The David H. Levy Comet Hunter

Don't be fooled by the name; this 6-inch Maksutov-Newtonian reflector will do a lot more than help you find comets.

David H. Levy Comet Hunter

U.S. price: $1,199
(on sale through the end of August 2011 for $999)
Explore Scientific, 621 Madison St., Springdale, AR 72762
explorescientific.com; 888-599-7597

Explore Scientific's David H. Levy Comet Hunter is sold as a complete telescope with a 8×50 illuminated finder, a 30-mm eyepiece, dew cap, tube rings, a Vixen-style dovetail mounting bar, and a high-quality storage case. ALL PHOTOGRAPHY BY THE AUTHOR

The David H. Levy Comet Hunter

from Explore Scientific is more than a run-of-the-mill telescope out of Asia rebranded with a celebrity endorsement. A lot more. For starters, the 6-inch Maksutov-Newtonian has no commercial counterpart being sold under another brand name. And the scope's f/4.8 optics bear a striking similarity to David Levy's cherished Minerva — a 6-inch f/4 Newtonian reflector that he used for many years of comet sweeping. Levy described his scope in our September 1988 issue, page 250, saying that if he had to do it over again, he'd opt for an f/5 mirror to improve off-axis star images. While the Comet Hunter is close to f/5, its really the Maksutov optics that get a bigger share of the credit for improving off-axis images, since the design has only about a third as much coma as an equivalent Newtonian reflector.

I knew there was something different about the Comet Hunter, which we borrowed from the manufacturer for this review, the moment I began unpacking the shipping box. The scope's foam-lined storage case is unusually well made, with reinforced metal trim, recessed carrying handle, and recessed heavy-duty latches. Except for the finder, which locks into its holder with a pair of thumbscrews, the scope fits in the case completely assembled with its tube rings and Vixen-style dovetail mounting bar in place. You can lift the scope from the case, place it on a mount, and attach the finder in less than a minute.

I did most of my testing with a 20-year-old Vixen Great Polaris DX German equatorial mount. It's an ideal class of mount for the Comet Hunter, which weighs 18 pounds (8 kg) as typically configured for observing.

A plastic cap unscrews to reveal collimation adjustments for the scope's secondary mirror. While the three brass thumbscrews provide standard tip-tilt motions, there are also adjustments (carefully explained in the scope's manual) for centering, rotating, and longitudinally positioning the secondary mirror in the rare case these factory-made settings ever need adjusting.

The scope is strikingly handsome, and in this case its beauty is also more than skin deep. The build quality is excellent, and there are lots of subtle features that make it clear people were paying attention to details when they designed the instrument. For example, the top bar on the tube rings is a nicely contoured carrying handle that makes easy work of maneuvering the scope on and off

What we liked:

- Very good optics for observing and photography
- Solid, high-quality construction
- Many subtle features

What we didn't like:

- A small issue with the focuser (now being corrected by the manufacturer — see the text for details)

In addition to the conventional location near the telescope's focuser, there's a mounting bracket for the finder at the bottom of the tube. While this helps balance the otherwise front-heavy telescope, as explained in the accompanying text, the author found this position unexpectedly nice to use.

a mount. But the handle is also slotted for ¼-20 screws and thus forms a solid piggyback mounting for cameras, guidescopes, and other accessories.

Another nice feature is a second finder mount at the bottom of the tube near the primary mirror, in addition to the conventional one near the focuser. The manual suggests that the rear-mounted finder helps balance the tube, which is somewhat front heavy because of the Maksutov's thick meniscus corrector. While that's true, I also found the rear-mounted finder surprisingly nice to use even though it often meant I had to kneel down to look through it. Sighting up the tube made it intuitively easy to point the finder at various targets, and much easier than when I had to lean my head sideways to look through the finder mounted in the conventional location.

Speaking of the 8×50 finder, it's a very nice straight-through design with a 6° field of view and a correct-reading image (like the view through a binocular). There are separate focus adjustments for the illuminated eyepiece reticle and the finder itself. If I had to nit-pick the finder, it would be that even at its lowest-intensity setting, the variable-brightness illuminator is a bit bright when you're observing in a truly dark sky.

The quality of the Crayford-style focuser is above average and it has a 10:1 fine-focus control. The drawtube has 43 millimeters of travel and it comes with 20- and 40-mm-long extension tubes and adapters for 1¼- and 2-inch eyepieces. I tested the scope with dozens of eyepieces from every major manufacturer and could always find a combination of extension tubes and adapters that worked. Ideally you want to reach focus with the drawtube racked out at least 25 mm, since anything less makes the bottom of the drawtube protrude into the scope's incoming light path, causing a pair of diffraction spikes on bright stars.

The dual-speed Crayford-style focuser comes with two extension tubes and adapters for 1¼- and 2-inch eyepieces. The scope's focal point falls approximately 3¾ inches (95 mm) beyond the top of the focuser's body.

