

Central Arkansas Astronomical Society

The Observer

Officers

President

Rocki Togni

Vice President

Donald Ferren

Treasurer

Pat Morris

Secretary

Stacy Edwards

Board Members

Carl Freyaldenhoven

John Reed

Don Lewis

Jim Dixon



Bubble Nebula in Cassiopeia, details on page 2

Inside this issue:

YOU Are Invited!	2
AL Outreach Award	2
Winter Work Party	2
Picture of the Month	2
Jan. Meeting Minutes	3
Demon & Wonderful: Variables for February	4
Calendar	5
R U In The Loop?	6
Share Your Story	6
February Sky Chart	9

(Re-) Building a Binocular Telescope

By John Reed

Back in 1984 I attended the Texas Star Party. This gathering is held in the spring of every year at the Prude Ranch near Ft. Davis, Texas. This was for me as much about observing from truly dark skies as it was seeing what wondrous equipment would be there. At that time the giant dobs were starting to become popular, but not near as many had them as now. That has always drawn me during those long, dark nights. Sometimes there was a line, but it was usually worth the wait to see some favorite faint fuzzy not so faint and not so fuzzy! I fully expected to get several razzle-dazzle views, but what I didn't expect was to see them with both eyes at once!

(Continued on page 7)

YOU Are Invited!



All are warmly invited to attend our regular monthly CAAS meeting at River Ridge Observatory on February 10th at 7:00 PM.

This month's presentation will be the eagerly awaited unveiling of John Reed's newly designed and re-built **binocular telescope**! Hopefully skies will be clear, and, if the bino's are ready, we may all have an opportunity to enjoy a magnificent glimpse of the heavens through John's handiwork.

For directions or other info, please feel free to contact CAAS President, Rocky Togni, at roberttogni@sbcglobal.net. We hope to see YOU there!

Astronomical League Outreach Award

In addition to the observing awards highlighted in last month's Observer, the Astronomical League also offers three award levels for those who participate in astronomy outreach events: Outreach Award, Stellar Outreach Award, and Master Outreach Award.

Outreach is the key to keeping the rewarding hobby of amateur astronomy growing and thriving, and also helps promote awareness of such important issues as light pollution. CAAS members have the opportunity to participate in several such events each year.

(Continued on page 6)



Winter Work Party—Clean-Up, Fix-Up, & Spruce-Up!

Join us at 12:00 noon on February 10th for a chance to work out those winter-weary muscles and keep the CAAS property neat and trim. We will clear some brush, install a gate, repair a floor, and do some general clean-up chores.

Bring along a dish for potluck, and we will enjoy supper together before the meeting starts at 7:00. Dust off those lopping shears and join the fun!

On the Cover—Bubble Nebula

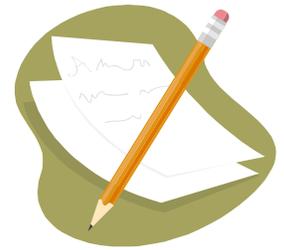
NGC 7635, in Cassiopeia by Danny Flippo.

Optics: Takahashi FS-102 @ f8 Exposure: Total of 80 minutes. Camera: ST-7E with an H-Alpha filter.

The bubble is thought to be a rapidly expanding shell of ionized gas created by the stellar wind of a massive star and is about 10 light years across.



Minutes from the January Meeting



Twenty members and guests braved a cold, rainy night to attend the first CAAS meeting of 2007. The clubhouse was warm and welcoming, though, filled with the aroma of vegetable soup and other delicious goodies.

Presentation

Don Lewis opened the meeting at 6:56 p.m. with a presentation entitled “Beginner’s Guide to Imaging the Heavens”, in which he provided an overview of astronomical imaging - from webcam-assisted solar system work to capturing long-exposure images of deep sky objects. Don discussed hardware options along with a generous helping of tips-n-tricks and a hearty dose of encouragement for the aspiring imager.

