STARSCAN

Johnson Space Center
Astronomical Society

VOLUME 22, NUMBER 2 February 2006

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"We Don't Look At Stars"

An Asteroid Occultation First Experience
By Triple Nickel
Jan 5, 2006

"We don't look at stars!" These are my oft-repeated words to people who think astronomers look at stars and make the little white dots look like big white dots. I not only say this phrase often, but it is exactly what I believed before I became an amateur astronomer. But I found out we look at beautiful things like galaxies and nebula and okay, star clusters…but that is as close as we get to looking at stars! Right? Well, now I must change my answer and say…wrong! To view an asteroid occultation, you look at a star and wait for it to "wink" at you as the asteroid passes in front of it. Makes sense, but I had never thought of some of the, well, obvious stuff. For example: The asteroid "has to" pass in front of the star, right? Sure! All the asteroids we know about are IN our solar system, and the nearest star (not counting the Sun) is 4.3 light years OUTSIDE our solar system. I know…"Duh!" But when I began to think about it more, it became exciting to picture the proximity of the asteroid to us relative to the star! And, sometimes for a short time before the asteroid is hidden in the light of the star, the asteroid can actually be seen. Cool eh? But this is not what I really wanted to write about here.

Paul Maley has given our club many hours of his time telling us about asteroid occultations and I always sat there listening, admiring his work, but always drowning in the "we don't look at stars" thing. I was not jazzed enough to go out and search the sky on a cold night (they are always cold right?) for a dim dot to watch it until it dimmed some more. That is what it all sounded like to my amateur (read amateur as uninformed) mind. Then Paul showed us that with enough people reporting the time and duration of this winking from known locations, we could not only get a feel for the size of an asteroid, but also the shape. You 'gotzta' be kidding me! No really! You can. And Paul showed us events where this happened and the amateur community made an impact on astronomy…again. I thought, "I gotta give this a try". Also, it was easy for me to commit to this one because the occultation path went right over my house! "Bring the occultation to them and they will observe!" And so I did…almost totally jazzed, I thought. More on this later.

For weeks I read Paul's fabulous web site http://eclipsetours.com/events and clicked on all the links. This site is a must read for the beginner, and I even recommend it for the mildly interested. Nothing left uncovered on this site. I felt like failure was NOT an option after reading Paul's advice. I got so into the planning that I had Santa bring me a tape recorder and a short wave radio for Christmas. I studied the charts, investigated Starry Night Pro, and even went out and practiced finding the target star on a couple of nights before the event night (a must by the way). Note to self here: Gemini at 0416 in the morning is upside down from Gemini at 2000 in the evening. Boy, obvious stuff I have experienced many times before, but when you are searching for a 9.2 magnitude star in the Aurora Houstonalis, standing on your head is not a good plan. So, the morning I went out at 0330 to practice (yes, Triple can get up before noon), made all the difference on the real day. A big difference!

So there I was, all 'edgumuhkated' on occultations, and ready for the big event. I went out the night before and set up all my equipment so it would be temperature stabilized, placed an extension cord where it could be used for my electrical things, cleaned all my eyepieces and TELRAD and put new batteries in everything. I even talked to my neighbors to let them know they might hear funny sounds coming from our backyard at 0400 and also asked them to turn off their back porch lights. They turned out their lights but said they could not control one tactically placed floodlight that comes on whenever there is movement in their back yard. I said no problem; unless it is windy, the light won't come on! Another note to self here: if it can go wrong on the morning of an occultation…IT WILL!

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I went to bed early enough to get a nice 4 hours of sleep (not enough) and put my clothing selection where I could get dressed without waking anyone in the house. I even put a red light by my room so I could keep my dark adaptation going. It all worked until I opened the back door and was hit by a gust of wind and the neighbor's floodlight! "I'm blind!" With pupils slamming shut, I started to set up my scope only to find this floodlight was pointing right at my planned set up spot. Panic at 0250 hurts worse than I would have guessed. Plan B? Plan B? I had thought so much about Plan A that there wasn't a Plan B…and I am known for being a Mr. Plan B kind of guy. Did I mention panic yet? Even if the light wouldn't bother me, the wind would turn my 8" Dob into a weather vane and I would be looking in the opposite direction from that needed. Oh wait…there, behind the garage…is the target high enough that I can be 15 feet away from the garage and still see over the roof? YES! And this blocked the wind almost to nothing! A great Plan B. Wish it had been Plan A, then that panic thing would have been missed.

So, this small delay only set me back about ten minutes and now I was ready to find the pointer stars, starting with Castor and Pollux. Who stole them? What? Clouds? Plan C? Never say die! I set up, got out my charts, sat there thinking "What would Chuck Shaw do?" and "Geez-o, there are 137 people dealing with this same thing so, get busy." Castor and Pollux finally peeked out from the clouds. I started my star hopping down from Pollux to Lambda Gemini, over to a group of stars that were lined up like a skyward pointing divining rod, and up to 85 Gemini resting at the tip of this rod.

I couldn't do it! The clouds were clearing but the seeing was too bad. I needed to get my scope pointed in the area of 85 Gemini but couldn't see enough to point the TELRAD there. I thought "What would Chuck…" you know, and I grabbed my green LASER and put it up against the eye-piece while looking through my wife's Orion Mini Giant 15 X 63 binoculars. I did not look like I had a clue what I was doing, but I must say, I didn't care…I needed to get to the eyepiece and find 85 Gemini NOW!

The green beam exploded out of the end of my homemade Dob and it worked like a charm! I could see 85 Gemini fine through the Mini Giants and all I had to do was move the scope and therefore the green LASER beam to inside the binocular field of view. I think I used both arms, a leg and an elbow to move the scope and LASER beam. Technology...with enough of it, I can succeed. So off and running…well, crawling for sure. From 85 Gemini, I quickly brought the scope down and to the right, losing sight of 85 Gemini, and found a field of stars that had to be close to the target. From this, I tried to make the field look like the charts. A very hard lesson learned as a fighter pilot while flying at 500 feet and 540 knots hit me square in the eyes! I was trying to make the chart match what I was looking at, and this can and did spell trouble for me while flying and was repeating the history here at the eyepiece.

I grunted in disgust and said "Chuck…help me man"! At this point I realized I had thought of Chuck three times and that there must be something terribly wrong with me. I shook my head like a dog coming out of water, and quit thinking of Chuck and got back to reading the charts, starting from a known star, and slowly stepping to the target star. It was a cakewalk when done correctly. I was ready for the occultation and I had ten to fifteen minutes to spare.

So I turned on the dreaded short wave radio to find it was very good for producing static and foreign speaking people talking about, uh, well, I am not bilingual so I don't know what they were talking about. I think my neighbors heard my next exclamation, but I will edit it from here now. "Channels" I thought, I preset several channels for this very possibility. All of them produced the same sound and my repeated exclamations. I had worried about this at great length so I had my watch all set to Universal Coordinated Time. So, I left the radio on and went back to the eyepiece to monitor my tracking.

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The scope was holding a good track of the target. Five minutes to go and the radio started playing the clock time and hope was restored. Final word on the radio; it was in and out so I augmented the voice on it for the tape recorder by repeating what I knew the radio was saying. I had a good 20 minutes of viewing of the target star and it never winked at me. I tracked and studied it for 4 minutes past the event time. I feared failure, but had worked so hard to do it right that I wondered how I could have failed. So, to back myself up, I reduced the eyepiece power and carefully drew the star field I was viewing. I drew each star in the vicinity of the target, and included the faintest viewable stars.

