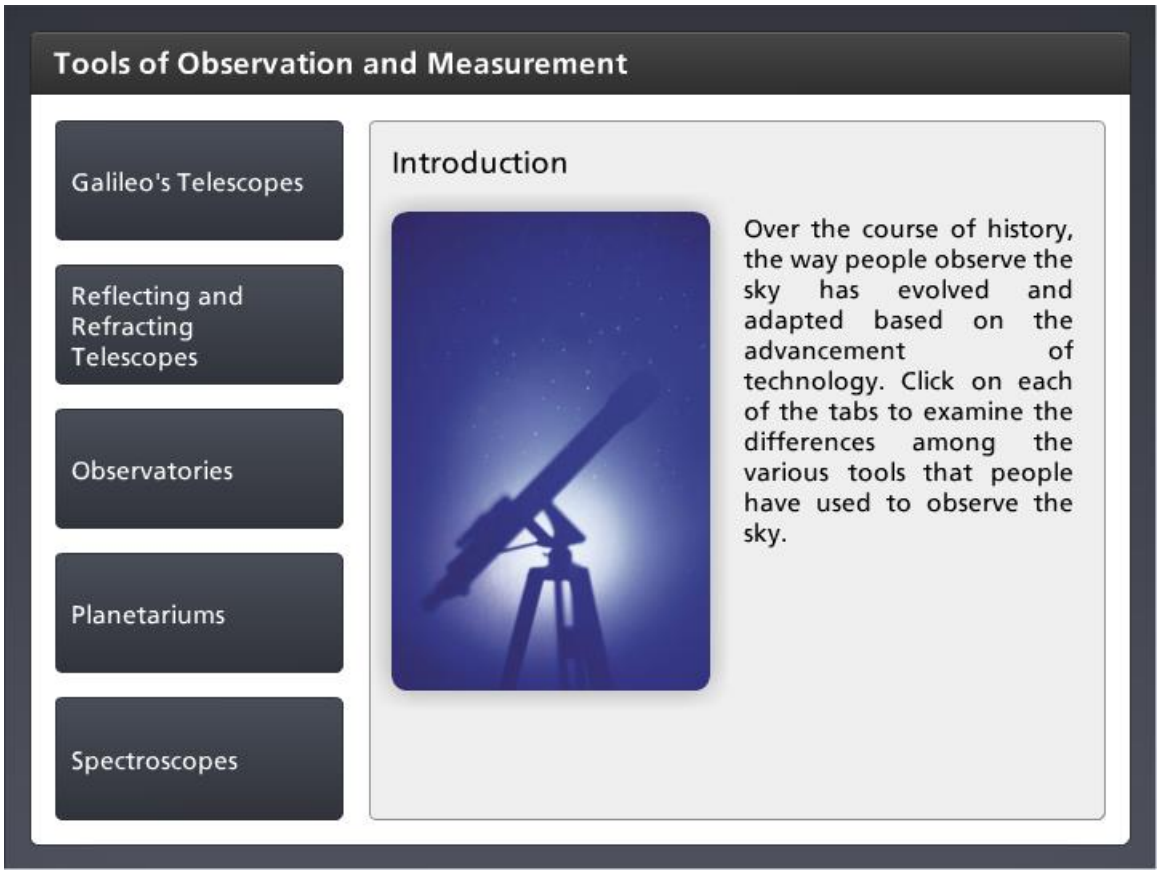
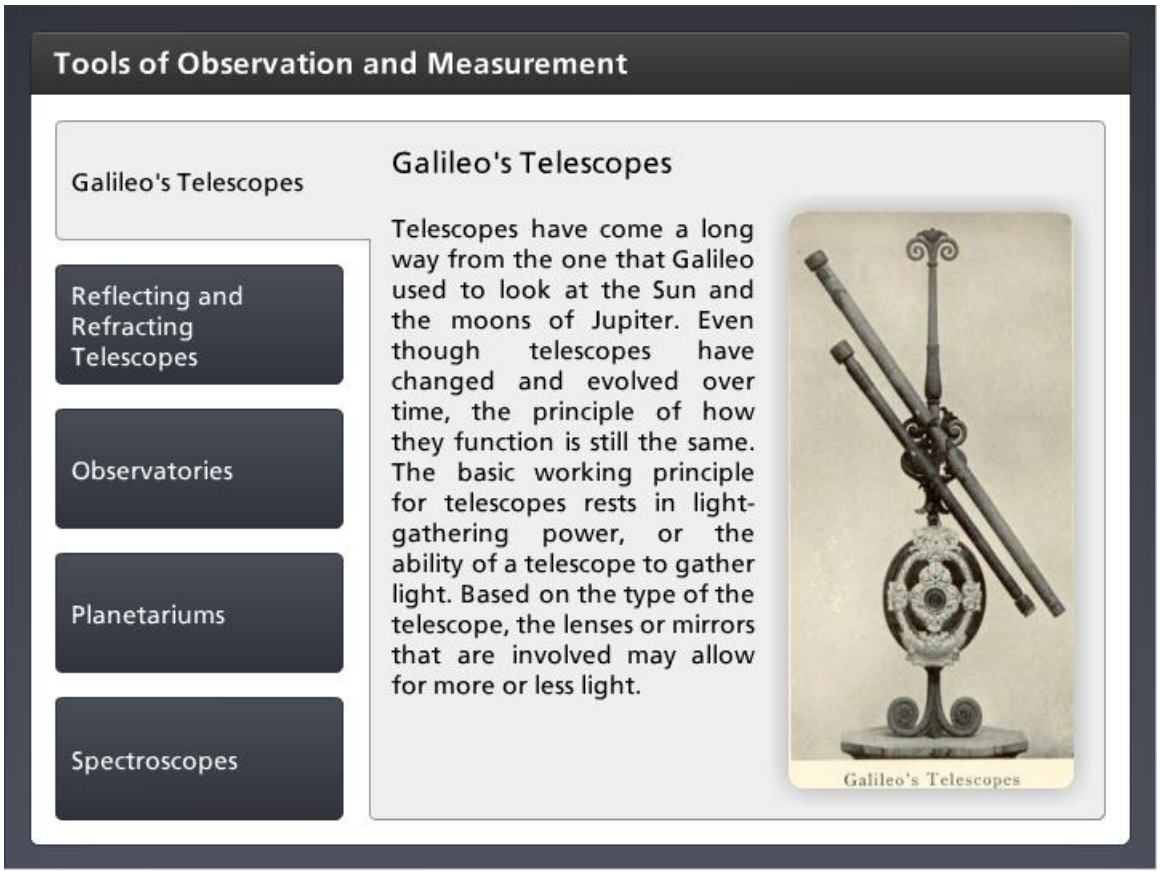
Module 5: Astronomical Tools
Topic 1 Content: Tools of Observation and Measurement

