the ASTROGRAPH

Volume 40 No. 1 August/September 2008

the ASTROGRAPH

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COVER PHOTOGRAPH

Object.....NGC6960, theVeil Nebula

Photographer.....Robert C. Price

Instrument.....Tele Vue NP-127 (5 inch F/5.2 refractor)

Exposure/Camera.....two 20 minutes/Hutech modified Canon 40D

Date.....2 July 2008

Location.....south of Blue Knob State Park, PA

VOLUME 40 No. 1
EDITOR.....Robert C. Price
CONTRIBUTING EDITOR.....Ralph Proctor
PROOFING CONTRIBUTOR.....Linda Miller
CONTRIBUTORS.....Lee C. Coombs

Features

Departments

The ASTROGRAPH is published in Adobe PDF format six times a year as follows: No. 1, August/March, No. 2 December/March, No. 3 December/March, No. 4 February/March, No. 5 April/May, No. 6 June/July.

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Using Noise Ninja in Astrophotography

by

Robert Price

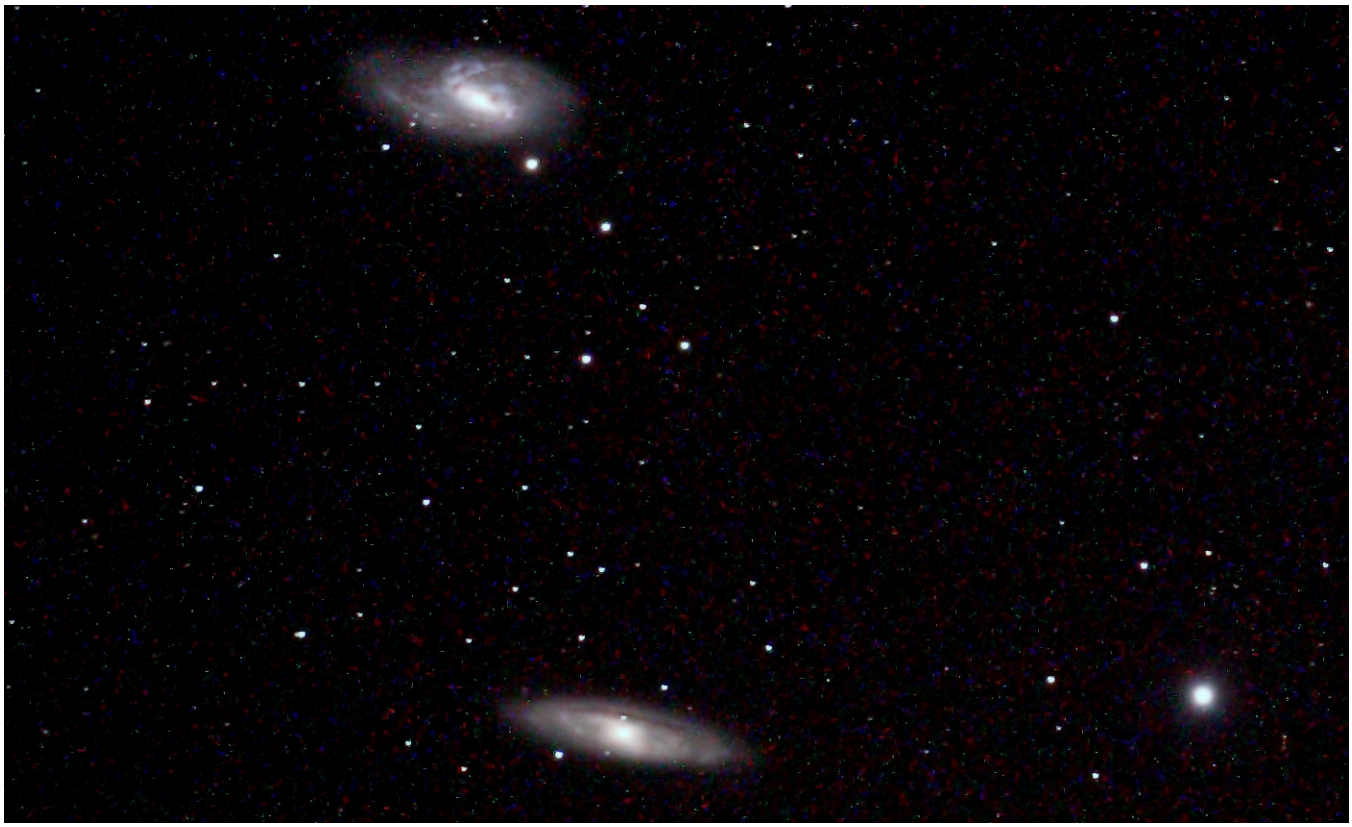
Noise Ninja is a well-known computer program for removing noise and grain from digital photographs and scanned film images. It is especially useful in reducing noise produced by digital images taken with high ISO values or under low light conditions. Noise Ninja runs on Windows, Mac OS X and Linux (standalone only). It is available as a standalone application, and as a plug-in for Photoshop, Photoshop Elements, and compatible hosts. Noise Ninja is available from Picturecode.com on the Internet. The basic program cost is $34.95 and the "pro bundle" version cost is $79.95.

