NIGHTFALL

A PUBLICATION OF THE HUACHUCA ASTRONOMY CLUB

AUGUST 2021

PRESIDENT'S NOTES

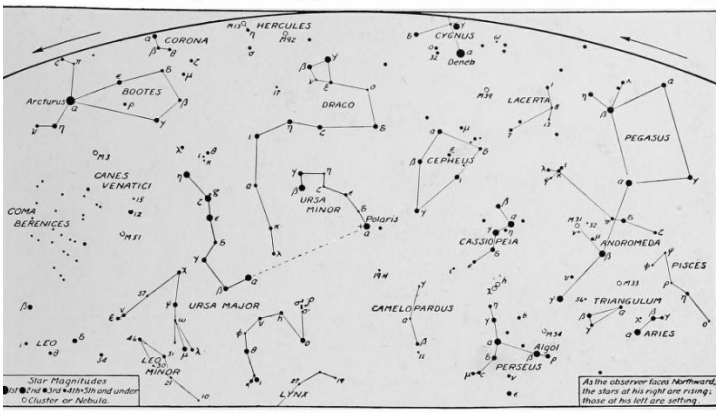
Well, it's August so there will be some downtime from observing for you to prepare for… observing. Depending on the monsoon season, we may or may not have observing weather.

If we have more monsoon-y weather, use the downtime to take stock of your astro equipment, and this year keep in mind that HAC is having an astro swap meet (in-person currently slated for) Saturday, September 11. So, as you start cleaning up and organizing those binoculars, telescopes, eyepieces, cameras (and lenses), mounts, books, ask yourself a few questions.

Do you have what you need for your latest or next astronomy project? Or do you have things you don't need and don't use? Has it been years since you have used some of your gear? Remember those 1.25" filters you still have, even though you moved up to 2" eyepieces? What about that old parallel-ported SBIG CCD and the old Windows XP laptop (that you still have) that went with it? You never know what people will want or what they need. This swap meet will give you the opportunity to learn. Do you really need 6 pairs of binoculars? Ok, maybe you do, but if you don't, think swap meet.

However, if we have breaks in monsoons here's a simple project for this month: Rediscover the Milky Way. Most of you have seen it. Some of you have studied it. All of you have looked at objects located within it. If the sky is clear and you can plainly see the Milky Way, start your discovery tour from your southern horizon with binoculars or a low power, widefield eyepiece in your telescope and work your way north. Zigzag your way east and west, moving across the width of the Milky Way, then move a bit north and zigzag again. Try to make your zigzags overlap your eyepiece's field of view, so you don't miss anything. Pages 54-57 of the Star-Book will give you an overview of the August sky.

CHART FOR AUGUST NIGHTS, LOOKING NORTH
For Opera-Glass, Field-Glass, and Telescope 55

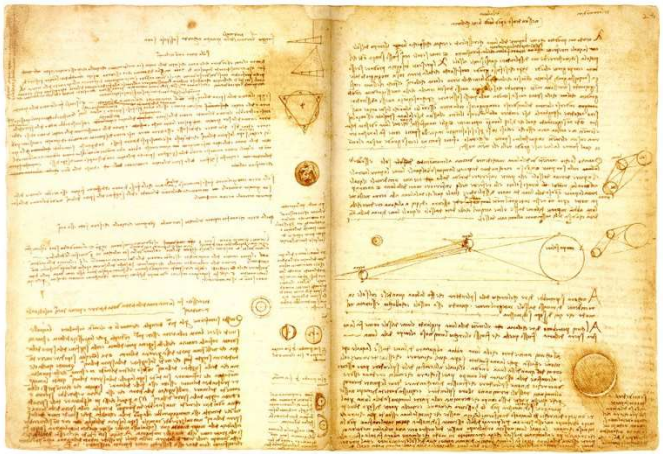


KEY-MAP TO THE SKY AS THE OBSERVER FACES NORTH.
SEPT. 1, 8 P.M., AUG. 15, 9 P.M., AUG. 1, 10 P.M., JULY 15, 11 P.M., JULY 1, 12 P.M.
FOR NIGHT-CHART TO THIS MAP SEE OPPOSITE PAGE.
FOR THE SKY AS THE OBSERVER FACES SOUTH, SEE PP. 56, 57.
For the sky at other Dates and Hours see Time Schedule, p. 35.

Source: A beginner's Star-Book; an easy guide to the stars and to the astronomical uses of the opera-glass, the field-glass and the telescope, Kelvin McKready, 1912-1929, p 55.

