NIGHTFALL

A PUBLICATION OF THE HUACHUCA ASTRONOMY CLUB

MARCH 2022

MARCH PRESIDENT'S NOTES

I want to thank all of you who joined in our February Zoom meeting with speaker Pierre Haenecour, Assistant Professor in the Lunar and Planetary Laboratory at the University of Arizona. The zoom meeting was a great success with 19 members connected in. Now that Covid is waning in the county I am looking forward to seeing more of you at our March meeting. Note for our March meeting we will be exploring a new location (see meeting notice below).

This month we also have a new adventure with the basic Astronomy class to be held on successive Saturdays starting Mar 12. Thanks to Karen Madtes for organizing this and to Thomas Brondum for being willing to share his time and knowledge.

As we get into clearer skies, I hope you all are out looking up and enjoying the sights. Those looking during the day are seeing more activity on the sun. On the HAC forum you have gotten to see the new sun images appearing almost daily. And then there are the night viewers that are collecting and sharing images too. A longtime contributor to our night-time images has been David Roemer (see the results of that effort below). We want to thank all of you who share your work thru the HAC forum, you wet our appetites for more and challenge us to get our telescopes out and look up.

WELCOME OUR NEW MEMBERS

Richard Fleming of Sierra Vista joined the club in February. Cindy Dubose of Hereford joined at the February Public Night. Joanie Cogan of Elgin joined at the Cave Fest event at Kartchner. Harold Baillie of Sierra Vista joined at the start of March. Welcome, we are glad you joined!

AT THE MARCH MEETING

The March meeting will be held in the, **Cochise College, Downtown Center Campus, 2600 E Wilcox Drive**, Sierra Vista. Room A102 at 7pm on Friday, March 18.

Our speaker is Dr. Emily Lichko, Postdoctoral Research Associate Solar and Heliospheric Research at the Lunar and Planetary Laboratory.

Dr. Lichko's research focuses on kinetic plasma physics processes in space and astrophysical plasmas, in particular as they relate to questions of particle heating and nonlinear processes that affect the evolution of collisionless, anisotropic plasmas.

2022 HAC DUES

There are still a number of members that are in arrears on their 2022 dues. If you are unclear about your dues status or if you have decided not to renew your membership, please contact our treasurer, Ted Forte (tedforte511@gmail.com).

$35 for a family membership (active-duty military pays $25)

$25 for a regular (individual) membership (active-duty military pays $20)

$10 for a student membership (valid student ID required)

HAC dues payment options:

1. You can pay your dues in person by cash or check made out to Huachuca Astronomy Club. See the treasurer, Ted Forte, at a meeting or event.
2. You can mail your dues check to the Huachuca Astronomy Club PO Box 922, Sierra Vista AZ 85636
3. You can pay online by visiting www.hacastronomy .org and pulling down the membership menu. You'll be directed to Pay Pal where you can use your Pay Pal account OR your credit card.
4. If you have a Pay Pal account, you can use PayPal Direct to send your payment to paypal@hacastronomy.org
5. If you have a Zelle account with your bank, you can make a dues payment by transferring funds to twforte@powerc.net

HAC Patches on Sale

We have two types of HAC patches available for purchase that can be affixed to any garment of your choice. They will be available at the meeting for $3.00 each.

Cash or check made out to the Huachuca Astronomy Club

Correct change greatly appreciated!

David Roemer receives Astronomical League's Planetary Nebula Program Imaging Award

Announcement from Ted Forte

David Roemer, is the latest recipient of the Astronomical League's Planetary Nebula Program Imaging Award. HAC members have seen many of his planetary nebula (PN) images. He has been sharing PN images (along with comets and planets and galaxies etc.) frequently. He has exceeded the requirements for the award imaging 109 objects (90 is the requirement). He is just the 21st person to complete the PN Imaging program.

Planetary nebulae are glowing shells of gas: the expelled outer layers of low to intermediate mass stars that are in a late stage of their evolution toward becoming white dwarfs. The circumstellar disks of gas are ionized by radiation from the hot exposed core of the once sun-sized star. They often display weird and wonderful shapes and are among the most colorful objects we can see through a telescope. They can be beautiful disks, rings, butterflies or wreaths or just tiny pinpoints that only reveal themselves through narrow band filters. They are my favorite telescope targets.

