STARRY NIGHTS

SUGAR CREEK ASTRONOMICAL SOCIETY NEWSLETTER

"This was not easy, being 200,000 plus miles away from home… it's a special thing to be a human and it's a special thing to be on Planet Earth." Artemis II commander, Reid Wiseman

JUNE 2026 EDITION

Member Astronomical League

Club Web Page https://sugarcreekastro.org/

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COVER PHOTO: One of the "original rules" for this newsletter was to use photos exclusively from club members. Due to the historic success of the Artemis II mission, it is fitting that that rule should be suspended. Thanks, NASA!

IN THIS ISSUE

Newsletter

Editor: Jack McDaniel
Associate Editor: Randy Holder
Event Photographer, Wendy Haynes
Articles in this issue by: David Cater, Jack McDaniel
Website: Doug Kunzman

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Club AstroNotes

At our club meeting on May 12th , Molly reminded the members about the upcoming star party at Prairie Grove Military Park on June 12th. She informed us that 40 people attended the Hobbs star party on May 9th.

Vern gave the Treasurer's report and reminded members to make sure their dues for 2026 are paid.

Kent Marts presented the Constellation of the Month: Aquila the Eagle. The constellation contains Altair, one of the stars in the Summer Triangle. Aquila does not contain any Messier objects but has some small planetary nebula, including NGC 6804,6781 and 6751. It also has a globular cluster NGC 6760.

Kent then gave a presentation on his trip to China to visit a supplier of telescope parts for Explore Scientific. It took 36 hours of travel to reach his destination near Shanghai.

Clint Willis showed the club some great pictures of the Andromeda Galaxy, galaxy M31 and solar flares taken with his DSLR on a 115mm refractor.

Ray Fletcher followed with a presentation on his visit to the Texas Tech University observing site at the 3 Rivers Ranch in west Texas.

Events Scheduled for June

Tuesday, June 9th at 6:30pm- Monthly Club Meeting at First Christian Church, 807 S.E. 14th Street, Bentonville.

Friday, June 12th Star Party at Prairie Grove Military Park.

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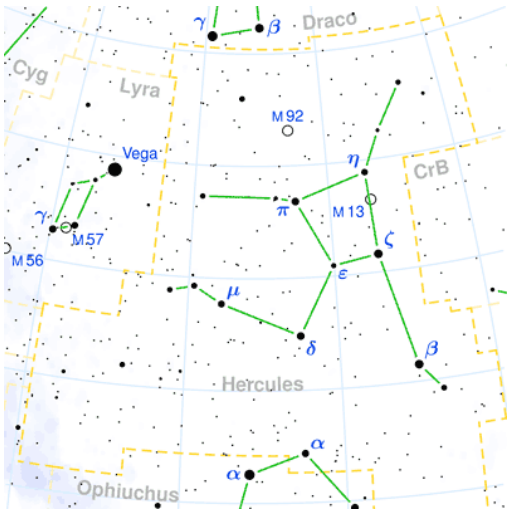
What's Up in June from the Editor

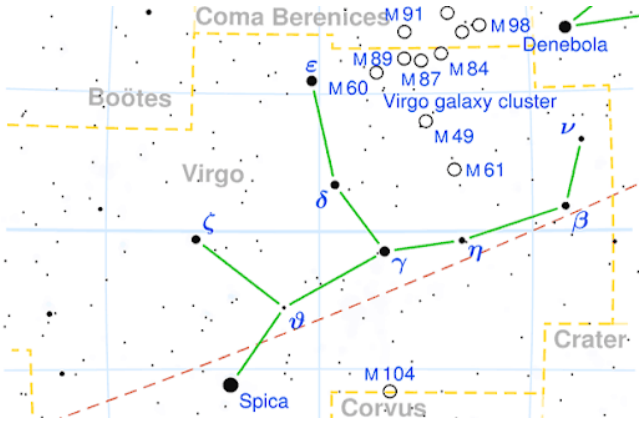
Solar System: **Jupiter** has been dominating the evening skies for several months. In June we will say farewell to the giant, but it will go out with a visual "bang". In the first week in June, it will edge nearer and nearer to **Venus** in the western sky. Finally, just after dusk on June 9th the pair will be less than 2 degrees apart. **Mercury** will also be close by. On the 15th a crescent **Moon** lines up with the three planets just after dusk. These will be great opportunities for visual observing and wide-angle photography. Don't miss them! For you early morning risers, **Mars** and a crescent **Moon** will be close to each other in the eastern skies just before sunrise on June 12th.

Deep Sky: **Virgo** (image below) transits our local meridian this month for the convenience of all you galaxy enthusiasts. **Hercules** (image below), home of famed globular cluster **M13**, will be high in the sky this month. Comprised of at least 100,000 stars, it can easily be seen in binoculars. Nearby globular cluster **M92** is also a great sight in small telescopes as is **NGC 6229**.

