The Prairie Astronomer

October 2022 Volume 63, Issue #10

IN THIS ISSUE: DART Asteroid Impact
Webb, Hubble Team Up

The Newsletter of the Prairie Astronomy Club

The Prairie Astronomer

The next meeting is October 25th at 7:30pm at Branched Oak Observatory

NEXT MEETING AND PROGRAM

Club viewing night at Branched Oak Observatory. Officers will be elected.

UPCOMING PROGRAMS

November: How To Buy a Telescope (tentative)

January: How to Use Your Telescope

CONTENTS

Cover: NASA's James Webb Space Telescope has produced the deepest and sharpest infrared image of the distant universe to date. Known as Webb's First Deep Field, this image of galaxy cluster SMACS 0723 is overflowing with detail. Credits: NASA, ESA, CSA, and STScI

Background photo: Brett Boller

CALENDAR

Audubon Star Party at Spring Creek Prairie
October 22, 6:30-10:30pm

PAC Meeting
October 25, 7:30pm at Branched Oak Observatory
Club observing night, election of officers.

PAC Meeting
November 29, 7:30pm at Hyde Observatory
Tentative program: “How to Buy a Telescope”

PAC Meeting
December 27th
Holiday Gathering

2022 STAR PARTY DATES

	Date	Date
January	28	2/5
February	25	3/4
March	25	4/1
April	22	29
May	20	27
June	17	24
July	22	29
NSP	7/24	7/29
August	19	26
September	23	30
October	21	28
November	18	25
December	16	23

Dates in BOLD are closest to the New Moon.

CLUB OFFICERS

President	**Bob Kacvinsky** **kacvinskyb@yahoo.com**
Vice President	**Jason O’Flaherty** **jflaher@gmail.com**
2nd VP (Program Chair)	**Bill Lohrberg** **wmlohrberg89@gmail.com**
Secretary	**Jim White** **jrwhite2188@gmail.com**
Treasurer	**John Reinert** **jr6@aol.com**
Club Observing Chair	**Jim Kvasnicka** **jim.kvasnicka@yahoo.com**
Outreach Coordinator	**Christine Parkyn** **cpparky@gmail.com**
Website and Newsletter Editor	**Mark Dahmke** **mark@dahmke.com**

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Night Sky Network

www.prairieastronomyclub.org

Meeting Minutes

Jim White

Bob Kacvinsky started the meeting at 7:38 PM. The club's shed at Branched Oak Observatory is now painted, please tell Katelyn Farneth thank you for the wonderful job!

Bob turned the meeting over to Jim Kvasnicka for his monthly observing report at 7:43 PM. Club star party date is this Friday, Sept. 30th and will be held at Hedgefield WMA. The clubs normal observing site is currently closed due to a bovine infestation, the land owner had to put some of his cattle on the land to graze due to the ongoing drought and the cattle will probably be there for about a month. The October star parties will be on the 21st and 28th. Jim will send out information about where the October star parties will be held as it gets closer to the dates. This Saturday, Oct. 1st, is International Observe the Moon Night and the club will be setting up scopes on the lawn on the south side of Hyde Observatory to help with the expected extra crowd that may be out for the event. Jim's entire observing report can be found in this newsletter. Jim turned the meeting back over to Bob at 7:49.

Bob mentioned that Jim has been the clubs observing chair for approximately the last 15 years. Please thank Jim for all that he does, he goes above and beyond as a volunteer for the club. PAC events coming up on October 14th we have members setting up scopes at Lazy Horse Brewery from 7:00 PM to 11:00 PM. October 22nd is the Audubon Star Party out by Denton from 7:00 PM to 8:00 PM. The next PAC meeting is at Branched Oak Observatory on October 25th at 7:30 PM as a star party and there will be a brief break to take care of elections. Bob will be out of town along with a few other members so he will have one of the vice presidents or Jason take

care of the elections.

Bob asked John Reinert for the treasures report at 7:55 PM. September is a busy month for the treasurer, the N990 was filed on time, the P.O. Box was paid for the next year, insurance is paid for the clubs general liability policy, the club has a CD coming due on the 21st and the treasurer will be looking for members dues. John said that we have a new member at tonight's meeting and introduced Rick Zajicek. John turned the meeting back over to Bob at 7:57 PM.

Bob asked that members please get their renewals in as soon as they can, whenever we change club president or treasurer we need to get an audit done within 45 days which is part of the clubs bylaws. Tonight is nominations for officers for the next year and nominations will be open until the next club meeting at which time they will be closed if there are no more new nominations and then election of officers will be held at the October meeting. Bob asked Jim and Dan, as passed presidents, to be a search committee and we think that we got at least one person interested in serving in each position and are now opening up the meeting to nominations. Bob asked for nominations for president and Jason O'Flaherty was nominated and said "sure." Bob was termed out after 5 years at this time last year but there were no nominations for President so Bob has been working with Jason for the last year to help prepare him for the position of president. There were no further nominations for President so we moved on to nominations for First Vice President and Brett Boller was nominated and Brett said "sure." There were no further nominations for First Vice President so we moved on to Second Vice President. Bill Lohrberg was nominated for Second Vice President and accepted the nomination. There were no additional nominations for Second Vice President so we moved on to nominations for Treasurer. John Reinert was nominated for Treasurer and said "sure." There were no other nominations for Treasurer so we moved on to Secretary. Jim White was nominated for Secretary and I replied "sure." There were no other nominations for Secretary so the meeting came to an end at 8:05 PM.

Tonight's program is a presentation that Brett Boller put together showing pictures taken by members at NSP or at other times during the last few months.

The President's Message

Bob Kacvinsky

THANK YOU. Thank you for allowing me to be your president over the past 6 years. More later.

It was truly a joy to have Pete Schultz visit PAC and join us for the DART mission completion. Pete worked on the mission and the atmosphere during the last few minutes before impact at Hyde made it feel like we were in Baltimore at NASA's command center. Follow-up photos and images indicate that the ejecta was substantial suggesting the possibility of success.

DART took center stage in September while the James Webb Space Telescope continues to capture Astronomy headlines with new discoveries on a weekly basis. Images continue to be posted to the Webb and NASA web sites. It seems like every 3-4 days a new image is released with "never before seen" features. It is an exciting time for Astronomy.

October 1st was the International Observe the Moon night and PAC set up 5 telescopes on the lawn at Hyde Observatory to help with crowd control and viewing. We had a great turnout. Jim Kvasnicka gave a constellation talk highlighting locations with background mythology for those attending. Thanks to the Hyde Board for allowing PAC to collaborate and to everyone who attended. Great fun with the kids.

Due to the drought and early harvest, we have lost our "PAC FARM" observing site this fall to a bovine invasion. It may smell like money to a farmer, but the potential smell you could bring home could be a problem. Jim Kvasnicka and I identified a couple new locations. Close to Lincoln we can use either Wagon Train or Hedgefield WMAs. Both have considerable Lincoln light pollution. BOO is also a possibility although they have scheduled Friday events that we might create conflicts.

Jim and I found a dark sky site at the public Clatonia Creek Reservoir. It is about the distance from Lincoln as the Farm. It has blacktop road access within a city block of the parking area. It looks like it avoids the typically weekend party crowd – no fire pits or beverage containers. We are going to try out the site for the next couple of star parties. Watch

President's Message, continued.

the NSN for an update including directions.

