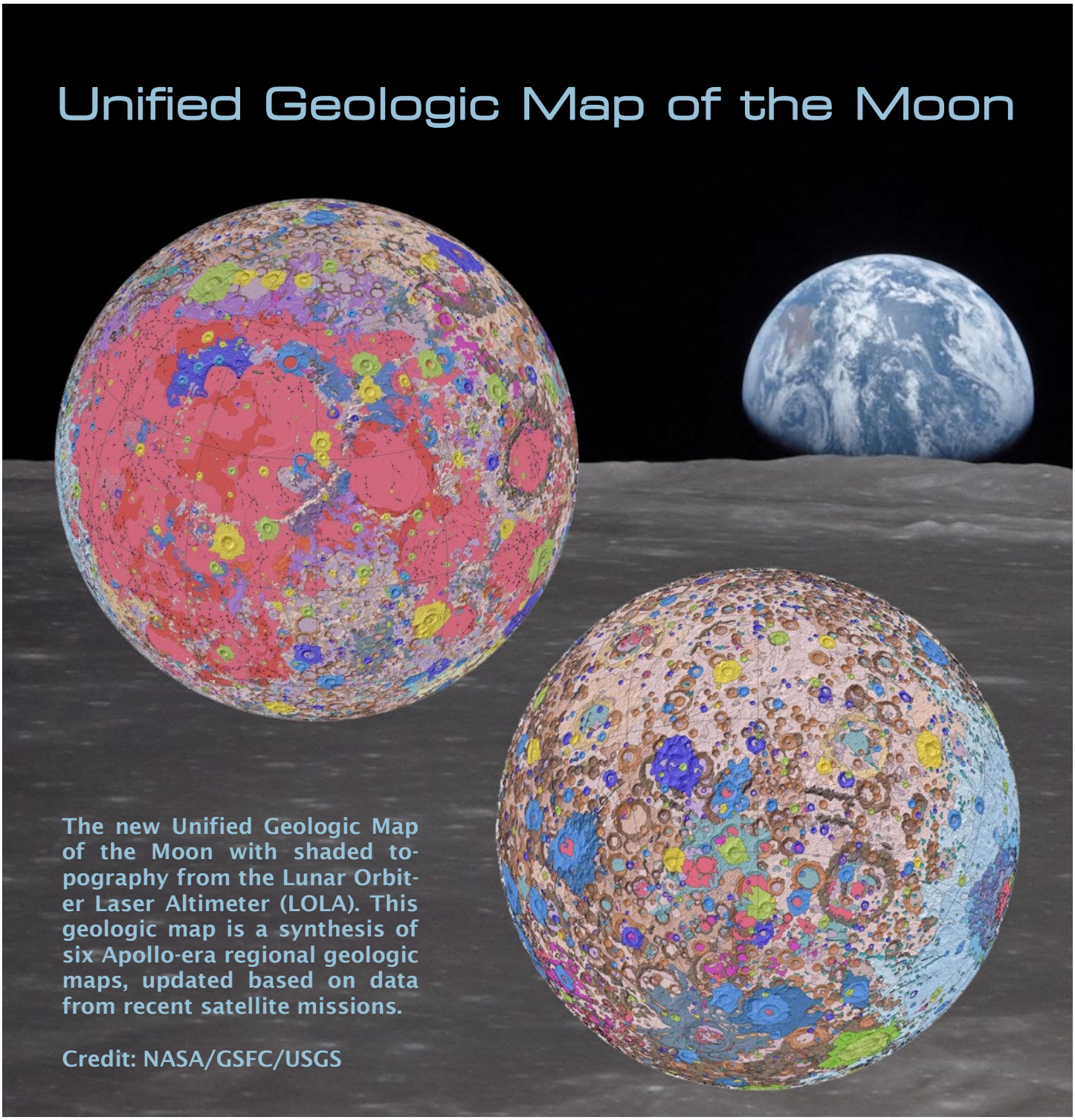
Vol. 52, no. 6

June 2020

The W.A.S.P.

The Warren Astronomical Society Paper



The WASP

Published by
Warren Astronomical Society, Inc.
P.O. Box 1505
Warren, Michigan 48090-1505

Dale Thieme, Editor

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The Warren Astronomical Society, Inc., is a local, non-profit organization of amateur astronomers. The Society holds meetings on the first Monday and third Thursday of each month, starting at 7:30 p.m.

First Monday meeting:
Cranbrook: Institute of Science
1221 North Woodward Ave
Bloomfield Hills, Michigan

Third Thursday meeting:
Macomb Community College
South campus, Bldg. J, Room J221
14600 Twelve Mile Rd.
Warren, Michigan

Membership and Annual Dues

Student	Individual	Senior Citizen	for families
$17.00	$30.00	$22.00	add $7.00

Astronomical League (optional)$7.50

Send membership applications and dues to the treasurer:
c/o Warren Astronomical Society, Inc.
P.O. Box 1505
Warren, Michigan 48090-1505
Pay at the meetings
Also via PayPal (send funds to treasurer@warrenastro.org

Among the many benefits of membership are
Loaner telescopes (with deposit). See 2nd VP.
Free copy of each WASP newsletter.
Free use of Stargate Observatory.
Special interest subgroups. See chairpersons.

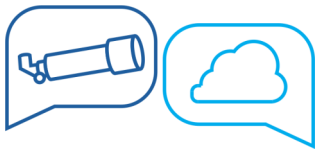
The Warren Astronomical Society Paper (WASP) is the official monthly publication of the Society.
Articles for inclusion in the WASP are strongly encouraged and should be submitted to the editor on or before the end of each month. Any format of submission is accepted. Materials can either be transmitted in person, via US Mail, or by email (publications@warrenastro.org)

Disclaimer: The articles presented herein represent the opinion of their authors and are not necessarily the opinion of the Warren Astronomical Society or this editor. The WASP reserves the right to edit or deny publication of any submission.

Stargate Observatory is owned and operated by the Society. Located on the grounds of Camp Rotary on 29 Mile Road, 1.8 miles east of Romeo Plank Road, Stargate features an 8-inch refractor telescope under a steel dome. The observatory is open according to the open house schedule published by the 2nd VP.

Snack Volunteer Schedule

The Snack Volunteer program is suspended for the duration. When it resumes, volunteers already on the list will be notified by email.



Discussion Group Meeting

Come on over, and talk astronomy, space news, and whatnot!

CANCELLED UNTIL FURTHER NOTICE

In This Issue:

President's Field of View

There we were, just south of the 45th parallel, beneath skies that on a new-moon night can offer a velvety darkness spangled with uncountable stars. But this was Michigan, so there in the west, gray fingers of cloud stretched across the horizon, with a days-old moon poised just above one of those fingers. The moon itself proved lovely— I think I've never seen such fine surface detail in a moon so new— but we aimed to see the final glimpse of a conjunction between Venus and Mercury after missing out on its best two evenings (work, clouds) and managing a peek at Mercury alone the previous night.

We should be fine, we agreed, if the clouds held position; Venus and then Mercury should pass into view as they descended toward the horizon. But this was Michigan, so almost as soon as we voiced those thoughts, the clouds began to close up in the manner of a zipper. Ah, Michigan astronomy!

Space Pirate Radio

Tune in to Captains Marty Kunz and Diane Hall for live radio Wednesday nights at 9:00 pm ET on Astronomy.fm

So it goes, from that freakish Veterans Day snowstorm that blotted out the 2019 transit of Mercury to, well… we all have our horror stories, don't we? I remember placing an eye to the great Kalinowski-Khula 'scope at Stargate on the night of the "triple transit" of Galilean moons across Jupiter, peering at a planetary disc tinted blue by the winter clouds as my head spun in the aftermath of a migraine. But I saw those three blips on Jupiter, if only for a few seconds, and that was enough to redeem the night.

We are amateur astronomers, and so we troop out to Stargate in the snow to hunt comets, or stand in the parking lot at Cranbrook in the bitter, bitter cold to watch a lunar eclipse. We linger on the fields at Astronomy at the Beach waiting for sucker holes. We drive untold miles to outrace clouds, dash between squalls, and get a little bit closer to some dazzling thing on the horizon. And sometimes, we get that reward— the comet seen at last in the nadir of the morning, the three shadows on the face of Jupiter, the eerie red of Luna in eclipse.

That evening, on the bridge that crossed a rain-swollen river through an old logging town that's nine-tenths dead, we at last saw first Venus (a perfect crescent) and then Mercury (a crescent, less perfect) between cloud banks and river-banks. For a fleeting moment, both planets fit in the field of a pair of binoculars. Then Venus was gone into the trees along the river, even as fingers of dark cloud reached out to grasp Mercury. Did the apparition last two minutes? Three?

Never mind the minutiae. We were victorious. We were astronomers.

Diane Hall,
President

Letters

Gary Ross forwarded this email to us with permission to reprint—Ed.

From: Mark Christensen
To: Gary Ross
Subject: The Astro-SCAM of the century!
Gary,

Well, now I've seen it all. OPT, a generally reputable company, is fronting this system: https://optcorp.com/products/vaonis-stellina-smart-telescope?gclid=EAIaIQobChMIvqmE2K-f6QIVDhzDCh1a0gK5EAEYASADEgLWPPD_BwE

Advertised as set up and look your computer, tablet, or, of course, bloody cell phone screen, no less, no eyepiece port.

Four grand. And the aperture is .. 80mm! Small, uncooled CMOS sensor. And a bloody blue accent light!

For about half that one can buy a fully automated telescope in the 200mm aperture range and a decent cooled CMOS camera. Or if you want the imager integrated the Meade Lightswitch 8" has a built-in CCD that you can link to. GPS and all if that is your taste.

