

## Central Arkansas Astronomical Society

# The Observer

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- Donald Ferren
- **Treasurer**
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- John Reed
- Don Lewis
- Jim Dixon
- **Activities Director**
- Sandy Morris



An Early Morning Lunar Eclipse by Carl Freyaldenhoven  
details on page 2

## Improving Your Observing Skills

The **Astronomical League Observing Clubs** offer observing programs to enhance your knowledge of Astronomy in many areas. Each Club offers a certificate based upon achieving specified observing goals and a beautiful [award pin](#). The most popular club and the first one is the Messier Club started in 1967 – 2368 individuals have completed it. 2<sup>nd</sup> most popular is the Binocular Messier started in 1991 with 761 completing. Other clubs include Double Star, Lunar, Meteor, Hershel, and the new Outreach. Some clubs have multiple levels of accomplishment such as the Outreach which has 10 hours public events, Stellar Outreach (60 hours), Master Outreach (160 hours). Some require you find objects without automated telescopes (such as Messier), others allow automated telescopes. There are clubs for naked eye (Constellation Hunter, Meteor, Earth Orbiting Satellite), binoculars, and telescopes. The Urban Club is a club for those who are city bound and have light polluted skies. Even several for beginners including Constellation Hunter, Lunar, and Universe Sampler. Sky Puppy is for Kids. Others require sketching (Lunar II, Open Cluster). The Planetary Nebula Club can either be completed by image or visually while the Arp Peculiar Galaxy Club is all imaging. Some of these have amazingly low Award #'s.

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## October Meeting

The October meeting will be held on October 13, 2007 at 7 PM. The presentation will be about Meteorites and Meteors. If you have any samples or personal stories about meteors or meteorites please bring them. If you would like a map & directions to River Ridge Observatory, please just drop an email to: [info@caasastro.org](mailto:info@caasastro.org) . Hope to see YOU there!

## Kyle Edwards—Celebrity

Kyle Edwards' images of the outer giant planets were featured in JPL's "What's Up for September". You can go to this URL to see it— <http://www.jpl.nasa.gov/videos/whatsup/whatsup20070911/> . He has been contacted for inclusion in a British newsletter. Congratulations and way to go, Kyle.



## On the Cover—An Early Morning Lunar Eclipse



Carl Freyaldenhoven had to get up early August 28th to catch this lunar eclipse. But catch it he did with these two images from before and during totality. No special equipment was used, just a standard digital camera. Well done, Carl!

*Image by Kyle Edwards*

## CAAS In The Community



*James Mullins, Jason Harper, and CAAS member James Fisher on KATV's MidDay Arkansas. Photo by Carl Freyaldenhoven.*

### CAAS is on TV!

On July 16, members James Fisher and Carl Freyaldenhoven took time out to represent CAAS at the set of KATV channel 7's Mid-Day Arkansas, along with James Mullins of Pinnacle Mountain State Park. Thank you, James, for representing CAAS in the public eye (by the way — **GREAT** tie!) And thank you, Carl, for providing us with a photographic record of our moments of fame.

Aerospace Education Center CAAS joined the nice people at the AEC on the evening of September 19 for a special viewing of the new PBS special "Seeing in the Dark" by Timothy Ferris. It appeared that about 40 members of the public joined us. Kind of disappointing turn out but these people did seem to be more interested than average. The show was very enter-

taining with high production values. After the showing, we had seven or eight scopes set up for a public star party. I have to say that next to the airport is not the best place for a star party but we could see all the first magnitude stars up there and many of the second magnitude stars. While swatting mosquitoes, we showed the visitors the Moon and Jupiter and Albireo and a few other bright objects. (Contributed By Jim Dixon)

### Pinnacle Mountain State Park

We had a most excellent star party on Saturday, the 15th of September. There was some concern over clouds but they dissipated early. The temperature was nice there were no bugs and best of all there was eager crowd of visitors yearning for astronomical knowledge. I forgot to take a roll call but we had a dozen or so CAAS members there and probably 8 scopes set up. The park people estimated 140 members of the public attended. We had three separate school groups attending. It is hard to say what they saw but I know Carl greeted the early visitors at the entrance with a view of the Moon and farther up the mountain we saw Jupiter, M13, M31, M7, M27, M57, Mizar and Alcor and who knows what else. After some disappointingly cloudy star parties this summer this final PMSPSP of the season turned out to be a fine one. (Contributed by Jim Dixon)