The next PAC meeting is scheduled for Tuesday, Oct 25th. October's meeting will be a Star Party at the Branched Oak Observatory (BOO). We started this tradition a couple years ago to gather during Covid while building on our collaboration with BOO. Plan to come on out and enjoy the night sky. Bring your telescope or just attend and float around enjoying the views of your fellow members. Sunset is at 6:32 pm, so plan to set up for viewing shortly before 7 PM. There are cement slabs available for scope setups. At 7:30 pm we will take a quick break and call a meeting together to finish up elections and any other business.

We continue to get requests for public star parties while the weather is "decent." Please consider your own circumstances and help where you can with these public events. We want to share our love of the night sky but also want you to feel safe doing so. If you have any concerns or issues, please let me know.

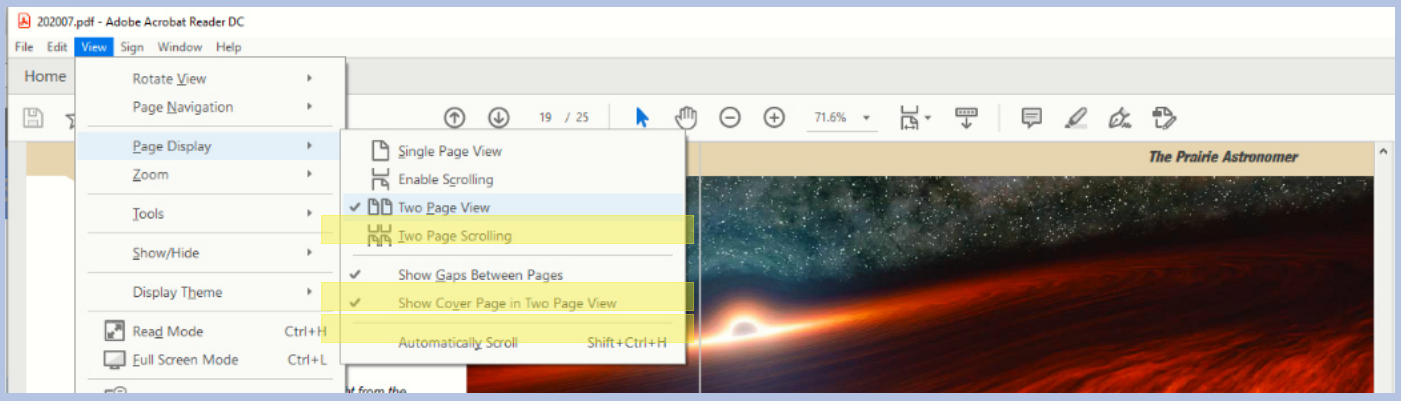
This is my last newsletter article as your President. It has been a privilege to serve the club over the last decade plus as Treasurer and President. I've learned so much from you, and your patience with me has been beyond understanding.

We navigated the challenges of COVID together. While many clubs and organizations failed during these times, PAC has continued to grow steadily. We learned how to work with technology, while sometimes it was a little clunky, to bring in some great outside experts and speakers. Prior to COVID and Zoom, we were averaging around 15 attendees at PAC Meetings, whereas over the past couple of years that number exceeds 25. We have been able to reconnect with our veteran long distance members. I hope you feel we have moved forward with your membership offerings. ...And the journey has just begun with new leadership. I'm looking forward to building on our first year with the mentorship program.

Notices

New Newsletter Format

How to Adjust Adobe Acrobat Settings for Two Page View



To view this newsletter in magazine spread format in Acrobat, select View ->Page Display->Two Page View. Acrobat will then show two pages side by side. Also make sure the checkboxes “Show Cover Page in Two Page View” and “Show Gaps Between Pages” are checked. If you have it setup correctly, the cover page will be displayed by itself and subsequent pages will be side by side with the odd numbered pages on the left.

PAC Newsletter Archive

Back issues of the Prairie Astronomer from 1962 to present are now available online:

https://www.prairieastronomyclub.org/newsletters

PAC-LIST

Subscribe through GoogleGroups or contact Mark Dahmke to be added to the list. You’ll need a Google/gmail account, but if you want to use a different email address, just associate that address with your google account to access Google Groups. Once subscribed, you can view message history through the GoogleGroups website.

To post messages to the list, send to this address: pac-list@googlegroups.com

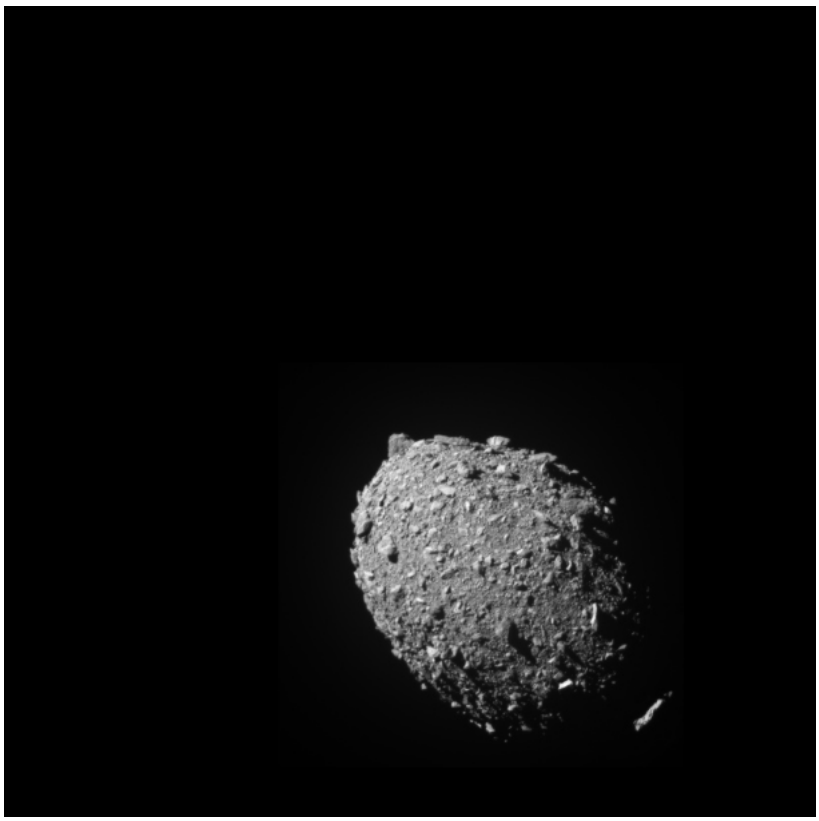
International Observe The Moon Night
At Hyde Observatory

Bullseye! NASA's DART Mission Impacts Asteroid Target in World First

After 10 months flying in space, NASA's Double Asteroid Redirection Test (DART), the world's first planetary defense technology demonstration, successfully impacted its asteroid target on Monday – the agency's first attempt to move an asteroid in space.

Mission control at the Johns Hopkins Applied Physics Laboratory (APL) in Laurel, Maryland, announced the successful impact at 7:14 p.m. EDT.

As a part of NASA's overall planetary defense strategy, DART's impact with the asteroid Dimorphos demonstrates a viable mitigation technique for protecting the planet from an Earth-bound asteroid or comet, if one were discovered.



