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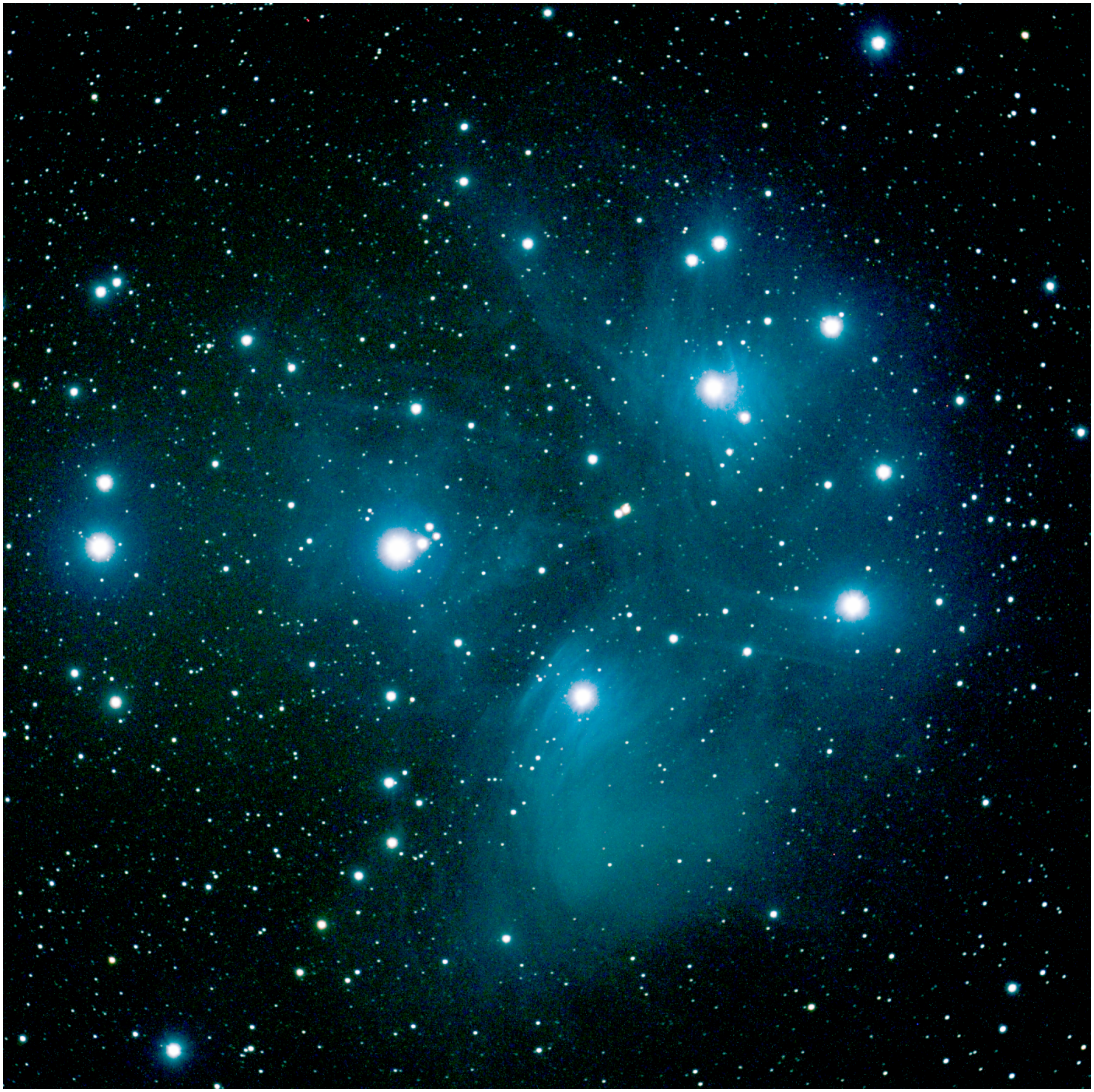