By the way, if you've wanted to start an observing log but never got around to it, this would be a fine time to start. The concentration of big bright objects couldn't be tighter. August just may by your biggest bang for your buck so to speak. It is a good strategy to start with big and bold objects and work your way towards the dimmer, smaller objects as you train your eyes for critical observing.

PAGES FROM *THE HAMMER CODEX*, A COLLECTION OF SCIENTIFIC WRITINGS BY LEONARDO DA VINCI



Source: A. P. Manuscripts. https://www.apmanuscripts.com/leonardo-da-vinci-collection/hammer-codex-da-vinci

But how to make one? There are many ways to write a log, but they tend to be either a mandated, institutional format or a personal one. In short, an observing log is the same as a lab notebook, every object we view, or image, is an experiment that we may want to repeat or modify in the future.

Institutions such as professional observatories have specific data they need collected, including reporting instrument problems (what we might toss off as maintenance). No one likes downtime, especially if you're paying for the time. And, if you think you might like to try some of the Astronomical League observing programs, remember, they require the data be submitted in a specific form, another log format.

Personal logs can be as simple as a note on a calendar or as elaborate as a nightly log that includes photometric and spectra data for each object. Some people include writeups describing weather, observing conditions and other external information as well as the study of the object. Maybe a drawing or two is included as well.

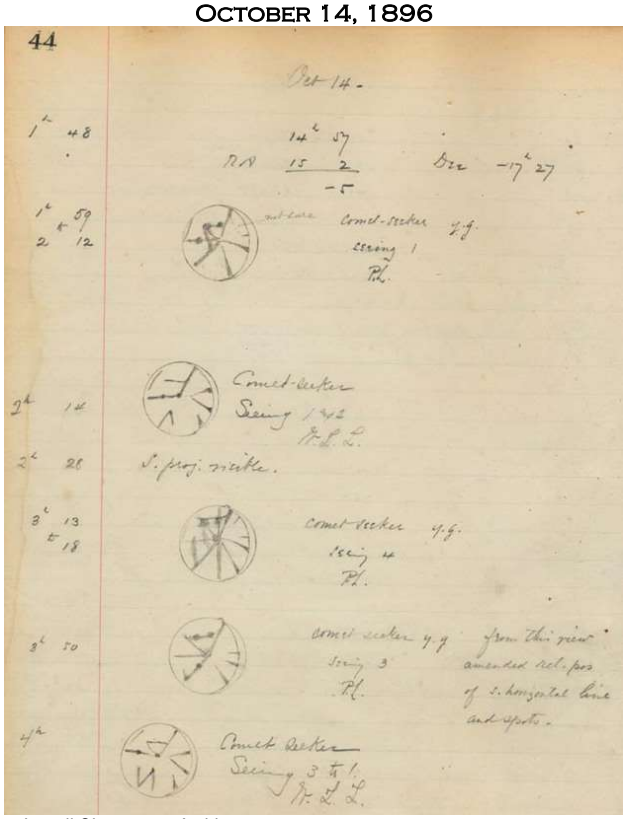
Three Entries from University of Chicago's, Stone Edge Observatory

Name epjmm15
Affiliation SJS
Date August 6, 2017
Coordinated Universal Time (UTC) 06:45
Objects Observed nsv 349, ngc 7023
Log Things did not go well and I got no usable data, the dome did not follow the scope well, and tracking turned off over and over again. Though I fixed the tracking with itzamna, I could do nothing about the dome. I tried closing down, logging out of the tunnel, starting over, did nothing, then I closed down, tried it all through itzamna, still did not work, then I closed down and tried with the GUI again, still did not work, then I gave up and went to bed.
Nameepjmm15
Affiliation SJS
Date July 31, 2017
Coordinated Universal Time (UTC) 07:00
Objects Observed m57
Log The telescope worked well but saving problems, I tried logging in and out of the tunnel and then the images saved to 2013 june 16. Pinpointing with itzamna worked very well.
Name epjmm15
Affiliation SJS
Date July 30, 2017
Coordinated Universal Time (UTC) 07:00
Objects Observed vdb 142
Log All worked well except for saving, still missing 2 images. anyway, I got a nice result.
Source: Stone Edge Observatory, University of Chicago
https://stoneedgeobservatory.com/logbook/

What to put in a log? I started my logs when I got a Tasco telescope in fourth grade. At the time, Tasco included a suggested format for an observing log, and I followed it for years. Your notebook should record some, if not all, the following information. Day, month, and year. Location (you're not always home). Time of the beginning and end of your observing session, or at the midpoint of your astronomical sketch. All times should be in Universal Time (UT), or at least your local time. Telescope type, focal length, focal ratio, eyepiece used, magnification, apparent FOV (field of view) and any filters used. I put the type of equipment I have in a preamble to the log, and then note configuration changes and date of change on that preamble page. Then I need only briefly mention the changes in the nightly log entries. Also include your observing target by name of some other form of locational information such as RA and Dec., or a known star it was close to and how you star-hopped from it. Discuss the local weather. Include temperature, seeing, percentage of cloud cover, the presence of any moon light, smoke from fires, anything that affects your observing. Oh, and always describe failures as well as successes.

