

Gift Telescope Part 2

The telescopes I will be describing here are intended for more experienced astronomers yet can be fine for beginners.

I described Refracting and Reflecting telescopes last time. Now I will dive into more complex designs, ones that use both refractive and reflective elements.

This telescope using reflective and refractive components is called *catadioptric*. For those interested, *cata* comes from *catoptrics* (curved mirrors) and *dioptrics* (refraction by lenses).

There are two common designs, the *Schmidt-Cassegrain* (SCT) and the *Maksutov-Cassegrain* (MCT).

Both designs produce a more compact telescope, easier to handle. Light comes into the front, through a lens, strikes a curved mirror at the back, bounces to a small mirror attached to the front lens, and finally back through a hole in the rear mirror. This folds the light path, resulting in a much shorter tube.

The difference between Schmidt-Cassegrain and Maksutov-Cassegrain designs is the front lens. In a nutshell, SCTs are better all-purpose telescopes, while MCTs are better for higher power applications such as lunar, planetary, and double stars.

While either design is good for beginners, I think the SCT will be easier to point vs the MCT. However, most beginner catadioptric telescopes are of the MCT design. Celestron is the only company I have seen offering a small (5 inch) SCT. MCTs have dominated the small (3-5 inch) market for years. Companies such as Orion, Meade, Celestron, Vixen, Skywatcher, and Explore Scientific have multiple options with my recommended Altitude-Azimuth mounts and tripods. Unfortunately, it is difficult to get away from computerized telescopes so manual versions might not be easy to find. Inexpensive computerized telescopes have improved but can still be frustrating. Especially their user manuals.

For the more experienced astronomy buff, these designs offer a higher degree of portability as they get larger. The MCT design however becomes heavy once it reaches 7-8-inch diameter because its front lens is much thicker than the SCT front lens. MCT designs larger than 8 inches are unusual. The MCT design typically results in a longer focal length/f ratio, translating to higher power and narrower field of view than the SCT for a given eyepiece. Consequently, SCTs are much more popular than MCTs in the 8 inch and larger range.

That said, for planetary, lunar, and double star observing, the MCT is better.

Is there a downside with SCT or MCT designs? They are more expensive than reflector telescopes of the same mirror diameter.