Meade® 12" LX200GPS Schmidt-Cassegrain Telescope

Large aperture combined with a dazzling array of state-of-the-art LX200GPS features, including 145,000-object database, Zero Image-Shift Microfocuser, GPS Alignment, and High-Precision Pointing.

The large light-collecting aperture of the Meade 12" LX200GPS gathers 44% more light than Meade 10" models and 125% more light than 8" models. The result is a level of resolution and image brightness that satisfy the advanced requirements of the serious amateur, as well as those of many school or college research programs.

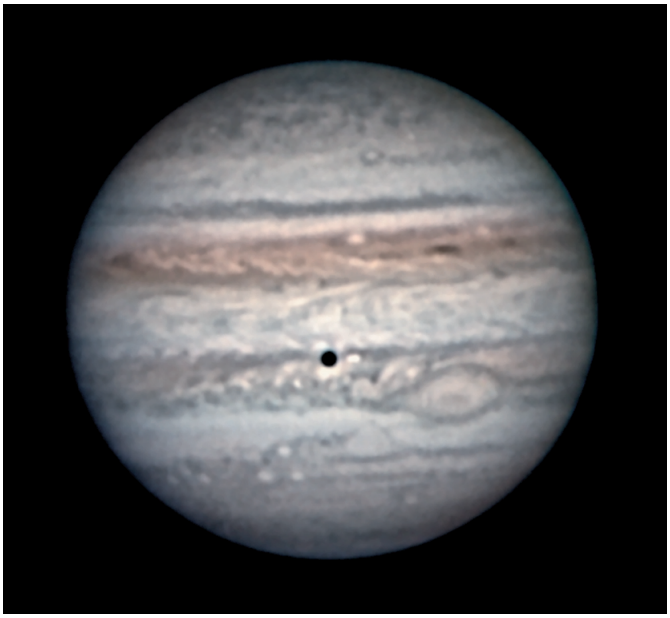
Meade 12" LX200GPS models include all of the features of the 8" and 10" models *(see pp. 32 - 34):* accurate GPS alignment; onboard 145,000-object database *(p. 33)* accessible in seconds through the Autostar II hand controller; 4-speed Zero Image-Shift Microfocuser; High-Precision Pointing to within one arc-minute; fast pushbutton slewing on both telescope axes, simultaneously, and at any distance GO TO slews of the telescope, since the large mass of the telescope's primary mirror is locked in position.

"We have been using Meade telescopes since our inception with remarkable success. We began with your 8-inch LX200 and now have one of your 12-inch LX200 models permanently mounted in our observatory. This instrument has proven to be extremely reliable and has allowed us to successfully conduct viewing opportunities for thousands of our Hawaii residents. It has also served us well for our 15 to 25 sections of astronomy classes we offer each academic year and has been an excellent research instrument for our undergraduate astronomy projects.

During November, 1997, a group of astronomers from Hopkins Observatory at Williams College in Massachusetts flew out to use our observatory for the occultation of the 10th-magnitude star Tycho 651672 by Neptune's 13th-magnitude satellite, Triton. The astronomers attached their imaging system to the 12-inch Meade LX200. The telescope acquired Neptune and resolved Triton easily; tracking was excellent. The entire system worked flawlessly. The 12-inch Meade LX200 successfully took 8000 images of Triton as it ran unattended, with the Hopkins imaging system attached, during the 17-minute occultation. We were the only observatory in Hawaii to get images of this event. Your company has enabled the small college to open a world of excitement, discovery, and meaningful undergraduate research at a cost easily within our reach." **— Fritz Osell, Director, Leeward Community College Observatory, Pearl City, Hawaii.**

of almost 200 drive speeds; factory-programmed Smart Drive in RA and Dec.; and, in addition, the Meade Giant Field Tripod for rock-solid stability in even the most sensitive applications. And yet, notwithstanding all of its high-performance features, the 12" LX200GPS is readily transportable for use in the field.

The 12" LX200GPS's progressive-tension primary mirror lock, in conjunction with the Zero Image-Shift Microfocuser, cancels any residual image-shift during focusing. In addition the mirror lock results in even more precise long-



An extraordinary image of the planet Jupiter, showing Jupiter's satellite, Io, and Io's shadow, transiting the disc of the planet. Thierry Legault obtained this CCD image, a composite of 20 images exposed for 0.15-sec. at f/34 plus a set of RGB images, on January 5/6, 2002, using his Meade 12" Schmidt-Cassegrain telescope. See pp. 42 - 43 for additional examples of Mr. Legault's precedent-setting work.

