

The Newsletter of the Popular Astronomy Club ESTABLISHED 1936

President's Corner APRIL 2020



Welcome to another edition of the "Reflections". As I write this month's column, I am completing my second week of "shelter in place" against the onslaught of the

coronavirus. This has been a difficult time for everyone. We are all trying to find new ways to work, shop, and stay safe against the pandemic. Some of us have been laid off and are battling boredom with nothing to do. Similarly, club activities have been severely curtailed as well. We must all respect the requests from our leaders in government to practice social distancing and selfquarantining until the virus subsides. This could easily be another month, but who knows? In any event, we must maintain resolve and get ready for that blessed day when we can once again engage in face to face club meetings and observing sessions.

While we wait for the pandemic to subside and for warmer weather, I wanted to keep you informed of some of the "indoor" activities we have been doing. First, I wanted to point out that we received another very nice donation from the Harry & Lillian Nelson Charitable Fund. Again, let me thank the entire Nelson Family for their legacy of service and support to the science of astronomy and to the Popular Astronomy Club. Their recent donations will enable us to proceed with updating and remodeling of the Paul Castle Memorial Observatory.

In the meantime, your PAC board has been working to forge alignment on next steps for the observatory remodeling project. Last Thursday evening the PAC board participated in a "Zoom" videoconference to discuss possibilities for a new telescope. The Zoom videoconference actually worked very well. Wayland Bauer, Rusty Case, Terry Dufek, Roy Gustafson, Dale Hachtel, Dino Milani and I were able to participate in a nearly hour-long meeting, each of us from our own homes using our personal computers with webcams to have a virtual meeting. Rusty had put together some cost numbers from three different telescope suppliers and for two different telescopes. You can read about the specifics here in this newsletter, but the important point is we were able to make a selection. Rusty and Dale are in the final stages of placing an order for a brand new Celestron CPC 1100 HD telescope which will be placed in Paul's observatory as part of the remodeling project. Thanks to the participants in the videoconference and to PAC members who provided input and support for the selection process.

April 2020

EAGU

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Let's see how things develop in early April on the virus front. It may be that we will have to cancel our April 13th meeting at the Butterworth Center (and the Niabi night on the 18^t). Hopefully not, but if so, we might want to try doing a Zoom conference for that as well. Stay tuned on these developments. We must all do our part to stem the spread of the coronavirus. In any event, you cannot keep a dynamic club like ours down for long! I am ready to go out and observe NCRAL's Spring Messier Marathon. Get ready for that and get psyched up to start working on Paul's observatory remodeling project. I am confident this remodeling will result in the world's greatest PAC observatory! Keep looking up! Alan Sheidler



ANNOUNCEMENTS / INFO



NCRAL Seasonal Messier Marathon Program

NCRAL's Seasonal Messier Marathon observing program is NOT designed to qualify observers for the Astronomical League's Messier Observing program; the two programs are unrelated and observing requirements are quite different. In the NCRAL program, the main requirement is to quickly observe and essentially check off items from one of four seasonal lists of Messier objects as noted in the section to follow.

NCRAL recognition will consist a suitable printed certificate and a 3/4-inch enameled star pin (a different color for each season). There will be no direct cost to the membership for participating in the award program; the cost of the program (pins, certificates, mailers, postage) will be borne by the Region as a benefit of affiliation. Relevant program documents are linked below

NCRAL Seasonal Messier Marathon Program Rules

NCRAL WINTER Seasonal Messier List

NCRAL SPRING Seasonal Messier List

NCRAL SUMMER Seasonal Messier List

NCRAL AUTUMN Seasonal Messier List

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> Contact for Information or questions here: popularastronomyclub@gmail.com

ANNOUNCEMENTS / INFO

LOOKING FOR OLDER ISSUES OF REFLECTIONS NEWSLETTER?



HISTORY OF PAC?



Popular Astronomy Club on Facebook?



Astronomical League Observing Programs

The Astronomical League provides many different Observing Programs. These Observing Programs are designed to provide a direction for your observations and to provide a goal. The Observing Programs have certificates and pins to recognize the observers' accomplishments and for demonstrating their observing skills with a varie-

ty of instruments and objects





3-18-2020 Breaking News: The NCRAL VISION 2020 Convention is CANCELLED due to the COVID-19 pandemic.

Northern Cross Science Foundations will be contacting attendees about refunds!

READY FOR MEMBERSHIP OR TO RENEW?

For PAC Documents Use "Enrollment Form"



SUBMISSIONS

If you have an article or photos to submit or items of interest, we encourage you to send them in by the 25th of the month. Links to stories are welcome also. **Thank you!**



Check out the Astronomical League **ONLINE**!



CONTRIBUTIONS



Astronomy Pictures: Sky & Telescope's Online Gallery

1-10 OF 11,143 RESULTS

The Flame, the Ice, and some iece of the Horse ablier n Nebula, M42, NGC 1976, , NGC 1982



FILTER RESULTS

Astronomy Pictures: Sky and Telescope's

Online Library!

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Frank Cesarski shared a post to the group: Telescope Addicts - ••• Astronomy & Astrophotography Community. 7 hrs • 🐵



"First that cretin Foster and now that jerk Cummings has instantly evaporated! ... I tell you, Ms. Goodman, without a doubt, I'm looking at an authentic, full-fledged wishing star!"



If you saw "Hidden Figures" or know a bit of NASA history, then you understand. Farewell Katherine and thank you for helping get us to the Moon.

CONTRIBUTIONS

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Sky & Telescope

Same great articles with a great new look. Take a peek at our brand new website **skyandtelescope**.org/astronomy-resources/ before heading out to enjoy the stars tonight.





My 1965 12.5" Cave Astrola



🚹 😮 🙄 You and 219 others

20 Comments 3 Share





Venus Stunner by the Japanese probe Akatsuki. The image is in the infrared. Credit Image: JAXA



CONTRIBUTIONS



Some You Tube videos for you to view while being home bound



Emily Levesque Public Lecture: The Weirdest Stars in the ... Perimeter Institute for Theoretic... Recommended for you





Solar Superstorms (Full Astronomy Documentary) | ... Spark 283K views • 2 years ago





Q&A: The Physics of Black Holes - with Chris Impey The Royal Institution © 33K views • 7 months ago





String Theory and the End of Space and Time with Robbert ... Science & Cocktails 398K views • 7 months ago





The Future of Colonizing Space-Neil deGrasse Tyson- WGS 2018 World Government Summit © 532K views • 2 years ago







Multiverse: One Universe or Many? World Science Festival 860K views • 5 years ago





THE PAUL CASTLE OBSERVATORY RENEWAL PROJECT

On March 26, 2020 a board meeting was held (via ZOOM) to discuss the telescope that was to go into the Paul Castle Observatory. Attending were Al Sheidler, Dale Hachtel, Rusty Case, Wayland Bauer, Dino Milani, Roy Gustafson and Terry Dufek . Also contributing his input was Ken Boquist.

