

# "CLEAR SKIES"



NEWSLETTER of the CHAMPAIGN-URBANA ASTRONOMICAL SOCIETY, Inc.  
An affiliate of the Champaign Park District

January, 2008

## WELCOME NEW OFFICERS

### CUAS OFFICERS MESSAGE

Jan pres. report!

On my quest for what is up this week I noticed that the full moon and Mars were playing chase as they came up, however as the night progressed it was easy to see that Mars was going to win the race to the western horizon. I know there are many technical terms that can be thrown out to explain this but sometimes it is just fun to lay back and watch. By the way our sunroom is a wonderful place to look through the glass roof at the moon as it has a built-in moon filter, heated floor and oh yes a nearby restroom.

Come in January to the CUAS meeting at the Staerkel Planetarium and see the events of the upcoming year take place along with commentary; it is warm, always has clear skies, padded seats, no bugs and of course restrooms. At our February meeting we try to help all those who received telescopes (club members or not) learn how to use their scopes and answer that question, "What do I do now?" along with other frequently asked questions. The meeting is always fun and even if you are still in the just looking mode you might find out what would be a good purchase for you, ranging from come to some public observing sessions that we have on the first quarter moon Saturday every month to buying your dream scope and camera and a dark site to use them.

An event that you might want to put on your calendar is a February 20 evening viewing session at the Staerkel Planetarium of the lunar total eclipse, which will last about an hour. Come and enjoy as this is not an event that happens locally every month or year or longer. All the Planetarium's facilities will be open, some refreshments (hot cocoa) inside and of course a variety of telescopes will be available outside.

Later in the year we are trying to get some interesting speakers to come and talk about the things that interest them in the general topic of astronomy, these might be people who build telescopes, review telescopes, use telescopes to find objects that might hurt us in the future and people with titles like professor, company president, researcher and others tell us about the amazing things that are out there starting just 100 miles away and at distances that are hard for us to fathom. Come to each meeting with



### CUAS DIRECTORY:

Guy Hampel, President	352-3690
John Stone, vice Prez.	337-1893
Mike Conron, Secretary	355-5996
Willard Brineger, Treasurer	356-5929
Mike Lockwood, 5 <sup>th</sup> Director	398-9778
Mike Rosenberger, Obs. Dir.	598-2254
Phil Wall, Webmaster	352-5442
Bill Marble, Newsletter Ed.	359-6407

a question or a 2 minute summary of something that you read or saw concerning astronomy. Remember the only question that is stupid is the one that you do not ask. Looking forward to seeing you at the meetings and/or hearing you at an observing session this year.

Another item on the agenda for this year is the reworking of the club's 16" cassigrain telescope's mount. This modification is to provide tracking of objects found during public observing sessions to allow our guests to see the objects in a timely manor without the club member having to re-center the object after every other person. There have been as many as 40 people standing in line at some of the summer and fall public sessions last year. Dave Leake and I were at the fall public session that the Decatur group and the park district put on with well over 100 people there to quickly see objects of the major types and any personal requests. The club brought their Go To scopes that with minor help from the club member at the scope got the objects quickly into view. The club member was available to add side comments, history, facts or just talk to the guests. The guest's interest span is usually short especially when small children are present (you have maybe 30 minutes total time from full crowd to few interested late nighters). The initial cost estimate for this work is in the \$1,000 range and will be done by club members or friends of club members. Later this winter we will vote on it.

Last year's attendees of the local and distant star parties all stress going to one, plan early and often and maybe we as a club could attend some of these. Last September (the prime month) there were many here locally and as many as 5 with-in 50 miles of the route we take to New Jersey. Lets talk early about going, I think Mike Lockwood said the Southern Star Party in Florida is in January or February, he also mentioned that there is one in South America during their summer, that would be a trip!

