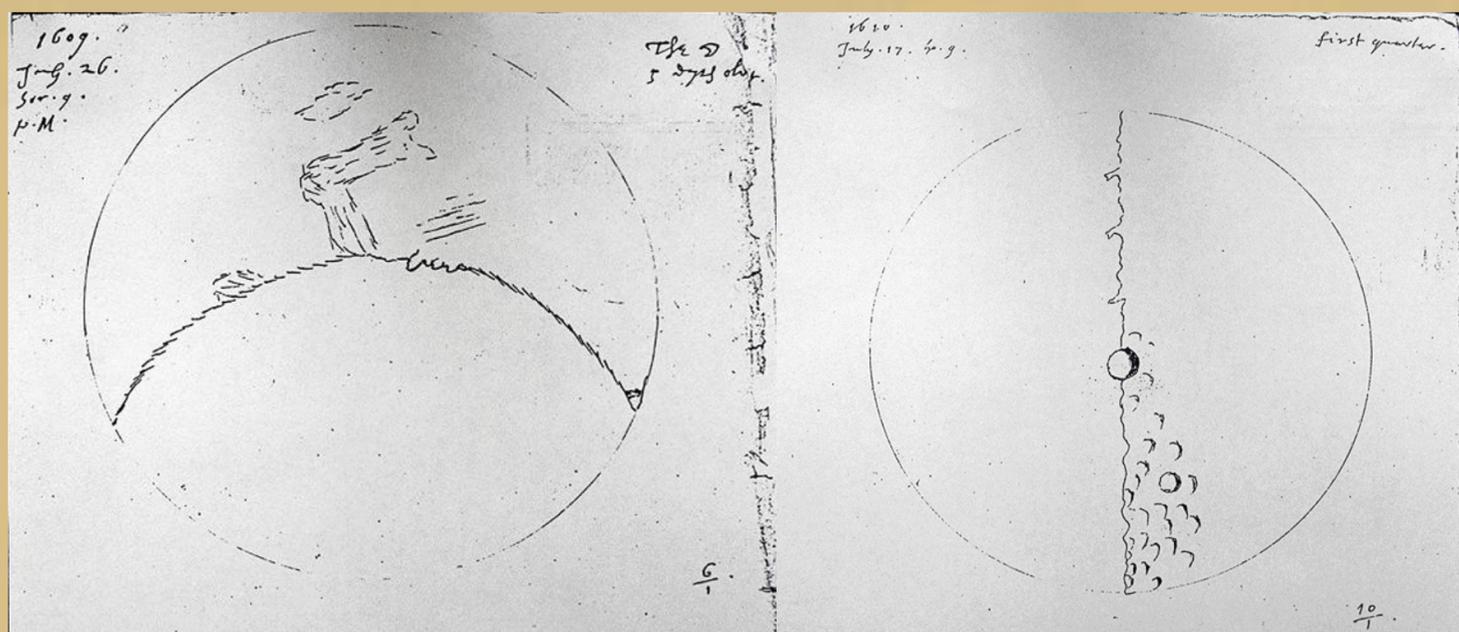
Thomas Harriot was a scientist and astronomer living in Oxford. In one of his many roles he was a cartographer on an expedition organised by Sir Walter Raleigh. He may have been the first person to use the telescope to do astronomy.

The English astronomer Thomas Harriot is not well known throughout the world although some of his observations were advanced for his time.

It is claimed by some (Van Helden, 1995) that Harriot observed and sketched the Moon through a telescope 26 July 1609, months before Galileo is known to have done so.



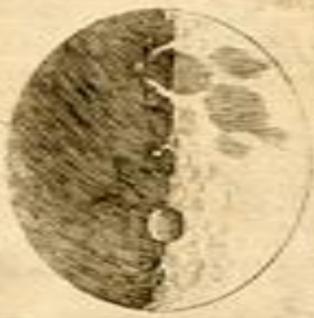
Image: East Carolina University | <http://www.ecu.edu/cs-cas/harriot.cfm>



Images: The Galileo Project

Moon observations by Harriot on 26 July 1609 (left) and 17 July 1610 (right)

Though hardly as famous as Galileo, Harriott's works in observing and recording sunspots were the first recorded observations of these phenomena.

