

Astronomy's third annual STAR PRODUCTS

Thomas V. Davis

Get ready to ogle some amazing equipment as we honor the **35 best** telescopes, cameras, and accessories produced in the past year. by Phil Harrington

It's time again to survey the amateur astronomy marketplace and announce our 2012 *Astronomy* Star Products awards. The 35 winners, listed here alphabetically by manufacturer, represent the best and most innovative pieces of astro-equipment to come along in recent memory. Some are high-end, no-compromise products while others are low-cost items that offer excellent value.

2 Astro Dome 2400

For Dobsonian owners, most commercial observatory domes are impractical because of the height of their walls. Astro Domes, however, designed its models to sit on the ground, offering unobstructed viewing from zenith to horizon. Each rotates smoothly on nylon wheels, while the shutter operates off a 12-volt battery. Sizes range from the newest 2.4-meter (7.9 feet) model up to 9 meters (29.5 feet) in diameter.



1 AG Optical Newtonian astrographs

Catering to the growing trend in fast astrographs, AG Optical offers 8-, 10-, 12.5-, and 16-inch Newtonian reflectors designed specifically with astroimagers in mind. An incorporated optical corrector ensures pinpoint stars over a 50-millimeter-wide field, large enough for most of today's CCD cameras. Each scope incorporates a carbon-fiber tube that is lightweight as well as stiff and stable at all temperatures.



3 Astronomy Magazine: The Complete Collection

How has the science and hobby of astronomy changed over the past nearly four decades? The best way to see for yourself is to scan back issues of *Astronomy*. And now, you can e-thumb your way through them all on your computer with this new compilation DVD that includes every issue from August 1973 (the first) right up through December 2010. Plus you get every issue from former sister publications *Deep Sky* and *Telescope Making*, all the magazine's special issues, and a complete history of *Astronomy* magazine.



Phil Harrington is an *Astronomy* contributing editor and author of *Cosmic Challenge: The Ultimate Observing List for Amateurs* (Cambridge University Press, 2010).

4 Astronomy-Shoppe The DobStand

Some of today's most popular telescopes are 6- to 10-inch Dobsonian-mounted reflectors. They offer great value, but using them can be a pain because of their low height. Enter The DobStand, a riser by Astronomy-Shoppe. At 20 inches (50.8 centimeters) across, The DobStand replaces the scope's ground board. Simply adjust the three aluminum legs anywhere between 15 and 20 inches (38.1 and 50.8cm), and your telescope is ready to go.



6 Catseye Deluxe Triplepack XLK

Nothing ruins the view through a telescope more than improperly aligned optics. By design, Newtonian reflectors are especially susceptible to this problem because of the way the primary mirror connects to the telescope's tube. Recently, Catseye added a deluxe 2-inch three-tool collimation kit for scopes with *f*/ratios between *f*/3.5 and *f*/6 to its product lineup. The kit includes a Cheshire eyepiece, adjustable-length sight tube, two-pupil auto-collimator, a template and two spots for center-spotting the primary mirror, a bright red LED clip light, and a comprehensive set of instructions — all in a custom carrying case.



7 Celestron CPC Deluxe 800 HD

Celestron continues to refine the Schmidt-Cassegrain design the company pioneered half a century ago. The CPC Deluxe 800 HD Computerized Telescope features optics that produce crisp images edge to edge as well as the company's premium StarBright XLT coatings. Celestron's NexStar computer-control technology provides fast and easy alignment and a 40,000-object database. The redesigned CPC mount includes a large brass gear and matching stainless steel worm gear. Add to that All-Star polar alignment, which allows you to choose any bright star, and you have an instrument sure to stand the test of time.



5 BinaryRivers BackYardEOS

BinaryRivers' automated image-acquisition software for Windows operating systems takes the guesswork out of camera manipulation. It lets users frame, focus, and control the exposures of their Canon digital single-lens reflex cameras in real time all from the convenience of their computer screen. *BackYardEOS* also integrates with autoguiding software to automate dithering between exposures as well as to control ASCOM-compliant focusers.



8 Celestron Nightscape CCD Camera

It's amazing how inexpensive high-quality CCD cameras have become. Celestron's new Nightscape is a 10.7-megapixel color camera whose backbone is Kodak's KAI-10100 color chip. Integrated thermoelectric cooling reduces the level of thermal noise that plagues all imaging sensors. It also comes with *AstroFX* software for Windows, which can control the camera, capture images, and process the results.





