



The Prairie Astronomer

September, 2009

Volume 50, Issue #9

The Official Newsletter of the Prairie Astronomy Club

PAC Program

Updates on MSRAL Convention planning, plus video of Jack Horkheimer's talk when PAC last hosted the MSRAL convention.

In This Issue

Focus on Observing, Rick Johnson's Observatory Update, Observing Site Proposals, Outreach Events.

"Europa and Ganymede Shadows on Jupiter" by Brett Boller and Dave Churilla. This image was captured using Brett's Celestron Neximage and Dave's telescope.

Featured Photo

Please send your astrophotos to Mark Dahmke to be added to the PAC website and the newsletter.



Saturn image courtesy NASA.

Observing Site Proposals

The following proposals are being submitted to the newsletter and PAC Board for consideration at the September club meeting.

1. We propose that a one time improvement to the observing site be approved that includes crushed rock for the driveway area of the Farm at a cost not to exceed \$600 (with tax).
2. We propose that as show of PAC's gratitude to the Busboom's for allowing the club to use the site for monthly observing we annually present the Busboom's a gift Certificate of \$200 to South Pointe Pavilion. This gift is to begin in the fall of 2009 and be renewed by vote of the club at each March meeting and be given to the Busbooms by the end of April.
3. We propose that to compensate whoever is mowing the site (at this time it's Jim Kvasnicka) we pay them \$50 a month from April through September to defray gas and mower costs for a total of \$300. This would be renewed by a vote of the club at each March meeting. Currently Jim is mowing at least once a month and during wet times twice a month. This would compensate him for his time and costs of driving and wear on his mower.

Dave Churilla, Dan Delzell, Bob Leavitt

Club Outreach Events – Dave Churilla

Another Outreach event that we are participating in is a Boy Scout Camporee at Homestead National Park outside Beatrice. This will be for about 150 scouts and is on October 10th. It will likely involve setting up telescopes and some instruction so it would be great to have 5 or 6 scopes to be able to set up. If the weather is bad we'll be indoors with a short "lecture" time. The contact will be calling me next week after their planning meeting with more details.

So, I'm looking for Volunteers for this event as well. Please let me know if you can help out.

Just so you all are thinking about it, don't forget that we also have the Homestead Halloween sometime around the end of October (usually the Saturday near Halloween, but Halloween is on a Saturday so I don't know when it will be) that we also participate in. This event also brings in over 400 kids and parents to view the through the scopes. I hope to have more info on this soon.

Just keep it in mind. I know this is really shoving a lot on the table but we really haven't had too much in the way of Outreach events this year and these are really good ones for us to be at.

PAC's 50th Anniversary—Mark Dahmke

I had planned to publish a printed and DVD version of the PAC history book by the April, 2011 anniversary date, but since we're hosting the MSRAL Convention in June, 2010, I thought it might be a good idea to move up the publication date so copies are available for the convention. My plan is to publish a book that will include the official history of PAC, plus photos and memoirs contributed by current and former club members. It will also include all the newsletters and some other articles and documents that were made available by Earl Moser. The book will be titled "The Prairie Astronomy Club: Fifty Years of Amateur Astronomy."

This is your opportunity to write a short story, memoir or anecdote to include in the book. Photos are also welcome. If you scan your own photos or slides, please scan at 300 dpi (at least 1200 pixels wide for a 4" photo) and slides at 2400 dpi or better, or I can scan them for you.

If you have any ideas on other content that should be included in the book, please let me know as soon as possible. The deadline for submissions will be February 1, 2010.

PAC Club Meeting
Tuesday, September 29, 2009 7:30pm @ Hyde Obsv.

Boy Scout Camporee
Homestead National Park
October 10, 2009

PAC Club Meeting
Tuesday, October 23, 2009 7:30pm @ Hyde Obsv.

Homestead Halloween
Homestead National Park
October 24, 2009

Next newsletter submission deadline: October 18.

MSRAL Convention
June 4-6, 2010

2009 Star Party Dates

September 25th
October 16th and October 23rd
November 13th and November 20th
December 11th and **December 18th**

The date that is **bold and underlined** is the date closest to the New Moon.

Club Telescopes - Checkout Policy

To check out one of the club telescopes, contact Cassie Etmund at cggymnast1@aol.com. If you keep a scope for more than a week, please check in with Cassie once a week, to verify the location of the telescope and how long you plan to use it. The checkout time limit will be two weeks, but can be extended if no one else has requested use of a club scope.



