

# The High Desert Observer

## October 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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### ASLC Board of Directors, 2017

[Board@aslc-nm.org](mailto:Board@aslc-nm.org)

President: Howard Brewington; [President@aslc-nm.org](mailto:President@aslc-nm.org)

Vice President: Rich Richins; [VP@aslc-nm.org](mailto:VP@aslc-nm.org)

Treasurer: Patricia Conley; [Treasurer@aslc-nm.org](mailto:Treasurer@aslc-nm.org)

Secretary: John McCullough; [Secretary@aslc-nm.org](mailto:Secretary@aslc-nm.org)

Director-at-Large: Sidney Webb; [Director1@aslc-nm.org](mailto:Director1@aslc-nm.org)

Director-at-Large: Ed Montes [Director2@aslc-nm.org](mailto:Director2@aslc-nm.org)

Past President: Chuck Sterling; [csterlin@zianet.com](mailto:csterlin@zianet.com)

### Committee Chairs

ALCor: Patricia Conley; [tconley00@hotmail.com](mailto:tconley00@hotmail.com)

Apparel: Howard Brewington; [comet\\_brewington@msn.com](mailto:comet_brewington@msn.com)

Calendar: Chuck Sterling; [csterlin@zianet.com](mailto:csterlin@zianet.com)

Education: Rich Richins; [Education@aslc-nm.org](mailto:Education@aslc-nm.org)

Grants: Sidney Webb; [sidwebb@gmail.com](mailto:sidwebb@gmail.com)

Loaner Telescope: Sidney Webb; [sidwebb@gmail.com](mailto:sidwebb@gmail.com)

Membership: Open

Observatories:

Leasburg Dam: David Doctor; [astrodoc71@gmail.com](mailto:astrodoc71@gmail.com)

Tombaugh: Steve Shaffer; [sshaffer@zianet.com](mailto:sshaffer@zianet.com)

Outreach: Chuck Sterling; [csterlin@zianet.com](mailto:csterlin@zianet.com)

Web-Site: Steve Barkes; [steve.barkes@gmail.com](mailto:steve.barkes@gmail.com)

HDO Editor: Charles Turner; [turner@milkywayimages.com](mailto:turner@milkywayimages.com)

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

### October Meeting --

Our next meeting will be on **Friday, October 27**, at the Good Samaritan Society, Creative Arts Room at 7:00 p.m.

The speaker will be Glen Brookshear and the topic will be The Copernican Universe..

### 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?

October 2017

I love star parties, large or small. And, after moving to the southwest in 1990, the Texas Star Party became a favorite spring event for me. Held on the Prude Ranch between the McDonald Observatory and Fort Davis, TSP has attracted very large crowds during its thirty-nine year history. Some years, in fact, the ranch struggled to accommodate the ever-increasing number of amateurs wanting to experience those VERY dark west-Texas skies. These days, however, TSP organizers have resorted to a cap on registration and a lottery system to make their decision fair for everyone.



I put my name in the hat each year and have never been disappointed although some years I had to sit on a waiting list since space was not available when my name was pulled. But, someone's plans would change, and they'd need to cancel their reservation, which freed-up an RV slot for yours truly. This is not usually the case with tent camping since the ranch has plenty of real estate. Before I bought my motorhome, I tent-camped a few times during my fifteen trips to TSP. I've also stayed in the bunkhouses and motel rooms on the ranch. Years when they were full, I stayed at several different motels in Fort Davis. In recent times, though, I just park my RV on the ranch, buy a meal plan at the Prude's chow hall, and not worry about driving back to Fort Davis after a long night of observing.

Speaking of Prude food, it's not bad, and it's reasonably priced. They don't serve breakfast since most attendees are sleeping at that time, but lunch and dinner are served daily. There's also a late-night snack bar for those individuals seeking a caffeine boost via coffee or hot chocolate. Like many other star parties, TSP has various workshops, ATM and imaging contests, a swap meet, and many interesting speakers. But, seeing old friends is one of the most enjoyable parts of the TSP experience for me. I look forward to this event each year.

So, if you want some creature comforts with your dark-sky observing, you'll probably enjoy the Texas Star Party. In 2018, the event will be held from May 6 to 13. You'll need to submit your registration before the 19 January lotto drawing. You can find more details about TSP at their webpage at <https://texasstarparty.org/> I'll certainly be there in 2018, and I hope to see you on the Prude Ranch too.

Howard Brewington  
ASLC President  
October 2017

\* \* \*

## **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 September Report***

by Jerry McMahan

### ***Leasburg, Saturday, September 16***

Rich Richins came early and set up the clubs single stack Hydrogen Alpha scope so that people could look and the Sun. Dave Doctor and Sid Webb operated the observatory, assisted by Bob Armstrong. I set up the 8 inch on the Orion Mount in Alt-Az mode, for the first time at Leasburg, and the first time it was not used in Equatorial Mode. Chuck Sterling helped me with the Mount.