Long exposure digital images contain a different type of noise compared to "normal" images taken by digital cameras under conditions that induce excessive noise by using high ISO values or under low light conditions, or the combination of the two. The noise contained in long exposure digital images consists of hot pixel noise and what appears to be red and blue blobs of color 10 to 20 pixels in extent. Both Adobe Photoshop and Corel Paint Shop Pro IX contain noise reduction features. Corel Paint Shop Pro IX was evaluated in the October/November 2007 issue of the ASTROGRAPH. In this article the author compares Noise Ninja and Corel Paint Shop Pro IX with normal processing. Two images are used for these comparisons. An image of the Helix Nebula that contains very little noise and an image of M65/M66 that contains a large amount of noise. Figure 1 is a portion of an unprocessed image of M65/M66. Figure 2 shows basic background normalization and level processing that only makes the noise more objectionable. Figures 3, 4, and 5 show the results of several noise reducing efforts. The author feels that, overall, Noise Ninja does the best job of decreasing the noise while maintaining the sharpness of the image. All noise reduction processing tends to "soften" the image. The less noise in an image the less processing that should be used. Figure 6 shows a relatively clean image of the Helix Nebula. Figure 7 shows basic background normalization and level processing. Figures 8 and 9 show the results of applying two different noise reduction programs. Both programs improve the image, but in the author's opinion Noise Ninja yields a slightly smoother image.

Above, Figure 1: Original cropped image of M65 and M66 taken with a Hutech modified Canon 40D camera and Tele Vue NP-127 5 inch refractor. Exposure was 20 minutes at 400ASA.

Above, Figure 2: Same image as Figure 1 after background normalization and level adjustments. Noise is very evident in this image.

Above, Figure 3: Same image as Figure 2 after noise filters, referred to as "despeckle" and "dust and scratches" in Photoshop 7, were applied to the image. Noise in the form of red and blue color blobs remain in the image.



Above, Figure 4: Same image in Figure 1 after background normalization, “Digital Camera Noise Removal” in Corel Paint Shop Pro IX , and levels adjustments were applied to the image. Noise in the form of red and blue color blobs and fine dust like noise remain in the image.

Above, Figure 5: Same image in Figure 1 after 2 passes in Noise Ninja. Background normalization and levels adjustments were applied to the image. Some noise in the form of fine dust like noise remain in the image.

Above, Figure 6: Original cropped image of the Helix Nebula taken with a Canon 350D camera and Tele Vue NP-101 4 inch refractor. Exposure was 20 minutes at 400ASA.

Above, Figure 7: Same image in Figure 6 after background normalization and level adjustments. Noise in the form of grain is apparent in the nebula.

Above, Figure 8: Same image in Figure 6 after background normalization, “Digital Camera Noise Removal” in Corel Paint Shop Pro IX, and levels adjustments were applied to the image. This image has a smoother appearance compared to Figure 7.

