

# The High Desert Observer

## May 2018



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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### ASLC Board of Directors, 2018

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*Masthead Image: February 10, 2017 From Las Cruces, Moon rising over the Organ Mts in Penumbral Eclipse.*

### May Meeting --

Our next meeting will be on **Friday, May 25**, at the Good Samaritan Society, Creative Arts Room at 7:00 p.m.

The program will be the annual star party review and the annual astrophoto contest by members..

### 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](mailto:Treasurer@aslc-nm.org) 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?

*May 2018*

May's ASLC meeting will be our annual Star Party Review and Astro-Imaging Contest. So, during the first three weeks of this month, several club members will be strategically located at very dark southern New Mexico sites with the hope of capturing that prize-winning shot. Some of our imagers will roll the dice at the Cosmic Campground, which is located north of Silver City. The remaining group of imagers will take their chances at Rusty's RV Park in Rodeo, NM. Bad weather and/or equipment problems are the only wild cards, so I hope we have lots of astro-images for the contest as well as additional images of their adventures. I wish all ASLC imagers the best of luck.



For myself, as I write this article, I'm back in the Fort Davis area for my sixteenth Texas Star Party; this year's event is scheduled during the week of 06 to 13 May. My first TSP was in 1991 after I relocated from central South Carolina to southern New Mexico in August of 1990. Like many other members in our club, I moved to the southwest because of the poor observing conditions on the east coast. In fact, the sky during those summer months in my home state was almost always filled with clouds, haze, and humidity. Moreover, the mosquitoes were relentless! Soooo, I don't miss SC when speaking of amateur astronomy. I actually consider New Mexico as my second home because of the much improved sky, air, elevation, and weather conditions, which allowed me to enjoy amateur astronomy year round.

Meanwhile back on the ranch, TSP is always held in the spring on the Prude Ranch, which is located a few miles from Fort Davis, Texas. This annual event moved to the ranch in 1982, after a few fledging years at the Davis Mountains State Park. An average year's attendance is around 500 amateurs with a high of 800 in 1994. The ranch's staff, unfortunately, struggled that year to accommodate attendees, so attendance is now capped at about 500 and a lottery system determines one's eligibility. While living on the east coast, I attended the Stellafane Telescope Makers Conference in Vermont several times, but TSP was my first truly dark-sky star party. Yet, in recent years, I noticed the degradation of TSP's night sky because of oil industry located northeast of the ranch. The subsequent sky glow starts under Polaris and extends along the horizon for about 50 degrees to the east. The height of the light dome is >15 degrees. Although the sky to the south still looks fairly dark, I did not need a red flashlight to maneuver around the observing field or find my way back to my motorhome after dark. Nevertheless, I can see myself attending TSP again next year. I really love seeing old friends, making new ones, and enjoying the ongoing nostalgia of the Prude Ranch.

Howard J. Brewington  
ASLC President  
May 2018

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## **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***

### ***April 2018 Report***

by Jerry McMahan

#### ***Tombaugh Observatory, Friday, April 20***

We were not sure if the open house would occur due to high winds. They died down enough so that we did have a program. Steve Shaffer opened our dome. He was joined by myself and Steve Wood, who made his first appearance at the 12.5 inch Cassegrain. Steve counted 47 people who came to observe at our site.

A 14 inch Celestron is in the middle dome. It was on M44, the Beehive star cluster. The 12 inch Meade, in the North dome, was on the double star Mizar and Alcore.

#### ***Moongaze, Saturday, April 21***

It was Astronomy day. We had a good turn out of club members, visitors and the public. The weather was good and the seeing allowed for good views of the Moon.

I set up the ETX 125, Howard Brewington brought his 8 inch Dobsonian, Steve Wood had an 8 inch Schmidt and Chuck Sterling operated his 10 inch. Ed Montes joined us as well.

Dal and Nancy Jones came in from El Paso. I have known Dal since high school and college. Other than my sister, the two people I have known the longest, Chuck and Dal, were present for this event.

Due to the height of the building to the East of our observing site at the International Delights, it takes a while for anything in the West to clear the building. Since we are getting near a time when we can observe Jupiter, Saturn and Mars, this presents a problem, at least for a while.

Steve Wood has looked for an alternate site. He found one on University Avenue, across the street from New Mexico State University. Since many people know about the club setting up at the International Delights, for many years, we are going to try both sites for the May Moongaze. We need to let people know about the change, so I would prefer that both locations be used for at least a while. I would like to see us have multiple outreach events. The problem is getting enough volunteers to support one, or more events on the same night. Recruiting time!

