

Central Arkansas Astronomical Society

The Observer

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Images by John Reed



Garage Astronomy

By John Reed

Inside this issue:

June Work Party & Meeting	2
Boy Scout Campout	2
May Meeting Minutes	3
Magazine Review	4
A Reader Shares	4
Calendar	5
Spring Diamond	7
Naked Astronomy	8
The Midnite Sky	9
June Constellation Close-Up	10
The Ions of Dawn	11

Jim Dixon asked me to write a follow up on the binocular project that was featured in the newsletter a couple months ago. Well I thought about it and decided that I really didn't have that much more to say on the subject, but I did feel that my personal journey to building those might be better.

I have been building telescopes since 1979 when I joined the newly formed Northwest Arkansas Astronomical Society. At the very first meeting I met a fellow by the name of Elliott Neel who was a physics student at Fayetteville. I was currently enrolled in the College Of Engineering at the same campus; however we had never met before. Elliott, as it turned out, built telescopes. Well it wasn't long after that I made a trip to view through one of these creations. I had never heard of anyone doing such a thing! Didn't it involve exacting procedures that only a factory could provide?

Well on a summer night long ago in Rogers, Arkansas we agreed to meet at his grandparents house where he kept a home made Newtonian in their garage. I believe he felt that the observing was a little better there than at his parent's house in Fayetteville. This being long before the advent of Dobsonians, this scope was a German equatorial style reflector. But what a contrivance! I would have never believed it would even work. The tube looked like a

Continued on page 6



*A painted lady butterfly enjoys one of the many butterfly bushes at River Ridge Observatory—June '05
Photo by Stacy Edwards.*

June 9 Work Party & Meeting—Everyone Invited!

All are invited to River Ridge Observatory on June 9! The work party will begin at 1:00 p.m., and will be followed by a picnic supper. Our goal will be to install the new storage building, as well as accomplishing other clean-up & fix-up chores.

At 7:00 p.m. we will hold our regular monthly business meeting, and enjoy a presentation by Kyle Edwards on *Using Orbital Elements to Find the Position of Planets*. The meeting will be followed by observing, weather permitting. Feel free to bring a 'scope or binoculars!

All are welcome! If you would like a map & directions to River Ridge Observatory, please just drop an email to: info@caasastro.org. Hope to see YOU there!



BSA Troop 770 enjoyed camping out at CAAS April 28. More pics on page 5.

Boy Scout Campout Report

By Rocky Togni

CAAS hosted 15 scouts and scouters from **Troop 770** of Sherwood on Saturday night, April 28 at River Ridge Observatory. We were treated to outstanding weather. There were lots of oohs and aahs as the waxing gibbous moon, Saturn, and Venus were introduced to them. Several double stars, M3, and M35 were also observed through scopes and binoculars.

Donald Ferren, Jim Dixon, Pat and Sandy Morris, and Coy Scott provided scopes and expertise. Some of the boys and adults learned to use a dob. Stacy Edwards and Don Lewis provided support and took pictures. Rocky Togni worked on the Merit Badge and constellations with 9 boys in the troop. The boys sketched the western sky and

then plotted where Venus was as one of the Merit badge requirements. They also sketched the position of the Big and Little dipper in the evening and again at 5:00 am. The Troop treated several CAAS members to a steak supper. During the afternoon the troop worked on wood tools and building fires. They also cleaned up the burn pile and mowed the Western half of the property. Rocky Togni and Donald Ferren camped out with them.

Continued on page 5

On the Cover— Saturn and Jupiter, by John Reed



Saturn 2006-05-08 21:03:04

This setup is the same for both images. It was with my homemade 18" f/4.5 dobsonian on a platform by "Affordable Equatorial Platforms" by Art DeBrito. I use a Phillips ToUCam and a Televue 2.5x Barlow. This makes my effective focal length 5000mm which gives me large images of planets. I use Registax to process the image, selecting only the very best images to stack. On this image I note that the seeing was good and I use 70 out of 1000 frames of video. I used a little freeware program called "Neat Image" to remove some of the noise left in the image.