- Dale reviewed the financials for the project.
- A discussion was held whether to have an Altazimuth or equatorial mount and it was felt for ease of use from the membership to go with altazimuth and to add equatorial later on.
- Roy thought it might be useful to have one of our meeting nights out at Paul Castle to a. encourage member usage and possible encourage new member sign ups.
- We decided to go with the Celestron CPC Edge over the CPC GPS
- A motion was made by Roy and seconded by Wayland to have Rusty Case negotiate the price and package through Orange County Telescopes (as they had the best price to begin with)
- NOTE: The package was approved by e-mail vote a couple of days later
- Dale will issue the check to purchase the package along with tax exempt information to Orange County Telescope



OVERVIEW of the CPC Edge

General Features

EdgeHD Optics

- Celestron's premium StarBright XLT coatings
- Fully computerized dual fork arm Altazimuth mount
- 50 mm finder scope to help accurately find objects
- Heavy-duty tripod makes attaching the telescope so easy you can do it in the dark; also features sturdy 2"; stainless steel legs and aluminum accessory tray
- 23 mm, 82 degree Luminos Eyepiece 2"
- Ergonomic design allows you to comfortably lift and move the telescope from location to location
- Star diagonal provides a more comfortable viewing position when observing objects that are high in the sky
- Convenient remote hand control holder holder allows you to view information hands-free while using the scope

Mirror Support Knobs hold the mirror in place and reduce image shift during imaging

Computerized Mount Features

- Proven NexStar computer control technology
- SkyAlign allows you to align on any three bright celestial objects, providing a fast and easy alignment process
- 40,000 object database with over 100 userdefinable objects and expanded information on over 200 objects

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THE PAUL CASTLE OBSERVATORY **RENEWAL PROJECT**

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Custom database lists of all the most famous deep-sky objects by name and catalog number; the most beautiful double, triple and quadruple stars; variable stars; solar system objects and asterisms

Rusty's Estimate from Orange County Telescopes

Celestron CPC Deluxe 1100 HD				
Celestron .7 Reducer for 1100 Edge HD (Reg \$692.95)				
1 Bressor 2" 35mm 70 Degree FOV (Reg. 149.99)	\$120			
1 Celestron 19mm Luminos (Reg. \$175.99)	S0			
2 Fine Finger Feather Focuser 11" SCT (Reg. 19.99)	S0			
Total:	\$4570			

Re-designed drive base and drive me-• chanics with spring loaded RA worm block with enveloping brass teeth

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ble of driv-	Focal Reducer	\$161.05	\$164.95	\$159.95
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when not	CPC 1100 HD	\$3,879.00	\$3,879.00	\$3,879.00
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alignment	Shinning	FREE	FREE	FREE
	ompping			

Flash up-.

> gradeable hand control software and motor control units for downloading product updates over the Internet

- **Permanent PEC** •
- Auxiliary port for additional accessories such as Autoguider •

NexRemote telescope control software and RS-232 cable included for advanced control of your telescope via computer

Roy Gustafson recently received a grant from the Harry and Lillian Nelson Foundation to PAC for \$1630.75. Al Sheidler sent thank you letters to the Nelson family; Alan and Peggy along with Ron and Glenys for their recent donation:



March 23th, 2020

Alan and Peggy Nelson 110 Bank St. SE #1401 Minneapolis, MN 55414

Dear Alan and Peggy,

On behalf of the Popular Astronomy Club, we would again like to express our gratitude to the Harry & Lillian Nelson Charitable Fund for the most recent donation. Coming so quickly after your very generous gift in 2019, we were very pleasantly surprised.

The Nelson family has been a very generous supporter of the Popular Astronomy Club. Your mother and dad were great supporters both financially and by being involved in many club activities over many years. Your dad served as PAC's second president from 1958 to 1969. The Popular Astronomy Club will honor their memory and cherish the legacy they have left to our club and to our community.

The club has been fortunate to attract new and younger members and students who are very enthusiastic about the science of astronomy. This year we will begin the work of remodeling the Paul Castle Observatory. Our plan is to repaint the dome, install a motorized shutter opener and replace the telescope with one having a computerized GOTO mount. The main goal of this work is to make the observatory easier for club members to use and to do some much needed maintenance. The PAC board hopes these upgrades will afford members an easier time of opening the observatory and to find objects during observing sessions. We hope these upgrades will encourage everyone to observe and inspire our younger members to pursue their interests in studying the night sky.

The gifts from the Nelson family will enable us to improve the value of this observatory to PAC members and to maintain PAC's public outreach activity. Thank you again for being such great supporters.

Sincerely,

Ulan Skeidles

Alan Sheidler, President

Popular Astronomy Club 3528 56th St. Ct. Moline, Illinois 61265 Email <u>adsheidler@gmail.com</u>

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Dino Milani, Vice President

A response to the Thank You note from the Nelsons:

Alan,

Thanks for your note. I am sure that Mom and Dad would be very happy with what you are doing with the Popular Astronomy Club. I can still remember as a kid going out to Carl Gambles house in Moline where the Popular Astronomy Club would meet, have a picnic dinner, move inside the downstairs of the observatory, have a discussion on an astronomical subject with a Q and A session, then either move to the observatory to view something or move to the driveway of his house where we sat in recliners (we would divide up and face four different directions (N S E or W)) to count meteors if there was a shower and a clear night. Many many great memories of the past. So glad you and the rest are continuing the process.

Have had several great conversations with Roy about what you are doing and the use of the money. Keep up the great work and THANKS to all. **Ron and Glenys Nelson**



MARCH 2020

Ever since I saw my first major display of the northern lights on July 8, 1966, I have been fascinated and delighted by this always-welcome show of greenish lights in the sky. But of all the displays I've seen, few can match the thrill of watching them from an airplane cruising high above the Arctic circle.

In January 2020 I was part of the Aurora 360 experience, an event consisting of scientific and cultural presentations surrounding the unique displays of northern lights than can be seen often from the sixty-degree latitude of Whitehorse, in Canada's Yukon territory.

Whitehorse is a fabulous town. It is named after a rock structure on the banks of the Yukon river which resembles the mane of a large white horse. Although it was in use for thousands of years by First Nations cultures, it really got its modern start with the discovery of gold in the Klondike in1896. The Alaska Highway, built rapidly during the second world war, passes through Whitehorse.