#### ***Cub Scouts at Leaburg, Saturday, April 28***

A Cub Scout group was camping out at the park. Chuck Sterling, Howard Brewington and Bob Armstrong opened the observatory. I assisted as did Ed Montes. Steve Wood set up his 8 inch. It was an almost full Moon. Later, near the end of the session, Steve pointed at Jupiter.

Bob kept me informed of the progress of the Yankee game. They scored 11 runs and won.

Just before we shut down, lightning was noticed in the South. As soon as the observatory door was closed, a high wind came up, so the timing was almost perfect. It started to rain on my drive home.

### **Highland Elementary, Friday, May 4**

This was a solar only event starting at 5:PM. This is the second daytime event in a row, at this school. Last time, Chuck was able to get a daylight view of Jupiter, but this time it was below the horizon, so it was the Sun only.

Chuck Sterling and Tracy Stuart has white light views and Sid Webb and Howard Brewington set up Hydrogen Alpha scopes. There were some prominences visable in the HA scopes and one Sun Spot in the other two scopes.

I did not set up a scope, but did have an important piece of equipment. The students needed a signature showing that they had looked through the scopes. I had the pen.

### **Leasburg, Saturday, May 5**

Chuck Sterling and Bob Armstrong operated the 16 inch. Sid Webb manned the newly donated 11 inch Celestron. It was first light with this scope, for us. Jupiter was the target for this scope.

We had clear skies with no wind for this event, which has been unusual the last several months. Steve Wood, Howard Brewington and Jerry McMahan were also available to assist.

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

May	01	19:48	Sun Sets
	01	20:16	Jupiter Rises
	05	19:48	OUTREACH; Dark Sky Observing at Leesburg Dam State Park
	06	09:00	Texas Star Party begins; runs through May 13
	07	20:09	Last Quarter Moon
	08	18:26	Jupiter Opposition
	11	21:00	OUTREACH; Tombaugh Observatory open at NMSU; 9 -10 pm
	15	05:48	New Moon
	18	18:00	Star Party at Dripping Springs Natural Area, La Cueva Group Picnic Area
	19	20:00	OUTREACH; MoonGaze, International Delights Café
	19	20:00	OUTREACH; MoonGaze, Pan Am Plaza on University Ave.
	21	21:49	First Quarter Moon
	25	19:00	ASLC Monthly Meeting; Good Samaritan Society, Creative Arts Room
	29	08:21	Full Moon
Jun	01	20:09	Sun Sets
	01	17:56	Jupiter Rises
	01	21:55	Saturn Rises
	06	12:32	Last Quarter Moon
	09	20:00	OUTREACH; Dark Sky Observing at Leesburg Dam State Park
	13	13:43	New Moon
	20	04:51	First Quarter Moon
	22	19:00	ASLC Monthly Meeting; Good Samaritan Society, Creative Arts Room
	23	20:00	OUTREACH; MoonGaze, International Delights Café
	23	20:00	OUTREACH; MoonGaze, Pan Am Plaza on University Ave.
	27	22:54	Full Moon

Be sure to visit our web site for ASLC information: [www.aslc-nm.org](http://www.aslc-nm.org)



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### **Announcements**

1. The program for the May meeting will be a presentation by the members about recent Star Parties and the annual Imaging Contest. Send submissions to Howard: [President@aslc-nm.org](mailto:President@aslc-nm.org)
2. The field trip to Safford, AZ to see the Pope's Telescope and the Large Binocular Telescope has been set for September 22nd. Unless the mountain catches on fire again or some other calamity occurs, Mike Nuss will be presenting information and details of the trip in the near future.
3. The agreement to use the facilities at Good Sam for our meeting prohibits members from bringing in ANY food or beverages, except water in a container with a screw lid. Take note: no more Starbucks or Saturn Cookies!

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### **Meeting Minutes** **ASLC Monthly Meeting** **April 2018 Minutes**

#### ***Show & Tell:***

John Kutney opened by remarking on new Yahoo posting restrictions; he's not a fan. He also has a new wireless remote that can be used to guide his telescope. It includes a USB multi-hub, has very good battery life and cost about \$40. No additional topics were offered for discussion.