Observing with the 12" LX200GPS: The advantage of large aperture immediately becomes apparent when observing with the 12" LX200GPS. Objects merely visible in smaller telescopes now take on new dimensions, with fainter, more tenuous nebular detail observable; the Orion Nebula grows to more than twice the area visible in an 8" telescope and with subtle color variations. Jupiter's surface is a web of interlocking structural detail, even under

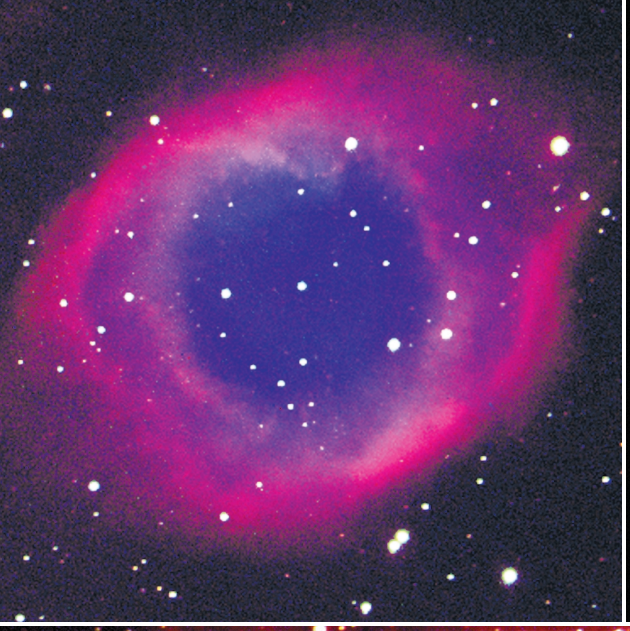
"...Wouldn't it be great if we could image the finest possible detail on Jupiter or the hairline divisions in Saturn's rings even on nights of moderate atmospheric turbulence? Well, we can. Department-store technology is all it takes to assemble an imaging system that removes the twinkle from stars and fuzziness from planets. All this method requires is a telescope with excellent optics, some off-the-shelf video and computer equipment, and a bit of patience.

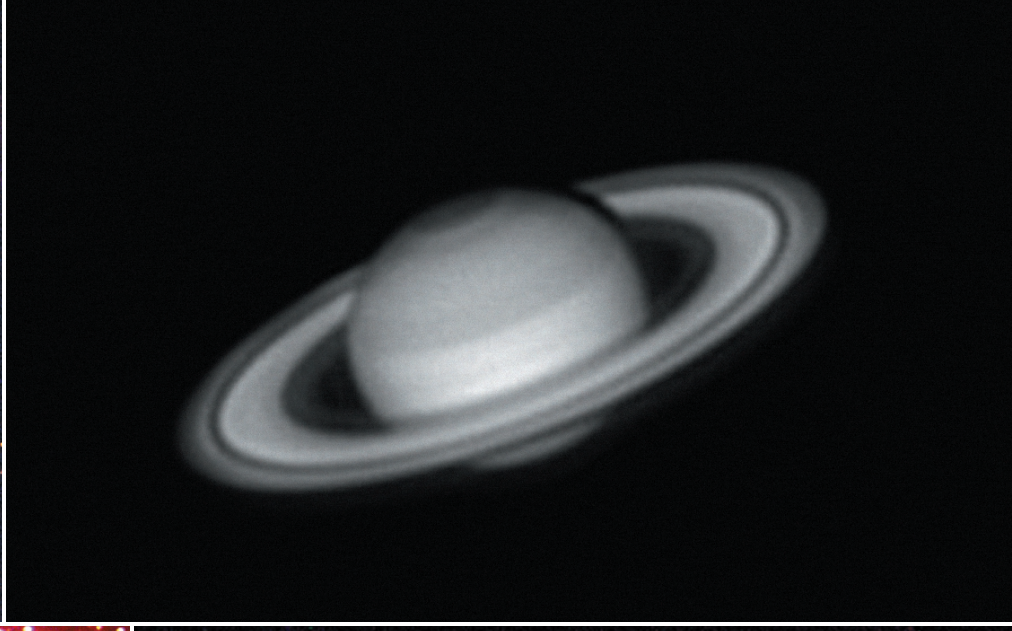
My results have consistently exceeded expectations. With a Meade 12-inch Schmidt-Cassegrain telescope in moderate turbulence I regularly resolve features at the Dawes limit of 0.4 arcsecond. I can even do this in a solar-heated and normally more turbulent daytime sky. [Images of the Space Shuttle in orbit] clearly show the wings, cargo-bay doors, and even the cockpit windows. [See p. 21.] I have also resolved Mir's solar panels and modules, even when the space station was hundreds of kilometers away. Images of bright stars reveal diffraction rings both day and night, and planetary details are extraordinary...." **— from the article *Sharper Images Through Video* by Ron Dantowitz in *Sky & Telescope,* August, 1998.**