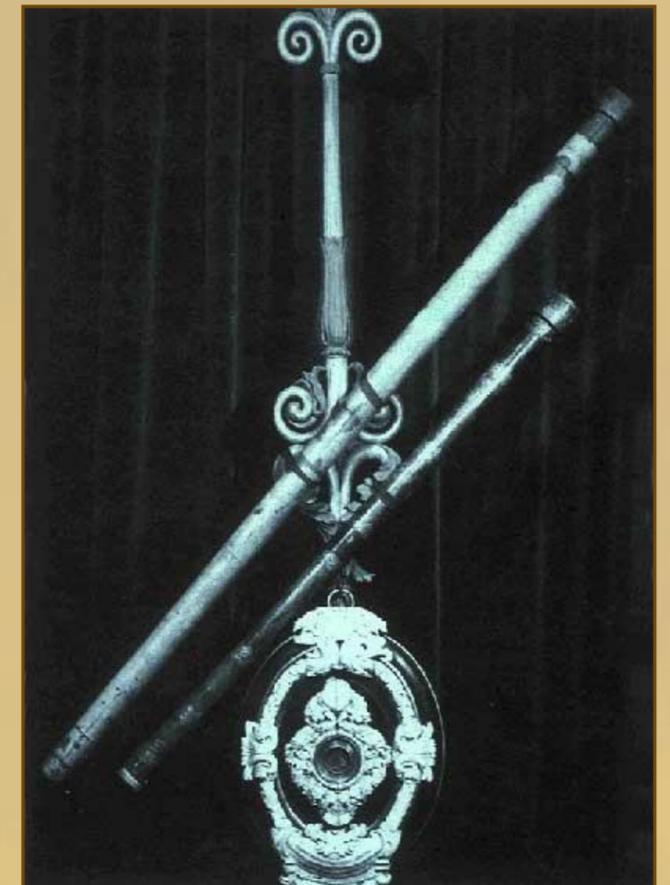
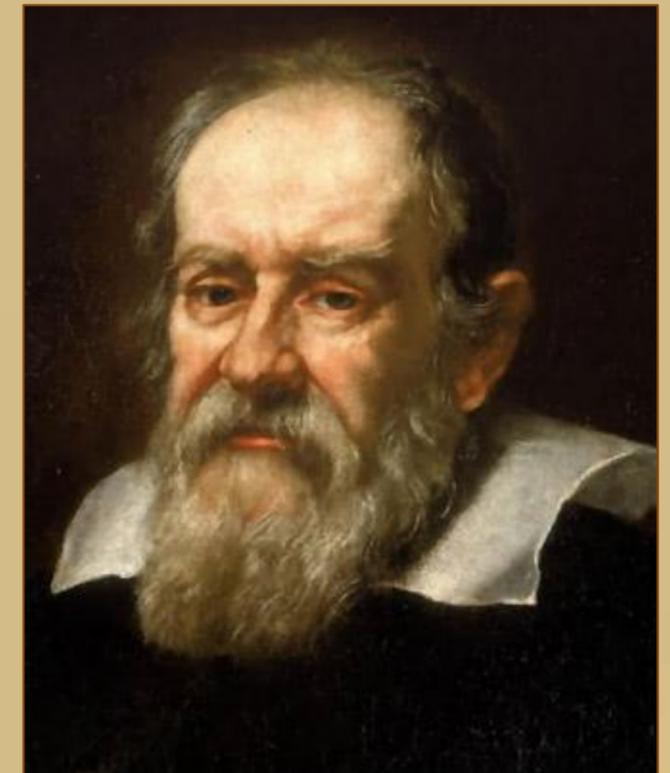


Galileo Galilei (1564 - 1642)

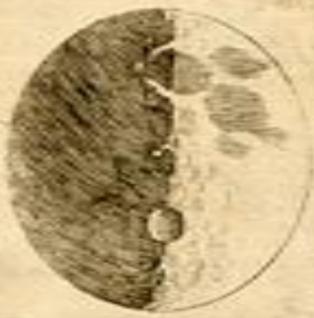
Despite the notable efforts of his contemporaries, the Italian Galileo Galilei is widely regarded as one of the founders of modern astronomy. His concise observations of a range of astronomical objects laid the foundations for centuries of research.