To me, the city symbolizes two things. One of course is the aurora borealis. On the Saturday evening of our trip we boarded an Air North 737 and took a never-to-be-forgotten flight from Whitehorse

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to Whitehorse, crossing the Arctic Circle. The sky had been cloudy and very cold, with temperatures hovering around zero degrees Fahrenheit. Looking out of an eastward-facing window, I spotted a greenish auroral glow the instant the plane cleared the cloud tops. As we headed north the glow brightened rapidly, and soon there were rays, a bright green rayed arc, and dancing green arcs splattered across the sky. As we entered the "auroral oval" just above the Arctic circle, there was no spot in the sky that was not covered by at least an auroral glow. The northern lights literally surrounded all 360 degrees of the airplane. The three-hour flight was stupefyingly wonderful. I have seen other great auroras, from the big one at the Adirondack Science Camp in 1966, to an even bigger one that covered the whole sky that September, and even a strong red display one night over Tucson, Arizona. But the aurora 360 experience was unique.



What about the other claim to fame of Whitehorse? The city is the centerpiece of one of the most famous poems in all of Canadian history, Robert W. Service's "The Cremation of Sam McGee." It tells the story of Sam McGee who left his home in Tennessee to join the Klondike gold rush, and who forces the poem's speaker to cremate him if and when he perishes from the cold. There was a real Sam McGee whom Service met in a bank; his cabin still stands on the grounds of a Whitehorse museum. My father, and most of our family, could quote sections of the poem, but Dad's brother (Uncle Sidney) knew and quoted every word. And when I quoted

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the final two stanzas during a lecture at the Yukon Centre of the Royal Astronomical Society of Canada, several people in the audience quoted it along with me.

Several days after Sam McGee dies in the poem, an abandoned boat, The Alice May, is used as a makeshift crematorium. As the flames grow higher, the speaker decides to open the furnace:

"...Then the door I opened wide.

And there sat Sam, looking cool and calm, in the heart of the furnace roar;

And he wore a smile you could see a mile, and he said: "Please close that door.

It's fine in here, but I greatly fear you'll let in the cold and storm—

Since I left Plumtree, down in Tennessee, it's the first time I've been warm."

There are strange things done in the midnight sun By the men who moil for gold;

The Arctic trails have their secret tales

- That would make your blood run cold; The Northern Lights have seen queer sights,
- But the queerest they ever did see Was that night on the marge of Lake Lebarge I cremated Sam McGee."



Michael Joseph Qualy > Astrophotography for Beginners





UPCOMING EVENTS



April 13th, 2019

Event: PAC regular meeting Location: Butterworth Center at 7:00 PM. Constellation Report : Frank Stonestreet Program: Firebaugh Observatory -Mr. Jim Dole & Mr. Tom Dunmore All these dates and times are Tentative due to conditions! Please check your emails for any updates as to whether the Event will Occur!

- April 18th, 2020 Niabi Outreach at sunset
- May 1st-2nd, 2020 NCRAL2020, Port Washington, Wisconsin
- May 2nd, 2020 QCAS Astronomy Day, Bettendorf H.S. (Contact Jeff Struve)
- May 9th, 2020 Illiniwek Campground 6:00 pm (rain date May 23rd)
- May 11th, 2020 PAC regular meeting at Butterworth Center at 7:00 PM.
- May 16th, 2020 Niabi Outreach at sunset
- June 6, 2020 Giant Goose Conservation Area "Youth Day", Atkinson, Illinois - 8:00 am noon, canceled if raining. Informational Tables and Solar Observing
- June 8th, 2020 PAC business meeting at Butterworth Center at 7:00 PM
- June 20th, 2020 Niabi Outreach at sunset
- July 13th, 2020 PAC regular meeting at Butterworth Center at 7:00 PM program: Mr. Dick Koos, "Go For Landing". Mr. Koos will discuss his NASA work with program alarm simulation and it's influence on Apollo 11.
- July 18th, 2020 Niabi Outreach at sunset
- July 25th, 2020 Woodhaven Lakes, 509 LaMoille Road, Sublette, Illinois.
- August 1st, 2020 Illiniwek Campground 8:00 11:00 pm (rain date August 22nd)
- August 8th, 2020 PAC Annual Picnic
- August 15th, 2020 Niabi Outreach at sunset

- September 14th, 2020 PAC business meeting at Butterworth Center at 7:00 PM
- September 19th, 2020 Niabi Outreach at sunset
- October 17th, 2020 Niabi Outreach at sunset
- October 24th, 2020 PAC Annual Banquet
- November 9th, 2020 PAC regular meeting at Butterworth Center at 7:00 PM
- November 21st, 2020 Niabi Outreach at sunset
- **December 14th, 2020** PAC Business meeting at Butterworth Center at 7:00 PM.

Mark your calendars and watch upcoming emails for more information!

Mountain-size asteroid will appear as a slow-moving star next month



SIGN UP REPORT

MONTH	NEWSPAPER ARTICLES	CONSTELLATION REPORT	PROGRAM
APR 2020	Jeff Struve	Frank Stonestreet	Mr. Jim Dole & Mr. Tom Dunmore, Firebaugh Observatory
MAY 2020	Dino Milani	Roberta Wright	lan Spangenberg
JUNE 2020	Terry Dufek	Anne Bauer	SMORGASBORD (SEE BELOW)
JULY 2020	Jeff Struve		Mr. Dick Koos, "Go For Landing"
AUG 2020		PICNIC	PICNIC
SEPT 2020	lan Spangenberg	lan Spangenberg	Mr. Zach Luppen, University of Iowa, Zach will discuss the upcoming JUICE and Europa Clipper Missions)
OCT 2020	Paul Levesque	BANQUET	BANQUET
NOV 2020			
DEC 2020	Terry Dufek		
JAN 2021			Roy Gustafson (Year n Review)
FEB 2021			
MAR 2021			SMORGASBORD (SEE BELOW)

Editors Note: If you are interested in contributing/ participating in the above programs, sign ups are available at the monthly meeting or please let The Vice President and Editor know what you are good to go with.. Any corrections please send to Vice President and Editor. This will be updated every issue. **Thank you**

All these dates and times are Tentative due to conditions! Please check your emails for any updates as to whether the Event will Occur!