Guy Hampel  
President

**IT IS TIME TO RENEW YOUR MEMBERSHIP. BASIC MEMBERSHIP IS \$15.00. THOSE WITH KEYS IS \$25.00. DON'T GET DROPPED FROM THE ROLLS.**

## **LOOKING UP THIS MONTH**

Happy New Year, everyone! Be sure to check out our annual preview of sky and club events for the year in this issue. For this month, we begin with Mars in the evening sky. Since the red planet is past opposition, it is already above the horizon as the Sun sets. In mid-January, Mars is high on the meridian just before 10pm. Being this high in the sky means you're looking through less air and the views should be relatively steady. But now the Earth is speeding away from Mars so both its brightness and apparent diameter will decrease this month. Mars continues to retrograde through Gemini to between the horns of Taurus the Bull. It will cease this motion at the end of the month and head back eastward through Gemini. On January 19 a nearly full Moon appears to be almost touching Mars.

We should also mention Mercury. Look southwest, low on the horizon during the second week of the New Year. Greatest separation occurs on January 21 when Mercury is 19° east of the Sun. On this evening, Mercury sets just after 6:30pm, a little over an hour after the end of evening twilight. Don't mistake it for Fomalhaut to the left and Altair to the right.

Saturn rises after Regulus in the east at 8pm on the 20<sup>th</sup>. Since it is also undergoing retrograde motion, you can watch Saturn get closer to Regulus, coming to within 7° by the end of the month. The rings are tilted a scant 6° as seen through a telescope. Saturn will reach opposition next month.

January's "big event" occurs at the end of the month and involves Venus and Jupiter, the two brightest objects in the sky besides the Sun and Moon. On February 1, the pair is 0.60 apart, but they appear very low in the southeast. They technically rise at 5:15am but give them an hour to get higher in the sky. Morning twilight begins at roughly 6:15am. In late January, Venus is higher than Jupiter, but the two will switch positions with Venus apparently getting closer to the Sun and Jupiter getting higher in the sky. Earlier in the month (January 5) a lovely waning crescent Moon appears below Venus and just below Antares.

Speaking of the Moon, it skims the northern end of the Pleiades star cluster late in the night of January 17-18 when the Moon is a waxing gibbous, meaning the stars will disappear behind the Moon's dark limb. Look after midnight, near 2am.

The Earth reaches perihelion (the point closest to the Sun) on January 2. On this date, we'll be 91,401,591 miles from the Sun.

Lastly, we close with Comet Tuttle, normally a dim comet that graces the inner solar system every 13.6 years. It ends up that the comet comes fairly near the Earth this go-round, with perigee coming on New Year's Day. Being close to us means it appears brighter and also moves swiftly in our winter skies. As we begin 2008, Tuttle is nearly due east of the Great Square of Pegasus and about a square's width away. But it's heading south quickly at about 40 per day! Some predictions have the comet at 6<sup>th</sup> magnitude so use binoculars and look before the Moonlight interferes on January 12<sup>th</sup>. On the night of the 6<sup>th</sup> and 7<sup>th</sup>, the comet passes Alpha Piscium and by the 10<sup>th</sup> it's already in Cetus. Good hunting!

-DCL

## ***Moon Phases***

### ***Waning Gibbous Moon***



1 <sup>st</sup> quarter	January 15	February 17
Full	January 22	February 21
Last quarter	January 30	February 29
New	January 8	February 7

If you would like to see the phases of the moon, past, present, and future log on to <http://aa.usno.navy.mil/data/docs/MoonPhase.html#y2007>

### ***Trivia space facts:***

A Martian year last 687 days. The two Mars Exploration Rovers have now spent more than two Martian years exploring the planet's surface.

Question:

What two asteroids is NASA's Dawn spacecraft, launched September 27, 2007 scheduled to visit?

Answer next newsletter.