What I consider an excellent overview of the process and very well thought out observing log is laid out at Vanderbilt University's class instructions for their Astronomy 101/102 class. Take a look here:
https://www.vanderbilt.edu/AnS/physics/astrocourses/AST102/labs/observing_log.html

Lowell Observatory Logbook Page, October 14, 1896



Source: Lowell Observatory Archives,
https://collectionslowellobservatory.omeka.net/items/show/12

I have a set of Kepple and Sanners', The Night Sky Observer's Guide, in which I take notes, but only when I go to Rocky Mountain Star Stare (RMSS) star party. Every RMSS I go to I meet up with the same people. We all tend to bring the same telescopes and we continue where we left off from previous parties. I put the date, the scopes, the powers (at least general rounded power), what we saw in each telescope and the image compared to the book. As

long as the book comes with me, the record is complete. It's interesting to compare notes from previous observations.

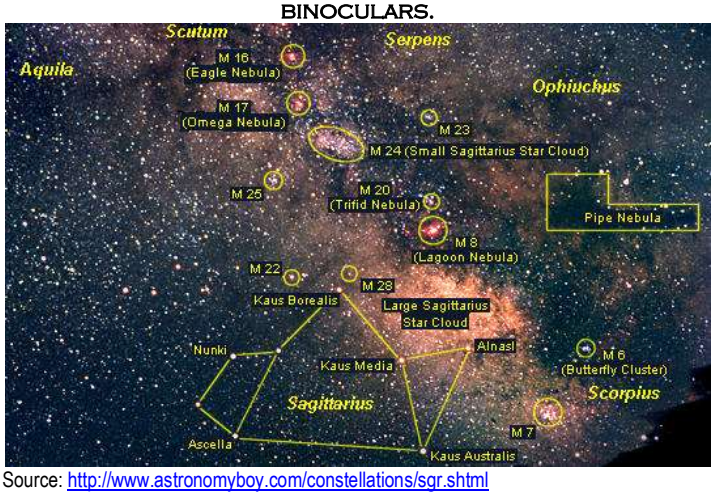
Experiment with what works for you in other roles you play in life and adapt it to become your star log. If you don't like a format, you will be less likely to use it so… Remember that a log is really made to refer back to, to remind you of something, something unusual, or maybe to note change.

Here's a good example, suppose you find a very cool object. I don't know, perhaps while wandering through the Milky Way you find a fuzzy patch, say, somewhere between M24 and M16. You can give a general area and a description of the object, include the telescope or optics you are using, include the eyepieces or powers, and if you see differences when different powers are used. Again, maybe you try to tease out more contrast of the object by using a filter or two; include notes on those.

The key bright stars to get acquainted with are Vega, Antares, Altair, and Deneb. Don't overlook the star and double star descriptions on pages 56-57. The key constellations are Sagittarius, Hercules, Aquila, and Lyra. Although Serpens, Ophiuchus, Delphinus, and little Sagitta also command notice from astronomers. And yes, several of the objects on Messier's list are also shown on the page 57 chart. Ok, over a dozen M-objects are on the chart.

Charts in this case, however, just do not do justice to the stellar situation. As we look at the Milky Way in Sagittarius, we are looking in towards the center, hub, of our galaxy. It presents us with a swarm of stars, millions of them) in a concentration unlike anywhere else we look in sky, and yet we don't even see much of it due to intervening gas and dust. Still, what we see is the Large Sagittarius Star Cloud as amazingly dense and bright.