9 Celestron SkyProdigy 6

Celestron unveiled two new models in its SkyProdigy lineup at the 2012 Consumer Electronics Show in Las Vegas, Nevada. Like previous telescopes in the series, the SkyProdigy 6 Schmidt-Cassegrain features the company's innovative StarSense Technology. After you set up the scope, a built-in camera compares the sky to a database of more than 4,000 objects and aligns the instrument's computerized go-to aiming system in less than three minutes.

10 DobSTUFF Makeover kits

Do you have a stock Dobsonian-mounted Newtonian reflector that you would like to improve with better componentry? Or maybe you've always wanted to make a telescope yourself but lack the skills or the woodworking tools needed for the job. DobSTUFF's Makeover kits contain what you need to turn your off-the-shelf telescope into a customized instrument that's as great to look at as it is to use.



11 Explore Scientific 9mm 120° Series Argon-Purged Waterproof Eyepiece

Looking for the eyepiece with the largest apparent field of view? You'll find it with Explore Scientific's 9mm 2" eyepiece. Flaunting a highly corrected 120° apparent field, this masterpiece produces sensational views of deep-sky objects. Every lens element has enhanced multilayer deposition coatings and sits securely in an argon-purged barrel to guard against fungal growth and dust intrusion.



12 Explore Scientific David H. Levy Comet Hunter

Explore Scientific's 6-inch Maksutov-Newtonian telescope delivers incredible sharpness across a broad field of view. Imagine squeezing the full length of Orion's Sword into a single eyepiece field with edge-to-edge pinpoint star images. That's what you can do when you use this scope with the included 30mm eyepiece. A high-quality focuser, a finder scope, and a carbon-fiber tube complete this impressive package.



13 Farpoint Astro Armour Cases

Astronomers love to bring their telescopes and cameras on vacation with them, but traveling with such delicate instruments can be a harrowing experience. Farpoint smooths out some of the bumps with its heavy-duty Astro Armour Cases. These rugged packages feature foam interiors that you can customize to the exact size

and shape of eyepieces, binoculars, cameras and even small telescopes.



14 Hands on Optics AstroTelescopes 102mm (4") f/11 Refractor

Traditional long-focal-length refractors are famous for their sharp planetary and double-star images. The AstroTelescopes 102mm refractor made by Kunming United Optics in China delivers just that at a remarkably low price. A dual-speed, fully rotatable 2" Crayford focuser; an aluminum tube; and a pair of mounting rings all come standard. Place this 12-pound (5.4 kilograms) scope on a mount of your choice, and you will enjoy great views for years.



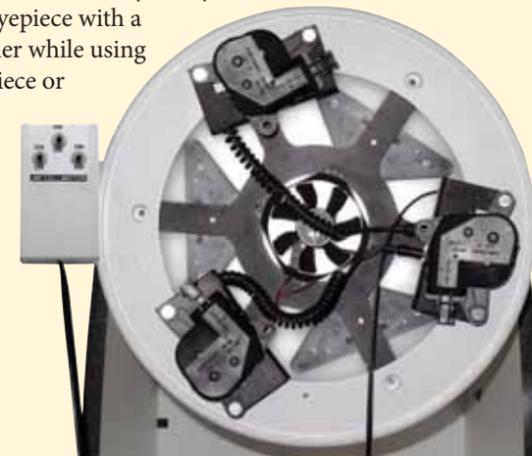
15 Hubble Optics 16" f/4.5 Premium Ultra Light Dobsonian System

Many observers need to travel far from home in order to enjoy dark skies. And hauling a telescope with a large aperture in a small car can often prove daunting. But Hubble Optics' 16-inch f/4.5 Dobsonian-mounted Newtonian makes the effort much less intense. Fully assembled, the UL16 weighs only about 60 pounds (27.2 kilograms) thanks in part to its mirror, which incorporates the company's compact open-core "sandwich" design.



17 JMI Telescopes ColliMotor

Amateur astronomers dislike collimating a Newtonian reflector because the process usually involves running between the eyepiece at the front of the telescope and the mirror cell at the back. The ColliMotor retrofit kit from JMI lets you adjust the mirror at the eyepiece with a hand-held controller while using a collimation eyepiece or laser. JMI makes the ColliMotor for Meade's 10- to 16-inch Lightbridge, as well as Orion's SkyQuest XT10 and XT12 scopes.



16 Innovations Foresight ONAG

For astroimagers, guiding long exposures has always been a challenge. The ONAG on-axis guider makes that task a little easier. Inside, a specially coated mirror diverts light 45° through a side port to the imaging camera. Near-infrared light, however, passes through the mirror and then through a back port, where an autoguider sits. That means you can guide on objects within the same field of view you are imaging, including the target itself.