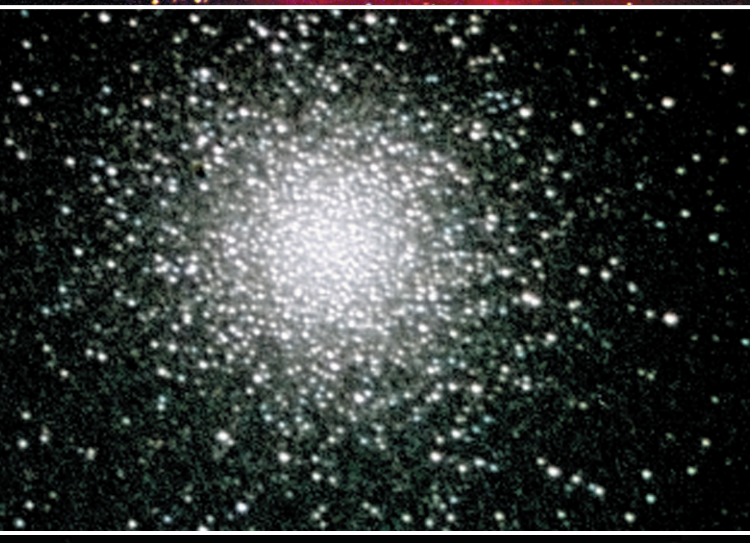
"The optics of my 12" LX200 are exquisite—in fact the best optics in a commercial catadioptric telescope that I have ever looked through. At 500X the Epsilon Lyrae double-double is not only clearly split into four components, but each of the four stars exhibits a textbook-perfect diffraction pattern, the ultimate test for superior optics." — **Jack Newton, Victoria, B.C., Canada.**

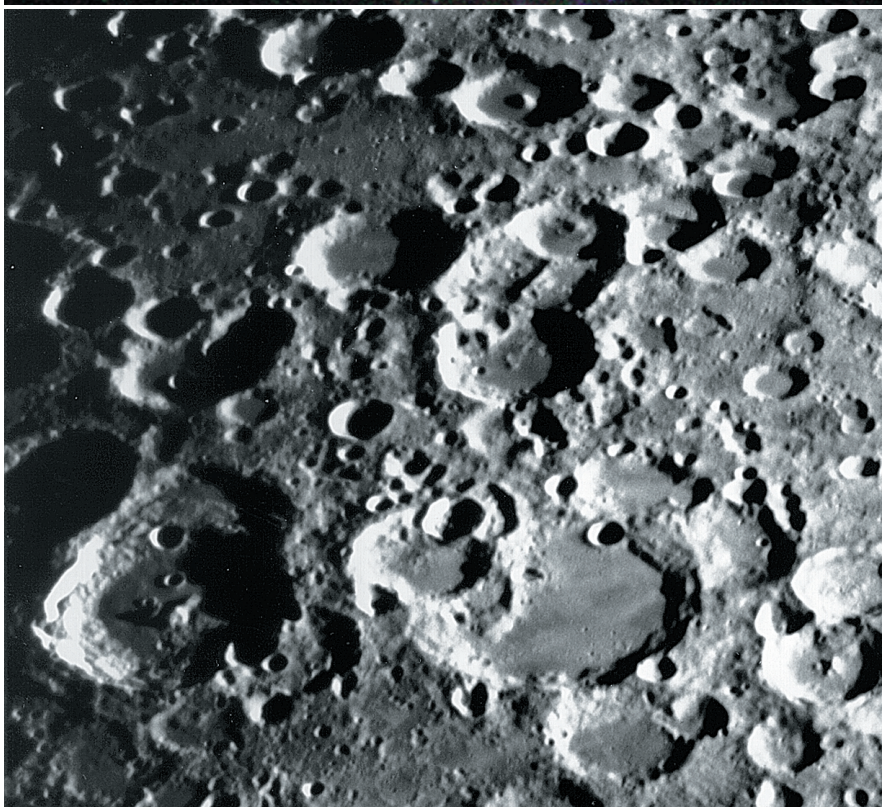
12" LX200GPS, shown on optional Superwedge. The power cord for the standard-equipment Zero Image-Shift Microfocuser plugs into the telescope's control panel.