	MARCH	
	JUNE	
	·	
	SEPTEMBER	
13		

SMORGASBORD

ASTRONOMICAL **CALENDAR OF EVENTS**

(CST) adjusted for Daylight Savings Time when applicable

Apr 01 05:21 FIRST QUARTER MOON Apr 02 02:59 Pollux 4.9°N of Moon Apr 03 01:25 Beehive 1.3°S of Moon Apr 03 09:36 Venus 0.3°S of Pleiades Apr 04 13:45 Regulus 3.9°S of Moon Apr 07 13:08 Moon at Perigee: 356909 km Apr 07 21:35 FULL MOON

Apr 12 21:58 Moon at Descending Node

Apr 14 17:56 LAST QUARTER MOON Apr 14 18:04 Jupiter 2.0°N of Moon Apr 15 04:26 Saturn 2.5°N of Moon Apr 15 23:33 Mars 2.0°N of Moon Apr 20 14:01 Moon at Apogee: 406463 km Apr 22 01:00 Lyrid Meteor Shower Apr 22 21:26 NEW MOON Apr 25 22:34 Aldebaran 3.8°S of Moon Apr 26 05:00 Uranus in Conjunction with Sun Apr 27 12:54 Moon at Ascending Node Apr 29 09:19 Pollux 4.7°N of Moon Apr 30 08:18 Beehive 1.6°S of Moon Apr 30 15:38 FIRST QUARTER MOON

The Sun is in Pieces on April 1st. It enters Aires on April 18th. **Mercury** is in Aquarius on April 1st (Mag: 0.0, Dia: 6.53", Illum: 64.4%). The planet is in the morning sky. It is a very bad position for viewing at being only 9^o above the horizon at sunrise and it doesn't get any better the rest of the month. It is just 2º above the horizon at the end. **Venus** is in Taurus on April 1st (Mag: -4.56, Dia: 25.83", Illum: 46.5%). It is 37º 14' above the western horizon. Watch the planet draw steadily toward the Pleiades until on April 3rd, it is 14' 25" from Alcyone in the cluster. A wonderful observing opportunity! Venus stays in almost the same place throughout the month. It moves slightly to the north, looses a couple of degrees in altitude and brightens slightly more. A 3.6-day old moon passes to the left of the planet on April 20th.

URANUS

THE PLANETS

NEPTUNE

UPITER

April 2020

Mars is in Capricorn on April 1st (Mag: .78, Dia: 6.43", Illum: 88.4%). At 5:30 AM, the red planet is 14º 26' above the SE horizon. Saturn is 1º above it. On April 16th, the Moon passes about 3 ½ º to the SE of the planet. On the 30th, the planet is 18º above the SE horizon at 5:00 AM, brightening slightly.

Jupiter is in Sagittarius on April 1st (Mag: -2.14, Dia: 37.10"). The gas giant is 13º 47' above the SE horizon at 5:00 AM. Mars and Saturn make an interesting conjunction in the early morning sky. The Moon is 5º to above the horizon by the end of the the east on the 15th and it makes the conjunction even more spectacular. Saturn is in Capricorn on April 1st



SATURN

(Mag: .66, Dia: 16.14" (rings 37.59"). The planet is 11^o above the SE horizon at 5:00 AM. Saturn and Mars are separated by 1 ° on the 1st. the Moon s 3º south of Saturn on the 15^{th.}

Uranus is in Aries on April 1st (Mag: 5.88, Dia: 3.40"). The planet is 14º above the western horizon at 8:00 pm. By the 24^{th,} it slips below the horizon by the 24th at the same time.

Neptune is in Aquarius on April 1st (Mag. 7.96, Dia:2.21"). It is 2° 26' minutes above the horizon at 6:15 AM. It is lost in the Suns glare, but it is 3 ½ ° to the left of Mercury. By the end of the month, Neptune is 12° month by 5:15 AM.



Although the planet Venus has a conjunction with the Pleiades star cluster every year, the best Venus-Pleiades conjunctions only come in early April and only recur in cycles of 8 years. Watch on April 2, 3 and 4, 2020, as Venus grazes past this beautiful cluster. On the middle date – April 3, 2020 – Venus passes a scant 1/4 degree south of Alcyone, the brightest star in the Pleiades star cluster



Mars, Saturn, and Jupiter on April 1st, 2020 at 5:00 AM



The 3 planets with addition of the Moon on April 15th, 2020 at 5:AM

Planetary Alignments in April 2020

Phenomenon	Date and Time	Object 1	Object 2	Separation	Solar Elongation	Lunar Elongation
Conjunction	2020-04-04 23:05:31	Jupiter	Pluto	+0°44'26.2"	+80°56'51.9"	+140°29'31.6"
Transit	2020-04-08 13:50:24	Jupiter	Europa (JII)	_	+84°06'22.9"	+86°00'34.6"
Occultation	2020-04-14 01:33:58	Jupiter	Io (JI)	_	+88°57'04.1"	+8°42'43.9"
Conjunction	2020-04-14 18:43:14	Jupiter	Moon	+2°16'03.6"	+89°35'07.8"	_
Transit	2020-04-16 21:40:43	Jupiter	Callisto (JIV)	_	+91°28'51.5"	+26°17'05.7"
Occultation	2020-04-25 08:19:56	Jupiter	Callisto (JIV)	_	+99°07'36.2"	+126°51'45.5"
Occultation	2020-04-29 23:46:50	Jupiter	Io (JI)	_	+103°23'59.1"	+175°02'57.3"
Conjunction	2020-04-15 23:06:12	Mars	Moon	+2°26'21.6"	+75°16'32.5"	_
Conjunction	2020-04-03 19:19:53	Mercury	Neptune	+1°19'30.5"	+25°28'37.8"	+148°35'56.6"
Conjunction	2020-04-17 09:36:12	Moon	(1) Ceres	+2°21'08.8"	+60°25'00.9"	_
Conjunction	2020-04-26 05:18:52	Moon	(4) Vesta	+0°41'24.5"	+37°24'47.3"	_
Conjunction	2020-04-26 04:09:57	Sun	Uranus	+0°26'43.4"	_	+36°41'05.3"



Ephemeris for Comet C/2017 T2 (Circumpolar)

