

The High Desert Observer

February 2017



The Astronomical Society of Las Cruces (ASLC) is dedicated to expanding public awareness and understanding of the wonders of the universe. ASLC holds frequent observing sessions and star parties and provides opportunities to work on Society and public educational projects. Members receive the *High Desert Observer*, our monthly newsletter, plus membership to the Astronomical League, including their quarterly publication, *Reflector*, in digital or paper format.

Individual Dues are \$30.00 per year
Family Dues are \$36.00 per year
Student (full-time) Dues are \$24.00

Annual dues are payable in January. Prorated dues are available for new members. Dues are payable to ASLC with an application form or note to: Treasurer ASLC, PO Box 921, Las Cruces, NM 88004. Contact our Treasurer, Patricia Conley (treasurer@aslc-nm.org) for further information.

ASLC members receive electronic delivery of the HDO and are entitled to a \$5.00 (per year) Sky and Telescope magazine discount.



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February Meeting --

Our next meeting will be on **Friday, February 24**, at the Good Samaritan Society, Creative Arts Room starting at 7:00 p.m.

The speaker will be Gary Starkweather
Topic: Mosaics and Astro Imaging.

Member Info Changes

All members need to keep the Society informed of changes to their basic information, such as name, address, phone number, or email address. Please contact Treasurer@aslc-nm.org and jkile3916@gmail.com with any updates.

Events

ASLC hosts deep-sky viewing and imaging at our dark sky location in Upham. We also have public in-town observing sessions at both the International Delights Cafe (1245 El Paseo) and at Tombaugh Observatory (on the NMSU Campus). All sessions begin at dusk.

At our Leasburg Dam State Park Observatory, we hold monthly star parties. Located just 20 miles north of Las Cruces, our 16" Meade telescope is used to observe under rather dark skies. Please see *Calendar of Events* for specific dates and times.

What's Up ASLC?

February 2017

We had a nice group at January's meeting, which included a few new members and guests. Then, we extended the meeting at Farley's for an after-meeting refreshment. One topic of conversation was the upcoming August pilgrimage to Wyoming for the solar eclipse. But, we also talked about this summer's star parties at the Cosmic Campground north of Silver City and the Prude Ranch near Fort Davis, Texas, i.e., the Texas Star Party. I went to both in 2016. This year, however, both gatherings will happen during the same week of May 21 to 28.



Since I won an RV site in the TSP lottery, I'm going to the Texas Star Party; this will be my fifteenth trip to the ranch. Registration and camping fees are charged for this event, but your money buys access to vendors, speakers, great door prizes, their chow hall, a late-night snack bar, contests, a swap meet, and creature comforts such as showers and electricity. Beyond toilets, none of the aforementioned will greet you at the Cosmic Campground. Although admission and camping are free, be prepared to rough it. In other words, bring lots of beer. :^)

We usually have the same small group of ASLC members that attend these types of events, but I invite everyone to consider one of these summer gatherings. If you choose the TSP, you'll need to contact them right away to secure lodging or camping if you want to stay on site. Fort Davis has several motels for off-site attendees, but they usually fill up quickly. For more information go to <https://texasstarparty.org/> If you're thinking Cosmic Campground instead, contact Steve Barkes at sbarkes@comcast.net for details. Speaking for the affirmed star-party goers, we hope to see you there if only for a few nights!

Howard J. Brewington
MVRC President

* * *

Outreach

Outreach is a very important part of ASLC. We are always looking for more volunteers to help us educate the public. Even if you do not have a portable telescope to bring to the events, please consider attending our public outreach programs to help answer questions, share knowledge and point out objects in the sky.

Outreach Events

by Jerry McMahan

Tombaugh Elementary School, Thursday, February 2

January Leasburg event was canceled due to bad weather, but we were back in business for a busy week in early February.

Tombaugh Elementary School is usually one of our busiest events and this was no exception. Chuck Sterling started on the Moon, planning to go to other objects, but never got a chance due to long lines waiting to look through the scope.

I had Venus and planned to use a higher magnification, but never got the chance to change eyepieces. Still, even at a magnification of 48, the crescent phase was obvious, prompting many people to assume they were looking at the Moon (almost in the same phase) until it was explained to them.

Tracy Stuart was on the Orion Nebula with his 8 inch. He told one girl about a "old star", meaning Betelgeuse. She wanted to see it. He told her to come back when the line died down. She did return, demonstrating her interest in what she was being told.

Howard Brewington brought his home made 8 inch Dobsonian. He even ground the mirror himself. The mount had a rotatable tube, very convenient for a Newtonian scope, and could be moved up and down the mount to achieve balance. I am not sure that it qualifies as a Dobsonian. Maybe it is a Brewsonian.

Ed Montes also came to help out by answering questions and giving explanations. The New Mexico State University Astronomy Department also participated with mounted Binoculars.

Tombaugh Observatory Open House, Friday, February 3

Steve Shaffer and Trish Conely attended a January 20 open house which was canceled due to clouds. They did give some friends a tour of our dome and the 12.5 inch Cassegrain.

We had better luck on February third, however. There were intermittent clouds, but the Moon was still visible, even when thin clouds were in front. The Astronomy department viewed Venus, the Orion Nebula and the double star Castor.

Moongaze, Saturday, February 4

Our third event, in three days, was our Moongaze at the International Delights Cafe. We had a clear night, but a smaller than usual turnout of Observers. Many of those who did look through the scopes were very enthusiastic about what they were seeing. It was a "You made my day" kind of reaction.

Howard Brewington brought his 8 inch Brewsonian and observed the Moon. I was on the Moon with a higher magnification with the ETX 125. Chuck Sterling had his 10 inch on Venus, the Moon, and the Orion Nebula. The evening was well worth the effort.

* * *

Calendar of Events (Mountain Time - 24 hr. clock)

Feb	01	18:30	Tombaugh Elementary Star Party
	03	21:19	First Quarter Moon
	03	19:00	NMSU: Tombaugh Observatory Open House
	04	17:30	OUTREACH; MoonGaze, International Delights Café
	09	17:30	Dona Ana Elementary Star Party
	10	17:32	Full Moon
	10	18:00	Penumbral Lunar eclipse (Moon rises in eclipse)
	16	18:30	Desert Hills Elementary Star Party
	18	18:00	OUTREACH; Dark Sky Observing at Leesburg Dam State Park
	18	12:33	Last Quarter Moon
	24	19:00	ASLC Monthly Meeting; Good Samaritan Society, Activities Meeting Room
	26	07:58	New Moon
	26	12:00	Annular Solar Eclipse (visible from S. Atlantic, Not North America)
Mar	01	17:50	Sun Sets
	03	18:30	Mesilla Valley Christian School
	03	19:00	NMSU: Tombaugh Observatory Open House
	04	17:30	OUTREACH; MoonGaze, International Delights Café
	05	04:32	First Quarter Moon
	12	00:00	Daylight Saving Time Begins ("spring forward")
	12	08:53	Full Moon
	18	19:00	OUTREACH; Dark Sky Observing at Leesburg Dam State Park
	20	04:29	Spring Equinox - Spring Begins
	20	09:59	Last Quarter Moon
	24	19:00	ASLC Monthly Meeting; Good Samaritan Society, Activities Meeting Room
	27	20:57	New Moon

Be sure to visit our web site for the latest updates: www.aslc-nm.org

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Announcements

1. February's ASLC speaker is ASLC Member, Gary Starkweather. The topic will be Mosaics and Astro Imaging. The presentation includes imaging equipment, capturing mosaic data, image processing, data management, image alignment, layering, and finishing adjustments. See Photo of the Month.