Meade 12" LX200GPS
Schmidt-Cassegrain
Telescope.









Facing page, 12" LX200 images, clockwise from lower-left: Galaxy (NGC 4565) in Coma Berenices and globular cluster (M3) in Canes Venatici — images by Joe Petrick with the Meade Pictor 416XT CCD imager; the Omega Nebula (M17) and the Helix Nebula (NGC 7293) — CCD images by Tim Puckett; the planet Saturn — CCD image by J.-P. Brahic; Spiral Galaxy in Ursa Major (M101) — Tim Puckett. *Lower-right:* A 12" LX200 photo of the Southern Highlands region of the Moon (with the crater Maurolycus at bottom-center) by Christian Arsidi using Kodak 2415 film.

moderate seeing conditions; shadowy detail on the surface of Jupiter's largest satellite, Ganymede, is often observable. With a limiting photographic magnitude of 17.5 (or over 18.0 if the telescope is equipped with the optional Meade **Ultra-High Transmission Coatings** group, p. 26), the 12" LX200GPS is a valuable tool in supernova patrols, in the plotting of faint asteroids, and in many other areas of significant astronomical research.

The 12" LX200GPS follows in the path of its predecessor, the Meade 12" LX200, a telescope installed in hundreds of school and college observatories worldwide and the choice of thousands of amateur astronomers. It is an instrument which leaves very little to be desired.

Meade 12" LX200GPS Schmidt-Cassegrain Telescope. The Autostar II hand controller operates the telescope for over 20 hours from eight C-cell batteries located inside the fork arms.

Specifications and Features: 12" LX200GPS

Optical Design	Schmidt-Cassegrain
Clear Aperture; Primary Mirror Diameter	305mm (12"); 314mm (12.375")
Focal Length; Focal Ratio	3048mm; f/10
Near Focus *(approx.)*	75 ft.
Resolving Power (arc secs.)	0.38
Optical Coatings	MgF_2 on correcting plate (2-sides); standard aluminum on primary & secondary mirrors
Ultra-High Transmission Coatings *(p. 26)*	optional at time of purchase
Limiting Visual Magnitude *(approx.)*	15.0
Limiting Photographic Magnitude *(approx.)*	17.5
Image Scale (degs./inch)	0.48
Maximum Practical Visual Power	750X
35mm Angular Film Coverage	0.45° x 0.65°
Optical Tube Dimensions (dia. x length)	13.6" x 25"
Secondary Mirror Obstruction (dia.; %)	4.0"—11.1%
Telescope Mounting	heavy-duty fork type; double tine
Setting Circle Diameters	Dec.: 5"; RA: 8.75"
RA and Dec. Motor Drive Systems	*both axes:* 185-speed, microprocessor-controlled, 12v. DC servo motor; 5.75" LX worm gear with Smart Drive software
Hemispheres of Operation	North and South, selected by GPS or user
Primary Mirror Lock	included (progressive tension)
Zero Image-Shift Microfocuser	included (4-speed)
GPS Alignment	included (16-channel GPS receiver, electronic sensors for true-level and North, with magnetic declination compensation)
GO TO Pointing Precision	2-arc mins. (1-arc min. in HP-mode)
Slow-Motion Controls	manual and electric, RA and Dec.
Bearings	Dec.: 3 x 1.83" dia. ball bearings; RA: 1 x 4" dia. and 1 x 2.25" dia. ball bearings
Autostar Hand Controller	Atmel 89C451 & PIC16C57 microcontrollers; 2 line x 16 alphanumeric character display; 20-button keypad, red LED backlit
Main Telescope Controller	distributed intelligence architecture using 8 networked microcontrollers (Motorola 68HC11, Atmel 89C451, 3 x PIC16C62, 2 x PIC16C54, Sony digital signal processor); 3.5-Megabyte flash memory, field reprogrammable, 32K RAM
Batteries; Battery Life *(approx.)*	8 x C-cells (user-supplied); 20 hrs.
Onboard Celestial Object Database	147,541 objects
Slew Speeds, RA and Dec.	0.01x to 1.0x sidereal, variable in 0.01x increments; 2x, 8x, 16x, 64x, 128x sidereal; 1°/sec. to 8°/sec., variable in 0.1° increments
Tracking Rates	sidereal, lunar, or custom-selected from 2000 incremental rates
Materials: **Tube Body; Mount Castings**	aluminum; aluminum
Primary & Secondary Mirrors	Pyrex® glass, grade-A, fine-annealed
Correcting Plate	clear float glass
Telescope Dimensions, swung down	15" x 20" x 37"
Net Weights: **Optical tube and fork mount —** 75 lbs.; **Superwedge** *(optional)* — 26 lbs.; **Giant field tripod —** 50 lbs.	
Total Shipping Weight *(approx.):* **Optical tube, fork mount, giant field tripod —** 150 lbs.; **Superwedge** *(optional)* — 38 lbs.	
#1220 Field De-rotater — *optional;* **Superwedge Latitude Range —** 24° - 65°; **Giant Field Tripod, height —** 40" - 50" variable	