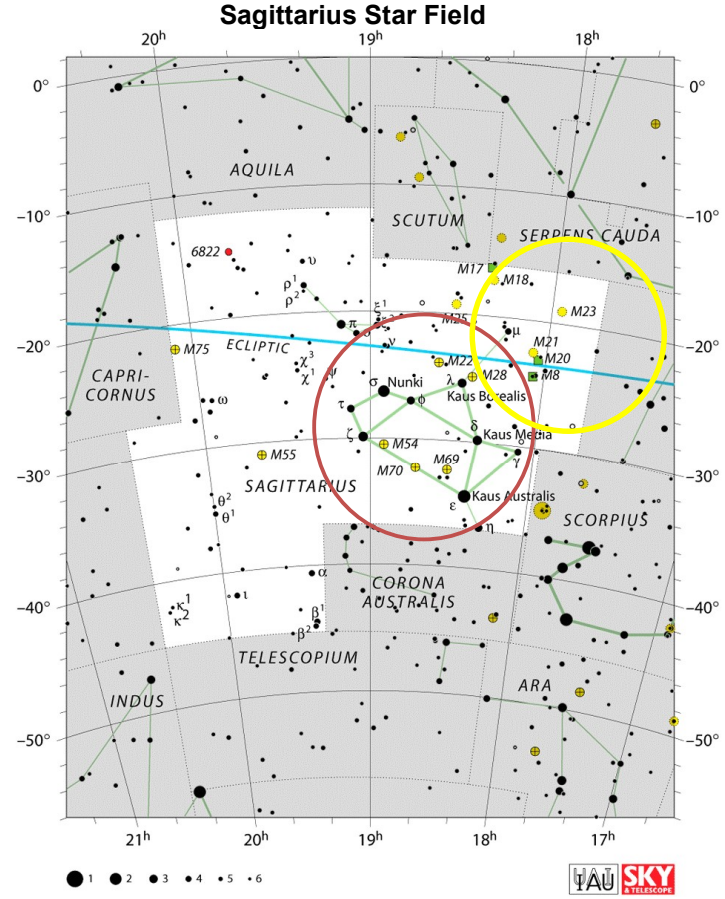
AN IMAGE OF THE SAGITTARIUS REGION SHOWING MUCH MORE THAN WHAT YOU SEE WITH YOUR UNAIDED EYES. THIS IS APPROXIMATELY WHAT YOU CAN SEE WITH BINOCULARS.



Source: http://www.astronomyboy.com/constellations/sgr.shtml

But because we are so far south here in Cochise County, we see a good deal farther south than the mid-latitude charts of our Star-Book, so we will need to use another source as a road map in that region of sky. Luckily, the internet is full of resources for us to use. One of my go-to sites is Constellation Guide https://www.constellation-guide.com/ . I've used their charts in previous articles. Here you will find information and charts for all the agreed upon 88 modern constellations as well as the Messier objects, NASA links, and Wiki-sky's interactive sky map. The charts are great, reprints from Sky and Telescope, with all the bright objects displayed. And because the charts are centered on the constellation, they are not restricted to an arbitrary horizon limit.

Sagittarius Star Field



Source: https://www.constellation-guide.com/constellation-list/sagittarius-constellation/

Most bright objects seen while looking in towards our galaxy's center are star clusters of one sort or another. Globular clusters are seen on the chart as yellow circles with crosses. Open clusters are yellow circles with a dotted outline. In the case of the other open star clusters, some may just be dense concentrations of galactic stars we perceive as associations. The area adjacent to the top right of the asterism in Sagittarius is known as the Tea Pot (circled in red in above chart) is the entire background glow of the Sagittarius Star Cloud (circled in yellow). The chart also has a few green squares designated. These are nebulae. In this case, all of them are wonderfully bright and visually spectacular.

You should get comfortable and be ready to study these objects for extended periods. Binoculars will give you a hint of the nebulae, but you will really need a telescope, even a small one. The added light grasp and power will allow you to view them at a scale suitable to discern something of

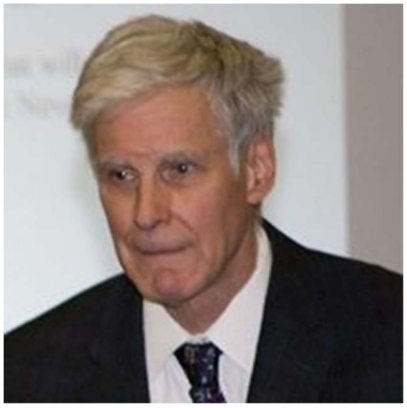
their structures. Sorry, no color, but with an 8”-diameter or larger telescope you will probably be able to notice differences, almost subtle tints in M20. As a last word, many of these nebulae are bright enough to view with a narrow band contrast filter, even in small telescopes. Don’t have a filter? Maybe you can score one at the upcoming swap meet!

So, do work on your sale/buy lists for the swap meet, and when you can, get out there and stare.