Above, Figure 9: Same image in Figure 6 after 1 pass in Noise Ninja using default settings. Background normalization, and levels adjustments were applied to the image. This image has a smoother appearance compared to Figure 7 and is slightly better than Figure 8.

Above: NGC2362 and region photographed by Lee C. Coombs on 5 February 2003 using a 10 inch F/5 Newtonian. Exposure was 15 minutes on Ektachrome 200 professional film.

Above: M28 and region photographed by Lee C. Coombs on 2 July 2002 using a 10 inch F/5 Newtonian. Exposure was 30 minutes on Ektachrome 200 professional film.

Astrophotography for August and September

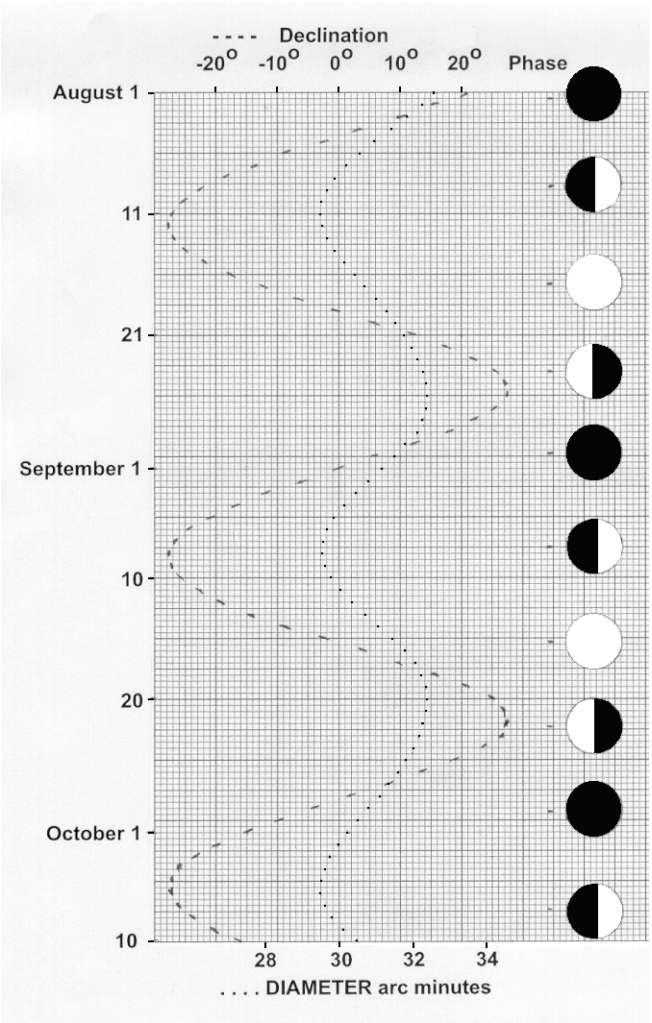
by

Ralph Proctor

Mercury begins August lost in the Sun's glare, but emerges from the Sun's glare in early August as an evening object low in the western sky. Mercury mover higher in the western sky and reaches a greatest eastern elongation of 27 degrees on 11 September when it will be in poor photographic position with a declination of minus 8 degrees. During the remainder of September Mercury moves lower in the eastern sky and by the end of September disappears into the Sun's glare.

Venus begins August as an evening object low in the western sky. During August and September Venus moves higher in the western sky.

Lunar Declination and Diameter:



The Moon's waning crescent and last quarter phases will be located high on the ecliptic and in excellent photographic position during August (August 26) and September (September 22), with an apparent declination of up to +28 degrees.

Mars begins August as an evening object low in the western sky in the constellation Leo. Mars moves into the constellation Virgo in late September. During August and September Mars moves lower in the western sky, decreases in brightness from magnitude +1.7 to +1.6, and decreases in diameter from 4.1 to 3.8 arc seconds.