Jupiter 2006-08-07 20:38:42 CDT

I wouldn't call this my best Jupiter, but the red spot finally was in the right place at the right time. Red Spot Jr. doesn't look quite as defined as it had before, but it was still visible above and left of the GRS.



Notes from the May CAAS Meeting



We had our May 12 meeting at the CAAS property with 8 members. Several more were in Nashville Arkansas for a Star Party. When I arrived Don Lewis was mowing the lawn and Chris Lasley was nailing the deck on for his observatory. Donald Ferren finished up mowing with the push mower. The lawn really looks nice. I wish mine at home looked half as good.

We discussed the location and how to anchor the building. We decided to place it on the east side of the meeting building with the front even with the front of that building. Following is a list of the plan and action items for the shed:

- Level ground - Need some dirt, some from tilling some uneven ground close to the location. I'll bring a small amount in my truck (can't carry much that distance).
- Concrete anchors - Chris Lasley has left over concrete he will bring and some scrap lumber for forms. Pat Morris has some lag bolts he will bring. Plan is to pour concrete and while still liquid insert bolts using base of building for template.
- Pick up building, 2-2x6 8' long - Pat Morris.
- I don't have the shed plans handy to list tools needed. Maybe someone else can supply a list for that.
- Plan on meeting June 9 at noon (next meeting day) to start project. Allen is planning on mowing earlier that week, although he has a prior commitment on Saturday.

We also discussed the problem of the air conditioner not being turned off. Following suggestions:

- Put notes on the key chain to check air conditioner and maybe on the doors so when you lock up you see it.
- Wire a timer switch into control circuit to prevent unit from turning on unless timer switch is on. This would probably require review of schematic. John, you might have some thoughts on this and possibly the schematic. The on off circuit is probably not 220 and may be low voltage.
- Wire a light into the unit showing it to be on. This would also require a schematic.

We should probably put a tag on the key chain even if we do one of the others. I will take responsibility for having ready to put on June 9. We had some good food and some as promised book reviews. The ones I remember are:

- Chris Lasley - Norton's and Burnham's. Two essentials every Astronomer should be familiar with. We have Burnham's in our Library and I have a Norton's I will bring up next meeting.
- Coy Scott - had 3 books. The one I remember best is the one on optimizing your scope. Another one was a nice guide to

deep sky objects including Messier that had pictures with coordinates along the side to make finding easy. Coy could you supply the names of the 3 books.

- Rocky - "The Sky Observer's Guide", by R. Newton and Margaret Mayall Circa 1960. A beginners guide with simple star charts of the constellations and objects for binoculars and small telescopes.
- Don Lewis - Laminated Deep Sky chart by Orion. Handy for developing observing or photo plans for an evening, impervious to the elements such as dew.
- Donald Ferren - didn't bring it but referenced a Photographic Essay he enjoys.
- Allen Lee - Referenced an Atlas he finds easy to use. Sorry I didn't take better notes.

Rocky also went through his Scout Merit badge presentation and brought up Stellarium showing it as a very useful training aid. Meeting closed with clear skies and Donald Ferren and Jim Dixon breaking out there scopes. I will be going back to China tomorrow for hopefully the last time, returning on the 24th in time for a long Memorial Day weekend. Hope we can have a big turnout for the June 9th meeting and work day.

—Rocky Togni CAAS President

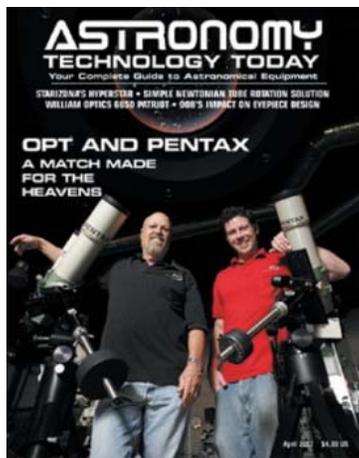
CAAS Member Snapshot



Rocky and Carol Togni at the CAAS Christmas Party, 2006.