Obviously based on two assumptions: (1) There's One Born Every Minute. (2) There are a lot of people around with money to blow.

Mark

Epilogue.
It would take the full Dianathan to defeat him in arena! —G.M.R.

Epilogue the Second:
In giving permission to reprint, Mark had this additional shot:

Yes, go ahead. I've seen other schemes like this one (mini-telescope with sensor and no eyepiece with a goto system) offered before, some on GoFundMe.

But this one is the most outrageous.

If you look at the listing they cite 'as mentioned in' with Wired, Forbes, and other no-nothing (astronomy wise, that is) magazines.

Mark

Letter:
B. Diane Hall's editorial was marvelous. (May issue.) As "urban" astronomers she and Jonathan followed the best instincts of our breed by offering to show people things in the sky of Dearborn, not at all easy given horizons and sky quality. When he came to Grand Rapids in the 1980's, John Dobson proclaimed it was our obligation to "show people where they are". How ever, the good folk of Ford Village resisted culture because they did not want to Catch Their Death. Bloody minded, if you ask me. Pandit Nehru well understood this culture whilst not knowing many Americans:

With the exception of the Bengalis, Americans are the most hysterical people on Earth.

Oh yes. In the second Eisenhower administration, there was no polygon in the sky winter-spring sky. It was the "Arc of Capella". Those were the days! -- when people had a DynaScope and strutted about there-by.

G. M. ROSS, Ancient One

One for the books, if not for the charts.

Forwarded:

-----Original Message-----
From: Joe McBride
To: Gary Ross
Subject: R AUR

Makenna has found one of your charts laying around and has plotted a very imaginative light curve while eating a bedtime snack. When asked what Mr. Gary does with it she said that You “Show it to your friends and then color it in” I thought ...maybe on cloudy nights...lol

Observing Report

Much awaited observing report

8 - 9 MAY, Veen Observatory:
Before dawn I observed Jupiter with 5" Newtonian @ approx. 100X. The planet is currently low in the Sagittarius Ecliptic, but also still down in the S.E. whilst climbing. Gibbous Moon was just past transit.

Seeing was unexpectedly good given Jupiter's elevation. Although transparency was excellent, he was slightly yellowish, and effect of elevation plus (possibly) the proximity of the very bright Moon.

The North Aequatorial Belt was very active with very dark knots across the disc. By contrast the South Belt was wan w/o remarkable features, greyish-purple.

Interesting were the Galilean moons. The farthest west (L.) was Callisto, the "blue" satellite, and strikingly dim. I know of no elongation effect affecting magnitude, analogous to Iapetus in the Saturn system, so the "dimming" was from moonlit sky. To the east of Jupiter was a "cat's eye"

formation made by Io and Europa in very close conjunction. With out referring to other data, I reckon Io was at, or very near greatest elongation. The brightness of the ball of Jupiter and the Moon made it difficult to decide which satellite was which. Intrinsically they are much different colours, Europa the white "ice world". There is another possible factor: the colour vision in my right eye. Alternately, I declared one or the other the "ice world" or the "volcano world". Reference to the graphic presentation in the OBSERVER'S HANDBOOK will resolve this minor mystery.

Respectfully submitted,
G.M.R., Master of the Small Aperture.

Another Jupiter observation

11 - 12 MAY, Veen Observatory
Jupiter in conjunction with gibbous Moon. Approx. 100X. Seeing good and planet very low.

All the activity on the North Aequatorial Belt previously reported is gone.

Either the dark features are on the other side of the planet, or have subsided. The S.E.B. remains unremarkable although wider. Io was very close to S.E. limb and faint from strong forward scatter by the Moon and planet's ball. Like-wise Jupiter himself was more "washed out" by moon-light from above.

Striking triangular lunar-planetary "asterism" in Sagittarius this mid-month.

The Third Jupiter Report

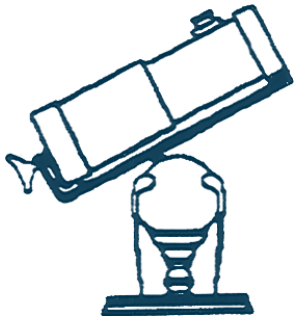
12-13 MAY, Veen Observatory
Obs'd the Giant Planet, start of astro. twilight. Gibbous Moon now to E. of the planet. Seeing fair, location is Sagittarius a disadvantage.

At ~ 100X in long focus Newtonian, two interesting oints:

a) The previously reported darkenings in the North Aequatorial Belt have returned, approx. equal extent on both sides of the Central Meridian. They completely dominate the Belt. No equivalent in the opposite hemisphere.

b) East of the ball, Io stood close-by, but mch farther out was a spectacular conjunction of Europa, Ganymede, Callisto, a tiny triangle pointing down (N.) More colourimetry possible. Ganymede was distinctly "creamy" next to the "ice" moon. Callisto was small and faint in comparison to the others, probably a function of the sky turning slightly blue. Size comparison was possible. Ganymede is the Solar System's largest satellite, over 2000 km. larger in dia. than Europa -- and obvious. Callisto is about

440 km smaller than Ganymede, but seemed smaller yet, a function of colour as the "blue" moon. Callisto is truly dark. To happen upon such an "asterism" makes planetary observation of interest every time a world is brought under observation.



The View From C.W. Sirius Observatory

NGC6027 - Seyfert's Sextet

NGC6027, also known as **Seyfert's Sextet**, is a group of galaxies about 190 million light-years away in the constellation Serpens. The group appears to contain six members, but one of the galaxies is a background object (6027D), and another presumed galaxy (6027E) is actually a separated part of one of the other galaxies (tidal tail). The gravitational interaction among these galaxies should continue for hundreds of millions of years. Ultimately, the galaxies will merge to form a single giant elliptical galaxy.

The group was discovered by Carl Seyfert using photographic plates made at the Barnard Observatory of Vanderbilt University. When these results were first published in 1951, this group was the most compact group ever identified.

NGC 6027 is a lenticular galaxy that is the brightest member of Seyfert's Sextet. Édouard Stephan discovered this galaxy in 1882.
NGC 6027A is a spiral galaxy that is part of the Sextet. In optical wavelengths, it has a strong resemblance to Messier 104, the Sombrero Galaxy, with which it shares a near equivalent orientation to observers on Earth.
NGC 6027B is an interacting lenticular galaxy within the group.
NGC 6027C is a barred spiral galaxy bluish in color.
NGC 6027D is a barred spiral galaxy that is strictly a visual member of Seyfert's Sextet. **NGC 6027D** is not interacting with the other galaxies in the cluster, but is in the background and just happens to be in the same line of sight. This galaxy is nearly 700 million light-years farther away from the interacting group and is believed to be extremely large in size. I found this one to be very interesting knowing how far away it is from the rest of the group. And it is appearing to be the same size as the others.
NGC 6027E is actually a tidal tail of NGC 6027, and not an individual galaxy, as once thought by Seyfert.

I found the Sextet to be a very interesting imaging target, since it is so faint, and took almost 6 hours of exposure time to reveal some detail in the center spiral galaxy (6027D), because of being so far away.

If you want to visually observe Seyfert's Sextet in a telescope, I recommend a very dark sky location and use a relatively large telescope (16" or larger). Using a 20" scope should show some separation between galaxies. I took this image using an 11" SCT telescope and ZWO camera.

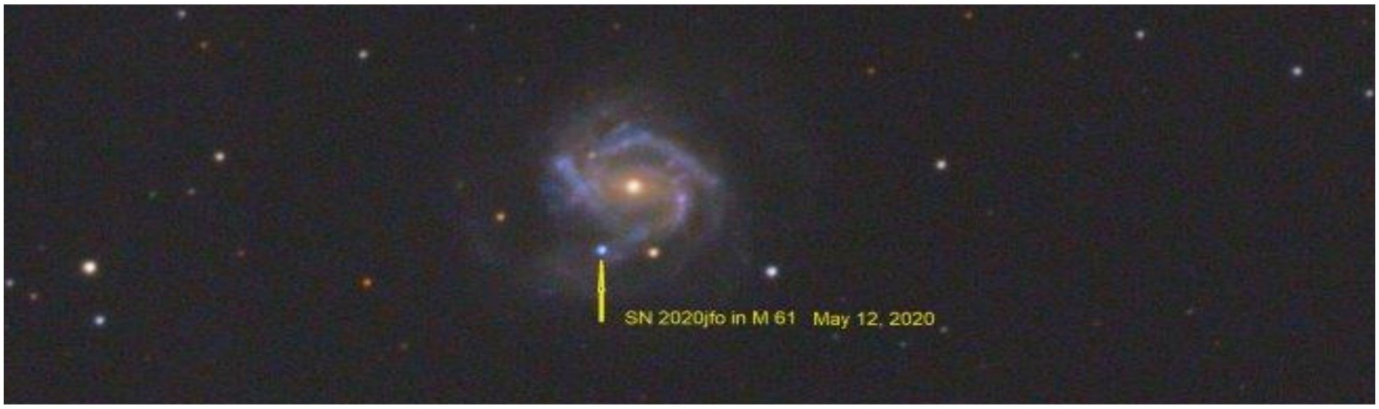
About CW Sirius Observatory:

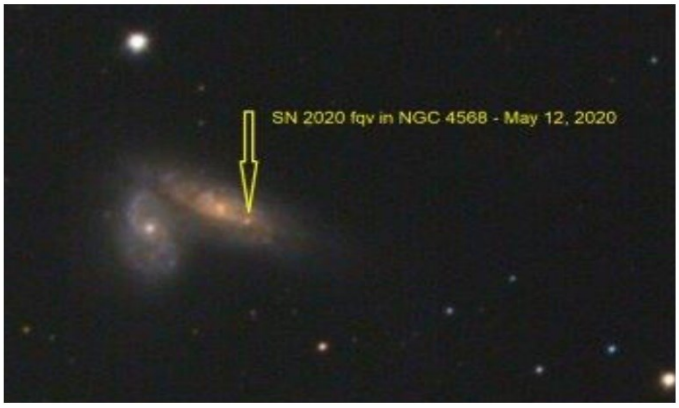
C.W. (Cadillac West) Sirius Observatory is located 15 west of Cadillac Michigan. Owned and operated by WAS member Bill Beers. The dome is an 8' Clear Skies Inc dome which houses an 11" f/10 SCT telescope, a 102mm f/7 refractor telescope, Celestron CGEM DX mount, and uses an ASI ZWO 071 color CMOS camera, as well as a QHY8L color CCD camera. The telescope can be remotely operated from inside Bills house.
Anyone interested in learning about astrophotography, or any questions regarding equipment, or how to take astrophotos using your iPhones, or any related questions, can contact Bill at: BEEZOLL@AOL.COM

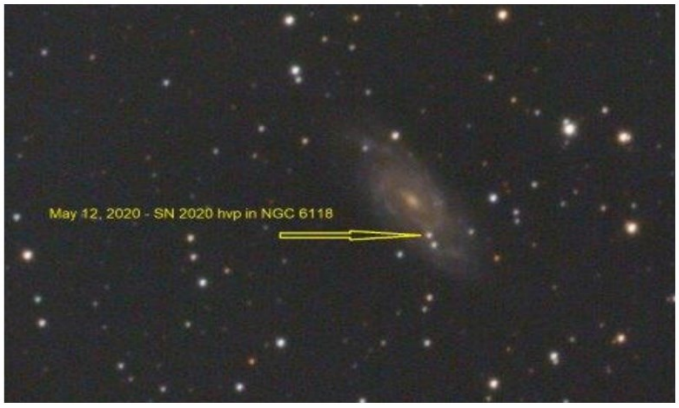
On May 12, 2020 I made a run on 5 super nova that range from Magnitude 12.4 to 15.4.

SN 2020 hvp – Magnitude 14.6 - in NGC 6118
SN 2020 fqv – Magnitude 15.4 - in NGC 4568
SN 2020 ftl – Magnitude 14.6 - in NGC 4277
SN 2020 hvf – Magnitude 12.4 - in NGC 3643
SN 2020 jfo – Magnitude 14.3 - in M 61 or NGC 4303

Note: color saturation shows a couple of them to be very blue – white
All images taken with the 10" f/8 RC and the ZWO asi071mc PRO camera







Doug Bock

Presentations

Monday, June 1, 2020
Streaming Presentations

Main Talk:

Travel into space off the planet we were born on and our species evolved on is dangerous. Some of the risks to our health are obvious - many are not.

About the Speaker:
Alan Kaplan is a retired physician and longtime WAS member.

Short Talk:

Seeing is Believing

By Mark Jakubisin

Mark discusses the impact the atmosphere has on light waves as they travel from outer space through a telescope and into your eyes. We'll also review some things you can do to optimize your observing experience and get the most out of your equipment and local environment.

Mark Jakubisin is an avid amateur astronomer and the current WAS Treasurer. He enjoys observing with WAS members and guests at Stargate open houses and from his back yard in Chesterfield MI.

Thursday, June 18, 2020
Streaming Presentation

By Mark O'Malley

Mark O'Malley will take us on a journey through Von Braun's biography from a child of the nobility in the Kingdom of Prussia to the end of his life as an American citizen in Virginia. The goal is to cover all of the major stops in between, including his various rockets built for Nazi Germany, the United States Army, and NASA, the historical significance of each step, and a bit of background to the history of Europe and America that resulted in all of these activities being so well-funded.

Mark works as a Buyer in the automotive industry. His current employer is the ZF Group. Prior to working in Michigan, he lived in Minnesota, Texas, Indiana, Missouri, and Germany. he has been a member of the WAS since 2016. His activities include but are not limited to stargazing, hockey, organizing German language clubs, studying history, and volunteering as a mentor at Warren Mott High School.

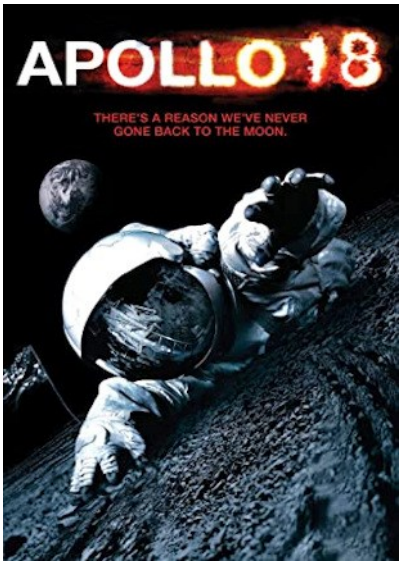
WAS PRESENTATIONS

If you would like to present either a short talk (10-15 minutes) or a full-length talk (45-60 minutes) at a future meeting, please email Dale Partin at:
firstvp@warrenastro.org.

Movie Review By Diane Hall

Apollo 18 (2011)

To pass the time during our era of self-distancing, President Diane Hall has resumed last year's series of space-themed movie reviews. This time we've got a so-called "American-Canadian found footage space horror film" on the docket.



NO.

Rating:  **and y'all would have to pay me to watch this.**

Castor House

A number of years ago, my friend Scott Roberts, then of Meade Instruments, sent Wendee and me two small "ETX" telescopes. We brought them both out to a picnic table we had set up in the yard to the south of our home. We turned on their motors and quickly learned how to move them across the sky; as it was Wendee's first time with a new telescope, she was not as fast as she is now. At one point, Wendee went into the house to answer the telephone. She came out again to find both telescopes purring nicely, with me, and an enormous smile on my face, sitting between them. I grinned like a Cheshire cat.

I have never forgotten that night. We now have a small shed at the spot, and Castor, on a tripod, sits inside along with a lawn chair I use for meteor observing. Castor house, as I call it, is now one of my favourite viewing spots. It affords a magnificent view of the night sky, especially for watching meteors. I even installed an outdoor speaker there that carries music from KUAT-FM, our local classical music radio station. I walk out there almost every evening, just to check on the sky.

What do I check for? One never knows when the sky will offer something new and unexpected. What if, since the night before, a distant sun somewhere in our galaxy has awakened, thrown off its covers, and rose in brightness as an exploding star or a nova? These events cannot be predicted. In 1572, the Danish astronomer Tycho Brahe peered skyward and saw a brilliant new star in the constellation of Cassiopeia. What he saw was not an "ordinary" nova wherein the star rises and fades in brightness. His star was a supernova that resulted in the total collapse and destruction of the star. Just 32 years later, his student, Johannes Kepler, discovered a second supernova in the constellation of Ophiuchus. Since then, 416 years later, there has not been one visible supernova in our own galaxy.

On August 30, 1975, I stepped out of a car on my way to a card game, looked up, and saw what appeared to be a slow moving satellite near the bright star Deneb. I went indoors, then stepped outside again to note that the satellite was moving very, very slowly indeed. Then I understood that the "satellite" was not moving at all. I had made an independent discovery of an exploding star, not a supernova but an "ordinary" nova. Three years later, on September 12, 1978, from a campground in the Adirondack mountains, I independently found a second nova.

Most of these ordinary novae, like the two I found, can recur, again and again. In fact, there is one star that has already exploded twice in recent memory. On May 12, 1866, the star named T Coronae Borealis or the "Blaze Star", rose to almost second magnitude. On February 9, 1946 it erupted again, this time to about third magnitude. There is a very good chance that within the next decade it will explode again. Stars like T coronae Borealis are called "recurrent novae."

When will the next unexpected stellar event disturb the symmetry of the familiar night sky? We are surely due for one. How about tonight? Wouldn't that be fun? The night sky is lovely and beautiful, but it is also astounding. We just never know what will come next. Maybe tonight I will find one again, as I stroll by Castor House.

Adventures in Armchair Astronomy

Continued from the May issue

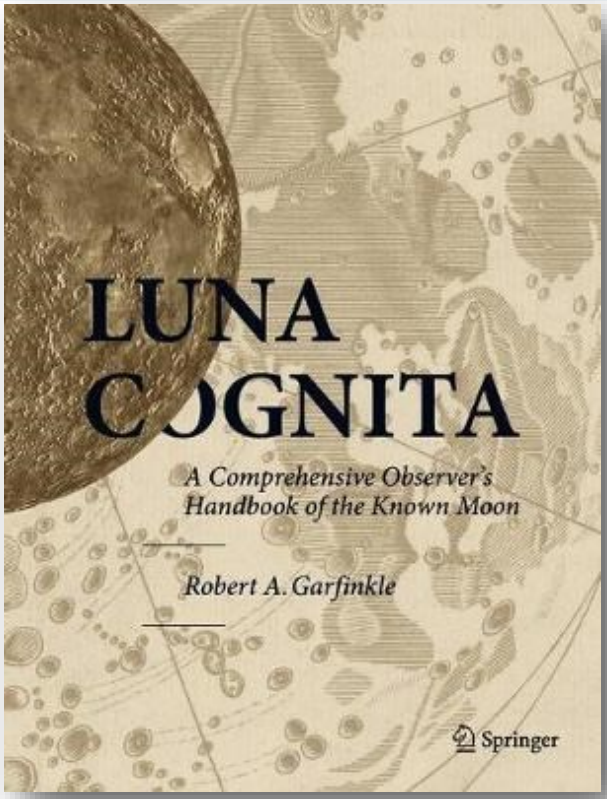
Serendipity: The occurrence of an unplanned fortunate discovery.