My only beef with the focuser involved the arrangement needed for photography with a DSLR camera fitted with a 2-inch nosepiece. This setup only reaches focus with the extension tubes removed, but screwing the 2-inch adapter directly to the focuser drawtube interferes with the adapter's compression ring because the threads on the drawtube are about a millimeter too long. This isn't a show-stopper since it's easy enough to slip out the compression ring, tighten down the adapter, and just use the adapter's thumbscrews to lock your camera in the focuser (this is the way the world worked before compression rings). Scott Roberts at Explore Scientific has since told me that he'll have the drawtube threads shortened on future scopes to prevent the issue with the compression ring. Problem, albeit small, solved.

This 15-second "snapshot" of the globular cluster M13 in Hercules was made with a full-frame DSLR camera on the night of June's full Moon to show the Comet Hunter's vignetting and that the scope covers all but the corners of the frame with decent star images. The field is almost 3° wide with north at right.

Optics

As mentioned earlier, the Comet Hunter's Maksutov optics produce far better off-axis star images than a conventional Newtonian of similar focal ratio. Indeed, the appearance of off-axis stars in low-power, wide-field views will likely depend more on your choice of eyepiece than on the scope itself. With a 730-mm focal length, the Comet Hunter covers a field of view almost 4° across at the opening of the 2-inch focuser. Accessing this much field with an eyepiece isn't practical, however, even if you ignore the restrictions cause by an eyepiece barrel.

In order to use the maximum light-gathering power

of a 6-inch telescope, you shouldn't use a magnification less that 22×, producing an exit pupil 7 mm across (the maximum most eyes can accept). In the case of the Comet Hunter, this means using an eyepiece with a focal length no greater than 33 mm. The scope comes with a 30-mm eyepiece that covers a field almost 3° across at 24×.

I prefer to do low-power sweeping with an exit pupil between 4 and 5 mm across because it offers more magnification and a darker sky background. For the Comet Hunter, this means using 20- to 25-mm eyepieces yielding a magnification range of 37× to 30×, and, depending on the eyepiece, fields of view about 2½° across. I could spend a lifetime plumbing the Milky Way with this configuration. All the major manufacturers have top-of-the-line eyepieces within this range, so take your pick. For example, Explore Scientific's 20-mm 100° eyepiece covers a 2¾° true field at 37×.

Although the Comet Hunter's emphasis is on wide-field viewing, the scope handles higher magnifications well. I would often track down deep-sky objects with a 9-mm (81×) eyepiece and then switch to a 5-mm (146×) for a detailed look. One evening when the atmosphere was unusually stable, I pushed the magnification to 365× with a 2-mm eyepiece. The view of Epsilon Lyrae, the famous Double Double, was particularly impressive with both star pairs cleanly separated and each star's Airy disk surrounded by a perfect set of diffraction rings.

The scope has fully adjustable collimation and the primary mirror is marked with a central ring that's compatible with laser collimators. I touched up the collimation when the scope first arrived (it was borderline being good enough to leave as is), and the optics never drifted out of alignment during my testing.

Photography

The Maksutov-Newtonian's good off-axis star images also extend to photography, making the Comet Hunter a respectable little astrograph. Here, too, it's the scope's subtle features that make a noteworthy difference. Foremost is the suppression of stray light inside the telescope. Light is completely blocked from entering the tube around the primary mirror and there's even a baffle ring around the front of the primary. The textured inside surface of the carbon-fiber tube is fully blackened, and the extended dew cap prevents all direct light from entering the focuser. Even the base of the focuser fits tightly against the side of the tube, preventing light leaks. The system is so well sealed from stray light that it can be effectively used as a 730-mm "telephoto" lens for daytime photography, which is rare for a telescope with a Newtonian configuration.

The scope delivers nice round star images across the frame of popular DSLR cameras with APS-size detectors. It even does a good job of filling all but the corners of a full-frame camera. I measured the scope's effective aperture as 146 mm, which is consistent for a Maksutov-Newtonian with a 6-inch primary. The secondary's optical obstruction is 52 mm.

The Comet Hunter proved to be an unexpectedly good 730-mm telephoto lens for daytime photography because of its excellent suppression of scattered light. And as this view through the author's office window on a dreary morning shows, the scope delivers apo-like images that are free of color fringes on high-contrast edges. Made with a full-frame DSLR, the image has been cropped only on the vertical edges.

All told, I found a lot to like about the David H. Levy Comet Hunter and very little to criticize. The scope offers first-class performance for observers and astrophotographers. And I'm particularly impressed with its quality of construction. ✦

Although Sky & Telescope *senior editor* ***Dennis di Cicco*** *hunts for comets only in his dreams, he still hasn't managed to discover one.*