Both constellations will be ideal for viewing and photography all month.



Hercules showing locations of M13 and M92



Virgo showing locations of selected galaxies and the great galactic cluster

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Club Events: Hobbs State Park Public Star Party May 9th

We had an enthusiastic group of 35 plus visitors to the May 9th Hobbs event. Jack McDaniel used a basketball, a gumball and some seeds and putty and six volunteers from the audience to illustrate the scale of the solar system. Chris Pistole informed the group on the effects of light pollution on bird migration and Molly Ussery presented astronomy history. We gathered outside for a great night of observing and astrophotography. One of the objects captured was globular cluster Messier 3 in the constellation Canes Venatici. Located about 33,900 light-years from Earth, M3 is a massive globular cluster containing roughly half a million stars. This image and other images were shown to the visitors using club member's android tablets and I-pads.

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Photos of the Month

Milky Way
Photo by Doug Kunzman

North American Nebula
Photo by Randy Holder

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David Cater's Column:

David is a retired college professor who taught astronomy courses at John Brown University. He is an enthusiastic amateur astronomer and loves astrophotography and public outreach. In this article, David covers the basics of solar photography: essential for those who want to take up the challenge.

Solar Photography: Continuum

There are two types of solar photography generally open to amateur astronomers: Continuum Solar Photography and Limited Wavelength Photography, the most common example of which is photography of solar phenomena in H alpha wavelength. This column deals with continuum photography.

With continuum photography, photographers are photographing the Sun in its natural light, essentially what is seen by the naked eye. Having said this, **DO NOT LOOK AT THE SUN** without the proper filtered protection. Always be aware that the Sun is dangerous when looked at directly!

The solar continuum photographer must use some sort of device to protect the optics of the photographic system and the camera or image-gathering device one is using. I have used two types of protection: 1 Solar filters that fit onto the front end of the optical-camera system, and 2] The Herschel Wedge.

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David Cater's Column:

Solar filters for the front end of the telescope are usually made of glass or coated Mylar or other transparent polymer which is then coated with a silver-like radiation rejection substance that only allows about 1/10th of 1 per cent passed light. They can be used with either a refractor, reflector or catadioptric, such as a Schmidt-Cassegrain.

A Herschel Wedge, invented by William Herschel in the 1700's, is a sort of diagonal with a clear reflecting element inside that is pitched at an angle such that only a very small amount of the Sun's continuum radiation is passed to the eye or the camera. Often, presently manufactured Herschel Wedges allow solar light to come out of the back end of the Wedge and this greatly aids finding the Sun to photograph it. Such wedges can be highly effective but they are more expensive than front-end solar filters.

Also, there are limits as to how much aperture can be used with a Herschel Wedge. Herschel Wedges are designed only to be used with refractors. I wouldn't use one on a refractor of greater than 4 inches aperture. To be on the safe side, I limit the aperture I use to 80mm. I personally use a Herschel Wedge because I think the sharpness of the image is a bit better. If I were just starting out though, I would get a front-end filter, keep expense down, and experiment to see if continuum photography of the Sun is for you. Make sure the front-end filter **FITS TIGHTLY** over the entire objective lens! **No light leaks!**

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David Cater's Column:

What can be photographed in the natural light of the Sun? Sunspots can be wonderfully photographed in the continuum! Total, Annular and Partial Solar Eclipses can all be photographed effectively in the continuum. I have photographed all of these phenomena and these can provide very pleasant images of high quality. Included in this column is a photograph of a Partial Eclipse of the Sun I made in 2014. I knew the Partial Eclipse was going to happen and I used a 120mm refractor with a front-end solar filter to make the image. I used a Canon digital camera set at ISO 100 and an exposure of 1/1000th. second. What I didn't expect at the time was one of the largest sunspots I had ever seen! Scientists eventually measured this spot at about 83,000 miles across! I processed the image in Photoshop and produced what you see in this column.

Let's walk through the process with a digital camera. Before doing anything else, place the front-end solar filter snuggly on the front end of the telescope. Connect your digital camera to the viewing end of your 'scope, aim the telescope at the Sun, and when you find it, center it and get the sharpest focus you can. Don't use your finder to find the Sun! Cover your finder with something completely opaque before setting up your rig and use the 'minimum shadow technique'. The minimum shadow technique is looking for the smallest shadow your telescope casts on the ground and then using Live View or the aiming device your camera has, to center the Sun.

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David Cater's Column:

If you have it, use a remote shutter release mechanism to shoot the exposure. You may have to experiment considerably to get the correct exposure. It is not unusual to overexpose your first few images.