Asteroid moonlet Dimorphos as seen by the DART spacecraft 11 seconds before impact. DART's onboard DRACO imager captured this image from a distance of 42 miles (68 kilometers). This image was the last to contain all of Dimorphos in the field of view. Dimorphos is roughly 525 feet (160 meters) in length. Dimorphos' north is toward the top of the image. Photo credit: NASA/ Johns Hopkins APL

"At its core, DART represents an unprecedented success for planetary defense, but it is also a mission of unity with a real benefit for all humanity," said NASA Administrator Bill Nelson. "As NASA studies the cosmos and our home planet, we're also working to protect that home, and this international collaboration turned science fiction into science fact, demonstrating one way to protect Earth."

"This first-of-its-kind mission required incredible preparation and precision, and the team exceeded expectations on all

DART Mission, continued.

The Prairie Astronomy Club is very fortunate to have as one of its founding members, Dr. Pete Schultz, a member of the DART Team. Pete gave a presentation on the mission on September 25th at Hyde Observatory.

counts," said APL Director Ralph Semmel. "Beyond the truly exciting success of the technology demonstration, capabilities based on DART could one day be used to change the course of an asteroid to protect our planet and preserve life on Earth as we know it."

DART targeted the asteroid moonlet Dimorphos, a small body just 530 feet (160 meters) in diameter. It orbits a larger, 2,560-foot (780-meter) asteroid called Didymos. Neither asteroid poses a threat to Earth.

The mission's one-way trip confirmed NASA can successfully navigate a spacecraft to intentionally collide with an asteroid to deflect it, a technique known as kinetic impact.

The investigation team will now observe Dimorphos using ground-based telescopes to confirm that DART's impact altered the asteroid's orbit around Didymos. Researchers expect the impact to shorten Dimorphos' orbit by about 1%, or roughly 10 minutes; precisely measuring how much the asteroid was deflected is one of the primary purposes of the full-scale test.

"Planetary Defense is a globally unifying effort that affects everyone living on Earth," said Thomas Zurbuchen, associate administrator for the Science Mission Directorate at NASA Headquarters in Washington. "Now we know we can aim a spacecraft with the precision needed to impact even a small body in space. Just a small change in its speed is all we need to make a significant difference in the path an asteroid travels."

The spacecraft's sole instrument, the Didymos Reconnaissance and Asteroid Camera for Optical navigation (DRACO), together with a sophisticated guidance, navigation

DART Mission, continued.

and control system that works in tandem with Small-body Maneuvering Autonomous Real Time Navigation (SMART Nav) algorithms, enabled DART to identify and distinguish between the two asteroids, targeting the smaller body.

These systems guided the 1,260-pound (570-kilogram) box-shaped spacecraft through the final 56,000 miles (90,000 kilometers) of space into Dimorphos, intentionally crashing into it at roughly 14,000 miles (22,530 kilometers) per hour to slightly slow the asteroid's orbital speed. DRACO's final images, obtained by the spacecraft seconds before impact, revealed the surface of Dimorphos in close-up detail.

"What a remarkable day for humanity," said APL Space Exploration Sector Head Bobby Braun. "The team nailed it – and I couldn't be more proud of their efforts. Data from this test will inform future planetary defense efforts. Today is a milestone in demonstrating just how far our nation's space program has come, and how important it is to all of us here on Earth."

Pete Schultz and other club members watching the impact event on NASA TV at Hyde Observatory.

Fifteen days before impact, DART's CubeSat companion Light Italian CubeSat for Imaging of Asteroids (LICIACube), provided by the Italian Space Agency, deployed from the spacecraft to capture images of DART's impact and of the asteroid's resulting cloud of ejected matter. In tandem with the images returned by DRACO, LICIACube's images are intended to provide a view of the collision's effects to help researchers better characterize the effectiveness of kinetic impact in deflecting an asteroid. Because LICIACube doesn't carry a large antenna, images will be downlinked to Earth one by one in the coming weeks.

"DART's success provides a significant addition to the essential toolbox we must have to protect Earth from a devastating impact by

DART Mission, continued.

an asteroid," said Lindley Johnson, NASA's planetary defense officer. "This demonstrates we are no longer powerless to prevent this type of natural disaster. Coupled with enhanced capabilities to accelerate finding the remaining hazardous asteroid population by our next Planetary Defense mission, the NEO Surveyor, a DART successor could provide what we need to save the day."

With the asteroid pair within 7 million miles (11 million kilometers) of Earth, a global team is using dozens of telescopes stationed around the world and in space to observe the asteroid system. Over the coming weeks, they will characterize the ejecta produced and precisely measure Dimorphos' orbital change to determine how effectively DART deflected the asteroid. The results will help validate and improve scientific computer models critical to predicting the effectiveness of this technique as a reliable method for asteroid deflection.

The last complete image of asteroid moonlet Dimorphos, taken by the DRACO imager on NASA's DART mission from ~7 miles (12 kilometers) from the asteroid and 2 seconds before impact. The image shows a patch of the asteroid that is 100 feet (31 meters) across. Dimorphos' north is toward the top of the image. Credit: NASA/ Johns Hopkins APL

Roughly four years from now, the European Space Agency's Hera project will conduct detailed surveys of both Dimorphos and Didymos, with a particular focus on the crater left by DART's collision and a precise measurement of Dimorphos' mass.

Johns Hopkins APL manages the DART mission for NASA's Planetary Defense Coordination Office as a project of the agency's Planetary Missions Program Office.

ARP 48

The Mantrap Skies Image Catalog

Rick Johnson

Rick Johnson, a founding member of the Prairie Astronomy Club, passed away in January, 2019. His legacy lives on through his comprehensive catalog of over 1600 images at www.mantrapskies.com.

An Arp 3 fer in Pisces!

Arp 88 (Very small pair, in cropped image above center to the right)

This one falls in his category Spirals with large, high surface brightness companions on their arms. There is very little on this one. It is also known as PGC 004728/VV 445 and listed as a galaxy pair in the VV catalog as well as the Arp Atlas. The larger spiral carries the designation 2MASX J01190524+1228240 so is an IR source. NED gives no distance data nor attempts to even classify it as a spiral. Even its magnitude estimate is blank! I'm literally drawing a blank on this one. Even the note at NED is very strange. There's only the one. I guess when as a researcher you draw a blank this is what you write:

"One of the rare cases where the companion at the end of a spiral arm is also a spiral. Here, a chain of H II regions encircles the massive condensation thus forming a small spiral ripening at the periphery of the larger one

ARP48, continued.

and liable to gemmate." I really doubt it is reproducing by budding as his comment would seem to indicate! The note does date to 1977. Likely he is being descriptive in a more poetic way than Arp. It's a 41 meg download, I didn't download it just trusted NED's note.

Arp 119 (The obvious pair)

Arp put it in his category of Elliptical and elliptical-like galaxies close to and perturbing spirals. The southern galaxy, MCG +02-04-021, is the more interesting. It shows two radial velocities with an emission knot between the core and northern galaxy showing a radial velocity about 800 km per second faster. NED classes it as SBc with an AGN while in another place it says Sdm: LINER. A note says SA(r)cd pec. I don't really see the ring many papers mention but otherwise, I agree with this last classification.