For those who may wish to review the material or pursue the topic further, Don will be making this presentation available in its entirety once the website is fully operational.

Business Meeting

President Rocky Togni began the business meeting at 7:50, welcoming all to CAAS.

TREASURER’S REPORT - Pat Morris gave the financial report and reminded everyone that membership dues are now due. This will provide a much-needed boost for our most-humble bank balance.

WEBSITE - The club expressed heartfelt gratitude for Jim’s and Chris’s willingness to take on the project of rebuilding of the website after it was disabled recently by an unscrupulous hacker.

Jim said that we are now using a server in the U.S. (as opposed to Asia), and have switched the content management system from the open-sourced Geeklog to WordPress, which is more secure. This is, of course, a learning curve, and it will take time to get everything back in order. Jim said that the photo galleries will be restored as soon as it is possible to do so.

Chris Lasley pays for the CAAS web server space annually, and this generous gift is appreciated very much. The question was asked if the recent server and software changes will generate added costs, and it was determined that (hopefully) they will not.

NEWSLETTER - Rocky mentioned that the first issue of the newly re-instated CAAS Observer turned out beautifully, and thanked Jim for his work on it. A separate email list is being put together for those who may not be on the CAAS email list but who would like to receive the newsletter. There are already several names added. If anyone would like to be added, or knows of someone who would, just email Rocky and let him know.

Submissions are now being accepted for the February issue of the Observer – all articles and items of interest are welcome!

WORK PARTY - Rocky reminded everyone that the work party is now slated for next Saturday, Jan 20th, at noon. Hopefully the weather will be cooperative, and the needed projects can be completed.

BOY SCOUTS - We have been contacted by Jon Norcross requesting a presentation next Saturday evening at BSA Troop 770’s campout at Pinnacle. Rocky, Bill Sanders, and the Edwards plan to attend – any others who would like to are welcome.

Rocky has researched the Boy Scouts’ merit badge requirements, and we hope to have several opportunities throughout the year to help scouts earn their astronomy badge. Rocky suggested this website for further research: <http://www.meritbadge.com>

Sandy asked if the scout outings are reportable to the Night Sky Network, and Jim stated that yes, they are, however, in order to count toward the five qualifying outreach events, we must use the NSN materials.

FRENCH CAMP - Sandy mentioned that the French Camp / Mid-South Stargaze is coming up April 11-14th this year.

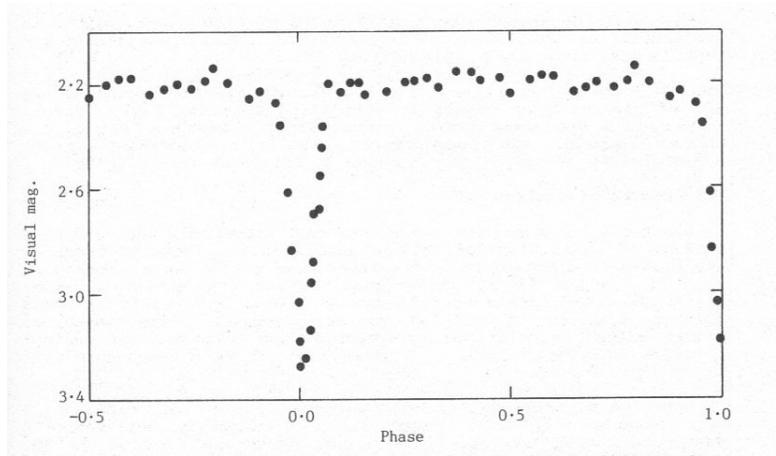
Demon & Wonderful—Variables for February Stargazers

By Rocky Togni

The first two variable stars identified, and two of the most famous, are in good position for observing in February 2007.