I packed up all my gear and went inside. I got out the charts to see what I might have done wrong. The charts revealed that I had drawn several magnitude 11 stars and a couple of 12's that were paired together. And best of all: I was tracking and studying the correct 9.2 magnitude star for this event. I was so relieved. I then thought that I must have been outside the path of the occultation. The path had changed a few times in the weeks prior to this day…maybe, just maybe. Well, at the time of this writing, it appears that my "miss" is the first miss, and that is a good report. In fact, the first miss can be a very important report. The first miss defines the edge or limit of the asteroid and you really need this "miss". There are about three unreported tracks between my track and the next covered track, but that still makes my report the "first miss" in this direction. I have been on cloud nine since finding this out. Either way, this has been a fabulous experience. I got to use all my astronomy toys and skills, I got to do something very challenging and important, and I got to think of Chuck and "What would Chuck do?" Okay, maybe that is not a good thing eh? Bottom line is that Paul's programs are well-run, very important, very challenging, and most important, very fun! I am now jazzed more than I thought possible to "look at stars."

Occultation of Asteroid 466, Tisiphone

Paul Maley

A front pushed clouds into the Houston-Victoria area and was slow to clear. However, by 4 am most of the clouds had exited the area leaving a few cirrus patches, which did impact some observers. The plan was to have mobile observers drive into the lines* between S7 and N7 which had the highest probability of seeing an occultation. Errors in the prediction were expected to push possible observations as far north and south as N12 and S12. As it turns out, 8 observers did successfully record the event. The longest chord was reported by Charlie McLeod at 8.44 seconds, his first occultation, which was captured on video. As luck would have it, Rick Frankenberger of San Antonio timed a 4.6 second event from close to the southern limit and Dennis Borgman from the George Observatory videotaped a 4.76 second event on the north side of the path. The next station north from Dennis was Triple Nickel, making his first ever attempt using an 8-inch Dob. He clearly reported no occultation. It appears then that the actual north edge was in the 5 mile gap between Borgman and Nickel. A similar suggestion is that the actual southern edge must have been in the 5 mile zone south of the Frankenberger site.

This is to be considered a highly successful experience and congratulations are in order to the above observers and Paul Sventek, Richard Nugent, Dave Clark and Matt Delevoryas who also timed the occultation. Thanks also to the entire team who braved the weekday morning to get up and attempt this event. Those who made negative observations should clearly see that your work is

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* A map of the predicted path of an asteroid occultation across an observing area is partitioned with parallel lines on either side of the occultation's original predicted path in order to assign locations to observers to obtain the widest possible coverage of the occultation. These parallel lines are labeled with a letter, either 'N' (north) or 'S' (south) and a number.

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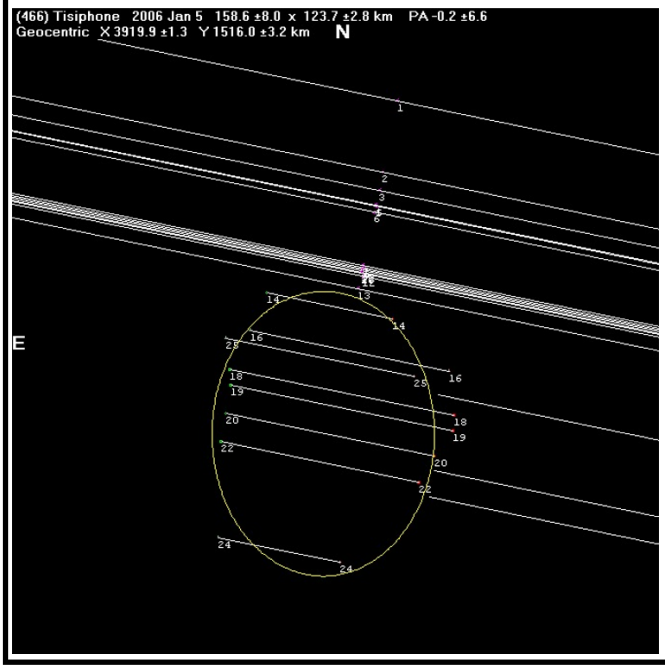
very valuable! Special appreciation is extended to Fletcher Gray who made a special trip to Victoria 3 days earlier to scout for good sites in addition to having returned a second time for the event. Thanks to Debbie Moran and Doug Rask who also drove long distances into the path. Due to the rare nature of the predicted track appearing to have altered due to a possible perturbation by another asteroid (at least that is the theory), it is hoped that this detailed information will help not only to shed some light on that problem, but also confirm that the size of Tisiphone was a bit larger than had been forecast. This was also a case where the consistent nature of the negative sightings was very important. The fact that we could easily determine the upper boundary of the northern edge of the true path was only made possible by having evenly spaced dedicated observers. We had at least two cases where brief dimmings were seen but other observers who were at virtually the same chords did not confirm them; hence we can chalk these up to passing cirrus.

Lessons were learned from this experience, especially for those who had not observed an occultation before and those who had not observed one in a long time: Be sure to give yourself enough time to find the star; if using a "goto" scope, be sure you have enough alignment stars visible in case of clouds; finding the star field east of the meridian and then attempting to relocate it when it has moved to the west side can cause you to get disoriented due to the changing aspect of the star pattern.

The graph below shows a preliminary solution that I generated. The fit is not perfect and this should be definable later on. Though the model shows Tisiphone as an egg (grade AA perhaps?), the fact that the lengths of each chord do not match the shape is not unusual. No asteroids would conform to a precise geometric shape due to their irregular makeup. It also shows that the rotation of the asteroid is important in determining how many observers actually see the occultation. Were it to have passed centrally over Houston we might have 20 or more observations and excellent resolution of the form due to the close observer spacing in the city. The graphic also shows the great value in being assigned a line. If all lines are staffed then we can get complete and accurate coverage across the face of the asteroid. Where the lines are thickest means two observers were literally on top of each other with respect to the ground track because they could not move.



N27	1	K Drake	NO
...	6	W Aulenbacher	NO
...	2	S Barziza	NO
N20	3	S Sartor	NO
N19	4	P Nolan	NO
...	5	B Cudnik	NO
N15	7	D Rogan	NO
...	9	B Dillon	NO
...	8	C Shaw	NO
...	10	M Knewston	NO
...	11	L Binder	NO
...	26	W Whiddon	NO
N14	12	T Lawrence	NO
N13	SA	B Tobias	NO
N13	13	T Nickel	NO
N12	14	B Taylor	Clouds
...	14	D Borgman	4.76 s
N9	16	P Sventek	7.5 s
N8	25	M Delevoryas	7.1 s
N7	17	D Morgan	ND
N6	18	C McLeod	8.44 s
N5	19	D Clark	8.37 s
N4	20	P Maley	7.85 s
N2	21	F Gray	ND
N1	22	R Nugent	7.47 s
C	23	D Rask	ND
S2	24 SA	R Frankenburger	4.6 s

NO = No Occultation; ND = No Data; SA = San Antonio

Family Space Days At LPI

Family Space Day for January 2006 was a *Journey To Mars*. The kids tested 'simulated' Mars soil using magnets to check for iron content, and examined the soil with magnifying glasses. They got to make river beds to show how the surface features on Mars were made by flowing water. At the next stop, the kids made calendars with pictures from Mars and also made Mars mobiles with CD's, Mars images and string. As usual there was coloring, glitter and tons of fun. The regular crew was absent for various reasons but the backup LPI team did a tremendous job. Many thanks as always to the good folks at the Lunar and Planetary Institute.

Next Month will be the *Gas Giant Planets*.