18 Lunt Solar Systems LS35T

This Hydrogen-alpha scope provides a great way to keep track of solar prominences and flares. The 1.4-inch (35mm) refractor's single-stack filtration system has a bandpass of less than 0.75 angstrom, making it ideal for visual observations. The LS35T includes a base for attachment to a tripod and a foam-lined case. For an extra \$150, the deluxe version adds a Tele Vue Sol Searcher finder and a 10mm eyepiece.



19 Meade Series 5000 HD-60 eyepieces

Combining a 60° apparent field of view, 17mm of eye relief, an adjustable eyeguard, and a price tag under \$80, Meade's new HD-60 eyepieces are a great deal. Focal lengths include 4.5mm, 6.5mm, 9mm, 12mm, 18mm, and 25mm. If you must wear eyeglasses when you observe but cannot afford to spend exorbitant amounts on premium eyepieces, the HD-60 series offers an excellent choice.



20 Meade LX80 Multi-Mount

When it comes to telescope mounts, one style does not suit all models. An alt-azimuth mount is best for quick sessions while an equatorial mount is a must for astroimaging. Enter Meade's LX80 Multi-Mount, which you can configure in either mode. Both let you take advantage of its go-to system, which contains a 30,000-object database. The alt-azimuth setup even lets you mount two telescopes with a combined weight up to 75 pounds (34 kilograms) at once. The LX80 Multi-Mount weighs 35 pounds (15.9kg), and the tripod tips the scales at 31.5 pounds (14.3kg). An adjustable stainless-steel tripod with 2-inch legs completes this multipurpose product.



21 Meade LX800 Mount

Astrophotography continues to evolve at a furious rate. Thanks to Meade's new LX800 German equatorial mount and its integrated StarLock system, you can now simply select a target from the more than 144,000-object library to photograph. The mount, which uses the company's AutoStar II go-to system, then slews to the object, locks onto it, and automatically corrects tracking errors without any external assistance. The adjustable-height tripod features 3-inch-diameter legs. Look for the LX800 with Meade's 10-, 12-, and 14-inch ACF catadioptric telescopes, as well as its 130mm apochromatic refractor.



22 Moonglow Technologies All Sky Cam

There's always a lot going on over our heads. To follow the action, Moon-glow introduced the All Sky Cam. It gives a full-color horizon-to-horizon view of either the daytime or nighttime sky. Watch clouds and the Sun cross the sky during the day, and stars, the Moon, planets, meteors, and aurorae at night, all from any television or Windows computer with optional software.



25 Orion SteadyPix Adapter for iPhone

With this adapter from Orion, you can couple your iPhone3G, 3GS, iPhone 4, or 4S to any telescope's eyepiece to take photos of the Moon, planets, and even some bright deep-sky objects. Then you can share your results nearly instantaneously by email or social media. The adapter comes with a clamp to fit eyepiece housings up to 1.5 inches (38 millimeters) in diameter. Orion sells a larger clamp separately.



26 Quantum Scientific Imaging 583wsg CCD camera

QSI's top-end 583wsg camera uses Kodak's highly regarded 8.3-megapixel KAF-8300 full-frame CCD sensor, which has a photoactive array of 3326x2504 pixels. Other noteworthy features include mechanical and electronic shutters, a removable built-in filter wheel that accepts any standard 1 1/4" filter, and the company's Integrated Guider Port that picks off the light from a guide star in front of the filter. The company packs each camera in a Pelican case.



27 SBIG ST-i Monochrome Planet Cam and Autoguider

Looking for a compact CCD imager for capturing the planets? SBIG's ST-i model may be for you. Smaller and lighter than many standard 1 1/4" eyepieces, SBIG built the ST-i around Kodak's KAI-340 chip, which has a 648x484 pixel array. The built-in electronic shutter allows exposures as short as 0.001-second, while the integrated mechanical shutter can be used to generate dark frames. The ST-i also makes a great autoguider. Its fast f/2.8 optics allow you to guide on faint stars.