The northern galaxy is MCG +02-04-022. It is classed as E? This seems odd to me as well. A note at NED says: "Our images show a clear stretching of this galaxy along the direction towards Arp 119S. We observe two definite components: an inner region (a < 16") where the surface brightness profile seems of de Vaucouleurs type, and other external region (a > 18") where the {mu} profile looks like a exponential profile. However, the geometric profiles do not show evidence for disky structure. At this point, the galaxy could be classified as E3 ... The total ... color is representative of E, S0 types." That I can agree with. Its radial velocity is about half way between the two measurements for the southern galaxy. It does appear they are interacting.

Arp's comment on this pair reads "Some material seems attracted, some repelled." Using the northern galaxies radial velocity the distance to this pair is about 640 million light-years.

The Odd looking blue galaxy below Arp 119 is MRK 0983. It is classed simply as Peculiar though appears to be a distorted spiral. I wouldn't be surprised if it isn't actually two interacting galaxies but I have nothing to support this but what I see in my image. Its radial velocity puts it at about 630 million light-years. This likely means it is part of the Arp 119 system and may have tangled with one or both Arp 119 members.

Arp 48 (lower left corner if full image -- inset in cropped image)

The third Arp entry is Arp 48 to the southeast of Arp 119. Arp put it in his category: "Spiral Galaxies with low surface brightness companions on arms." I put it in the lower right

corner of the enlarged and cropped image as there wasn't much in that corner but it is a bit confusing to put it there. When I imaged Arp 119 I knew Arp 88 was coming along for the ride but missed Arp 48. In fact, I imaged it separately a couple months later never realizing I already had it. Good thing as the intentional image had poor seeing compared to the Arp 119 image. It wasn't until I went to process this image I noted Arp 48 but thought it one Arp missed until I looked it up. The pair is also known as CGCG 436-026.

Individually the lower galaxy carries the IR source designation of 2MASX J01195923+1220377 and shows a radial velocity and shows a radial velocity distance of 635 million light-years. So it too is likely part of the same group as Arp 119. NED has no notes on it nor does it attempt to classify it. It does say this: "Low surface brightness companion on end of arm. M51 Type." Now, which of three objects is this referring to, the golden galaxy, the odd blue knot or galaxy by the cut-short arm or the galaxy to the south? I see no hint of an M51 type arm structure reaching over any of these. I could sort of make this work for the smaller blue fuzz patch, though that seems more likely a part of the northern galaxy's mostly missing arm.

The northern galaxy with one good and one not so good arm is another IR source listed as 2MASX J01200039+1220537 and also as PGC 4789. NED has absolutely nothing on it. Not even a magnitude. Odd, as it appears to be the major galaxy here. Arp certainly considered it the main one. It also appears that he considered the fainter blue fuzz patch as the companion on the arm and ignored the southern galaxy entirely. His comment reads: "Some material seems attached, some repelled." This "repelling" comment may be due to the sudden cut off of the arm. Without a redshift, it is impossible to say with certainty the northern galaxy is even related to either of the other two. I'd like some confirmation here. Neither the blue knot that's Arp's "companion" nor the golden galaxy just east of the northern spiral are in NED at all. This is a very poorly researched area it would appear.

There's an obvious galaxy cluster below Arp 48. This is NSCS J01195 at 4 billion light-years. NED shows it as containing 64 members. It extends south out of this field of view. While I got all of it in the later image of Arp 48 the seeing is so bad it isn't worth processing. This view will have to do.

The only other object in my image with a redshift measurement is CGCG 436-027. It is the blue spiral nearest the upper left corner. Oddly, NED makes no attempt to classify it, not even The only other object in my image with a red shift measurement is CGCG 436-027. It is the blue spiral nearest the upper left corner. Oddly, NED makes no

ARP48, continued.

attempt to classify it, not even a a spiral. It too appears to be about 635 million light-years away and thus part of the same system that Arp 119 and Arp 48 reside in. Though it appears very ordinary with nicely defined spiral arms. It too is listed as an IR source (2MASX J01200039+1238007). To its lower right is another rather obvious spiral that does appear to have a southern arm drawn well away from its "body". The gap seems oddly dark in fact. It is another IR source, 2MASX J01195236+1235486. I presume it too is part of the same system but can't confirm it without more data. It too may have some distortion.The only other object in my image with a red shift measurement is CGCG 436-027. It is the blue spiral nearest the upper left corner. Oddly, NED makes no attempt to classify it, not even a a spiral. It too appears to be about 635 million light-years away and thus part of the same system that Arp 119 and Arp 48 reside in. Though it appears very ordinary with nicely defined spiral arms. It too is listed as an IR source (2MASX J01200039+1238007). To its lower right is another rather obvious spiral that does appear to have a southern arm drawn well away from its "body". The gap seems oddly dark in fact. It is another IR source, 2MASX J01195236+1235486. I presume it too is part of the same system but can't confirm it without more data. It too may have some distortion.The only other object in my image with a red shift measurement is CGCG 436-027. It is the blue spiral nearest the upper left corner. Oddly, NED makes no attempt to classify it, not even a a spiral. It too appears to be about 635 million light-years away and thus part of the same system that Arp 119 and Arp 48 reside in. Though it appears very ordinary with nicely defined spiral arms. It too is listed as an IR source (2MASX J01200039+1238007). To its lower right is another rather obvious spiral that does appear to have a southern arm drawn well away from its "body". The gap seems oddly dark in fact. It is another IR source, 2MASX J01195236+1235486. I presume it too is part of the same system but can't confirm it without more data. It too may have some distortion.The only other object in my image with a redshift measurement is CGCG 436-027. It is the blue spiral nearest the upper left corner. Oddly, NED makes no attempt to classify it, not even a a spiral. It too appears to be about 635 million light-years away and thus part of the same system that Arp 119 and Arp 48 reside in. Though it appears very ordinary

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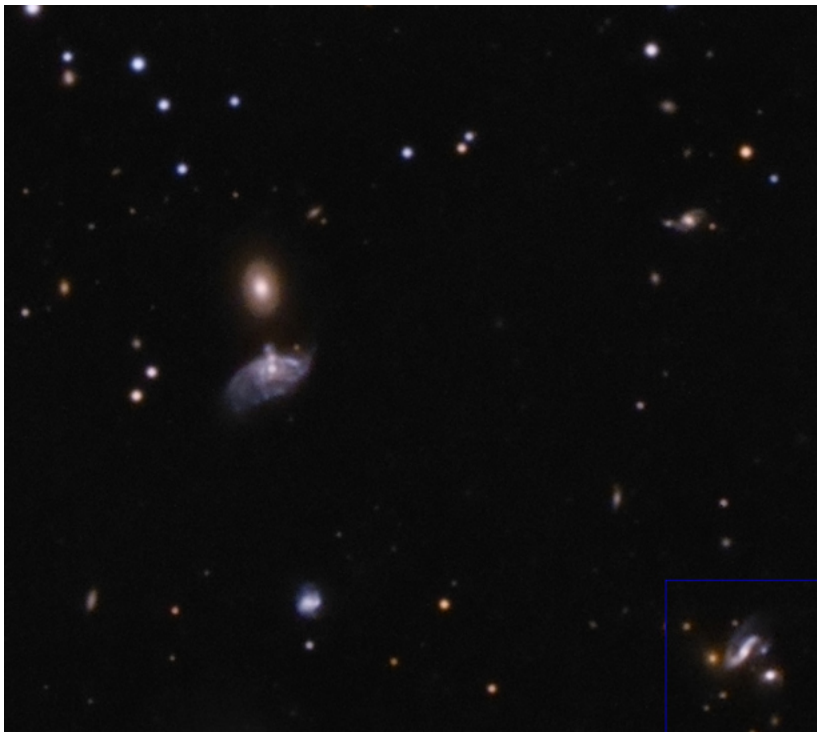
The obvious asteroid in the image is (243847) 2000 VA62 at an estimated magnitude of 17.7. This magnitude seems reasonable.