Magazine Review

By Jim Dixon



There is a new magazine in town and it is called Astronomy Technology Today. It is not your usual astronomy magazine. If you want to know how the universe started or what is coming to opposition this month this magazine is not for you. If however, you want reviews of astronomical equipment, tips and project histories for ATMs, and news about all kind of equipment then ATT may be for you.

I received a complimentary issue for review, the April 2007 issue. The magazine is printed in newsprint rather than the usual glossy paper. This issue had about 70 pages which included a fair number of ads. The issue included an article about Starizona's Hyperstar adapter for SCTs (written by a Starizona employee), a review of the Williams Optics 66SD Patriot refractor, a review of a new Televue eyepiece, at least three ATM projects, a couple theory articles, plus perhaps two dozen other product reviews.

The cover price is \$4 per issue but they are currently running a subscription special of \$12 annually (\$1 per issue). In my opinion, it is definitely worth at least one year's subscription at that price. If you should miss that offer, CAAS members can still get a discount through your membership although I'm not sure just how much that discount will be.

[\(Click for Astronomy Technology Today Website \)](#)

A Reader Shares....

On May 19, Venus and the Moon hung closely together in the west, providing a spectacular view, and a wonderful photo opportunity. Former CAAS member Brian Mitchell captured this image from Pinnacle Mountain State Park. He writes:

“This is nothing compared to what you real astrophotographers capture, but I send it to show what can be done by anyone using whatever simple, meager equipment they may have.



I was spending a quiet evening at Pinnacle catching up on some reading. I had with me my little 3.1MP 4x/3.5x digital camera as I usually do. As I was about to leave, I was surprised by the sight of the Moon and Venus together (I regret to admit I haven't been keeping up with events for a while). I also just happened to have a cheap 4 inch mini-tripod in the case.

I attached the camera to the tripod, set the zoom to the 4x maximum optical zoom, and set the shutter priority for long exposure times. I then placed the camera and tripod on the car roof, using the viewscreen to make sure I was aimed properly, and set the timer so the camera would have time to settle after pressing the shutter release.

It took a few times to determine the proper exposure time, but in the end, it came out with something fairly decent for what was being used. Best yet, no film wasted in the trials-and-errors :)

Happy hunting to all of you who "could never do that".

—Thanks for sharing , Brian!!

Boy Scout Outing Report

Continued from pg 2



The whole troop arose at 5:00 am (a struggle for some of us) to see Jupiter, Mars, the Milky Way without the moon, and a whole new set of constellations. Several even caught a meteor.

The troop was very appreciative and hinted that they might like to do this again sometime if possible.

—By Rocky Togni

June 2007

Schedule of Events—June 2007

Sun	Mon	Tue	Wed	Thu	Fri	Sat
					1 Full Moon	2
3	4	5	6	7	8 Last Qtr Moon	9 Work Party and Meeting
10	11	12	13	14	15 New Moon	16
17	18	19	20	21 Summer Solstice	22 First Qtr Moon	23
24	25	26	27	28	29	30 Full Moon

- June 1—Full Moon
- June 8—Last Quarter Moon
- June 9—CAAS Work Party 1:00 p.m.; Potluck Supper; Regular Meeting 7:00 p.m.
- June 15—New Moon
- June 22— First Quarter Moon.

Other Upcoming Events

- July 21— Woolly Hollow Star Party
- July 28—Pinnacle Moon Party
- Aug 18—Pinnacle Star Party
- Sept 15—Pinnacle Star Party

Garage Astronomy

Continued from page 1

crate and really wasn't tube-like at all. The primary mirror (which he had ground himself) was mounted on a circle of plywood supported on three carriage bolts. The spider was made of wire. The whole thing creaked when moved. The mount was simple galvanized pipe with threads that slipped to allow movement in right ascension and declination. Yet in spite of all this it delivered beautiful images. The moon looked crisp, stark and beautiful. The planets were sharply drawn in the old hand-me-down eyepiece he was using. I was stunned. You could build a thing like this in your garage that worked this well!