If you have set your ISO to 100 or 200, try about 1/500th of a second and adjust from there. Also, if your mount will track, keep tracking on—there will be many fewer adjustments to the 'scope as you go along.

The best time to shoot the Sun is before 10:00 a.m. unless you are trying to achieve some sort of special effect, like a sunset image.

If possible, set your 'scope on wet grass, but avoid black-top or white concrete.

As in all photography of Solar System objects, turbulence is the main enemy of clarity with poor focus the second reason the image can be poor.

Shoot many images because, chances are, one of them will have been captured when turbulence was minimal.

Have fun but keep SAFETY always in mind. No great photograph you could ever make is worth losing your sight!!!

Next—photographing in H-alpha.

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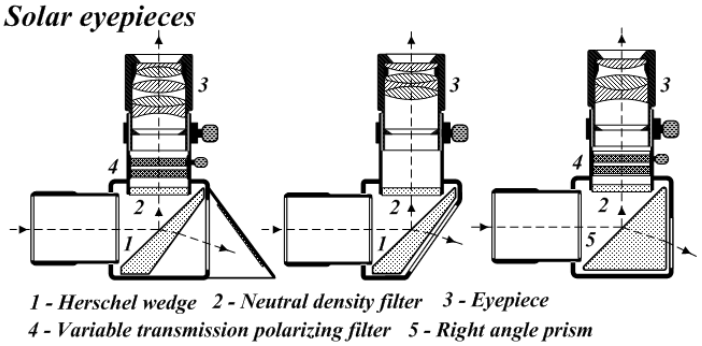
David Cater's Column:



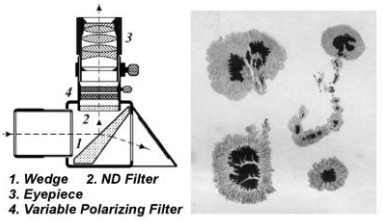
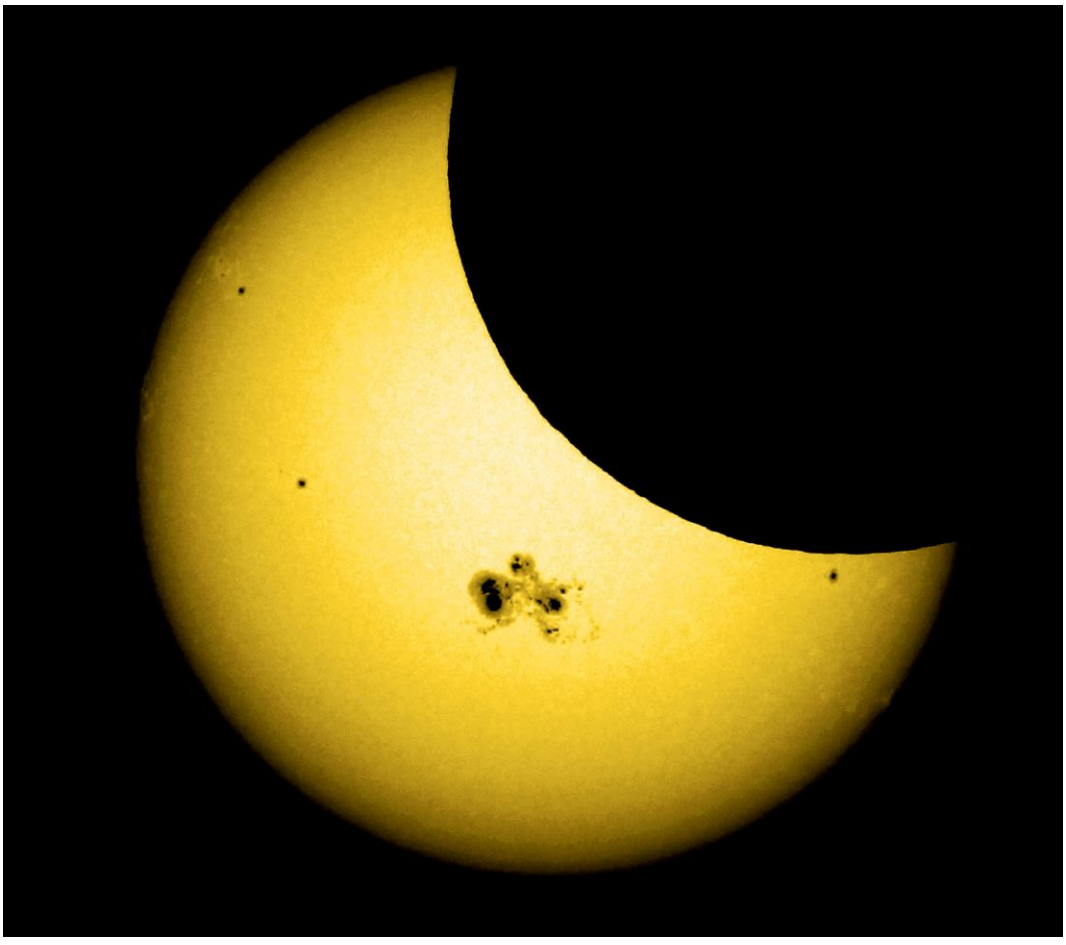


Figure 5. The Herschel Wedge: John Herschel first proposed the idea of using a wedge to split off a safe amount of sunlight for observation (left). His resulting observation sketches are as impressive today as they were 150 years ago (right).