2. The agreement to use the facilities at Good Sam for our meeting prohibits members from bringing in ANY food or beverages from outside, except water in a container with a screw lid. Take note: no more Starbucks or Saturn Cookies!

* * *

Back at the Telescope

by Bert Stevens

How to Photograph the 2017 August 21 Total Solar Eclipse.

A total solar eclipse is one of the most beautiful and awesome events in the sky. There are no words that can adequately describe a total eclipse and photographs can never really reproduce the sights and sounds of being in the path of totality. Even so, if you are going to the zone of totality, you will want to try to record the spectacle in pictures. This article will attempt to outline what you will need to do to take those pictures.

Photographing the total solar eclipse can be as easy or as difficult as you wish. The pictures you will treasure most will not be taken with the most expensive or biggest equipment, but they will be the ones taken by you. Before you can take those pictures, there are many decisions to be made and much work to be done.

The first decision that you will have to make is what you are going to do at the eclipse. Totality lasts about two and a half minutes along most of the track. You will need to select what kind of photographs you are going to take during that time. This needs to be done well in advance of the eclipse so you have plenty of time to practice before the eclipse.



Figure 1: A map of the 2017 August 21 total solar eclipse as it travels across the United States from Fred Espenak's Mr. Eclipse website (<http://www.mreclipse.com/MrEclipse.html#Sun>). There are plenty of maps on the Internet. This eclipse is only visible on land from the United States. You can also find their excellent book *Eclipse Bulletin: Total Solar Eclipse of 2017 August 21*.

In addition to the information in this article, NASA is providing information on this eclipse on the Goddard Spaceflight Center website. Highly detailed maps of the eclipse path are on this site as well as overview maps. The site is at <http://eclipses.gsfc.nasa.gov/SEmono/TSE2017/TSE2017.html>.

The interactive map that will compute eclipse times for any location is at <https://eclipses.gsfc.nasa.gov/SEgoogle/SEgoogle2001/SE2017Aug21Tgoogle.html>.

Projects to Work On at the Eclipse.

The most important project to work on during totality is just looking at the eclipse. Allocate some time to just stop and view it with your own eyes. Some people have become so busy with photography that they forget to stop and enjoy looking at the eclipse! Naked eye, binoculars, or telescopic are all options for direct observation.

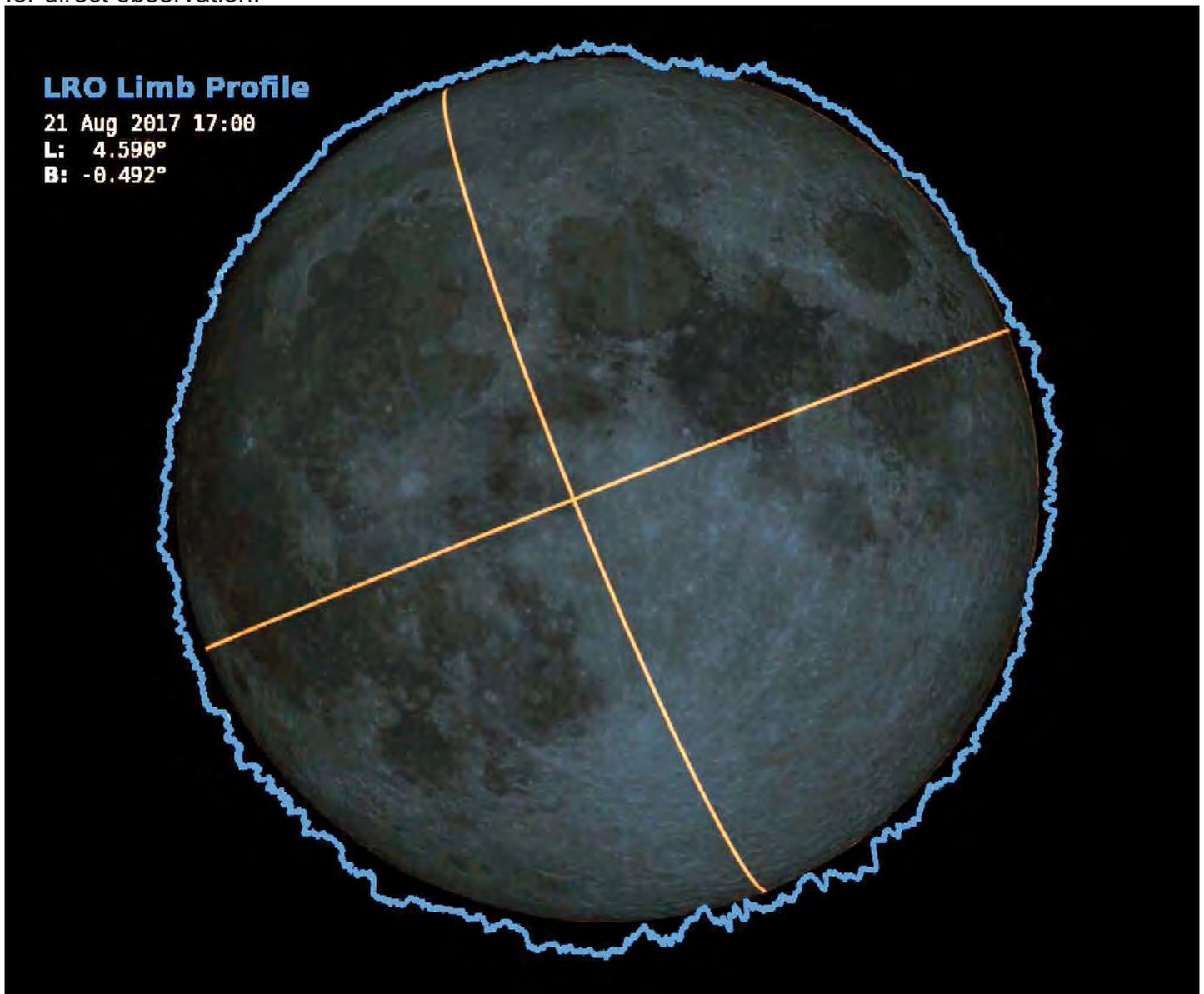


Figure 2: LRO Limb Profile: The lunar limb as it will be during the August 21, 2017 total solar eclipse. The vertical profile is exaggerated by a factor of eighteen. This profile is from a composite dataset of the lunar profile from NASA's Lunar Reconnaissance Orbiter (LRO) and the Japan Space Agency's Kaguya spacecraft. The lunar profiles for eclipses had previously been generated from Chester Burleigh Watts' 1963 set of charts that plotted the height of the lunar profile at various librations.