When I started looking into the landscape of the "Shining Mountain" (see last month's Armchair Article and Gary Ross' presentation from January 6, 2020), I received an email notice for an opportunity to pre-order *Luna Cognita*—a three-volume set about the Moon. Naturally, I had to order it (Since then, I ordered and received the Moon Globe from Sky & Telescope. Now we're cooking!)

Luna Cognita did not disappoint. A wealth of lunar information, discovery and lore lie in its pages. "Three volumes" is a bit misleading: Volume one starts off with 105 pages of table of contents, listing of images and photos (that's the big part), forwards and introductions before the first page of section 1-1 makes an appearance. At least there is a lot of book following that. Volume two is all lunar, all the time and three is the appendices (Still good information but no plot.) I am "over the moon" having acquired this addition to my library.

So, what does this book offer to enlighten us about Mare Orientale? Leading off with the location, lat. 19.87°S; 94.67°W, 294 Km (183 Mi.) in diameter, we find that it was first named in 1906 by Julius Franz (*Der Mond*.) Based on the convention at the time, Mare Orientale made sense- "Eastern Sea" as it was on the eastern limb. Since then, the IAU (in 1961) flipped the coordinate system from earth-centric to lunar-centric which put Mare Orientale on the western limb. There were earlier descriptions of the area but no naming apart from the Rook Mountains (1802, Johann Schröter, *Selenotopographische Fragmente*) and the Cordillera Mountains (1834, Wilhelm Beer and Johann Mädler.)

Lunar cartographers started using Mare Orientale on their maps and the IAU was aware of the practice, but in their 1932 session, refused to recognize it stating, "the presumed center of the feature was beyond the limb." But that didn't stop everyone else, in 1950, Mare Orientale pops up again in an article about it in the *Memoirs of the BAA*. In their 1955 book, *The Moon*, Hugh Wilkins and Patrick Moore discuss Mare Orientale but do not mention a discoverer (Wilkins described the area in 1936, calling the basin Mare "X".) But, in the 1976 edition of his *The New Guide to the Moon*, Moore claimed he and Wilkins discovered the Mare, christened it "Mare Orientalis" and said he "will always have a fatherly affection for it." He continues the discovery



claim in my 2001 copy of his *On the Moon* book (yep, had to get a copy after reading the passage in *Luna Cognita*.) He eventually did reverse course and gave credit to Julius Franz in his *2009 Yearbook of Astronomy* (p. 133-135).

But it is topography and libration that yields a "Shining Mountain" and my armchair fueled quest. The two books I have that discuss M. Orientale, state that the basin is directly surrounded by a double ring, the Rook Mountains and then an outer ring, the Cordillera Mountains. In my mind's eye, I envisioned the scenario presented by a favorable libration during a full moon: Dawn is just occurring on the basin and the eastern facing slope (which is steeper and directly facing the sun) would light up on the limb, contrasting with the darker basalt in the basin. Gary pointed out that his observation took place on a last quarter moon. OK, so then it is "high noon at the Orientale Corral." My idea didn't quite crash and burn, I found an observing tip page at *Sky & Telescope's* web site by Charles Wood that talked about libration and the Orientale Basin (September 19, 2005) and he had this to say, "When librations are very favorable, Mare Orientale itself can be seen bordered by a low white range: the Inner Rooks." Therefore, with the sun overhead, a very light-colored range would still stand out

(Continued on page 12)

(Continued from page 11)

against the basalt basin. The article also suggested looking for it during last quarter moons, so…points to Gary.

During our ongoing email discussion of Mare Orientale/Shining mountain, Rik Hill sent an image of the area in question to Gary and marked the locations of the Shining Mountain and the false shining mountain. Gary pointed out that the labels were misapplied. At the bottom of this page is the image with the proper labeling (I'm pleased to note this is the image used in the section on M. Orientale in *Luna Cognita*.)

That bright area under "SM" sure looks promising to me. Perhaps a lesser degree of libration would make that bright elevation stand out against the limb.

Looking ahead this year to favorable librations combined with last quarter moons, I turned to the "Book of all Knowledge" (*Observer's Handbook 2020*) and we have:

Aug 16, (-5.9˚) five days after last quarter (the sun is past Orientale's zenith but might light up something.)

Sep 13, (-7.2˚) and getting closer to the last quarter, three days after.

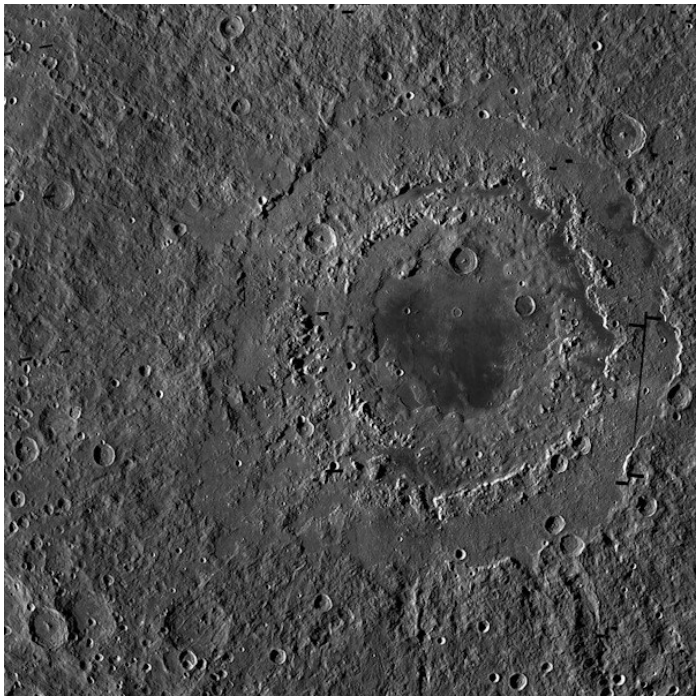
Oct 11, (-7.7˚) the day after last quarter.

Nov 8, (-7.4˚) the day before last quarter and the moon is already starting to tilt the basin away.

Dec 6 (-6.3˚) two days before last quarter

This gives us some practice opportunities in August and September with the main tries in October and November. Hardier members might give December a go.

-Dale Thieme



Lunar Reconnaissance Orbiter Camera- Wide angle camera image of Mare Orientale

References:
6 January 2020 Short Talk by Gary Ross: https://www.youtube.com/watch?v=xNV9AEw16Qg

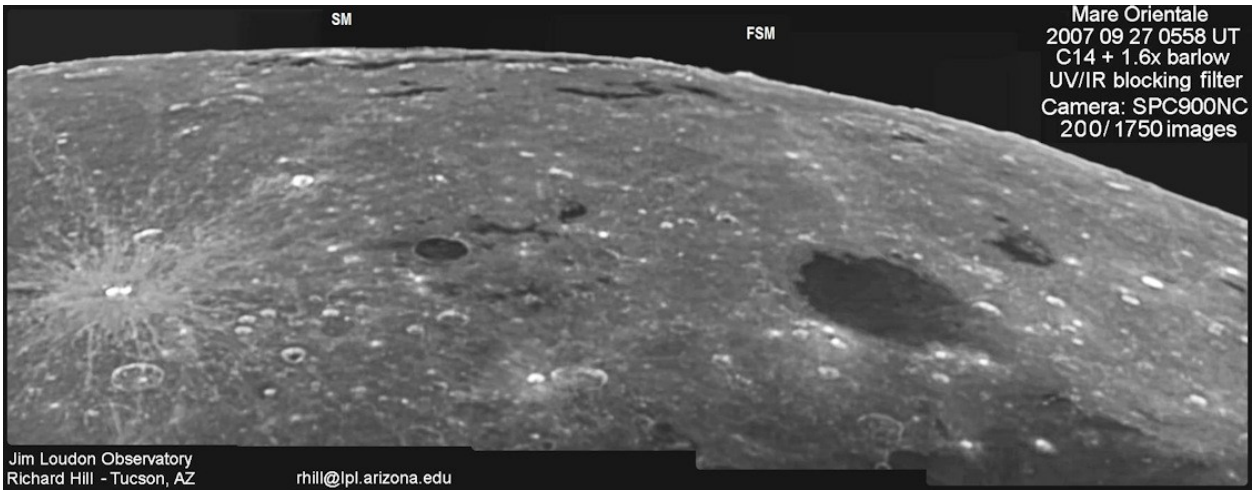
The Sky & Telescope web article: *https://skyandtelescope.org/observing/celestial-objects-to-watch/a-rare-glimpse-of-mare-orientale*

Luna Cognita, Robert A. Garfinkle, ISBN-10: 1493916637

The Modern Moon, Charles A. Wood, ISBN-10: 0933346999

RASC *Observer's Handbook 2020* (USA Edition), James S. Edgar-Editor, ISBN-10: 1927879191