Jupiter begins August as an evening object high in the western sky in the constellation Sagittarius, having reached opposition with the Sun on 9 July. During August and September Jupiter moves lower in the western sky, decreases in brightness from magnitude -2.7 to -2.3, and decreases in diameter from 46.7 to 39.8 arc seconds.

Saturn begins August as an evening object low in the western sky in the constellation Leo, and by mid-August is lost in the Sun's glare. Saturn emerges from the Sun's glare as a morning object low in the eastern sky during the last week in September. During August and September Saturn decreases in brightness from magnitude +0.8 to +1.0, and decreases in diameter from 16.3 to16.2 arc seconds.

Uranus begins August as a morning object high in the eastern sky in the constellation Aquarius, reaching opposition with the Sun on 13 September. During August and September Uranus increases in brightness from magnitude +5.8 to + 5.7, and increases in diameter from 3.64 to 3.68 arc seconds. Uranus is located at R.A. 23 hours 31.0 minutes declination -04 degrees 00 minutes on 15 August and at R.A. 23 hours 26.7 minutes declination -04 degrees 28 minutes on 15 September.

Neptune begins August as an evening object high in the western sky in the constellation Capricornus, reaching opposition with the Sun on 15 August. During August and September Uranus moves lower in the western sky, decreases in brightness from magnitude +7.8 to + 7.9, and decreases in diameter from 2.35 to 2.34 arc seconds. Neptune is located at R.A. 21 hours 41.3 minutes declination -14 degrees 14 minutes on 15 August and at R.A. 21 hours 38.2 minutes declination -14 degrees 29 minutes on 15

September.

Pluto begins August as an evening object high in the western sky in the constellation Sagittarius. During August and September Pluto moves lower in the western sky, having reached opposition with the Sun on 20 June. During August and September Pluto decreases in brightness from magnitude +13.9 to +14.0. Pluto is located at R.A. 17 hours 53.8 minutes declination -17 degrees 12 minutes on 15 August and at R.A. 17 hours 53.2 minutes declination -17 degrees 21 minutes on 15 September.

Events:

Antares will be occulted by the Moon on 10 August (19 hours universal time) for the central portion of South America, the southern tip of Africa, and Madagascar; and on 7 September (03 hours universal time) for the eastern portion of Australasia, Polynesia, and the southwestern portion of South America.

Neptune will be occulted by the Moon on 16 August (19 hours universal time) for the northeastern portion of Africa, the eastern portion of Europe, and the western and central portions of Asia; and on 13 September (02 hours universal time) for all but the northwestern portion of North America, the northern tip of South America, Iceland, and the United Kingdom.

The Sun will undergo a total eclipse on 1 August for the northern and eastern portions of North America, Greenland, northern Europe, and all of Asia except Japan. The eclipse begins at 8 hours 04.1 minutes and ends at 12 hours 38.4 minutes universal time. Central eclipse at local apparent noon occurs at 9 hours 47.4 minutes. The shadow of the total eclipse begins in China, travels northwest across Russia, then crosses the northern portion of Greenland, and ends in north central Canada.

The Moon will undergo a partial eclipse on 16 August for Antarctica, all Australasia except New Zealand, all but the northeastern portion of Asia, Africa, and all but the northeastern portion of South America. The eclipse begins (Penumbra contact) at 18 hours 23.1 minutes and ends at 23 hours 57.1 minutes universal time. Umbra contact begins at 21 hours 10.1 minutes and ends at 22 hours 44.6 minutes. Mid-eclipse occurs at 21 hours 10.1 minutes universal time.