Figure 3: During the February 26, 1979 in Minot, ND, the Sun was low in the sky allowing this picture of the Sun and the landscape. In addition, there were thin cirrus clouds that allowed the shadow of the Moon to be visible to the south of the observing site at a local hotel across from the airport. The bright area along the horizon is where the Sun is not completely eclipsed and it is illuminating the thin clouds.

The eclipsed Sun has a tremendous brightness range that cannot be recorded in a single image with a single exposure time. A special filter called a radial density filter will dim the bright areas in the inner corona to the brightness level in the outer corona. The same effect can be accomplished with a rotating shutter, such as the one employed by George Van Biesboeck in the 1950's and 1960's. See the May 1973 Sky & Telescope magazine (Vol. 45, No.5) on page 326 for more information.

Since you will already be at the eclipse with your equipment, you might as well photograph the partial phases. A few shots taken as the Moon covers the Sun, particularly as any sunspots are covered (or uncovered after totality) make a nice lead-in to your totality images. The only extra piece of equipment you will need is a solar filter.

Selecting the Right Equipment.

Now that you have had a chance to see what types of images can be taken, you can decide on what equipment you want to take to the eclipse. The first decision is the focal length of your lens (or telescope). The Sun's diameter on the image plane (in units of length) is approximately 0.0087 times the focal length (in the same units of length). Remember that the important part of the eclipse is outside the central solar diameter on the image. Typically, the best focal length for general eclipse photography is about 25 inches (600 mm). An important decision to make now is whether you will buy new equipment or use what you have available. If you are buying new equipment, you can select your projects first, then select and purchase your equipment. If, on the other hand, you want to use your current equipment, you will have to select projects that fit in with the focal lengths available to you.

Table 1 shows each type of project and the approximate focal lengths and exposure times required for the project. You can use this table to determine what focal length you need for the projects you want to perform or what projects you can do based on the focal lengths available. From the formula for size of the Sun's diameter on the image (above), you can see that short focal lengths yield very small images of the eclipsed Sun. Longer focal lengths yield larger images, but also require larger apertures and heavier mountings. With very long focal lengths, much larger apertures are required to keep the image bright (i.e. get a low $f/$ ratio) so the exposures will remain short. This makes the entire camera system very heavy, requiring an even heavier mounting.

Project-Imaging Target	Equipment Needed	Exposure Time
Eclipse and Star Field	Wide Angle (e.g. 28 mm)	1+ seconds
Eclipse and Inner Planets	Normal Lens (e.g. 50 mm)	1/4 second
Extreme Outer Corona	Telephoto (e.g. 200 mm)	> 10 seconds
Outer Corona	Short Focal Length Telescope (400-800 mm f.l.)	1/4 to 1 seconds
Inner Corona	Medium Focal Length Telescope (800-2700 mm f.l.)	1/125 second
Solar Prominences	Long Focal Length Telescope (2700 mm or more f.l.)	1/500 seconds

Table 1. Imaging target with required focal lengths and exposure times. Exposure times are for an $f/4.5$ system and an ISO 400 exposure index.

If you find it difficult to make these decisions, here are some recommendations: If you want to see and enjoy the eclipse, forget photography and just observe it. Buy your photos from some online source. If you just cannot rid yourself of the desire to photograph the eclipse, but are not into weight lifting, use a 400mm $f/6.3$ telephoto lens with or without a 2x teleconverter. Using a high ISO speed and a camera tripod, you can get reasonably good pictures without too much effort, but note that all the glass in the system may produce some reflections even with multi-coated optics. Image the full moon with your system first, with the Moon off-center in the frame. This will allow you to see how bad the reflections (if any) are.

If you are serious about getting the best possible photos at any cost, use at least a 600 mm focal length at $f/4.5$ or faster. This will provide you a photograph that will give you the maximum outer-corona coverage at the fastest possible f -ratio. Remember that you can run multiple cameras with different lenses to capture different aspects of the eclipse.

If you want to take close-up photographs of the inner corona or prominences use a focal length of 4000 mm or longer. You will probably be at a slow $f/$ ratio (typically $f/30$), requiring a solid mount, long exposures, and a clock drive. You will need to set-up at least the night before and polar align the telescope.

With all this in mind for the total phases, we can stop for a minute and discuss photography of the partial phases. The prime requisite for this work is a solar filter. The standard filter reduces the intensity of the Sun's light by a factor of 100,000 by passing the light through a thin metal film. There are solar filters specifically for photographic use (sometimes called Type-3 filters) that only reduce the Sun's light by 10,000. This allows photographs to be taken at a much faster shutter speed, but these filters can be dangerous to the human eye, so do not look through them. In any case, the metal film is deposited on a glass or a transparent Mylar base plastic film.

Ideally, the glass should have been ground optically flat before the coating is applied. Unfortunately, some solar filters are coated on window glass and hence do not provide as clear an image as possible. The alternative to glass uses a mylar base that is so thin that it can be wavy and still produce a good image. Exposure times can be found by photographing the uneclipsed Sun through your equipment well before you leave for the eclipse.

When determining the exposure to use for the partial phases, remember that the Sun suffers from limb darkening. The physics of the Sun's atmosphere causes the Sun's edge to be substantially darker than the center of the disc. Near the edge, the Sun is only about 30% of the brightness of the center. If you are exposing the partially eclipsed Sun near the totality, you will need to increase the exposure time by three to keep from underexposing the limb.

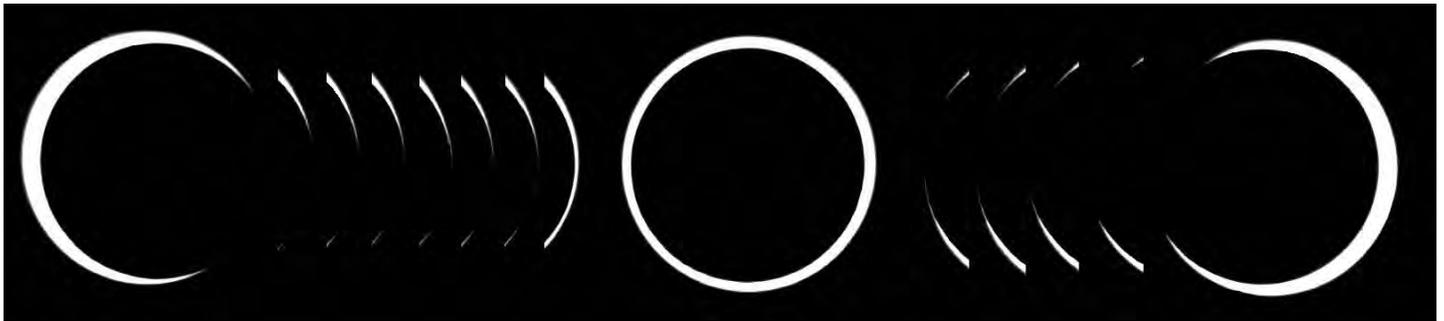


Figure 4: This is a mosaic of the partial and annular phases of the annular eclipse of May 10, 1994 from central Illinois. This sequence shows a number of frames as the Moon covered the Sun. The Moon was near apogee which makes the Moon appear smaller than the Sun, giving us the “ring of fire” in the sky. Las Cruces was in the path of this eclipse.