Specifications: 12" Model LX200GPS—Includes 12" Schmidt-Cassegrain optical tube assembly (D = 305mm, F = 3048mm, f/10) with MgF_2 coatings on the correcting lens and standard aluminum coatings on the primary and secondary mirrors (Ultra-High Transmission Coatings, p. 26, available optionally); primary mirror lock; 4-speed Zero Image-Shift Microfocuser; heavy-duty fork mount, with 4"-diameter polar ball bearing, dual-axis 5.75" worm gears, and 7-port multi-function control panel, including two RS-232 serial interface ports; manual and electric slow-motion controls on both axes; setting circles in RA and Dec; Autostar II control system with 3.5-Megabyte flash memory, digital readout display, permanently-programmable Smart Drive and 185-speed drive controls on both axes, High-Precision Pointing, and 145,000-object onboard celestial software library; GPS alignment system with 16-channel GPS receiver, magnetic declination compensation, and true-level and North electronic sensors; 12v DC telescope power supplied from internal battery compartments accepting 8 (user-supplied) C-cells (optional 25 ft. cords are available for powering from auto cigarette lighter plug or from 115v AC); 8 x 50mm viewfinder; 2" diagonal mirror with 1.25" adapter; Series 4000 Super Plössl 26mm eyepiece; variable-height giant field tripod; operating instructions.

"Images close to optical perfection…"

Over the past ten years Meade Schmidt-Cassegrain owners throughout the world have pushed the resolution of their photographic and CCD images closer and closer to ultimate professional standards — standards set by professional astronomers using telescopes with costs measured in the millions of dollars. Thierry Legault of Elancourt, France, with his Meade 12" Schmidt-Cassegrain telescope is one of the leaders of an elite group which has made quantum leaps in imaging resolution of the Moon and planets.

In the January, 1999, issue of the leading French astronomy magazine *Ciel et Espace [Sky and Space]*, Editor-in-Chief Serge Brunier wrote, referring to the images reproduced on these pages:

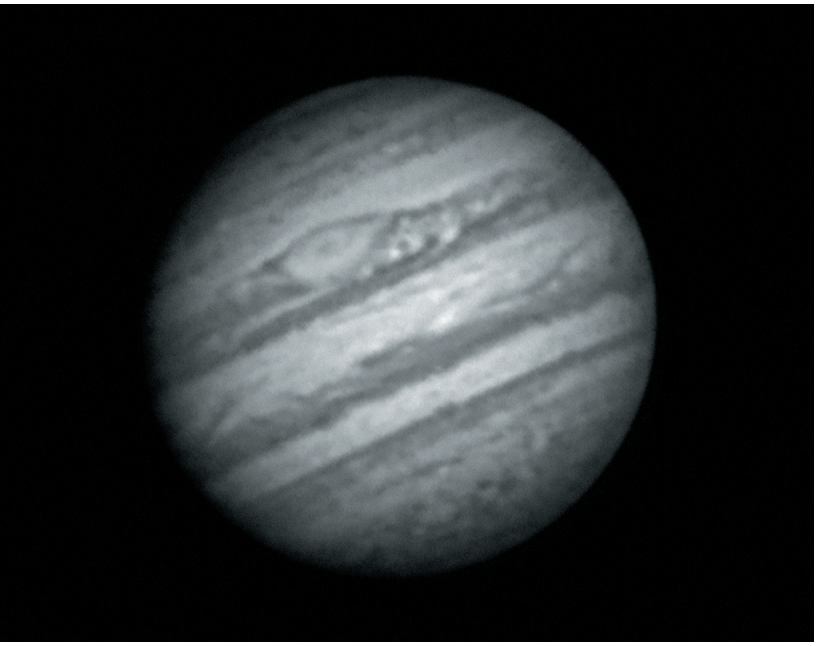
"Thierry Legault takes his images with a Hi-SIS 22 CCD camera installed at the focus of a Meade 305mm [12" Schmidt-Cassegrain] telescope.... *[He] has changed with his 305mm telescope and his CCD camera, all the standards of astronomical imaging.*