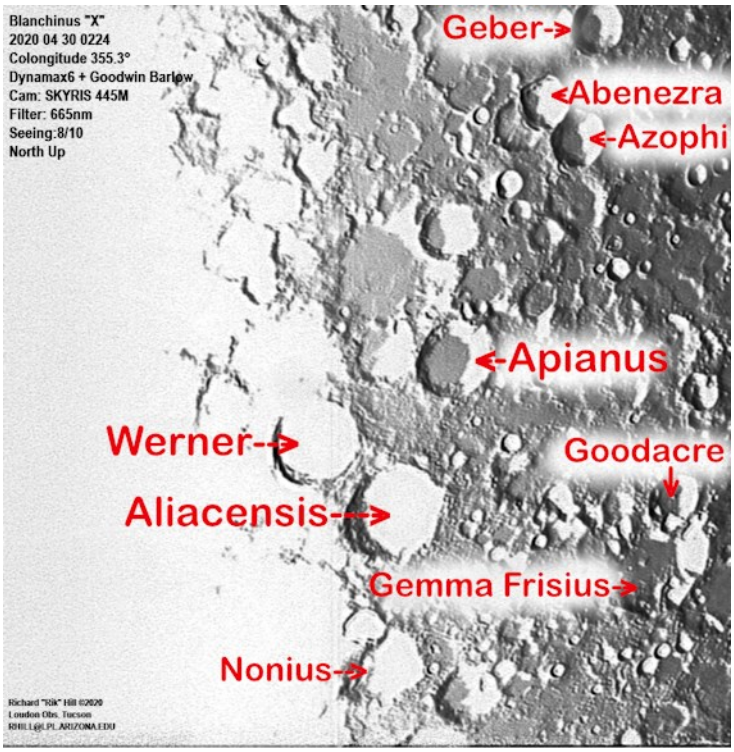
This image, taken by Rik Hill, makes an appearance in Luna Cognita, *illustrating the location of Mare Orientale.*

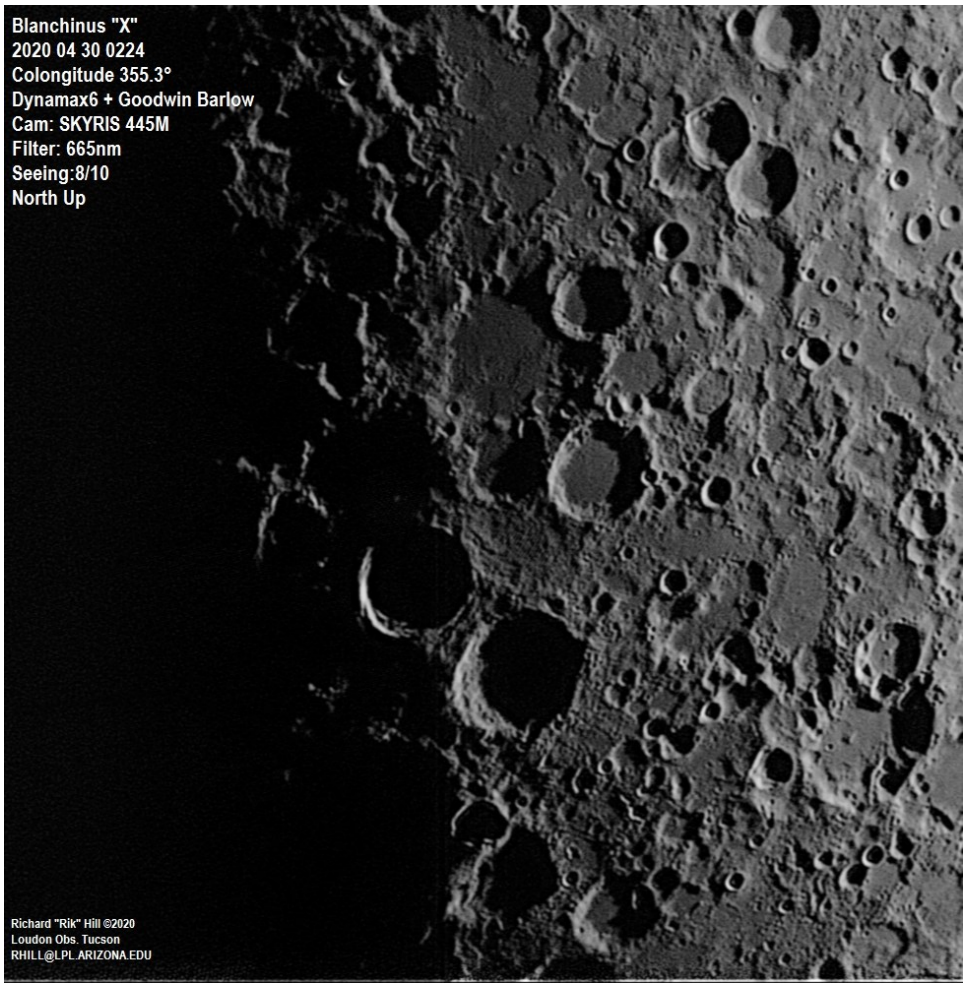


Over the Moon with Rik Hill

The "X"

Our best observing weather is when the days are hot, the evenings warm and still. The colongitude was just right so this was a good night to get a look at the famous "X" on the moon. Can you see it on the terminator? It only lasts for an hour or so. Here's how you get there. The area below center of this image is dominated by the two circular pools of darkness that are Aliacensis (82km diameter), lower, and Werner (71km) above. A line between the centers of these two craters lead to the "X" formed by the walls of Blanchinus, La Caille, Purbach and several smaller features. Above Aliacensus and Werner is a nice flat floored crater, Apianus (65km) and further above that is a smaller crater Playfair (49km). Near the top of the image is a pair of craters Azophi (49km) and above it is the irregular Abenezra (43km) with Geber (46km) partially cut off by the edge of this image.





In the lower right of this image is the irregularly shaped Gemma Frisius (90km) overlain by the smaller Goodacre (48km) to the north. Lastly, is the roughly triangular and shadow filled crater Nonius (71km) due south of our first crater landmark, Aliacensis. Enjoy this region but it will take a bit of work and patience to catch the "X"!

This was a single AVI stacked with AVIStack2 (IDL) and further processed with GIMP and IrfanView.

History S.I.G.

June 1987

A group photo graces the cover of this month's WASP.

Ken Kelly leads off with "How To Write A Paper For The Wasp" with some good tips that still apply today, although he seemed to have the luxury of getting to choose among submissions for publication (This editor wonders what that feels like.) Ken goes on to stimulate the little gray cells with "LOGIC PUZZLE-The Star Party".

What follows is a reprint from the ASTROFORUM (possibly on CompuServe): "How to Clean Mirrors and Lenses" by Lenny Abbey.

Then back to Ken Kelly with "Minor Planets for May – June"

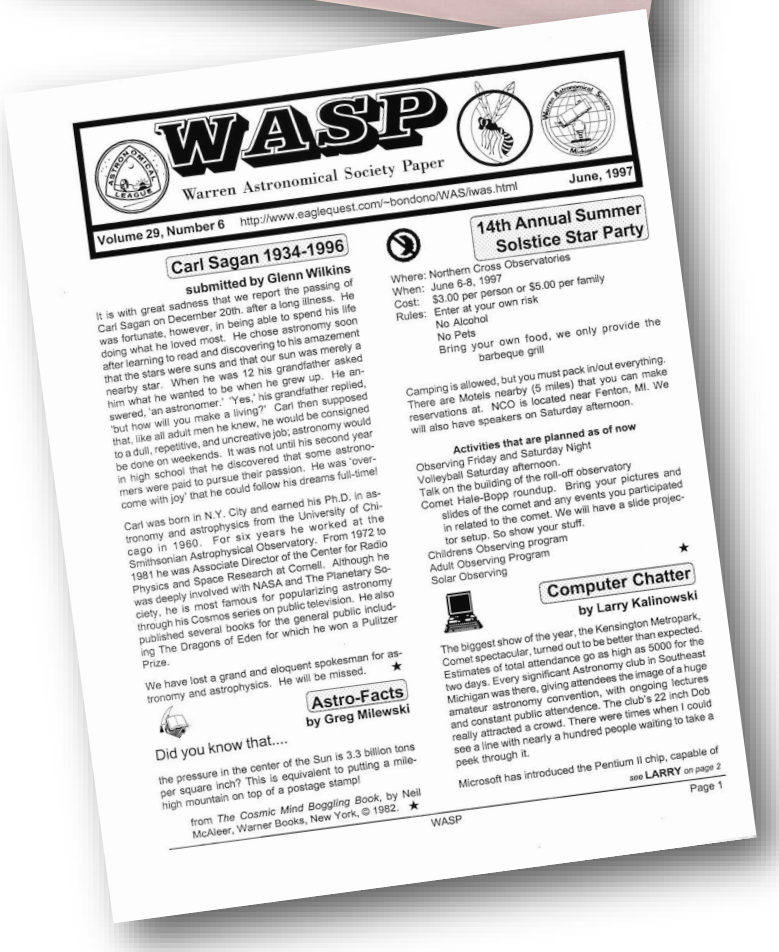
Ephemeris For (2) Pallas
Ephemeris For (1) Ceres
Ephemeris For (6) Hebe
Ephemeris For (7) Iris

Source of Elements: 1987 Ephemerides of Minor Planets

June 1997

Glenn Wilkins writes an obituary for Carl Sagan 1934-1996. Greg Milewski continues his Astro-Facts bit and Doug Bock announces his 14th Annual Summer Solstice Party.

"Computer Chatter" by Larry Kalinowski and the "Minutes of Meeting" by Glenn Wilkins round out the issue, with a bonus of a puzzle by Greg Milewski: "A Messier Marathon" in the printed version of the June WASP.


