



# The Prairie Astronomer

July, 2008

Volume 49, Issue #7

The Official Newsletter of the Prairie Astronomy Club

## PAC Program

Finally Understanding Quasars and Supermassive Black Holes: a 45-Year Journey -- Martin Gaskell (see page 6 for more information)

## In This Issue

Focus on Observing Clubs, Rick's Observatory Report, Martin Gaskell's program for the July PAC meeting.

## Featured Photo

Arp 84 / NGC 5394/5, by Rick Johnson.

“This one looks like a blue heron eating a fish. The body is NGC 5395, the neck and head NGC 5394 and the "fish" in its beak is SDSS J123826.24+372708.7. Blue herons have a crest that normally lays back across the head and down the neck. Even that shows in this galaxy trio. Actually the fish is unrelated to the other two and is not part of the Arp designation. The two galaxies making up the blue heron are a bit over 160 million light years from us while the fish is a bit over 650 million light years away.” (see page 7 for more information)

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

Saturn image courtesy NASA.



# The Prairie Astronomer

## NEWSLETTER

### Focus on Observing Clubs--Jim Kvasnicka

#### Sunspotters Observing Club

This month we are looking at a different kind of observing club. The Sunspotters Club is designed to encourage solar observing with an emphasis on educating the amateur astronomer on solar features and their evolution.

#### **Caution**

Before starting any solar observing make sure you have safe filters and a safe set-up. The Sunspotters Club is designed for white light filters. Unsafe filters can damage your eyes permanently!

For the Sunspotters Observing Club you will make two sets of drawings. The first set is five detailed sketches of sunspot groups. The second set is 20 or more sketches of the whole solar disk during two solar rotations. One rotation is about 30 days.

The five sunspot sketches must be done on different days. The drawing must be labeled to include observing conditions, equipment used, and sunspot class. There are examples of drawings on the Astronomical League web site under the Sunspotters Club that show the features that must be identified and labeled.

In the second set of drawings you will sketch the whole solar disk during two different solar rotations. Again the Astronomical League web site has examples of drawings for the whole disk and what needs to be identified and labeled. You should have a minimum of 20 drawings for the two rotations.

The Sunspotters Club will introduce you to different solar terms and their definitions that you need to know. Blank drawing forms can be downloaded from the Astronomical League web site for you to use, or you can design your own.

If you have any questions regarding the Sunspotters Observing Club or need help getting started please ask me and I will be glad to assist you.

#### **List of PAC Sunspotters Observing Club Awardees**

No PAC member has completed the Sunspotters Observing Club.

## Club Events

Club Star Party  
Friday, July 25, 2008

Nebraska Star Party: July 27th -August 1st, 2008

PAC Club Meeting  
Tuesday, July 29, 2008 7:30pm @ Hyde Obsv.

Club Star Party  
Friday, August 1, 2008

PAC Club Meeting  
Tuesday, August 26, 2008  
7:30pm @ Hyde Obsv.

Club Star Party  
Friday, September 05, 2008

Next newsletter submission deadline: August 16th.

Official Club Star Party Dates for 2008:  
Aug 1, Aug 29, Sept 26, Oct 31, Nov 28, Dec 26.

Alternate Dates:  
Sept 5, Oct 3, Oct 24, Nov 21, Dec 19.

## Club Telescopes - Checkout Policy

To check out one of the club telescopes, contact Cassie Etmund at [ccggymnast1@aol.com](mailto:ccggymnast1@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.



## ON THE NET

**PAC:**  
[www.prairieastronomyclub.org](http://www.prairieastronomyclub.org)

**PAC E-Mail:**  
[info@prairieastronomyclub.org](mailto:info@prairieastronomyclub.org)

**NSP:**  
[www.nebraskastarparty.org](http://www.nebraskastarparty.org)

**NSP E-Mail:**  
[info@nebraskastarparty.org](mailto:info@nebraskastarparty.org)

**OAS**  
[www.OmahaAstro.com](http://www.OmahaAstro.com)

**Hyde Observatory**  
[www.hydeobservatory.info](http://www.hydeobservatory.info)

**Panhandle Astronomy Club**  
[Panhandleastronomyclub.com](http://Panhandleastronomyclub.com)

**PAC-LIST:** You may subscribe to the PAC listserv by sending an e-mail message to: [imailsrv@prairieastronomyclub.org](mailto: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](mailto:pac-list@prairieastronomyclub.org)

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



# The Prairie Astronomer

## NEWSLETTER

### Club Business

Minutes of the Prairie Astronomy Club Meeting for June 24, 2008

President Brian Sivill called the meeting to order 14 members, 2 guests.