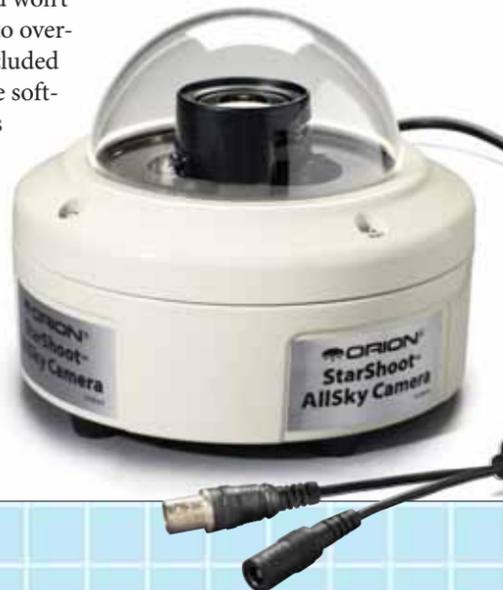
23 Optics Planet Bushnell ARES 5-inch Compact Truss Tube Dobsonian

Compact Dobs, like this 5-inch f/5 Newtonian reflector made exclusively for Optics Planet by Bushnell, are great traveling companions. To make the 14-pound (6.4 kilograms) ARES 5 even more compact, it collapses to just 16 inches (41 centimeters) long. To observe, just unlock and slide out the two truss tubes, secure them, and the scope is ready to go. The ARES 5 kit includes 10mm and 25mm Plössl eyepieces, a red dot finder, and a simple alt-azimuth mount with rubber feet.



24 Orion StarShoot AllSky Camera

With its 180° fisheye lens, the StarShoot AllSky Camera can keep track of the sky from horizon to horizon. The company also designed the camera to withstand all conditions, so it can provide clear full-sky images any time. And the Sun overhead won't cause pixels to overload. The included video capture software also lets you display your sky in real time over the Internet, or you can take images to create amazing time-lapse movies.



28 Sirius Astro Products Computer Cave

Many amateur astronomers bring laptops telescope-side, either as an imaging aid or for viewing star charts. But laptop screens, even overlaid with red gel, put out a lot of light. And they don't like dew. Enter the Computer Cave, a shield that encloses your laptop, reducing the light pollution it emits and protecting it from dew. Made of 6-mil corrugated plastic, the 24-inch by 18-inch by 18-inch (61cm by 46cm by 46cm) Cave quickly unfolds and assembles in seconds with Velcro strips.



29 Southern Stars SkySafari 3

"There's an app for that" certainly rings true in observing. One of the most popular planetarium apps to come along recently is *SkySafari 3*. Available for iPhones, iPads, and iPod Touches using iOS 4 or later, *SkySafari 3* has three different levels. The Pro version will show you up to 15.3 million stars, 740,000 galaxies, and 550,000 solar system objects. It also will control your go-to telescope using optional cables or Wi-Fi modules.



30 Starmap Pro

Another popular app for iPhone and iPod Touch is *Starmap Pro* from France's Fredd. Not only does the app display the sky at any time, but it also lets you zoom in and out on objects and offers go-to telescope control, event calendars, and a night-vision mode. Most fun of all, *Starmap Pro* can identify stars and constellations in the sky when installed on devices with a built-in compass, like the iPhone 3GS. Hold your iPhone toward the sky, and *Starmap Pro* will identify the stars "behind" the phone.



31 Takahashi Mewlon-250CRS

Takahashi designed its 9.8-inch (250mm) Mewlon-250CRS Corrected Dall-Kirkham reflector with astroimaging in mind. Thanks to a three-element corrector lens made of extra-low dispersion glass, an ASCOM-compliant electric focuser that moves the secondary mirror, and a manual/automatic three-fan cooling system, the Mewlon 250CRS produces crisp flat-field views of solar system and deep-sky objects alike.



32 Teeter's Solid Tube Series

Designed with apertures of 8 and 11 inches and with moderate focal lengths, Teeter Solid Tube Series (STS) Newtonian reflecting telescopes are great for lunar and planetary observing. They also provide great views of binary stars and bright deep-sky objects. As with Teeter's truss-tubed scopes, their STS lineup combines outstanding workmanship with high-quality optics and materials to create heirloom-quality instruments. Each scope comes with a Dobsonian mount.



35 Vixen BT81S-A Binocular Telescope

Combining a pair of 3.1-inch f/5.9 refractors, Vixen's BT81S-A is ideal for anyone who — like me — thinks that two eyes are better than one. Magnesium-fluoride-coated air-spaced doublet objectives snap images into focus, while an optional alt-azimuth mount and tripod keep those views steady and secure.