Introduction



Over the course of history, the way people observe the sky has evolved and adapted based on the advancement of technology. Click on each of the tabs to examine the differences among the various tools that people have used to observe the sky.

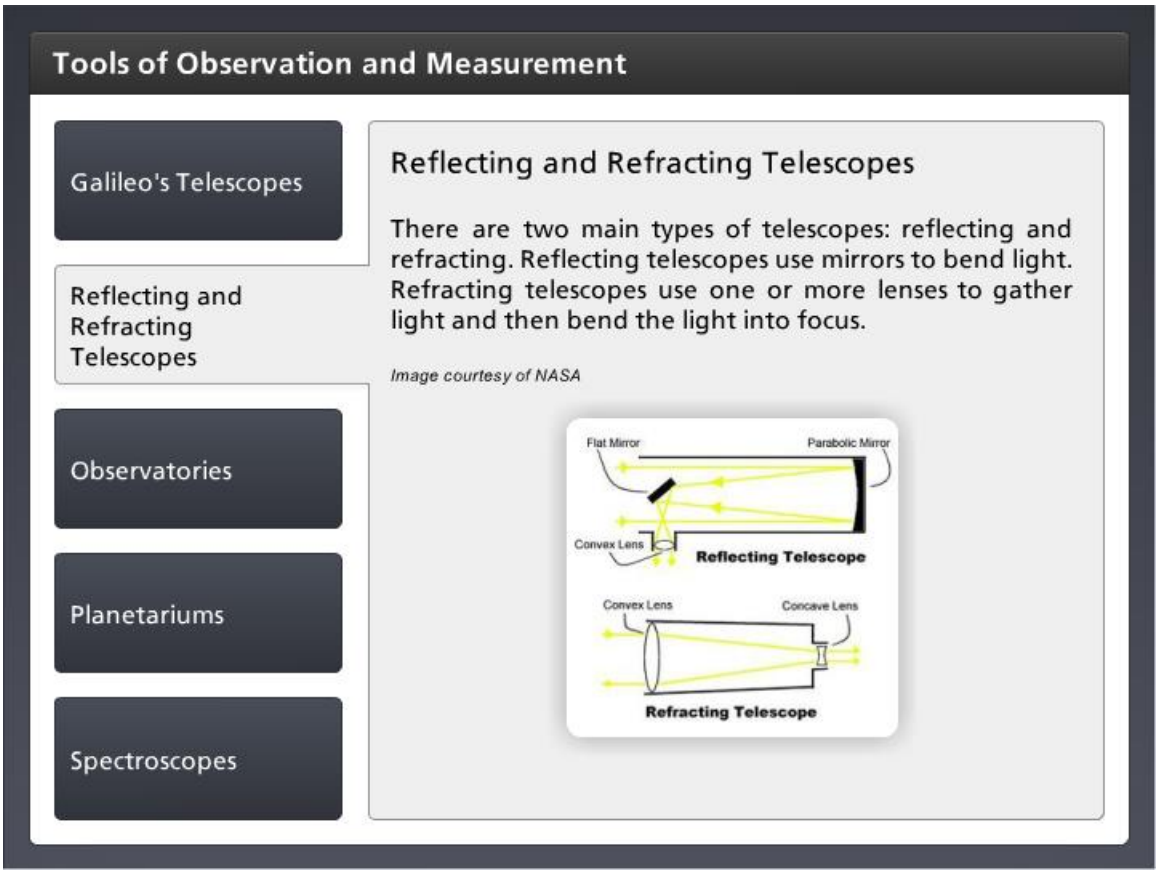
Galileo's Telescopes



Telescopes have come a long way from the one that Galileo used to look at the Sun and the moons of Jupiter. Even though telescopes have changed and evolved over time, the principle of how they function is still the same. The basic working principle for telescopes rests in light-gathering power, or the ability of a telescope to gather light. Based on the type of the telescope, the lenses or mirrors that are involved may allow for more or less light.

Module 5: Astronomical Tools
Topic 1 Content: Tools of Observation and Measurement