It was clear with a very dark sky and good seeing. We did see lightening in the South, but it was not near us at shut down time. The 16 inch was used on the globulars M4 and M13 as well as the Triffid Nebula and the Andromeda galaxy. The 20mm eyepiece was used for Saturn

I had Saturn and M4 in the 8 inch. The goto was not good, nor was the tracking. I had exactly the same problems when I set up the mount at home a couple of days later

### ***Tombaugh Observatory, Friday, September 29***

Steve Shaffer missed the event, which was a rare miss. Chuck Sterling and Trish Conely covered for him. Chuck set a rookie record for killing black widow spiders. Do to several months of the observatory not being used and wet weather, there were a lot of spiders. I supervised.

We had trouble with the scope tracking Saturn and the Moon. Trish and Chuck had to move the scope by hand often. I supervised. OK, I know, that means I watched.

Trish used the counter which registered 74 observations. That is a bit above average, so it was a good night.

### ***Moongaze, Saturday, September 30***

Chuck Sterling was back in action with his 10 inch on Saturn. I had the ETX on the Moon. Trish Conley was there again. Steve Barkes joined and helped train Trish with the use of a small scope.

We had a good night. Saturn's Cassini division was easily seen though the 10 inch. The best part of the evening was a four year old observer. Her mother said that, while they were in the car, the little girl noticed "Mister Moon" through the car window. She looked at the Moon, through the scope, over and over again. In between Moon observations, she would go back to see Saturn. It is times like this make these outreach events worthwhile.

\* \* \*

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

Oct	01	18:56	Sun Sets
	05	12:41	Full Moon
	12	06:26	Last Quarter Moon
	14	19:00	OUTREACH; Dark Sky Observing at Leesburg Dam State Park
	19	12:00	Uranus at Opposition
	19	12:11	New Moon
	26	12:00	Jupiter at Conjunction with the Sun
	27	16:22	First Quarter Moon
	27	19:00	ASLC Monthly Meeting; Good Samaritan Society, Activities Meeting Room
	27	20:00	OUTREACH; Tombaugh Observatory open at NMSU
	28	18:30	OUTREACH; MoonGaze, International Delights Café
Nov	01	18:17	Sun Sets
	03	23:22	Full Moon
	03	09:00	Renaissance Faire Setup
	04	10:00	Renaissance Faire Begins
	05	16:00	Renaissance Faire Ends
	05	02:00	Daylight Saving ends - Get out the longjohns, winter is coming
	10	13:37	Last Quarter Moon
	11	18:15	OUTREACH; Dark Sky Observing at Leesburg Dam State Park
	17	19:00	OUTREACH; Tombaugh Observatory open at NMSU
	17	19:00	ASLC Monthly Meeting; Good Samaritan Society, Activities Meeting Room
	18	04:42	New Moon
	23	00:00	Thanksgiving Day
	25	17:00	OUTREACH; MoonGaze, International Delights Café
	26	10:03	First Quarter 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 October meeting will be a presentation by Glenn Brookshear on the Copernican Universe.
2. The Road-Trip to Mount Graham is set for, Saturday, September 22, 2018. If you want to see The Pope's telescope, mark your calendars. If you have questions or need more info, contact Mike Nuss ([nuss1419@msn.com](mailto:nuss1419@msn.com))
- 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!
4. October 27 is designated as our Annual Meeting, as required in the By-Laws, and to preserve our non-profit status. One important function of the meeting is to formally elect Officers and Directors for 2018. The last page of the HDO includes the Official Ballot for members to fill out and sign. Read the instructions to figure out what to do if you cannot bring your Ballot to the meeting.

\* \* \*



### ***Treasurer's Report:***

Trish Conley, Treasurer, presented a status of the Society's accounts. She noted that recent sales of eclipse glasses paid for the alarm system for the observatory at LDSP. She also reported that the Royal Astronomical Society of Canada (RASC) 2018 Observer's Handbook is ready to order. She or Bert Stevens will coordinate the request for Handbooks and calendars with a last call via email.

### ***Nominating Committee:***

Howard reported that all four (4) 2017 officers had agreed to serve another term for 2018. Ed Montes can serve an additional term as Director-at-Large but Sid Webb is "term limited" as Director. Steve Barkes has agreed to be a candidate for the open Director-at-Large position. Despite the convenience of potentially concluding the election at tonight's meeting, ballots will be prepared and provided to the full membership and the election will be formally conducted at the Annual Meeting in October as called for in the By Laws. The slate of candidates is as follows:

President:	Howard Brewington
Vice-President:	Rich Richins
Treasurer:	Patricia Conley
Secretary:	John McCullough
Director-at-Large, Position #1:	Steve Barkes
Director-at-Large, position #2:	Ed Montes

Check Sterling will continue to serve as most immediate Past-President to fill out the Board of Directors.

