the ASTROGRAPH



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the ASTROGRAPH

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COVER PHOTOGRAPH

Object.....The Double Cluster,NGC 869 and 884

Photographer.....Lee C. Coombs

Instrument.....4.25 inch F/4.6 Newtonian

Exposure\Film.....30 minutes/Kodak Ektachrome P200

Date.....30 October 1999

VOLUME 37 No. 2

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Features

Color Images by Lee C. Coombs.....19
Product Evaluation: Losmandy G11 Mount.....28

Departments

Astrophotography for October and November.....26

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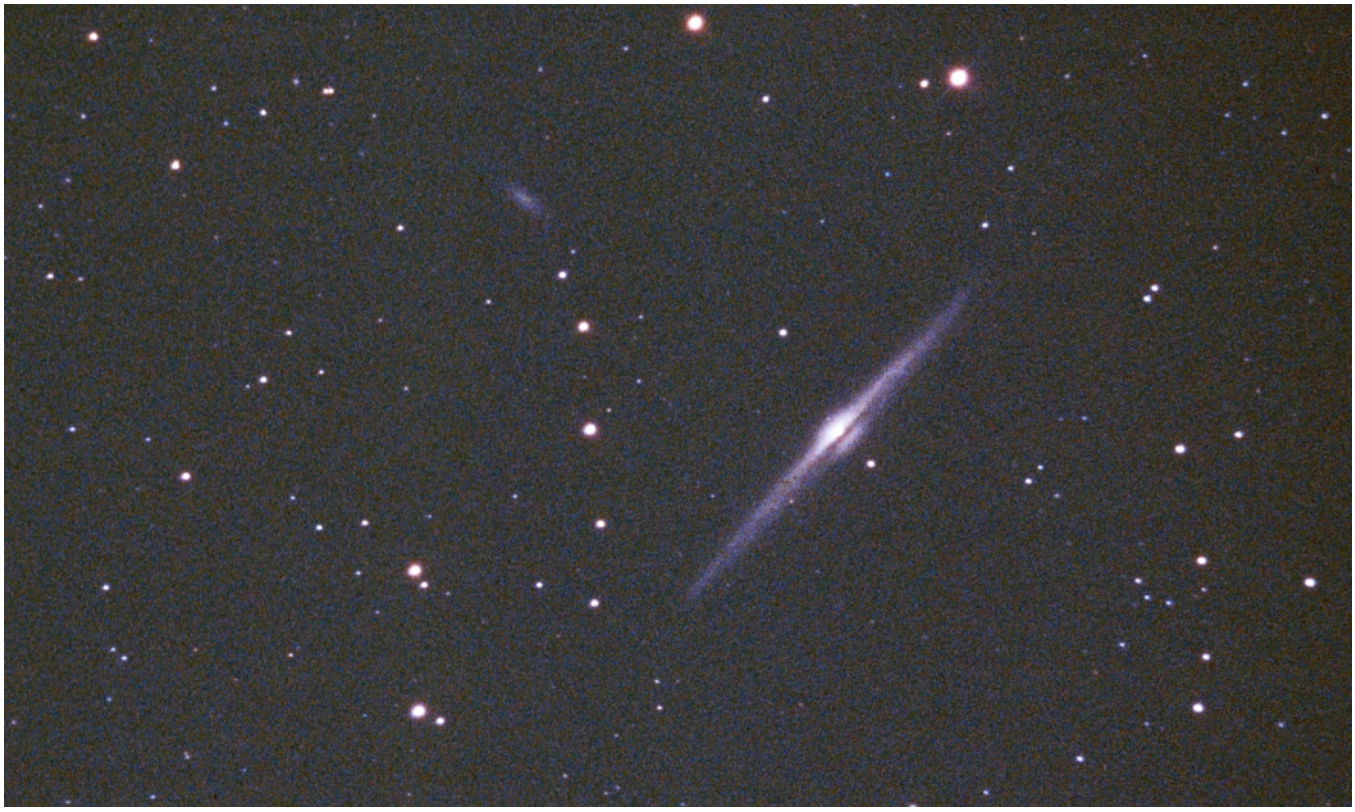
Color Images by Lee C. Coombs



Above: Galaxy NGC 4565 photographed by Lee C. Coombs on 28 March 2003 using a 10 inch F/5 Newtonian. Exposure was 35 minutes on Kodak Ektachrome P200 slide film.