Date and Time	RA (J2000)	Dec (J2000)	Mag.	Phase	Dist., AU	Elong.
2020-04-01 09:46:59	3h03m39.7s	+68°58'16.3"	8.68	91.64%	1.767211	+68°12'51.1"
2020-04-06 09:46:59	3h21m42.1s	+70°28'50.5"	8.63	91.52%	1.760710	+67°32'03.1"
2020-04-11 09:46:59	3h44m12.8s	+71°59'57.0"	8.58	91.39%	1.751920	+67°06'49.7"
2020-04-16 09:46:59	4h12m29.3s	+73°27'40.8"	8.54	91.25%	1.741259	+66°56'09.3"
2020-04-21 09:46:59	4h47m59.2s	+74°46'04.0"	8.50	91.11%	1.729191	+66°58'53.0"
2020-04-26 09:46:59	5h31m49.7s	+75°46'27.9"	8.47	90.97%	1.716253	+67°13'39.7"
2020-05-01 09:46:59	6h23m38.5s	+76°17'50.5"	8.46	90.84%	1.703054	+67°38'53.9"
2020-05-06 09:46:59	7h20m17.6s	+76°09'16.6"	8.45	90.73%	1.690288	+68°12'43.5"
2020-05-11 09:46:59	8h16m18.0s	+75°14'21.2"	8.46	90.64%	1.678722	+68°53'01.7"
2020-05-16 09:46:59	9h06m38.4s	+73°33'51.4"	8.48	90.58%	1.669153	+69°37'34.2"
2020-05-21 09:46:59	9h49m01.6s	+71°14'00.1"	8.51	90.56%	1.662382	+70°24'03.0"
2020-05-26 09:46:59	10h23m39.5s	+68°22'45.4"	8.57	90.58%	1.659200	+71°10'04.8"
2020-05-31 09:46:59	10h51m50.3s	+65°07'30.7"	8.66	90.65%	1.660371	+71°53'12.4"
2020-06-05 09:46:59	11h15m00.8s	+61°34'26.3"	8.77	90.76%	1.666614	+72°30'56.5"
2020-06-10 09:46:59	11h34m24.6s	+57°48'35.9"	8.93	90.91%	1.678580	+73°00'53.0"
2020-06-15 09:46:59	11h50m58.6s	+53°54'17.6"	9.16	91.11%	1.696793	+73°20'56.6"
2020-06-20 09:46:59	12h05m24.9s	+49°55'18.0"	9.50	91.35%	1.721618	+73°29'26.8"
2020-06-25 09:46:59	12h18m14.2s	+45°54'59.7"	10.07	91.62%	1.753250	+73°25'10.3"

Ephemeris for Comet C/2019 Y4 Atlas in April

C/2019 Y4 (ATLAS), or	Date and Time	RA (J2000)	Dec (J2000)	Mag.	Dist., AU	Elong.
Comet Atlas, is a near-	2020-04-01 08:21:59	7h50m36.0s	+68°29'11.9"	8.7	1.043441	+91°34'34.9"
parabolic comet which	2020-04-02 08:21:59	7h43m29.6s	+68°25'00.1"	8.6	1.040135	+90°17'13.3"
Was discovered by the	2020-04-03 08:21:59	7h36m30.4s	+68°19'30.0"	8.4	1.036863	+88°59'56.9"
cember 28 2019	2020-04-04 08:21:59	7h29m39.1s	+68°12'44.9"	8.3	1.033613	+87°42'46.4"
ocimber 20, 2013.	2020-04-05 08:21:59	7h22m56.2s	+68°04'48.2"	8.2	1.030374	+86°25'42.4"
C/2019 Y4 (ATLAS) is	2020-04-06 08:21:59	7h16m22.3s	+67°55'43.4"	8.1	1.027137	+85°08'45.4"
currently the brightest	2020-04-07 08:21:59	7h09m57.6s	+67°45'33.8"	8.0	1.023891	+83°51'55.8"
comet in the sky of this	2020-04-08 08:21:59	7h03m42.3s	+67°34'22.8"	7.9	1.020626	+82°35'13.7"
year and can be found	2020-04-09 08:21:59	6h57m36.7s	+67°22'13.6"	7.7	1.017331	+81°18'39.1"
In the constellation of	2020-04-10 08:21:59	6h51m40.7s	+67°09'09.3"	7.6	1.013997	+80°02'11.9"
with a pair of binoculars	2020-04-11 08:21:59	6h45m54.4s	+66°55'12.8"	7.5	1.010615	+78°45'52.0"
or a telescope It is ex-	2020-04-12 08:21:59	6h40m17.5s	+66°40'26.8"	7.4	1.007173	+77°29'38.9"
pected that the comet	2020-04-13 08:21:59	6h34m50.1s	+66°24'53.9"	7.2	1.003664	+76°13'32.1"
will continue to bright-	2020-04-14 08:21:59	6h29m31.7s	+66°08'36.3"	7.1	1.000076	+74°57'31.1"
en, and it is possible	2020-04-15 08:21:59	6h24m22.1s	+65°51'36.2"	6.9	0.996402	+73°41'35.0"
the comet may be visi-	2020-04-16 08:21:59	6h19m21.0s	+65°33'55.4"	6.8	0.992630	+72°25'42.7"
ble to the naked eye	2020-04-17 08:21:59	6h14m28.0s	+65°15'35.2"	6.6	0.988753	+71°09'53.2"
May of 2020 It will	2020-04-18 08:21:59	6h09m42.6s	+64°56'36.8"	6.5	0.984762	+69°54'05.1"
reach its nearest point	2020-04-19 08:21:59	6h05m04.5s	+64°37'01.2"	6.3	0.980647	+68°38'16.9"
to Earth on May 23 and	2020-04-20 08:21:59	6h00m33.1s	+64°16'48.7"	6.2	0.976401	+67°22'26.7"
come to periheli-	2020-04-21 08:21:59	5h56m07.9s	+63°55'59.5"	6.0	0.972016	+66°06'32.7"
on (closest to the	2020-04-22 08:21:59	5h51m48.5s	+63°34'33.3"	5.9	0.967484	+64°50'32.7"
Sun) on May 31.	2020-04-23 08:21:59	5h47m34.4s	+63°12'29.5"	5.7	0.962797	+63°34'24.2"
	2020-04-24 08:21:59	5h43m24.9s	+62°49'46.8"	5.5	0.957949	+62°18'04.4"
	2020-04-25 08:21:59	5h39m19.6s	+62°26'23.8"	5.3	0.952934	+61°01'30.6"
	2020-04-26 08:21:59	5h35m17.9s	+62°02'18.4"	5.2	0.947746	+59°44'39.2"
	2020-04-27 08:21:59	5h31m19.3s	+61°37'27.9"	5.0	0.942381	+58°27'26.9"
	2020-04-28 08:21:59	5h27m23.3s	+61°11'49.1"	4.8	0.936833	+57°09'49.5"
The Carlos	2020-04-29 08:21:59	5h23m29.3s	+60°45'18.3"	4.6	0.931101	+55°51'42.8"