Well needless to say I was hooked. It wasn't long after this that I built a Newtonian of my own. A photo of it may be seen on my web-site: <http://www.propermotion.com/jwreed/>

The tube was made of six long spars connected by plywood rings. It was really over complicated, but worked fairly well. I soon learned that if you are going to build Newtonians that you must also get very good at an arcane art called collimation. For years I was never really happy with the images that scope provided until I really learned how to collimate. That being said I did really learn a lot building that scope and soon had many ideas on ways to make better ones. During this period Elliott began to grind his 12.5" mirror which at that time was a huge objective. The really big mirrors that are so common now were not even heard of back then. My 10" scope gave me years of use and made it many starparties including the Texas Star Party years ago. I re-built the mount several times, even making a split ring contraption that tracked using a small synchronous electric motor. Eventually the tube was mounted in a Dobsonian cradle that I read about in S&T. The article was about this guy named John Dobson and showed pictures of his gun-turret style mount that moved effortlessly across the sky. Of course the big advantage was the ease of setup: simply drop the tube in the cradle and go! All my visual scopes have used that style of mount since.

As I described in the binocular article I had a chance to look through one of these and got interested in building my own bino scope. Of course if you read the article that went on for years and is a whole other story. My first bino project occurred while I was still living in Rogers. It also used a Dobsonian mount and made the rounds of many starparties. As to unusual projects Elliott had also built a 6" refractor using a stove pipe that he kept on a huge pipe mount under his parents' carport. It was almost as if we were egging each other on with wilder and wilder projects. He had also finished his 12.5" scope which gave excellent views that I will never forget.

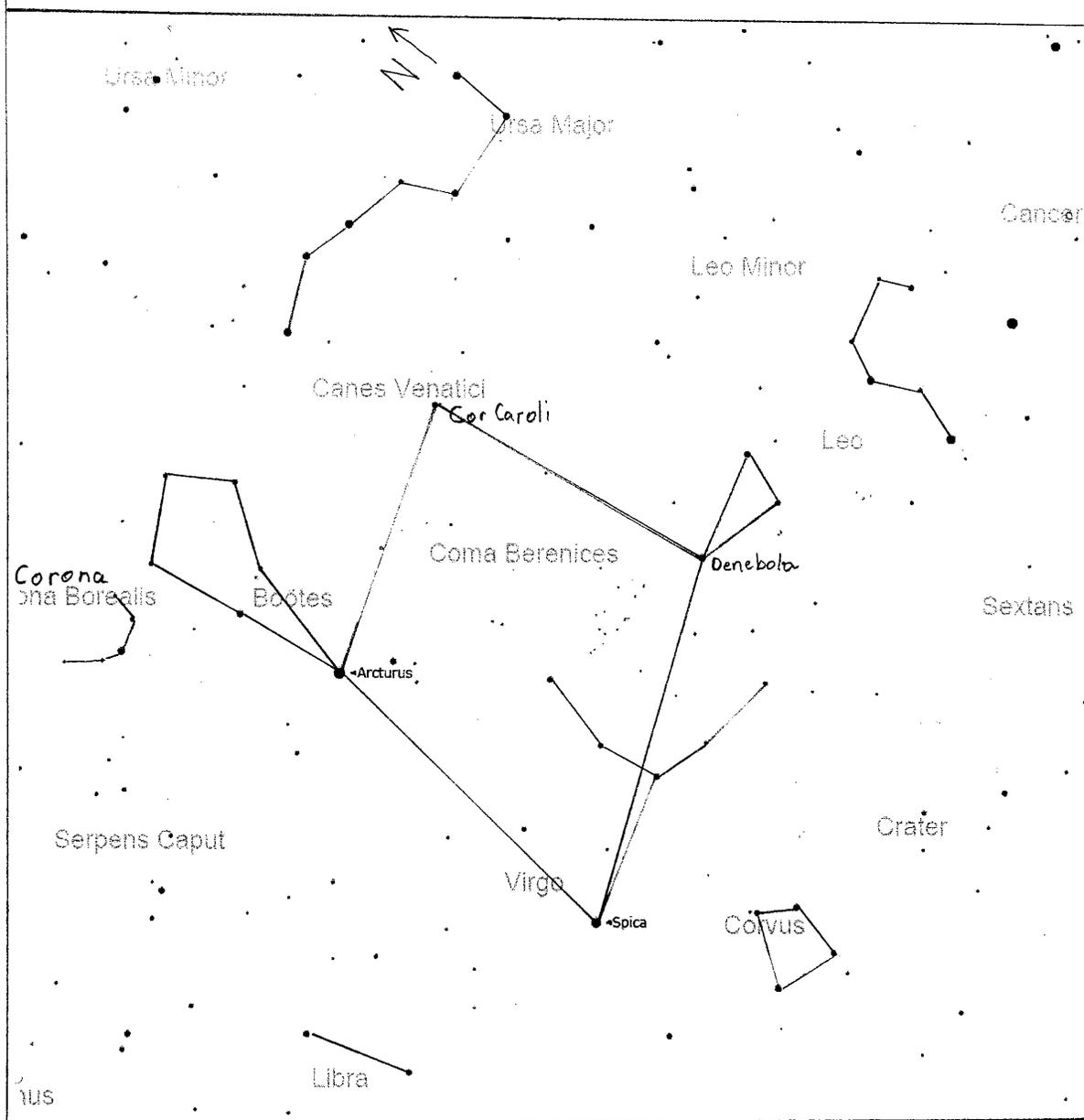
Well eventually Elliott and I parted. He remained in Fayetteville, while I moved away in search of work. Elliott switched his major to Architecture and so had a couple more years to finish school, whereas I graduated in 1982 and started work in Rogers. I worked there for five years and finally left Rogers to work for a firm in South Carolina, then finally ending up in North Little Rock. As I recall Elliott was working for an architecture firm in Little Rock at that time. I even remember us making a trip to the property back in the late 80's where I think we looked through his 12.5". Elliott later went back to Fayetteville to work there. It was during this time that David Reynolds of CAAS got me interested in building truss tube scopes. David came by the house every weekend for a couple of months while we worked on his 10" scope. I now call this scope Mark I. I have built four of these scopes, including one for Bruce McMath which is still at the property. These scopes were very light yet rigid and seemed to work well. The only drawback to them was they took a long time to build. The final version of these scopes was Mark IV, the 18", which still resides in my observatory behind the house.