A second asteroid in the image is more difficult to find. It is near the right edge a bit below center just above a typical white star. It shows as a horizontal line about 7 pixels long so is very short. It is the slow moving asteroid (146703) 2001 VY112 at an estimated magnitude of 19.5. It appears only slightly fainter than the far brighter (243847) 2000 VA62 because its very slow motion greatly increases its exposure time on any one pixel. As there isn't much information on this field the annotated image only points out the three Arp systems and the two asteroids.



Focus on Constellations: Cassiopeia

Jim Kvasnicka

Cassiopeia the Queen has the familiar "W" or "M" pattern superimposed over the brilliant star field of the Milky Way. Cassiopeia is a rather modest constellation with 600 square degrees. It is especially rich in open clusters that range from tiny groups of stars embedded in rich star fields making them difficult to see, to some of the finest open clusters in the sky. The constellation has an assortment of planetary nebulae, a few galaxies, and some colorful double stars. Cassiopeia contains two Messier objects in M52 and M103, both are open clusters. Cassiopeia is a circumpolar constellation best seen in November.

Showpiece Objects

Open Clusters: M52, M103, NGC 457, NGC 654, NGC 663, and NGC 7789

Galaxies: NGC 278

Multiple Stars: Eta Cassiopeiae, Iota Cassiopeiae (Triple)

Mythology

In Greek mythology, Cassiopeia and Cepheus were the king and queen of Ethiopia, the parents of Princess Andromeda. Cassiopeia was very vain and boasted that she was more beautiful than the Sea Nymphs. This upset Poseidon the God of the Sea who sent the terrible sea monster Cetus to destroy their land. The only way Poseidon would spare their land was if Cassiopeia and Cepheus offered their daughter Andromeda as a sacrifice to Cetus. They chained Andromeda to the rocky shore and as the sea monster Cetus was getting closer down flew Perseus on Pegasus who killed the sea monster, rescued Andromeda and married her.

Number of Objects Magnitude 12.0 and Brighter

Galaxies: 3

Globular Clusters: 0

Open Clusters: 52

Planetary Nebulae: 2

Dark Nebulae: 0

Bright Nebulae: 1

SNREM: 0

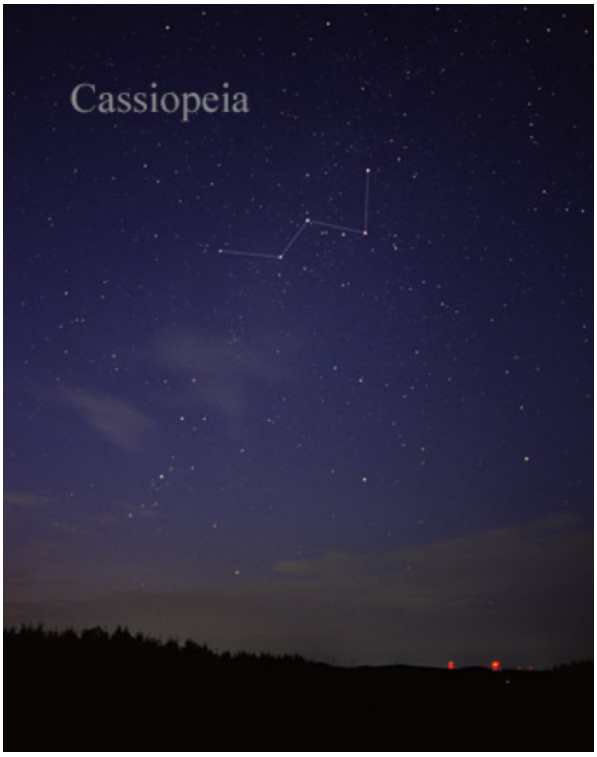
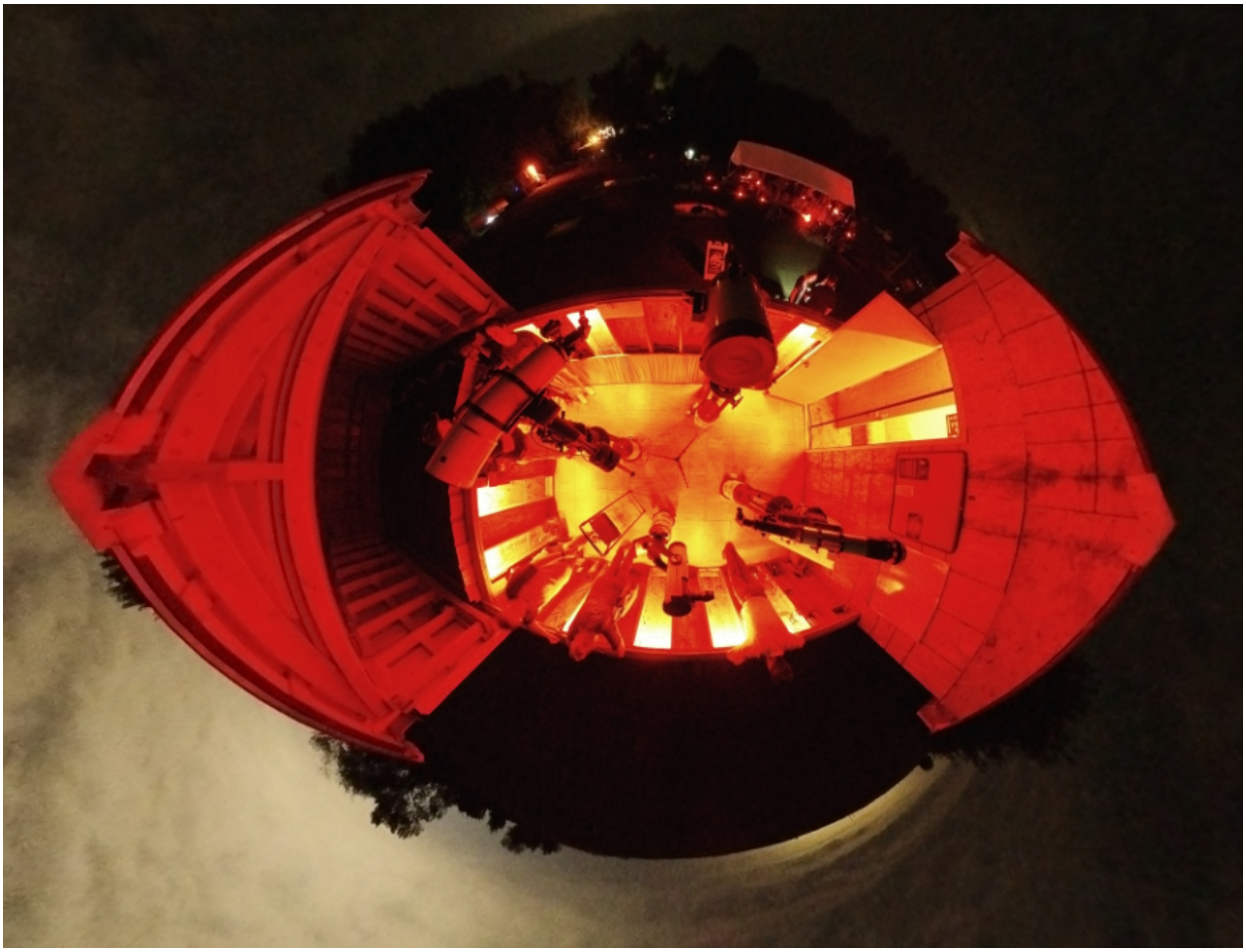