Till Next Month,
Matt Hommel.

Family Space Days is a free event for children between the ages of 5 and 8 and their families. It is held from 10:00 am to 1:00 pm on the third Saturday of each month at the Lunar and Planetary Institute located at the USRA Center for Advanced Space Studies (CASS), 3600 Bay Area Boulevard, in Houston. Families are encouraged to bring lunch on sunny days and to enjoy a picnic on the Lunar and Planetary Institute's grounds. The children will be treated to hands-on activities and demonstrations that will allow them and their families to explore the theme of the day. They will read stories, color pictures, and get messy with theme-based crafts!

Upcoming Events for 2006
February 18th – Tour stop 4 – Gas Giants
March 25th – Sun-Earth Day/Eclipse

Please note: Each child must be accompanied by a responsible parent or adult the entire time they are visiting the LPI. For more information contact Mike Madera, Education Specialist, 281-244-2040, or madera@lpi.usra.edu.

All images by Matt Hommel

Attaching A Laser Pointer To Your Telescope

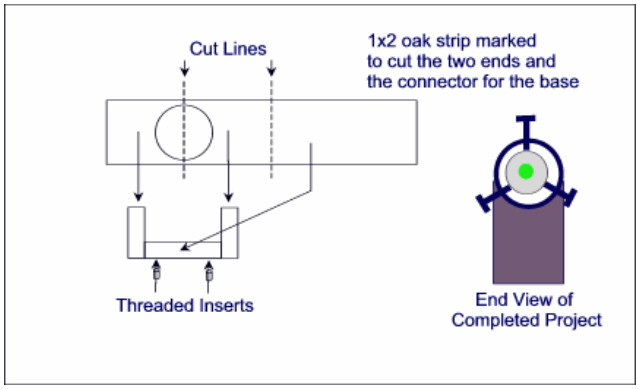
Text and images by Ken Lester

I hope you have read Triple Nickel's personal observing account (on page 3) of his first asteroid occultation. In the article, Triple describes a most unique method of pointing his 8" Dob to the correct star field using his green laser pointer and a pair of binoculars. Like so many of us, Triple doesn't have a finder scope. His pointing device of choice is a Telrad. Here is Triple's description of how he found the target star:

> "The clouds were clearing but the seeing was too bad. I needed to get my scope pointed in the area of 85 Gemini but couldn't see enough to point the Telrad there. ... I grabbed my green laser and put it up against the eyepiece while looking through my wife's Orion Mini Giant 15 X 63 binoculars. ... The green beam exploded out of the end of my homemade Dob and it worked like a charm! I could see 85 Gemini fine through the Mini Giants and all I had to do was move the scope and therefore the green laser beam to inside the binocular field of view. I think I used both arms, a leg and an elbow to move the scope and laser beam."

When I read his story, I realized all Triple needed was a neat mount to attach his laser pointer to the end of the telescope. It also dawned on me that it would be a great public star party tool.

After a little thought, I decided to build one for Lisa's star party scope, an 8" Celestron Star Hopper. I grabbed my laser pointer and went to the garage to see if there was anything I could use to fabricate a holder. A piece of tubular material like PVC water pipe or conduit seemed like a logical starting point. No matter what material I used, it would have to have an inside diameter large enough to hold the laser with enough room left over to be able to align the laser beam with the scope. Collimation could be achieved by two sets of three nylon screws in the same way finder scopes are collimated.



I hit pay dirt right off. I found a short piece of 3/4" schedule 40 rigid electrical conduit. There was ample room inside and the conduit walls were thick enough to tap threads for the nylon collimation screws.

There are lots of ways I could have fabricated the holder. I choose one that took advantage of the fact I could play with my milling machine. I cut away material from the middle of the conduit, leaving the tubular ends intact and connected by a bridge of PVC material. This allows me to easily reach the laser's on-off push button between the two ends. It also makes the entire substructure very rigid. This part was then fastened to a base made out of scrap 1x2 red oak. I could just as easily cut two short pieces of conduit and fastened these at opposite ends of the oak base.

Ready to be installed

Each end of the conduit was drilled with three holes spaced approximately 120° apart. I then used a 10-24 tap to cut the

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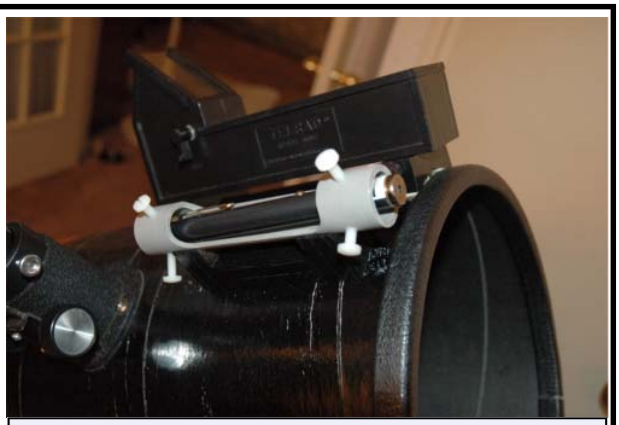
treads for the 10-24 nylon collimation screws.



The laser pointer holder sits next to the Telrad and eyepiece

To fabricate the oak base, I used a 1" Forstner bit to drill a hole near one end of a short piece of 1x2 oak. Using my table saw, I reduced the width of the oak strip to just larger than the hole. I then made a cross-cut through the center of the hole. This produced one end of the base. Another cross-cut gave me the other end and the base connector. The outside diameter of the 3/4 PVC conduit was slightly larger than the diameter of the hole, so I had to sand the inside curves of the ends slightly to create a good fit. I drilled two holes in the bottom of the connector, one on each end. I then installed 8-32 threaded inserts in the holes. The threaded inserts are used to attach the base to the scope. The base ends were attached to the connector with a good quality exterior wood glue.

2 stainless machine screws attach pointer to the scope

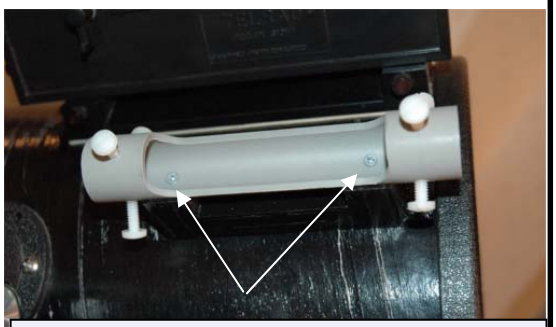
All that remained was to paint (using black spray paint) the base and the 8-32 stainless steel screw heads and washers that attach the laser holder to the scope. The PVC conduit was attached to the base using small wood screws.

After years of being an amateur astronomer, I have been able to correlate enough data to postulate the following theorem: "the number of days until first light is directly proportional to the investment made in new equipment". Having made only a nominal outlay of funds and a few hours of effort, the time until I was able to test the holder (first light) was only about a week. Much better than the months I waited to use my C-11 the first time.

When the sky finally did clear, I set up the scope, inserted the laser into the holder and crossed my fingers that I would be able to see enough of the laser beam in my light polluted skies to test the holder's effectiveness. As it turned out, I was able to see the beam constantly if I had my eye near the laser pointer. Using the front 3 collimating screws I was able to bring the beam into the eye-piece field of view. This took approximately 5 minutes.