Well now it seems I am engrossed on another building project: the re-design of my 10" binoculars. Sometimes I wonder if I enjoy the construction projects more than the observing! On cloudy nights I remind myself that I am doing astronomy in the garage. On clear nights I anguish over which to do: observe or build. Both have been very rewarding. The Buddhists say it's all about the journey and not so much the destination. I guess I can see that. I'm sure once I get the binos working there is another project on the horizon. Clear Skies,

— John Reed

The Spring Diamond

by Rocky Togni



Spring Diamond Visible March to July in the evenings

Arcturus 2nd brightest star in Northern Hemisphere and 4th brightest overall. About 37 light years away.

Cor Caroli Nice double star for small scopes. Note colors. Mag 2.9 and 2.95.

Spica – Mag 1.0, 275 light years away, 2300 times as luminous as our sun.

Virgo has a rich history with the Egyptians, Greeks, and Romans worth reading about.

Denebola – The Lion’s Tail. Magnitude 2.14 and about 43 light years away.

Cancer, Leo, Virgo, and Libra in Zodiac/Ecliptic

Small dots in Coma Bernices are galaxies

2

Naked Astronomy

by Rocky Togni

No, this is not an essay on running naked under the stars on Midsummer's Night (which will be upon us this month). It is a book review on Fred Schaaf's book "*The Starry Room – Naked Eye Astronomy for the Intimate Universe*".

The book is a series of essays on Fred's personal observing experiences (and a lot of astronomy history) without the aid of optics. It seems that most people who show an interest in Astronomy want to look through a telescope and know which scope to get. Many who pursue our hobby in this way quickly lose interest because telescopes can be difficult contraptions and they don't know how to find what to look at.