#### ***Call to Order:***

Howard Brewington, President, Astronomical Society of Las Cruces (ASLC, the Society), called the April 2018 business meeting to order at 7:13 pm, 27 April 2018, Creative Arts Room, Good Samaritan Society Las Cruces Village, 3011 Buena Vida Circle, Las Cruces, New Mexico.

#### ***President's Comments:***

Howard Brewington, President, welcomed the group to tonight's meeting. He announced that he will be attending Texas Star Party (TSP) 2018 next month (06-13 May) in the Davis Mountains in the Big Bend area of Texas. Since this is star party "season", he encourages all members attending a star party to take lots of pictures to share at the star party roundup in May. He asked all members and visitors to sign in on the rosters at the rear of the room. Howard recognized visitor Stewart Hutchins from Denver who is planning to eventually relocate to the area. Bruce Leavitt, a retired astrophysicist from New Hampshire who has relocated to Las Cruces, is joining the Society tonight.

Howard also announced that a C11 telescope has been donated to the Society. For the time being, it will support the Outreach program and reside at either Chuck Sterling's garage or the Observatory at Leasburg Dam State Park (LDSP). Depending on usage, it may be offered for sale to the membership.

Howard thanked Charles Turner for the April edition of the High Desert Observer (the Society's newsletter, the HDO). He also thanked Ed Montes and John Kutney for their contributions.

The minutes of the March meeting were published in the HDO. If there are no corrections or discussion, Howard asked that the minutes be accepted as submitted; they were accepted by acclamation.

***Treasurer's Report:***

Trish Conley, Treasurer, presented a status of the Society's accounts. She reported a net income for the month of \$291, primarily from dues and donations.

***Outreach:***

Chuck Sterling, Outreach Coordinator, reported on upcoming events. Local Boy Scouts are having an event at LDSP this week and the Observatory will be open Saturday evening, 28 April. The monthly LDSP open house event will be 05 May. There will be a Moon Gaze at International Delights Café (IDC) on 19 May. Howard and Stephen Wood may offer a parallel event at the clock tower in Pan Am Plaza that evening as well. The Organ Mountain Star Party will be 18 May at Dripping Springs. Chris Brownell reported the observatory at City of Rocks State Park has been completely refurbished and is "ready to go". This observatory has an adjustable telescope pier that makes it ADA accessible. Other events are posted on the web site. Howard noted that Moon Gazes and public star parties are excellent opportunities to get to know other members of the Society as well as interact with the public. He encourages all members to participate when possible.

***Presentation:***

This month's presentation was by member Ed Montes entitled "Through the Looking Glass: from ASLC to SDL and Back – My Adventures in Namibia". Ed was inspired by Jerry Armstrong's presentation at the July 2017 meeting describing being the astronomer-in-residence at the &Beyond Sossusvlei Desert Lodge (SDL), a remote desert resort in southwest Africa. Ed asked several follow-up questions and Jerry gave him the contact information for the resort. Almost before he knew it, Ed was deplaning in the Namibian desert. At first, the similarities to the desert in southern New Mexico were uncanny, but the night-time skies assured Ed he wasn't in Las Cruces anymore. The month-long experience was so positive that Ed plans to do it again.

The May 2018 presentation will be a star party review by members and the Annual Member Astro-Image competition.

The April meeting of the Astronomical Society of Las Cruces concluded at 8:30 pm. A social time followed at Pecan Grill.

-Respectfully submitted by John McCullough, ASLC Secretary

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# Quick-Trick for Making a Custom Mask in PixInsight

Alex Woronow & Charles Turner

Most amateur astronomers are well aware of how much the hobby has changed in the past 25 years or so. Optics are much improved. Mounts and software are much better at GoTo and tracking. And the cameras available are way beyond any cameras from the 90s or before. The switch to digital imaging with CCD and CMOS chips may be the area where we have seen the most change. Not only are the cameras more sensitive with lower noise, but our ability to combine or stack images effectively allows us to create a new image with virtually unlimited exposure duration. These advances have opened up the world of astro-digital-imaging techniques.