Above: Galaxy NGC 4631 photographed by Lee C. Coombs on 21 April 2004 using a 10 inch F/5 Newtonian. Exposure was 35 minutes on Kodak Ektachrome P200 slide film.



Above: Galactic cluster NGC 7789 photographed by Lee C. Coombs on 3 August 2005 using a 10 inch F/5 Newtonian. Exposure was 30 minutes on Kodak Ektachrome P200 slide film.



Above: Emission nebula IC 405 photographed by Lee C. Coombs on 10 December 2001 using a 10 inch F/5 Newtonian. Exposure was 35 minutes on Kodak Ektachrome P200 slide film.



Above: Dark nebula B72 photographed by Lee C. Coombs on 1 July 2005 using a 10 inch F/5 Newtonian. Exposure was 30 minutes on Kodak Ektachrome P200 slide film.



Above: Emission nebula NGC 281 photographed by Lee C. Coombs on 26 September 2000 using a 10 inch F/5 Newtonian. Exposure was 35 minutes on Kodak Ektachrome P200 slide film.



Above: Galaxies M66, M65 and NGC 3628 photographed by Lee C. Coombs on 19 May 2003 using a 10 inch F/5 Newtonian. Exposure was 35 minutes on Kodak Ektachrome P200 slide film.



Above: Galaxy M83 photographed by Lee C. Coombs on 27 May 2003 using a 10 inch F/5 Newtonian. Exposure was 35 minutes on Kodak Ektachrome P200 slide film.

Astrophotography for October and November

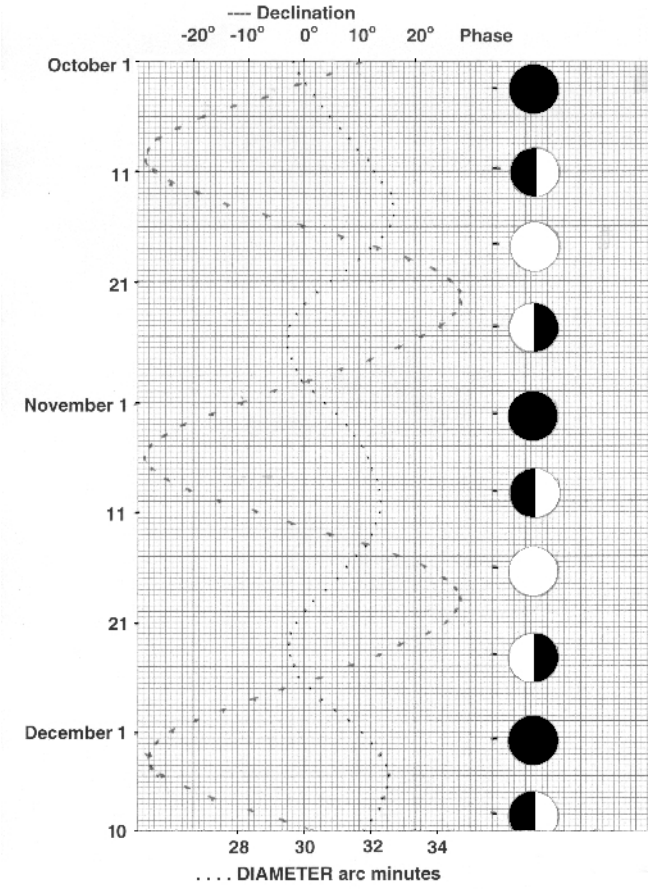
by

Ralph Proctor

Mercury begins October lost in the Sun's glare, but emerges from the Sun's glare in early October as an evening object low in the western sky. During October mercury moves higher in the western sky and reaches a greatest eastern elongation of 24 degrees on 3 November when it will be in poor photographic position with a declination of minus 7 degrees. During November Mercury moves lower in the western sky and disappears into the Sun's glare at the end of the third week in November.

Venus begins October as an evening object low in the western sky. During October and November Venus climbs slightly higher in the western sky and reaches a greatest eastern elongation of 47 degrees on 3 November when it will be in poor photographic position with a declination of minus 27 degrees.