Our Next Meeting

The August 20 HAC meeting will be held via Zoom. Watch your email for details.

Our speaker will be Dr. David Dunham.



David is a Trajectory Design Engineer at KinetX Aerospace. He got his Ph.D. in celestial mechanics from Yale University in 1971. He played major roles in the trajectory design for pioneering missions, including ISEE-3, the first libration-point mission and first to a comet; NEAR orbiting and landing on Eros; and STEREO. He also worked on MESSENGER (NASA Mercury orbiter) and New Horizons (Pluto flyby). He established the lunar grazing occultation program in the 1960’s and co-founded the International Occultation Timing Association in 1975, an organization that now mainly observes occultations of stars by asteroids to determine their sizes and shapes. He was the first to obtain coordinated video observations of lunar meteor impact flashes in 1999, and to record an occultation by a small near-Earth asteroid, Apophis, in 2021.

Mark Your Calendars

September 11: Telescope Swap Meet at the Patterson Observatory. Break out all your unused telescopes, cameras, and accessories and get them ready to sell at our “not quite annual telescope swap meet”. Then save up your nickels and dimes to purchase replacements. Watch the HACAstro group for further announcements and information.

September 17: Return to In-Person Meetings. The September meeting will be held live and in-person in the Community Room, Student Union Building at Cochise College. Program to be announced.

October 2: Dine Under the Stars. The 19th annual Dine Under the Stars fundraiser will be held on the UA Sierra Vista campus adjacent to the Patterson Observatory. The observatory will be open for public viewing during the event. This year’s event is themed: “Reach for the Stars”. Tickets are $50 adult, $15 children. Proceeds go to fund scholarships for students attending classes at UA Sierra Vista and Douglas campuses. Dine Under the Stars is the major fundraiser for the University South Foundation, owner of the Patterson Observatory. Please support the event if you can. Tickets will be available for purchase at the September HAC meeting. Purchasing a ticket not only supports scholarships but also supports HAC’s representatives on the University South Foundation’s board of directors. They need your help to fulfill their ticket sales requirement.

The event features dinner including appetizers provided by Indochine Family Restaurant, an entree from Texas Roadhouse and dessert from Bonke’s For Lunch. Wine and beer bar by La Casita Mexican Restaurant and Cantina. There will be live music by Desert Fever and a dance presentation from Alma Dolores Dance Studio. Our Emcees this year are Sheriff Mark Dannels and Grady Butler of Cherry Creek Radio. There will be a live auction, a silent auction, a 50/50 raffle and door prizes.

You are also invited to support the event by the donation of auction items. Contact Ted Forte.

October 9 Kartchner Star Party. The fall star party at Kartchner Caverns State Park is planned for Saturday, October 9. We will set up for solar observing around noon, enjoy a talk in the Discovery Center at 5:30 pm followed by an evening of telescope observing. Watch HACAstro for more details.

JWST Community Event

A consortium consisting of the Patterson Observatory and the Henry F. Hauser Museum, along with the Huachuca Astronomy Club, the Sierra Vista Library and several other city facilities have been selected by NASA to host a NASA supported Community Event in celebration of the launch of the James Webb Space Telescope.

Events are still developing but so far, we have scheduled a "City Star Party" to kick things off on Friday October 15. The party will be a public observing event at Veterans Memorial Park. Watch for more details. On October 16 (times TBA) there will be two youth events. A limited number of seats will be offered for kids to participate in a "Design, Build, Test your own Spacecraft" activity at the Ethel Berger Center. The same day, there will be a "Sensory Space Exploration" activity geared toward special needs children.

The HAC meeting on October 22 will feature guest speaker Dr. George Rieke, the University of Arizona's team lead on the MIRI instrument for the James Webb Space Telescope.

Our "Launch Party" will be held at the Patterson Observatory on Saturday October 23 from 9am to 4 pm (times subject to change) and will feature solar observing, displays of NASA artifacts by HAC member Scott Schneeweis, activities, and JWST related programs including a virtual presentation by a NASA scientist associated with the Webb Telescope. Watch for more details.

On October 27, at 6pm, NASA Solar System Ambassador, Ted Forte, will give a public talk on the Webb Telescope in the Sierra Vista Library.

Watch for other events as well. Contact Ted Forte if you would like to be involved.

The James Webb Space Telescope, a joint NASA/ESA/CSA mission, is scheduled to launch in November 2021, from Europe's Spaceport in French Guiana atop an Arianne 5 rocket. It's a four-week journey to the second Lagrange point where it will be stationed. The second Lagrange point is located 932,056 miles away from Earth. Webb will be the largest, most powerful and complex space telescope ever built and launched into space. It will fundamentally alter our understanding of the universe.