Image credit: By Till Credner - Own work: AllTheSky.com, CC BY-SA 3.0, https://commons.wikimedia.org/w/index.php?curid=20042019

Photos from the Branched Oak Observatory Star-B-Q

Above: about 1200 people attended the Star-B-Q including Dave Knisely and Jim White. Below: a 360 degree "tiny planet" shot of the Boller-Sivill Observatory



November Observing

Jim Kvasnicka

This is a partial list of objects visible for the upcoming month.

Planets

Mercury and Venus: Not visible.

Jupiter: At magnitude -2.8 with a disk 47.6" wide in Pisces.

Saturn: At magnitude +0.7 with a disk 17.3" wide in Capricornus.

Mars: At magnitude -1.6 with a disk 16.6" wide in Taurus.

Uranus and Neptune: In Aries and Aquarius.

Lunar Eclipse

Tuesday, November 8th. Partial eclipse begins at 3:09 am, total eclipse begins at 4:16 am, total eclipse ends at 5:41 am, partial eclipse ends at 6:49 am.

Messier List

M27: The Dumbbell Nebula in Vulpecula.

M30: Class V globular cluster in Capricornus.

M56: Class X globular cluster in Lyra.

M57: The Ring Nebula in Lyra.

M71: Class XII globular cluster in Sagitta.

M72: Class IX globular cluster in Aquarius.

M73: Asterism in Aquarius.

Last Month: M11, M16, M17, M18, M24, M25, M26, M55, M75

Next Month: M2, M15, M29, M31, M32, M39, M110

NGC and other Deep Sky Objects

NGC 7662: The Blue Snowball in Andromeda.

NGC 128: Elongated galaxy in Pisces.

NGC 247: Galaxy in Cetus.

NGC 253: The Silver Coin Galaxy in Sculptor.

NGC 288: Class X globular cluster in Sculptor.

NGC 457: The E. T. Cluster in Cassiopeia.

Double Star Program List

Iota Trianguli: Yellow primary with a pale blue secondary.

Gamma Arietis: Two equal white stars.

Lambda Arietis: Yellow and pale blue stars.

65 Piscium: Yellow pair.

Psi 1 Piscium: Equal bluish white pair.

Zeta Piscium: White primary with a secondary.

Alpha Piscium: Close white pair.

Gamma Andromedae: Almach, gold and greenish blue pair.

Challenge Object

NGC 193 and NGC 194: Two small round galaxies in Pisces that fit in the same FOV.

Cover Photo

NASA's James Webb Space Telescope has delivered the deepest and sharpest infrared image of the distant universe so far. Webb's First Deep Field is galaxy cluster SMACS 0723, and it is teeming with thousands of galaxies – including the faintest objects ever observed in the infrared. Image credit: NASA, ESA, CSA, and STScI *See this page for more information.*

Club Member Profile: Mike Kearns

Mike joined PAC in 2012

My wife Linda and I are the proud parents of two adult children and grandparents of five grandchildren. I retired, after almost a fifty-year career as a framing and finish carpenter and serving six years with the Army National Guard.

I joined the Prairie Astronomy Club (PAC) December 1, 2012, and purchased my first real telescope, a Zhummel 10" dobsonion. Prior to my purchase, I went online and found the PAC website, looking for some insight in purchasing a telescope. After much research, I found the Z10 at an affordable price. I emailed the club and got a response from Bob Kacvinsky and Jim Kvasnicka. Thank's to their vast knowledge and help, I made the purchase and decided to attend one of the PAC club meetings at Hyde Observatory. I was impressed with the help and the friendliness of everyone in the club and decided to join. This was 10 years ago.

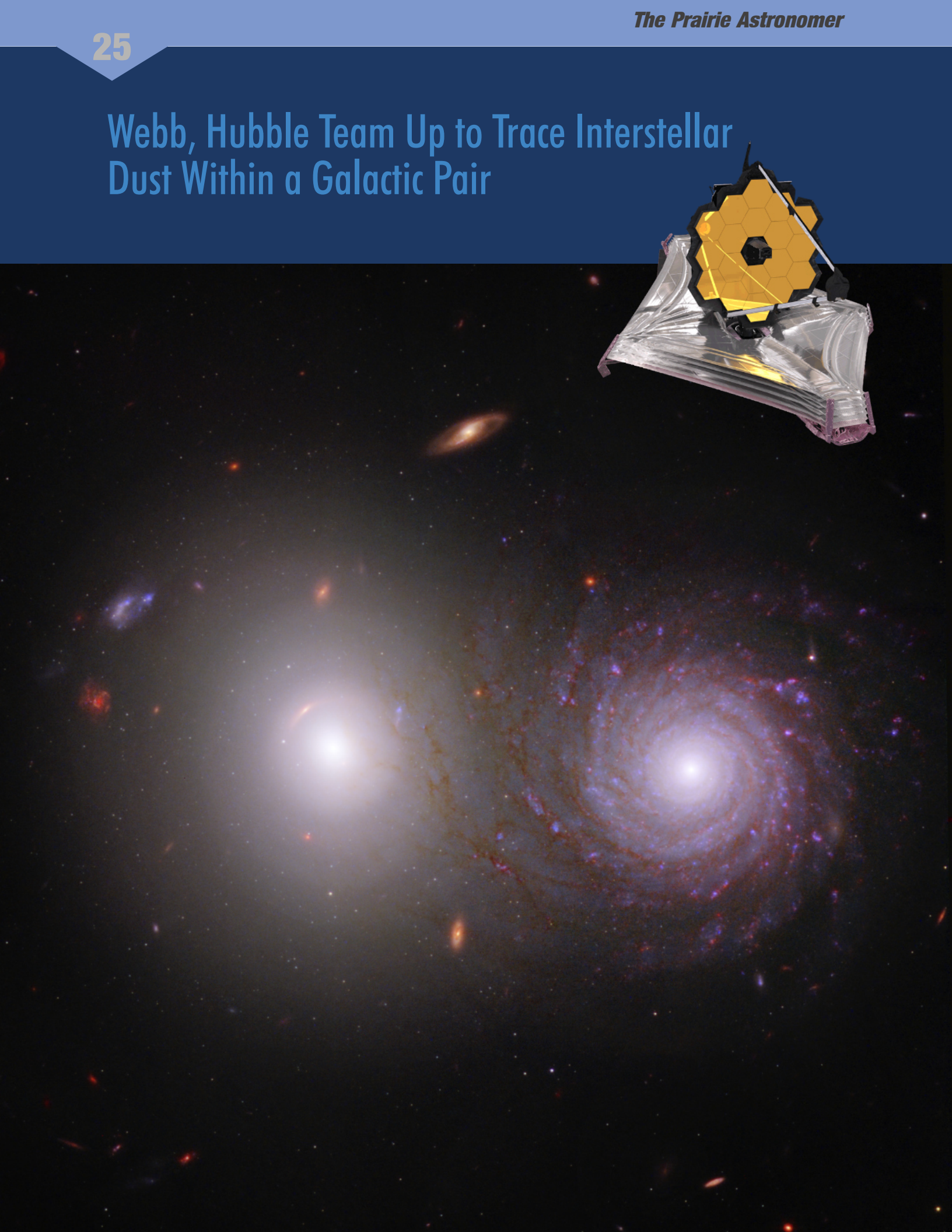
At a very young age, I used to go out at night and look up to the heavens. This was before all the light pollution we have now. I was amazed and thought to myself of how there is no end out there and how could that be? When I was about six years old my parents bought me a telescope for Christmas. It was a 4 or 5"Newtonian with a cardboard OTA, which is what they could afford at the time. It actually had pretty decent views from what I can remember. I used to observe Jupiter, Saturn and of course, the moon. Along with this telescope, they gave me "The Golden Book of Astronomy". These two Christmas presents had me addicted to astronomy for the rest of my life. I still to this day own and cherish this book. After wearing that telescope out, I used binoculars until I could afford the Z10 telescope purchase in 2012. Since I joined the club, Linda and I have attended seven "Nebraska Star Parties". We are continually amazed of the vast amount stars that are visible at NSP, especially The Milky Way! Linda enjoys going