The Planetary Nebula Program can be completed visually or by imaging. Visual observers must observe 60 objects from the "standard" list of 110 objects to earn the basic award which is recognized by a certificate. It can easily be completed with an 8-inch telescope. Images can be in black and white or color.

To earn the advanced award, the observer must observe all 110 objects. However, there are 26 alternate objects that can be substituted, on a one for one basis and the program even allows for negative observations. An observer can check off an object, even if it was undetectable as long as there is sufficient evidence that a diligent effort was made to detect it, and proof that the proper FOV was examined (at least two sketches of the star field on different nights). The advanced award comes with an attractive lapel pin.

While special recognition is given to observers that use traditional star-hopping methods to locate the objects, GO-TO scopes and other device-aided pointing methods are allowed.

Imagers can choose 90 PNe from the entire list of 180 objects associated with the program.

All of the award recipients are recognized in the Reflector Magazine.

The PN program is just one of nearly 80 observing programs offered by the League! Truly, there is a program for every interest. HAC is a member society of the League and every member of HAC is also a League member. Observing programs are one of the more tangible benefits to our league membership. Check them out at https://www.astroleague.org/al/obsclubs/AlphabeticObservingClubs.html and

https://www.astroleague.org/al/obsclubs/planetarynebula/planetneb1.html

The difference between Amateur and Professional Astronomers

by Dwight Hoxie

The fundamental difference between amateur and professional astronomers. Amateurs are in the game to see and appreciate the beauty and mystery of the Universe; the professionals tend to know or care little about the aesthetics but instead occupy their time scribbling scientific papers that most often few read, seeking tenure and grant money and teaching students who want a passing grade without having to work and learn something to earn it. The professionals, too, have their prizes and awards that can be had by convincing their peers of their excellence in playing the astronomy game. Winning can be based more on appearance than merit.

Amateurs have fun, professionals disdain the whole notion of "fun" in favor of their Puritan work ethic. Without the amateurs who would champion the enjoyment of the amazing Universe in which we find ourselves? Who would convey and share the marvels that can be seen from our planet Earth with the populace were it not for HAC and the other amateur astronomy clubs? It is difficult for the professionals to descend from their ivory towers and mingle amongst the masses. The lowest order of humankind with whom they can deal are their graduate students. So thank you, David, Ted, Penny and all the others that are bringing astronomy to those who for the first time look up at the night sky and appreciate what are those twinkling things called stars.

Astronomy – Where Science Intersects History

By Penny Brondum

When looking at the night sky on a clear night we see stars, and we also admire the planets and constellations. However, we rarely think "I'm looking at history" -- but we are. Thanks to Science, we know that light travels at a little more than 186,000 miles per second (the maximum speed for all energy, matter and information). This means that the sunlight we feel during the day took just over 8 minutes to get from the surface of the Sun to us, a distance of 93 million miles.

When we look at night sky objects, which are farther away than the sun, we are looking back in time at what occurred. For instance, Mizar (the star at the bend of the handle of the Big Dipper), is 78 light years away. This means the image we see in the telescope or with our eyes took 78 years to get to us. The light we experience today from Mizar started traveling to us at the start of WWII in 1944. Its "optical" double Alcor is 82 light years away so the image we see of it is 4 years older.

In our Winter skies Orion dominates the view. The nebula in Orion (a star nursery) is 1600 light years away which means that Attila the Hun was sacking Europe when the light from this Nebula started on its way for us to see it. One of my favorite objects to see in the summer sky is the Great Globular Cluster in Hercules. The cluster is a group of approx. one million mature stars. They are about 25,000 light years away which means the image we are observing started on its way to us when human beings were migrating out of Africa to around the earth. (Mind Boggling!) The question I often get asked is "How do we know that these nebula/stars still exist?" The answer is "We don't know!" We will have to look constantly to discover any changes, it will take those thousands of years for any difference to reach us here on earth. Even with telescopes in orbit around the earth, like Hubble, or as far out as the JWST at the Lagrange point, we cannot change the speed that light travels, so while we might get more information, we cannot see actions happening to a distant star any sooner.