Algol or Beta Perseus was probably the first variable discovered, hence the name Algol from ancient times which means “demon star”. Algol is a close binary with two stars in close orbit around each other. Because we are in its orbital plane, the star dims when the dimmer star passes in front. It has a secondary dimming when the dimmer star passes in back. Every 2.86 days, Algol dims from a magnitude of 2.1 to a magnitude of 3.4. The eclipse lasts about 10 hours. Following are the dates and times of minimum for the upcoming month CST. Jan 30-9:52 pm, Feb 3-6:41 pm; 14-5:58 am; 17-2:48 am; 19-11:37 am; 22-8:27 pm. Print this chart for magnitudes of comparison stars:

<http://www.aavso.org/images/Betaper-aa.gif> or use κ Per = 3.8 and γ And = 2.1.



Mira or Omicron Ceti is a long period variable star identified as a variable by Fabricius 410 years ago. It was named Mira which stems from the word for “wonderful” in Latin. Stars of this type are often called Mira type. Mira goes from a moderately bright star at maximum to not being visible at minimum. Mira has a period of 332 days during which it falls to a minimum of 9.3 magnitude and returns to a maximum of 3.4. These are averages, and Mira has obtained magnitudes closer to 2 on occasion.

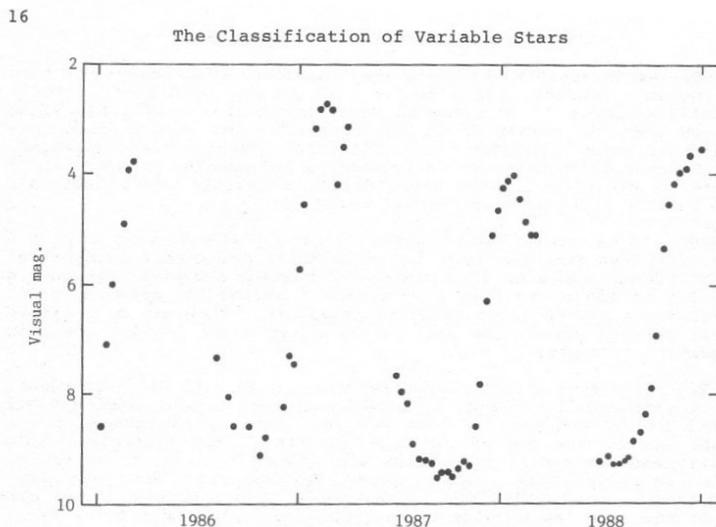


Figure 5. Light curve of Omicron Ceti (type M) in 1986–8, from 10d means of observations by the JAS. Gaps occurred when the star was too close to the Sun for observation.

(Light curves from The Webb Society Handbook for Variable Stars)

February has Mira well placed in the southwest and it obtains maximum about mid-month. On January 26 it was already shining at magnitude 3.5. Use the eastern fish in Pisces to find it. Start with Aries. Draw a line through the two main stars and go about 2 times the distance to eta(η) Pisces a 3rd mag star. A line perpendicular will find two more 3rd mag stars to the south for three in a row. If there is a fourth at the bottom then that is Mira at maximum. Trace it out in your atlas. For charts to determine its magnitude by comparison to other stars, go to:

<http://www.aavso.org/observing/charts/> and enter “omi cet” in the name box. There will be a list of charts available, pick the “A” chart.

Minutes From January Meeting (continued from page 3)

PAYPAL - Stacy noted that she is still planning to research what is required in setting up a non-profit status Paypal account. We hope to have a link on the website soon for ease in paying annual dues and making generous spontaneous donations. :)

IDA - Jim noted that the International Dark Sky Association (<http://www.darksky.org/>) has a reduced membership fee of \$50 for “small” clubs, and suggested that CAAS may well fit into this category.

The evening’s lock & key adventures were discussed, and the meeting was adjourned. Pat went on a determined hunt and soon found an extra key, thus providing a temporary remedy to our situation.

This evening’s guests included Doug Nelson of LR (now a new member) and Kay and John Thomas from Mountain View. The Thomases brought two telescopes, and club members enjoyed helping them collimate and learn how to use the equipment following the meeting.