PAC:
www.prairieastronomyclub.org

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NSP:
www.nebraskastarparty.org

NSP E-Mail:
info@nebraskastarparty.org

OAS
www.OmahaAstro.com

Hyde Observatory
www.hydeobservatory.info

Panhandle Astronomy Club
Panhandleastronomyclub.com

PAC-LIST: You may subscribe to the PAC listserv by sending an e-mail message to: imailsrv@prairieastronomyclub.org. In the body of the message, write "Subscribe PAC-List your-email-address@your-domain.com"

For example:
Subscribe pac-list me@myISP.com

To post messages to the list, send to the address

pac-list@prairieastronomyclub.org

PAC can also be found on Twitter and Facebook.

Buy club apparel through the club website. Shirts, hats, mugs, mouse pads and more.



October Observing: What to View--Jim Kvasnicka

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

Planets

Jupiter: Magnitude -2.6 in Capricornus.

Neptune: Also in Capricornus, 6° west of Jupiter.

Uranus: Magnitude 5.8 south of the Circlet of Pisces.

Mars: Rises around midnight at magnitude 0.8 located 6° from Pollux.

Venus: Magnitude -3.9 and it continues to get lower through October.

Mercury: Best seen in early October when it shines at -0.6 and is 6° below Venus.

Saturn: Shines at 1.1 magnitude. On the morning of Oct 8th Saturn and Mercury are only 1° apart and just 6° to the lower left of Venus.

Meteor Showers

Orionids: Runs from Oct 17th – 25th and will peak on the 21st. The Moon will not be up.

October Messier List

M11: The Wild Duck Cluster in Scutum.

M16: The Eagle Nebula in Serpens.

M17: The Omega or Swan Nebula in Sagittarius.

M18: Small open cluster in Sagittarius.

M24: The Sagittarius Star Cloud.

M25: Open cluster in Sagittarius east of M24.

M26: Open cluster in Scutum.

M55: GC in Sagittarius. One of the brightest and largest.

M75: GC in Sagittarius. One of the most concentrated.

Last Month: M13, M14, M22, M28, M54, M69, M70, M92

Next Month: M27, M30, M71, M72, M73, M56, M57

NGC and Other Deep Sky Objects

NGC 253: The Silver Coin Galaxy in Sculptor, low surface brightness.

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

NGC 869/884: The Double Cluster in Perseus.

NGC 1528: Open cluster in Perseus.

Double Star Club List

8 Lacerta: Four white stars.

Beta Cephei: White and blue stars.

Struve 2816: White primary with two white secondary stars in Cepheus.

Xi Cephei: Pair of yellow stars.

Delta Cephei: Yellow primary with a pale blue secondary.

Eta Persei: Bright yellow and light blue stars.

Struve 331: White and blue-white stars in Perseus.

Epsilon Pegasi: Bright yellow and white stars.

Challenge Object

IC 1795: Complex of nebulosity in Cassiopeia. Use a nebula filter.

Focus On Constellations - Jim Kvasnicka

Aquarius

Aquarius the Water Carrier is a faint constellation representing a man pouring water from an urn. Aquarius is the 11th sign of the Zodiac and covers 980 square degrees. The most prominent star pattern in the constellation is the Y-shaped asterism centered on Zeta Aquarii. Galaxies are the most numerous type of object in Aquarius but most are faint. Since Aquarius lies far from the plane of the Milky Way it is lacking in star clusters and diffuse nebulae. It does contain three globular clusters, two of which are Messier objects M2 and M72. The third Messier object M73 is an asterism. Aquarius contains two notable planetary nebulae, the Saturn Nebula and the Helical Nebula which requires a large aperture telescope and an OIII filter to see. Aquarius is best seen in the month of October.

Mythology

In most cultures Aquarius is drawn as a man pouring water. This may arise from the fact that the Sun enters Aquarius in early winter, when the rainy season begins in many parts of the world. The Babylonians knew this area of the sky as a celestial sea, and from them the Greeks inherited not only Aquarius but also Pisces, Capricornus, and Eridanus.

Objects in Aquarius Magnitude 12.0 and Brighter

Galaxies: NGC7727, NGC7606, NGC7184, NGC7377, NGC7723, NGC7585, NGC7721, NGC7284, NGC7285, NGC7183, NGC7392, NGC7600, NGC7218

Open Clusters: M73

Globular Clusters: M2, M72, NGC 7492

Planetary Nebulae: NGC7009, NGC7293

Bright Nebulae:

SNREM:

Dark Nebulae:

Named Stars: Sadalmelik (Alpha), Sadalsuud (Beta), Sadalachbia (Gamma),

Skat (Delta), Albali (Epsilon), Ancha (Theta), Situla (Kappa)

Number of Aquarius Objects in Various Observing Clubs

Messier Club: 3 objects

Double Star Club: 2 objects

Herschel 400 Club: 4 objects

Globular Cluster Club: Aquarius contains 3 globular clusters, all can apply towards the 50 required by the Globular Cluster Club.