### ***Renaissance Arts Faire 2017:***

This year's RenFaire is 04 05 November at Young Park with setup on 03 November. Contact Trish Conley if you can help.

### ***Presentation:***

This month's presentation was in two parts.

#### **Part 1: The 2017 Great American Eclipse**

Howard Brewington prefaced the presentation by recounting his and wife Maya's plan to view the eclipse from a Wal Mart parking lot in Casper, Wyoming. This was already a change from Howard's initial plans. Things worked out remarkably well despite extremely heavy post-eclipse traffic and Howard and Maya were both glad they made the trip. Howard presented some images and video he obtained during the eclipse. Other members including Wes and Carol Baker, Bert and Janet Stevens, Jeff Johnson, Rich Richins, and Steve Barkes shared their impressions and images of the event.

#### **Part 2: Telescope Donations**

As mentioned earlier, former member Vince Dovydaitis recently gave a large number of telescopes and other equipment (two truckloads) to the Society as he and wife Fran are downsizing to relocate to a retirement village. Sid Webb provided an inventory of this donations so members could see the range of material submitted. The donated equipment includes an 8" Meade SCT, several binoculars, and a Coronado PST. Sid would like ideas on disposition of this donation. Some equipment can be absorbed into the Loaner Telescope program but not all. A suggestion of an auction to members of remaining equipment after the Loaner Telescope program and the Society's observatories fulfilled any requirements or needs they currently have. Several Board members volunteered to go through the inventory on 23 September to determine what to retain for the Society's needs and to start evaluating and pricing the remainder. Further plans will be announced via email.

Steve Shaffer broached a final topic that he would have offered during the Show & Tell portion of the meeting. He is involved with the Southern New Mexico State Fair that occurs each September at the fairgrounds west of Las Cruces. He wonders if the Society would consider setting up telescopes and solar scopes with assistance from the Astronomy Department at NMSU as public outreach during the Fair. It is too late to accomplish this in 2017 but perhaps the Society will consider it for 2018.

The September meeting of the Astronomical Society of Las Cruces concluded at 8:37 pm. A social time followed at Pecan Grill.

-Respectfully submitted by John McCullough, ASLC Secretary

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### ***Back at the Telescope***

by Bert Stevens

The evening sky is filled with stars that are the backdrop to the planets as they dance through the sky. While the planets present a face to us that are visible in a telescope, some of the stars also give us a different kind of show.

About two-thirds of the stars are not single stars but multiple stars. It seems that stars do not form alone; they have companion stars or a family of planets around them. While sometimes companion stars are too close to the primary star to be seen from Earth, many times they are separated enough to be visible with the naked eye.

The most famous example of a naked-eye double star is Alcor-Mizar in the middle of the Big Dipper's tail. These two are separated by 11.8 minutes-of-arc, one-third the diameter of the full Moon. Mizar is the brightest of the pair, shining at magnitude 2.06 while Alcor is only magnitude 4.02.

If you have ever tried to separate this pair visually, you will know it is quite a bit more difficult to find the fainter Alcor. This is a common problem with double star observing. It is much easier to make



out a double star pair when the two components are of equal brightness than when they have greatly different magnitudes. In the case of Alcor and Mizar, the magnitude difference is 2.0, which is factor of 6.3 in brightness.

*Figure 1: An image of the wide double star Alcor (upper left) and Mizar (lower right). Mizar itself is a double star, with Mizar A above Mizar B in this image.*

Alcor and Mizar are an actual binary double star. Some double stars in our sky are two stars at vastly different distances that just happen to line up as viewed from Earth. They are still called double stars, but they are not a binary star. Alcor and Mizar form a high-separation binary star, taking at least 750,000 years to complete an orbit.

This pair of stars is between 0.5 and 1.5 light-years apart at a distance of 78 light-years. They are part of the Ursa Major Moving Group, a group of stars in Ursa Major that are all moving in the same direction and share a common birth. They were all once part of an open cluster that has become very dispersed over the centuries.

Once a telescope is trained on Mizar, it is revealed as a double star with two white components 14.4 seconds-of-arc apart (about 500 light-years). It was the first telescopic binary to be discovered, most likely by Italian mathematician Benedetto Castelli in 1617. The two take at least 5,000 years to complete an orbit.

The two stars in Mizar are magnitude 2.27 and 3.95. The brighter, Mizar A, is also famous in its own right, being the first spectroscopic double star to be discovered by Edward Charles Pickering in 1889. This binary star pair orbit in just over twenty days. Later, Mizar B was also discovered to be a spectroscopic binary as well.

Spectroscopic binaries are binary stars that are orbiting so close together that we are unable to see them separately in a telescope. The spectrum of the star actually shows features of more than one type of star. Sometimes the spectrum shows the lines being “double humped”, representing the differing Doppler shift of the two stars. In the case of Mizar A, the two components are probably around seven thousandths of a second-of-arc apart.