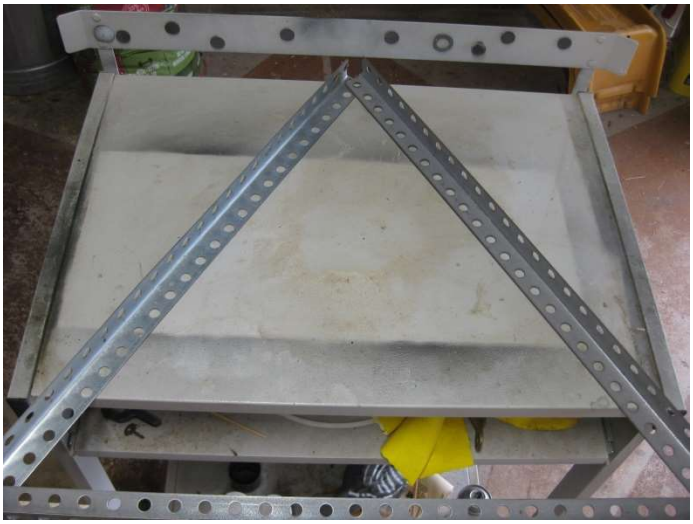
Weekend Project - Dob Caddy

By Bert Kelher

When Connie and I go camping, we like to bring our 12" Dobsonian. What we don't like, I having to break it down to move it to a safe place once we go to bed. I have seen the scope carts for tripod mounted telescopes, I saw no reason the same concept couldn't be applied to our Dob. And so, the Dob Caddy was born. As much as possible, I wanted to use things I already had around the garage.

In order to have a bit of slop I decided on a triangle 26" per side. The base of our Dob has three legs so the shape made sense.

The sides:



Yup, that's a triangle all right.

Rather than just trying to bolt things together, I elected to brace each corner with ½" pine. This would also give the legs some place to sit, as well as a platform to bolt the wheels to.

All three corner braces are secured with 1 1/2 " outdoor woodscrews. These can be seen in the picture below, as

well as the layout of the casters. The casters are lockable 2" wheels held in place with ¼:-20 1 ¼" machine bolts, 4 each.

The base easily fits onto the caddy. I will have to reach under it to lock and unlock the wheels, but that is not that much of a concern. The wheels are rated at 110lbs each, and it easily holds my body weight, so it will hold our 12" Dobsonian with ease.

Please use appropriate safety equipment any time you are working around power tools. Eye, ear, and respiratory protection is a must, especially when cutting metal.

Hope you enjoyed this small project, and clear skies.

NASA Night Sky Notes August 2021

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!

Corner the Great Square of Pegasus

By David Prosper

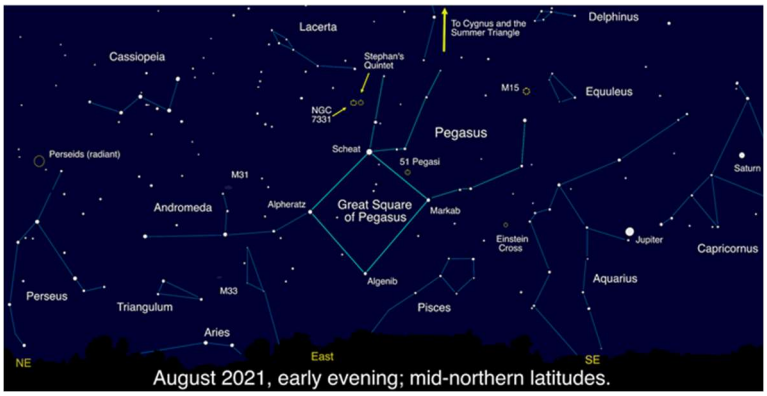
The Summer Triangle may be the most famous seasonal star pattern, but during early August evenings another geometrically-themed asterism rises: the Great Square of Pegasus. This asterism's name is a bit misleading: while three of its stars - Scheat, Markab, and Algenib - are indeed found in the constellation of the winged horse Pegasus, its fourth star, Alpheratz, is the brightest star in the constellation Andromeda!