Open Cluster Club: 0 objects

Planetary Nebula Club: 2 objects

Urban Club: 2 objects

ANNUAL MEMBERSHIP DUES

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.

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.

Observatory Update– Rick Johnson

This update covers two Arp galaxies, close in catalog number, very similar in that both have huge narrow tidal tails yet Arp saw them as very different objects. One with a "narrow filament" the other as having ejected material from its nucleus.

ARP 190

Arp classifies this one under "Galaxies (not classifiable as E or S): Narrow filaments". Odd as the two galaxies involved seem to be obvious spirals. But it appears Arp thought there were three, one stellar but he never got spectral data on it to know for sure. More on this below. It is also cataloged as UGC 2320. UGC 2320 also includes the galaxy below those with the filament.

Of the upper galaxies the northern blue spiral galaxy has no red shift data but is presumed to be interacting with the southern red spiral galaxy. Remember that red spiral is a new classification of galaxies not recognized before being uncovered by the folks at Galaxy Zoo, many of which aren't even amateur astronomers, just folks with computers who like classifying SDSS images. The red spiral has a red shift showing a distance of about 460 million light years. So what about that odd "comet" a bit west of the red spiral? Arp says "filament seems to originate from stellar image; no spectra available". That would mean a third galaxy, one that is star-like with a huge plume. Or is it just a star? I can't find any data on it at all, even today. Most list this as a galaxy pair but some say multiple system as if to say maybe there are 3. Considering the "stellar object" is rather white and the plume a slightly reddish color, more like the red spiral I have to think it a tidal plume from that galaxy and the "stellar object" is just that, a star in our galaxy. If anyone out there has anything on this mystery please let me know. In measuring the FWHM of this star/galaxy I get a reading a bit larger than an average star but smaller than other known stellar galaxies. I have to believe this is a star and the point spread function of the object is due to the haze of the plume distorting the reading. If I assume the plume carries over the object and subtract that out its reading is that of a star. Still a spectrum would be welcome!



14" LX200R @ f/10, L=4x10' RGB=2x10' STL-11000XM, Paramount ME

That leaves the red elliptical like galaxy below the pair. Is it part of Arp 190? Arp did include it in his image and framed it as if it was. It too is part of UGC 2320 though other catalogs give it its own designation. It does seem related as its red shift distance is also about 460 million light years. If you look closely there seems to be a very faint bridge between it and the spirals to the north. But it isn't classed by NED as an elliptical galaxy which surprised me. Sure looks like one in my image. It is actually classed as a "compact object", whatever that means. The ARK catalog, where it is entry 92 says "Compact nearly symmetrical red object." The CGCG catalog where it is entry CGCG 440-018 also mentions how compact it is. It also looks compact in Arp's photo. Problem is it looks like a rather typical E2 or E3 galaxy to me though the core region seems to get brighter faster than many do. It was the home to the super nova 2003iv back in 2003.

While there are a lot of interesting looking galaxies, including a group of 4 below Arp 190 near the bottom of my image, few are in any catalog at NED or SIMBAD. In fact, of the 4 only the easternmost has a magnitude estimate. It is 2MASX J02500130+1243553. The next one to the west and also the southernmost of the 4 is 2MASX J02495966+1243253 but there's little other data available. The rather bluer galaxy somewhat north of the other

three is 2MASX J02495556+1244454, again, not much else is worth mentioning about it that I could find. So what about the one I left out. Seems I can't even find a catalog designation for it at NED or SIMBAD though The Sky gives it the extended PGC number 1415084 and a magnitude of 16.5. In fact The Sky 6 has quite a few extended PGC galaxies not listed in the two databases I mentioned. Super LEDA does have them but little information other than position and sometimes magnitude. The Mitchell Anonymous Catalog (MAC) also lists some of the brighter galaxies in the image but again this is just a listing with no helpful data to understand relationships or distances.

SDSS hasn't covered this part of the sky unfortunately. So while that fourth galaxy is the brightest and reddest and likely a member of the group it isn't in the 2 micron survey. Red doesn't mean it will be strong in the infra red. That happens when massive star formation is going on that is hidden behind dust clouds. The IR comes from this dust heated by the stars it is hiding. That doesn't appear to be happening in this galaxy. An active galactic nucleus (AGN) can hide behind a huge dust cloud and also trigger the 2 micron survey to include the galaxy.