With the beam collimated to the telescope, I decided to give the setup a small workout. I turned off the Telrad so I wouldn't cheat. I pointed the scope toward M42 in Orion and pressed the laser's on button. I positioned the beam to the middle of the 3 sword stars. Looking in the eyepiece I found that M42 was almost exactly centered. For my next test I pointed the beam toward Saturn. Again, I was dead on. Finally I tried a harder target, the Tau Canis Major cluster (NGC 2362). The target star was very faint to the unaided eye. It kept fading in and out due to the light pollution and some high clouds. If I had used a Telrad, the light drop due to the Telrad would have prevented me from seeing the target. Using the laser, I pointed the scope at Tau and when I looked through the eyepiece I found that the cluster was just at the edge of the field of view.

This really does work and is going to be great at public star parties!



Two wood screws attach PVC conduit to wood base

Ruins of the Commanding Officer 's Quarters
Credit: Ken Lester

Spring Fort McKavett Star Party

Ken Lester

Although our spring trip to the fort is almost 2 months away, now is the time to make plans to attend. Our bi-annual trips to Fort McKavett are the highlight of the JSCAS year. If you have never attended one of these premier star parties, we hope that you can find time in your busy schedule to participate. If you're a veteran attendee, there have been some changes at the fort you will need to know about.

For those who have never been… Fort McKavett is about a 6 1/2 hour drive out I-10 to the western edge of the Hill Country. The fort is situated some 35 miles northwest of Junction at the intersection of ranch roads 1674 and 864.

In the decade following the 1848 Treaty of Guadalupe Hidalgo that established the US/Mexico border, the US military installed a defensive line of forts lying just ahead of the western limits of settlement in Texas. Opened in 1852, Fort McKavett is one in a series of these remote western forts established to protect frontier settlers and traffic on the Upper El Paso Road.

Family Fun

Today, Fort McKavett is a beautifully restored historic site. It is high (2155 ft.), dry (22.1" annual rainfall), and dark; a stargazer's paradise! It offers shelter, fresh water, electricity and restroom facilities in the middle of nowhere. The park has no public campsites. It closes at 5:00 on Friday through Monday. It is closed to the public Tuesday through Thursday. After closing time, we have the park and the dark skies to ourselves. On Saturday night we do host a public star party. The public usually leaves by 11:00, so the rest of the night should be uninterrupted viewing.

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The fort accommodations consist of a long barracks, complete with cots, which will be opened for sleeping. Electricity is available in the barracks. Bring your own bedding. The 5 room Headquarters Building is reserved for families. Families should contact Lisa Lester at 281-479-1102 or lesteln@swbell.net to reserve a room. There is plenty of tent camping available. There is limited space for RVs and popup campers near the north end of the barracks. Water and electricity for the RVs is available but limited. There are some full hookup sites available for us at the volunteer fire department facilities just down the road from the fort.

Friday Night Cook Out

The park superintendent, Buddy Garza, has installed an open roof shower area with plenty of hot water. The indoor restroom facilities at the park headquarters are left unlocked at night but require a few minutes walk. Portable toilets are available nearer the barracks for those not wanting to walk to the park headquarters.

JSCAS activities include a trip to a local school on Friday afternoon. This year we will be traveling to a school in San Angelo. This is the school we were supposed to visit last October. That trip was canceled due to Hurricane Rita. Lisa Lester is in charge of organizing speakers. This is your big chance to be a star and help spread our love of astronomy. If you can, please consider volunteering to give a brief talk to elementary age children.

We have a community cookout on Friday night. Bring your own main dish to cook on the fire pit and a side dish or dessert to share. Bring your own drinks, keeping in mind that no alcohol should be visible while the park is open to the public. Because of the extreme fire danger around the state, this activity must be confirmed closer to the star party date.

On Saturday at noon, the Friends of Fort McKavett will host a BBQ for us at the post school house. The menu usually includes sausage, brisket, salads, beans, ice tea, and lots of desserts. Traditionally, a $10 per person donation to the Friends of Fort McKavett is made to help cover the cost of the food and to support the fort. The donation is optional and the amount you donate is left up to each individual. Just remember, other than your travel, food, and drink expenses, there are no other fees associated with this 3 day mini-vacation. We are allowed to use the fort's facilities, without charge. The only thing that Buddy asks in return is for us to host a public star party on Saturday night.

A group JSCAS photo is usually made following the BBQ on Saturday.

Saturday afternoon, we entertain the public with discussions about our telescopes and astronomy in general. From time to time, the fort will know in advance about groups of school kids or scouts who show up in the afternoon and stay for the star party. In these instances our discussions become more formal and are held at the school house. Otherwise they are held on the observing field. So far we are not aware of any such group. If you have equipment to do solar viewing, either with a solar filter or a H-Alpha scope, please consider sharing the view with the public on Saturday afternoon.

A Field of Telescopes

Saturday evening, the Friends of

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the Fort will be back, offering BBQ sandwiches, hot dogs and drinks. Again, this meal will be for a donation to the Friends. This meal will be served next to the Post Hospital (park headquarters).

Of course, besides these organized activities, we have lots of time to observe. The skies are very dark. When the Milky Way rises you think it's a bank of clouds. Truly an awesome experience.

Even though this star party is held the last week-end in March, please be prepared with plenty of warm clothes and bedding in case the temperature suddenly turns cold.

Community Outreach at Local Schools

Changes to this year's star parties… It is entirely possible that you can attend this year's star party without noticing any changes. However, please be aware that changes have occurred at the fort. Because of budget cuts, Buddy's staff has been cut by two full time employees. In addition, the park is no longer open to the public 7 days a week. These changes put a lot of pressure on the staff to host our star parties, their Living History event, and summer camps. This year, we are asking for volunteers to assist Buddy and the Friends of the Fort. JSCAS will be forming a cooking team to assist with the Saturday noon BBQ. We would also like to offer Buddy help in setting up tables for the BBQ and in cleaning up afterward. It is not mandatory that you volunteer. However, this is our **fifteenth** star party at the fort. In addition, many of us have stayed at the fort to observe before or after our star party or as we were passing through the area at other times. Buddy has asked so little from us in return. I hope that you will consider repaying their hospitality by volunteering a little of your time.

Despite being closed three days a week, Buddy is still offering to allow those who want to come early or stay late to do so. All he asks is prior notification of your intentions. Keep in mind that Living History is the weekend prior to our event. There will be **no** accommodations available for us that weekend. If you want to come early, we will need to check with Buddy about availability beginning on the Monday following Living History.

I look forward to seeing all of you at the fort. It's a great opportunity for all members to get to know each other and to look through some really neat telescopes.

You can help support Fort McKavett by joining or renewing your membership in The Friends of Fort McKavett. The Friends group was formed in 1998 to assist Texas Parks and Wildlife with the preservation and operation of Fort McKavett State Historical Site. Many JSCAS members are founding members of the Friends group. JSCAS' Lisa Lester continues to serve as secretary and Hernan Contreras serves as vice-president. A single annual membership is $15.00 and a family membership is $25.00. You can join/renew while you are at the Spring Star Party or by printing out and mailing the application found at: http://www.fortmckavett.org/MembershipApplication.htm.

The mission of the Friends of Fort McKavett, a non profit 501 (c) organization, is to assist in the operation, the receipt, solicitation, administration and disbursement of gifts, grants, bequests or other conveyances of real and personal property. The Friends of Fort McKavett will also assist with a volunteer program including labor, hosts, living history, and research through the Post Library for the benefit of the operation, maintenance and preservation of Fort McKavett State Historical Site and to provide information regarding the park and its resources to the public both on and off site.