Selecting the Right Film/ISO Sensitivity.

While digital imaging has become the norm, if you are still using film, the first decision in this area is whether to shoot color or black and white film. While black and white film has fewer problems and produces technically better pictures, color film will produce prettier pictures.

Film speed or ISO sensitivity can be determined by selecting the part of the eclipse that you want to photograph. If you want to image the outer corona, a fast film or setting, around 400 ISO or higher, would be your best pick. If you are going for the inner corona, use a slower film or setting with an ISO rating around 25. You can just set digital cameras to the ISO rating, but try to keep the speed low enough that you do not get significant digital noise.

If you are unable to decide, try a speed around ISO 200 or, if used with a clock-driven system, use ISO 100. Depending on your camera, use the highest setting that will not generate objectionable color noise. Whatever speed you select, be sure to try it on the full moon well before the eclipse. The full moon is approximately the brightness of the eclipsed Sun.

Equipment Considerations.

One major consideration for selecting equipment is weight: how heavy is everything you will be taking to the eclipse? Weight may not be important if you are driving to the eclipse, but if you are flying there, this can be a limiting factor. Unless you are airfreighting the telescope, you should try to go as light as possible. Remember that in addition to your telescope, you will need to carry clothing, recorders, computers, etc. All this gear can get very heavy. Related to the weight of the equipment is its stability.

While many times the wind dies down during totality, you cannot depend on it. How shaky will your equipment be during a 1-second exposure pointing at the eclipse if the wind is blowing a mere 10 miles per hour?

When pointing your equipment at the Sun, make sure your telescope mount or camera tripod will not be so unbalanced that it falls over. Provide a counterweight or at least make sure the center of gravity of the system is over a tripod leg and not between two tripod legs to increase the stability of the system.

If you are going to be mobile, you should be able to set-up your equipment in about ten minutes. A number of observers have managed to see an eclipse by racing to a clearing in the clouds, arriving scant minutes before totality. Others who could not move so quickly have been clouded out.

Finders should be fitted with a solar filter to allow you to find the partially eclipsed Sun. If you will not be using the finder, remove it. You do not need to carry the extra weight and people will not be tempted to look through the finder at the Sun and become blind by the concentrated sunlight.

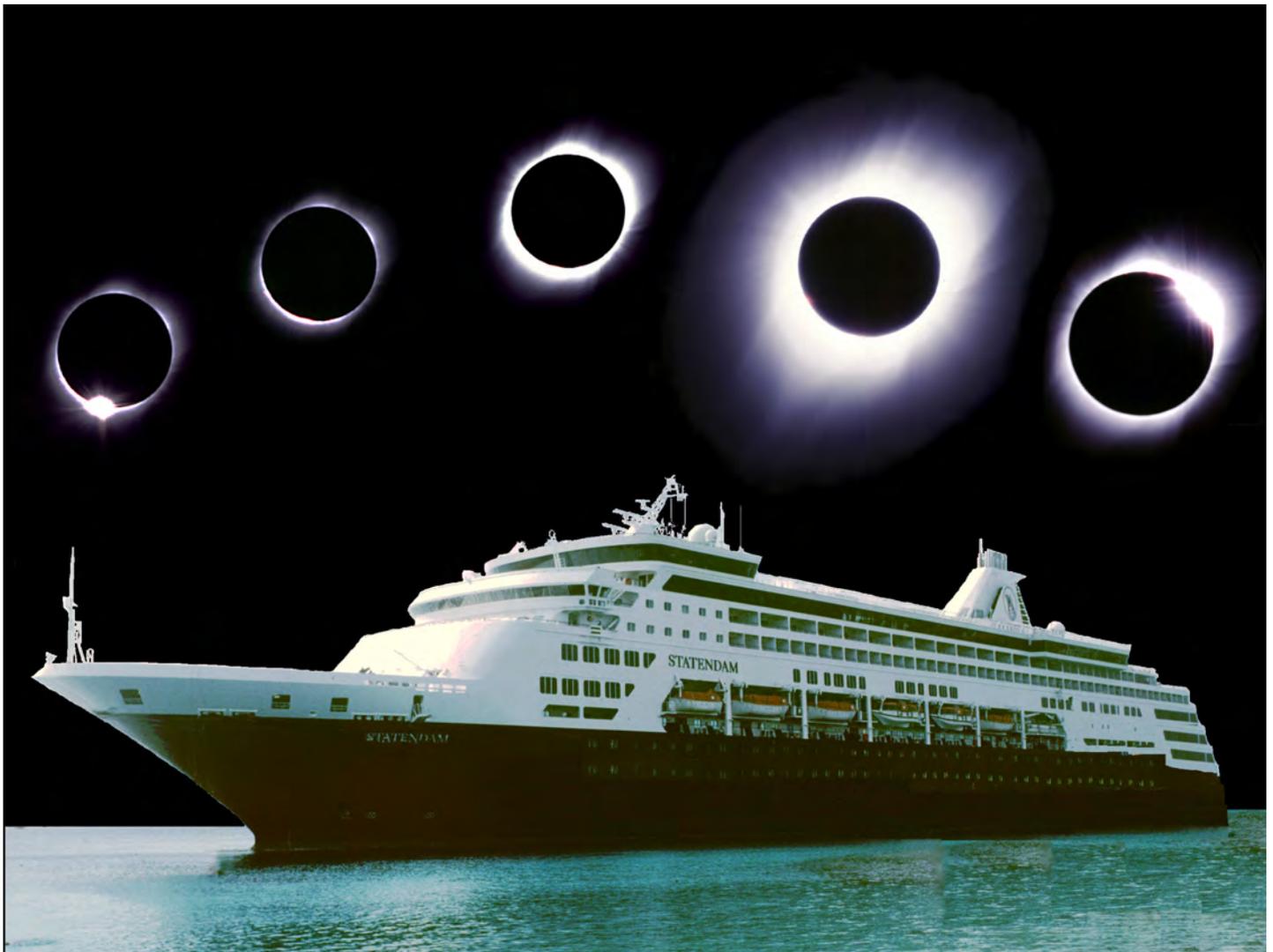


Figure 5: This is a mosaic of the total solar eclipse taken from the deck of the MS Statendam just offshore of the north end of Curacao, in the Netherlands Antilles. The ship was anchored in an area of relatively clear skies. The location on the leeward side of the island provided some protection from ocean waves.

Preparing For the Eclipse.