2014 Partial Solar Eclipse

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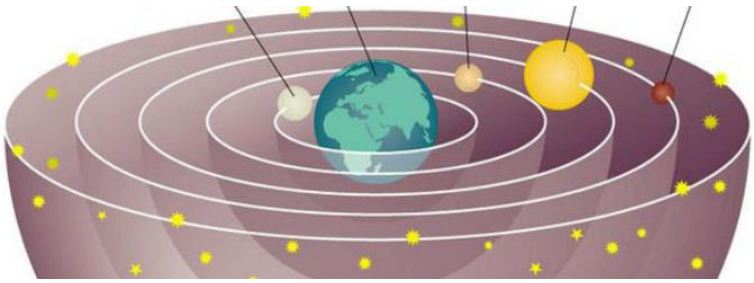
Ye Olde Astronomer's Column

Ye Olde Astronomer (a.k.a. YOA or Jack McDaniel) is living proof that you are never too old to reinvent yourself! YOA morphed from a retired engineer and his wife's chief helper into a devotee of all things astronomical. YOA's intent is to share his enthusiasm for the cosmos.

Kepler's Laws of Planetary Motion: Historical Background

From the time of the Roman Empire until the 16th century the prevailing model of the solar system was the Geocentric Model. In this model the Sun, Moon, planets and stars orbited the Earth. The Earth was the center of the universe.



This view was the result of the influence of the great Greek philosopher (but not so great scientist!) Aristotle and promulgated by the Roman astronomer Ptolemy several centuries later in his work called the Almagest. The Geocentric Model fitted the religious orthodoxy of the Middle Ages and so became the only acceptable model. Other ideas were considered inferior or even heretical.

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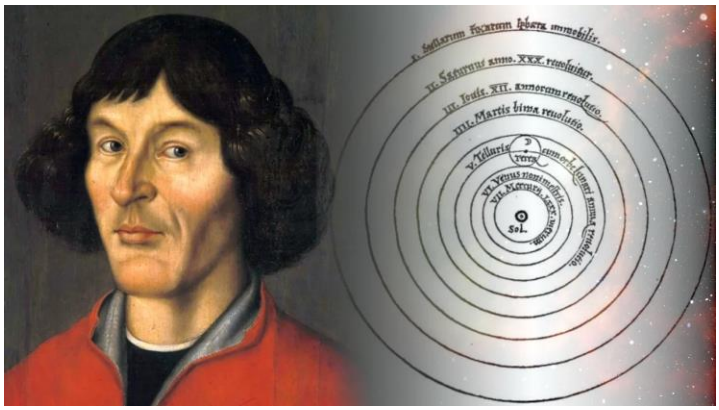
Ye Olde Astronomer's Column

One of the problems with this model was that some heavenly bodies, the planets, did not follow the orderly diurnal motion of the Sun, Moon and stars. Mars, Jupiter and Saturn exhibited retrograde motion in which they would periodically slow and move in the opposite direction before resuming their expected motion. Ptolemy used an ingenious system of circles called epicycles to explain their motion. The question of why this was so, was never asked. At least not until a man named Nicolaus Copernicus questioned it. Copernicus realized that the Geocentric Model was incorrect and illustrated its deficiencies in a great work called "Concerning the Revolutions of the Celestial Sphere" which was published after his death in 1543.



Copernicus' idea was not new. The ancient Greek scientists Aristarchus and Hipparchus had proposed such a system many centuries earlier. Also, astronomers and scientists throughout the Middle Ages and in the time of Copernicus, including Galileo, realized that the Geocentric Model was fatally flawed.

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Ye Olde Astronomer's Column

A famous astronomer of the 16th century, Tyco Brahe, meticulously recorded the positions and motions of celestial objects. He and his staff made extensive catalogues of stars and planets. Needing mathematical assistance to explain planetary motion, he hired a young mathematician named Johannes Kepler. It was a momentous event.

Brahe soon died and Kepler inherited his catalogues. He realized that the idea of circular planetary orbits did not fit Brahe's observations. After much trial and error, he determined that the orbits were elliptical. It was a great discovery for astronomy.

Kepler formulated three principles from his analysis. We call them Kepler's Laws. In the coming newsletters we will explore their meaning and application.