American Astronomical Society 207th Meeting

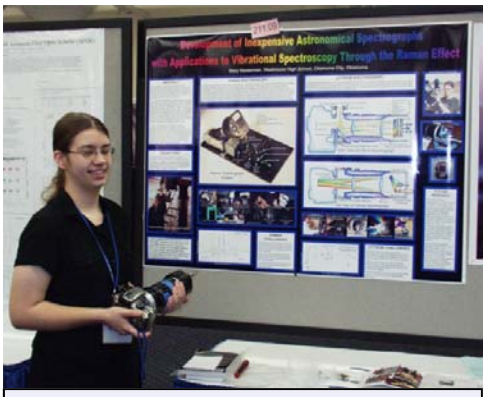
Kelley Knight

The AAS had their largest meeting ever with over 3,000 astronomers in attendance. Overall it was a great meeting.

There was the typical conference stuff with vendors, lots of oral sessions, posters displaying various results, and the group receptions. I was fortunate to find the undergraduate reception sponsored by several physics associations. I met Dr. Vera Rubin and Dr. Chris Impy. They had wonderful talks. The headline in the 1950's about Dr. Rubin's first acclaimed discovery just cracks me up: "Young Mother Discovers Center of Universe". It was so neat to talk with the "Duchess of Dark Matter" (the title given by Dr. Impy). She talked about her daughter, Dr. Judith Young, who had press releases last year and this year about lunar standstill.

Kelley Knight & Dr. Vera Rubin

In talking with the undergrads it was interesting to find out that they struggle to get time on telescopes. They often don't need really huge scopes. Beyond saying check out your local astronomy club, I wonder if there is a network of amateur observatories being used by undergraduates?



Mary Masterman

When I was in the exhibit hall trying to catch various headliners at their posters, I often stopped to talk with those that didn't have a large group of people standing around them. That gave me an opportunity to learn a little more about them. The only high school student to have a poster was a very shy young lady, Mary Masterman from Westmore High School, Oklahoma City. After taking her photo and talking with her she managed to amass a crowd. She attends OkieTex so you may have seen her.

I photographed one press conference after the other. Often times, I had to run from the posed shot to an invited talk to shoot photos of various prize lecturers. Then on Tuesday, I followed Dr. Mike Griffin, NASA director, and his entourage around with a camera. I met a really neat photographer, Chris Gunn. He does contract work for NASA's Goddard Space Flight Center. To see how Chris Gunn captures scientists at work, visit his web site at: http://www.gunnphotography.com.

David Koch (Kepler project) talks to Dr. Griffin in the exhibit hall

Dr. Griffin pretty much said no to the robotic servicing mission of HST and yes to a shuttle repair mission with the caveat the shuttle needs to be proven safe. He also said NASA isn't in the business of educational outreach (all the educational public outreach budgets may be gutted). He mentioned that we can't pay for everything that we have planned so some projects will be cut, not shelved. I don't know if there are campaigns yet to save the educational outreach or not. Visit http://www.slackerastronomy.com and log your opinions there.

The press conference that interested me the most was the unveiling of the latest of Hubble Heritage Image. The

(Continued on page 14)

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approximately 8 foot by 15 foot poster was spectacular. To see a scientist so excited about the image and his work was very refreshing. Massimo Robberto is a great speaker as well. I caught part of his oral session.

Alex Witze and Jeff Kanipe

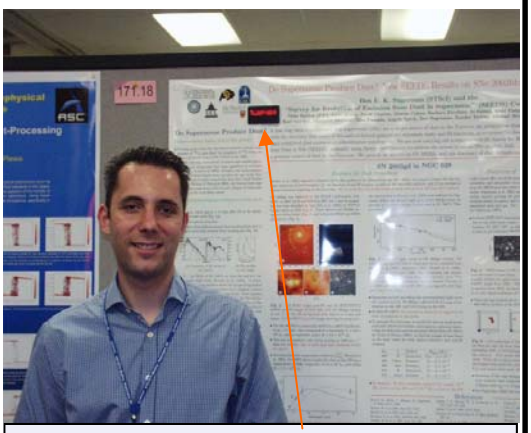
I also caught up with several former Texas astronomers like Brad Schaeffer, Pamela Gay, Alex Witze and Jeff Kanipe. Jeff had a reception for his new book entitled *Chasing Hubble's Shadows: The Search for Galaxies at the Edge of Time*. I haven't had much time to delve into the book but the first chapter was really good.

Dr. Schaeffer's press conference on recent findings about gamma ray bursts was very good. Dr. Gay's (that just sounds weird to call her Dr. Gay) podcasting seemed to receive great accolades from her fans. I had almost forgotten that UT astronomer, Dr. Craig Wheeler will be the next AAS president.

I managed to get an autographed copy of Lynette Cook's (famous space artist) and Ray Villard's (the person who unveils all the beautiful Hubble images) new collaboration, *Infinite Worlds: An Illustrated Voyage to Planets Beyond Our Sun*. It's worth the $40 cover price.

I managed to squeeze in some sights, go to a couple of parties and just have a great time. I shot a few photos of the cameleopardis and a nebula of cats' eyes at the National Zoo. I'd say the two sets of cheetah cubs were my favorite. The pandas were cool but the cheetahs were more attentive to the people.

I also made the rounds to the monuments in the Capitol District. Almost everything was under renovation. I was wearing a burnt orange Rose Bowl shirt when I walked by a bunch of folks playing flag football. One of the teams was Texas and they were in all sorts of UT gear. They asked where I was from and I told them I was visiting from Austin. I showed them an image of the lit UT Tower I had on my camera. I think my UT pride was beaming.



Dr. Sugarman, the Space Telescope Science Institute
Bob and Chuck, note the red LEDs on his poster.

Seeing someone clean Lincoln's nose is just strange. The fog on Friday morning led to poignancy when I visited the various war memorials. The most melodramatic cluster of stars I've ever seen are the 400 on the WW II Memorial. Hard to believe that each star represents 1,000 people killed in action.

The American Astronomical Society will be hosting a winter meeting in Austin in January, 2008. Hopefully you will volunteer to help out when the call is made.

Stardust Returns

NASA

Image above: Donald Brownlee, Stardust principal investigator with the University of Washington, flashes a victory sign for the successful arrival of Stardust material. Also pictured are JSC's Mike Zolensky (left), curator and co-investigator for the project; Friedrich Horz, JSC, and Peter Tsou, Jet Propulsion Laboratory. Photo Credit: NASA

Scientists said they were delighted with Stardust samples returned from the tail of a comet after an almost three-billion-mile journey.

Speaking at NASA's Johnson Space Center, Peter Tsou, Stardust deputy principal investigator, said researchers were ecstatic with the collection of the cometary and solar materials from outer space.

"Stardust is the realization of a 25-year dream to capture and return samples from a comet," Tsou, of the Jet Propulsion Laboratory at Pasadena, Calif., told news media representatives at Johnson Space Center, Kennedy Space Center and NASA Headquarters.

"This exceeded all of our grandest expectations," stated Dr. Donald Brownlee, Stardust principal investigator, also astronomy professor at the University of Washington, as he described the capsule return and capture process. The material responsible for capturing the tiny particles -- Aerogel -- is a sponge-like solid made of 99 percent empty space.

You can follow the examination of Stardust by viewing NASA's web cam:
http://stardust.jpl.nasa.gov/mission/webcam.html

NASA's Stardust sample return capsule successfully landed at the U.S. Air Force Utah Test and Training Range at 2:10 a.m. Pacific time (3:10 a.m. Mountain time). The capsule contains cometary and interstellar samples gathered by the Stardust spacecraft. Credit: JPL/NASA

Stardust@Home

With Stardust's return, scientists at the Space Sciences Laboratory at U.C. Berkeley will create "movies" of each tiny section of the aerogel collector. To cover the entire surface, they will produce 1.6 million such movies! Each of these movies will then be sent electronically to volunteers around the world, who will inspect them for the telltale signs of interstellar dust particles. Scientists need the public's help: it is the only way they know to find the elusive grains.