Galileo built his telescope in the summer of 1609.

On 25 August 1609, Galileo demonstrated his first telescope to Venetian lawmakers. This was the first astronomical outreach activity with a telescope, and the first thoroughly documented use of the telescope for astronomy.



Galilean Telescope



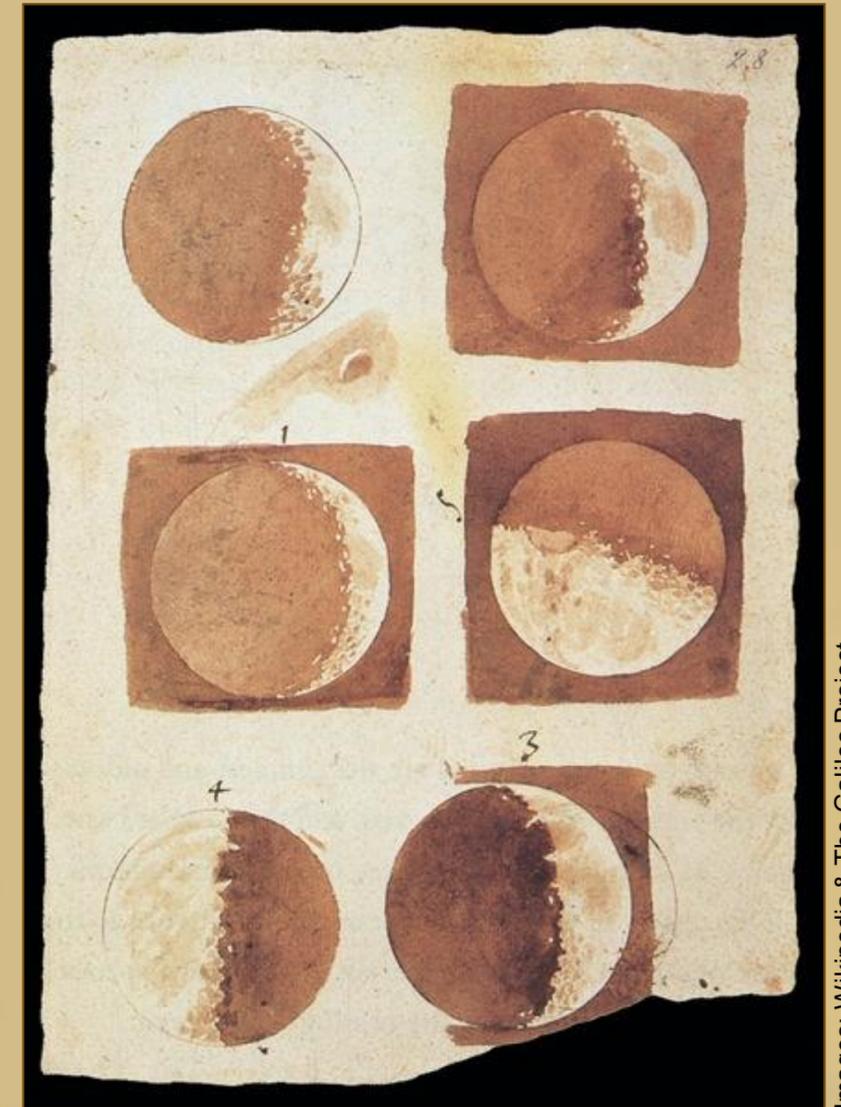
Galileo Galilei (1564 - 1642)

By October 1609 Galileo had developed a telescope that gave him 20x magnification.