**Welcome**  
to all of our new members!



# Upcoming Events

## October 2007

Sun	Mon	Tue	Wed	Thu	Fri	Sat
	1	2	3 Last Qtr Moon	4 Sputnik Day	5	6
7 Moon close to Venus, etc	8	9 Draconid Meteor Shower	10	11 New Moon	12	13 CAAS Meeting
14	15	16	17	18	19 First Qtr Moon	20
21	22	23	24	25 Full Moon	26	27
28	29	30	31			

## November 2007

Sun	Mon	Tue	Wed	Thu	Fri	Sat
				1 Last Qtr Moon	2	3
4 Daylight Savings Time Ends	5	6	7	8	9 New Moon	10 CAAS Meetings
11	12	13	14	15	16	17 First Qtr Moon
18	19	20	21	22	23	24 Full Moon
25	26	27	28	29	30	

- Oct 3—Last Quarter Moon.
- Oct 4—Happy Sputnik Day! 50th Anniversary of the Space Age.
- Oct 7—Moon in close grouping with Venus, Saturn, and Regulus.
- Oct 9—Peak of Draconid Meteor Shower.
- Oct 9-13-Venus, Saturn, and Regulus are at their closest grouping.
- Oct 11—New Moon.
- Oct 13—Regular Monthly CAAS meeting at 7 PM.
- Oct 19—First Quarter Moon.
- Oct 20-22—Orionid Meteor Shower.
- Oct 25-26—Full Moon and Perigee making this the largest Full Moon this year. Since it is close, it will be moving out of the way that much faster.
- Oct 28—Venus at greatest elongation (46°) West of Sun.
- Nov 1—Last Quarter Moon.
- Nov 4—Daylight Savings Time ends.
- Nov 4—Peak of Taurid Meteor Shower.
- Nov 8—Mercury at greatest western elongation (19°)
- Nov 9—New Moon and at apogee.
- Nov 9—Dwarf Planet Ceres at opposition.
- Nov 10—CAAS Board Meeting at 5 PM
- Nov 10—Regular Monthly CAAS meeting at 7 PM.
- Nov 17—First Quarter Moon.
- Nov 17—Leonid Meteors.
- Nov 24—Full Moon



## Minutes from the August Meeting

The August CAAS Meeting was held at Pinnacle Mountain State Park just prior to the star party. Rocky opened the meeting at 7 p.m. with approximately 15 members and guests in attendance, including new members Jim and Kathy Fisher and Lance and Linda Sorrows.

Upcoming events were discussed including the Aerospace Education Center's upcoming showing of "Seeing in the Dark" which is scheduled for September 19, 2007. Hopefully CAAS can provide some scopes for viewing after the show.

Pat gave the treasurer's report and the meeting was adjourned so the star party could begin. Clouds were occupying most of the sky at meeting time, but all were hopeful that it would clear before the guests began.

## Minutes from the September Meeting

CAAS met Saturday evening September 8 with much clouds and threatening weather. This was appropriate to the topic though which was a presentation on Meteorology by Allen Lee. We had a delicious covered dish dinner with the highlight being a homemade squash casserole by Linda Sorrows. Thanks to all who brought something.

The meeting opened with a treasurers report by Pat Morris. Rocky talked about the upcoming star party at Pinnacle Mountain on September 15 and "Seeing in the Dark" presentation at the Aerospace Education Center Planetarium on September 19. James Fisher and others are getting out some good publicity on this and we hope it will be well attended. James also announced that CAAS has been invited to the first showing of a new planetarium show at the AEC on September 22 at noon.

Allen Lee then taught us how to predict the weather with a list of sites giving raw meteorological data. He showed us how to analyze a sounding which is data taken by a weather balloon. By looking at the current data from a local weather balloon you can determine what kind of seeing you can expect for the evening. In addition he taught us about radar and what the TV meteorologists use to give us our weather. We have access to the same data and with the other information he gave us he proclaimed that we now knew more about predicting the weather than most of our favorite weather personalities.