In recognition of the critical importance of the Stardust@home volunteers, the discoverer of an interstellar dust particle will appear as a co-author on any scientific paper by the Stardust@home collaboration announcing the discovery of the particle.

To volunteer, visit: http://stardustathome.ssl.berkeley.edu/index.html.

A Planet Colder Than It Should Be

Harvard-Smithsonian Center for Astrophysics
Press Release No.: 06-01; January 3, 2006

Cambridge, MA - Mercury is boiling. Mars is freezing. The Earth is just right. When it comes to the temperatures of the planets, it makes sense that they should get colder the farther away they are from the Sun. But then there is Pluto. It has been suspected that this remote world might be even colder than it should be. Smithsonian scientists now have shown this to be true.

Scientists continue to discuss whether Pluto is a planet or should be considered a refugee from the Kuiper belt. Whatever its classification, Pluto and its moon Charon are certain to harbor secrets about the early history of planet formation. Charon is roughly half the diameter of the planet itself, and they form a unique pair in our solar system. How they came to be together remains a mystery.

In this artist's concept, Pluto and its moon Charon are seen from the surface of one of Pluto's newly discovered candidate satellites. Credit: David A. Aguilar (Harvard-Smithsonian Center for Astrophysics.

Located thirty times farther away from the Sun than the Earth, sunlight reaching the surface of Pluto is feeble at best, with daytime resembling dark twilight here at home. Pluto's temperature varies widely during the course of its orbit since Pluto can be as close to the sun as 30 astronomical units (AU) and as far away as 50 AU. (An AU is the average Earth-Sun distance of 93 million miles.) As Pluto moves away from the Sun, its thin atmosphere is expected to freeze and fall to the surface as ice.

Reflected sunlight gathered with instruments such as the Keck telescope in Hawaii and the Hubble Space Telescope suggested the surface of Pluto might be colder than it should be, unlike Charon's. However, no telescope capable of directly measuring their thermal emission (their heat) was able to peer finely enough to distinguish the two bodies. Their close proximity presented a formidable challenge since they are never farther apart than 0.9 arcseconds, about the length of a pencil seen from 30 miles away.

Now, for the first time, Smithsonian astronomers using the Submillimeter Array (SMA) on Mauna Kea in Hawaii have taken direct measurements of thermal heat from both worlds and found that Pluto is indeed colder than expected, colder even than Charon.

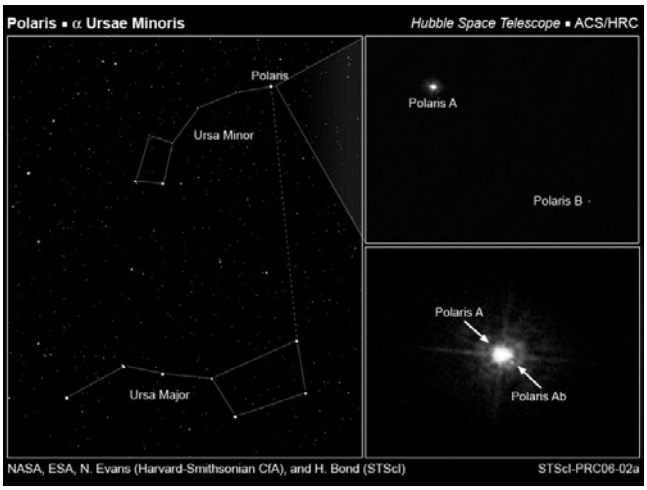
"We all know about Venus and its runaway greenhouse effect," said Mark Gurwell of the Harvard-Smithsonian Center for Astrophysics (CfA), co-author on this study along with Bryan Butler of the National Radio Astronomy Observatory. "Pluto is a dynamic example of what we might call an anti-greenhouse effect. Nature likes to leave us with mysteries - and this was a big one."

During the observations, the SMA utilized its most extended configuration to obtain high-resolution interferometric data, allowing separate "thermometer" readings for Pluto and Charon. It found that the temperature of the ice-covered surface of Pluto was about 43 K (-382 degrees F) instead of the expected 53 K (-364 degrees F), as on nearby Charon. This fits the current model that the low temperature of Pluto is caused by equilibrium between the surface ice and its thin nitrogen atmosphere, not just with the incoming solar radiation. Sunlight (energy) reaching the surface of Pluto is used to convert some of the nitrogen ice to gas, rather than heat the surface. This is similar to the way evaporation of a liquid can cool a surface, such as sweat cooling your skin.

Hubble Images Polaris' Companion

STScI-PRC2006-02a

Credit: NASA, ESA, N. Evans (Harvard-Smithsonian CfA), and H. Bond (STScI)



This sequence of images shows that the North Star, Polaris is really a triple star system. For the first time, the close companion of Polaris has been seen directly. The left frame shows Polaris's location very close to the position of Earth's north celestial pole in Ursa Minor (the Small Bear).

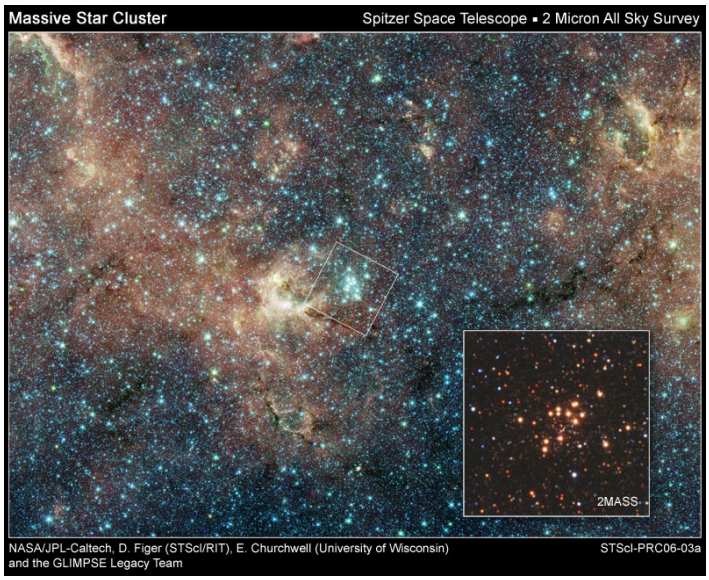
The upper right image shows Polaris A and its distant companion Polaris B, as viewed by Hubble. They are separated by approximately 240 billion miles. Polaris B, the wide companion, is visible in small telescopes, and was first noticed by William Herschel in 1780. The close companion, Polaris Ab was known to exist from its gravitational tug on Polaris A, but has only been seen directly now using Hubble (lower right image). The companion is only 2 billion miles from Polaris A. The triple system is 430 light-years away.

Mystery Solved: High-Energy Fireworks Linked to Massive Star Cluster

January 9, 2006

STScI-2006-03

Call it the Bermuda Triangle of our Milky Way Galaxy: a tiny patch of sky that has been known for years to be the source of the mysterious blasts of X-rays and gamma rays. Now, a team of astronomers, led by Don Figer of the Space Telescope Science Institute (STScI) in Baltimore, Md., has solved the mystery by identifying one of the most massive star clusters in the galaxy. The little-known cluster, which has not been catalogued, is about 20 times more massive than typical star clusters in our galaxy, and appears to be the source of the powerful outbursts.