## *Looking ahead to 2008:*

It's time again for our annual look ahead to events in 2008. We'll start with the planets. For the inner planets, you need to catch them when they are on either side of the Sun and not in between. Mercury has three evening and three morning apparitions, but not all are favorable. In the evening, you have a decent chance to see Mercury from January 11 to February 3, though a better view comes between April 27 and June 1. Basically the entire month of May provides a great chance to see the innermost planet with greatest separation from the Sun occurring on May 13 when Mercury will set at 10pm CDT. For early risers, June 20 to July 20 is very good but October 12 to November 12 is better. On October 22 Mercury rises at 5:45am.

It is not a good year for Venus. It begins the year in the morning sky, rising at 4:30am on New Year's Day. This time gets nearer to dawn as we head into March, when Venus sets in twilight. Venus will hug the eastern horizon until it passes behind the Sun on June 9 and then heads into the evening sky . . . but not quickly. In fact, Venus sets in the evening twilight until August! By October 1 it has risen higher in the sky and, by New Year's Eve 2008 it's very high in the sky, setting at 8:30pm.

For the outer planets, the best time to see them is when they are closer to us, which occurs several weeks on either side of their opposition. At opposition, an outer planet is seen opposite the Sun, meaning it rises at sunset and is visible all night. There is no opposition of Mars in 2008 as this occurred in December of last year. For the other planets the opposition dates are: February 23 for Saturn, July 8 for Jupiter, August 14 for Neptune, and September 12 for Uranus. So Saturn will be featured at early Spring Skywatches and Jupiter in late summer.

As the planets move around the Sun at different speeds, they appear to catch and pass each other throughout the year. On February 1, the two brightest objects (besides Sun and Moon) pass each other in the morning sky. Jupiter and Venus come to within  $0.6^\circ$ , which would be extra spectacular if they weren't so low, rising only an hour before sunrise.

In the evening sky, four planets play tag in the evening twilight. Mars comes to within  $0.7^\circ$  of Saturn on July 10. Then Saturn passes Venus ( $0.5^\circ$ ) on August 13. Mercury joins the fun passing Saturn ( $0.8^\circ$ ) on August 15, Venus ( $0.9^\circ$ ) five days later, and Mars ( $2.5^\circ$ ) on September 6. Mars and Venus are  $0.3^\circ$  apart on September 11 and Mercury and Venus are  $3.6^\circ$  apart the next night.

We'll have a couple of Sun/Moon events this year, but only one is nicely placed for observing. That being a total lunar eclipse on the night of February 20 . . . prime time! The umbral phase of the eclipse begins at 7:43pm with mid-eclipse being at 9:26pm. We'll have a full Moon again by 11pm. Anyone want to do any public observing? On February 7, there's an annular solar eclipse visible in Antarctica and a total solar eclipse on August 1 . . . if you're visiting Siberia and mainland China!

As far as comets go, they are tough to predict! You can never tell when a comet will brighten (e.g. Comet Holmes) or when a new one will be discovered. Several periodic comets are due in 2008, though. You may have already read about Comet Tuttle. If all goes as planned, it should be an easy binocular object high in the southwest just after New Year's Day, situated just east of the Great Square of Pegasus in Pisces. This high inclination comet comes to within 0.25 AU of the Earth at this time! It is heading southward. Comet d'Arrest is closest to the Sun in August and should be at 9<sup>th</sup> magnitude in June in Aquila. Comet Wirtanen may also reach 9<sup>th</sup> magnitude in February and could stay visible until May.

The dust from past comet passages can cause meteor showers. That's a great segue except that 2008 isn't a good year for meteor showers. Most showers are best observed in the pre-dawn hours under a dark, Moon-less sky. There's a thin morning moon for the Quadrantids (January 3-4) and the Eta Aquarids (May 5-6) will be nice as well. Same for the July 28-29 Delta Aquarids. But the major fall showers aren't good. The Moon is near full for the August Perseids, a waning gibbous for the October Orionids, again nearly full for the November Leonids, and full for the December Geminids.

