Science Fun: Theory of Optic

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ABSTRACT

We, as budding researchers, try to present science in the form of comics. We present the theory of optics by Christiaan Huygens and Sir Isaac Newton in a short comic strip. As we know, the Huygens principle explains that each wavefront can be considered to produce new wavelets or waves with the same wavelength as the previous one. A wavelet can be likened to a wave generated by a rock dropped into the water. The Huygens principle can be used to explain the diffraction of light in small slits. When passing through a small gap, the wavefront will create an infinite number of new wavelets so that the waves do not just flow straight, but spread out. By doing so, Huygens discovered his telescope. In this paper, we then illustrate his telescope through a simple comic.

Keywords:
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Brief Introduction of Christiaan Huygens

Christiaan Huygens was born in The Hague on April 14, 1629. His family served diplomatic affairs in the Orange Dynasty in the Netherlands. As a child, he showed talent in mathematics and drawing. In 1645, he attended Leiden University to study mathematics and law, then to Breda two years later. Together with his brother, Constantijn, Huygens built a telescope and built a theory about it (Suprapto & Dwikoranto, 2019).

He discovered the law of refraction to obtain the focal length of the lens. Besides, he also optimized his telescope by sharpening and polishing the lenses. In 1655, he accidentally discovered Saturn's satellite now known as Titan. Huygens became one of the founders of the Académie Royale des Sciences in 1666 and lived in Paris until 1681. He met Isaac Newton in London in 1689. The two men respected each other despite scientific disagreements. Newton believed that light was a particle, while Huygens believed light was a wave. However, because Newton was more famous than Huygens's theory did not receive much attention until more than a hundred years later. Preferring to work alone or not to collaborate, he was less recognized as a great scientist during his lifetime. Huygens died on July 8, 1695, in The Hague. Huygens was inspired by Galileo's discovery of the four largest moons of Jupiter in 1610. He was also impressed by Galileo's improvements to the telescope. This Dutch scientist and his brother later built the telescope around 1650. In 1655, he pointed one of his new telescopes at Saturn. Initially, he wanted to study Saturn's rings, but he was surprised to see that besides the rings, the planet also has a large satellite. It is the sixth satellite discovered, after Jupiter's moon and moons (Fatt, 2016; Suprapto & Dwikoranto, 2019).

Huygens named it Saturni Luna or Saturn's Moon, and it was published in De Saturni Luna in 1655. Other astronomers later discovered other Saturn moons. The name Titan comes from the gift of John Herschel, son of William Herschel who discovered Saturn's satellites named Mimas and Enceladus. This name appears in Results of Astronomical Observations Made During the Years 1834-1838, at the Cape of Good Hope in 1847. In Greek mythology, Titan is a group of powerful gods, descended from Gaia and Uranus (Fatt, 2016).
Our Comics Strip

By referring to works related to science fun in previous editions, for example (Khoiriyah & Sukma, 2020; Sayekti & Rachmawati, 2020), then we took the initiative to present another form related to optics, especially the invention of telescope.
what happens if I reflect that light?

I will use the Galileo telescope that I have developed so that I can magnify at time what I call telescope reflection.

This white light, if refracted into rows of various kinds I will call it spectrum.

Dialog Concerning the Two Chief World System
Galileo Galilei
1632
Huygens discovered the largest Saturn moon called "Titan".

The same year, Huygens observed the Orion Nebula with his modern telescope and divided the Nebula into different stars. The brightest region in the Nebula is called "Huygens Region".

Christian Huygens learned to build accurate clocks for ship navigation tools in the form of pocket clocks (1679).
REFERENCES

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