Supporting evidence for the hefty weight of this cluster is the presence of 14 red supergiants, hefty stars that have reached the end of their lives. They bloat up to about 100 times their normal size before exploding as supernovae. In fact, Figer's team believes that the blasts of X-rays and gamma rays were released in supernova explosions. Sightings of red supergiants are rare. Astronomers have spotted only about 200 such stars in the Milky Way. The lack of sightings is because the red supergiant phase is

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very short in astronomical terms, lasting about half a million to a million years.

"Only the most massive clusters can have lots of red supergiants, because they are the only clusters capable of making behemoth stars," Figer explained. "They are good signposts that allow astronomers to predict the mass of the cluster. This observation also is a rare chance to study huge stars just before they explode. Normally, we don't get to see stars before they pop off."

The 14 red supergiants in this cluster represent almost three times as many as in any other star cluster in our galaxy. The runner-up, NGC 7419, has five. Stars that become red supergiants weigh between 8 to 25 times our Sun's mass and are 6 to 15 million years old.

The team identified the star cluster as a potential behemoth from the newly found clusters compiled in the Two Micron All Sky Survey catalogue. Astronomer John MacKenty, also of STScI, performed follow-up observations of the cluster in Sept. and Oct. 2005 with a unique ground-based infrared spectrograph at Kitt Peak National Observatory in Arizona. Called the Infrared Multi-object Spectrograph, "the instrument has about 500,000 movable microscopic mirrors in its focal plane which allow astronomers to take infrared spectra of up to 100 stars at once," said MacKenty, the instrument's lead investigator. Spectra display stars' energy output as a series of individual wavelengths of light for study. The resulting patterns are akin to sets of fingerprints for stars, revealing characteristics such as composition, temperature, mass, and age. Astronomers plan to use similar technology on the Near Infrared Spectrograph aboard the James Webb Space Telescope, scheduled for launch in 2013.

Figer relied on data from a variety of telescopes, including the Spitzer Space Telescope, to confirm that the infrared colors of the suspected red supergiants are consistent with those of known red supergiants. The red supergiants discovered by Figer's team are very bright, indicating that the cluster is a youngster of about 8 to 10 million years old. The cluster has to be young enough for astronomers to see these short-lived stars before they explode, yet old enough to have stars that have evolved to the red supergiant stage. The cluster's mass equals 20,000 times the mass of our Sun. An estimated 20,000 stars reside in the cluster.

The cluster is the first of 130 massive star cluster candidates that Figer and his team will study over the next five years using a variety of telescopes, including the Spitzer and Hubble Space telescopes. "We can only see a small part of our galaxy in visible light because a dusty veil covers most of our galaxy," Figer said. "I know there are other massive clusters in the Milky Way that we can't see because of the dust. My goal is to find them using infrared light, which penetrates the dusty veil."

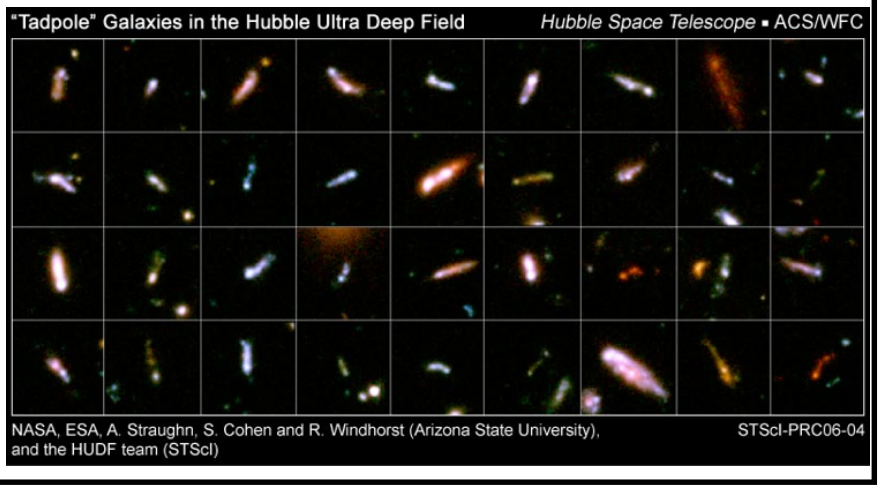
Artists's View of Massive Star Cluster in the Milky Way
NASA, ESA, and A. Schaller ▪ STScI-PRC06-03b

The monster cluster's location, nearly two-thirds of the way to our galaxy's center and 18,900 light-years from Earth, is in an area known for energetic activity. Several observatories — the High Energy Stereoscopic System, the International Gamma-Ray Astrophysics Laboratory and the Advanced Satellite for Cosmology and Astrophysics — detected very high-energy X-rays and gamma rays from that region. Astronomers knew that something powerful was occurring there, but they couldn't identify the source.

Monster Black Holes Grow After Galactic Mergers

January 10, 2006
STSci-2006-04

An analysis of the Hubble Space Telescope's deepest view of the universe offers compelling evidence that monster black holes in the centers of galaxies were not born big but grew over time through repeated galactic mergers. The Hubble Ultra Deep Field (HUDF) studies also confirm recent computer simulations that predict that newly merging galaxies are enshrouded in so much dust that astronomers cannot see black holes feasting on stars and gas from the mergers. The computer simulations, as supported by Hubble, suggest that it takes hundreds of millions to a billion years before enough dust clears so that astronomers can see the black holes feasting on stars and gas from the merger. These postage-stamp-size images reveal 36 young galaxies caught in the act of merging with other galaxies. These galaxies appear as they existed many billions of years ago. Astronomers have dubbed them "tadpole galaxies" because of their distinct knot-and-tail shapes, which suggest that they are engaging in galactic mergers.



Hubble's Sharpest View of the Orion Nebula

January 11, 2006
STScI-PRC2006-01a

This dramatic image offers a peek inside a cavern of roiling dust and gas where thousands of stars are forming. The image, taken by the Advanced Camera for Surveys (ACS) aboard NASA's Hubble Space Telescope, represents the sharpest view ever taken of this region, called the Orion Nebula. More than 3,000 stars of various sizes appear in this image. Some of them have never been seen in visible light. These stars reside in a dramatic dust-and-gas landscape of plateaus, mountains, and valleys that are reminiscent of the Grand Canyon.

The Orion Nebula is a picture book of star formation, from the massive, young stars that are shaping the nebula to the pillars of dense gas that may be the homes of budding stars. The bright central region is the home of the four heftiest stars in the nebula. The stars are called the Trapezium because they are arranged in a trapezoid pattern. Ultraviolet light unleashed by these stars is carving a cavity in the

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nebula and disrupting the growth of hundreds of smaller stars. Located near the Trapezium stars are stars still young enough to have disks of material encircling them. These disks are called protoplanetary disks or "proplyds" and are too small to see clearly in this image. The disks are the building blocks of solar systems.

The bright glow at upper left is from M43, a small region being shaped by a massive, young star's ultraviolet light. Astronomers call the region a miniature Orion Nebula because only one star is sculpting the landscape. The Orion Nebula has four such stars. Next to M43 are dense, dark pillars of dust and gas that point toward the Trapezium. These pillars are resisting erosion from the Trapezium's intense ultraviolet light. The glowing region on the right reveals arcs and bubbles formed when stellar winds - streams of charged particles ejected from the Trapezium stars — collide with material.

The faint red stars near the bottom are the myriad brown dwarfs that Hubble spied for the first time in the nebula in visible light. Sometimes called "failed stars," brown dwarfs are cool objects that are too small to be ordinary stars because they cannot sustain nuclear fusion in their cores the way our Sun does. The dark red column, below, left, shows an illuminated edge of the cavity wall.