Lunar Declination and Diameter:



The Moon's waning quarter phase will be located high on the ecliptic and in excellent photographic position during October (October 23) and November (November 19), with an apparent declination of up to +28 degrees.

Mars begins October as a morning object high in the eastern sky in the constellation Taurus, but almost immediately moves into the constellation Aries. Mars reaches opposition on 7 November when it will be in good photographic position with a declination of plus 16 degrees. During October and November Mars moves higher in the eastern sky, increases in brightness from magnitude -1.7 to -2.3 and back to -1.7, and decreases in diameter from 17.3 to 17.1 arc seconds

Jupiter begins October lost in the Sun's glare, but emerges from the Sun's glare in early November as a morning object low in the eastern sky in the constellation Virgo. During October and November Jupiter moves higher in the eastern sky, remains constant in brightness at magnitude -1.7, and increases in diameter from 30.8 to 31.4 arc seconds.

Saturn begins October as a morning object low in the eastern sky in the constellation Cancer. During October and November Saturn moves higher in the eastern sky, increases in brightness from magnitude +0.4 to +0.2 , and increases in diameter from 17.3 to 19.3 arc seconds.

Uranus begins October as an evening object high in the western sky in the constellation Aquarius. Uranus reached opposition with the Sun on 1 September. During October and November Uranus moves lower in the western sky, decreases in brightness from magnitude +5.7 to + 5.8, and decreases in diameter from 3.68 to 3.51 arc seconds. Uranus is located at R.A. 22 hours 37.1 minutes declination -9 degrees 35 minutes on 15 October and at R.A. 22 hours 35.5 minutes declination -9 degrees 43 minutes on 15 November.

Neptune begins October as an evening object high in the western sky in the constellation Capricornus. Neptune reached opposition with the Sun on 8 August. During October and November Neptune

moves lower in the western sky, remains constant in brightness at magnitude +7.9, and decreases in diameter from 2.34 to 2.25 arc seconds. Neptune is located at R.A. 21 hours 09.5 minutes declination -16 degrees 31 minutes on 15 October and at R.A. 21 hours 09.7 minutes declination -16 degrees 30 minutes on 15 November.

Pluto begins October as an evening object low in the western sky and disappears into the Sun's glare in early November. During October and November Pluto decreases in brightness from magnitude +13.9 to + 14.0. Pluto is located at R.A. 17 hours 28.0 minutes declination -15 degrees 32 minutes on 15 October and at R.A. 17 hours 31.4 minutes declination -15 degrees 42 minutes on 15 November.

Events:

Spica will be occulted by the Moon on 31 October (19 hours Universal Time) for the northeastern portion of North America; and on 28 November (04 hours Universal Time) for northern China, and central and northern Russia.

Antares will be occulted by the Moon on 8 October (01 hours Universal Time) for the central Pacific Ocean, western Samoa, and the western tip of northern South America; and on 4 November (07 hours Universal Time) for Arabia, the eastern tip of Africa, Indonesia, the Philippines, and the northern half of Australia.

The Sun will undergo an annular eclipse on 3 October for eastern Greenland, Iceland, all Europe except the British Isles, all but the southern tip of Africa, western Asia, and India. The eclipse begins and ends at 7 hours 35.5 minutes and 13 hours 27.8 minutes Universal Time respectively. Central eclipse at local apparent noon occurs at 10 hours 10.7 minutes Universal Time.

The Moon will undergo a partial eclipse on 17 October for parts of Antarctica, Australasia, central and eastern Asia, all but the eastern portion of North America, and Central America. The Moon enters and leaves the penumbra at 09 hours 51.4 minutes and 14 hours 15.1 minutes Universal Time respectively. The Moon enters and leaves the umbra at 11 hours 34.0 minutes and 12 hours 32.5 minutes Universal Time respectively. Mid-eclipse occurs at 12 hours 03.3 minutes Universal Time.