Besides visual images we are looking at objects in the sky with x-ray and gamma ray detectors to get more information. Knowing the speed of light allows scientists to measure/calculate the distance to stars. As a result. scientists are working to build a history of planets, stars, galaxies and the spaces in between, how and when they were formed. In the same manner archeologists dig to discover the information about ancient peoples and fossil records to give us a history of life and change here on Earth. Astronomy is a place where science meets History and every day, we are learning more and more about the amazing universe we live in, and the things we see in our night sky.

NASA Night Sky Notes March 2022

This article is distributed by NASA Night Sky Network

The Night Sky Network program supports astronomy clubs across the USA dedicated to astronomy outreach. Visit nightsky.jpl.nasa.org to find local clubs, events, and more!

Embracing the Equinox

By David Prosper

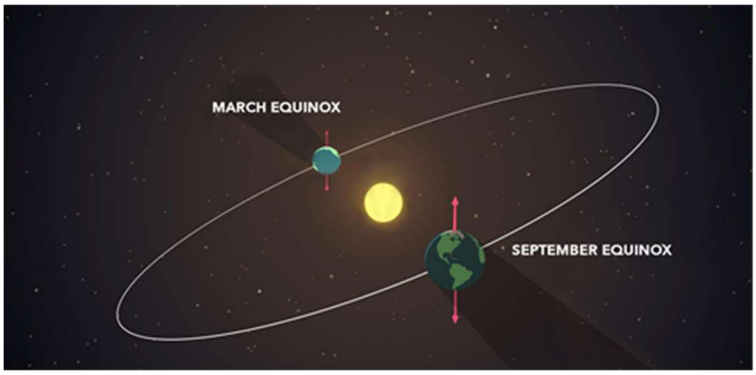
Depending on your locale, equinoxes can be seen as harbingers of longer nights and gloomy weather, or promising beacons of nicer temperatures and more sunlight. Observing and predicting equinoxes is one of the earliest skills in humanity's astronomical toolkit. Many ancient observatories around the world observed equinoxes along with the more pronounced solstices. These days, you don't need your own observatory to know when an equinox occurs, since you'll see it marked on your calendar twice a year! The word "equinox" originates from Latin, and translates to equal (equi-) night (-nox). But what exactly is an equinox?

An equinox occurs twice every year, in March and September. In 2022, the equinoxes will occur on March 20, at exactly 15:33 UTC (or 11:33 am EDT), and again on September 23, at 01:04 UTC (or September 22 at 9:04 pm EDT). The equinox marks the exact moment when the center of the Sun crosses the plane of our planet's equator. The day of an equinox, observers at the equator will see the Sun directly overhead at noon. After the March equinox, observers anywhere on Earth will see the Sun's path in the sky continue its movement further north every day until the June solstice, after which it begins traveling south. The Sun crosses the equatorial plane again during the September equinox, and continues traveling south until the December solstice, when it heads back north once again. This movement is why some refer to the March equinox as the northward equinox, and the September equinox as the southward equinox.

Our Sun shines equally on both the Northern and Southern Hemispheres during equinoxes, which is why they are the only times of the year when the Earth's North and South Poles are simultaneously lit by sunlight. Notably, the length of day and night on the equinox aren't precisely equal; the date for that split depends on your latitude, and may occur a few days earlier or later than the equinox itself. The complicating factors? Our Sun and atmosphere! The Sun itself is a sphere and not a point light source, so its edge is refracted by our atmosphere as it rises and sets, which adds several minutes of light to every day. The Sun doesn't neatly

