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Opinion Article

Role of Reflector Telescope in Astrobiology

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DESCRIPTION

Reflectors are used to investigate not only the visible region of the electromagnetic spectrum but also the shorter and longer wavelength regions adjacent to it (i.e., the ultraviolet and the infrared). The name of this type of instrument comes from the fact that the primary mirror, rather than reflecting light, reflects it back to a focus. The primary mirror has a concave, spherical, or parabolic shape and inverts the image at the focal plane as it reflects light. Reflecting telescopes have several advantages over refractors.

Because reflected light does not disperse according to wavelength, it is not subject to chromatic aberration. A reflector's telescope tube is also shorter than that of a refractor of the same diameter, lowering the cost of the tube. As a result, the dome for housing a reflector is smaller and less expensive to build. Only the primary mirror for the reflector has been discussed thus far. The placement of the eyepiece may raise questions. The primary mirror reflects the celestial object's light to the prime focus near the tube's upper end. Obviously, if an observer placed his eye there to observe with a modest-sized reflector, he would use his head to block out the light from the primary mirror. Isaac Newton moved the focus to the side of the telescope tube by inserting a small plane mirror at a 45 angle inside the prime focus. When compared to the total light-gathering power of the primary mirror, the amount of light lost by this procedure is negligible. Amateur telescope builders like the Newtonian reflector.

Refractors are telescopes that make use of the refractive property of lenses. The lenses of a refractor should be quite large if it has a high light-gathering power, which is required for astronomical observations a high light-gathering power, which is required for astronomical observations. The Yerkes Observatory's instrument has a 1 m-diameter objective lens. Such large lenses are difficult to produce. They are heavy and susceptible to cracking due to temperature changes. Large-diameter refractors are not practical instruments for these reasons. Only a few of them are still in use for astronomical research.

Light enters the telescope from the left side and strikes the primary mirror at the telescope's back. An image is focused and bounced off a secondary mirror, through an eyepiece, and into the observer's eye. A secondary mirror in a reflecting telescope focuses light from the main mirror on a different focal point. The eyepiece of a telescope is located at the telescope's upper end. Newtonian telescopes are typically less expensive than other telescopes with similar configurations for any given aperture. The manufacturing of these telescopes is straightforward. They only require one surface to be grounded. They are polished into an intricate shape. Mirrors of various shapes are used in different reflectors. All incoming light rays will be focused on a single point by parabolic mirrors. Images from a parabolic mirror, on the other hand, will have a flaw known as a coma, in which images far from the centre of the field of view are elongated. A spherical mirror surface is relatively simple to construct, but different parts of the mirror have slightly different focal lengths, resulting in fuzzy images. Modern telescope mirrors are made in a variety of shapes to compensate for these errors. Mirrors and lenses are used in some telescopes. Schmidt-Cassegrain telescopes use a spherical mirror with a focus-correcting plate.

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