MINOR PLANETS

		position			
		15 October		15 November	
Planet	Magnitude	R.A.	Decl.	R.A.	Decl.
Ceres	08.5 - 09.0	16 hr 23.0 min	-21 deg 49 min	17 hr 14.1 min	-24 deg 09 min
Pallas	09.6 - 10.0	15 hr 02.8 min	+06 deg 24 min	15 hr 52.1 min	+04 deg 08 min
Juno	09.5 - 07.6	05 hr 24.6 min	+04 deg 49 min	05 hr 26.7 min	-00 deg 16 min
Vesta	08.5 - 07.2	07 hr 22.5 min	+19 deg 41 min	07 hr 38.6 min	+19 deg 46 min

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Volume No. 12 issue 1, 2, 3, 4, 5, and 6
Volume No. 13 issue 1, 2, 3, 4, 5, and 6
Volume No. 14 issue 1, 2, 3, 4, 5, and 6
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Volume No. 30 issue 1, 2, 3, 4[1], 5, and 6
Volume No. 31 issue 1, 2, 3, 4, 5, and 6
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Volume No. 35 issue 1 and 2

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Product Evaluation: Losmandy G11 Mount

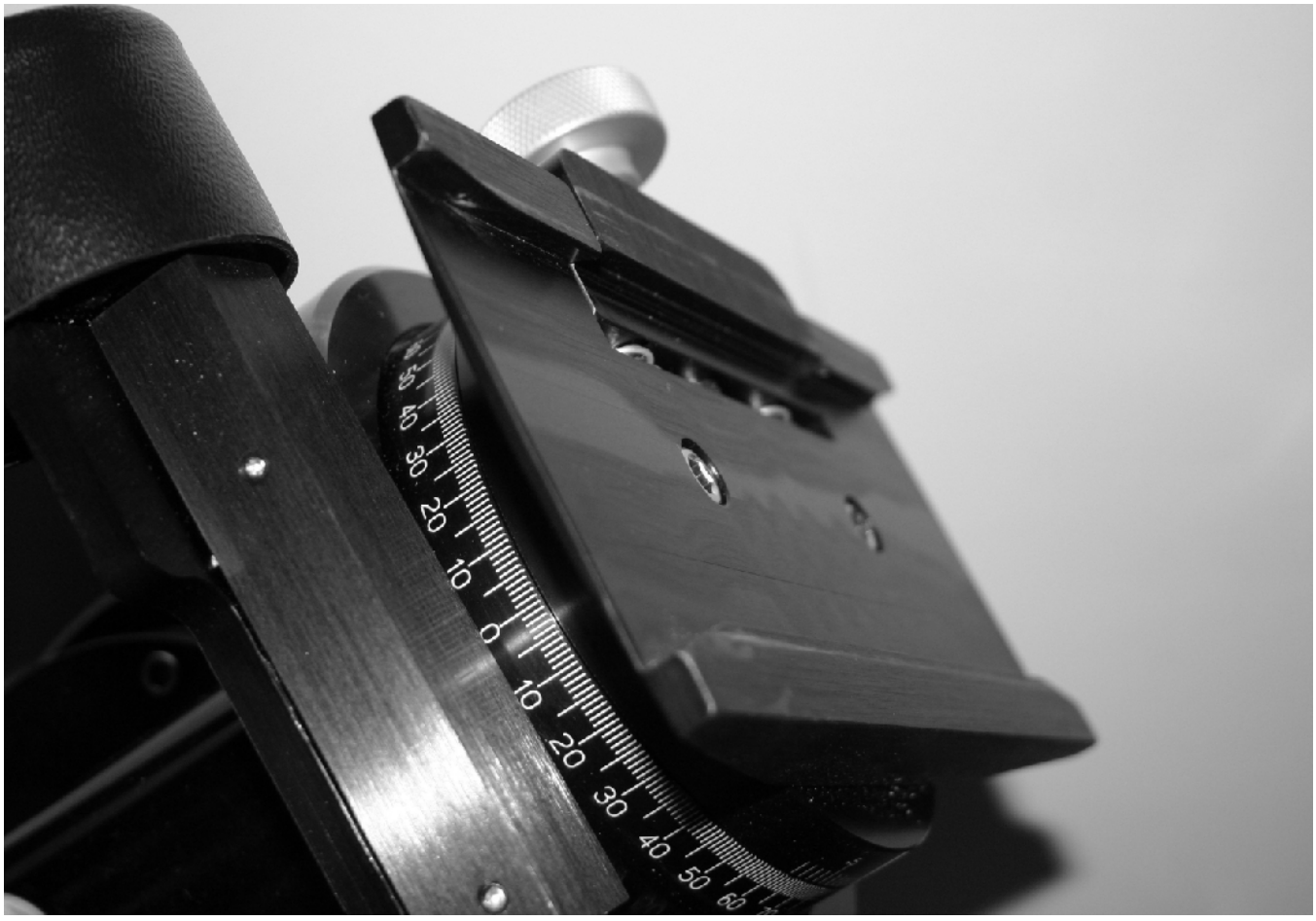
by

Robert C. Price

The Losmandy G-11 mount is a rugged German equatorial mount that comes equipped with tripod, 21lb counter weight, right ascension and declination drives, and drive controller. A polar axis alignment scope, pier mount adapter, and dovetail plate for mounting a telescope to the mount are extra. If the telescope is to be fixed mounted on a pier there would be no need for the tripod or polar axis alignment scope. Using the optional pier adapter would eliminate the need for the tripod. Once