So while there appears to be a lot going on in this image I can't find much useful to relate about all these anonymous galaxies. We are likely anonymous to the residents of these galaxies as well.

All this reminds me of a T-shirt sold here. It shows a big mosquito with blood dripping from his mouth. It is saying "So many fishermen, so little time." Substitute galaxies for fishermen and astronomy grad students for mosquitoes and it would be even more true: "So many galaxies, so little time."

I should explain the rather elongated stars. This was taken on a clear night with 40 mph winds gusting to 60 mph; 65 kph to 100 kph. Two trees fell on our road that night. But the wind direction was such it wasn't stressing the rolled off roof, even though that is about 18 feet in the air but the wind was swirling like crazy in the observatory. I hoped that the wind wouldn't hurt the image but as it got strong the seeing got worse. It started about 3" and ended at about 5" Bright stars show some elongation due to the wind. I really shouldn't have even tried imaging that night as the observatory ended up full of debris from my Polaris tree but nothing heavy hit the optics though bark scars indicated two large branches did hit the tube (well 2" in diameter weighing about 4 and 6 lb.). I took a couple more images that night I haven't processed. Don't know when those branches fell. Seeing was very variable going from great to lousy and back again. It was fair to lousy for this one. I did take 4 color frames for each color. All were poor. I chose the best two for each color as including more just made things worse, not better. I took 6 luminosity frames but had to throw out two due to the seeing getting very bad. This is another on the reshoot list.

Arp's image: http://nedwww.ipac.caltech.edu/level5/Arp/Figures/big_arp190.jpeg

This image was taken under poor conditions as I was imaging through haze or light fog. This caused some very nasty halos around the brighter stars. I reduced them somewhat. The haze reduced my ability to go deep. But seeing was pretty good and that was needed for this one.

Arp 195 is in Arp's category "Galaxies (not classifiable as E or S): Material ejected from nuclei. Also known as UGC 04653, it is a triple galaxy system in which the northernmost has one heck of a tidal plume though Arp seems to consider this as something the nucleus ejected from his classification. To me it looks little different from the plume in Arp 190 which he classed as a narrow filament. Why the difference escapes me. In the case of both, the likely source galaxy is rather red but the plume is either less red (Arp 190) or slightly blue in the case of Arp 195. Arp makes the following note in his catalog:



14" LX200R @ f/10, L=4x10' RGB=2x10' STL-11000XM, Paramount ME

"absorption edge on connection to nucleus". I still don't know what this refers to. There does seem to be a dark absorption lane between the upper two galaxies. This might be it. These galaxies are very distant, about 750 million light years. So getting much detail with my typical seeing isn't easy. The middle galaxy hosted a super nova last year, SN 2008bv. It blew early in 2008 and this image was taken nearly a year later in the middle of January 2009 so I missed it. It had faded from view months earlier. NED classes the southern galaxy as SBb, but the other two are left unclassified.

This would be a good time to bring up Arp's idea of galaxies ejecting objects. It would seem the classification of this object and others in his "material ejected from Nuclei" class fit this idea. To him many, if not all, quasars are relatively near by objects ejected from galaxies rather than black holes at the core of very distant galaxies. To make this idea work he has to explain red shift as something other than a distance indicator. Something he's never really managed. Also we see absorption lines in quasar spectra that come from the vast interstellar media between us and the quasar. When the light passes through several galaxy clusters at various distances we see these lines with the right red shift to match that of those clusters indicating the object is beyond these clusters and not nearby. Virtually no one accepts Arp's idea about ejected quasars nor that the plumes seen in galaxies of this class are due to ejected material. It is well agreed they are tidal plumes just like others he does seem to recognize as falling into this classification. Though he even describes these in terms that are rather ambiguous like "diffuse counter tails", "narrow counter-tails" and "narrow filaments". While others he fits into the ejected class by calling what others would call narrow tidal features, "jets". One of which likely doesn't even exist. You have to consider his classification scheme in light of this ejecta belief. True galaxies to eject matter. Black holes in the cores, when active, emit strong jets of electrons and maybe other particles that radio telescopes see as huge plumes and a very few of which are seen in visible light such as the black hole generated jet in M87. Also massive star formation can create solar winds of such intensity they can carry matter in the form of gas and dust out of a galaxy. M82 would be an example of this. But massive objects, that is very rare. A run-away star ejected when its companion blows itself to bits in a super nova explosion may happen but these are rare random events not capable of making a jet. Most of Arp's jets are due to tidal interaction that can create "beads on a string" effects as mentioned in a previous post. I'll have more of these in the future when I get them processed. But in 1966 they did seem to be jets, at least to Arp. Arp's catalog is fascinating but some of his ideas are rather out there in left field, assuming space has a left field. Still they force astronomers to better support the current models and that's always a good thing.