As for NASA, the Voyagers are leaving the Solar System, Cassini is still at Saturn, and the rovers are still working on Mars. The Phoenix lander will touch down near the polar cap of Mars at 6:35pm CDT on May 25. In other launches, ESA should launch its first transfer vehicle, the Jules Verne, in January, NASA launches a new Gamma Ray Telescope in early February, and a new weather satellite (GOES O) is launched in April. If all goes as planned, there should be four shuttle launches in 2008 with Endeavor delivering a Japanese Logistics module to the ISS in February, Discovery taking another Japanese robotic arm to the ISS in April, Atlantis to do a Hubble Space Telescope servicing mission in August and Endeavor returning to the ISS in September on a cargo delivery mission. The Lunar Reconnaissance Orbiter (LRO) will return us to the Moon on Halloween.

The Staerkel Planetarium will have three more "World of Science" talks on the first Fridays of February, March and April (see the schedule online), plus we'll show all of our 35mm films one more time to the public before we retire them. The First (and Last) 35mm film festival begins in March and goes through April. Of special note to CUAS members may be "Arctic Light" on the aurora and "The Space Shuttle Movie." The band "Stars of the Lid" are due to visit on April 22 for a live concert (sponsored by Krannert Center) and CUAS, the planetarium, WILL, and the libraries will join together for a "Rocket into Space" event on April 24 from 5:30 to 8:30pm.

CUAS will hold Skywatches on the Saturday closest to the first quarter Moon out at the observatory. Check the newsletter for dates. We need to make good use of our equipment out in the country. Monthly meetings are held on the second Thursday of the month at the planetarium at 7pm.

Club members like to visit star parties and there are several this year. Be sure to visit their respective web sites to acquire the deadlines for registration (which are usually about a month in advance of the party). The "Prairie Skies" star party will be on September 25-28 at Camp Shaw-Waw-Nas-See, just northwest of Kankakee. The Chicago Astronomical Society's "Astrofest" will be held September 5-6 at Vana's Farm. The Illinois Dark Skies gathering will be held at the Jim Edgar Panther Creek campground north of Springfield also in September (but, at press time, the dates weren't on the web site). Keep an eye on this newsletter in the new year for news of observing sessions at the water fowl area at the Middle Fork Forest Preserve, Walnut Point State Park, and Allerton Park . . . all three beautiful dark sky sites. Have fun in 2008!

## **CUAS NEWS**

**REMEMBER TO RENEW YOUR MEMBERSHIP DUES for 2008!** Use the form at the end of this newsletter and do this today so you can be with us for the next year. Dues are \$15 per year, plus, if you're a keyholder, subscribe to a magazine with the club's discount, or just want to make a donation to the group, now is the time! As of the week before Christmas, only 27 members have renewed!

Thanks to Williard, we have 20 **2008 Astronomy calendars**. They are \$10 for members and \$12 for non-members, first come, first served! Get your copy while supplies last at the club meetings. This is a fundraiser for us!

Webmaster Phil Wall reports that our **cuas.org** domain name and our web account is up for renewal on January 2. Standard web hosting at Prairienet is \$120 but, given our 40Mb site, we'll need to spend more. As this issue goes to press, Phil has already researched other hosts and the board will make a decision on what to do. Phil is open to suggestions on the [www.cuas.org](http://www.cuas.org). Willard also reports our insurance went up \$100, too.

At the December 17 officer's meeting, thought was given to having **featured speakers** at our meetings. Names that came up include UI astronomer Leslie Looney, Dennis Percik (Hampshire, IL . . . a comet

photographer), Bruce Carball (Chicago astrophotographer), and Roland Christian (owner of Astrophysics). We may invite other clubs and ask them to maybe share some of the costs.

Speaking of costs, Bill Marble is using 53 stamps a month to mail the newsletter. It is your option to continue to receive the **newsletter via the mail** but consider switching to receiving it electronically as a pdf file. You will get your news faster, same on paper, save the club some money, plus the links are live and the photos in color!