WASP
Warren Astronomical Society Paper
Volume 29, Number 6 http://www.eaglequest.com/~bondono/WAS/iwas.html June, 1997

Carl Sagan 1934-1996
submitted by Glenn Wilkins

It is with great sadness that we report the passing of Carl Sagan on December 20th, after a long illness. He was fortunate, however, in being able to spend his life doing what he loved most. He chose astronomy soon after learning to read and discovering to his amazement that the stars were suns and that our sun was merely a nearby star. When he was 12 his grandfather asked him what he wanted to be when he grew up. He answered, 'an astronomer.' 'Yes,' his grandfather replied, 'but how will you make a living?' Carl then supposed that, like all adult men he knew, he would be consigned to a dull, repetitive, and uncreative job; astronomy would be done on weekends. It was not until his second year in high school that he discovered that some astronomers were paid to pursue their passion. He was 'overcome with joy' that he could follow his dreams full-time!

Carl was born in N.Y. City and earned his Ph.D. in astronomy and astrophysics from the University of Chicago in 1960. For six years he worked at the Smithsonian Astrophysical Observatory. From 1972 to 1981 he was Associate Director of the Center for Radio Physics and Space Research at Cornell. Although he was deeply involved with NASA and The Planetary Society, he is most famous for popularizing astronomy through his Cosmos series on public television. He also published several books for the general public including The Dragons of Eden for which he won a Pulitzer Prize.

We have lost a grand and eloquent spokesman for astronomy and astrophysics. He will be missed. ★

Astro-Facts
by Greg Milewski

Did you know that....

the pressure in the center of the Sun is 3.3 billion tons per square inch? This is equivalent to putting a mile-high mountain on top of a postage stamp!

from *The Cosmic Mind Boggling Book*, by Neil McAleer, Warner Books, New York, © 1982. ★

14th Annual Summer Solstice Star Party

Where: Northern Cross Observatories
When: June 6-8, 1997
Cost: $3.00 per person or $5.00 per family
Rules: Enter at your own risk
No Alcohol
No Pets
Bring your own food, we only provide the barbeque grill

Camping is allowed, but you must pack in/out everything. There are Motels nearby (5 miles) that you can make reservations at. NCO is located near Fenton, MI. We will also have speakers on Saturday afternoon.

Activities that are planned as of now

Observing Friday and Saturday Night
Volleyball Saturday afternoon.
Talk on the building of the roll-off observatory
Comet Hale-Bopp roundup. Bring your pictures and slides of the comet and any events you participated in related to the comet. We will have a slide projector setup. So show your stuff.
Childrens Observing program
Adult Observing Program
Solar Observing ★

Computer Chatter
by Larry Kalinowski

The biggest show of the year, the Kensington Metropark, Comet spectacular, turned out to be better than expected. Estimates of total attendance go as high as 5000 for the two days. Every significant Astronomy club in Southeast Michigan was there, giving attendees the image of a huge amateur astronomy convention, with ongoing lectures and constant public attendence. The club's 22 inch Dob really attracted a crowd. There were times when I could see a line with nearly a hundred people waiting to take a peek through it.

Microsoft has introduced the Pentium II chip, capable of

see LARRY on page 2

Page 1

WASP

From the Scanning Room

More copies of the Detroit Astronomical Society's newsletters are surfacing. This month's crop yielded much of 1980 and another from 1981. When I uploaded the issues to our website, I marked the additional issues as "new", making them easier to spot. In the recesses of my memory, I keep feeling I have another stash of more recent editions, if only I could remember which storage tub they're in. But once found and processed to the website, they will get the "new" designation in their turn.

Dale Thieme,
Chief scanner

WE WANT YOU

to join the Astronomical League!

Our Astronomical League membership list is due at the end of June. Please let us know immediately if you'd like to join the Astronomical League or renew your membership.

A membership for the whole year (through next June) costs only $7.50. Membership nets you their quarterly magazine, The Reflector, and participation in their observing clubs - a great way to encourage yourself to observe. (They even have online leaderboards!)

Beyond these fun programs, you also get the right to attend their annual convention for a reasonable fee, not to mention full voting rights at the convention.

If you would like to join or renew, and your W.A.S. dues are paid up for 2020, please:

immediately let me know at alcor@warrenastro.org

OR

send a check for $7.50 to:

Warren Astronomical Society
22712 Nona St.
Dearborn, MI 48124

OR

send $7.50 via PayPal to treasurer@warrenastro.org with a note that it's for the AL membership.

Thanks!

Jonathan Kade
Astronomical League Coordinator
Warren Astronomical Society

Sample award pins

Stargate Observatory

Special Notice

Due to the measures taken during the Covid-19 pandemic On-site Star Parties and group events are cancelled.
During this time, you are encouraged, when the skies co-operate, to join the livestream with Northern Cross Observatory on the open house schedule (4th Saturday of the month)
Past livestream are available on the Warren Astronomical Society's YouTube channel:
https://www.youtube.com/channel/UC12jUX4Gmweg6fTtUuqa8CQ

Observatory Rules:

1. Closing time depends on weather, etc.
2. May be closed one hour after opening time if no members arrive within the first hour.
3. Contact the 2nd VP for other arrangements, such as late arrival time. Call 586-909-2052.
4. An alternate person may be appointed to open.
5. Members may arrive before or stay after the scheduled open house time.
6. Dates are subject to change or cancellation depending on weather or staff availability.
7. Postings to the Yahoo Group and/or email no later than 2 hours before starting time in case of date change or cancellation.
8. It is best to call or email the 2nd VP at least 2 hours before the posted opening with any questions. Later emails may not be receivable (secondvp@warrenastro.org).
9. Generally, only strong rain or snow will prevent the open house... the plan is to be there even if it is clouded over. Often, the weather is cloudy, but it clears up as the evening progresses.

Advisory: Concerns are circulating in the amateur astronomy community about COVID-19 being passed from one person to another via contact of different persons' eyes with a telescope eyepiece. While we are not medical experts, we thought we should pass on this concern. Sharing telescopes may be considered by some to be high-risk due to the possibility of eyes touching eyepieces.

Stargate Report

Stargate observatory and the Dob shed along with all equipment are in good condition as of May 21st at 3:45 pm.

The observatory will remain closed until further notice due to the COVID-19 pandemic.

Riyad I. Matti
2020 WAS 2nd VP,
Observatory Chairperson

Treasurer's Report

Treasurer's Report for 5/31/2020

MEMBERSHIP

We have 82 current members

INCOME AND EXPENDITURES (SUMMARY)

We took in $1,821 and spent/transferred $510 We have $22,104 in the bank $103 in checks and $677 in cash, totaling $22,913 as of 5/31/2020.

INCOME

Row Labels	Sum of Credit
AL 2020	$60.00
calendar 2020	$150.00
donation	$348.88
membership	$377.00
merch	$84.00
renewal	$801.00

EXPENSE

Row Labels	Sum of Debit
Calendar Shipping Cost	30.35
PO Box 2020	92.00
Snack Reimbursement	70.00
Snack Supplies	2.12
Speaker Expense, Dinner	54.23
Speaker Expense, Driving	261.00

Astronomical Events for June 2020

Add one hour for Daylight Savings Time
Source:
http://www.astropixels.com/ephemeris/astrocal/astrocal2020est.html

Day	EST (h:m)	Event
02	22:36	Moon at Perigee: 364366 km
03	13:00	Venus at Inferior Conjunction
04	08:00	Mercury at Greatest Elong: 23.6°E
05	14:12	FULL MOON
05	14:25	Pen. Lunar Eclipse; mag=0.568
06	13:10	Moon at Descending Node
08	12:19	Jupiter 2.2°N of Moon
08	21:19	Saturn 2.7°N of Moon
12	18:53	Mars 2.7°N of Moon
13	01:24	LAST QUARTER MOON
14	19:56	Moon at Apogee: 404597 km
19	03:52	Venus 0.7°S of Moon: Occn.
20	16:43	Summer Solstice
20	23:24	Moon at Ascending Node
21	01:40	Annular Solar Eclipse; mag=0.994
21	01:41	NEW MOON
22	20:53	Pollux 4.5°N of Moon
23	19:33	Beehive 1.7°S of Moon
25	09:09	Regulus 4.3°S of Moon
28	03:16	FIRST QUARTER MOON
29	21:09	Moon at Perigee: 368958 km
30	22:00	Mercury at Inferior Conjunction

GLAAC REPORT 4/30/2020

Beginning Balance: $2,237

INCOME

No activity

EXPENSES

No activity

Ending Balance: $2,237

Mark Jakubisin
Treasurer

Meeting Minutes

BOARD MEETING
May 4, 2020

Members present: Diane Hall, Dr. Dale Partin, Riyad Matti, Glenn Wilkins, Jonathan Kade, Bob Trembley and Dale Thieme. Diane called the meeting to order at 6:32

Old Business

Riyad visited the observatory and reported that it is good shape although there has been no response from the Park regarding our grounds concerns. He also offered that small groups of members wishing to use the observatory area for observing are not likely to be questioned as long as they are complying with social distancing.

Jonathan reported that the WASP is up and contains the minutes and treasury reports for April. He is also asking for suggestions for the 2019 Year in Review report he is compiling.

Diane and Bob agreed to meet this week to develop a "wish list" for products asked for by the Macomb Discovery Center.

990 filing – Diane will contact the treasurer before the Macomb meeting to get updated, and also determine if the post office mail pickup concern has been resolved. Substitutes are available, if needed.

New Business

GLAAC Financing – The Board formally discussed the option of allowing the suggestion of fully incorporating GLAAC access to our checking account. The WAS treasurer was not present, but it was agreed that the WAS is not willing to take this step and alternative solutions need to be explored.

International Day of Light Day on May 16 – Bob E-mailed an outline of this program to our membership on May 4 for awareness and comment.