the telescope is polar aligned using the drift method of polar axis alignment, the alignment scope would not be necessary. One nice feature of this mount is the number of telescope-specific dovetail plates that are available for specific Celestron, Meade, and Astrophysics telescopes. Figure 1 shows the G-11 saddle assembly ready to receive a dovetail plate.

Physical Characteristics: The weight of the G-11 equatorial head is 36 lbs. Right ascension and declination axis are made of 1.25 inch O.D. stainless steel shafts. These ride on two 1.5 inch diameter needle bearings, one 2 inch diameter needle thrust bearing and one 3.75 inch diameter needle thrust bearing. The right ascension drive main gear is a 5.625 inch diameter, 7075 aluminum, 360 tooth worm gear. The drive system has an input for a auto-guider and has memory for periodic error correction. The setting circles are 5 inches in diameter and laser engraved. The polar axis is adjustable in elevation and azimuth. The aluminum tripod consists of 3 fixed detachable cylindrical aluminum legs that are adjustable to vary the tripod height from 33 to 48 inches. Tripod weight is 35 lbs. The bottom of the mount consists of a 5.5 inch diameter cylinder that fits into the tripod or pier mount adapter (called the Meade field tripod adapter).

The Evaluation: For this evaluation the author mounted his 11 inch Celestron SCT using the C11 dovetail plate. This provided a very ridged mount-