In the future **observing events** department, the board will try to work up some dates for the year's observing events so the publicity can get out well ahead of time. At the officer's meeting we discussed having one event in the Champaign parks, one in an Urbana park, one at Allerton park, one at the Middle Fork near Rantoul, and maybe a repeat trip to Rockome Gardens. Of course we can do more than one, but these would be in addition to the monthly observatory open houses. It was also decided to observe the prime-time total lunar eclipse on Wednesday, February 20 from the planetarium.

**Light pollution news:** An update to last month's light pollution news . . . quite a few things have been happening since last month! The Urbana City Council has been discussing campus lighting, which even made the News-Gazette. Several community members including our own Bob Lozar, Bob Rubendunst, and Dave Leake had letters-to-the-editor published. Councilman Charles Smyth will have several meetings just after the first of the year to get more of an idea of where this project stands. IF you live in Ward #3 (Robert Lewis) or Ward #5 (Dennis Roberts), write your councilman and tell them about your desire for full cut-off streetlights to improve safety and security. A wonderful email group complete with legislators, professors, engineers and even lighting designers has come out of the discussion. They have prepared a multi-page document of resources.

The County Board is to meet on January 17 at the Brookens building to discuss special use permits and exterior lighting. John Hall, Zoning administrator, will send us some information prior to that meeting. A course of action will appear on the listserv.

The CUAS draft ordinance continues to be revised. A request be made that it be much shorter and to the point. Other ordinances can be downloaded from the [www.darksky.org](http://www.darksky.org) web site. More info on upcoming will appear on the club listserv.

A reminder that CUAS is a part of the **Night Sky Network**. As a member, we are supposed to use their materials to conduct several events over the calendar year. If anyone has been asked to do a talk or some other presentation, we have the materials! The latest is the "galaxies" tool kit. The web site for the network is <http://nightsky.jpl.nasa.gov/>.

## TREASURERS REPORT

CUAS Treasurer's Report for December 2007  
Willard Brinegar, Treasurer 2008

As of 12/31/07

### Assets\*

\$ 111.00	petty cash envelope
\$ 2744.49	checking account
\$ 2855.49	Total Assets

### Income\*

\$ 40.00	Key Fees
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\$ 20.00 Calendars  
\$ 180.00 membership renewal  
\$ 38.00 Donations  
\$ 15.00 new membership  
\$ 293.00 Total Income

Outgo\*  
\$521.00 Insurance  
\$ 18.00 CUAS.ORG renewal  
\$130.38 Postage for newsletter  
\$669.38 Total expenses

\*Note: Magazine subscription funds are not reflected in income and expenses since they are simply sent on to the respective publishers. And they are not reflected in the Assets category either.

Champaign Urbana Astronomical Society  
2007 Annual Report  
Prepared Jan 1st, 2008  
By Willard Brinegar, Treasurer CUAS 2008

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Assets as of December 31st 2007

\$2855.49 Total  
\$ 111.00 - petty cash envelope  
\$2744.49 - checking account

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Income, January 1st 2007 through December 31st 2007

100.00% - \$1770.50 Total

19.77% - \$350.00 Sale of 6" Telescope

15.53% - \$275.00 Calendars (including remainder of 2006 calendars)

7.51% - \$133.00 Donations  
40.00 - 2 \$20 donations  
10.00 - 1 \$10 donation  
50.00 - 2 \$25 donations  
15.00 - 1 \$15 donation  
18.00 - 1 \$18 donation

57.19% - \$1012.50 Fees and memberships

180.00 - key fees  
720.00 - membership renewals  
105.00 - new memberships  
7.50 - new half-year prorated membership  
100.00% - \$9.72 Total

26.54% - \$252.08 Champaign Park District for 16 months 1st class postage  
121.70 Jan-Jun  
130.38 Jul-Dec

54.86% - \$521.00 Dome site and equipment

521.00 - 2008 dome site insurance

1.90% \$18.00 GoDaddy for CUAS.org 2 year renewal

16.70% \$158.64 Promotions  
\$ 158.64 - Kalmbach for 2008 calendars

## **OBSERVATORY NEWS**

The club will duplicate more club tri-fold **brochures** for use at events, including the Skywatches. We want to be sure everyone walks away with some club information in an effort to recruit new members.