He has an outstanding section on Lunar Eclipses with a lot of history. Since 1601 the darkest lunar eclipses ($L=0$ on Eclipse brightness scale) have all followed huge Volcanic Eruptions. Some of you may remember the last really dark one in 1982, after an eruption in Mexico. According to Fred the total brightness of the moon at mid totality was equal to a 3rd or 4th magnitude star. Unfortunately I missed it or don't remember it. I have been disappointed in the lunar eclipses I have seen because they were so bright. Now I know why they were so bright.

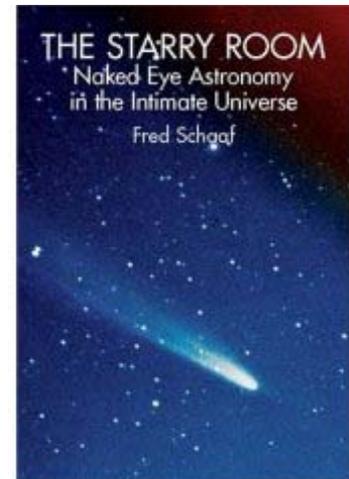
Another chapter is about sun dogs and rainbows. There are all kinds of variations on these, some rare and some common. More atmospheric than astronomical, they are still a great reason to look up and take the time to observe even in the daytime in not so perfect weather. After reading this you may want to start adding these phenomenon to your Astro journal.

Meteor comes from the Greek Meta (beyond) and aeiros (raise) and originally meant any atmospheric phenomenon. This would include lightning and even aqueous meteors (rain) in some technical jargon. Fred talks about a memorable stormy night when he observed both lightning and meteors. Another chapter is devoted to a fireball he saw over New Jersey in 1982 while observing comet Austin. I can list the 5 or 6 (according to definition) I've seen. My best was about 10 years ago as my wife and I were driving east to Heber Springs from Conway at dusk. A bright green fireball came into view at the top of my windshield about brightness of a half moon. This meteor was also observed by meteor/comet observer Gary Kronk in Illinois. He took our observations and pinpointed where it possibly could have landed in the boot heel of Missouri. My first fireball was on the night of the Leonid Meteor shower in 1966. I was in West Tennessee and the sun came up too early for me to witness the meteor storm I was hoping for.

Planetary conjunctions are not neglected. 1982 was a good year for Fred as he talks about when all the planets were within about 30 degrees. Earthquakes and all kinds of calamities were expected, but as he explains this happens every 179 years. Some of my favorite Astronomy pictures are conjunctions with a nice horizon.

Fred ends with an essay on Walking to the Stars. He says perhaps he was wrong that all you need to get started in Astronomy are the eyes. He says something you may need before you use your eyes is your feet. To walk to where the stars are visible, out from under the city lights (your car can supplement your feet).

Fred is an excellent writer having written the monthly "Eye on the Sky" column for Astronomy magazine and other books including *Seeing the Sky*. Experienced or beginning observers can glean a lot from *The Starry Room* and enjoy the sky even more.



—Rocky Togni

The Midnite Sky

by Glen Schwarz

The King in his Domain

The ancients must have known far more about astronomy than our history lets on. For they correctly named the king of all planets for their leading deity, Jupiter, Jove, or Zeus in the ancient Greek. In June mighty Jupiter takes his place at the pinnacle of the heavens. Turn your scopes directly overhead, but 45 degrees to the south at true midnite, (1 am CDT) to catch your best view of the gas giant and its four Galilean moons.

The four moons of Jove are named, in order of distance from the planet; Io, Europa, Ganymede and Callisto As predicted by Arthur C. Clarke, the second moon Europa is the furthest we can expect to expand the domain of mankind during our lifetime. If we don't blow ourselves up or smother ourselves in the interim, Europa has water and an acceptable temperature to beckon us half a billion miles out into the solar system.