August evenings are an excellent time to look for the Great Square, as it will be rising in the east after sunset. If not obvious at first, wait for this star pattern to rise a bit above the murky air, and remember that depending on your point of view, it may appear more like a diamond than a square. Look for it below the Summer Triangle, or to the southeast of nearby Cassiopeia at this time. As the Great Square rises in prominence during autumn evenings, it becomes a handy guidepost to finding more constellations, including some of the dimmer members of the Zodiac: Aries, Pisces, Aquarius, and Capricornus. Like the Summer Triangle, the Great Square of Pegasus is also huge, but Pegasus itself is even larger; out of the 88 constellations, Pegasus is 7th in size, and feels larger as the stars in its neighboring constellations are much dimmer.

There are many notable deep-sky objects found within the stars of Pegasus - ranging from easily spotted to expert level targets - making it a great constellation to revisit as your observing skills improve. Notable objects include the densely-packed stars of globular cluster M15, a great first target. The potential "Milky Way look-alike" galaxy NGC 7331 is a fun target for more advanced observers, and expert observers can hop nearby to try to tease out the much dimmer interacting galaxies of Stephan's Quintet. A fascinating (but extremely difficult to observe) object is a gravitationally-lensed quasar famously known as the Einstein Cross. Pegasus has quite a storied history in the field of exoplanet research: 51 Pegasi was the first Sun-like star discovered to be host to a planet outside our solar system, now officially named Dimidiam.

While observing Pegasus and its surroundings, keep your eyes relaxed and ready to catch some Perseids, too! August 2021 promises an excellent showing of this annual meteor shower. The crescent Moon sets early on the evening of the shower's peak on August 11-12, but you can spot stray Perseids most of the month. If you trace the path of these meteors, you'll find they originate from one point in Perseus - their radiant. Giant planets Jupiter and Saturn will be up all evening as well. Look south - they easily stand out as the brightest objects in the faint constellations Aquarius and Capricornus.

Pegasus truly holds some fantastic astronomical treasures! Continue your exploration of the stars of Pegasus and beyond with NASA at nasa.gov.

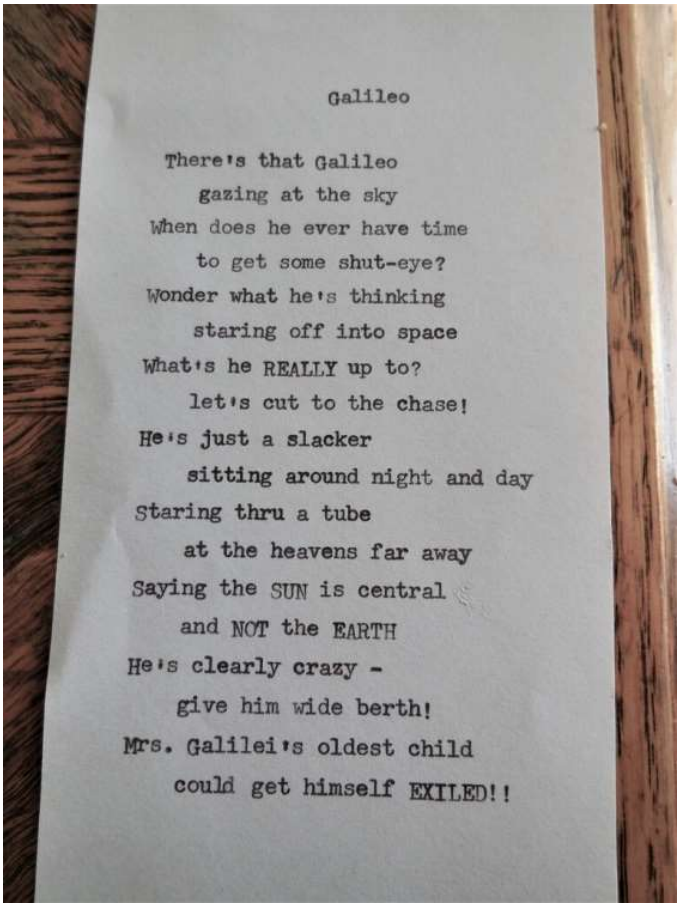


While the stars of the Great Square of Pegasus are not as bright as those of the Summer Triangle, they still stand out compared to their neighbors, and make a great foundation for exploring this area of the night sky. Note that the brightness of the stars near the horizon is exaggerated in this picture.