Announcements:

Due to a conflict with NSP 15, the date of the next PAC meeting is to be determined.

Camp Carol Joy Holling, near Mahoney State Park will host Astronomy Night on June 26, 2008 from 10:30-11:30.

The next club star parties are scheduled for Friday June 27 and THURSDAY July 3, in consideration of the July 4 holiday. The next Mahoney Star Parties are scheduled for July 11, August 8, and September 19, 2008 at Mahoney State Park. The National Astronomy League Convention will be July 18/19 in Des Moines Iowa. The 15th annual Nebraska Star Party will be held July 27 - August 1 at the Snake River Campground on Merritt Reservoir near Valentine, Nebraska.

Club business:

Dave Churilla reported on recent outreach activities, including Waterfest held on June 14. With help from Cassie Etmund, Bob Kasvinski, Jim Kvasnicka, and Joey Churilla. Dave also presented a list of future events. Club observing chair, Jim Kvasnicka reported on objects for viewing for the rest of this month and July. Brian presented some ideas for other club activities he would like our club to consider doing, such as a picnic, star parties for planets, double stars, etc. in addition to our regular new moon observing sessions, and some ideas for trips our club could arrange, such as to the Cosmosphere in Kansas, or to other observatories in Nebraska. To finish up, Steve Lloyd provided some eyepiece cases for a drawing. Winners included: Bill Lohrberg, Jim Kvasnicka, Lee Taylor.

Adjourn to our program, the new DVD version of Hyde's presentation of THE SUMMER CONSTELLATIONS

Respectfully submitted by,  
Lee Taylor

### **July Program: Finally Understanding Quasars and Supermassive Black Holes: a 45-Year Journey**

Former UNL astronomer and PAC member Martin Gaskell, who moved to the University of Texas last fall, returns to give a personalized illustrated account of what has been accomplished through his research, and research of his students, collaborators, and other astronomers, in getting answers to the key questions about the nature of supermassive black holes and the roles these black holes play in galaxy formation. As well as telling how many of the objects we see in our telescopes got to be the way they are, Martin will share some insights into the realities of the scientific process that are illustrated by how astronomers have wrestled with black hole issues.

Martin comments: "My main research area throughout my career has been the study of supermassive black holes in the centers of galaxies. I realized a month or so ago after attending a quasar conference on the island of Crete that a lot of the main answers to long-standing questions about galaxies, quasars, and black holes have recently fallen into place, and that, although people outside the field don't realize it, most of the big questions about quasars that astronomers have struggled with for decades now have answers. I think this is interesting in itself, but when I thought about our progress, I was surprised to realize how many personal connections I have had to the advances and the people involved. I thought that the inside story I've been fortunate to witness and be part of was perhaps worth telling." This will be a non-technical, family-friendly talk suitable for all ages.

## Observing: What to View in August -- Jim Kvasnicka

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

### Meteor Showers

The Perseid meteor shower will peak the morning of August 12<sup>th</sup> just before sunrise. The waxing gibbous Moon will set at 1:14 am which will enhance the viewing.