to the “Nebraska Star Parties” as much as I do. It makes for a relaxing vacation for both of us. Especially when camping up on the observing field in our travel trailer.

I have also attended two other star parties besides our monthly ones at the farm. Those have been with several club members from PAC and OAS at “Lords Ranch”. About six years ago, I was named Outreach Coordinator for PAC and have held that title until October 7th of this year. Just recently, I received my award for completing the “Messier Program”. I’ve been told this is the first Messier Award presented in the club since 2009.

I decided last year it was time for me to get the telescope I’ve always wanted. The Z10 has served me well over the last 10 years, but after discussing this in depth with Linda and doing a lot of research, I decided to go ahead and purchase a “Teeter Classic F/4.5 - 15” Dobsonion.

Webb, Hubble Team Up to Trace Interstellar Dust Within a Galactic Pair



Webb, continued.

"We got more than we bargained for by combining data from NASA's James Webb Space Telescope and NASA's Hubble Space Telescope! Webb's new data allowed us to trace the light that was emitted by the bright white elliptical galaxy, at left, through the winding spiral galaxy at right – and identify the effects of interstellar dust in the spiral galaxy. This image of galaxy pair VV 191 includes near-infrared light from Webb, and ultraviolet and visible light from Hubble.

"Webb's near-infrared data also show us the galaxy's longer, extremely dusty spiral arms in far more detail, giving the arms an appearance of overlapping with the central bulge of the bright white elliptical galaxy on the left. Although the two foreground galaxies are relatively close astronomically speaking, they are not actively interacting.

"VV 191 is the latest addition to a small number of galaxies that helps researchers like us directly compare the properties of galactic dust. This target was selected from nearly 2,000 superimposed galaxy pairs identified by Galaxy Zoo citizen science volunteers.

"Understanding where dust is present in galaxies is important, because dust changes the brightness and colors that appear in images of the galaxies. Dust grains are partially responsible for the formation of new stars and planets, so we are always seeking to identify their presence for further studies.

"The image holds a second discovery that's easier to overlook. Examine the white elliptical galaxy at left. A faint red arc appears in the inset at 10 o'clock. This is a very distant galaxy whose light is bent by the gravity of the elliptical foreground galaxy – and its appearance is duplicated. The stretched red arc is

Facing page: Researchers traced light that was emitted by the bright white elliptical galaxy on the left through the spiral galaxy at right. As a result, they were able to identify the effects of interstellar dust in the spiral galaxy. Webb's near-infrared data also shows us the galaxy's longer, extremely dusty spiral arms in far more detail, giving them an appearance of overlapping with the central bulge of the bright white elliptical galaxy on the left, though the pair are not interacting. In this image, green, yellow, and red were assigned to Webb's near-infrared data taken in 0.9, 1.5, and 3.56 microns (F090W, F150W, and F356W respectively). Blue was assigned to two Hubble filters, ultraviolet data taken in 0.34 microns (F336W) and visible light in 0.61 microns (F606W). Read the full description and download the image files by clicking or tapping the image above. Credit: NASA, ESA, CSA, Rogier Windhorst (ASU), William Keel (University of Alabama), Stuart Wyithe (University of Melbourne), JWST PEARLS Team

Webb, continued.

warped where it reappears – as a dot – at 4 o'clock. These images of the lensed galaxy are so faint and so red that they went unrecognized in Hubble data, but are unmistakable in Webb's near-infrared image. Simulations of gravitationally lensed galaxies like this help us reconstruct how much mass is in individual stars, along with how much dark matter is in the core of this galaxy.

"Like many Webb images, this image of VV 191 shows additional galaxies deeper and deeper in the background. Two patchy spirals to the upper left of the elliptical galaxy have similar apparent sizes, but show up in very different colors. One is likely very dusty and the other very far away, but we – or other astronomers – need to obtain data known as spectra to determine which is which."

About the authors:

Webb interdisciplinary scientist Rogier Windhorst of Arizona State University and his team obtained the data used in this image from early results of the Prime Extragalactic Areas for Reionization and Lensing Science (PEARLS) JWST Guaranteed Time Observation (GTO) programs, GTO 1176 and 2738. Additional data from Hubble's STARSMOG snapshot program (SNAP 13695) and GO 15106, were added. Jake Summers, also of Arizona State, performed the pipeline data reduction. The dust analysis was led by William Keel of the University of Alabama, while the Hubble data acquisition was led by Benne Holwerda of the University of Louisville in Kentucky. The detailed gravitational-lensing analysis was conducted by Giovanni Ferrami and Stuart Wyithe, both of the University of Melbourne, Australia and ASTRO 3D, Australia.

PAC Board Meeting Minutes: 10/4/22

Jim White

Attendees: Bob Kacvinski, Jason O'Flaherty, Brett Boller, John Reinert, Bill Lohrberg, Jim Kvasnicka, Mark Dahmke, Jim White

First item on the agenda is the PAC loaner telescopes. There are currently three scopes that the club has available to borrow, one is a small refractor, one is a small SCT and the third is a 10-inch DOB. The club was in need of some eyepieces to go with a couple of the loaner scopes. Mark Dahmke talked to Holly Johnson, Rick Johnson's widow, and asked if she would mind donating some eyepieces of Rick's that she had given to Mark to find a home for and she graciously agreed. The scopes and accessories need to be organized and sorted so that the club knows what goes with each scope when they are let out. Bob, Jason and Rick Littrell are going to work on getting this taken care of. Jason is putting together a spreadsheet that will get posted on the website or in the newsletter that will list the loaner scopes that the club has available for members to borrow. The club has a 13" scope that is missing a secondary mirror and a spider, at some point the club will need to decide if we want to repair this scope. The board also had a discussion about what needs to be done with a scope left to the club by Earl Moser.