Astro-imaging cameras have the ability to record more levels of gray than either an ordinary printer or computer display can render. Some subtle, but beautiful or scientifically interesting, elements of an image may span a dynamic range of intensities too large to portray in a single print or to project on a screen to an audience, or even view on a computer screen. So we make adjustments to bring those seemingly incompatible parts of our image into coexistence within the dynamic range available to us. Processing programs generally have two ways to do that: histogram adjustments and curve adjustments. Histogram adjustments affect the full dynamic range of image intensities using three sliders that enable the user to pin down the shadow level, the highlight level, and to adjust the mid-level value. Curves allow one to snake through the brightness range, boosting contrast in one range and flattening it in another. But neither of these tools discriminates one area of an image from another. Boosting an intensity range to bring out faint wisps of nebula, for example, also will bring out a plethora of faint stars, or even background noise. What if you don't want all those stars and surely not background noise? Enter the Mask! Generate a mask that reveals just the nebula, concealing all other parts of the image, and apply the intensity boost through the mask.

Maybe the intensity of the nebula is fine, but it has weak tones of red and blue. Again a mask revealing only the nebula would allow one to increase the saturation of the nebula's colors while not altering the tint of the stars (or, even worse, giving a red or blue tint to the dark background).

So, you can apply changes such as brightness, contrast, color saturation, image sharpness, blur, ..., basically any adjustment that you can make can be applied through a mask. The mask can either enhance the masked area or protect it from changes.

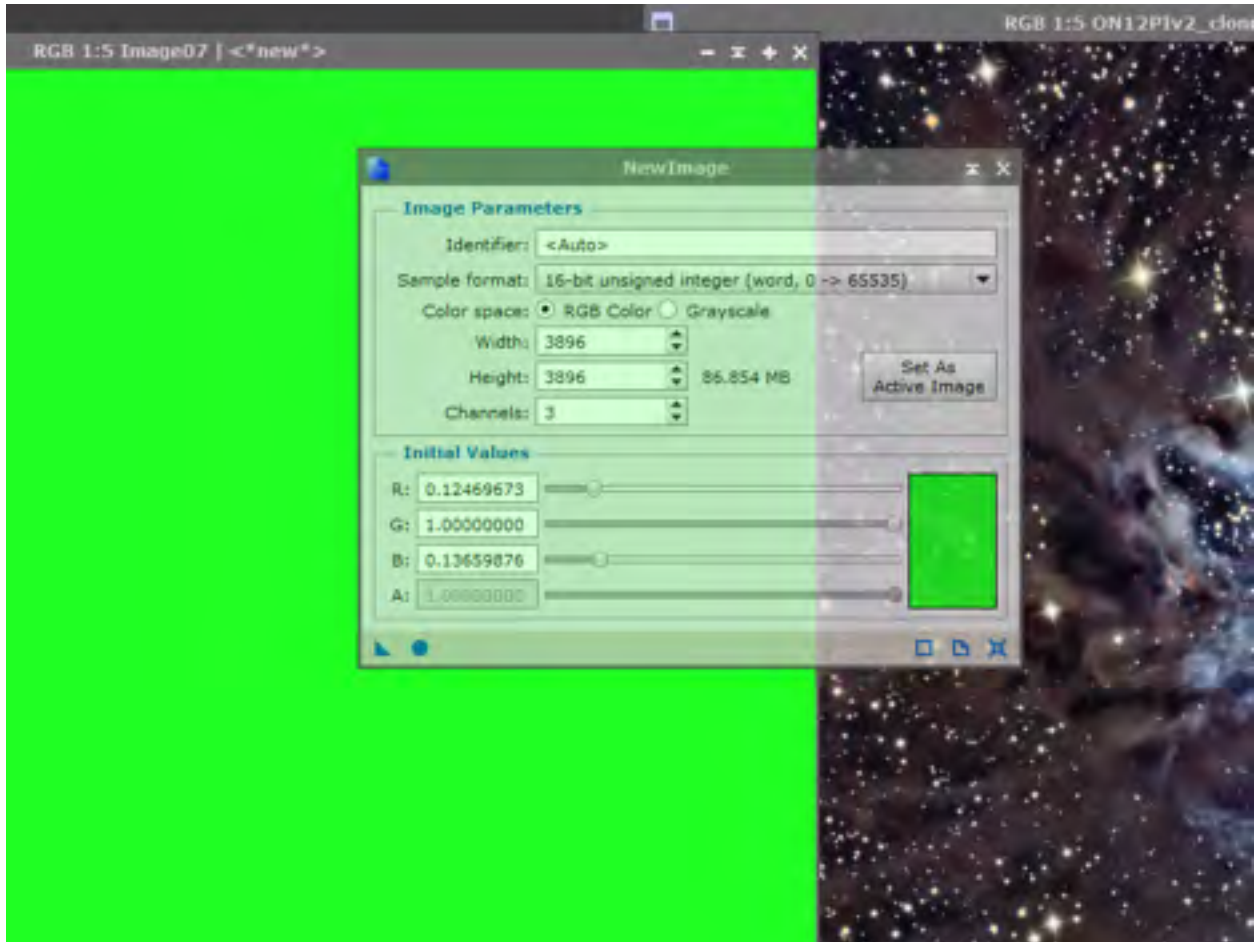
All image-processing programs (PixInsight, ImagesPlus, AstroArt, StarTools, ) have masking capabilities to some level. Star Masks, for instance, are pretty much universal. Other masking options vary with product. Compared to programs designed for astro-images, general photo-manipulation programs such as PhotoShop, LightRoom, ON1, DarkTable, Gimp, etc usually provide a greater variety of masking tools, although the most useful of all masks, the star mask, would be an add-on, if available at all.