MINOR PLANETS

		position			
		15 August		15 September	
Planet	Magnitude	R.A.	Decl.	R.A.	Decl.
Ceres	08.7 - 08.8	08 hr 03.7 min	+24 deg 12 min	09 hr 00.1 min	+22 deg 10 min
Pallas	09.4 - 08.6	04 hr 27.1 min	- 05 deg 08 min	05 hr 05.9 min	- 11 deg 48 min
0Juno	10.6 - 11.1	16 hr 57.4 min	- 07 deg 29 min	17 hr 10.7 min	- 10 deg 11 min
Vesta	07.8 - 06.9	02 hr 51.7 min	+07 deg 36 min	03 hr 02.1 min	+06 deg 49 min

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Volume No. 23 issue 4 and 5
Volume No. 24 issue 5 and 6
Volume No. 25 issue 1, 2, 4, and 6
Volume No. 26 issue 1, 2, 3, 5, and 6
Volume No. 27 issue 2, 3, 4, 5, and 6
Volume No. 28 issue 5 and 6
Volume No. 29 issue 1, 2, 3, 4, 5, and 6
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Volume No. 31 issue 1, 2, 3, 4, 5, and 6
Volume No. 32 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: Canon 300mm lens and Hutech modified Canon 40D Camera

by

Robert C. Price

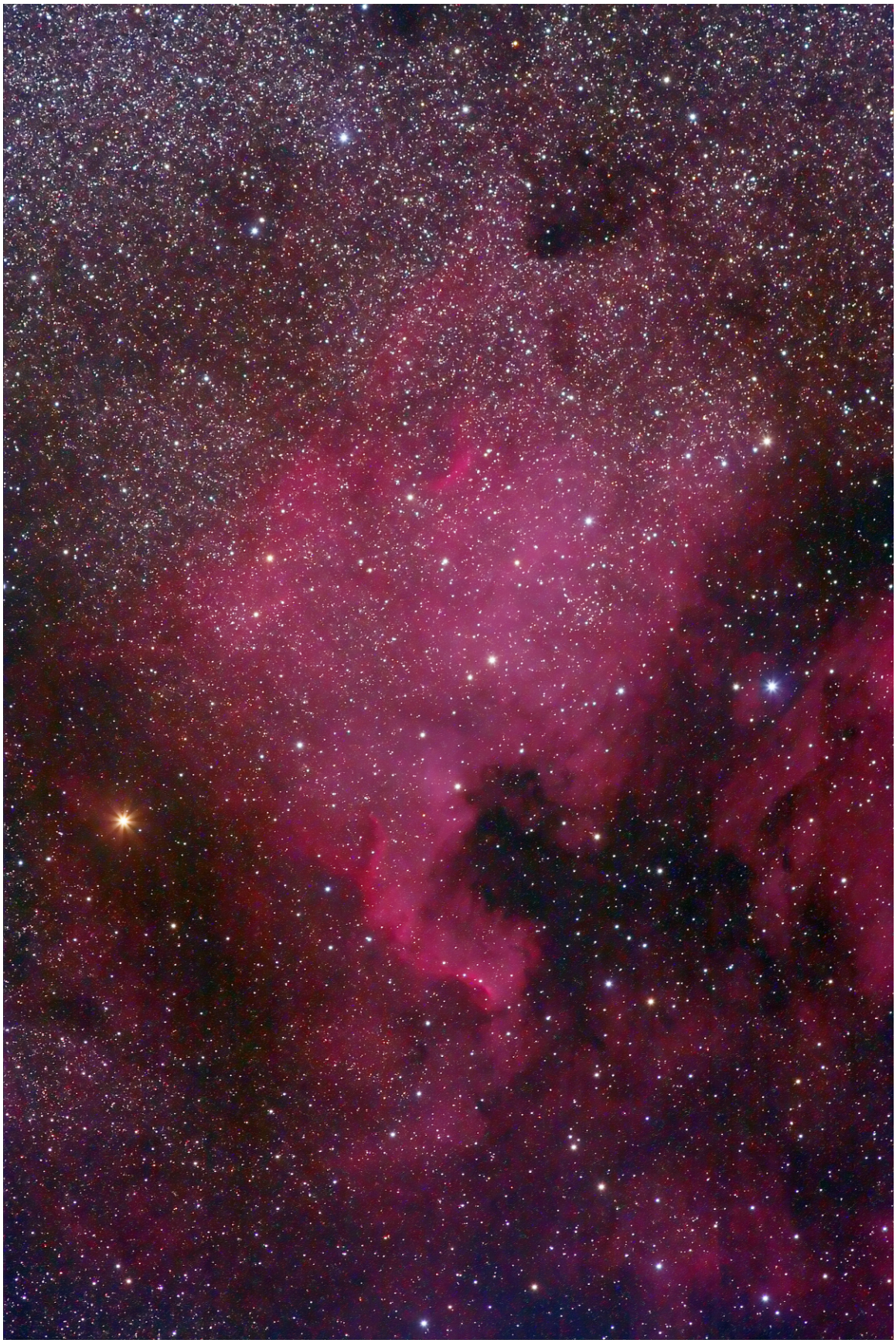
The product being evaluated is the combination of a Canon 300mm F/4L IS (image stabilized) lens and a Hutech modified Canon 40D digital camera. The canon 300mm F/4 lens was evaluated in the February/March 2006 issue of the ASTROGRAPH and the Hutech modified Canon 40D was evaluated in the December 2007/January 2008 issue of the ASTROGRAPH. For this evaluation the image stabilization was turned off and the lens was focused using the Canon live view function at 10 times magnification. The Canon 300mm EF lens has automatic focus that includes a manual mode that allows the area for focusing to be confined to the center of the image. The lens and digital camera do have the ability to focus on the Moon, bright planets, and bright stars. Bright stars required several attempts for the automatic focus to successfully achieve focus. The 300mm F/4 lens consists of 15 elements in 11 groups. Two of the elements are ultra-low dispersion glass elements to aid in the reduction of chromatic aberration. The lens is 8.7 inches long and weights 2.6 pounds. The lens comes with a tripod collar that allows attaching the lens to a tripod mount. Shown in Figure 1 is the lens mounted on a Losmandy dovetail plate by means of this tripod collar. This is a very popular lens for wildlife and sports photography because of its stabilization and long focal length. This lens is also available with a focal ratio of F/2.8 at over three times the cost of the F/4 lens. This 300mm lens is a type EF lens for Canon EOS model cameras. The EF lens only fits the newer Canon cameras, designated by the term EOS. Older lenses for film cameras such as the Canon AE-1 are type FD lenses and can fit the Canon EOS cameras with an adapter that contains an optical element that increases the focal length of the lens by about 25 percent.