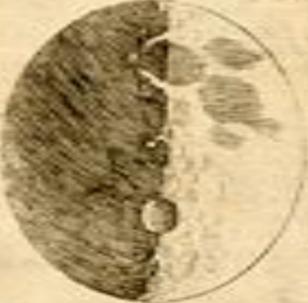
With his new 20x telescope he observed the Moon and discovered the four largest moons of Jupiter.

He would go on to use his telescopes to study sunspots and the phases of Venus.

Galileo's observations revolutionised astronomy and changed our worldview profoundly.



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



Johannes Kepler (1571-1630)

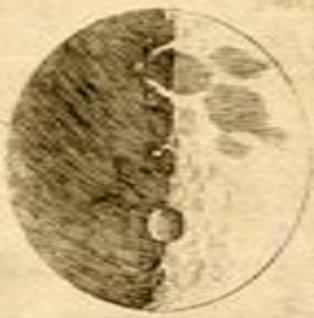
Johannes Kepler was born in southwest Germany in 1571. His work, describing the Universe with mathematics as well as observations, was revolutionary.

He was the assistant to another famous astronomer, the Dane Tycho Brahe.

Kepler learnt of Galileo's use of the telescope in 1610 and soon became a great enthusiast of its use for astronomical purposes.

Kepler himself used a telescope to observe Jupiter's four largest moons and published a work on telescope theory in 1611.



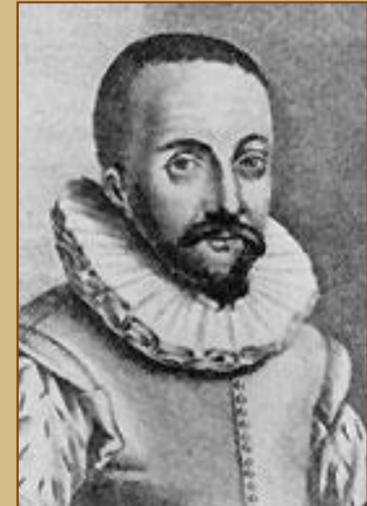


Timeline of the birth of the telescope

The first eyeglasses are made by a lay person in Pisa, Italy

c. 1286

Hans Lipperhey approaches the government of the Netherlands with a patent for the telescope.



Images: Wikipedia

c. 1350

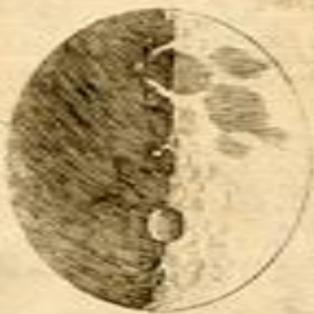


Images: Wikipedia

Detail of portrait of Hugh de Provence, 1352

Spectacles invented & glass lenses developed

1608



Timeline of the birth of the telescope

July

Thomas Harriot may have observed the Moon through

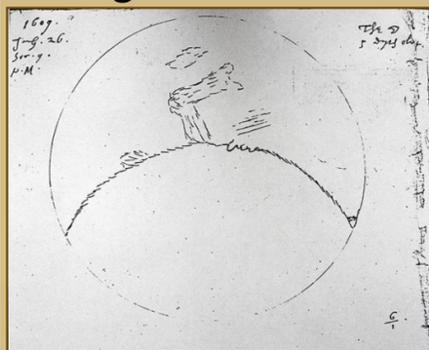
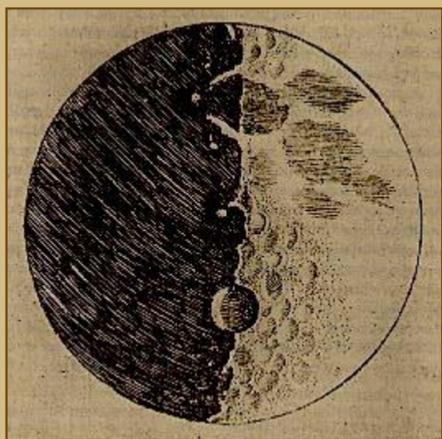


Image: Galileo Project

September – October (?)