33 Tele Vue Delos series eyepieces

Mention eyepieces, and Tele Vue Optics is bound to pop into the minds of most amateur astronomers. Each Tele Vue Delos eyepiece — 3.5mm, 4.5mm, 6mm, 8mm, 10mm, 12mm, 14mm, or 17.3mm — features 20mm of eye relief and a 72° apparent field of view. The long eye relief means that even eyeglass-wearers get to enjoy the full field of view. And that field stays tack-sharp from edge to edge, whether you're viewing the Moon, planets, or your favorite deep-sky object.



34 Vixen Artes Binoculars

Vixen's Artes Binoculars, available in 8.5x45 and 10.5x45 models, feature extra-low dispersion fully multicoated lenses, phase coating on their BaK-4 roof prisms, long eye relief, and waterproof, nitrogen-filled barrels. Their no-compromise design guarantees exceptionally sharp images of all targets, whether terrestrial or celestial.



Astronomy's Star Products

#	COMPANY	PRODUCT	PRICE	WEBSITE
1	AG Optical	Newtonian astrographs	\$6,695 to \$20,195	www.agoptical.com
2	Astro Domes	Astro Dome 2400	\$3,980	www.astrodomes.com
3	Astronomy magazine	<i>Astronomy Magazine: The Complete Collection</i>	\$149.95	www.Astronomy.com
4	Astronomy-Shoppe	The DobStand	\$110	www.astronomy-shoppe.com
5	BinaryRivers	<i>BackyardEOS</i>	\$30 (\$38 with ASCOM plugin)	www.backyardeos.com
6	Catseye Collimation	Deluxe Triplepack XLK	\$349 to \$375	www.catseyecollimation.com
7	Celestron	CPC Deluxe 800 HD	\$2,399	www.celestron.com
8	Celestron	Nightscape CCD Camera	\$1,499	www.celestron.com
9	Celestron	SkyProdigy 6	\$999	www.celestron.com
10	DobSTUFF	Makeover kits	\$495 to \$795	www.dobstuff.com
11	Explore Scientific	9mm 120° Series Argon-Purged Waterproof Eyepiece	\$999.95	www.explorescientific.com
12	Explore Scientific	David H. Levy Comet Hunter	\$1,199.99	www.explorescientific.com
13	Farpoint	Astro Armour Cases	\$79.99 to \$249	www.farpointastro.com
14	Hands on Optics	AstroTelescopes 102mm (4") f/11 Refractor	\$599	www.handsonoptics.com
15	Hubble Optics	16" f/4.5 Premium Ultra Light Dobsonian System	\$2,995	www.hubbleoptics.com
16	Innovations Foresight	ONAG on-axis guider	\$989	www.innovationsforesight.com
17	JMI Telescopes	ColliMotor	\$259 to \$289	www.jmitelescopes.com
18	Lunt Solar Systems	LS35T Hydrogen-alpha telescope	\$598 to \$749	www.luntsolarsystems.com
19	Meade Instruments	Series 5000 HD-60 eyepieces	\$79.99	www.meade.com
20	Meade Instruments	LX80 Multi-Mount	\$999	www.meade.com
21	Meade Instruments	LX800 Mount	\$7,299	www.meade.com
22	Moonglow Technologies	All Sky Cam	\$399.95 to \$419.95	www.moonglowtech.com
23	Optics Planet	Bushnell ARES 5-inch Compact Truss Tube Dobsonian	\$164.99	www.opticsplanet.net
24	Orion Telescopes and Binoculars	StarShoot AllSky Camera	\$899.99	www.telescope.com
25	Orion Telescopes and Binoculars	SteadyPix Adapter for iPhone	\$59.99	www.telescope.com
26	Quantum Scientific Imaging	QSI 583wsg CCD camera	\$3,690	www.qsimaging.com
27	Santa Barbara Instrument Group	ST-i Monochrome Planet Cam and Autoguider	\$595	www.sbig.com
28	Sirius Astro Products	Computer Cave	\$35.95	www.siriusastroproducts.com
29	Southern Stars	<i>SkySafari 3</i>	\$2.99 to \$59.99	www.southernstars.com
30	Starmap	<i>Starmap Pro</i>	\$18.99	www.star-map.fr
31	Takahashi	Mewlon-250CRS	\$9,250	www.takahashiamerica.com
32	Teeter's Telescopes	Solid Tube Series telescopes	\$1,475 to \$1,975	www.teeterstelescopes.com
33	Tele Vue Optics	Delos series eyepieces	\$370	www.televue.com
34	Vixen Optics	Artes Binoculars	\$999 to \$1,099	www.vixenoptics.com
35	Vixen Optics	BT81S-A Binocular Telescope	\$1,199	www.vixenoptics.com