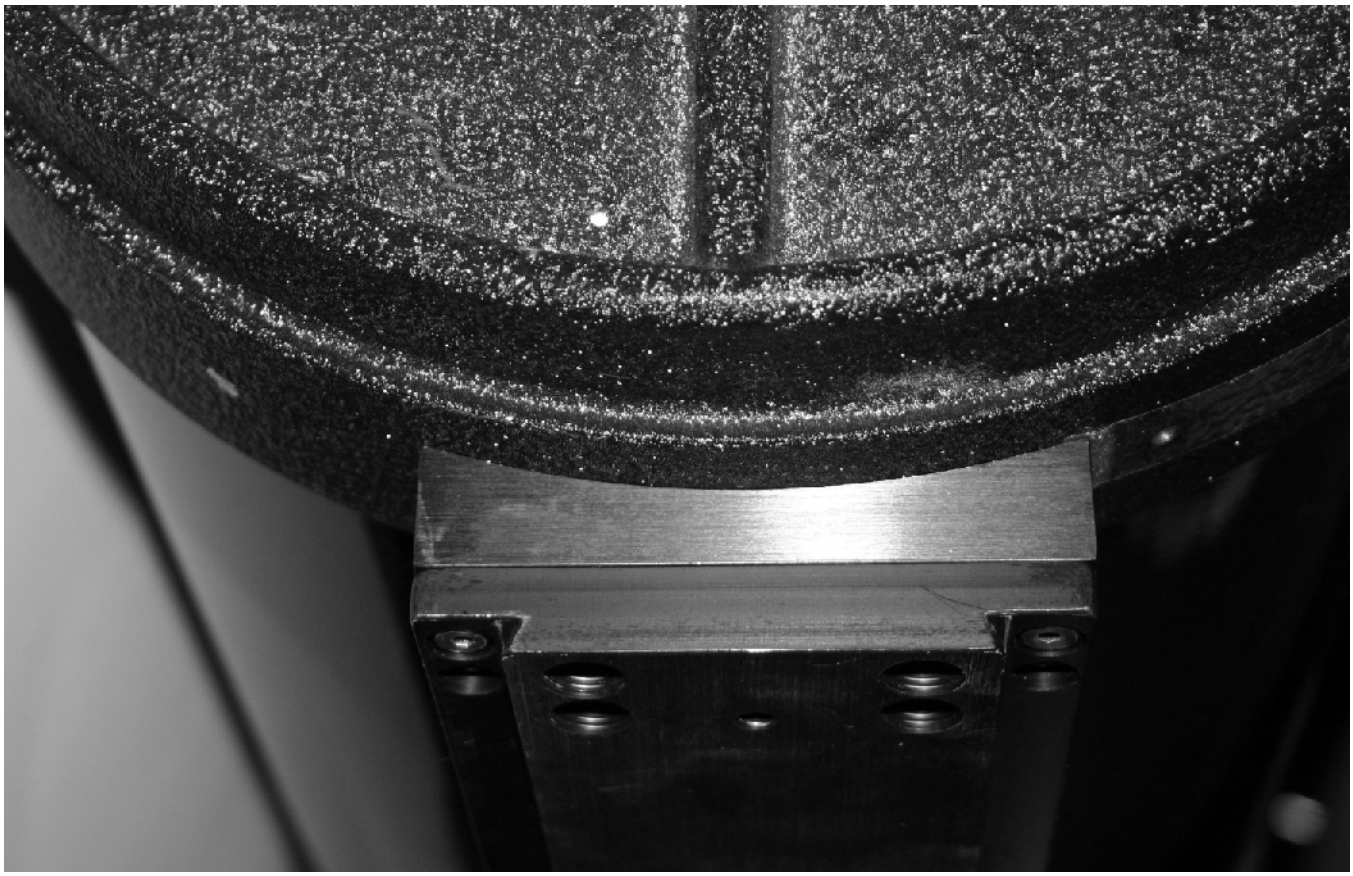


Above: Figure 1, Lasmandy G-11 saddle assembly ready to receive a dovetail plate. Tightening knob is at the extreme top of this photograph

ing of the optical tube to the mount. Figure 2, 3 and 4 show this attachment method. Figure 3 shows how the dovetail plate spans almost the entire length of the 11 inch Celestron SCT optical tube assembly. An Orion 80mm, 910mm focal length, guide scope was attached to the Celestron optical tube assemble for guiding. Since light pollution in my area limits my exposures to 5 minutes on a typical good night I felt no need to use an off-axis guider. The weight of the Celestron SCT, guide scope and mounting hardware was 36 lbs and required 30 lbs of counterweight. The Celestron SCT was rock solid on the Losmandy G-11 mount. The clutch assembly worked smoothly and easily provided the right amount of friction for slewing the optical tube. The right ascension drive was smooth and error corrections were easy and less frequent than with either the author's Celestron Super Polaris with an 8 inch SCT or the Orion Atlas heavy-duty mount with its 8 inch F/4.9 Newtonian. The author had previously mounted his 11 inch Celestron on the Orion Atlas heavy-duty mount but found that the Atlas mount did not provide sufficiently fine guiding for this focal length optical system.

Portability: The Losmandy G-11 mount assembles from components that are reasonably easy to carry. The bulkiest item is the 11 inch Celestron optical tube since that item must be lifted to be attached to the saddle of the mount. The tripod is bulky but easily handled and positioned. The three legs are easy to adjust. The equatorial head is heavy but compact, and it is easier to position on the tripod than positioning the optical tube on the saddle. Even though the counter weight is the lightest component, its small size makes holding and moving it more difficult than its 21 lb weight would imply. Connecting the wires from the drive electronic box to the two drive motors and to the hand held drive controller box is a snap. Telephone type connectors are used for these connections. Total set up time including polar axis alignment is typically less than 15 minutes.