It was a fascinating lesson in meteorology and there were many questions and discussions. The best moment though was during Allen's introduction when he told us he was from Wyoming and went to school at Texas A&M. Just as he stated that he started out in Astronomy with dark skies in Wyoming, the lights went out for a few seconds (due to the raging thunderstorm I am sure) and he got to say "Like this".

The meeting adjourned about 9:00 pm. By the way Long term predictions look good for this next Saturdays star party at Pinnacle Mountain.

Rocky Togni



## In Memoriam—Sandy Freyaldenhoven

As we are putting this newsletter together, we learned of the passing of Sandy Freyaldenhoven, wife of long time member Carl Freyaldenhoven. Many of us have known Sandy for years. Our hearts go out to Carl for his loss.



*Sandy and Carl at the 2006 CAAS Annual Meeting & Christmas Party*



*Sandy Morris & Sandy Freyaldenhoven*

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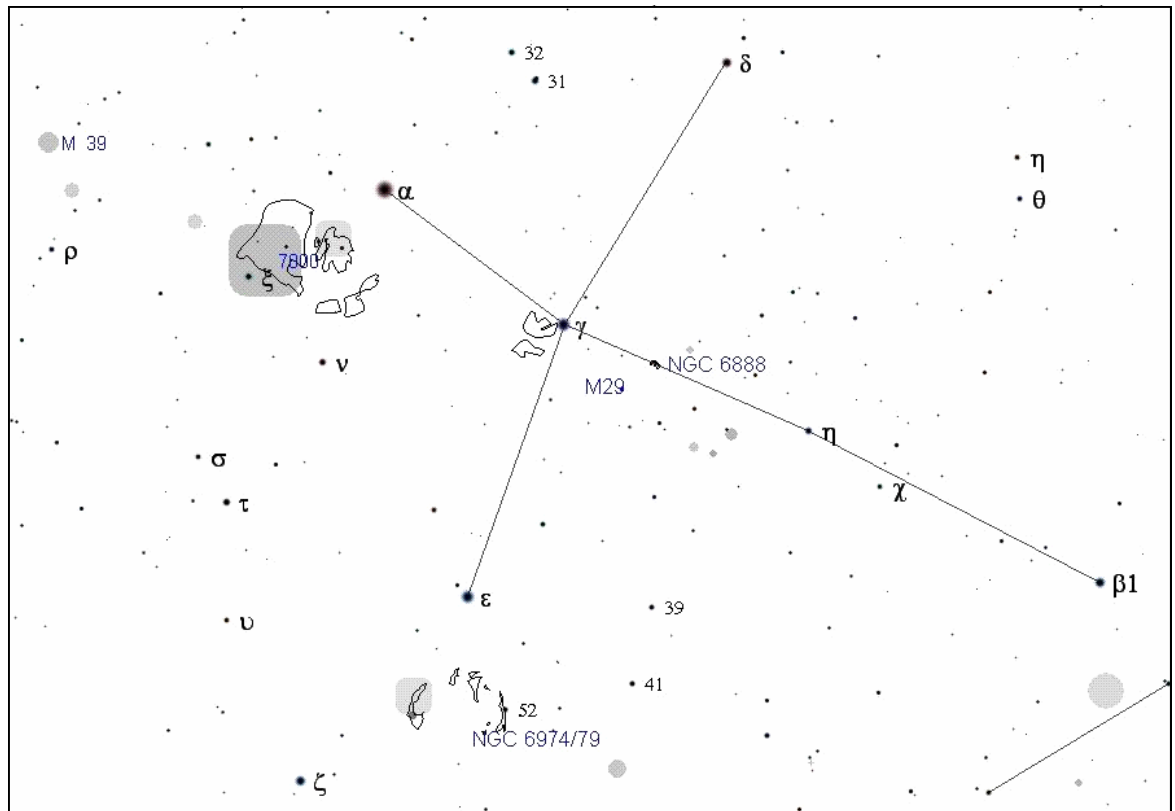
*We will always treasure our memories of Sandy. Her smile could light up a whole room, and she possessed a rare and genuine warmth that made one feel as if you'd known her forever.*

*We will miss you, Sandy.*

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## Close Up On Cygnus the Swan by Jim Dixon