Ephemeris is generated from Stellarium , Magnitude is from in the sky.org



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DEEP SKY WONDERS

For April Evening Skies

Name	Mag.	Rise	Transit	Set	Ang. Size
NGC 1502 (Jolly Roger Cluster)	7.06	_	16h27m	—	+0°03'30.00"
NGC 1528 (m & m Double Cluster)	6.56	_	16h35m	_	+0°12'30.00"
NGC 1545 (m & m Double Cluster)	6.36	_	16h40m	—	+0°09'00.00"
NGC 2264 (Christmas Tree Cluster)	4.06	12h21m	19h00m	1h40m	+0°08'30.00"
M 41 (Little Beehive Cluster)	4.79	14h20m	19h05m	23h51m	+0°19'30.00"
NGC 2281 (Broken Heart Cluster)	5.53	9h38m	19h08m	4h38m	+0°07'30.00"
NGC 2301 (Hagrid's Dragon Cluster)	6.18	13h05m	19h11m	1h17m	+0°07'30.00"
M 50 (Heart-Shaped Cluster)	6.10	13h48m	19h22m	0h56m	+0°07'30.00"
IC 2177 (Seagull Nebula)	7.18	13h57m	19h24m	0h50m	+0°20'00.00"
NGC 2343 (Doublemint Cluster)	6.91	14h02m	19h27m	0h53m	+0°03'00.00"
NGC 2353 (Avery's Island)	7.31	14h07m	19h34m	1h01m	+0°10'00.00"
π Pup Cluster	2.74	16h17m	19h36m	22h55m	+0°25'00.00"
NGC 2360 (Caroline's Cluster)	7.44	14h31m	19h37m	0h43m	+0°07'00.00"
NGC 2362 (τ CMa Cluster)	4.43	15h11m	19h38m	0h05m	+0°04'00.00"
NGC 2367 (Charlie Brown's Christmas Tree)	8.19	14h59m	19h39m	0h20m	+0°01'45.00"
Tuft in the Tail of the Dog Cluster	3.96	15h54m	19h43m	23h32m	+0°21'00.00"
NGC 2392 (Eskimo Nebula)	9.82	12h25m	19h49m	3h12m	+0°00'46.41"
NGC 2409 (Firsse 213)	7.55	14h51m	19h51m	0h51m	+0°16'00.00"
M 47	4.63	14h45m	19h56m	1h07m	+0°12'30.00"
NGC 2420 (Twinkling Comet Cluster)	8.44	12h31m	19h58m	3h25m	+0°03'30.00"
M 46	6.33	14h51m	20h01m	1h11m	+0°10'00.00"
M 93 (Butterfly Cluster)	6.51	15h32m	20h04m	0h35m	+0°05'00.00"
NGC 2477 (Electric Guitar Cluster)	6.54	17h05m	20h11m	23h17m	+0°13'30.00"
NGC 2467 (Skull and Crossbones Nebula)	7.45	15h52m	20h12m	0h31m	+0°07'30.00"
NGC 2539 (The Dish Cluster)	6.73	15h13m	20h30m	1h47m	+0°10'30.00"
NGC 2546 (Heart and Dagger Cluster)	7.00	17h18m	20h31m	23h44m	+0°20'00.00"
M 48	5.99	14h50m	20h33m	2h16m	+0°15'00.00"
M 44 (Beehive Cluster)	3.24	13h42m	21h00m	4h18m	+0°35'00.00"
M 67 (Golden-Eye Cluster)	7.06	14h24m	21h11m	3h58m	+0°12'30.00"
NGC 2841 (Tiger's Eye Galaxy)	9.36	—	21h42m	—	+0°04'35.22"
M 81 (Bode's Galaxy)	7.09	_	22h16m	—	+0°20'30.00"
M 82 (Cigar Galaxy)	8.57	_	22h16m	_	+0°07'45.00"
NGC 3242 (Ghost of Jupiter Nebula)	9.01	17h50m	22h45m	3h39m	+0°00'31.20"
M 95	9.94	16h18m	23h04m	5h50m	+0°03'00.00"
M 96	9.46	16h20m	23h07m	5h53m	+0°06'24.00"
M 105	9.97	16h18m	23h08m	5h57m	+0°05'06.00"
M 66 (Leo Triplet)	9.15	16h49m	23h40m	6h31m	+0°06'39.00"
NGC 3628 (Hamburger Galaxy)	9.71	16h47m	23h40m	6h34m	+0°06'33.45"
M 101 (Pinwheel Galaxy)	8.13	_	2h23m	—	+0°27'51.00"

* Data from Stellarium



Duplication allowed and encouraged for all free distribution.





Vesta in Taurus

Vesta is in Taurus on April 1st (Mag:8.4). It is located between Aldebaran and the Pleiades on the 3rd so it is good time to locate this closest of one of the original asteroids



Date		Age of	Age of Right		
			Moon	Ascension	
2020	Apr	01	07 days	04 ^h 11 ^m 11 ^s	+18°47'46"
2020	Apr	09	15 days	04 ^h 22 ^m 09 ^s	+19°27'33"
2020	Apr	16	23 days	04 ^h 33 ^m 30 ^s	+20°04'33"
2020	Apr	23	29 days	04 ^h 45 ^m 11 ^s	+20°38'28"



Spotlight: NGC 4216 - Silver Streak Galaxy

- a metal-rich intermediate spiral galaxy
- located not far from the center of the Virgo Cluster
- roughly 55 million light-years away
- one of the largest and brightest spiral galaxies of the Virgo Cluster
- Magnitude 11.0
- an absolute magnitude that has been estimated to be -22 (i.e.: brighter than the Andromeda Galaxy
- considered an anemic galaxy by some authors, also with a low star formation
- In NGC 4216's halo, besides a rich system of globular clusters with a number of them estimated in around 700
- two stellar streams that are interpreted as two satellite galaxies being disrupted and absorbed by this galaxy are present.
- NGC 4216 seems to be in a place of the Virgo cluster where dwarf galaxies are being destroyed/accreted at a high rate



NASA Space Place Partner Article



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 <u>https://nightsky.jpl.nasa.gov/</u> to find local clubs, events, and more!

Hubble at 30: Three Decades of Cosmic Discovery

The **Hubble Space Telescope** celebrates its 30th birthday in orbit around Earth this month! It's hard to believe how much this telescope has changed the face of astronomy in just three decades. It had a rough start -- an 8-foot mirror just slightly out of focus in the most famous case of spherical aberration of all time. But subsequent repairs and upgrades by space shuttle astronauts made Hubble a symbol of the ingenuity of human spaceflight and one of the most important scientific instruments ever created. Beginning as a twinkle in the eye of the late Nancy Grace Roman, the Hubble Space Telescope's work over the past thirty years changed the way we view the universe, and more is yet to come!

We've all seen the amazing images created by Hubble and its team of scientists, but have you seen Hubble yourself? You actually can! Hubble's orbit – around 330 miles overhead -- **David Prosper**



Image Credit: NASA

is close enough to Earth that you can see it at night. The best times are within an hour after sunset or before sunrise, when its solar panels are angled best to reflect the light of the Sun back down to Earth. You can't see the structure of the telescope, but you can identify it as a bright star-like point, moving silently across the night sky. It's not as bright as the Space Station,

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Hubble at 30: Three Decades of Cosmic Discovery (continued)

(Continued from previous page)

which is much larger and whose orbit is closer to Earth (about 220 miles), but it's still very noticeable as a single steady dot of light, speeding across the sky. Hubble's orbit brings it directly overhead for observers located near tropical latitudes; observers further north and south can see it closer to the horizon. You can find sighting opportunities using satellite tracking apps for your smartphone or tablet, and dedicated satellite tracking websites. These resources can also help you identify other satellites that you may see passing overhead during your stargazing sessions.