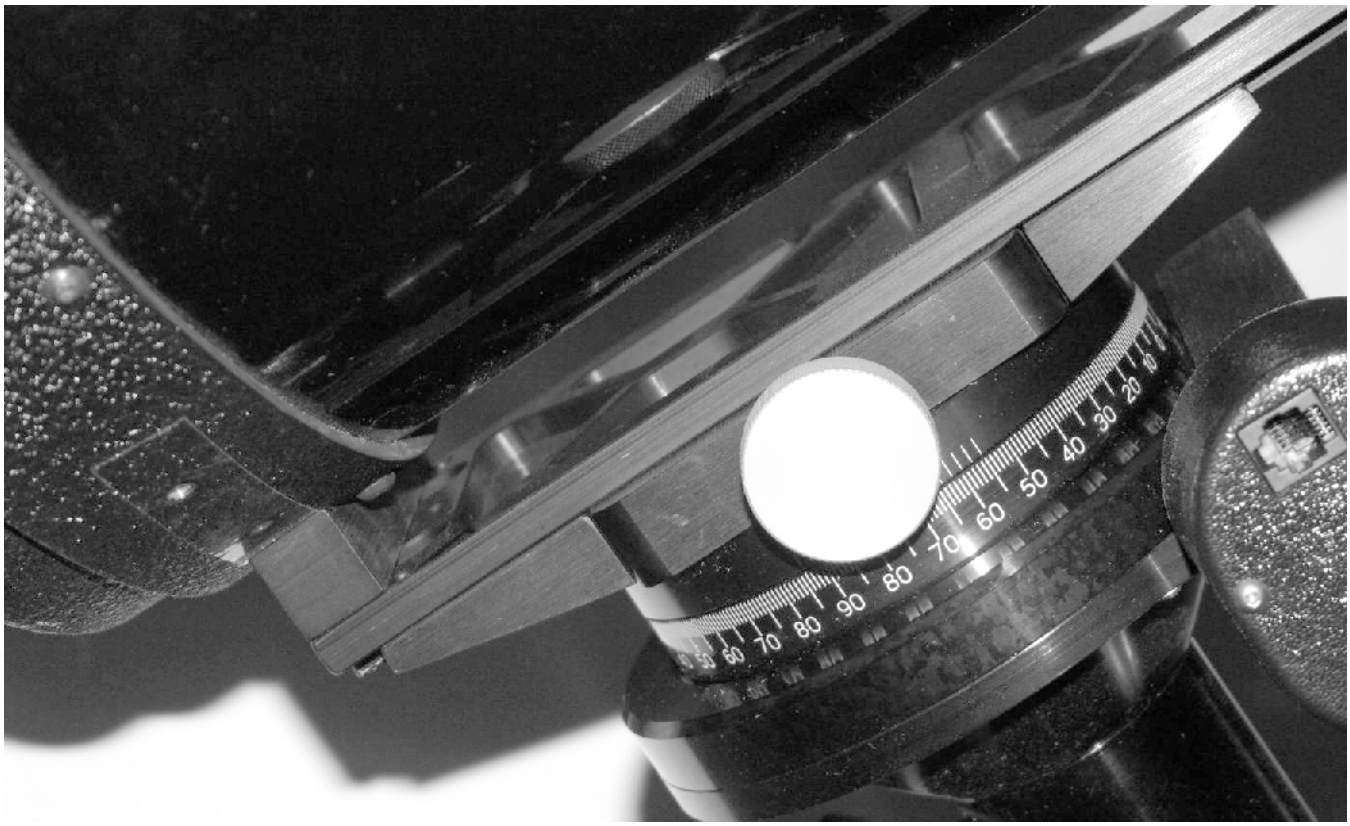
Tracking error: The author misaligned the polar axis by one degree and took an 8 minute exposure. Measured periodic error of the right ascension drive without periodic error correction was 13 arc seconds peak-to-peak.