Alcor also was discovered to be a spectroscopic binary, giving this star system six stars, a sextuple system.

Alcor-Mizar has a mix of double stars. It has a wide pair, a closer pair and spectroscopic pairs. We are unable to split a spectroscopic pair with our telescopes, but the wider ones are visible. The characteristics needed to observe double stars are very similar to those needed for planetary work. The critical issue is the size of the Airy disc generated by the telescope.

The Airy disc is named after English mathematician and astronomer George Biddell Airy who, among many other accomplishments, studied how optical systems form images. Airy wrote the first full theoretical treatment explaining

*Figure 2: A red laser beam is used to create an Airy disc by passing it through a 0.09-millimeter pinhole onto a photographic plate. The plate was placed 65 millimeters from the pinhole and the Airy pattern was projected directly onto the photographic plate. Twenty-seven rings can be seen, counting toward the upper left.*

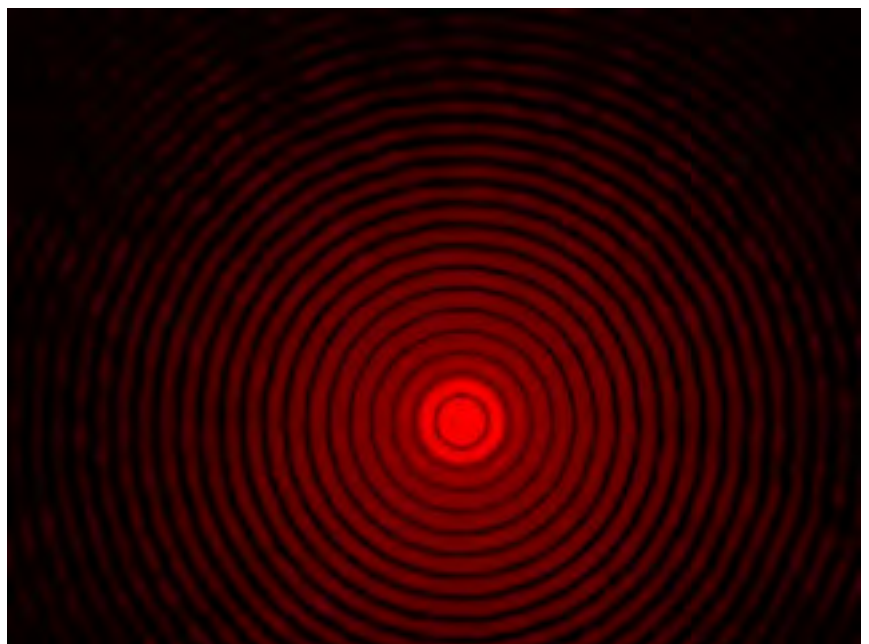
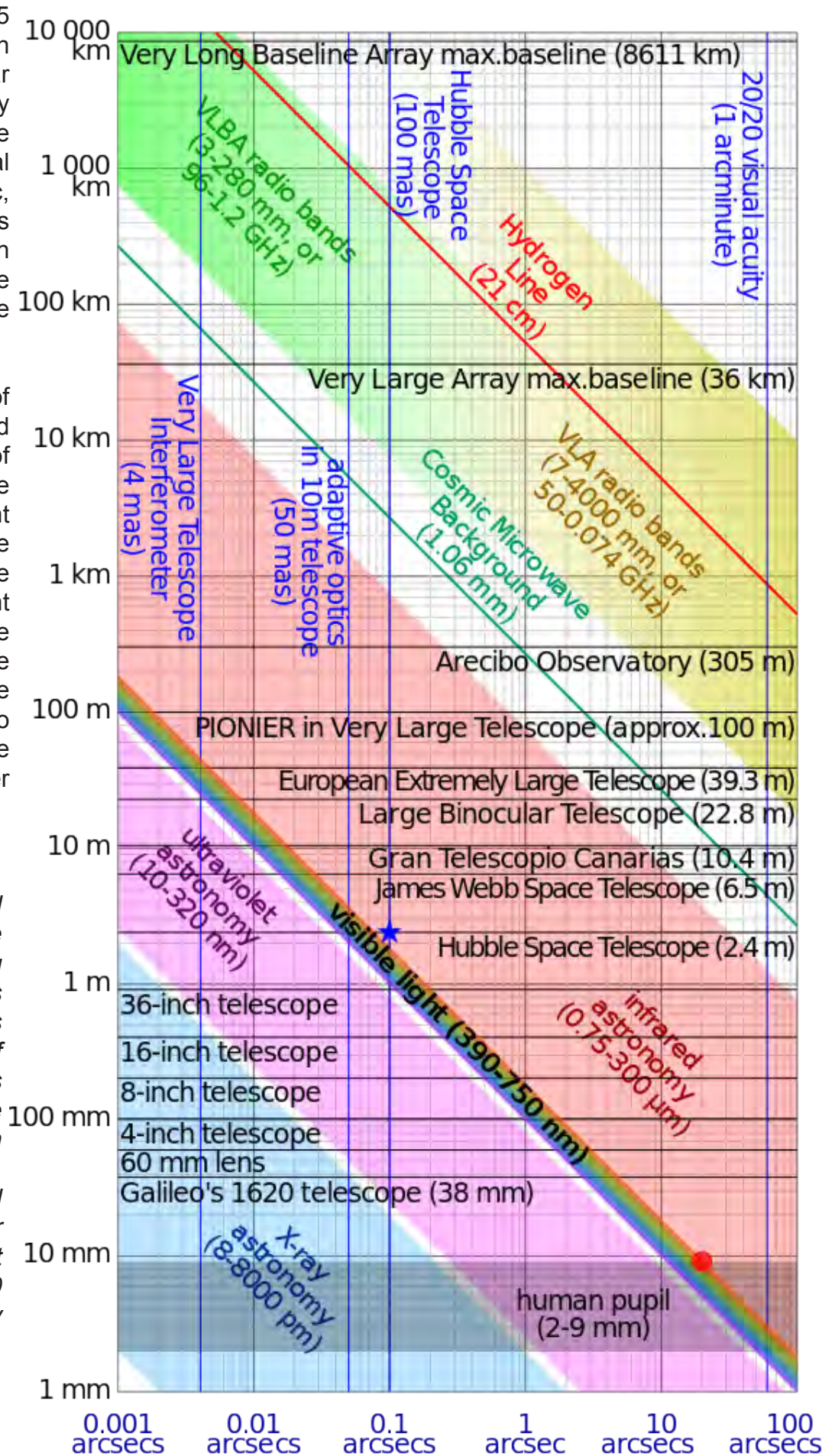