After selecting your projects, work out a time line of when you will work on each project during the eclipse and how long you will spend on it. After you have it on paper and have your equipment built, perform a trail run of your time line. Eliminate the projects that you do not have time to complete and then keep practicing until you can do everything in your sleep. The landscape will only be full moon bright, so you will need to do everything in near-dark conditions.

If possible, you should have two portable recorders and a WWV receiver. One recorder should be connected to the WWV receiver and a microphone. This recorder will record the times and exposures for each frame you take. All you need to do is remember to keep a running commentary going as you photograph. Just verbalize your settings and exposure times into the microphone. The second recorder should have a pre-recorded version of your time-line, which includes a countdown to each contact as well as what you are supposed to be doing. If you fall behind your time-line during the eclipse due to a problem, abandon the problem project. Carry on with your time line and do not worry about what you cannot help. You could easily waste the entire eclipse working on a balky piece of equipment.

Remember that you will be very excited so do not plan anything that takes complex concentration, such as changing film, etc. The eclipsed Sun is only about as bright as the full moon, so once you have a good plan, take it outside and actually test it (with real film) on the full moon. If you can actually produce good pictures of the Moon, you are ready to try for the eclipse.

Prepare checklists for everything. Two of the most important checklists are the packing checklist and the equipment set-up checklist.

Everything that you will pack for the eclipse should be on your packing checklist. You will need to bring everything you need with you. Do not depend on finding it at your site. Include equipment, clothes, film, batteries, etc. on your checklist. Remember to pack a flashlight and two sets of spare batteries for all your equipment including your camera and computer. If you might have access to wall-outlet power,

bring extension cords and multi-outlet power strips.

Your set-up checklist should include all the things you need to do to get your equipment ready for the eclipse. Your schedule of activities may start as little as a few minutes before the eclipse, or as long as few days before if you need to polar align your equipment. You should have a fresh roll of film and batteries in each of your cameras just before totality begins.

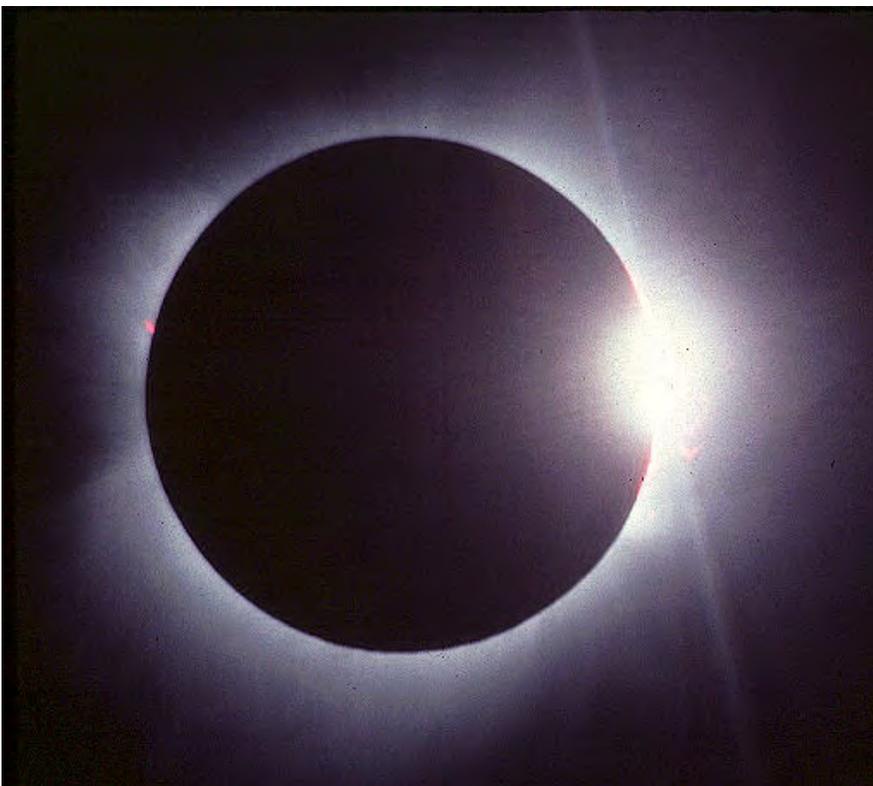


Figure 6: *The edge of the Sun peaks out from behind the edge of the Moon. This is frequently called the Diamond Ring. If there are multiple deep valleys on the edge of the Moon, you can get a series of these bright spots that are called Bailey's Beads.*

Any other activities where you may forget to do something should also be checklisted. Note that the recorded countdown and instructions acts as your checklist during the eclipse.

Packing for the Eclipse

Packing for the eclipse is like packing for any vacation. You need to bring everything that you will be unable to obtain at your observing site. In addition, you must pack your telescope, cameras, computers, batteries and film. If you are flying, be sure to remove all optics from your telescope and wrap them carefully. Telescope mirrors should be packed face down on a layer of cotton, backed-up by a piece of cardboard. Lenses should be carried in their cells, wrapped in cotton. Finally, wrap the optics in clothing to protect them even further. Carry the wrapped optics with you as carry-on luggage while the mount and tube is tossed around by the baggage handlers in checked baggage.

All film and magnetic tapes should be carried on and packed separately from everything else in clear plastic bags. When you go through security at the airport, request the agent perform a hand inspection for the film and tapes. Everything else can be x-rayed, since x-rays cannot hurt the equipment. Do not pack the film in your luggage, since luggage is often x-rayed with even more powerful x-rays than used on carry-on luggage.

The mounting and tube should be packed in a strong suitcase or packing case. If the equipment is very heavy, you should consider having a custom crate built and ship the equipment to your site well ahead of time. This will allow you to locate the crate if the airfreight company should lose it.

When planning your flight to the eclipse site, make sure you arrive at least the day before the eclipse to reduce the possibility of being delayed by bad weather. Stay overnight in a hotel in the eclipse path so at least you can see something of the eclipse if your vehicle breaks-down on eclipse day.

Good luck, have fun, and remember to stop and enjoy the eclipse, the spectacle of the year!