But there are baby steps to be taken long before the moons of Jupiter are reached. To review the agenda of our immanent domain, we must first return to the moon, and establish a base there. Then Mars, and a substantial presence on that planet. Then we could reach for the asteroid belt, and use the resident material there to build a solar orbiting way station. Then finally, and more likely in your children's lifetime than ours, mankind may reach Europa, and attempt a landing there.

Venus Hangs Out for June

You may have noticed, even if you are not a sky watcher, that bright star hanging out high in the western sky after dusk. It is of course, our neighbor and sister planet Venus, fast approaching our position on the inside track of the solar system raceway. But it is unusual for bright Venus to just hang there, unmoving in the eyes of anyone who would look to the west at say, 9 pm every night. Indeed the crescent moon has passed close by the planet twice, and will do so again on June 17, if my calculations are correct. The planet is like, a lighthouse in the sky.

The reason for this stationary loitering is a simple coincidence. The planet has reached its furthest angle of separation from the sun, according to our view askance from here on the surface of Earth. Now Venus is racing to close the distance between us. But this is happening, by happenstance, just as we reach the summer solstice for us dwellers in the northern hemisphere. So there is no significant movement in the nightly position of bright Venus, neither up nor down, nor North or South. Soon however, she will begin her descent into the western horizon and trek across the sun sometime in August.

Dept. of Astro-Corrections

Well I finally nailed the Star by Crescent prediction on May 19. A crystal clear night and here is the proud picture I took. Venus was just a pinkie finger in angular distance from the bright crescent moon. And the weather was, well it was just picture perfect. Take you own shots on June 17, if the weather Gods are in you corner.

But we printed two photos in last months column, without crediting the noble artists. In the new header for this column is a shot of Venus, taken in April of this year by Kyle Edwards of the Central Arkansas Astronomy Society. Ditto for the crescent moon picture, taken in 2004 by John Reed, whose work has appeared in this column before. Check out the whole spectrum of their cosmic photography at the club's website:

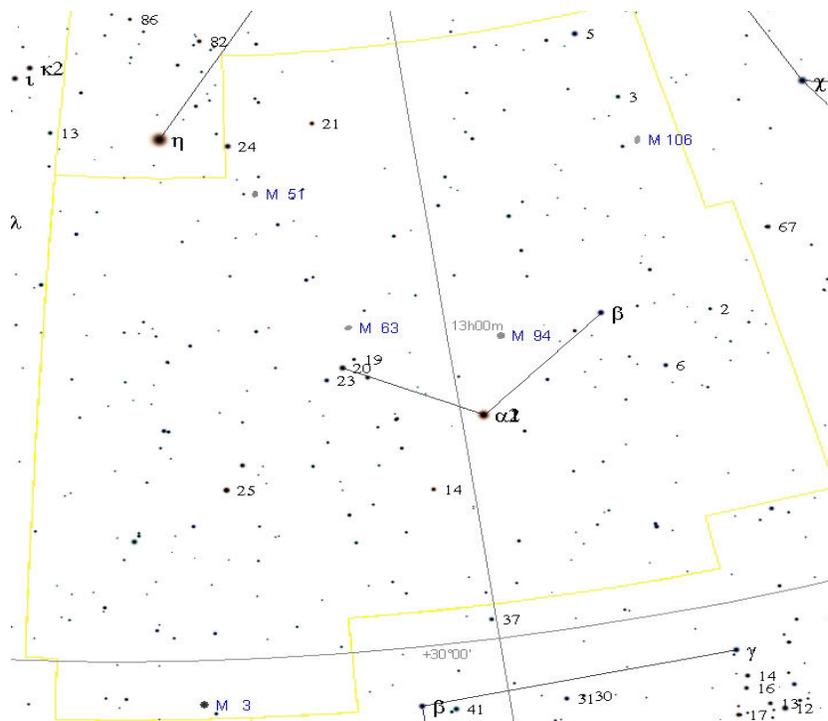
[Kyle Edwards' Gallery @ Caasastro.org](http://Caasastro.org)

[John Reed's Gallery @ Caasastro.org](http://Caasastro.org)

(Editor's Note: This article is reprinted from the June edition of the Little Rock Free Press, with the gracious permission of the author. Please refer to the LRFP issue for the photo referenced above. Thanks, Glen!!)