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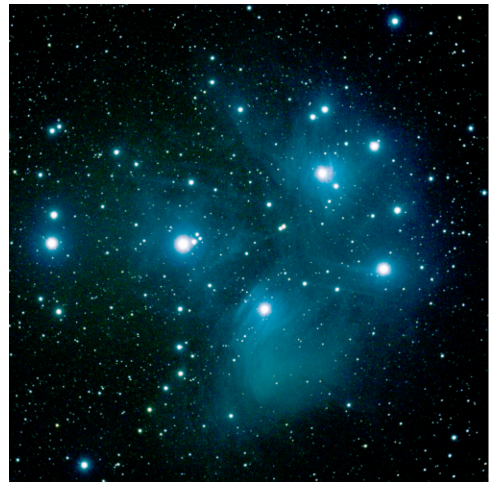

COVER PHOTOGRAPH

Object..M45, the Pleiades
Photographer..Robert C. Price
Instrument.....................Tele Vue NP-101, 540mm F.L F/5.4 refractor
Exposure/Camera..................1171 seconds/Canon 350D at 400ASA
Date...17 September 2006
Location...............Just south of Blue Knob State Park in Pennsylvania

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VOLUME 38 No. 2
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Product Evaluation: Tele Vue NP-101

by

Robert C. Price

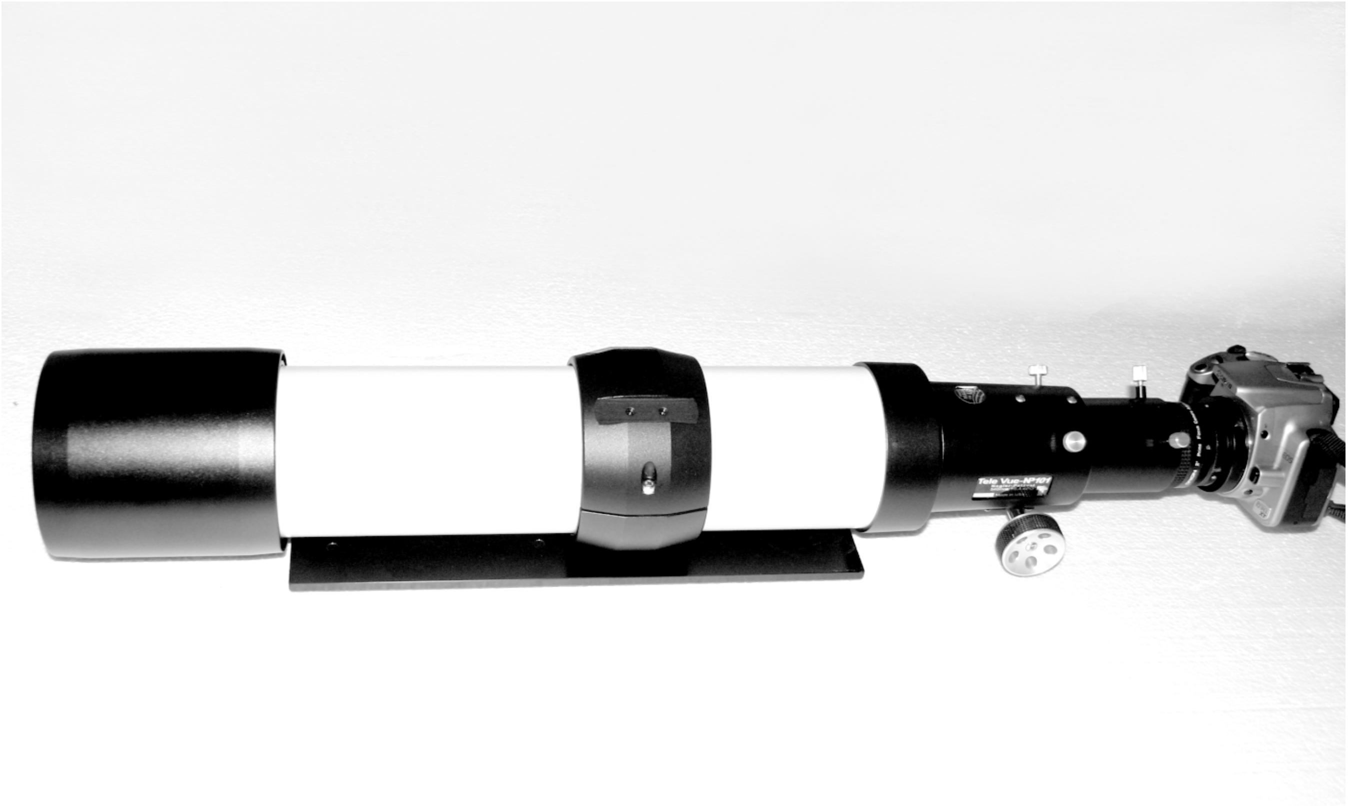
The Tele Vue NP-101 is a refractor telescope utilizing a 4-element Nagler-Petzval design. Its aperture is 101mm and its focal length is 540mm, giving it an F-value of 5.4. The Tele Vue NP-101 weighs 10 pounds and the optical tube assembly is 26 inches long. The Tele Vue NP-101 comes in a hard shell carry case and the optical tube assembly contains a screw-on lens cap and sliding dew shield. Figure 1 shows the Tele Vue NP-101 in its case. The NP-101 also comes with a 2 inch focuser, a 2 inch diagonal, a 1.25 inch eyepiece adapter, and a ring mount with three 1/4-20 inch holes for mounting the optical tube assembly to a telescope mount or a dovetail plate. Figure 2 shows the Tele Vue NP-101 mounted to a G-11 dovetail plate.