image formation (his 1835 “On the Diffraction of an Object-glass with Circular Aperture”). The Airy pattern of a point source consists of a central disc, called the Airy disc, surrounded by a series of concentric rings, which decrease in intensity the further they are from the central disc.

The theoretical size of the Airy disc is controlled by the diameter of the telescope and the wavelength of the light being used. The larger the telescope, the smaller the Airy disc and the more light that is subtracted from the rings and added to the disc. This reduces the smearing between the two components of a double star, allowing the observer to split closer doubles.

**Figure 3:** Resolution is plotted against telescope diameter in this log-log plot comparing various astronomical instruments at various wavelengths of light. The blue star shows that the Hubble Space Telescope is diffraction limited at 0.1 arcseconds. The human eye should have a resolving power of 20 arcseconds, but it is normally only 60 arcseconds as marked by the red circle.



A modern achromatic refracting telescope is perhaps the best choice for a specific aperture size. The apochromat is even better, reducing the chromatic aberration to zero. Chromatic aberration is caused by the different colors of light being bent differently by the lens. This will cause the different colors of light to come to a focus at different points along the central axis. The results in the star having a color ring around it spreading the light of the star over a wider area. Apochromats are designed to prevent this from happening, giving a brighter and more focused image of the star. This is very important if you are looking at a double star whose two components have a very small separation.

Unfortunately, amateur-sized refractors usually have small apertures. The ability to “split” a double depends on the resolution provided by the telescope, which is related to aperture. The larger aperture gives a better resolution. Unfortunately, large refractors are expensive and heavy; so many amateurs turn to the reflecting telescope to get higher resolution.

The reflector does not have chromatic aberration, since its mirror surfaces reflect the different colors in exactly the same way. The reflector (in the common designs) has a secondary mirror that has to be held on-axis by a set of supports, called a spider. The type of secondary used will change depending on the design of the reflecting telescope.

The secondary mirror and spider have diffraction effects that cause the Airy disc to become slightly smaller as some of the light is shifted to the first bright ring. This makes the overall Airy pattern larger, reducing the resolution. The larger the secondary that is required to intercept the entire light cone, the more light that is diverted into the first ring.

A reflecting telescope with a higher  $f/$  ratio will have a smaller secondary, while the low  $f/$ ratio telescope has the secondary mirror intercepting the light-cone where it is larger, requiring a larger secondary. For both planetary work and double star work the longer focal length mirror with its smaller secondary are preferred.