Twenty minute exposures of the Veil Nebula (NGC6960) Figure 2, the Lagoon and Trifid Nebula (M8 and M20) Figure 3, and the North American Nebula (NGC7000) Figure 4 were taken with the 300mm lens. All images showed that image quality, especially at the edge of the frame, was very good. Image illumination was also especially uniform across the entire frame. In summary the author concludes that this lens and camera are suitable for astrophotography. The Canon 300mm F/4 IS lens is optically fast and provides sharp, well color-corrected, star images over the field covered by the Canon 40D camera, 14.8mm by 22.2mm.

Above, Figure 1: Canon 300mm F/4 telephoto lens with Hutech modified Canon 40D attached to a Losmandy dovetail plate.

Above, Figure 2: Veil Nebula, NGC6992, taken with a Canon 300mm F/4 lens at F/5.6 on 28 July 2008. This image is a combination of two 20 minute exposures using a Hutech modified Canon 40D camera at 400ASA.

Above, Figure 3: Lagoon and Trifid Nebula (M8 and M20), taken with a Canon 300mm F/4 lens at F/5.6 on 27 July 2008. This image is a combination of two 20 minute exposures at 100ASA and one 20 minute exposure at 400ASA using a Hutech modified Canon 40D camera.



Above, Figure 4: North American Nebula, NGC7000, taken with a Canon 300mm F/4 lens at F/5.6 on 28 July 2008. This image is a combination of three 20 minute exposures using a Canon 40D camera at 400ASA.

Above: NGC7822 and region photographed by Lee C. Coombs on 18 September 2006 using a 70mm F/5.1 Tele Vue Pronto. Exposure was 45 minutes on Ektachrome 200 professional film.