Initial testing on some distant land features revealed that the author's two inch prime focus camera adapter did not position the camera at infinity focus when the adapter was inserted all the way into the NP-101 eyepiece holder and the focuser was moved to the maximum out position. The discrepancy was about 1/4 inch. The author's two inch prime focus camera adapter has an .8 inch lip that extends the T-adapter. For the initial backyard tests the camera adapter was moved out of the eyepiece holder to achieve proper focus. Having the camera adapter not resting against the eyepiece holder is not desired because proper focus can only be maintained during camera rotation when the camera adapter lip is against the eyepiece holder tube. Figure 3 shows two .4 inch T-thread extenders that were added to achieve proper focus when the prime focus adapter is in contact with the eyepiece holder.

The author took some test exposures from his backyard in the light polluted suburbs 28 miles south of Washington D.C. Figure 4 is a 4 minute exposure with a Canon 350D of the Ring Nebula, M57. This image showed some nice detail in the nebula and one central star. This exposure showed well formed star images from the center to the edge of the frame. Star images showed no hint of coma, astigmatism, spherical aberration, or chromatic aberration. In summary the Tele Vue NP-101 is an excellent lens for astrophotography

On the night of 16 and 17 September the author took a number of images with the NP-101 and Canon 350D from a location just south of Blue Knob State Park, Pennsylvania. Figures 5 and 6 show two of the images taken on this night

Above: Figure 1: NP-101 evaluation. Shown above is the Tele Vue NP-101 in its supplied case.



Above: Figure 2: NP-101 evaluation. Shown above is the Tele Vue NP-101 attached to a Losmandy dovetail plate.

Above: Figure 3: NP-101 evaluation. Shown above is the Tele Vue NP-101 focuser, the author's Orion 2 inch prime focus camera adapter, 2 extenders, and a Canon 350D camera.

Above: Figure 4: NP-101 evaluation. Shown above is the center portion of an image centered on the Ring Nebula, M57. Photographed by Robert Price on 15 August 2006 using a Canon 350D and Tele Vue NP-101. Exposure was 237 seconds at 400ASA. Image processing was limited to level adjustments.

Above: Figure 5: NP-101 evaluation. Shown above is a half-frame image centered on the Double Cluster. Photographed by Robert Price on 16 September 2006 using a Canon 350D and Tele Vue NP-101. Exposure was 358 seconds at 400ASA. Image processing was limited to level adjustments.