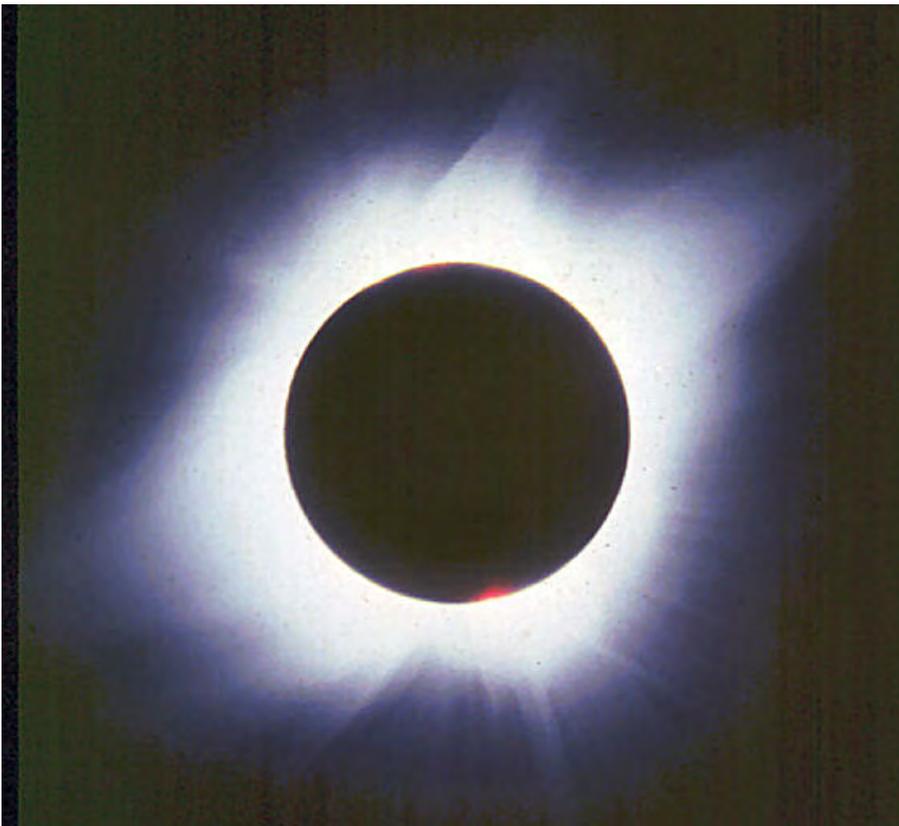


Figure 7: *The July 11, 1991 eclipse as observed from La Paz, Baja, Mexico taken with color slide film. This image was taken through a 6-inch f/4.5 with a 2X teleconverter. This gave an effective focal length close to 1400 mm. This focal length allows a good image scale for inner and middle corona images of the eclipse. For outer corona, the teleconverter could be removed for a 700 mm focal length.*

Poem of the Month #1

History and Development of Tracking Telescopes
James B. Edson, Ph. D.
Technical Consultant
Colorado Springs, Colorado

Dawn Star, 1946

There was Venus, up and blazing in the velvet desert night,
And the distant crystal glitter of the launch pad lights,
And the slender gleaming needle of the rocket standing there,
With its whisp of frosty vapor in the cool, still air.

There was Little Brighteyes waiting with a soft and eager whine,
As we heard the station checkoff on the hard wire line;
As we heard the Launch Director call the name of Station Star,
And he asked us, "Are you ready?", and we answered him, "We are."

Softly then the first faint dawnglow welled above the mountain rim,
Silver fringed the night's black velvet, and the eastern stars grew dim,
As we, waiting, heard the pulsebeats coming off the timing line,
As we counted down the seconds until blastoff time.

There it was! Ignition! Liftoff! And a shining spear of light,
Rose above the darkling desert, thrusting through the fading light.
Then like distant organ music, deep and strong, the jetsong came,
Filled that vast sky-roofed cathedral with the anthem of the flame.

Up and out our nightbird mounted, reaching eager for the void,
And the tracker, struck with wonder, saw her flaming wings deployed;
Saw those vast and glowing pinions spread for flight across the deep,
Out and far, beyond the limits of a world still sunk in sleep.

Dream of men, made up in metal and flame-hurled beyond the sky,
But her fledgeling wings must falter, and we knew that she must die.
So it was. Her slim white body, when her rocket burn was done,
Rose on through the empty darkness till she saw the rising sun.

We, Earthbound and deep in shadow; we saw her shining there,
Like a dawning-star of promise; bright, and high, and fair.
For half a hundred heartbeats she glowed with splendid light.
Then, as man and all his creatures must, she faded into the night.

Now, we've tracked a hundred mightier jets beyond the azure sky,
And a swarm of circling satellites as they went wheeling by,
And we were few, and we grow grey, and some of us are gone,
But our dream still lies beyond the skies,
And our hearts are bold like that bird of old,
That flew to meet the dawn.

Poem of the Month #2

Why Didn't They Name Stars After Vegetables?

by Kirbini

I mean really! Who came up with this stupid idea
that stars should be called by names that some people
in a far-off land decided centuries ago?
Strangers to our modern ways of thinking and being.

For example, take a name like Sirius.
Are you serious?
Or Deneb. Who names their kid Deneb? Did you know it means a chicken? Who
wants to be called a dumb chicken?
Nobody.

And the Constellations! What is this stuff about ancient Gods and
Goddesses? Some old Greeks or Romans sitting around, drinking bad wine and
trying to outdo one another naming the Heavens.

Who cares if Orion was from Crete - what a bunch of bull.
Or Mononucleosis was from Monoceros. You know - that horned creature that
looks like a horse, has a lion's tail and pours peanut butter into telescope
mounts for kicks.

Is this all we are left with after 3 thousand years? Pathetic!

And my God, the Planets.
Don't get me started.
Just think about it. Saturn for example. Here is a guy that snarfed up his
babies for a noontime treat.

Strictly X rated when he was called Cronus. What he did to Ouranos you
don't want to know about in polite company.

At this rate, how can it not be embarrassing to consider the night sky.

Oh yes, and as if that were not enough what about Mars? I mean, has
Parental Guidance ever been enforced?
It's the violence that concerns.
And what about his relationships? Did he ever marry Venus or just have his way with her?

So think about THAT the next time your child wants to look through a telescope.
And some food for thought..how many big macs and fries did Jupiter consume
to get so fat? Does this encourage good dietary behavior?

I don't think so.

Perhaps we should take matters into our own hands and clean this mess up.

For example, the gentle vegetable never hurt a soul.

Poem of the Month #2, Continued

That southern piece of sky that looks vaguely like a scorpion (shudder) we
might call Broccoli or Brussel Sprouts.

Or Cygnus, which sounds like some skin disease, might be called Carrot or
even Rutabaga.

I think Mercury would be much better tolerated as Pea or Jalapeno as a nod
to its position next to the Sun. And as for old Sol himself why not Tomato?

If we exhaust the list of vegetables, we can move on to herbs and other
forms of plant life.

How easy it can be to change Aquila to Arugula.

I am sure this program can keep ALSC occupied for years.

Photo of the Month



OBJECT: This is a picture of the Witches Broom, part of the Veil Nebula. It's a good sample picture because it is a 6 panel mosaic and I'll be discussing mosaics.