Spring projects . . . . we probably need to **scrape paint** again, both inside and outside. The inside looks pretty bad in the daylight! Thank goodness it's used in the dark! Also, a new **tarp** for the 16-inch, cooling **fans** in the telescope, and a **vent** for the shed. If you're returning the 8-inch red Dobsonian telescopes to the dome, remember to try to store them horizontally to help protect the mirror coatings.

Mike Lockwood and John Pratt will soon look at the dome-mounted **16-inch scope's mount**, which is very tight in right ascension. The plan is to turn the shaft to a smaller diameter and then replace the two large bearings with five smaller ones. We'll be discussing this at an upcoming meeting. The project could cost \$1,000.

Do we want to bring back the **logbook**? If we have one, you'd have to remember to sign-in what you're at the dome, but it will help us determine how much the dome is used and allow us to estimate an annual attendance . . . which would come in very handy should we pursue a grant.

Here is the **mow list**, though we may be done for the year! When you mow, let the next person know immediately. If you'll be out of town or can't mow, let the next person know ASAP so we don't lose control of the lawn out there. We're currently going through for the second time. Thank you!:

- |                     |                     |                  |                    |
|---------------------|---------------------|------------------|--------------------|
| 1) Mike Rosenberger | 4) Audrey Ishii     | 7) Mike Lockwood | 10) Dick Robrock   |
| 2) Dave Leake       | 5) Willard Brinegar | 8) Mike Matthews | 11) Bob Rubendunst |
| 3) Mark Prather     | 6) Guy Hampel       | 9) Wayne James   | 12) John Stone     |
| 13) Bill Marble     |                     |                  |                    |



## LOOKING AHEAD

January 10                    CUAS Club Meeting                    7-8:30pm                    Staerkel Planetarium  
Our first meeting of the new year! We'll talk about club goals for the year and then use the Zeiss projector to check out important sky events and planet positions for 2008. Note: No public open house was planned for January. Skywatch sessions will pick up again in February.

February 1                    "World of Science" talk                    7pm                    Staerkel Planetarium  
Carol Jo Morgan will be in the dome for "Show Me the Green!" What does it mean to be "green?" Might the streetlight issue come up? Show up and see!

February 9                    Member's Only Observing                    7pm - ?                    Observatory  
Sure, it's cold but why not catch some dark skies at the observatory! Dress warm! Remember that 700E is not the first road to be plowed after a snow, so use caution! Also, if the grounds are damp and soft, it's easy to get stuck. Weather permitting.

February 14                    CUAS Club Meeting                    7-8:30pm                    Staerkel Planetarium  
This will be our annual "Telescope Users Seminar" night where members of the public can bring their telescopes to Parkland and get one-on-one assistance on their operation. Bring your collimating tools and expertise . . . or bring your telescope if you are having issues with it. In the past we have had a dozen people participate!

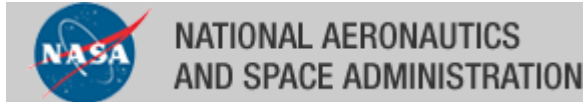
February 16                    CUAS Family Skywatch                    7-9pm                    Observatory  
This will be our first observatory open house of the year. We'll start at 6:30 or 7pm, weather permitting. Take I-57 to the south of Champaign to the Monticello Exit. Take the exit and then turn right (west) on the Monticello Road. Go 1.4 miles and then turn left on County Road 700E. The Observatory will be 0.8 miles south on this road, on your left.

February 20                    Total Lunar Eclipse                    7-11pm                    Staerkel Planetarium  
Bring a telescope to the planetarium on this night and set it up for the best eclipse of the year. We can have a table with info on it inside the lobby (read: warm room!) of the planetarium. This will be open to the public – volunteers will be needed!