Double star observing can be an interesting and useful activity. There are many double stars that are beautiful, like Albireo (Beta Cygni), a blue-gold double that is worth looking at whether you are a double star observer or not. The color contrast is between the brighter K2 red giant star mixed with an extremely close B8 blue main sequence star and the other visible star, which is also a fainter B8

*Figure 4: The beautiful blue-gold double star Alberio (Beta Cygni) is one of the most colorful stars in the sky because of the brightness of the stars. This allows the eye to detect the colors since the human eye's ability to recognize colors is limited to brighter objects. Fainter objects appear only in shades of grey. This image was taken July 1, 2008.*

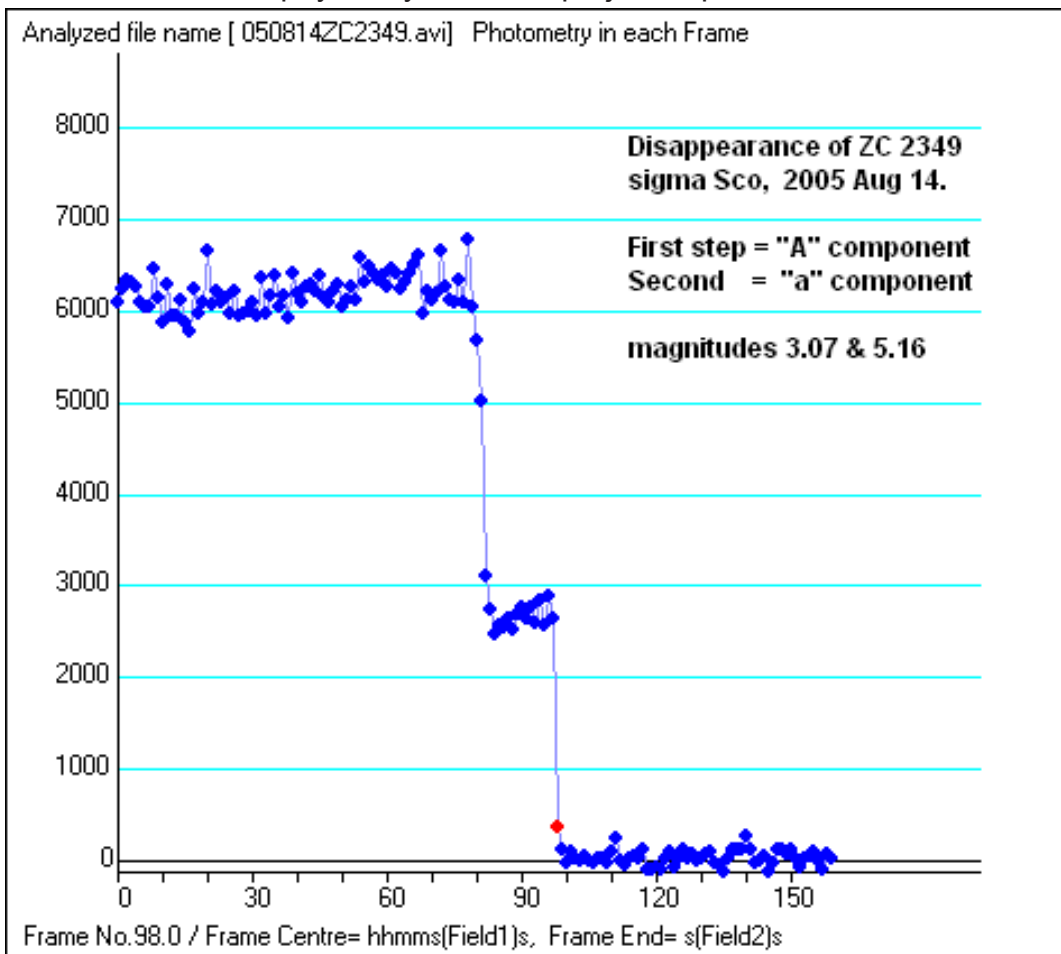
blue main sequence star. The stars in this visible pair are 35 seconds-of-arc apart and about 430 light-years away. Astronomers do not know if they are orbiting each other as a binary or they are just on the same line-of-sight. If they are a binary pair, they take over 100,000 years to complete an orbit.

Other double stars are closer together and orbit more quickly. The double star observer will take measurements of the distance between the two (or more) stars in the system and the angle they form relative to north. There are various ways of doing this, one being a filar micrometer. While professional astronomers have very complex devices, the amateur can get an eyepiece with a micrometer built in that can make these measurements. These can then be used to improve the orbits in the star system.

Double star observing can also be done with a CCD camera, using astrometry programs to calculate the positions of the component stars. This usually requires CCDs with small pixels and a long focal length. Occultations of stars by minor planets or the Moon can also reveal that a star is a very close double by seeing the star's brightness drop in steps, rather than just disappear behind the Moon or minor planet.

Surprisingly, many double stars have not been measured for a long time and are in need of observation to refine their orbit. Double star work is not currently a popular activity, so these stars have languished. This would be an interesting field for you to contribute your observations to the advancement of astronomy.

If you are interested, you can peruse the electronic Journal of Double Star Observations from the University of Southern Alabama. Their website is <http://www.jdso.org>. You can also consider joining the International Association of Double Star Observers (IADSO) at <http://iadso.org>. The IADSO "promotes the science of double and multiple stars through astrometric, photometric, and spectroscopic observations, the identification of physically bound or projected pairs, the determination and refinement of binary star



orbits, and the publication of these observations and analysis in recognized scientific journals". Good observing!