Image Information

OTA - Astrotech 10" F8 Ritchey-Chrétien carbon fiber optical tube

Focuser - Feathertouch

Camera - SBIG ST4000C

Image Stabilization - AO8 Adaptive Optics

Mount - Losmandy G11

Primary Image Processing - CCD Stack2

Finish Image Processing - Photoshop CS5

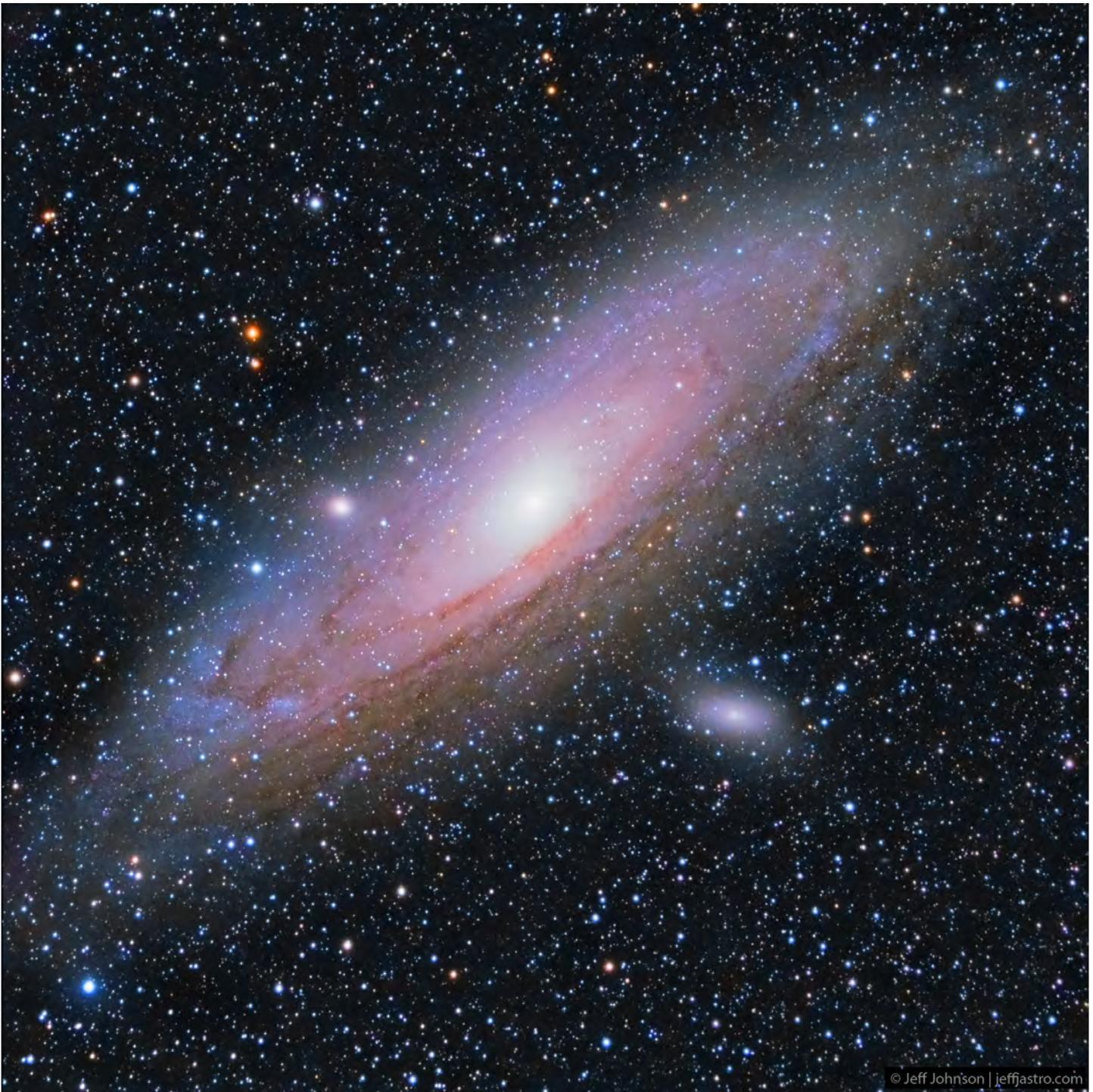
6 Image Frames - Each Frame was 30 minutes total exposure time. 3) 10 Minute Images