March 7                    "World of Science" talk                    7pm                    Staerkel Planetarium  
Vijay Singh (no, not the famous golfer) will be in the dome to talk about ethanol and its future use. Admission is \$1 at the door.

March 7/8                    "Arctic Light" film                    8pm                    Staerkel Planetarium  
A beautiful two-story-tall film was shot at 70-degrees north in Tromso, Norway. This is part of the planetarium's "First (and Last) 35mm Film Festival." See [www.parkland.edu/planetarium](http://www.parkland.edu/planetarium) for more details on the series.

March 8                    Members-Only Observing                    7-?pm                    Observatory



## *Astronomy Club Resources*

Did you know that the Mars Odyssey mission has been going on for six years? It's true. On October 24, 2001 the spacecraft Odyssey went into orbit around Mars. It has been orbiting ever since. In fact the orbiter has been sending information from rovers Spirit and Opportunity back to earth. The Odyssey is now in extended mission. It will continue in this mode for future missions also. The mission seems to have exceeded all expectations, just as the rovers have. So at least there seems to be some up sides to the Mars missions. It is not all doom and gloom.

For more on the Mars missions, log onto this web site.

<http://marsprogram.jpl.nasa.gov/odyssey/mission/>

### 'Death Star' Galaxy Black Hole Fires at Neighboring Galaxy 12.17.07

It seems like those pesky black holes are causing havoc on some galaxies in our universe.

A powerful jet from a super massive black hole is blasting a nearby galaxy, according to new findings from NASA observatories. This never-before witnessed galactic violence may have a profound effect on planets in the jet's path and trigger a burst of star formation in its destructive wake.

Known as 3C321, the system contains two galaxies in orbit around each other. Data from NASA's Chandra X-ray Observatory show both galaxies contain super massive black holes at their centers, but the larger galaxy has a jet emanating from the vicinity of its black hole. The smaller galaxy apparently has swung into the path of this jet.

This "death star" galaxy was discovered through the combined efforts of both space and ground-based telescopes. NASA's Chandra X-ray Observatory, Hubble Space Telescope, and Spitzer Space Telescope were part of the effort. The Very Large Array telescope, Socorro, N.M., and the Multi-Element Radio Linked Interferometer Network (MERLIN) telescopes in the United Kingdom also were needed for the finding.

The above was taken from the NASA web site

[http://www.nasa.gov/mission\\_pages/chandra/news/07-139.html](http://www.nasa.gov/mission_pages/chandra/news/07-139.html)

To view and read the entire article, please go to this website.

### **CHECK OUT ALL CLUB EVENTS ON THE CUAS HOME PAGE:**

<http://www.prairienet.org/cuas> or <http://www.cuas.org>

**"Clear Skies"** is published twelve times per year for its membership. [Circulation: 78]

The Champaign-Urbana Astronomical Society is an affiliate group of the **Champaign Park District**. <http://www.champaignparkdistrict.com>

## MEMBERSHIP FORM

- Enroll me as a new member!  
 Membership renewal [attach mailing label]  
 Change of address only

Name \_\_\_\_\_  
Address \_\_\_\_\_  
Phone # \_\_\_\_\_  
Email address: \_\_\_\_\_

Make all checks payable to:  
"Champaign-Urbana Astronomical Society"

Circle all that apply:

Basic membership	\$15
Observatory key fee	\$10
<i>Astronomy</i> magazine renewal*	\$34
<i>Sky &amp; Telescope</i> renewal*	\$33
Donation	\$ _____
Total Enclosed	\$ _____

\*enclose mailing label

Detach and mail to:

C.U.A.S. Treasurer  
c/o Staerke Planetarium/Parkland College  
2400 West Bradley Avenue  
Champaign, IL 61821

**William M. Staerke Planetarium** has public shows on Friday evenings in August. Call 217/351-2446 for more information.

<http://www.parkland.edu/coned/pla>



**Champaign-Urbana Astronomical Society  
C/O William M. Staerke Planetarium  
Parkland College  
2400 West Bradley Avenue  
Champaign, IL 61821**