Last time we talked about the Teapot near the center of the galaxy. This time we're covering another region lying in the plane of the Milky Way, the constellation of Cygnus the Swan. Cygnus is one of those rare constellations that actually looks like what it is supposed to be. On late summer and early fall evenings, you can see the swan flying down the Milky Way toward the Teapot. Before getting started with Cygnus proper, I want to encourage you to go out on a clear night and try to locate the Summer Triangle of the stars Deneb, Vega, and Altair. I'll leave a discussion of that asterism for another time or another writer but I want to bring your attention to the long slender cloud in the area. Year after year, I never fail to look up there and feel a sense of disappointment when I see that line of clouds coming in despite the good weather forecast. Then I realize that I was fooled again, if only for a few seconds, by the well named Milky Way.



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The following is a short list of interesting objects to be found in the swan:

- M29 – an open star cluster and 29<sup>th</sup> item on the Messier List.
- M39 – another open star cluster, don't look for globular clusters here the plane of our galaxy would block those from being seen.
- NGC 6960, 6974, 6979, 6992 and 6995 – a very large supernova remnant so large in fact they assigned five NGC (short for No Good Constellation) numbers to it. Commonly called the Veil Nebula this SNR is about 1400 light years away and was created about 5,000 to 10,000 years ago.
- NGC 6888 – the Crescent Nebula. This gaseous body looks like it could be another SNR but is in reality a planetary nebula like the Ring Nebula. In this case, the stellar wind from a Wolf-Rayet star at its center.
- NGC 7000 and IC 5070 – this is the famous North American Nebula and its sidekick the Pelican Nebula. Like the Veil and Crescent, they are favorites of astrophotographers everywhere.
- Albireo – this is Beta Cygni, the second brightest star in the constellation and marks the head of Cygnus at the right hand side of the graph. It is a beautiful yellow and blue binary star and a favorite object for star parties everywhere.
- Chi Cygni – this star is the slightly squiggly X in the neck of the Swan just a little ways up from Albireo. It is a giant Mira type long period variable. It takes about 400 days per period and can reach 3<sup>rd</sup> magnitude. Last summer it had a particularly good maximum and for a time the familiar shape of Cygnus was pleasantly distorted by this normally dim star.

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## Improving Your Observing Skills (continued from page 1)

Regardless of your interests in Astronomy or even if you don't have any specific interests yet, an observing club will teach you more about the sky, instruments, and documentation. You will develop your observing skills, learning to see more, more than you can see in a picture, maybe even more than you see now in a picture.

In Timothy Ferris's book "Seeing in the Dark" he discusses a fascinating visual observer, Stephen James O'Meara. His exploits include visually seeing spokes through the rings of Saturn in the mid 1970's. Research showed that only the nineteenth-century observer Eugene Antoniadi had seen similar radial features. ALPO wouldn't publish it because they didn't have photographic evidence. He went on to determine that the spokes orbital period followed the planet and not the rings but still couldn't get published. Alas, when Voyager passed Saturn it sent back pictures showing the spokes. He was the first to pick up Halley's Comet on its return in 1986, even before the big telescopes verified it with photographic evidence, and also determined the correct orbital rate for Neptune, disagreeing with professionals, again vindicated by Voyager when it reached Uranus. Granted O'Meara can probably see several magnitudes fainter than most of us. But a great deal of seeing is patience, observing for periods of time until your brain has "memorized" the image and then starts to pick out the subtle shades, objects you missed when you first look at it.

Following is a list of Observing awards CAAS members have received. We have had a lot of interest in the last year or so after a seven year period without any. Review the programs on the Astronomical League site [www.astroleague.org](http://www.astroleague.org) and pick one that interests you and have fun.



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## Close Up on Cygnus the Swan (continued)

A couple final notes about Cygnus:

- As the end of the year approaches the Swan appears to fly down to the western horizon at sunset and acquires its other nickname of "The Northern Cross". Perhaps that is technically an asterism rather than a constellation.

When I was in college and living in a dorm, I discovered an interesting facet of this and other northerly constellations in winter. I noticed the cross setting one evening and the next morning as I glanced out a window on the way to the showers, I saw it again rising in the east. The combination of its location and the maximum length nights enabled this interesting phenomenon.