But, back to PixInsight (PI), the emphasis of what follows. PI has tools to create star masks, color-range masks, and intensity-range masks, but no specific tool to mask a restricted area of the image. (I believe it is fair to say that doing this is deemed akin to 'cheating' by PI's author, and as fostering behavior antithetical to the objectives of science. Ok, but sometimes we want to inspire others to our hobby with stunning pictures or make a nice print for ourselves or as a gift.) To me, this constitutes a glaring omission from PI, the otherwise best astro-image program available. So let's see how to circumvent that omission.

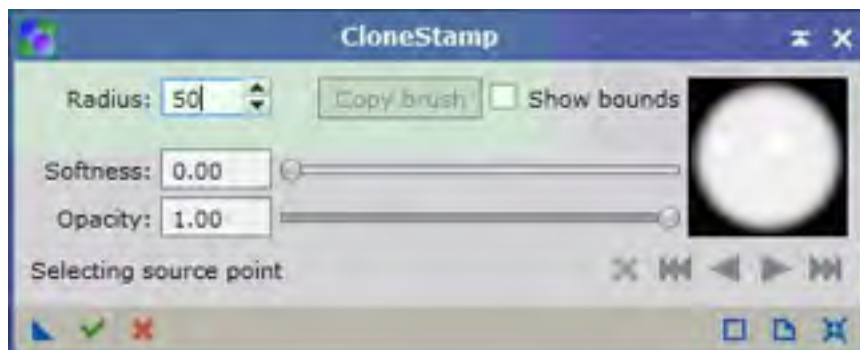
Say you have an image of a nebula and you want to make a mask that hides the surrounding stars and background, but reveals the nebula for further targeted processing. This brief article will illustrate how

you can make an irregularly shaped mask in PixInsight without having to invoke a helper program. The steps are

1. Clone the image that you want to mask. The cloned image eventually will become the mask. (For convenience, let us refer to that image as the “Mask-Image.”)
2. Make a “New Image.” Click IMAGE in the tool bar at the top of the PI window and on the drop-down menu select NEW. Click SET AS ACTIVE IMAGE and slide the green slider all the way to the right. When applied, on your desktop you will have a solid green image in addition to the Mask-Image .



3. Start painting the green image over the Mask-Image. To do this, open CLONE STAMP and click on the target image. Then set the brush size to a diameter that is appropriate for outlining the area to be masked. I often use a setting of 50. Slide the Softness slider all the way to the left.