*Figure 5: The occultation of the star ZC 2349A is plotted in brightness units versus time. The star is its normal brightness as it is plotted with time increasing from the left. As the first component of the star is covered, the brightness level drops to a little less than half. Then the remaining component is covered and the brightness drops to zero. This is referred to as a step event in an occultation.*

\* \* \* \*

**Photo of the Month**



NGC 4565 The Needle Galaxy

DSW RCOS 14.5" STX-16803

R	15 x 1200"
G	9 x 1200"
B	14x 1200"
L	17 x 1200"

Total ~18 hrs

Image width ~27.5 arcmin

An edge-on spiral galaxy at ~43M light-years away in the constellation Coma Berenices. It lies close to the North Galactic Pole and has a visual magnitude of approximately 10.

Processed in PixInsight 1.8.5 with color calibration invoked

Alex Woronow Faint Light Photography



**M16 - The Eagle Nebula:** The Eagle Nebula (catalogued as Messier 16 or M16, and as NGC 6611, and also known as the Star Queen Nebula and The Spire) is a young open cluster of stars in the constellation Serpens, discovered by Jean-Philippe de Chéseaux in 1745–46. Both the “Eagle” and the “Star Queen” refer to visual impressions of the dark silhouette near the center of the nebula, an area made famous as the “Pillars of Creation” photographed by the Hubble Space Telescope. The nebula contains several active star-forming gas and dust regions, including the Pillars of Creation. The Eagle Nebula is part of a diffuse emission nebula, or H II region, which is catalogued as IC 4703. This region of active current star formation is about 7000 light-years distant. A spire of gas that can be seen coming off the nebula in the northeastern part is approximately 9.5 light-years or about 90 trillion kilometers long. The cluster associated with the nebula has approximately 8100 stars, which are mostly concentrated in a gap in the molecular cloud to the north-west of the Pillars. The brightest star (HD 168076) has an apparent magnitude of +8.24, easily visible with good binoculars. It is actually a binary star formed of an O3.5V star plus an O7.5V companion. This star has a mass of roughly 80 solar masses, and a luminosity up to 1 million times that of the Sun. The cluster’s age has been estimated to be 1–2 million years.

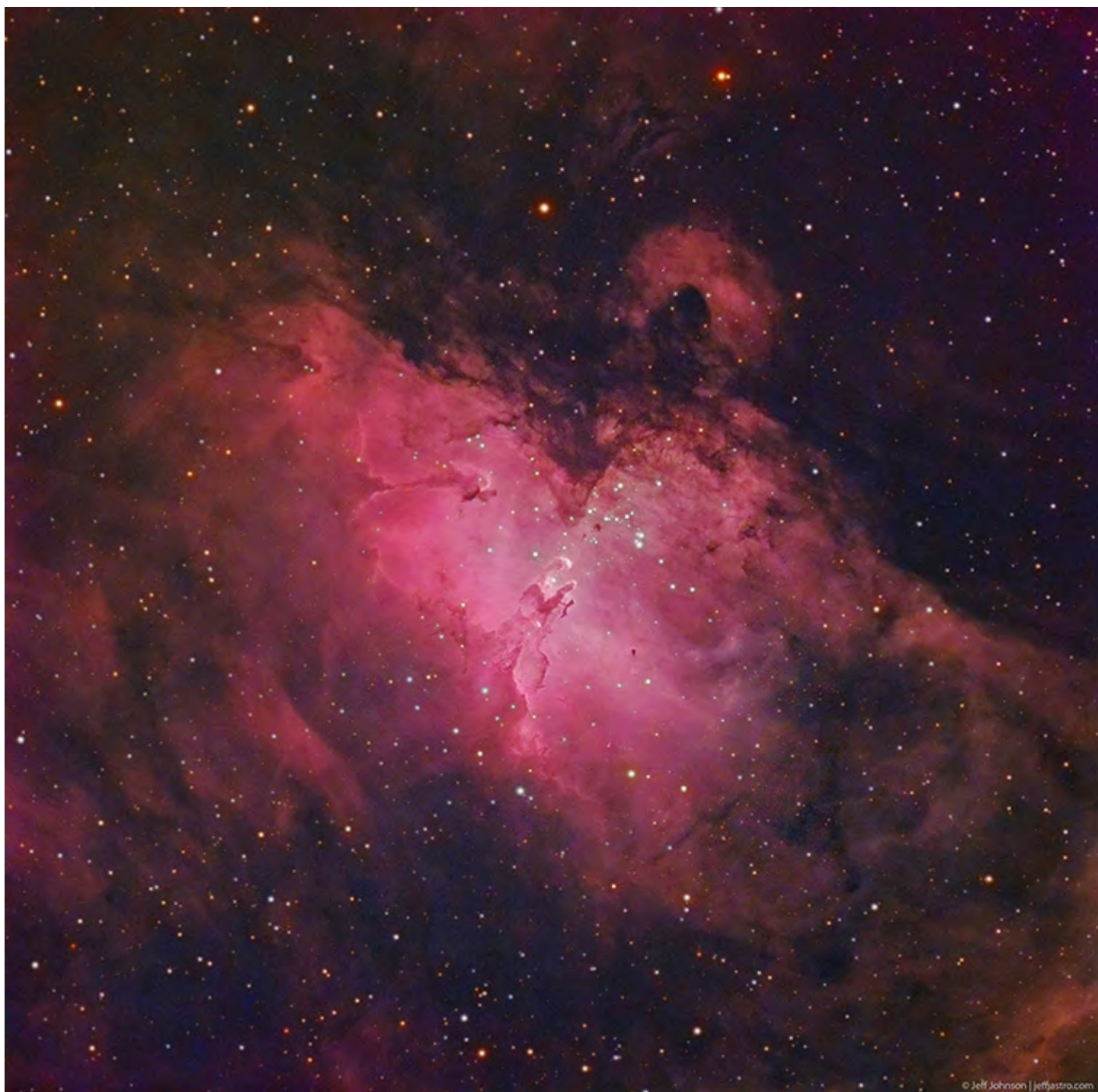
This was acquired on 2017/09/25 from Las Cruces, NM, using an Astro Tech f/4 Imaging Newtonian with a Canon 60Da camera set at ISO1600 and 60 seconds, taking 27 images, mounted on a Celestron CGE. Chuck Sterling, Las Cruces, NM