CRANBROOK MEETING
May 4, 2020

Diane called this virtual meeting to order at 7:30. 23 members participated on WebEx and an additional 20 watched on You Tube. Members & guests were encouraged to be sure that their E-mail address is added to our contact list to stay up to date.

In the News/Sky was presented by Dr. Partin
Subjects included:

- Black hole merger detected resulting in possible detector improvements of 8x
- Death by meteorite in Turkey in 1888
- Possible use of cosmic rays to forecast volcanic eruptions
- New revelations from reviews of Europa images from Galilea in 1998
- Short radio burst in Milky Way appears to be a magnetron neutron star
- Space X preparing to launch 2 astronauts
- Three proposals submitted for moon landers

Current viewing recommendations include the Eta Aquariid meteor shower (low in sky), Venus & Beehive (M44), and Mars, Saturn & Jupiter in the morning.

Officer/Viewing reports

Bob Trembley is searching for astronomy presenters requested by local and national organizations using virtual formats. GLAAC minutes are in the WASP.

Jonathan acknowledged the accomplishments of Dr. Partin in lining up virtual presenters on short notice.

Riyad noted a sunspot although it faded out about halfway across the surface.

Bill Beers showed the surprising number of faint galaxies that usually appear around long-exposures of popular faint objects. He recently counted a group of over 40 new Star Link satellites which are brighter than stars. Future timing can be determined for these satellites on the Heavens Above site. Additional launches are expected on May 7 & 18.

Doug Bock and Jonathan answered a question about how viewing quality is defined.

Jonathan noted that glow tape and other merchandise are available. He reminded us also that Jeff MacLeod's Astro Chat program is active and available on You Tube.

Short talk

Dr. Partin introduced Jonathan Kade to present **There's No Place Like Home**

Jon's tour took us around the Local Group of familiar objects but also included other interesting objects in a 6 million light year sphere. These included NGC 55, 147, 185, 300, 1569 & 3109. Some of the irregulars have shapes not commonly recognizable as galaxies in the normal sense.

Break – 8:30 to 8:45

Main Talk
"Zwicky and Baade"

Dr. Partin introduced Ken Bertin

Ken presented the life stories of famous 20th century astronomers Fritz Zwicky and Walter Baade. For a time in California, both of these men had a successful collaboration although each also

(Continued on page 19)

(Continued from page 18)

had long lists of notable achievements. Zwicky compiled extensive catalogues of galaxies & galaxy clusters still in current use. His talents also extended into astrophysics and jet/rocket design which were recognized with many awards. It seems his achievements could have been even greater except for certain personality problems that limited his ability to work with others!

Walter Baade, by contrast, was fascinated by astronomy from his youth and was able to get a great education in science and math at prominent universities in Germany and elsewhere. He was a superior student and able to flourish in highly desirable observatories in America while collaborating with other high-achievers. His career was enhanced further by being gifted with an agreeable personality. He is most noted for the discovery of numerous asteroids and some minor planets, now called centaurs, which cross the orbits of the giant planets.

The meeting was closed at 10:15

MACOMB "Virtual" MEETING
May 21, 2020

Diane Hall called this meeting to order at 7:30 PM for 16 viewers on You Tube and 28 participants on WebEx

IN-THE-NEWS/IN-THE-SKY presented by Ken Bertin

News highlights included:

- Images from telescopes & spacecraft are being combined to improve understanding of Jupiter's atmosphere.
- The closest black hole to earth has been discovered at only 1,000 light years from us. It is actually visible by naked eye from the Southern hemisphere!
- A new AI program called Morpheus has been developed to identify galaxies in images.
- Stellar pulsations are being studied in depth now according to a recent report in Nature.
- SOHO has discovered a new comet called Swan in the Southern hemisphere.
- It has been determined that the orbits of Trapist-1 planets are NOT misaligned.
- A small pattern of rotating material was found with the ESO scope and appears to be an early stage of planetary formation.
- A massive rotating disk was found with ALMA and had formed at only 10% of the current age of our universe.

Current interesting **objects** in the sky include:

- Mercury can be easily spotted just below crescent Venus shortly after sunset. They make a lovely pair.
- The bright star Spica will be close to the moon on June 1.

OFFICER REPORTS – Diane

Diane was pleased to report that David Levy unexpectedly joined us from Arizona. David talked for a bit and noted that he had recently observed a long-duration meteor (about 6 seconds).

Diane reported that medical experts have reported that COVID 19 can be transferred through the eyes thus making shared optical scopes problematic.

Riyad reported that Stargate is secure but not yet available for events. Our governor has just declared that restrictions will be extended at least through June 12.

Marty Kunz reported that sunspot activity continues to be very low

Dale Thieme reported that scanning of vintage astronomy stories is ongoing

Jim Shedlowsky inquired if the July debate event would be moved. It seems likely.

Jim also asked the membership if the abrupt transition to transparency, after the Big Bang, affected the background radiation and provided a good clue about the age of the universe? Dr. Partin reported that this event likely occurred when cooling reached about 3000 deg. kelvin. Discrepancy in these conclusions is likely relatively small and any future changes will probably not be significant enough to materially change current age estimates.

OBSERVING REPORTS

Jonathan Kade reported that he just returned from the dark sky site at Black River and had a very good observing experience including several close galaxies, M6/51/109 & others. Also, a flyover of the ISS.

Bill Beers noted the distinct blue tint of super nova 2020 and wondered what it meant. Photo shown.

Adrian showed some photos he took with his basic new equipment at Lake Hudson during unexpected clear skies. This initiated a discussion of costs, problems and rewards related to newcomers to astro photography.

BREAK – 8:14 to 8:30

MAIN PRESENTATION
"Where is extraterrestrial life likely to be found? "

Dale Partin introduced Dave Bailey who presented an abbreviated version of his report on the necessary conditions for development of intelligent life and what our solar system might look like if our sun was a red or orange dwarf. Dave had the unusual experience of delivering his report by phone while the coordinated visuals were provided from other locations by Jon & Ken.

(Continued on page 20)

(Continued from page 19)

Dwarf stars offer the best opportunity for life to evolve as they are relatively stable. Our sun, however, is not a typical star, yet here we are. So, there are many other arrangements which can still work. Dave noted that crystals may also play a role by combining with RNA and providing the foundation for evolution of DNA.

Simply looking at a "habitable zone" ignores problems with dwarf suns and overlooks many other unique life-developing situations. For instance, cooler suns mean that the potential planets must be closer thus making it more likely that they will become tidally locked to the sun and thus more difficult for life to develop. However, this situation may be resolved by planets with sufficiently large moons to counter this tendency.

Larger suns do not last very long and are variable over time periods of a few million years and therefore may not allow sufficient time for evolution. However, it may be possible that civilizations that have developed billions of years ago may have the technology to populate suitable planets in these systems and use them for enough time to make it worthwhile.

Dave concluded by saying that he has plans to make hand-out packages of his full report and will make them available to WAS members.

Note: Some technical problems were encountered over the course of this overall meeting. These will be addressed by the Team to improve future virtual meetings.

Diane closed the meeting at 9:31 pm.

Glenn Wilkins
Secretary

McMath-Hulbert News

The McMath-Hulbert Astronomical Society (MHAS) in Lake Angelus Michigan has to goal of preserving the historic McMath-Hulbert Observatory (MHO)in Lake Angelus. MHO was a state of the art solar observatory operated by the U. of M. from the mid 1930's to 1980 when it was sold into private ownership. MHAS is presently active in a number of areas to promote MHO with outreach activities to local and national amateur astronomy organizations, community outreach in the form of attendance at star parties such as Astronomy at the Beach and the Detroit Maker Faire and STEM outreach with classes offered by members at the Rochester Hills Public Library. With social distancing in effect, our outreach efforts are on hold, but we continue as best we can with virtual meetings and instructional videos for online events. If social distancing allows it, we'll have a booth at the Oakland County Pioneer and Historical Society "Summer Social" event on July 25.

We also are working hard to address urgent maintenance issues in our 3 buildings. The big project now is fixing leaks in the wood dome of the oldest observatory building (Tower 1), expecting to finish it off later this summer. Then internal water damage needs to be addressed. Anybody with carpentry and roofing experience could really help us on this project. The other buildings fortunately are mostly rain proofed, but we need to clean them out and organize contents. Again, help is most appreciated! We have some landscaping projects underway and maybe you'd like to help out with these too.

And yes, we have been doing some observing both solar and astronomical. Marty has been using his recently acquired solar telescope to view the Sun. Unfortunately there's been little solar activity lately as we seem to be stuck in solar minimum. Marty and I have been observing Venus during the day as it approaches inferior conjunction. See below photo by Marty through his Celestron 8 telescope. The other shot (below left) I made with my phone camera of the recent Venus-Mercury-Moon conjunction on 5/24.

Please check out our website at:
http://www.mcmathhulbert.org/

We also have a Facebook page at:
https://www.facebook.com/MHObservatory/

The Warren Astronomical Society is a Proud Member of the Great Lakes Association of Astronomy Clubs (GLAAC)

GLAAC is an association of amateur astronomy clubs in Southeastern Michigan who have banded together to provide enjoyable, family-oriented activities that focus on astronomy and space sciences.