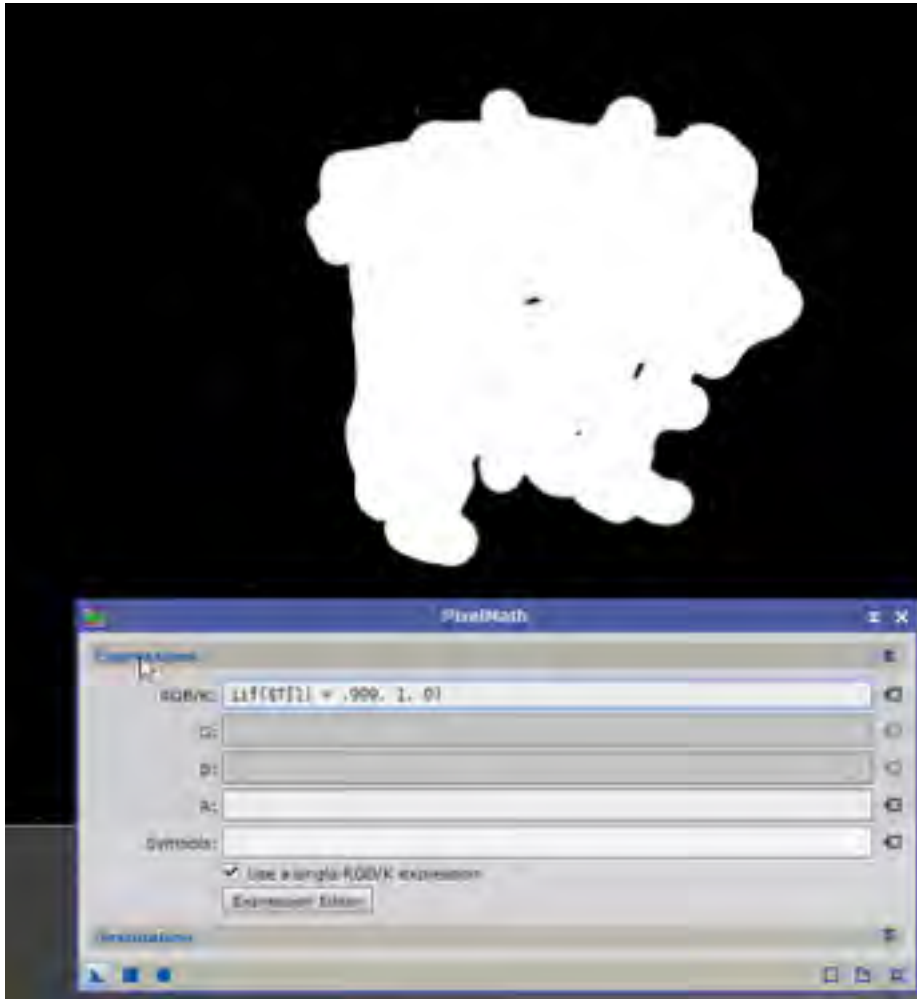
4. Cntrl-Click on the green image. Move the cursor back to the edge of the area to be masked, hold down the left mouse button and begin to outline the mask.



5. After finishing the outline, paint the interior of the mask, perhaps with a larger brush.



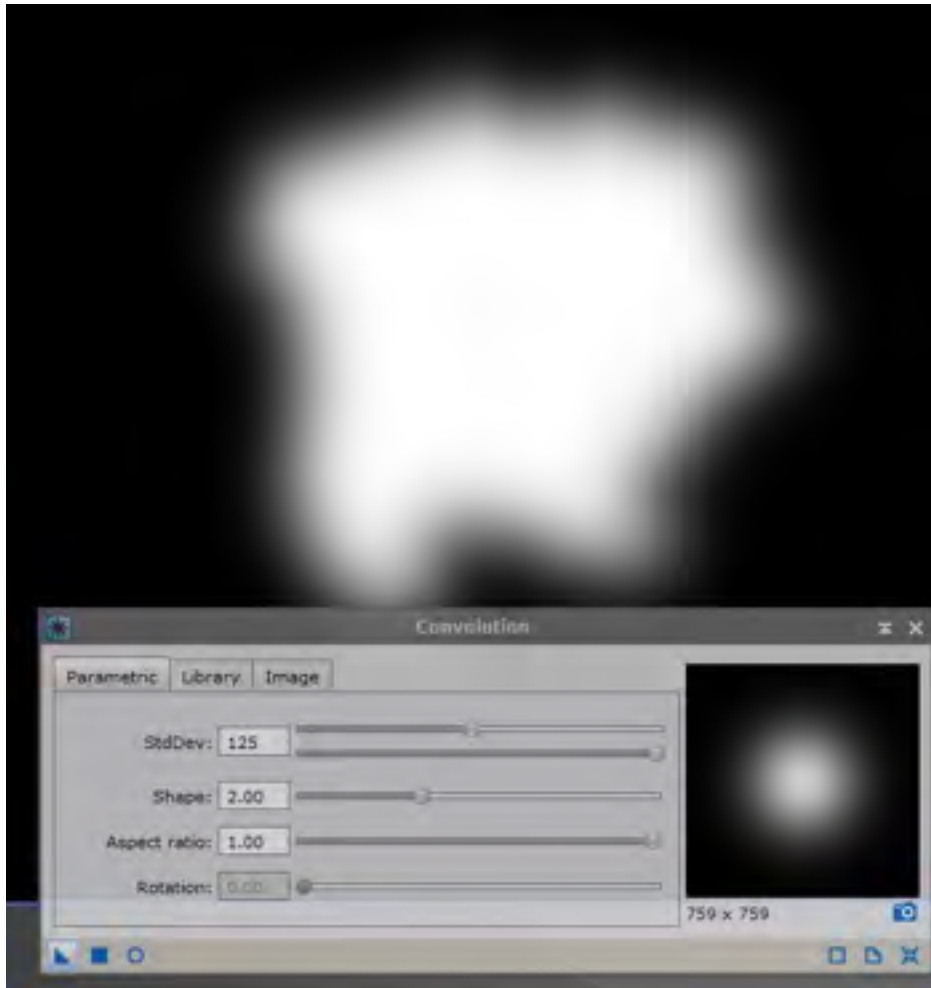
6. Now, we use PixelMath with the equation shown in the following figure. (“\$T[1]” represents the green component of the Mask-Image.) When we drop the PixelMath triangle onto the Mask-Image, we get ...