Calibration, Flats, Darks, 6 Master lites in tiff format

Stitched and final processed in CS5

By Gary Starkweather

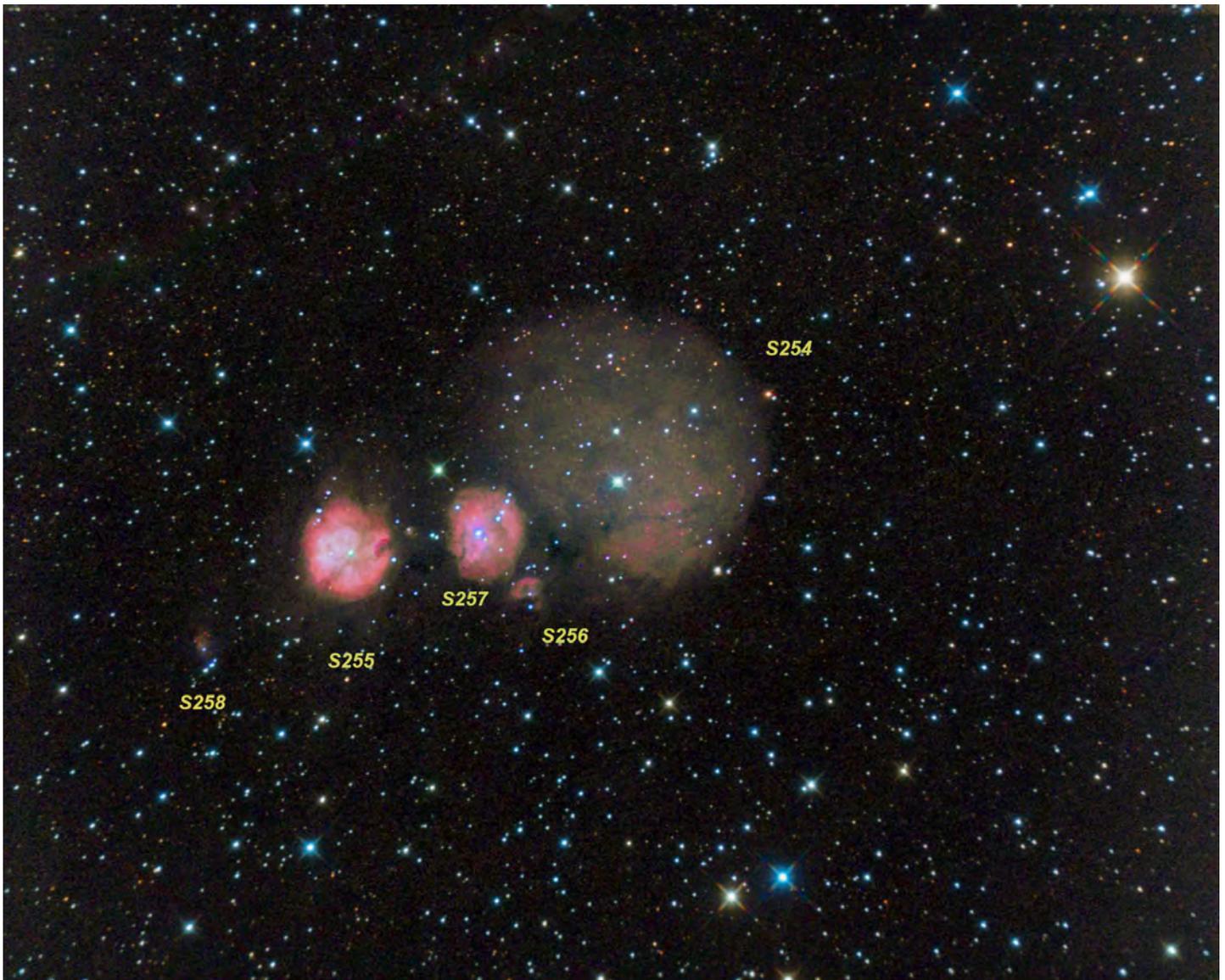
Photo of the Month



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OBJECT M31 - Andromeda Galaxy Distance: 2.5 million light years
Telescope Takahashi FS-60C @ f/6.2
Mount Takahashi EM200 Temma II
Camera QSI 540wsg @ -15C
Filters Astrodon Tru-Balance I-Series LRGB Gen 2
Guider SX Lodestar Settings 13x5min L (bin1x1); 5x5min ea RGB (bin2x2);
AstroArt5, CS4 (cropped, 10xdarks/flats/fdarks/bias)
Date/Locatio 23 November 2016 - Las Cruces, NM
Copyright Jeffrey O. Johnson <http://jeffjastro.com>

Photo of the Month



This nebula complex of HII regions and active star formations is located on the Orion/Gemini border. Starting from the left is Sh2-258 a small nebula. To the right is Sh2-255 (IC 2162) which is the brightest nebula with some dark filaments.

Sh2-257 is to the right. To the lower right is the smaller Sh2-256 emission nebula and the largest nebula, Sh2-254, is an emission nebula with a darker red hue.

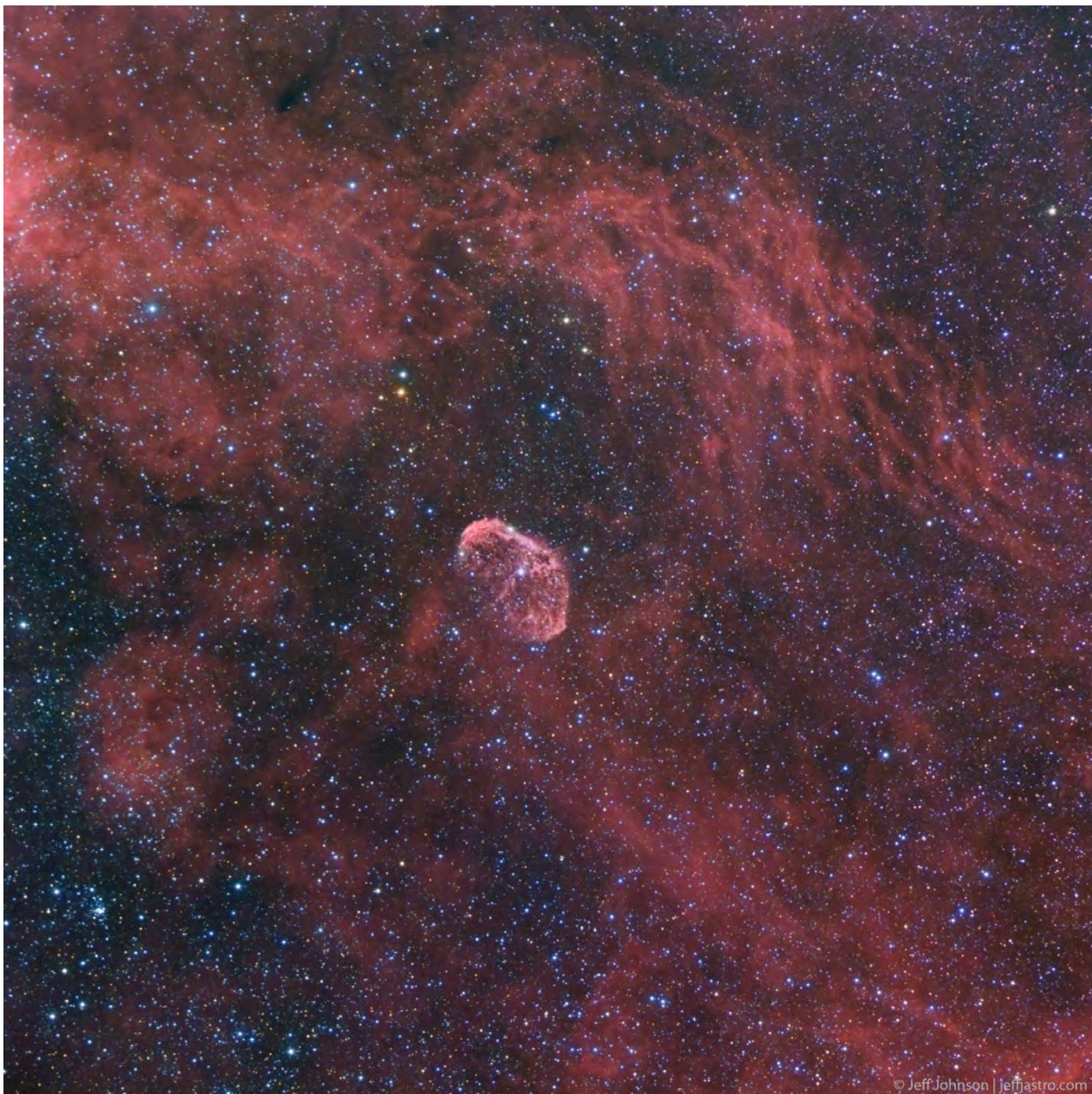
These relative small nebulae are located in the constellation of Orion but closer to the border of Gemini.

RC10 / FLI 16200 / LRGB 2x2 4x5min / Ha 2x2 12x5min / PS /

Las Cruces 1/23/17

John Kutney

Photo of the Month



OBJECT NGC 6888 (Crescent Nebula) and surroundings Distance: 5,000 light years
Telescope Takahashi FS-60C @ f/6.2
Mount Takahashi EM200 Temma II
Camera QSI 540wsg @ -15C
Filters Astrodon Ha (3nm), Astrodon Tru-Balance I-Series LRGB Gen 2
Guider SX Lodestar Settings 6x20min Ha, 2x5min L (bin1x1); 2x5min ea RGB (bin2x2);
AstroArt5, CS4 (slightly cropped, 10xdarks/flats/fdarks/bias)
Date/Location 23 November 2016 - Las Cruces, NM
Copyright Jeffrey O. Johnson <http://jeffjastro.com>

Photo of the Month



M65 & M66

- ❖ HaRGB
- ❖ Planewave 20", Mayhill, NM
- ❖ PL11002
- ❖ R: 30x180"
G: 20x180"
B: 30x180"
Ha: 25x300" (~6h total)
- ❖ PixInsight
- ❖ below average seeing, and clouds terminated one of the two runs. May have had dew on the objective. Still, "doesn't stink!"

Alex Woronow