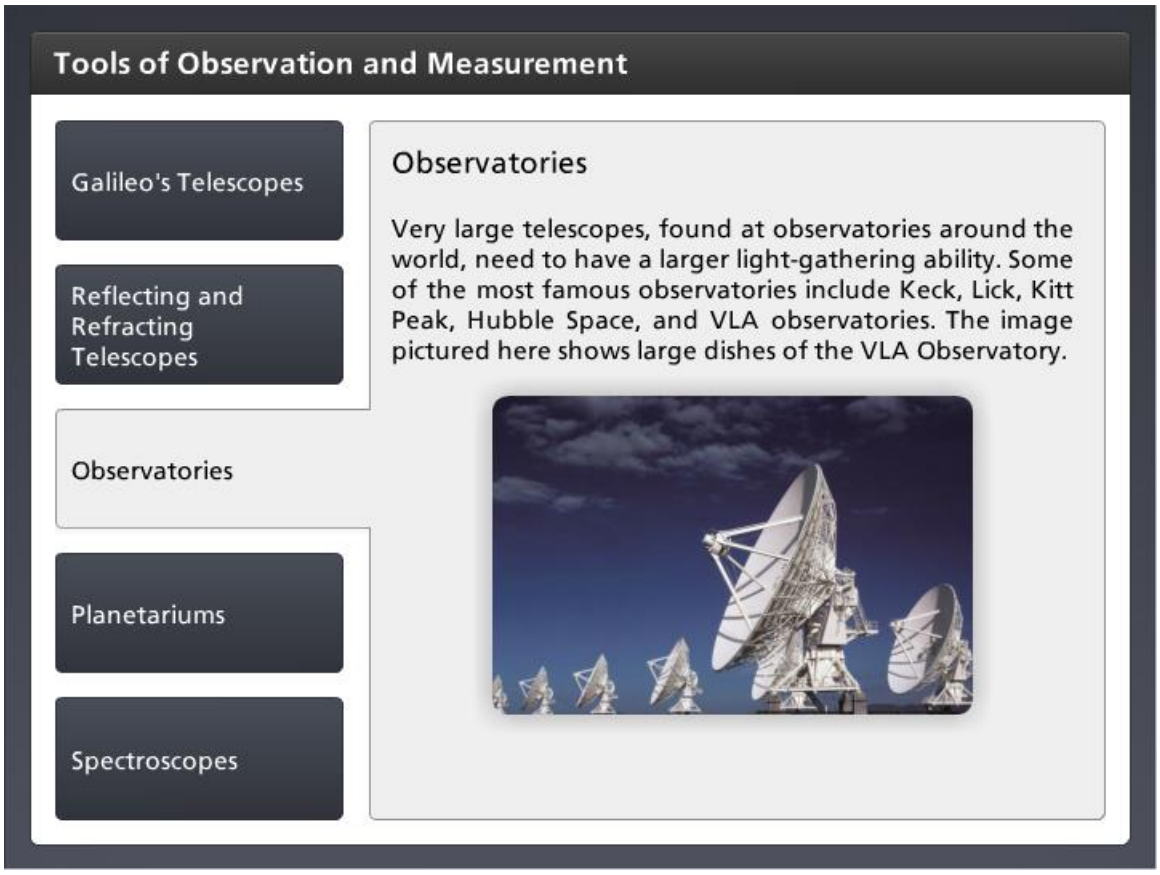
Reflecting and Refracting Telescopes



There are two main types of telescopes: reflecting and refracting. Reflecting telescopes use mirrors to bend light. Refracting telescopes use one or more lenses to gather light and then bend the light into focus.