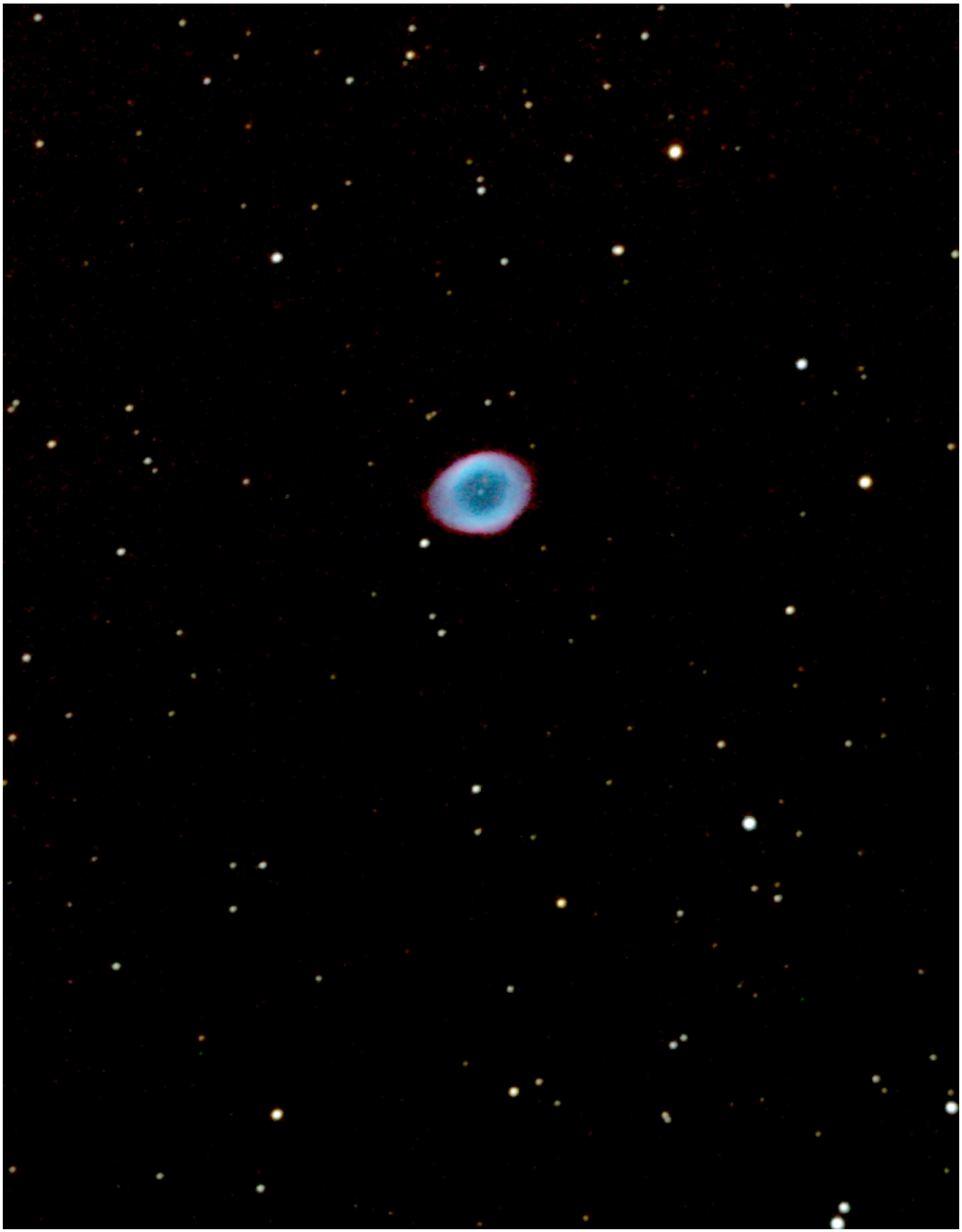
Above: Figure 2, C-11 divetail plate showing ridged fit with 11 inch Celestron optical tube using available bolt holes in the optical tube.



Above: Figure 3, full extent of the C-11 dovetail plate is shown in this photograph.



Above: Figure 4, C-11 dovetail plate attached to the G-11 saddle is shown in this photograph. Note the rib structure of the dovetail plate.



Above: Figure 5, G-11 test. M57 photographed by Robert C. Price on 22 September 2005 using an 11inch SCT at F/10. Exposure was 5 minutes 35 seconds using a Canon 300D digital SLR at 400ASA.



Above: Planetary nebula M97 and galaxy M108 (lower left) photographed by Lee C. Coombs on 8 March 2002 using a 10 inch F/5 Newtonian. Exposure was 40 minutes on Kodak Ektachrome P200 slide film.