Credit: NASA, ESA, and G. Bacon, J. DePasquale, F. Summers, and Z. Levay (STScI)

Stephan's Quintet is one of the most famous deep-sky objects in Pegasus. First discovered in 1877, it contains the first galaxy group discovered (which includes 4 of the 5 galaxies making up the Quintet) – and has been studied extensively ever since. One day this group will merge into one supergalaxy! While famous, these galaxies are hard to spot in all but the largest backyard telescopes – but are a favorite target of astrophotographers. Take a virtual flyby of these galaxies with a tour created from Hubble data at: bit.ly/quintetflyby

Galieo – A Poem from Karen Madtes

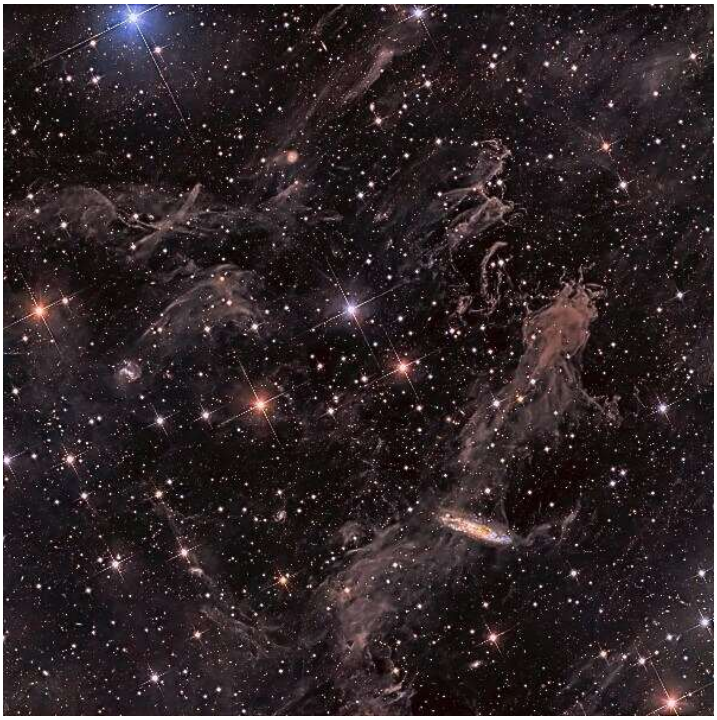


Galileo

There's that Galileo
gazing at the sky
When does he ever have time
to get some shut-eye?
Wonder what he's thinking
staring off into space
What's he REALLY up to?
let's cut to the chase!
He's just a slacker
sitting around night and day
Staring thru a tube
at the heavens far away
Saying the SUN is central
and NOT the EARTH
He's clearly crazy -
give him wide berth!
Mrs. Galilei's oldest child
could get himself EXILED!!

Pictures by HAC Members

NGC 7497 behind the molecular cloud MBM 54 by Alex Woronow



Nebula by Alex Woronow

Galactic Center by D Z

FOR SALE

Patricia Houser has two telescopes to sell. Her husband was the astronomer, and can no longer pursue the hobby. She did not mention what the scopes are but would be open to potential buyers coming out to see them (Whetstone). That's all the information we have, so if you have questions please contact Ms. Houser directly at iamtennis@peoplepc.com

Celestron 6SE. (Schmidt Cassegrain) Includes two scope buggies for it. Also includes an equatorial tripod for the 2nd buggy. See pictures below
Contact JD Maddy at 602-672-2032 Will deliver

Club Officers and Contacts

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For more information on products and contact information, their websites are:

Farpoint Astronomy http://www.farpointastro.com/

Starizona http://starizona.com/

HAC August/September 2021 Calendar of Events

SU	MO	TU	WE	TH	FR	SA
1 Aug	**2** Saturn at Opposition	**3**	**4**	**5**	**6**	**7**
8 **6:50AM**	**9**	**10**	**11** Perseid Meteors	**12** Perseid Meteors	**13**	**14**
15 **8:21 AM**	**16**	**17**	**18** Mars/Mercury 0.1 degrees	**19** Jupiter at opposition	**20** **HAC Meeting ZOOM**	**21**
22 **5:02 AM**	**23**	**24**	**25**	**26**	**27**	**28**
29	**30** **0:15 AM**	**31**	**1Sep**	**2**	**3**	**4**
5 Spica/Venus 2° separation	**6** **5:52 PM** **Happy Labor Day!**	**7**	**8**	**9** **Patterson Public Night 7 PM**	**10**	**11** **Telescope Swap meet at Patterson**
12	**13** **1:41 PM** Mercury eastern elong	**14** **Neptune Opposition**	**15**	**16**	**17** **HAC Meeting Student Union (In -Person)**	**18**
19	**20** **4:54 PM** Spica /Merc 1° apart	**21**	**22** Autumnal equinox 12:21 PM	**23**	**24**	**25**
26	**27**	**28** **6:58PM**	**29**	**30**	**Oct 1**	

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