



si vedeva col cannone  
\* uchi:  
delle piastre col cannone

DIADVM CONSTELLATIO.

Adi 7. di Gennaio  
3. stelle fiffe  
muni h. u.



# 1

## NEW VIEWS OF THE SKIES

### ARTIST'S IMPRESSION OF GALILEO'S FAMOUS TELESCOPES

With his small, homemade telescopes, capable of magnifying objects by a factor of 20, Galileo Galilei made some of mankind's most astonishing discoveries. He observed stars and nebulae and studied Solar System objects like the Sun, the Moon, Saturn, Jupiter and Venus. Although he did not invent the instrument, it was Galileo who truly made the telescope famous.

The telescope is astronomy's miracle worker. It reveals faint stars and nebulae and magnifies distant objects. Telescopes take astronomers on a journey to the distant reaches of the Universe, where sparkling galaxies adorn the darkness of the void. But they also serve as time machines, providing scientists with a view of the earliest cosmic eras. No other single instrument has done so much for our view of mankind's place in time and space. Astronomy would barely rate as a science without the telescope. Four hundred years ago the early pioneers began a journey that led from the chance alignment of two simple lenses to today's complex space-based observatories and massive mountaintop mirrors.



## *“That night Galileo started a scientific revolution of cosmic proportions”*

Four centuries ago a man walked out into the fields near his home in Padua and pointed his homemade telescope at the Moon, the planets and the stars. Astronomy would never be the same again. The date was Thursday, 30 November 1609. The man was the Tuscan physicist and astronomer Galileo Galilei. He may not have realised it at the time, but that night he started a scientific revolution of cosmic proportions. To commemorate Galileo's first observations of the heavens with a telescope the United Nations and the International Astronomical Union have declared 2009 to be the International Year of Astronomy.

For thousands of years the human eye was the only instrument available to observe the Universe. The invention of the telescope changed that. Now astronomers assemble giant mirrors on remote mountaintops to look out through the thinnest layers of the clearest, stillest atmosphere to catch faint signals from some of the farthest and oldest objects known. Radio telescopes collect faint chirps and whispers from outer space. Scientists have even launched telescopes into Earth orbit, high above the distorting effects of our atmosphere. And the view has been breathtaking.

Galileo didn't invent the telescope, and its exact origin is still controversial. The oldest existing documents to mention the telescope attribute its invention to the Dutch spectacle maker, Hans Lipperhey (also known as Lippershey) in the early 17th century. Tinkering away, Lipperhey found that placing a convex lens at one end of a cardboard tube and a concave lens at the other allowed him to magnify distant objects. The telescope was born!

*“The true origin of the telescope remains shrouded in mystery”*



**GALILEO DEMONSTRATING ONE OF HIS TELESCOPES**

In August 1609, Galileo demonstrated the use of his new telescope as a tool for observing the stars to the ruler of Venice, the Doge. Standing to the right of the telescope, Galileo can be seen in the centre of St. Mark's square in Venice. Always the radical inventor, Galileo had not only revolutionised the design of the telescope, but was also the first to realise that it could be used to study the heavens rather than just to magnify objects on Earth. In the years to come, Galileo's observations would lend credence to the heliocentric worldview of Nicolaus Copernicus, who removed the Earth from its central position in the Universe.

As far as we know, Lipperhey never looked at the stars through his telescope — he believed that his invention would mainly serve seafarers and soldiers. Lipperhey was from Middelburg, a large trading city in the fledgling Dutch Republic, then at war with Spain. In October 1608 Lipperhey demonstrated the telescope to Prince Maurits of the Netherlands, who was able to read the time on the church clock in Delft, from a tower in The Hague eight kilometres away. The new spyglass could reveal enemy ships and troops too distant to be seen by the unaided eye. A useful invention indeed. However, the Dutch government did not grant Lipperhey a patent, since other merchants, notably Lipperhey's competitor Zacharias Janssen, also claimed the invention and might actually have built the first telescope around 1604. The dispute has never been settled. The true origin of the telescope remains shrouded in mystery.