June Constellation Close-Up — Canes Venatici

By Jim Dixon



Canes Venatici is a small northern constellation situated between Bootes and Ursa Major. It is one of three constellations (with Canis Major and Canis Minor) that is named after dogs, in this case “the Hunting Dogs”. Its brightest star, Cor Caroli is a 2nd magnitude star in a sparse area and is easy to spot especially with help from the handle of the Big Dipper. There are no other bright stars in the constellation but Gamma CVn is a very red Carbon Star nicknamed “La Superba”.

Canes Venatici is home to several Messier objects that you might have thought were in other constellations.

- M3 is a large and bright globular cluster just inside the constellation boundaries and adjacent to Bootes.
- M51 is the famous “Whirlpool Galaxy” on the opposite side of the constellation and almost in Ursa Major.
- M106 is another spiral galaxy that is nearly in Ursa Major. Unlike the face on Whirlpool, M106 is tilted steeply from our point of view so that one dimension is nearly three times that of the other.
- Closer to the center of the constellation, you will find Messier 63 (the Sunflower Galaxy) an 8th magnitude spiral galaxy
- Rounding out the Messier objects is M94, a nearly face on 8th magnitude spiral galaxy that has a very bright and extended core due to a large family of bluish stars.

The Ions of Dawn

by Patrick L. Barry

This summer, NASA will launch a probe bound for two unexplored worlds in our solar system's asteroid belt—giant asteroids Ceres and Vesta. The probe, called Dawn, will orbit first one body and then the other in a never-before-attempted maneuver.

It has never been attempted, in part, because this mission would be virtually impossible with conventional propulsion. “Even if we were just going to go to Vesta, we would need one of the largest rockets that the U.S. has to carry all that propellant,” says Marc Rayman, Project System Engineer for Dawn at JPL. Traveling to both worlds in one mission would require an even bigger rocket.

This is a trip that calls for the *unconventional*. “We’re using ion propulsion,” says Rayman.

The ion engines for the Dawn spacecraft proved themselves aboard an earlier, experimental mission known as Deep Space 1 (DS1). Because ion propulsion is a relatively new technology that’s very different from conventional rockets, it was a perfect candidate for DS1, a part of NASA's New Millennium Program, which flight-tests new technologies so that missions such as Dawn can use those technologies reliably.

“The fact that those same engines are now making the Dawn mission possible shows that New Millennium accomplished what it set out to,” Rayman says.

Ion engines work on a principle different from conventional rockets. A normal rocket engine burns a chemical fuel to produce thrust. An ion engine doesn't burn anything; a strong electric field in the engine propels charged atoms such as xenon to very high speed. The thrust produced is tiny—roughly equivalent to the weight of a piece of paper—but over time, it can generate as much speed as a conventional rocket while using only about 1/10 as much propellant.

And Dawn will need lots of propulsion. It must first climb into Vesta's orbit, which is tilted about 7 degrees from the plane of the solar system. After studying Vesta, it will have to escape its gravity and maneuver to insert itself in an orbit around Ceres—the first spacecraft to orbit two distant bodies. Dawn's up-close views of these worlds will help scientists understand the early solar system.

“They're remnants from the time the planets were being formed,” Rayman says. “They have preserved a record of the conditions at the dawn of the solar system.”

Find out about other New Millennium Program validated technologies and how they are being used in science missions at <http://nmp/TECHNOLOGY/infusion.html>. While you're there, you can also download “Professor Starr’s Dream Trip,” a storybook for grown-ups about how ion propulsion enabled a scientist’s dream of visiting the asteroids come true. A simpler children’s version is available at <http://spaceplace.nasa.gov/en/kids/nmp/starr>.

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



Artist's rendering of Dawn spacecraft, with asteroids. Largest are Vesta and Ceres. Credits: Dawn spacecraft—Orbital Sciences Corporation; background art—William K. Hartmann, courtesy UCLA.

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 June 2007 at 8 PM CST from 35° North latitude