Above: Figure 6: NP-101 evaluation. Shown above is a half-frame image centered on the Orion Nebula, M42. Photographed by Robert Price on 17 September 2006 using a Canon 350D and Tele Vue NP-101. Exposure was 560 seconds at 400ASA. Image processing included level, curve, and color adjustments.

Above: M5 photographed by Lee C. Coombs on 15 June 2001 using a 10 inch F/5 Newtonian. Exposure was 31 minutes on Ektachrome 200 professional film.

Above: M67 photographed by Lee C. Coombs on 3 March 2002 using a 10 inch F/5 Newtonian. Exposure was 25 minutes on Ektachrome 200 professional film.

Astrophotography for October and November

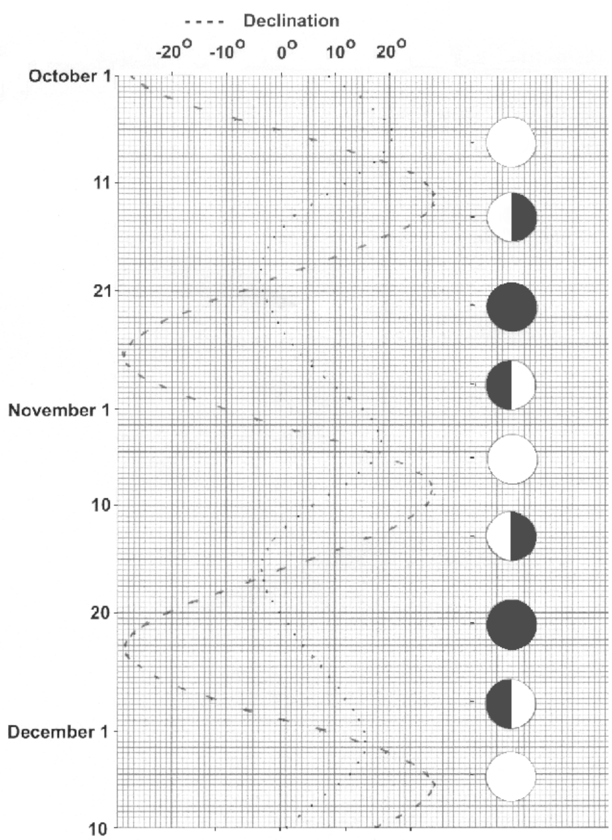
by

Ralph Proctor

Mercury begins 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 25 degrees on 17 October when it will be in poor photographic position with a declination of minus 20 degree. During the remainder of October Mercury moves lower in the western sky and disappears into the Sun's glare in early November, reaching inferior conjunction on 8 November. Mercury emerges from the Sun's glare in mid-November as a morning object low in the eastern sky.

Venus begins October lost in the Sun' glare and remains lost in the Sun's during October and November. Venus reaches superior conjunction with the Sun on 27 October.

Lunar Declination and Diameter:



The Moon's waning gibbous phase will be located high on the ecliptic and in excellent photographic position during October (October 12) and November (November 9), with an apparent declination of up to +28 degrees.

Mars begins October lost in the Sun's glare and remains lost in the Sun's glare during October and November. Mars reaches conjunction with the Sun on 23 October. During October and November Mars increases in brightness from magnitude + 1.7 to + 1.6, and increases in diameter from 3.6 to 3.7 arc seconds.

Jupiter begins October as an evening object low in the western sky in the constellation Libra. During October Jupiter moves lower in the western sky and disappears into the Sun's glare in early November, reaching conjunction with the Sun on 21 November. During October and November Jupiter decreases in brightness from magnitude -1.8 to -1.7, and decreases in diameter from 32.2 to 31.0 arc seconds.

Saturn begins October as a morning object low in the eastern sky in the constellation Leo. During October and November Saturn moves higher in the eastern sky, increases in brightness from magnitude +0.5 to + 0.4, and increases in diameter from 16.9 to 18.7 arc seconds.