### Planets

**Venus:** Low in the west at magnitude -3.9 but looks fainter because of the low altitude.

**Saturn:** To the upper left of Venus at magnitude 0.8.

**Mars:** To the upper left of Saturn at magnitude 1.7.

**Mercury:** To the lower right of Venus at magnitude -0.9, difficult to see.

**Jupiter:** In eastern Sagittarius at magnitude -2.6 and 45" in size.

**Uranus and Neptune:** In Aquarius and Capricornus. Magnitudes 5.8 and 7.8.

### August Messier List

**M10/M12:** A pair of globular clusters in the middle of Ophiuchus.

**M9/M107:** Two small, faint globular clusters in Ophiuchus.

**M19/M62:** Another pair of globular clusters in Ophiuchus separated by 4 degrees.

**M6/M7:** A pair of large, bright open clusters in Scorpius visible to the naked eye.

**M8/M20:** The Lagoon Nebula and the Trifid Nebula in Sagittarius.

**M21:** Small bright open cluster next to M20 in Sagittarius.

**M23:** A large open cluster in Sagittarius.

**Last Month:** M3, M4, M5, M53, M68, M80, M83

**Next Month:** M13, M14, M22, M28, M54, M69, M70, M92

### NGC Objects

**NGC 6781:** A planetary nebula in Aquila similar to M97.

**NGC 6990/6992/6995:** The Veil Nebula in Cygnus. Use an OIII filter.

**NGC 7000:** The North American Nebula in Cygnus. Use a filter and low magnification.

### Double Stars

**Struve 2404:** Close pair of orange stars in Aquila.

**57 Aquilae:** White pair.

**Beta Cygni:** Albireo, beautiful yellow and blue pair.

**31 Cygni:** Yellow primary with a blue secondary.

**61 Cygni:** Orange pair.

**Epsilon Lyrae:** The Double Double.

**Zeta Lyrae:** Pair of yellow stars.

**Beta Lyrae:** Yellow primary with multiple white stars.

### Challenge Object

**PK 80-6.1:** The Egg Nebula. A very small proto-planetary nebula in Cygnus.

## 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**

## CLUB STAR PARTIES

**Club star parties are held monthly on the Friday night nearest the new moon. Since they are held on private land, they are for club members and invited guests only. If you'd like to attend a star party, please contact one of the club officers. Check the club website members-only area for directions to the site.**

# The Prairie Astronomer

## NEWSLETTER

### Observatory Update--Rick Johnson

I had a few days of barely manageable weather and one quite good one this week which allowed me to capture a couple ARP galaxies. First up is one I took under rather poor conditions the first day things started to clear of Arp 188, the Tadpole galaxy, UGC10214. While the image says I used 60 minutes of Luminosity data clouds and lousy transparency limited it to more like 15 under good skies. This made for a very noisy image and I had to do some rather nasty processing to deal with the noise. The lousy light transparency meant I didn't pick up the "tail" all that well. Arp classifies it under "narrow filaments" which obviously refers to the tail which, isn't connected to any of the spiral arms. SIMBAD catalogs it as an interacting pair. So is it calling the streamer the remains of the galaxy it is interacting with?

I wanted to find the distance to the little edge on to its right but had a major surprise. While both NED and SIMBAD list OVER 5700!!! galaxies within 5 minutes of the Tadpole (usually the count is 5 to 10 if the area is really crowded) but the one I wanted to know about was not one of them! In fact the only galaxy in the area I could find that's in my photo is the golden round elliptical to the southwest (about 5 O'Clock) just above a bright blue star. It is at the same distance as the tadpole. So what about those 5700+ other galaxies. All are dimmer than 24th magnitude, thus far below my limit and were taken from Hubble's images of this galaxy.

But there's something even more interesting in this photo. When I download the first frame of a new field I always compare it to the Palomar Digital Sky Survey plates. Since my images usually go deeper than these plates it is common to find faint stars not on the survey but this time I came up with a rather "bright" one. Its the star above and right of the nucleus. It is 6.2" north and 7.2" of arc west of the core of the tadpole. Had I found a Supernova? Yes it was a super nova but it had been discovered 3 days earlier by the Lick Super Nova Search . It missed me by 3 days to paraphrase Maxwell Smart. Close but no cigar. I did submit it to a webpage that acts as a clearinghouse for Supernova images. You can find the Lick discovery image there, as well as other near discovery images. Scan down column of thumbnails for 2008dq which is the official name for it. As I type this it is the 6th thumbnail which is the Lick discovery photo. Mine isn't the discovery one but comes in third. Still I get something for my efforts -- a WOW! label. I would much prefer a discovery label. Oh well. <http://www.supernovae.net/snimages/> Before you get excited about my image being better than that of that of a major observatory with millions of dollars in their telescope keep in mind that this is a survey image. Quality isn't what they are going for. Likely the total exposure time of their image is on the order of 15 seconds while I needed 2 hours! All they are after is finding that speck of light (or dark as surveys usually work in the negative since that is more sensitive to faint things) the only expose long enough to reach the magnitude limit they are after. It appears Lick is shooting for 19th magnitude which their survey scope should reach in 15 seconds or less. The shorter the exposure the more galaxies they can check in a night. I wasn't trying to find a super nova. It just happened. This SN is classed as a type 1c. For more on supernova see: <http://www.lancs.ac.uk/ug/hughesri/>