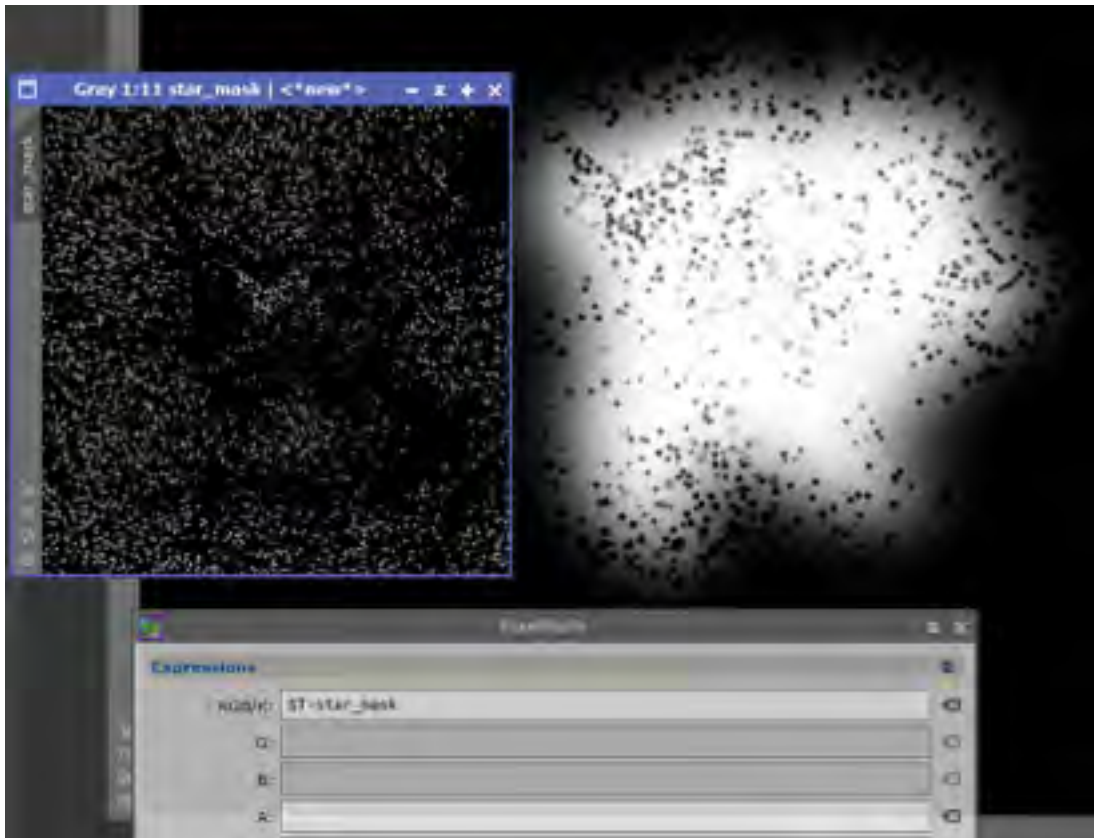
(Update: I now use the equation  $\text{iif}(\$T[0] < 0.1 \ \&\& \ \$T[1] > 0.9, 1, 0)$ . This leads to less need to touch up the resulting mask.  $T\$[0]$  is the amount of red in a pixel.)