**Photo of the Month**



**OBJECT** Messier 27 the Dumbbell Nebula.  
**Telescope** RC 10  
**Camera** QSI 6120  
**Settings** 4x5 min LRGB Ha OIII ea  
**Processing** CCDstack /PS6/  
**Date/Location** 7 October 2017 - Las Cruces, NM  
by John Kutney

## Photo of the Month



**OBJECT** M16 - Eagle Nebula (“Pillars of Creation”) - Distance: 7,000 light years  
**Telescope** Takahashi TOA-130F @ f/7.7      **Mount** Takahashi EM200 Temma II  
**Camera** QSI 540wsg @ -10C  
**Filters** Astrodon Ha (3nm), Astrodon Tru-Balance I-Series LRGB Gen 2  
**Guider** SX Lodestar  
**Settings** 15x10min Ha, 4x10min L (bin1x1); 5x5min ea RGB (bin2x2); AstroArt5, CS4 (slightly cropped, 10xdarks/flats/fdarks/bias)  
**Date/Location** 27 August, 3 September 2017 - Las Cruces, NM  
**Notes** Data collected over two nights. This image is LHaRGB, where Ha was used in combination with Luminance and Ha:R (80:20) was used for the Red channel. Copyright Jeffrey O. Johnson

# Astronomical Society of Las Cruces

## Ballot for 2018 Society Officers

And

## 2017 Annual Meeting Announcement

Vote for one (1) candidate for each position **OR** write-in the member of your choice:

<u>Position:</u>	<u>Candidate</u>	<u>Write-in</u>
President-	<input type="checkbox"/> Howard Brewington	<input type="checkbox"/>
Vice-President-	<input type="checkbox"/> Rich Richins	<input type="checkbox"/>
Treasurer-	<input type="checkbox"/> Patricia Conley	<input type="checkbox"/>
Secretary-	<input type="checkbox"/> John McCullough	<input type="checkbox"/>

Vote for two (2) of the candidates below **OR** write in the member of your choice:

<u>Position:</u>	<u>Candidate</u>	<u>Write-in</u>
Director-at-Large (Position #1)	<input type="checkbox"/> Steve Barkes	<input type="checkbox"/>
Director-at-Large (Position #2)	<input type="checkbox"/> Ed Montes	<input type="checkbox"/>

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Member Signature	Printed Name	Date
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**Note:** Write-in candidates must be current voting members of the Astronomical Society of Las Cruces (ASLC) and agree to serve if elected.

For confirmation purposes, please sign and date your ballot. Mail or email your ballot to the Secretary and/or the Elections Committee at P.O. Box 921, Las Cruces, NM 88004 or [Secretary@aslc-nm.org](mailto:Secretary@aslc-nm.org) to arrive no later than 26 October 2017. Ballots may also be hand delivered or cast at the Annual Meeting.

### **2017 ANNUAL MEETING ANNOUNCEMENT**

The Annual Meeting of the Astronomical Society of Las Cruces will be held at 7:30 pm on 27 October 2017 in the Creative Arts/Activities Room, Good Samaritan Society-Las Cruces Village, 3011 Buena Vida Circle, Las Cruces, NM.