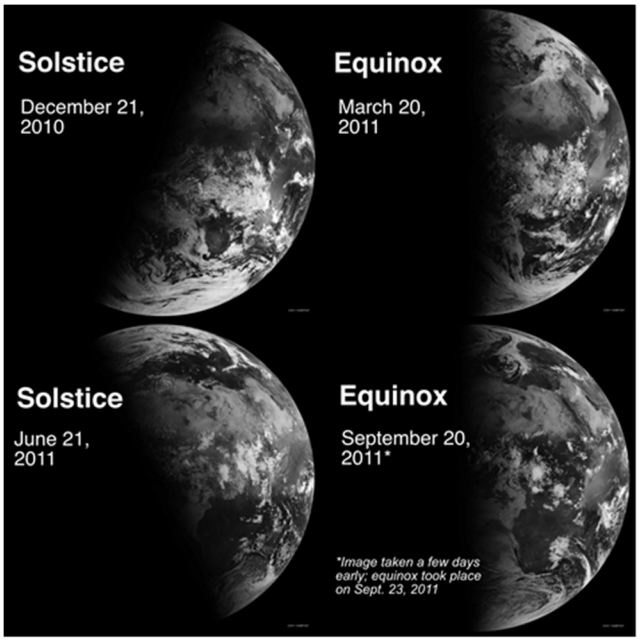
wink on and off at sunrise and sunset like a light bulb, and so there isn't a perfect split of day and night on the equinox - but it's very close.

Equinoxes are associated with the changing seasons. In March, Northern Hemisphere observers welcome the longer, warmer days heralded by their vernal, or spring, equinox, but Southern Hemisphere observers note the shorter days – and longer, cooler nights - signaled by their autumnal, or fall, equinox. Come September, the reverse is true. Discover the reasons for the seasons, and much more, with NASA at nasa.gov



This (not to scale) image shows how our planet receives equal amounts of sunlight during equinoxes.

Credit: NASA/GSFC/Genna Duberstein



Scenes of Earth from orbit from season to season, as viewed by EUMETSAT. Notice how the terminator - the line between day and night - touches both the North and South Poles in the equinox images. See how the shadow is lopsided for each solstice, too: sunlight pours over the Northern Hemisphere for the June solstice, while the sunlight dramatically favors the Southern Hemisphere for the December solstice.

