by Greg Lisk

GETTING AN EYEFUL As dusk approaches, a father-and-son backyard-astronomy team begins observing the Moon with the Sky-Watcher 5-inch Maksutov-Cassegrain telescope.

A compact 5-inch telescope

During the past decade, inexpensive, mass-produced Maksutov-Cassegrain telescopes have begun appearing on the market. We acquired one to see how well it performs.

MAKSUTOV-CASSEGRAIN TELESCOPES are compact instruments that are ideally suited to backyard astronomy, especially in the 4-to-6-inch sizes, which are easily transportable and offer sharp, satisfying views of the full range of astronomical objects: Moon, planets, double stars, star clusters, nebulas and galaxies. They also act as telephoto lenses for long-range daytime photography.

The famous Questar brand introduced the legendary 90mm Maksutov-Cassegrain to amateur astronomers in the 1950s, and after half a century, the design is basically the same—a proven performer. What has changed is the price. Maksutov-Cassegrains used to be the Rolls-Royce category of the telescope world. But with the introduction of Meade's moderately priced ETX Mak-Cass scopes in the late 1990s, this soon became one of the most popular telescope lines in the history of amateur astronomy.

Our test telescope, the new Sky-Watcher 5-inch Mak-Cass, came complete with German equatorial mount, sturdy tripod, two eyepieces and a Barlow. It retails in Canadian telescope stores for $750. Sky-Watcher also markets 3.5- and 4-inch versions on smaller equatorial mounts, but we selected the 5-inch model on the hunch that it might prove to be the most suitable for the *SkyNews* reader looking for a highly portable yet serious astronomical telescope.

The instrument arrived by courier in a single carton, with many of the assembly steps in the well-written manual already completed. Only one of the supplied tools, and about 20 minutes, was required to finish the job. The heavy-duty equatorial mount is well matched to the telescope and is fitted for optional motor drives for hands-free tracking. A polar scope is also available as an aid for basic astrophotography.

The 13-inch-long, 5-inch f/12 optical tube is solidly built and nicely finished. The eyepiece holder at the rear of the tube accepts the supplied 1.25-inch star diagonal and is also threaded for a standard camera T-adapter for photography. A red-dot reflex finder, which some consider an upgrade from the typical 6x30 finder, comes standard. Also included are 25mm and 10mm eyepieces (modified Kellner type) and a 2x Barlow—a combination providing magnifications of 62x, 123x, 154x and 308x—essentially a complete basic set for most observing situations.

UNDER THE STARS

The mount was quick and easy to level and polar-align with the built-in level bubble and generous travel on the latitude adjustment. All the mount motions were smooth, tight and backlash-free. The scope remained perfectly on target when I reached for the motion locks, a sign of a well-balanced instrument.

A common complaint from owners of Schmidt-Cassegrain and Maksutov-Cassegrain telescopes is image shift during back-and-forth fine focusing, which is caused by the moving primary mirror. But the tiny shift that was evident in this telescope

THE SUM OF ITS PARTS Rather than a small-aperture finderscope, the Sky-Watcher 5-inch Maksutov-Cassegrain sports a red-dot reflex sight (top). Mak-Cass telescopes have a front lens (right) that supports a small central mirror, which reflects light back through a hole in the primary mirror and on to the eyepiece (left). Focuser knob is to right of the eyepiece diagonal.

is barely noticeable and perfectly acceptable. However, I found that turning the focuser knob transferred a slight vibration seen through the eyepiece, although it dampened in three to four seconds. The red-dot finder was difficult to access in some orientations and, even at the dimmest setting, overpowered fainter guide stars. This could be remedied by upgrading to a Telrad or Rigel reflex finder, placed farther forward on the telescope tube. None of these items is a serious negative for a telescope at this price.

Star testing revealed the optics to be well baffled and in perfect collimation. No apparent aberrations were observed, although the primary mirror exhibited a very slight turned edge that would not be noticed in normal observing. The supplied star diagonal is of a quality consistent with an advanced-level instrument. Overall, the optical performance was well above average for a beginner/intermediate-level telescope.

The two eyepieces provided as standard equipment are adequate to get the beginner started, but they are not capable of demonstrating this instrument's true potential, particularly at low power. They lack multicoatings, blackened edges and field stops that are de rigueur with all first-class eyepieces. Owners will soon want to upgrade to a maximum-field, 1.25-inch-barrel low-power eyepiece (see eyepiece review, page 14) and other high-quality eyepieces. I should emphasize, though, that adding high-performance eyepieces has always been normal procedure, even with telescopes far costlier than this one.

I set up the 5-inch Sky-Watcher telescope beside my Celestron NexStar 5-inch Schmidt-Cassegrain. With a set of premium eyepieces in hand, I compared views of several astronomical targets. At equivalent magnifications on deep-sky objects, such as the Hercules globular cluster (M13) and the Whirlpool Galaxy (M51), the Sky-Watcher Mak-Cass had the edge in contrast (i.e., a blacker sky) and revealed slightly fainter stars in M13. Cassini's division in Saturn's rings and fine festoons in the clouds of Jupiter were slightly better defined and better contrasted in the Mak-Cass, approaching the performance of a premium 4-inch apo refractor.

For many observers, this scope's most important attribute is its relatively small size, compared with, say, a 10-inch Dobsonian Newtonian in the same price range. This is a telescope that will easily fit on an apartment balcony or in the backseat of the smallest compact car. It can be carried outside fully assembled for the ultimate in portability, yet it has the aperture to show a wide range of the wonders of the universe. Add the motor-drive option, and the mount will provide hands-free observing as it compensates for the Earth's rotation.

My overall impression? In almost all respects, this is a premium-level telescope, ready to go right out of the box. Given the beginner-level price, it is a great value for anyone who wants an all-round astronomical telescope in a compact package. Accessory upgrades will allow it to grow with the user to provide a lifetime of enjoyment of the night sky. ■

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PRODUCT SPECIFICATIONS

Sky-Watcher 5-inch f/12 Maksutov-Cassegrain
Focal length: 1,500mm
Central obstruction: 30.7% of aperture by diameter
Eyepieces: 25mm and 10mm plus 2x Barlow
Mount: EQ2-3 German equatorial, single- or dual-axis drive optional
Price: $750, available through Canadian telescope dealers
Info: www.skywatchertelescope.net