Galileo turns his telescope to the Moon.



September

The phases of Venus observed by Galileo and others.

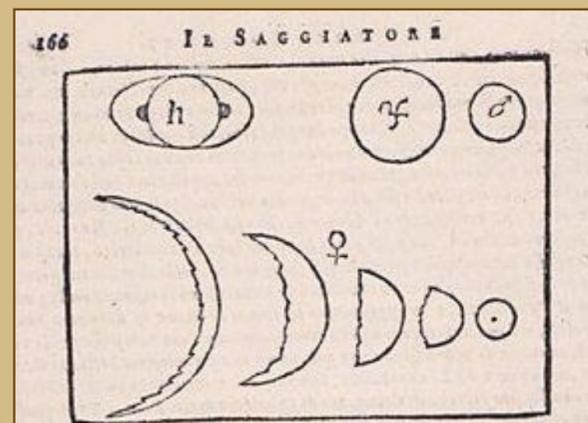


Image: Il Saggiatore (1613)

1609

1610

1611

Telescopes could be bought in spectacle shops in Paris

Galileo demonstrated his first telescope to Venetian lawmakers



Image: Universe Review

January

Obronazioni Jovis
1610

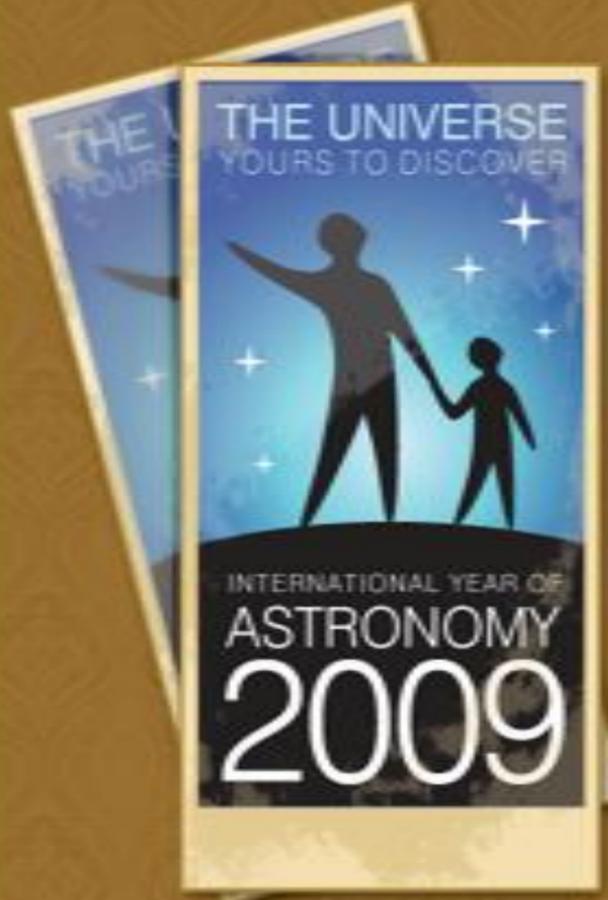
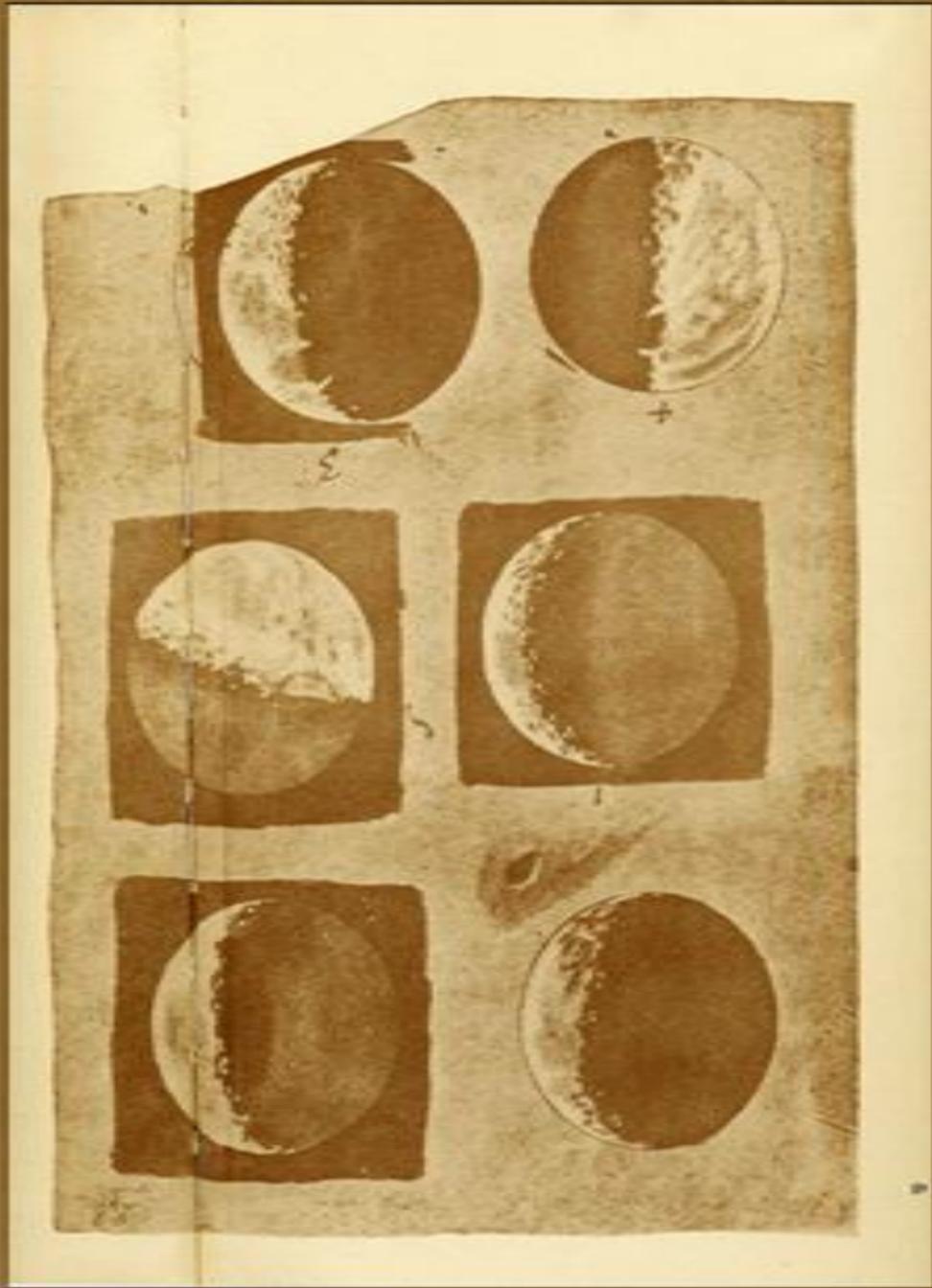
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30. Jan.	** ○ *
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3. Mart.	○ * *
3. Apr.	* ○ *
7. May.	* ○ **
6. Jun.	** ○ *
8. Jul.	** * ○
10. Aug.	* * * ○ *
11.	* * ○ *
12. H. Aug.	* ○ *
17. Sept.	* ** ○ *
14. Oct.	* * * ○ *

Image: Galileo Project

Galileo turns his telescope to the sky to see Jupiter's moons.

Johannes Kepler describes the optics of lenses, including a new kind of astronomical telescope with two convex lenses (the 'Keplerian' telescope).

August



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