Uranus begins October as an evening object high in the western sky in the constellation Aquarius. 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 3.66 to 3.52 arc seconds. Uranus is located at R.A. 22 hours 52.4 minutes declination -8 degrees 03 minutes on 15 October and at R.A. 22 hours 50.4 minutes declination -8 degrees 4 minutes on 15 November.

Neptune begins October as an evening object high in the western sky in the constellation Capricornus. During October and November Neptune moves lower in the western sky, remains constant in brightness at magnitude +7.9, and decreases in diameter from 2.32 to 2.25 arc seconds. Neptune is located at R.A. 21 hours 18.4 minutes declination -15 degrees 55 minutes on 15 October and at R.A. 21 hours 18.5 minutes declination -15 degrees 55 minutes on 15 November.

Pluto begins October as an evening object low in the western sky. During October and November Pluto moves lower in the western sky and remains constant in brightness at magnitude + 14.0. Pluto is located at R.A. 17 hours 36.9 minutes declination -16 degrees 12 minutes on 15 October and at R.A. 17 hours 40.2 minutes declination -16 degrees 22 minutes on 15 November.

Events:

Uranus will be occulted by the Moon on 5 October (00 hours Universal Time) for the southern part of South America and most of central Africa; on 1 November (8 hours Universal Time) for southeastern Australia and New Zealand; and on 28 November (15 hours Universal Time) for southern Africa, Madagascar, most of India, and the eastern portion of southeast Asia.
Juno will be occulted by the Moon on 19 October (18 hours Universal Time) for the Hawaiian Islands and southern South America.
Antares will be occulted by the Moon on 25 October (14 hours Universal Time) for central and eastern South America.
Spica will be occulted by the Moon on 18 November (03 hours Universal Time) for eastern Africa and the southern tip of New Zealand.

Mercury will transit the Sun on 8 and 9 November for South America, all North America except the extreme northern part of Canada, Antarctica, New Zealand, Australia, and eastern Asia. The entire transit will be visible in eastern Australia, New Zealand, part of Antarctica, the western part of North America, the western part of Mexico, the southern coast of Chile, and most of the Pacific Ocean. Ingress exterior contact occurs at 19 hours 12 minutes 01.7 seconds Universal Time. Ingress interior contact occurs at 19 hours 13 minutes 54.6 seconds. Egress interior contact occurs at 00 hours 08 minutes 13.6 seconds 9 November. Egress exterior contact occurs at 00 hours 10 minutes 06.5 seconds.

MINOR PLANETS

		position			
		15 October		15 November	
Planet	Magnitude	R.A.	Decl.	R.A.	Decl.
Ceres	08.4 - 09.2	21 hr 18.0 min	- 28 deg 22 min	21 hr 35.6 min	-25 deg 29 min
Pallas	10.3 - 10.6	18 hr 27.3 min	+06 deg 02 min	18 hr 59.1 min	+02 deg 28 min
Juno	10.7 - 10.9	11 hr 50.8 min	+00 deg 44 min	12 hr 34.8 min	- 02 deg 48 min
Vesta	07.9 - 08.0	12 hr 28.5 min	+02 deg 14 min	13 hr 26.0 min	- 03 deg 20 min

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Camera Comparison Part 2

by

Robert C. Price

On the night of 16 September 2006 Alan Defelice, Andrew Jezioro, and the author were able to take several long astronomical exposures centered on M31 and M45 using a Canon 350D, a Canon 20D, and a Canon D5. These exposures were taken from Gene Well's farm located near Blue Knob State Park in Pennsylvania. This location provides a dark sky. This camera comparison utilized a Tele Vue NP-101. The NP-101 is a 540mm focal length F/5.4 refractor. The cameras being evaluated are all digital SLR cameras. The Canon 350D and Canon 20D are consumer oriented digital cameras currently costing about $1000, while the Canon 5D is a more professional full-frame camera costing about $3200. A specific camera comparison is as follows:

The Canon 350D:
Specified size: 8.0 megapixel
Image size: 3456 by 2304 pixels
Image sensor: 22.2 by 14.8mm CMOS
Camera body weight: 17.1 oz.
Camera body size: 3.7 by 5.0 by 2.7 inches
ISO range 100 to 1600
Mirror lock up: yes

The Canon 20D:
Specified size: 8.2 megapixel
Image size: 3504 by 2336 pixels
Image sensor: 22.5 by 15.0mm CMOS
Camera body weight: 24.2 oz.
Camera body size: 4.2 by 5.7 by 2.8 inches
ISO range 100 to 1600

The Canon D5:
Specified size: 12.8 megapixel
Image size: 4368 by 2912 pixels
Image sensor: 35.8 by 23.9mm CMOS
Camera body weight: 28.6 oz.
Camera body size: 4.4 by 6.0 by 3.0 inches
ISO range 100 to 1600
Mirror lock up: yes

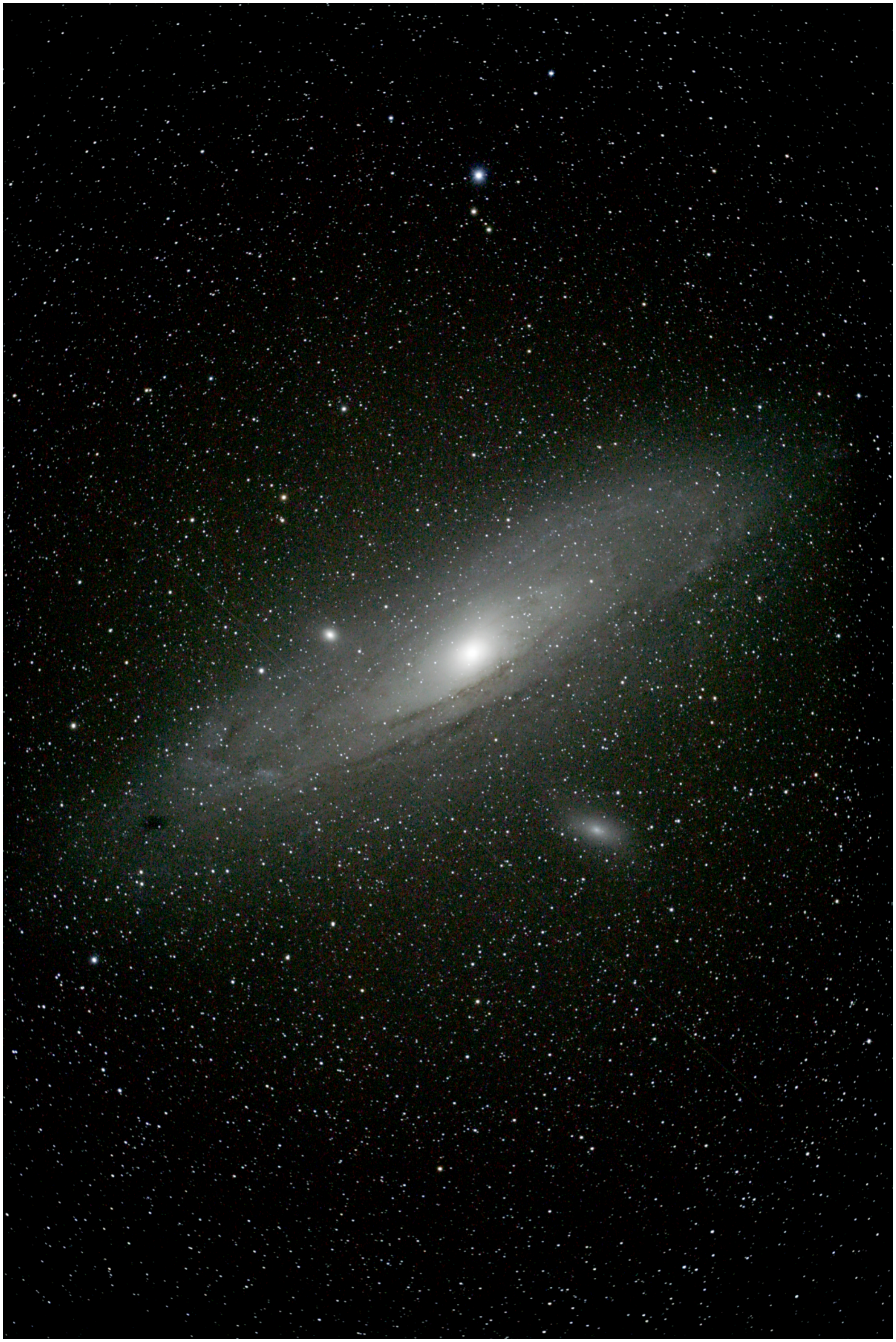
The first two comparison exposures were taken with a Canon 350D and a Canon 20D. Exposures were 647 seconds with the Canon 20D, Figure 1, and 508 seconds with the Canon 350D, Figure 2. Both cameras were set to 400ASA and the image processing was limited to level adjustments. Other than the slight difference in exposure the only other difference was that the Canon 20D utilized its noise reduction feature. This feature takes an identical time exposure and subtracts that exposure from the original exposure to eliminate camera noise. Other than a slight difference in color hue, both Figure 1 and Figure 2 seem identical.