7. Again using the CloneStamp process, we can touch-up the holes in the mask and the few stars that had enough green to sully our perfect background.

8. We now use the Convolute process, setting the Standard Deviation to a value that achieves the desired blurring, or gradation between the background and foreground.



9. If we wish to isolate the nebula from stars overlying it, we can use PixelMath again as in the figure below.



When we apply our mask (following figure), we can operate on the nebula and leave the background and stars unaltered.



To validate that the masking actually works, we resurrect the first nonlinear image for the above target and apply only the right-hand half of the mask then apply a strong degree of color saturation to the image. As obvious in the following, the mask works!



Well, that's it. Happy masking to one and all!

Quiz: What would we have if we outlined and filled the nebula as above, applied the equation:

`iif($T[0]<0.1 && $T[1]>0.9, 0, 1),`

blurred it, then subtracted the star mask?

Answer: a mask that reveals only the background without stars

**Photo of the Month**



**Abell 31 (Sh2-290)**

OTA: RH-305 (12" f/3.5) & RCOS (14.5" f/8); Camera: SBIG STX-16803; Observatory: Deep Sky West  
EXPOSURES USED: RH-305 RCOS

Hydrogen:	13 x 1200	14 x 1800 sec
Oxygen:	17 x 1200	15 x 1800
Sulfur:	-	12 x 1800
Red:	6 x 300	-
Blue:	10 x 300	-
Green:	8 x 300	-

Total exposure 32.5 hours; Image Width: ~0.5deg

Processed by Alex Woronow using PixInsight, Straton, CS6, On1 in 2018

Cheers, Alex Woronow

**Abell 31** is a “planetary nebula”; a gas and dust cloud that forms when a low-mass, dying star ejects its outer layer at the end of its life. This particular planetary nebula is the largest one known, having a diameter of about 23 light-years and lying at a distance of about 2,000 light-years. Because of its large size, its surface brightness is very low: just 22 magnitude/ arc sec.

## Photo of the Month



**OBJECT** M81 - NGC 3031 (Bode's Galaxy, with faint Holmberg IX above M81) Distance: 12 million LY  
**Telescope** Takahashi TOA-130F @ f/7.7  
**Mount** Takahashi EM200 Temma II  
**Camera** QSI 690wsg @ -15C  
**Filters** Astrodon Tru-Balance I-Series LRGB Gen 2  
**Guider** SX Lodestar  
**Settings** 18x10min L (bin1x1); 2x5min R, 3x5min ea GB (bin2x2); AstroArt5, CS4 (slightly cropped, 10xdarks/flats/bias)  
**Date/Location** 23 January 2018 - Las Cruces, NM

This image is LRGB, only. If you do a stretch of this, you can see I picked up some IFN...even with my light polluted skies. Lost an R frame in this session unfortunately, so carefully managed color. Also, combined a slight amount of color from my 2013 session (also with TOA and using previous QSI camera).

Copyright Jeffrey O. Johnson

**Photo of the Month**



Attached is a photo of the moon that I took last September. It's a very old moon - about a day and a half from New - rising in the east, with Venus several degrees west of it. The interesting thing is that the middle of the moon's arc is obscured, so it looks like devil's horns on the horizon.

Details:      Date: Sept 18, 6:28 am; Camera: Canon 60Da; Exposure: 3.2 seconds; Fstop: 13; ISO: 640  
Location: my backyard in Las Cruces                      Thanks...Ed Montes



## Photo of the Month



**NGC 2170** is a reflection nebula in Monoceros. The area is smoky with dark nebula in the background mixing with a host of other colorful objects. Most imagers focus on NGC 2170 with its intricate details but one needs more aperture to collect that data. The reddish swatches of Ha are the emission nebula LBN999.

NGC 2170 and LBN 994 are at the bottom center. Just above it is the star HIP 29082 with its reddish diffuse nebula. Above that is LBN 995 a reflection nebula. Off to the right is LBN993 another reflection nebula.

The large Ha areas are as mentioned LBN 999. It was very faint and mixed in with the dark nebula in that area giving it a muted red tone. At the top of the image is NGC 2132 a diffuse nebula with LBN 998 just below it.

RC10/FLI ML16200/ LRGB 5x5min/Ha 9x10min/CCDstack/PS6/

Las Cruces 1-18-18 By John Kutney