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Celestron Package:

A Lot for a Little

An ensemble of Celestron equipment provides excellent visual and photographic performance.

AS ROBERT HEINLEIN used to say, “There ain’t no such thing as a free lunch.” That’s usually true, but I *almost* feel like I got a free meal with Celestron’s Edge 800 Schmidt-Cassegrain Telescope and VX mount. I found the combination of the advanced 8-inch SCT and inexpensive German equatorial mount (GEM) surprisingly capable, especially when equipped with Celestron’s Edge f/7 reducer, off-axis guider, and StarSense auto-alignment system.

I have dreamed of an enormous SCT on a fork mount to ease me into my golden years. Unfortunately, I have to carry my scope to dark sites to do my best observing, and I really didn’t want to haul a 14- or 16-inch telescope around. The more I thought about it, the more convinced I became that an 8-inch SCT was still the scope for me. Maybe my retirement scope should be a C8 of a *new type*, though, Celestron’s Edge 800.

VX MOUNT U.S. price: \$1,799

www.celestron.com

WHAT WE LIKE:

- Excellent Go To accuracy
- Tracking good enough for unguided 30-second exposures
- Stable with an 8-inch SCT and accessories

WHAT WE DON'T LIKE:

- Hand-control cable is too short
- The included counterweight is too light for use with the telescope and heavy cameras or accessories

The author's Celestron 8-inch Edge SCT sits atop a VX German equatorial mount. The standard 9x50-mm finderscope is attached. A 12-pound counterweight is included in the package.

Different from other Schmidt-Cassegrains, the Edge includes a built-in corrector-lens system that both flattens the SCT's normally curved field and reduces coma, the blurring of stars at the field edge. For more on the Edge, see Dennis di Cicco's review of the Edge 1400 (*S&T*: Feb. 2011, p. 52). The Edge 800 is a scaled-down version of its innovative big sister.

I thought I'd purchase a new mount too — one that Celestron is pairing with the Edge 800, the Advanced VX. The VX's payload capacity is 30 pounds (14 kg), making it the company's smallest computer-equipped GEM. But it's well matched for a C8. Celestron currently offers the combination as a package for \$1,799.

I purchased the telescope and mount last year, and they arrived in pristine condition. The tube came equipped with a 50-mm finder and a Vixen-format dovetail bar to fit the VX. *S&T* recently borrowed a StarSense and an off-axis guider from Celestron and shipped them to me to complete the package so I could write this review.

The box that contained the VX mount included the GEM head, a 2-inch steel-legged tripod, a single 12-pound counterweight, the NexStar Plus computer hand control, a cable for updating the mount's firmware, an instruction manual, the basic version of Software Bisque's *TheSkyX* planetarium software, and a DC power cord with a cigarette-lighter-style plug.

The Edge 800 is a striking pale green and the mount is impressively well finished for a GEM in this price class. I particularly appreciated the VX's large adjustment knobs, well-laid-out control panel, and big power switch that's easy to manipulate with gloved hands.

Visual Use

On my first clear night, I hustled the new scope out to my club's dark site. I didn't run into any problems assembling the mount or attaching it to the scope. After a little practice, most people won't need more than 10 to 15 minutes to set up the Edge/VX combo for visual use.

The big deal, though, was not how easy the scope and mount were to assemble, but how easy they were to transport. The package breaks down into easily manageable components that encourage me to use it frequently. At 14 pounds (6.4 kg) for the telescope, 17 pounds for the mount head, and 18 pounds for the tripod, I never had to strain. The telescope was quite stable on the mount with vibrations dying out in a couple of seconds.

A GEM must be properly aligned on the celestial pole to track stars accurately. Polar alignment is simple for visual use. Remove the end caps from the VX's right ascension housing, turn the scope perpendicular to the mount's head to open up a hole in the declination axis, and then sight Polaris through the hollow polar bore. After these steps, the mount's Go To system will find objects with even the roughest polar alignment, though tracking will be poor.



A DSLR is attached to the Celestron off-axis guider. The auto-guider camera is not part of the reviewed Celestron package.

Before the VX can locate objects, it must be Go To aligned. The first step is entering the time, date, time zone, daylight-savings time status, and location into the hand control. Most of these entries will be a one-time job because the mount is equipped with a battery-powered, real-time clock that keeps the date and time current.

There are several alignment options, but the most accurate is the two-star alignment. When you select that option, the VX will point at two stars it chooses from its database. After you center them in the finder and main scope, the hand control will ask if you want to add calibration stars. You may add as many as four, but I found three sufficient for excellent pointing accuracy.

Even at a magnification of 100 \times , anything I requested from horizon to horizon was in the eyepiece when the mount stopped. In the year that I've had the VX, it amazingly has never missed an object when I've been careful to do the alignment as outlined in the manual. The only problem I have encountered has been the 3-foot-long hand-control cable, which is a bit short.

The Edge f/7 Reducer

The addition of Celestron's Edge focal reducer converts the f/10, 2,000-mm-focal-length Edge 800 to an f/7, 1,400-mm-focal-length telescope that delivers lower powers and wider fields of view. The reducer is specifically designed to work with the Edge's built-in corrective lenses to preserve the scope's flat field. Although intended for astrophotography, I found the reducer very effective for visual use as well.