Respectfully submitted by CAAS Secretary Stacy Edwards

February 2007

Sun	Mon	Tue	Wed	Thu	Fri	Sat
				1	2 Full Moon	3 Algol at minimum (see pg 4 for time)
4	5	6	7	8	9	10 Work Party; Meeting; Last Qtr Mn
11 Mira at maximum	12	13	14 Algol at minimum (see pg 4 for time)	15	16	17 New Moon Algol at minimum
18	19 Algol at minimum (see pg 4 for time)	20	21	22 Algol at minimum (see pg 4 for time)	23	24 First Qtr Moon
25	26	27	28			

Schedule of Events February 2007

- 2 Full Moon.
- 10 CAAS Work Party (Noon) and Regular Meeting (7 p.m.) at River Ridge Observatory
- 10 Last Quarter Moon.
- 17 New Moon.
- 24 First Quarter Moon.

Other Upcoming Events

- Apr 11-14—Mid-South Star Gaze
- Apr 21-National Astronomy Day, Pinnacle Mountain State Park
- July 21– Woolly Hollow Star Party
- July 28—Pinnacle Moon Party
- Aug 18—Pinnacle Star Party
- Sept 15—Pinnacle Star Party

Astronomical League Outreach Award

Continued From Page 2

Each public star party, as well as each club, scout troop, and school group with whom we share, promotes astronomy in the community. As a C.A.A.S. and Astronomical League member, your participation in just five of these events in a year qualifies you for the Astronomical League's Outreach Award. You will receive the lovely pin (pictured below) as well as a certificate.



All you have to do is share your passion for astronomy with others, keep a log of the events, and submit the list at the end of the year. For more detailed information, please point your browser to:

<http://www.astroleague.org/al/obsclubs/outreach/outreach.html>

(If you would like for CAAS members to visit your school, scout outing, church, or club, please contact Sandy Morris at sjmorris@aristotle.net)

R U In The Loop??

Would you like to be aware of CAAS members' latest imaging successes, observing accomplishments, and any upcoming events?? Just join the CAAS email list and you will be "in the know!"



Point your browser to <http://www.caasastro.org> and click on the "CAAS Mail List" tab. Enter your email address in the "Subscribe" field, and you're in. It's that easy!



The email list is where we chit-chat about everything from azimuth to zenith. This is also the place where a Friday night cookout will be planned, or an informal, impromptu observing session will be announced.

So, come join us, share your thoughts, and be a part! The list is open to anyone interested in CAAS and/or astronomy. See you there!

Share Your Story!

What's your specialty in astronomy? Imaging? Observing? Outreach? Sketching? Poetry? Building hardware? Maybe you are a skilled observer, and would like to share in detail an evening where everything was *just perfect* (and maybe offer the rest of us some tips!) Or, perhaps you enjoy detailed study and have gone on an astronomical bunny-trail and learned a great deal. We want to hear about it!



The Observer needs articles from members like you! If you would like to share, please send your article (it can be as brief as you like, or up to a couple of pages long) and any images, scanned drawings, or other accompanying graphics, to the editor, Stacy Edwards, at:

anastasiadaisy@yahoo.com

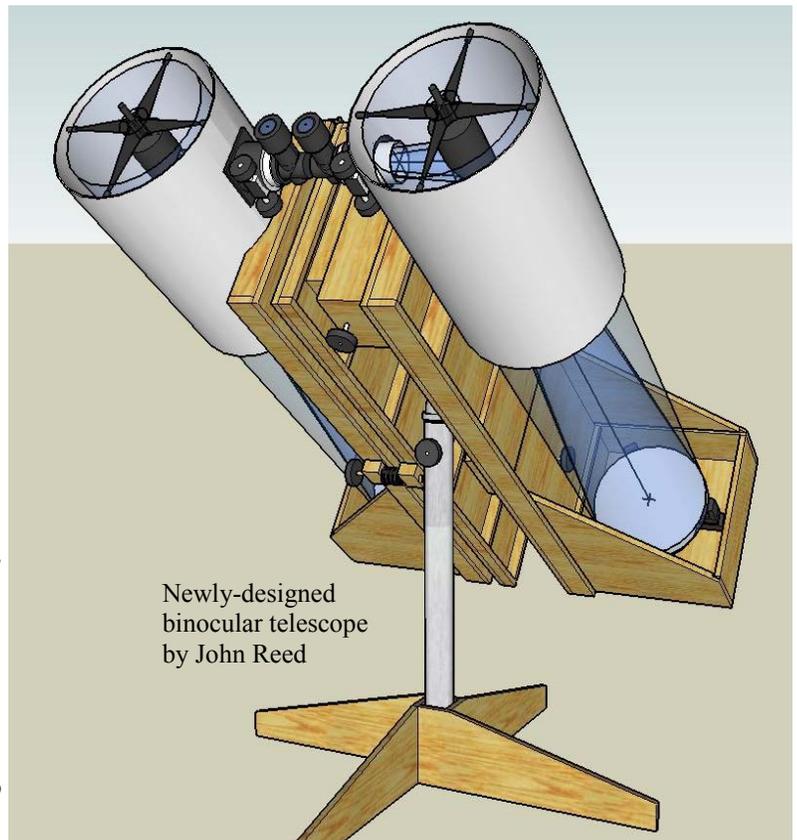
We look forward to reading your story!

(Re-) Building a Binocular Telescope

Continued from page 1

A young fellow from Huston, TX had quite a crowd around him. This naturally drew my attention. After I worked my way through the onlookers I saw that he had not one, but two telescopes on a Dobsonian mount. Now this was something new. A giant binocular! It was really two Newtonian telescopes mounted side-by-side. The eyepieces were mounted in diagonals that turned them up toward the sky, so that one looked into them much like a stereo microscope. When I finally had them adjusted for my eye-spacing (interpupillary spacing), I gazed into another world. Well universe really. I had always discounted binocular viewing until this moment. I knew that the objects in space were simply too far to see any possible depth perception. And yet the view I was getting was so much more than monocular viewing. The contrast! The comfort! Even the overall brightness of the objects was a little... well... brighter! From that moment on I was hooked. I had to build one of these for myself. I talked to the builder, Lee Cain, for a bit and asked him how he had done this. It didn't look particularly easy, but it did look very possible.

Well, that summer I began to design the instrument. I purchased two 10" f/5.5 mirrors from Coulter optical. I called them with my unusual request, stating that I had to have two matched mirrors. I expected that they would tell me this was very expensive or impossible, but they simply said "no problem". They said they would pull one off the production line then wait for another to come off with close to the same focal length. Apparently this worked because I had them within two weeks. They matched to within 0.1": good enough for what I needed. Of course I had to buy two of everything else: secondaries, spiders, cells, and focusers. This gets a little expensive. My design would have both OTA's (optical tube assemblies) mounted in a common cabinet. The upper cages, spiders and focusers would be mounted in clips that slipped and allowed them to turn, thus making the eyepiece spacing change for different observers. This was how Lee Cain had done it. His method seemed to work, so I stuck with it.



Newly-designed
binocular telescope
by John Reed

Well, to make a long story a little shorter, they did work pretty well. The biggest problem was that in setup a helper was required to "co-collimate" them. This simply meant that both OTA's must look at the same spot in the sky. To do this I first collimated them in the conventional sense. Then with a helper turning one of the collimation screws while I was looking through the eyepieces, I watched the two star fields merge. Unfortunately this highly sensitive co-collimation would only last for a short while. Once the binoculars were moved to a different part of the sky a re-adjustment was required. I soon got tired of this. Observing alone was out of the question. I found I wasn't using them that often because of the difficult setup. Also the images weren't the best because one OTA had to be taken slightly out of collimation on order to co-collimate them: a real drawback! The views, however, were fantastic. A true space-walk experience! Many folks looked through them and said that they had not ever had a similar view! This encouraged me to keep trying to make them work.