The second camera comparison was between a Canon 350D and the full 35mm size sensor frame Canon D5. Exposures were 415 seconds with the Canon 350D, Figure 3, and 596 seconds with the Canon D5, Figure 4. Both cameras were set to 400ASA and the image processing was limited to level adjustments. Figure 3 is shown to scale with respect to Figure 4. This comparison shows just how much more area the full 35mm frame Canon D5 covers compared to other digital SLR cameras whose sensor is about half the physical size of a 35mm frame. Other than the slight difference in exposure the only other difference was that the Canon D5 utilized its noise reduction feature. This feature takes an identical time exposure and subtracts that exposure from the original exposure to eliminate camera noise. There is a definite difference in color hue between the image taken with the Canon 350D and that taken with the D5. The outer arms of the Andromeda Galaxy have a bluish hue in the image taken with the Canon 350D while the same arms have almost no color in the image taken with the Canon D5. It is difficult to account for the color difference especially since both images were processed by adjusting only the levels, no color adjustments were made. Looking at the unprocessed image showed the same difference in hue, the unprocessed Canon 350D image showed the outer arms of the Andromeda Galaxy to have a blue hue. Examination of the color histograms of both unprocessed images from the Canon 350D and Canon D5 showed that both images had almost perfect registration of the red, blue, and green channels. Actual color level sampling of both images verified the visual impression that the outer arms of the Canon 350D image contained slightly more blue.

Above: Figure 1: camera comparison. Shown above is a full frame image centered on M45. Photographed by Alan Defelice and Robert Price on 17 September 2006 using a Canon 20D and Tele Vue NP-101. Exposure was 647 seconds at 400ASA. Image processing was limited to level adjustment, no color was adjusted.

Above: Figure 2: camera comparison. Shown above is a full frame image centered on M45. Photographed by Robert Price on 17 September 2006 using a Canon 350D and Tele Vue NP-101. Exposure was 508 seconds at 400ASA. Image processing was limited to level adjustment, no color was adjusted.

Above: Figure 3: camera comparison. Shown above is a full frame image centered on M31. Photographed by Robert Price on 17 September 2006 using a Canon 350D and Tele Vue NP-101. Exposure was 415 seconds at 400ASA. Image processing was limited to level adjustment, no color was adjusted.



Above: Figure 4: camera comparison. Shown above is a full frame image centered on M31. Photographed by Andrew Jezioro and Robert Price on 17 September 2006 using a Canon D5 and Tele Vue NP-101. Exposure was 596 seconds at 400ASA. Image processing was limited to level adjustment, no color was adjusted.

Above: IC 1318 photographed by Lee C. Coombs on 2 July 2005 using a 10 inch F/5 Newtonian. Exposure was 30 minutes on Ektachrome 200 professional film.