Source: bit.ly/earthequinox Images: NASA/Robert Simmon

Pictures by HAC Members

NGC 2264 The Fox Fur Nebula by Richard Lighthill

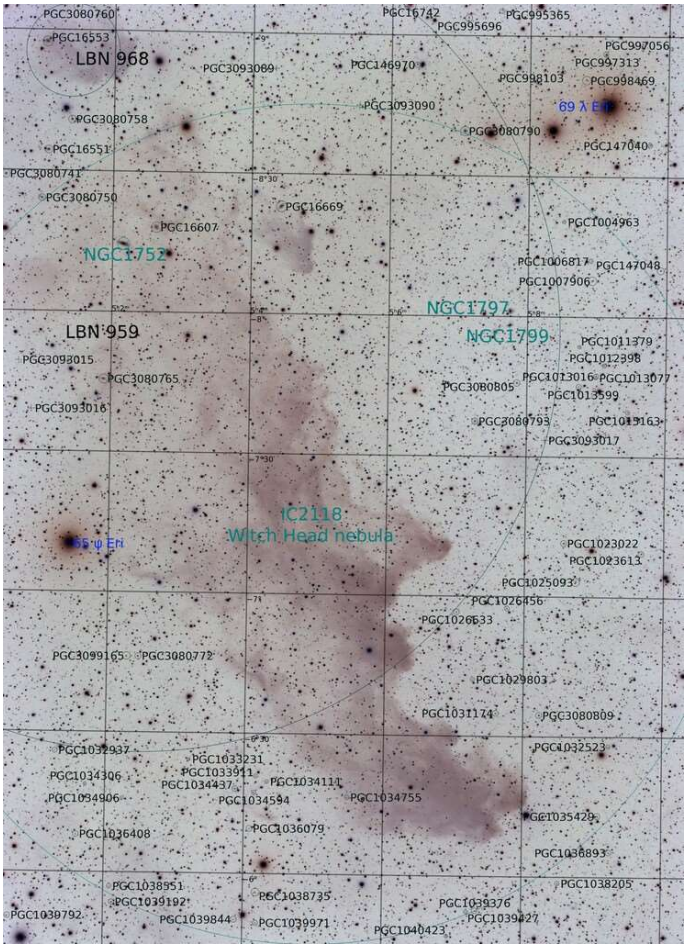
Messier 78 by Richard Lighthill

M3 by David Roemer

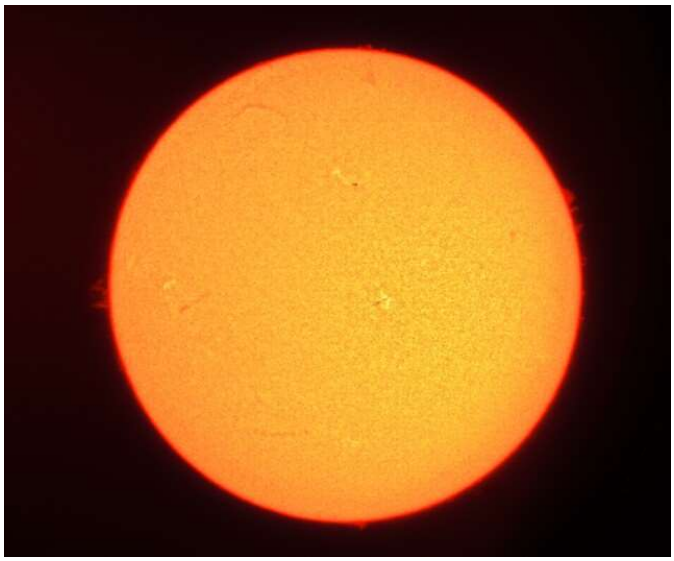
M53 by David Roemer

NGC 5053 by David Roemer

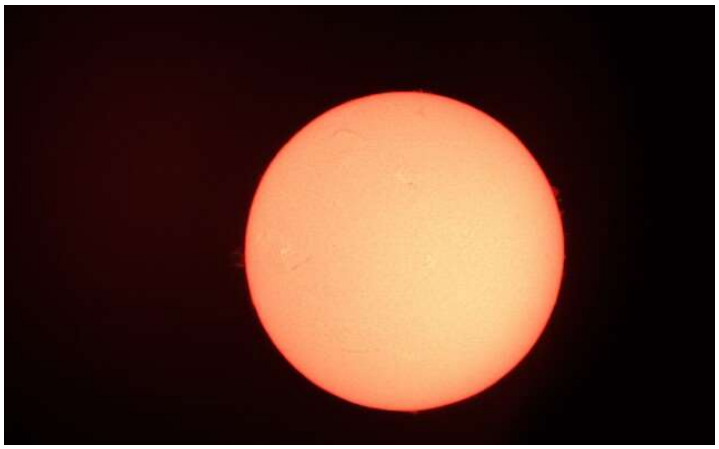
IC 2118 Witch Head Nebula by Richard Lightfoot



Sun by Mark Orvek



Sun by Mark Orvek (2)



Sun by Leonard Amburgey

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Starizona *http://starizona.com/*

HAC Mar-Apr 2022 Calendar of Events

SU	MO	TU	WE	TH	FR	SA
27	28	1 Mar	2 10:35AM Saturn/Mercury 1 degree	3	4	5
6	7	8	9	10 3:45AM Patterson Public Night 7PM	11	12 Beginners Class at Patterson. Telescopes. 2-3 PM
13 Daylight Savings Time Begins	14	15	16 Mars/Venus 4 degrees	17 	18 12:17AM **HAC Meeting 7PM Downtown Ctr**	19 Beginners Class at Patterson. Observing. 2-3 PM
20 Vernal Equinox 8:33AM	21	22	23	24 10:37AM	25	26 Beginners Class at Patterson. Equip Clinic. 2-3 PM
27	28 Venus-Saturn and the moon	29	30	31 11:24PM	1 Apr	2 Kartchner Star Party noon to 9 PM
3	4 Saturn-Mars 0.4 degrees	5	6	7 Patterson Public Night 7:30PM	8	9 12:48PM
10	11	12	13	14	15 **HAC Meeting 7PM Community Room**	16
17 12:55AM **EASTER**	18	19	20	21 Earth Day Vet Park 10A-2P	22 Earth Day Lyrid Meteors	23 Lyrid Meteors
24	25	26	27	28	29	Huachuca Astronomy Club of Southeastern Arizona

All times local MST

Join **HacAstro** to keep up to date with all of the Huachuca Astronomy Club events

Send an email to: HACAstro+subscribe@groups.io

Watch the group for notice when in person events and meetings will resume