GLAAC Club and Society Meeting Times

Club Name & Website	City	Meeting Times
Astronomy Club at Eastern Michigan University	Ypsilanti/EMU	Every Thursday at 7:30PM in 402 Sherzer
Capital Area Astronomy Club	MSU/Abrams Planetarium	First Wednesday of each month 7:30 PM
Farmington Community Stargazers	Farmington Hills	Members: Last Tuesday of the month Public observing: 2nd Tuesday of the month
Ford Amateur Astronomy Club	Dearborn	Fourth Thursday of every month (except November and December) at 7:00 PM
Oakland Astronomy Club	Rochester	Second Sunday of every month (except May)
Seven Ponds Astronomy Club	Dryden	Monthly: generally the Saturday closest to new Moon
Sunset Astronomical Society	Bay City/Delta College Planetarium	Second Friday of every month
University Lowbrow Astronomers	Ann Arbor	Third Friday of every month
Warren Astronomical Society	Bloomfield Hills/ Cranbrook & Warren/ MCC	First Monday & third Thursday of every month 7:30 PM

GLAAC Club and Society Newsletters

Warren Astronomical Society: http://www.warrenastro.org/was/newsletter/
Oakland Astronomy Club: http://oaklandastronomy.net/
Ford Amateur Astronomy Club: http://www.fordastronomyclub.com/starstuff/index.html
Sunset Astronomical Society: http://www.sunsetastronomicalsociety.com/
University Lowbrow Astronomers: http://www.umich.edu/~lowbrows/reflections/

WAS Member Websites

Jon Blum: Astronomy at JonRosie
Bill Beers: Sirius Astro Products
Jeff MacLeod: A Life Of Entropy
Bob Trembley: Balrog's Lair
Bob Trembley: Vatican Observatory Foundation Blog

Doug Bock: https://boonhill.org
Facebook: Northern Cross Observatory https://www.facebook.com/NorthernCrossObservatory
Boon Hill and NCO Discussion https://www.facebook.com/groups/369811479741758
YouTube channel: https://www.youtube.com/channel/UC-gG8v41t39oc-bL0TgPS6w

Classifieds













An amateur astronomer in Warren recently passed away and his family is looking to sell his telescope collection. There are many scopes and a number of eyepieces. If something catches your eye, email classifieds@warrenastro.org or call us at 313-282-2562 and we'll get you in touch with the family.

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.gov to find local clubs, events, and more!

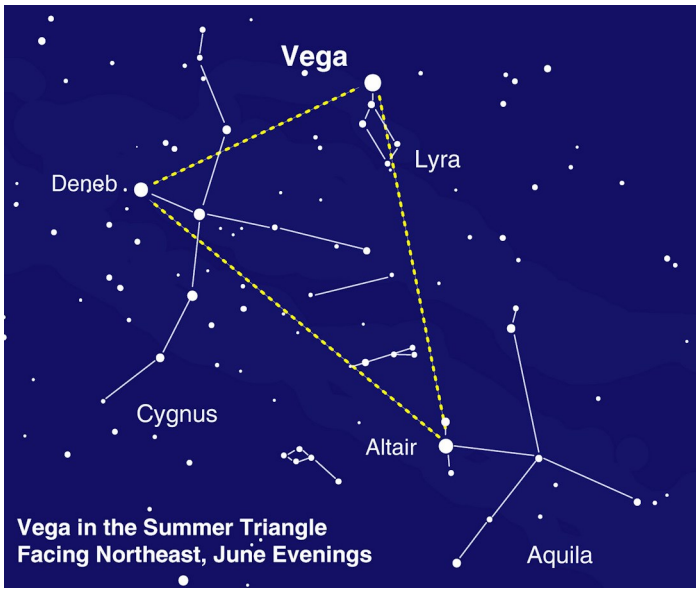
Summer Triangle Corner: Vega

David Prosper and Vivian White

If you live in the Northern Hemisphere and look up during June evenings, you'll see the brilliant star **Vega** shining overhead. Did you know that Vega is one of the most studied stars in our skies? As one of the brightest summer stars, Vega has fascinated astronomers for thousands of years.

Vega is the brightest star in the small Greek constellation of Lyra, the harp. It's also one of the three points of the large "Summer Triangle" asterism, making Vega one of the easiest stars to find for novice stargazers. Ancient humans from 14,000 years ago likely knew Vega for another reason: it was the Earth's northern pole star! Compare Vega's current position with that of the current north star, Polaris, and you can see how much the Earth's tilt changes over thousands of years. This slow movement is called **precession**, and in 12,000 years Vega will return to the northern pole star position.

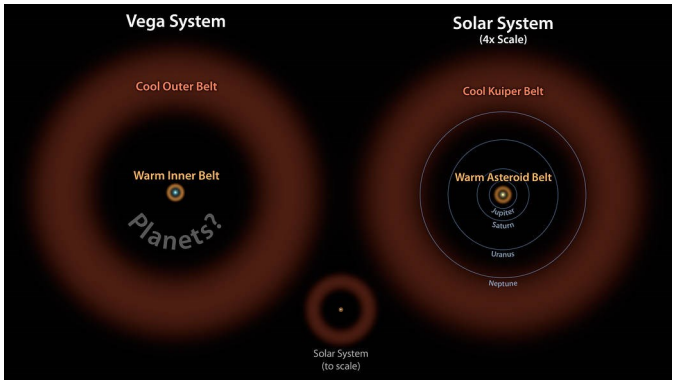
Bright Vega has been observed closely since the beginning of modern astronomy and even helped to set the standard for the current magnitude scale used to categorize the brightness of stars. Polaris and Vega have something else in common, besides being once and future pole stars: their brightness varies over time, making them **variable stars**. Variable stars' light can change for many different reasons. Dust, smaller stars, or even planets may block the light we see from the star. Or the star itself might be unstable with active sunspots, expansions, or eruptions changing its brightness. Most stars are so far away that we only record the change in light, and can't see their surface.



Can you spot Vega? You may need to look straight up to find it, especially if observing after midnight.

NASA's TESS satellite has ultra-sensitive light sensors primed to look for the tiny dimming of starlight caused by transits of extrasolar planets.Their sensitivity also allowed TESS to observe much smaller pulsations in a certain type of variable star's light than previously observed. These observations **of Delta Scuti** variable stars will help astronomers model their complex interiors and make sense of their distinct, seemingly chaotic, pulsations. This is a major contribution towards the field of astroseismology: the study of stellar interiors via observations of how sound waves "sing" as they travel through stars. The findings may help settle the debate over what kind of variable star Vega is. Find more details on this research, including a sonification demo that lets you "hear" the heartbeat of one of these stars, at: bit.ly/DeltaScutiTESS

Interested in learning more about variable stars? Want to observe their changing brightness? Check out the website for the American Association of Variable Star Observers (AAVSO) at aavso.org. You can also find the latest news about Vega and other fascinating stars at nasa.gov.



Vega possesses two debris fields, similar to our own solar system's asteroid and Kuiper belts. Astronomers continue to hunt for planets orbiting Vega, but as of May 2020 none have been confirmed. More info: bit.ly/VegaSystem Credit: NASA/JPL-Caltech

Last Word

-Jonathan Kade, Publisher

"What do you get for joining the club?"

We're almost halfway into the year, and last I heard we don't quite have 100 members yet. While on the one hand, our membership of 80+ is pretty impressive given that we haven't been able to hit you up for money in person this year, it's also a far cry from our norm. Generally, we're at least to 100 by now, and we typically crack 140 later in the year. Part of the trouble is that we haven't sent out a membership renewal form by mail in a couple of years. That's primarily my fault, I have to admit; Dale Thieme got a mailer teed up and we just never got it over the line last year. I'm pretty determined to send one out this year, even if it arrives at the halfway point of the year.

You wouldn't think, in this hyper-connected age when our online meetings actually surpass our in-person meetings in attendance, that we would need to send out a "snail mail" missive. But past renewal flyers have been extremely effective in getting people to renew - partly because, in an age where we mostly communicate electronically and where most of the mail we get is mass-distribution junk, a semi-personal piece of mail really stands out. Partly it's because a lot of people lose their club emails to overly aggressive spam and bacn* filters. And partly because sometimes we need a little kick to get us to do the things we know we ought to do.

So, watch your mailbox. Something is coming. I don't know what we'll replace our typical calendar of events for the year with, but it will be something! Maybe some sample astrophotos, perhaps?

But back to my title. A question I get a lot from prospective members is, "what do I get for joining the club?" I often talk about the tangible benefits - access to Stargate's collection of lending telescopes, access to our library**, discounts on subscriptions to Sky & Telescope, Astronomy, and Astronomy Technology Today, eligibility to join the Astronomical League for the low, low price of $7.50 per year, and so on. But I also always emphasize that joining is not a requirement for attending our events - that people should show up, see how they like us, and pay their dues if and when they feel like we're a community they want to support.

But to answer with a bit of cliche: what you get out of your membership is mostly what you put in. Many of us have formed decades-long friendships, discovered aspects to the hobby we never knew existed, found intellectual passions we never could have imagined***, found extremely rewarding volunteer work, gotten to see the shining eyes of kids looking at the moon for the first time or to hear a senior citizen gasp in amazement when they get their first view of Saturn. And on the less fun side: a support network of people who care about you when times get tough; a group of people who know what you're going through when you take a dream astronomy trip and get skunked; other people to encourage you and join you in fighting against light pollution in your community.

For me, the WAS meeting schedule is the structure to my month. I know what I'm going to be doing virtually every first Monday, third Thursday, and fourth Saturday. And I have a pretty good idea I'm going to be talking to a lot of you in between. It's something outside of work and outside of the family - the mythical Third Place that exists for so few people these days. And honestly, forget $37 a year - I think that's priceless.

Jonathan

* commercial mail that you signed up for but don't really read
** currently on hiatus until we have a suitable location again
*** see the dispatch from our resident Armchair Astronomer earlier in this issue!

W.A.S.P. Photo and Article Submissions

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