NASA has a dedicated site for Hubble's 30th's anniversary at <u>bit.ly/NASAHubble30</u>. The Night Sky Network's "Why Do We Put Telescopes in Space?" activity can help you and your audiences discover why we launch telescopes into orbit, high above the interference of Earth's atmosphere, at <u>bit.ly/TelescopesInSpace</u>. Amateur astronomers may especially enjoy Hubble's images of the beautiful objects found in both the Caldwell and Messier catalogs, at <u>bit.ly/</u>

<u>HubbleCaldwell</u> and <u>bit.ly/HubbleMessier</u>. As we celebrate Hubble's legacy, we look forward to the future, as there is another telescope (continued in next column)



Hubble's "first light" image. Even with the not-yetcorrected imperfections in its mirror, its images were generally sharper compared to photos taken by ground-based telescopes at the time. Image Credit: NASA

ramping up that promises to further revolutionize our understanding of the early universe: the James Webb Space Telescope!

Discover more about the history and future of Hubble and space telescopes at <u>nasa.gov</u>.





Betelgeuse Is Brightening Again

February 25, 2020



Biggest explosion since the Big Bang spotted by astronomers

February 28th, 2020

Milky Way galaxy 'reverse engineered'

March 3rd, 2020



Globular cluster billowing in the galactic wind

March 3rd, 2019





XMM Newton Catches a Tiny Flare Star in Action

March 6th, 2020



Betelgeuse Isn't Dimming Because It's About To Explode — It's Just Dusty

March 6th, 2020





New minor planets found beyond Neptune

March 11th, 2020





Heavy metal may rain from the skies of planet WASP 76b

March 11th, 2020





Deep-sky Observing the Easy Way

March 11th, 2020



Surprisingly, Mercury's 400 C Heat May Help It Make Its Own Ice

March 14th, 2020





The Milky Way's Warped Tutu Twirls Every 600 Million Years

March 17th, 2020



The sun has an 'Old Faithful' geyser made of plasma

March 17th, 2020





The strange orbits of 'Tatooine' planetary disks

March 19th, 2020

Image: Hubble gazes at fluffy-looking galaxy

March 23rd, 2020

Learning from LIGO's Second Binary Neutron Star Detection

March 20th, 2020







Comet ATLAS may put on quite a show



March 23rd, 2020



MEMBER OBSERVATIONS

Messier 42 taken by Ken Boquist with his 5.1 f8 APO using DS287 SkyRaider. Photo taken from Rock Island. Processed " My main goal with this picture was to image the Trapezium multiple star system, with each star separately visible, while also bringing out the nebulosity "



NGC 2683, UFO Galaxy, taken by Ken Boquist with his 9.25 in Celestron from Rock Island. He used his DS287 SkyRaider and a 90 sec exposure (4.5 sec X 20). Processed. NGC2419, Globular in Lynx by Ken Boquist. Using his 9.25 in Celestron and DS287. No filter. 105 sec exposure (3.5 sec X 30). Taken from Rock Island. Processed "Intergalactic Wanderer (it is a globular cluster; it was originally thought to be outside our galaxy but later studies have cast doubt on that theory "



NGC 2359, Thor's Helmet, emission nebula in Canis Major, by Ken Boquist. He used his 5.1 f8 APO and DS 10C camera from Rock Island. 12 minutes processed. Photo by Ken Boquist

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MEMBER OBSERVATIONS



IC 405, Flaming Star Nebula in Auriga by Ken Boquist. Taken at Sherman Park. He used his 5.1 f8 APO and DS10C camera. 300 sec exp (60 sec X5)



NGC 1973, Running Man Nebula in Orion (this nebula is just north of M42). by Ken Boquist. It was taken from Sherman Park using his 5.1 f8 APO and DS10C camera . 450 sec exposure (30 sec X 15)



Cone Nebula by Ken Boquist. Taken from Sherman Park. He used his 5.1 f8 APO and DS10C camera. 300 sec exp (60 sec X5)



Rosette Nebula by Ken Boquist. Taken from Rock Island. Used an 80 mm and DS10C Camera. A 280 sec exposure (7 sec X40)

MEMBER OBSERVATIONS



The main feature of interest to me is actually not the most prominent feature. Wargentin is the small crater that is between the two larger ones, and it looks like it is virtually filled to the brim with lava. This has always been one of my favorite craters.



Photo (above-left) was taken as the sun had just risen on Wargentin. The right photo was taken one day later (March 8th, 2020). Photos by Ken Boquist

Darwin (right) is the large, darkish crater just left of center. Visually, this crater was appealing to me because I could see a depression on the upper part of its floor. Unfortunately the depression didn't image too well, but if you spend some time, you can kind of make it out. There is an almost horizontal crack visible in the pic that runs across this depression. Photo with 5.1 f8 refractor and ZWO

(Sun): This was taken on March 9th. Remarkably there was some activity, albeit minor. However, given the virtual lack of activity for many months, I'll take it! Photo with a Lunt H scope.





(Aristarchus Region– above): This has been another favorite region of mine. Aristarchus is the greatly overexposed crater. Also nicely visible in the pic are Schroter's Valley, which is the rille running away to the upper left, ray patterns, lava flow fronts, and towards the upper left the Agricola mountain Photo by Ken Boquist

Paul Castle Observing Sessions

Paul Castle Observing Session February 29th, 2020

Last night a group of us got together at the Paul Castle Memorial Observatory to take advantage of relatively clear skies for an observing session. In the group picture are Rusty Case, Wayland Bauer, Gary Nordick, Terry Dufek, Dale Hachtel, and Al Sheidler. To my knowledge two more of us were able to work through the NCRAL Winter Messier Marathon list of 27 objects. The astrophotography are my attempts to image some of the prescribed Messier objects and a few other interesting objects as well. All of these were taken with a Nikon D7500 camera with 400mm zoom lens piggy-backed on a 10" Meade LX200 telescope. These images were taken at ISO 6400, F6.3 and with exposure times of 15-30 seconds. The sky glow from the crescent moon did not present any problem but by 8:30, a veil of thin clouds was presenting a challenge to observe some of the fainter objects. Nevertheless, I believe two more of us were successful in observing all 27 objects on the list. Al Sheidler



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Messier(s) 42 (The Orion Nebula) and 43 by Al Sheidler

Messier 44, (The Beehive) by Al Sheidler

(continued on next page)

Paul Castle Observing Sessions

Messier (s) 65, 66 and the Hamburger Galaxy By Al Sheidler

Messier 45 (The Pleiades) by Al Sheidler



Messier 109 and NGC 3953 by Al Sheidler



NGC 2238 (The Rosette Nebula) By Al Sheidler



President Alan Sheidler called the March business meeting of the Popular Astronomy Club to order at the Butterworth Center at 7:00 p.m. local time, on March 9th, 2020. We had 23 members and 1 guests attending.