The second item on the agenda is financials. The club currently has $34,767.75. There is approximately $1,000.00 in checking, $1,900.00 in a money market account, $6,000.00 in a cd that comes due the 21st of October and another cd that is approximately $25,000.00. Bob suggested that we consider taking the cd that is coming due this month and roll that money into an internet bank savings account where the interest rate is currently running between 2-3 percent and is insured like a standard savings account. John is going to investigate the options for the cd that is coming due.

Third on the list is insurance. The club is essentially self-insured when it comes to our shed at Branched Oak Observatory and its contents (our loaner telescopes). Total value of the shed and the current contents is approximately $5,000.00. Insurance to cover the shed and its contents would cost approximately $500.00 annually with a $1,000.00 deductible. The consensus of the board is that we remain self-insured as it wouldn't take long for premiums to consume the value of the property being insured. The suggestion was also made that the club purchase and install an additional lock on our shed to improve security. Part of the insurance issue is that Branched Oak Observatory wants the club to sign an agreement that states that we are self-insured and won't hold Branched Oak

Board Meeting, continued.

Observatory liable for anything that may happen to our shed and its contents. The board agreed that we will sign the agreement.

Fourth item on the list is the property taxes imposed on Branched Oak Observatory due to improvements and value added to the property by structures on the land. Bob made a suggestion to the board that beginning in 2023 the club pay Branched Oak Observatory $50.00 per year for rental and to help offset the increase in property taxes due to our shed being on Branched Oak Observatory property.

Fifth on the list is the club did obtain a Zoom account which will be paid for annually.

Sixth on the list is the search for a location to use for star parties as our current site has been taken over by cattle for the next month or so. Hedgefield WMA was tried recently but there is a farm house close by that has some lighting that makes observing difficult. Bob and Jim also located a possible site that is about a mile north of Claytonia. The suggestion was made that we give it a try and see how it goes, nobody has been there at night to see how dark the site is. It is comparable in distance from Lincoln to the current club observing site. If this site is found to be a good observing site and could be used on an ongoing basis the club could save some money that we currently pay for our observing site plus the cost to have Jim mow the site. We also have a backup of being able to use Branched Oak Observatory when it is available. If the site by Claytonia doesn't work out, what kind of limit do we want to set on how far away a site is before it becomes objectionable to travel that far. Jim is going to plan on going down within the next week to see how dark the site is at night.

Seventh item on the list is change of Outreach Coordinator. Christine Parkyn has said that she is willing to take over as Outreach Coordinator if needed.

Eighth item on the list is Bob would like the board to consider adding a Mentorship chair which Bob has expressed an interest in heading up.

The ninth topic of the night is to have the new board consider having a committee review and update the clubs' bylaws which are quite antiquated.

Item ten was a discussion on possibly having our yearly How to Buy a Telescope and How to Use a Telescope programs turned into class formats scheduled outside of our regular Tuesday night meetings which might make them more accessible to families than it being held on a school night.

Item eleven was a discussion of club membership and how to

attract and obtain new members. In the last few years we have bucked the trend of a number of clubs and have been picking up and retaining new members and our membership count is currently about 65. We need to be conscious of the fact that we need to help meet the needs of our new members as well as our longtime members.

Item twelve is Mark and John getting together to get things finalized as far as being able to pay dues online and probe the waters for normalizing when dues need to be paid. A possible good time of the year to have dues normalized to would be around September so we have good membership data as we come into officer election time.

IT'S WEIRD MAKING PLANS FOR ECLIPSES.

xkcd.com

Moser Telescope Presented to Gideon Johnson

Earl Moser's 6" reflector was given to Gideon Johnson on October 15th. Earl donated the scope to PAC in 2006 with the request that it be given to a young person interested in astronomy. In 2006 the club gave the scope to Joey Churilla and when Joey graduated and went to college, it came back to the club. Mark Dahmke then did some restoration work and built a dobsonian mount for it. At a recent PAC board meeting, Bob Kacvinsky suggested that the scope be given to Gideon.

Above left: Gideon with his sister and mother. Right: Leona Barratt, Brad Moser and Marge Moser. Below: Dan Delzell and the Moser family.

From the Archives

October, 1971

The President's Report

In recent months I have received several suggestions to have the day and the time of our monthly meeting changed. Several years ago our club was changing its meeting time and place quite frequently, in order to best satisfy the majority of club members. We finally settled on the last Tuesday of the month, at 7:30pm at Nebraska Wesleyan, and it's been there ever since.

Now, it seems that perhaps Saturday evening or Sunday afternoon would work out better. There is getting to be more and more conflicts with other meetings on Tuesday nights for some of our members and also prospective members.

A weekend meeting will in addition give out of town friends from other clubs in the area a chance to visit us.

I will bring this up Tuesday night, and I would like to hear from those who can't make it to the meeting.

We will let this matter "brew" for a couple of months before any change is made, if any change is to be made at all.

On October 5, there appeared in the Lincoln Journal a story about our club and some of its activities. A photo of sunspots was included with the article.

Thanks to Jess Williams for his efforts, and accomplishments in publicizing our club. If any others get a chance to publicize the club and its activities, go right ahead. We need all the publicity we can get ahold of.

Earl Moser

Our meeting will be Tuesday, October 26 at, as usual, 7:30 pm in the Olin Hall of Science on the Nebraska Wesleyan campus. Professor Moore will start his series of planetarium lectures on the movements of the planets.

We will discuss, among other things, the 1973 national convention of the Astrononical League which we will be hosting in conjunction with the Omaha club. In addition we will have a film and an informal swapshop and auction. Any member with any unwanted items such as eyepieces, finders, mechanical parts, atlases, photographic equipment, and the like should bring them to the meeting. Certainly anything any member wants to bring up can be discussed and, of course, there will be refreshments afterwards.

At our last meeting, officers for the coming year were elected. Those elected were:

President: Earl Moser, Vice-president: Dr. Robert Manthey, Secretary: Jess Williams, Treasurer, Monte Cole, Program Chairman: Larry Stepp, Publications Chairman: Ed Woerner, Recording Secretary: Brian Dodson.

CLUB MEMBERSHIP INFO

REGULAR MEMBER - $30.00 per year. Includes club newsletter, and 1 vote at club meetings, plus all other standard club privileges.

FAMILY MEMBER - $35.00 per year. Same as regular member except gets 2 votes at club meetings.

STUDENT MEMBER - $10.00 per year with volunteer requirement.

If you renew your membership prior to your annual renewal date, you will receive a 10% discount.

Club members are also eligible for special subscription discounts on Sky & Telescope Magazine.

ADDRESS

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CLUB TELESCOPES

To check out one of the club telescopes, please contact a club officer. Scopes can be checked out at a regular club meeting and kept for one month. Checkout can be extended for another month if there are no other requests for the telescope, but you must notify a club officer in advance.

100mm Orion refractor: Available
10 inch Meade Starfinder Dobsonian: Available
13 inch Truss Dobsonian: Needs repair
10 inch Zhumell: Needs mount

Buy the book! The Prairie Astronomy Club: Fifty Years of Amateur Astronomy. Order online from Amazon or lulu.com.