While this area has been surveyed by the SDSS I couldn't find an SDSS image of this one on the net.

The tiny reddish galaxy, OK they are all that color, just east of Arp 195 is 2MASX J08540227+3508470 at just over one billion light years, so likely not related.

Continuing east about half way to the edge from Arp 195 is a larger appearing galaxy. The halo around it is real, not haze. It is 2MASX J08543214+3509203 at about 770 million light years.

NW of Arp 195 is a small galaxy of magnitude 21.1. It is SDSS J085329.60+351242.4 and is nearly 4.5 billion light years away. It is also listed as a radio source. I have little resolution on it but it looks oddly shaped as if it could be two interacting galaxies. I wouldn't normally suggest that but being a radio source means it has a lot of activity going on, maybe just an energetic AGN at the core or maybe a collision. I'm surprised I was able to get it through the haze layer. Normally my background is about 300 ADU. For this image it was 2900 thanks to the haze or light fog. I figured 20th magnitude would be my limit.

Below and a bit west of the above galaxy are two more that don't appear all that different on my image. The upper one is a bit redder and a bit smaller and dimmer but not by much. Yet that slightly redder and dimmer one is 2.2 billion light years away compared to only about a quarter billion for the one below it. Obviously you can't expect galaxies to all be average size and brightness.

Two asteroids were in the area when I took the image (165805) 2001 RB58 at magnitude 19 on the west side of my image and (115475) 2003 UV4 at magnitude 18.6 on the east side.

I've been asked for more annotated images so I've made one for this image. It just shows distance to the various galaxies and one quasar in the image. I find it interesting that the most distant galaxy is further away than the quasar. All labels are directly west (right) of the galaxy or quasar they refer to. A few times there was a second galaxy that forced me to lower the label a bit so not to overwrite this other galaxy. That put the label below the unlabeled one. Oddly, when this happened the second galaxy never had any red shift data, even if it was brighter. This happened with quite a few pairs in the image, not just those that got in the way of my labeling. In fact only one pair had red shift data and they turned out to have almost exactly the same redshift. Notice there's a group around 1.6 light years. NED lists a possible galaxy cluster, NSC J085511+350146, with a photographic red shift of about 1.9 billion light years in the lower left of my image. The label goes through the center coordinates. I see nothing there. South of it there are some faint galaxies, right in the SE corner of my image. Looking at the SDSS data for the area I see no jump in the galaxy count around the given coordinates either. But the label is there.

Arp's image with the 200" telescope: http://nedwww.ipac.caltech.edu/level5/Arp/Figures/big_arp195.jpeg



From the Newsletter Archives – 1984

The following is a portion of a letter received from Rick Johnson. Rick is one of our more active members who takes off each summer for Park Rapids, MN.

"We have been having some great heat inversions lately spurring all sorts of UFO reports. Most are Capella and Aldebaran turning all colors of the rainbow. Last night I watched as Capella split into three pieces several times while skimming the northern horizon (it is circumpolar up here).

I suspect that really will make believers out of these people. Early Sunday morning a deputy sheriff went off the road chasing Aldebaran. He ripped out a line of mailboxes before going into the ditch. According to today's paper he claims a green ray beam from the UFO shoved him off the road! Heat inversions can be so much fun!!"

Rick has since reported to this reporter that his lights have been flickering on and off. Also the one side of his face is sunburned red but he doesn't remember how it got that way. I'd check out back to see if any WWII airplanes have suddenly appeared out of nowhere...



THE *Prairie*
Astronomy
Club

Amateur Astronomy --
A Hobby as Big as the Universe

The Prairie Astronomer is published monthly by the Prairie Astronomy Club, Inc. Membership expiration date is listed on the mailing label. Membership dues are: **Regular \$30/yr, Family \$35/yr.** Address all new memberships and renewals to: **The Prairie Astronomy Club, Inc., PO Box 5585, Lincoln, NE 68505-0585.** For other club information, please contact one of the club officers listed to the right. Newsletter comments and articles should be submitted to: **Mark Dahmke, PO Box 80266, Lincoln, NE 68501 or mark@dahmke.com,** no less than ten days prior to the club meeting. The Prairie Astronomy Club meets the last Tuesday of each month at Hyde Memorial Observatory in Lincoln, NE.

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FIRST CLASS MAIL

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Next PAC Meeting
TUESDAY
September 29, 2009
7:30 PM
Hyde Observatory