## Improving Your Observing Skills (continued)

### CAAS Members who have received AL awards

Name	Award	Award #	Date	Society
Brian Mitchell	Binocular Messier	94	13 Apr 1993	CAAS
Thomas Baskins	Messier	1176	19 Oct 1993	CAAS
Bill Sanders	Double Star	34	23 Feb 1996	CAAS
Robert Togni	Lunar Club	17	14 Apr 1996	ASNA
Robert Togni	Messier	1391	04 May 1996	ASNA
Robert Togni	Binocular Messier	261	15 Aug 1996	ASNA
Robert Togni	Double Star	22	28 Sep 1996	ASNA
Dean Williams	Double Star	34	21 Apr 1997	CAAS
Dean Williams	Deep Sky Binocular	66	21 Apr 1997	CAAS
Dean Williams	Messier	1490	01 May 1997	CAAS
Robert Togni	Deep Sky Binocular	68	20 Sep 1997	ASNA
Thomas Baskins	Double Star	44	27 Mar 1998	CAAS
Jim Ramsey	Messier	1588	25 May 1998	CAAS
Michael Berrington	Binocular Messier	342	14 Jul 1998	CAAS
Beth Lasley	Binocular Messier	347	18 Aug 1998	CAAS
Robert Togni	Meteor Club	53	01 Jan 1999	ASNA
Robert Togni	Caldwell Silver	100	15 Jan 2006	CAAS
Bill Sanders	Deep Sky Binocular	215	19 Jan 2006	CAAS
Bill Sanders	Binocular Messier	715	19 Jan 2006	CAAS
Bill Sanders	Meteor Watchers	122	18 Mar 2006	CAAS
Robert Togni	Herschel 400	346	26 Jun 2006	CAAS
Carl Freyaldenhoven	Basic Outreach	100	15 Feb 2007	CAAS
Bill Sanders	Stellar Outreach	101	15 Feb 2007	CAAS
Bill Sanders	Comet – Silver	27	01 Mar 2007	CAAS
Bill Sanders	Earth Orbiting Satellite	19	16 Apr 2007	CAAS
Jim Dixon	Basic Outreach	113	16 Jun 2007	CAAS
Bill Sanders	Messier	2360	22 Jun 2007	CAAS
Robert Togni	Constellation Hunter – Northern	46	25 Jun 2007	CAAS
Donald Ferren	Basic Outreach	118	29 Jun 2007	CAAS

## NASA Space Place

### A Missile in Your Eye by Patrick L. Barry

Satellite technology designed to catch ballistic missile launches may soon help doctors monitor the health of people's eyes.

For the last 15 years, Greg Bearman and his colleagues at JPL have been working on a novel design for a spectrometer, a special kind of camera often used on satellites and spacecraft. Rather than snapping a simple picture, spectrometers measure the spectrum of wavelengths in the light coming from a scene. From that information, scientists can learn things about the physical properties of objects in the photo, be they stars or distant planets or vegetation on Earth's surface.

In this case, however, the challenge was to capture snapshots of short-lived events—like missile launches! The team of JPL scientists designed the new spectrometer, called a computed tomographic imaging spectrometer (CTIS), in collaboration with the Ballistic Missile Defense Organization as a way to detect missiles by the spectral signatures of their exhaust.

But now the scientists are pointing CTIS at another fast-moving scene: the retina of an eye.

Blood flowing through the retina has a different spectral signature when it is rich in oxygen than when it is oxygen deprived. So eye doctors can use a spectrometer to look for low oxygen in the retina—an indicator of disease. However, because the eye is constantly moving, images produced by conventional spectrometers would have motion blurring that is difficult to correct.

The spectrometer that Bearman helped to develop is different: It can capture the whole retina and its spectral information in a single snapshot as quick as 3 milliseconds. "We needed something fast," says Bearman, and this spectrometer is "missile-quick."

CTIS is even relatively cheap to build, consisting of standard camera lenses and a custom, etched, transparent sheet called a grating. "With the exception of the grating, we bought everything on Amazon," he says.