This galaxy also had a SN last year 2007cu. Two in one galaxy in one year is VERY VERY rare. The current one was caused when a massive short lived star blew up. The one in 2007 was a white dwarf orbiting a normal star very closely. It pulls matter from the ordinary star until it reaches a detonation point and blows up. Such stars are usually older than those that form a 1c type of super nova. So they are likely unrelated and their closeness in time only a coincidence. The Tadpole and the elliptical I mentioned are a bit over 400 million light years from us.

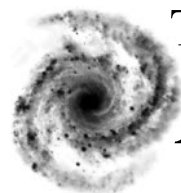


This update's other Arp galaxy is Arp 84 / NGC 5394/5 (see photo on page 1). Earlier I had one that looked like a loon. This one looks like a blue heron eating a fish. The body is NGC 5395, the neck and head NGC 5394 and the "fish" in its beak is SDSS J123826.24+372708.7. Blue herons have a crest that normally lays back across the head and down the neck. Even that shows in this galaxy trio. Actually the fish is unrelated to the other two and is not part of the Arp designation. The two galaxies making up the blue heron are a bit over 160 million light years from us while the fish is a bit over 650 million light years away. Herons may have a long bill but not that long! Arp classifies this one under "galaxies with bright companions". The interaction has really drawn out the spiral arms of NGC 5394 to make the neck and head. While arms have been ripped off of NGC 5395 helping to shape the body. Notice how the blue arm connecting to the "neck" shows no connection to the rest of NGC 5395 and in fact seems to get wider when it should get narrower. Also the arm at the top going to the left comes out of nowhere and again isn't connected to the galaxy. Obviously a lot of interaction is going on here.

The odd blue galaxy at the far left is MAPS-NGP O\_271\_0033361 but I can find no distance data. To the right of the fish is a red star. below it is a small starlike galaxy. That one is 1.8 billion light years away. Near the lower right corner are 4 galaxies. The two upper ones rather elongated the lower ones round, all are slightly to strongly orange. They are all about 770 million light years away though I found no listing as a galaxy group for them. Near by to the upper right is a small blue galaxy that is 1.1 billion light years away.

The bright orange elliptical above and a bit left of the "bird" is IC 4356 and about the same distance from us as the "fish". It may be part of its galaxy group. The other galaxy to its right is an unknown. To the immediate left of NGC 5395 is a small bright blue galaxy. It too is located at the same distance as the fish so may also be part of its group. In any case, this image covers a lot of space. Sharp eyed observers may spot a star between the core of NGC 5394 and the inner upper arm. No, this time it isn't a super nova. Just a star in our galaxy that happened to line up that way. Same as a brighter one makes the eye of the "heron".

I had one really good night a couple days ago and started a really tough nut to crack. I had some really good data early on that first night only to discover I had been away from this for so long I forgot to turn on autosave and it was all lost. I've gotten some new data but not of that quality. I was so excited to have a night better than any since I built the observatory I wasted most of it to a stupid mistake. I'm still kicking myself over that one. Still I think I can salvage a fuzzier version. I have a lot more work ahead on it. Maybe next update it will be ready.



# 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.

<b>PRESIDENT</b>	Brian Sivill (402) 325-0997 nanoamps@windstream.net
<b>VICE PRESIDENT</b>	Cassie Etmund
<b>2nd VICE PRESIDENT (Program Chair)</b>	Jack Dunn jdunn@spacelaser.com
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**Next PAC Meeting**  
**July 29, 2008**  
**7:30 PM**