EDGE FOCAL REDUCER U.S. price: \$299.95

WHAT WE LIKE:

Sharp stars to the field edge

WHAT WE DON'T LIKE:

Using larger imaging chips could pose a problem



For prime-focus deep-sky imaging, a focal reducer is highly desirable. The Edge reducer, which is optimized for small imaging chips, almost doubles the size of a telescope's field and cuts required exposure times in half. With my Canon DSLR, stars were sharp all across the frame.

Unguided Imaging

Since astrophotography was in my plan on a trip to the Chiefland Astronomy Village in Florida, I kept things simple. I shot through the SCT and reducer with my DSLR, but I didn't guide any exposures.

I mounted my Canon 60D camera to the scope with a standard prime-focus adapter threaded onto the Edge Reducer, which replicates the normal SCT threads. The only problem I ran into was balance. The VX's single counterweight was not heavy enough to balance the telescope in right ascension with the camera onboard. Fortunately, I had brought an additional 11-pound counterweight.

Because good tracking is critical for imaging, once the Go To alignment was complete, I performed the VX's All-Star Polar Alignment procedure. After centering a star I chose from the hand control's database, I completed the process by re-centering it again using the mount's alti-

The author imaged the Dumbbell Nebula (M27) through the Edge 800 setup. The picture is a stack of twenty 30-second unguided, prime-focus exposures using the Edge f/7 focal-length reducer.

tude and azimuth adjusters rather than the hand control.

Preliminaries over, I sent the scope to M15 and began firing 30-second exposures. I shot twenty 30-second subframes of the globular. My stars were not quite round in all frames, but stacking these short exposures into a finished picture yielded pleasing images. What's amazing is that a beginner could have achieved similar results. I didn't do anything special; I just snapped away.

The Off-Axis Guider

If you want to go much beyond 30-second exposures, you'll need to guide the VX. Today, that's done with an autoguider camera that plugs into the VX's autoguide port. You could use a separate small telescope to provide guide stars for the camera to monitor, but flexure between the main scope and guide scope can cause trailed stars. Enter the Celestron off-axis guider (OAG).

When I opened the box containing the guider, my heart sank. There appeared to be a million adapter rings

OFF-AXIS GUIDER U.S. price: \$249.95

WHAT WE LIKE:

Good construction quality with large, clear aperture

WHAT WE DON'T LIKE:

Camera and T-ring attach to off-axis guider with less-than-secure setscrews

and spacers. Luckily, the instructions for configuring the OAG for my setup were clear. Three setscrews attached the camera to the guider body. I prefer a more secure connection, but it caused no problems and I was impressed by the OAG's otherwise hefty construction and quality finish.

My pictures with the guider weren't award winners because I was imaging from my light-polluted backyard under a full Moon. And I did have one scare — when I began autoguiding at first, the guide camera didn't pick up a single star. It turned out that my autoguider wouldn't reach focus without an extension tube due to the presence of the Edge reducer. With the guider inserted into the tube from an old Barlow, the OAG worked well, keeping stars respectably round.

The StarSense AutoAlign Camera

Celestron's StarSense accessory mounts to the Edge's tube in place of the telescope's 50-mm finder and automates the Go To alignment process. The box contained a small

STARSENSE AUTO-ALIGN CAMERA U.S. price: \$329.95

WHAT WE LIKE:

Completes a good Go To alignment in 3 minutes

WHAT WE DON'T LIKE:

The All-Star polar-alignment feature did not function



The Celestron StarSense camera takes the place of the standard 9x50-mm finder when used. This camera automates the Go To alignment process.



The author's image of globular cluster M15 consists of twenty 30-second, stacked, unguided, prime-focus f/7 exposures.

camera and a replacement NexStar hand control. Connect the StarSense controller in place of the original, hook the camera to one of the mount's Auxiliary ports, and you're ready to go.

I was skeptical that such a seemingly simple gadget would enable the VX to align itself. Nevertheless, it worked. I turned on the mount, entered the date, time, and city, and selected Auto Alignment. StarSense directed the mount to take images of star fields on both sides of the meridian. Despite a bright Moon, the camera was sensitive enough to acquire 40 to 100 stars every time. In only three minutes the StarSense indicated that the VX was aligned. We'd see about *that*.

I punched in M13. There it was near the center of the field of a 20-mm eyepiece at 100x. M57? Same. M3? Yep. Every single object from horizon to horizon was in the eyepiece. Go To accuracy seemed just as good as with alignments done the old-fashioned way.

Not that the StarSense was perfect. My eyes had difficulty with the display's small fonts. More significantly, the StarSense's All-Star polar-alignment routine didn't work. The results it yielded were inaccurate — it put the telescope degrees away from the celestial pole. I contacted Celestron technical support, who assured me they are working to make All-Star functional by the end of 2014. Even without All-Star, however, the StarSense was amazing. Not only did it align the VX as well as I could, it was just *so cool*.

The VX mount is not a caviar-class GEM, but it makes up for that with its low price, portability, and solid performance. Throw in the optically impressive Edge 800, the Edge Reducer, the off-axis guider, and the StarSense, and a novice — or an old hand — will be equipped with a system ready to take on almost any task for a price lower than I would have thought possible. ♦

S&T contributing editor *Rod Mollise* writes an entertaining astronomical blog at www.uncle-rods.blogspot.com.