The grating was custom-designed at JPL. It has a pattern of microscopic steps on its surface that split incoming light into 25 separate images arranged in a 5 by 5 grid. The center image in the grid shows the scene undistorted, but colors in the surrounding images are slightly "smeared" apart, as if the light had passed through a prism. This separation of colors reveals the light's spectrum for each pixel in the image.

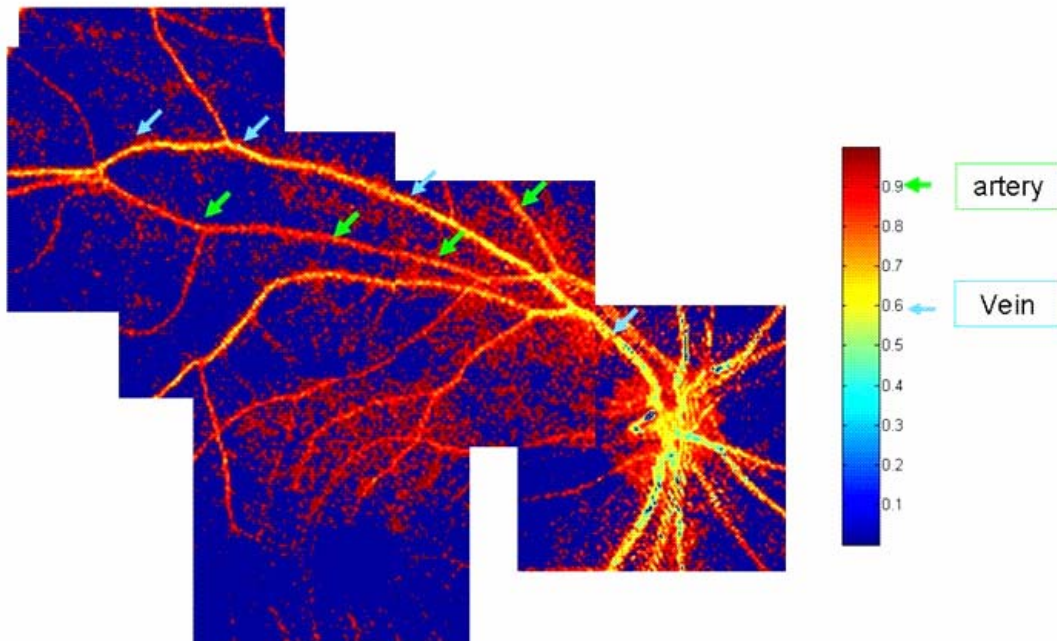
"We're conducting clinical trials now," says Bearman. If all goes well, anti-missile technology may soon be catching eye problems before they have a chance to get off the ground.

Information about other NASA-developed technologies with spin-off applications can be found at <http://www.sti.nasa.gov/tto>.

*This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.*

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## NASA Space Place (continued)



Caption:

*This three-color composite image from the computed tomographic imaging spectrometer shows the oxygenation of the blood in the arteries and veins of a human retina. (Arteries appear red, veins appear yellow.)*

### Upcoming Meetings

- October 13, Regular Meeting at 7 PM.
- November 10, Board Meeting at 5 PM.
- November 10, Regular Meeting at 7 PM.
- December 8, Annual Meeting at 7 PM.

The Annual Meeting, which we hold once a year (hence the name), is looking for a home. If you are willing to host a group of rowdy astronomers (you know how we get) for a couple of hours on December 8 please let Rocky know.

Website: [www.caasastro.org](http://www.caasastro.org)  
 E-mail: [info@caasastro.org](mailto:info@caasastro.org)

Contact the editors at  
 Stacy: [anastasiadaisy@yahoo.com](mailto:anastasiadaisy@yahoo.com)  
 Jim: [J.Dixon3@Comcast.net](mailto:J.Dixon3@Comcast.net)

*The Central Arkansas Astronomical Society strives to connect the people of Central Arkansas with their universe by promoting amateur activities for its members and by providing information and programs to the general public. Membership offers monthly programs, special outings, and the opportunity to share this hobby with others. No one is under qualified for membership. Experience levels range from novice sky watchers to skilled observers. C.A.A.S. is a proud member of the Astronomical League and the Night Sky Network.*

The Sky in mid October 2007 at 8 PM CST from 35° North latitude