(Continued on page 8)

(Re-) Building a Binocular Telescope

Continued from page 7

Well several years went by with the binoculars sitting in my garage, gathering dust. I still wanted them to work, but lacked a way to do it. Obviously they needed to be re-designed to make them more user-friendly. Again I made the trek to the Texas Star Party, this time in 1992, eight years after my last visit. I didn't bring my bino's, but rather my conventional 10" Newtonian. The huge binocular cabinet simply wouldn't fit in the car along with everything else. I remember that this time Mark Habenicht went with me, setting up his 8" GEM to do some astrophotography. We were in the lower field that is closest to the highway. I noticed that this fellow a few scopes over was setting up the biggest binocular rig I had ever seen! I later found out that this was a 17" pair. HUGE! Well I had to meet this guy: another bino builder! His scope used a neat system of all-thread rods near the upper cages that allowed both OTA's to be moved with respect to each other while viewing. He had solved my co-collimation problem. The observer simply adjusted them while viewing to get them co-collimated. Easy! Brilliant! I have never met him again, but I remember he was from New Mexico. My experience with his bino was written up in Sky and Telescope that year based on an article I wrote for the CAAS Observer:

<http://www.propermotion.com/jwreed/Essays/Uncharted%20Islands.htm>

I did re-build the binoculars using the old optics and incorporated the 17" design. However they were so big and heavy that again they sat in the garage for several years. I built my 18" dob during this time and was more focused on that than my binos. Finally Steve Block asked if he could buy them, and after a little consideration I agreed. That was back in the late 90's I think. Steve kind of dropped out of CAAS so I didn't hear from him for a long time until he came by to see my observatory project. It was then that he mentioned that his son had driven a car into them where they were stored in the garage. I asked if the optics were damaged and he said that they were not, just the cabinets. Recently I have been bit by the bino bug again and asked him if I could buy the optics back. He agreed. I was in business once more! Steve had not only returned the optics, but had built two aluminum cages that I was able to incorporate. It seemed everything was falling into place. It was then that I found the article by Dave Trott on a pair he has built:

<http://hometown.aol.com/davetrott/page4.htm>

His design was much more compact, lighter and easier to use than mine. I emailed him and asked if he minded if I used his design. He seemed not only agreeable, but interested in my request. Check out his web-page, it is very good. This design not only allows for interpupillary spacing, but also co-collimation. Both functions are available from the observer's location at the eyepieces. It basically uses a central "spine" between the two OTA's, which allows the above mentioned adjustments, but is not a full enclosed cabinet. The mirror boxes and upper cages will be removable to make transport easier. The mount will be galvanized pipe with two sets of threads left to turn for an alt-azimuth mount. One of the most expensive aspects of this most recent version is the use of Televue Radians. I already have an 18mm Radian, but will have to purchase another to have a matched set. As I write this, the woodworking is done and assembly begins next. This will involve the installation of the all thread rods that turn to make the above noted adjustments. Also the upper cages and mirror boxes have to be mounted once the systems have been checked for proper focus distance. The design was made a little easier than in the past by using Google Sketchup. This freeware allowed the design to be done in true 3D, so material cutout and assembly went a little faster than usual.

Hopefully this latest version of the giant binoculars will be worth the effort that I have put into them! I'm sure we'll all find out at future star parties.

(Editor's Note: There are photos of the project on John's website: <http://www.propermotion.com/jwreed>—click on "Telescope Making." All are welcome to attend the February CAAS meeting for the bino scope unveiling!)

Website: www.caasastro.org
 E-mail: info@caasastro.org

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 February 2007 at 8 PM CST from 35° North latitude