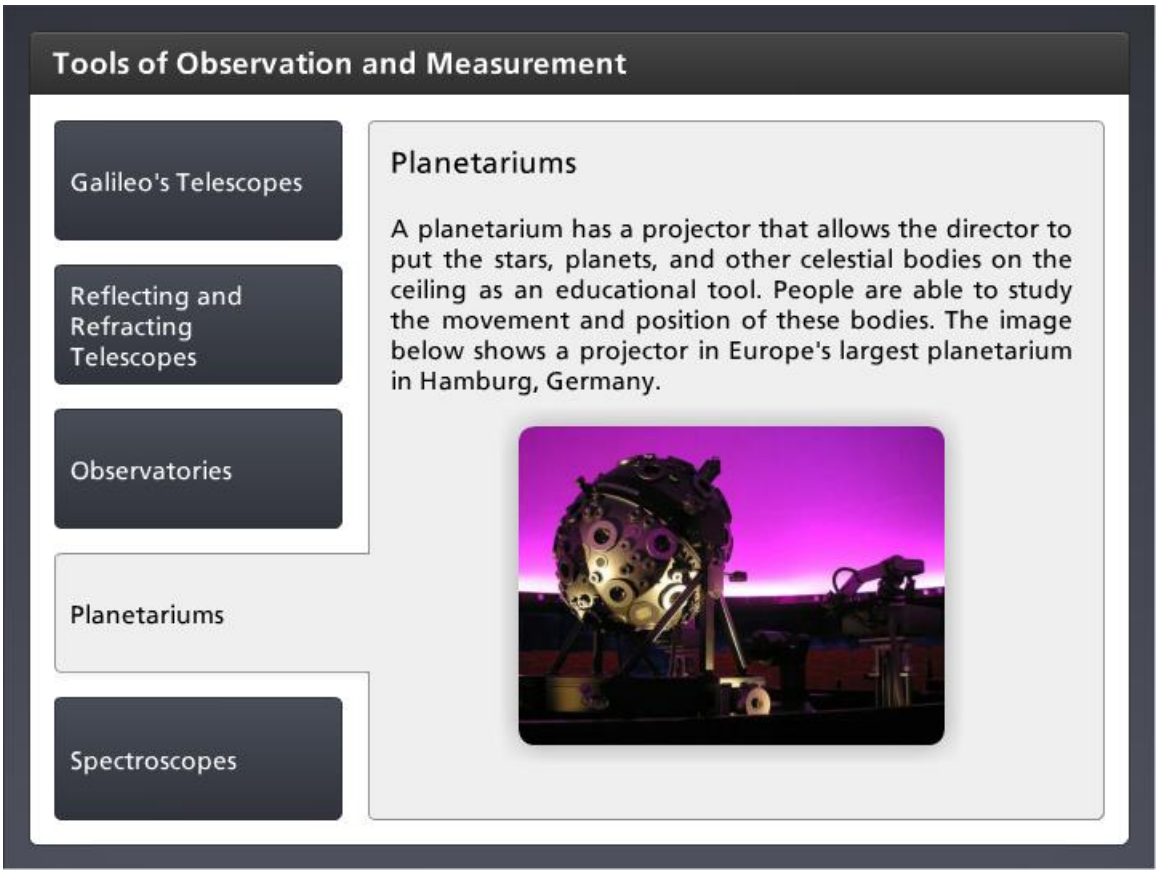
Image courtesy of NASA

Observatories



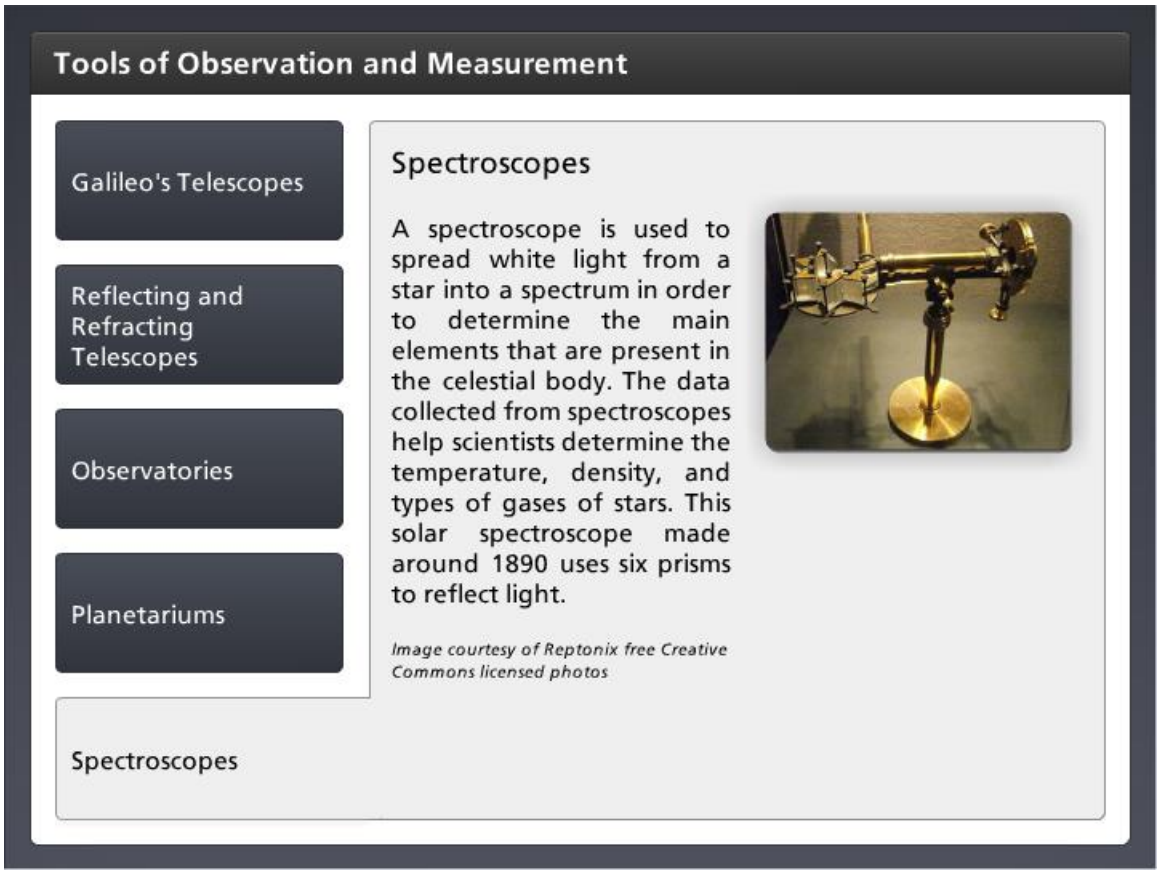
Very large telescopes, found at observatories around the world, need to have a larger light-gathering ability. Some of the most famous observatories include Keck, Lick, Kitt Peak, Hubble Space, and VLA observatories. The image pictured here shows large dishes of the VLA Observatory.

Planetariums



A planetarium has a projector that allows the director to put the stars, planets, and other celestial bodies on the ceiling as an educational tool. People are able to study the movement and position of these bodies. The image below shows a projector in Europe's largest planetarium in Hamburg, Germany.

Spectroscopes



A spectroscope is used to spread white light from a star into a spectrum in order to determine the main elements that are present in the celestial body. The data collected from spectroscopes help scientists determine the temperature, density, and types of gases of stars. This solar spectroscope made around 1890 uses six prisms to reflect light.

Image courtesy of Reptonix free Creative Commons licensed photos