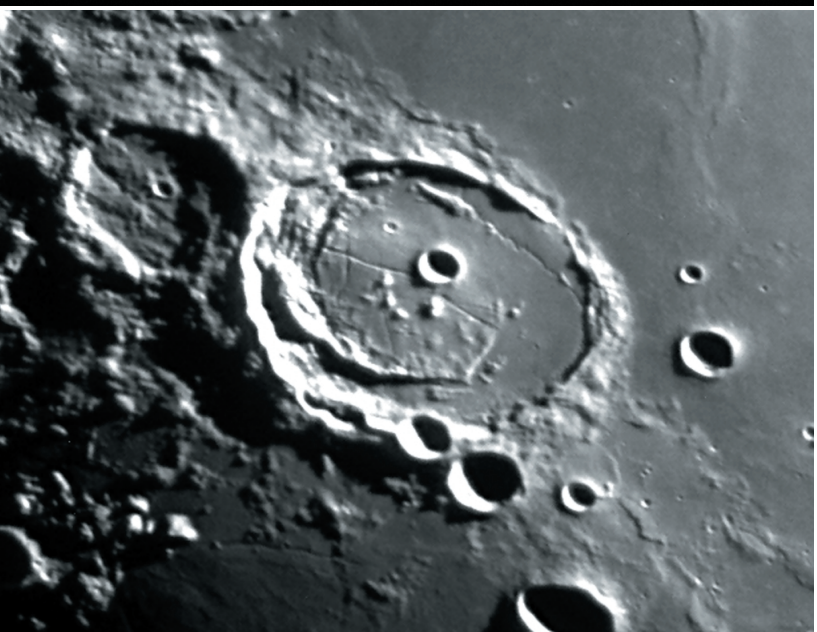
His images of the sky, of an unprecedented sharpness, seem to come from a mountain observatory.... In the opinion of his peers, his images of the Moon and the planets have no equivalent throughout the world. The sharpness of these electronic images is equivalent to those of the best photographs obtained in recent decades at the Pic du Midi and Catalina Observatories. [Shown here] the Hadley rille, as you probably never saw it....

Visible during the first and last quarters, the area of the craters Hyginus and Triesnecker [facing page] is one of the most spectacular on the Moon. The fine rilles which cover the lunar surface are often used as an optical test by astrophotographers. Here is, to our knowledge, the sharpest image of these crevasses ever obtained.

[Referring to images of Jupiter shown here] Images close to optical perfection.... On Jupiter too, Thierry Legault has placed the bar very high....The resolution of these images is exceptional for a 305mm telescope.... [The three images of Jupiter, opposite page, with] the passage of Io in front of the disk of the planet. Shots formerly within the range only of professionals."

— reprinted with permission, *Ciel et Espace.*





Shown here are some of the finest images of Jupiter, Saturn, and the Moon ever obtained with any Earth-based telescope of any aperture, amateur or professional. All are CCD images with a Meade 12" Schmidt-Cassegrain telescope by Thierry Legault.

(this page, clockwise from lower-right): The Hadley Rille *(center of image)* on the Moon; lunar crater Posidonius; the planet Jupiter, showing the Great Red Spot crossing the planet's meridian.

(facing page, upper-left): The planet Saturn. Comments Mr. Legault: "To my knowledge, this is the first amateur image of Saturn that clearly shows the Encke division — only 0.05 arc seconds wide and located very near the rings' outermost edge, about 80% of the distance from the Cassini division."

(facing page, clockwise from upper-right): Vicinity of the lunar craters Hyginus and Triesnecker; region of the Straight Wall on the Moon; Jupiter, showing transit of its satellite Io, and Io's shadow, across the planet's disc; lunar crater Clavius.