- He began by reviewing the evenings agenda.
- I re-introduced Katie Melbourne who graduated and was moving to Boulder to take up a job there.

Business Meeting:

Vice Presidents Report:

- Renewal of the web site has been taken care of
- The American Doll and Toy Museum will open and an introductory dinner will be at Happy Joes in Rock Island on 3/10 at 6:30 pm

Director of Observatories Report:

- Terry and Rusty have uncovered the PACMO and installed batteries for the season. The monitor still needs to be reinstalled
- Ready to begin disassembling the Paul Castle. Take the dome off and take for recoating. Store sides on Nordic farm. Remove deck to begin to rebuild the pier. Start on a Saturday and may be finished on a Sunday. Will send out email when ready to begin.

Secretary/ Newsletter Editor:

 PAC website address on Astronomical League web site needs to be corrected.

(continued in next column)

- Newsletter updates include established date added to newsletter masthead.
- Several link symbols in newsletter may indicate multiple stories attached. To story

Treasurers Report

- Dale reviewed the last two treasurers reports
- There were additional renewal and new member additions
- There was a motion by Roy Gustafson to approved the report. It was seconded by Gerald Pierson and approved by a majority.

ALCOR:

- There are still Winter Messier Awards still pending with NCRAL
- Roy as received a grant from the Harry and Lillian Nelson Foundation to PAC for \$1630.75.
- Roy presented the check (endowment) to Al Sheidler
- Al will send a thank you letter.
- There is also an endowment to Augustana and the planetarium will be renamed for Harry Nelson

New Business:

- The Banquet site this year is between the Riverfront Grill and the Butterworth Center
- Al and Sara went down to check the facilities out
- A discussion was held by the members present about the Riverfront Grill
- A motion was made by Jeff Struve to ac-



cept the Riverside Grill as site for the banquet. It was seconded by Roy Gustafson and approve by the majority.

- The banquet will be (tentatively) on October 24th at 5:30 PM.
- The speaker for the banquet will be Lisa Wells (details to be ironed out)
- QCAS members are also invited to attend

The business meeting was adjourned with a motion by Roy Gustafson with a second and an approval by a majority.

Review of Outreach Programs and Meetings:

- April 18th, 2020 Niabi Outreach at sunset
- May 1st-2nd, 2020 NCRAL2020, Port Washington, Wisconsin
- May 9th, 2020 Illiniwek Campground 6:00 pm (rain date May 23rd)
- Outreach at C.R. Hanna school: Roy and Jan Gustafson did Outreach at C.R. Hanna school in Orion on February 28th, 2020 3 -Fifth Grade Classes - 73 4- First Grade Classed - 69. Total: 142. Constellations, stellar magnitude, colors of stars, mythological stories, etc.
- Meeting of interest : QCAS 3/16/2020 EAA and Monoceros
- April 13th, 2019 : PAC regular meeting , Constellation Report : Frank Stonestreet Program: Firebaugh Observatory - Mr. Jim Dole & Mr. Tom Dunmore
- Meeting of interest: QCAS 4/23/2020
- May 1st-2nd, 2020 NCRAL2020, Port Wash-

(continued in next column)

ington, Wisconsin

- May 2nd, 2020 QCAS Astronomy Day, Bettendorf H.S. (Contact Jeff Struve)
- June 12th, 2020 MSRAL in Tulsa
- July 13th, 2020 PAC regular meeting at Butterworth Center at 7:00 PM program: Mr. Dick Koos, "Go For Landing". Mr. Koos will discuss his NASA work with program alarm simulation and it's influence on Apollo 11.
- July 15th, 2020 ALCON Albuquerque NM

Constellation Report:

 The Constellation Report was given by Jan Gustafson on Quadrans Muralis

Smorgasbord Reports

- Roberta Wright: Apollo 11/ Moondust
- Jan Gustafson w/ : Spacey Fashion Show
- Anne Bauer: Spacey Fashion Show
- Wayland Bauer: Bedtime Story: Earth's Twisted Sister
- Dino Milani: Satellite Problem
- Terry Dufek: PAC and Facebook

The meeting was adjourned



TREASURER'S REPORT

description	current period detail	current	2019 total
Receipts:			
memberships	1 new, 5 renewals	157.50	1097.50
member donations	1 sustianing	30.00	210.00
program donations			1644.00
misc donations			5025.00
interest		0.40	0.94
banquets			800.00
birdies			1634.20
calendars			45.50
NCRAL 2019 receipts			13239.32
sales of items			150.00
other	T shirt, adjustment	20.00	165.00
Total Receipts		207.90	24011.46

Expenditures:		
programs		30.00
PACMO operation		1263.11
observatory		301.00
maintenance		85.00
Astronomical League		180.00
insurance		986.00
web page		96.00
banquet		664.38
miscellaneous		989.45
NCRAL 2019		12281.95
PACMO upgrade		461.19
other		1200.00
Total Expenditures	0.00	18538.08

Balances	as of	12/31/2019		
previous balance			13775.42	8509.94
net change			207.90	5473.38
ending balance			13983.32	13983.32
check account				4315.05
money market account				9612.60
savings account				10.23
business special				45.44
cash				0.00
undeposited checks				0.00
Total Cash Assets				13983.32

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3/2/2020 TREASURER'S REPORT

description	current period detail	current	YTD
Receipts:			
memberships	2 new, 1 renew	90.0	90.00
member donations			
program donations			
misc donations			
interest		0.7	0.79
banquets			
birdies			
calendars			
special			
sales	Paul Castle telescope	700.0	700.00
other	T shirts	30.0	30.00
Total Receipts		820.7	820.79

Expenditures:			
programs			
speakers			
PACMO operation			
observatory	rent and utilities	301.00	301.00
equipment			
maintenance			
Astronomical League			
insurance			
operating supplies			
newsletter			
web page			
banquet			
donations			
miscellaneous		100.00	100.00
legal			
PACMO upgrade			
other			
adjustments			
Total Expenditures		401.00	401.00

Balar	ICES	as of	2/29/2020		
	previous balance			13983.32	13983.32
	net change			419.79	419.79
	ending balance			14403.11	14403.11
	check account				4674.05
	money market account				9613.39
	savings account				10.23
	business special				45.44
	cash				30.00
	undeposited checks				30.00
	Total Cash Assets				14403.11

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