The Orion Nebula is 1,500 light-years away, the nearest star-forming region to Earth. Astronomers used 520 Hubble images, taken in five colors, to make this picture. They also added ground-based photos to fill out the nebula. The ACS mosaic covers approximately the apparent angular size of the full moon.

The Orion observations were taken between 2004 and 2005.

Cartwheel Galaxy Makes Waves in New NASA Image

January 11, 2006
Galex-2006-01

A new image from NASA's Galaxy Evolution Explorer completes a multi-wavelength, neon-colored portrait of the enormous Cartwheel galaxy after a smaller galaxy plunged through it, triggering ripples of sudden, brief star formation.

The false-color composite image, available at http://www.galex.caltech.edu, shows the Cartwheel galaxy as seen by Galaxy Evolution Explorer in ultraviolet light (blue); the Hubble Space Telescope in visible light (green); the Spitzer Space Telescope in infrared (red); and the Chandra x-Ray Observatory (purple). "The dramatic plunge has left the Cartwheel galaxy with a crisp, bright ring around a zone of relative calm," said astronomer Phil Appleton of the California Institute of Technology, Pasadena, Calif. "Usually a galaxy is brighter toward the center, but the ultraviolet view indicates the collision actually smoothed out the interior of the galaxy, concentrating older stars and dust into the inner regions. It's like the calm after the storm of star formation." The outer ring, which is bigger than the entire Milky Way galaxy, appears blue and violet in the image.

Recently-observed features include concentric rings rippling out from the impact area in a series of star formation waves, ending in the outermost ring. "It's like dropping a stone into a pond , only in this case, the pond is the galaxy, and the wave is the compression of gas," said Appleton. "Each wave represents a burst of star formation, with the youngest stars found in the outer ring."

Previously, scientists believed the ring marked the outermost edge of the galaxy, but the latest Galaxy Evolution Explorer observations detect a faint disk, not visible in this image, that extends to twice the diameter of the ring. This means the Cartwheel is a monstrous 2.5 times the size of the

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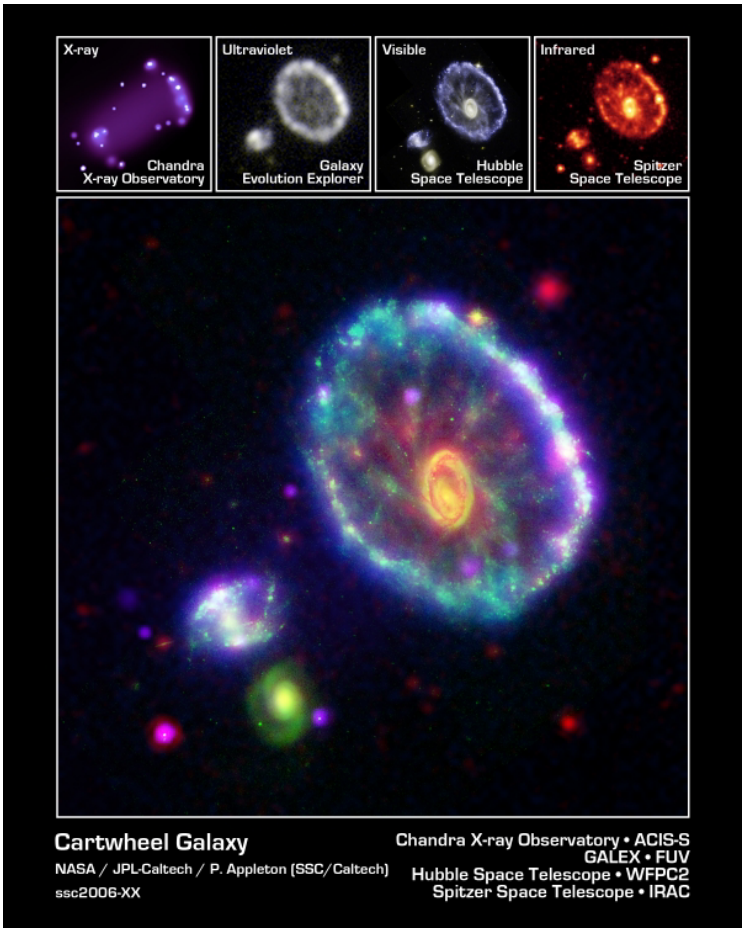
Milky Way. Most galaxies have only one or two bright X-ray sources, usually associated with gas falling onto a black hole from a companion star. The Cartwheel has a dozen. Appleton said that makes sense, because black holes thrive in areas where massive stars are forming and dying fast.

The Cartwheel galaxy is one of the brightest ultraviolet energy sources in the local universe. In some visible-light images, it appears to have spokes. Appleton is presenting his finding today at the 207th meeting of the American Astronomical Society in Washington. His research collaborators included Armando Gil de Paz of Universidad Complutense, Madrid, Spain, and Barry Madore of The Observatories of the Carnegie Institution of Washington, Pasadena, Calif. The team's observations were a follow-up to studies made by the Galaxy Evolution Explorer science team's Nearby Galaxy Survey. Caltech leads the Galaxy Evolution Explorer mission and is responsible for science operations and data analysis. NASA's Jet Propulsion Laboratory, Pasadena, Calif., manages the mission and built the science instrument. The mission was developed under NASA's Explorers Program managed by the Goddard Space Flight Center, Greenbelt, Md. South Korea and France are the international partners in the mission.



Sky & Telescope and now Astronomy Magazine Subscriptions – Don't Forget about the Club Discount!

Sky & Telescope offers a "Club Discount" on subscriptions. You can subscribe to Sky and Telescope for $10 off the normal price ($32.95 with the club discount). Astronomy magazine is also offering a club discount. JSCAS members can subscribe to Astronomy for $29 a year. We need to have a minimum of five subscribers to take advantage of the discount. If you are a current subscriber, *please* contact me so I can put you on the list for the club discount when your subscription is due for renewal!

Contact me by the email listed on the JSCAS web site, catch me at a meeting, or send your check and renewal form to my home address: 2407 Elkton Ct., Pearland, TX, 77584. I'll put your renewal in the mail within 48 hours after I receive it.

David Haviland
Vice-president and Secretary

NASA Names Former Astronaut New JSC Director

NASA Release: J05-055

Michael L. Coats has been named director of NASA's Johnson Space Center. Coats is a former astronaut, and he currently is vice president of Lockheed Martin Astronautics in Denver. He will become the ninth person to serve as director in the center's 44-year history.

"Mike Coats brings a perfect blend of experience to his new role as the head of the nation's primary center for human spaceflight development and operations," said NASA Administrator Michael Griffin. "As a former pilot and astronaut, and a long-time aerospace industry executive, he knows what our next generation of manned spacecraft must be able to do, and he knows what it takes to produce them. I'm delighted to welcome Mike back home to NASA."

Coats joined NASA in 1978 as a member of the first astronaut class specifically selected to fly the space shuttle. He flew three shuttle missions, the first as pilot for the maiden flight of Discovery in 1984. He commanded two subsequent shuttle missions, logging a total of more than 463 hours in space. Before joining NASA he was a distinguished U.S. Navy aviator. He logged more than 5,000 hours of flight time in 28 different types of aircraft. He retired from NASA and the Navy in August 1991.

"I look forward to returning to the Johnson Space Center, and I am honored by the trust Mike Griffin has shown in me," Coats said. "We will embrace the challenge of the new Constellation program that will take us first to the moon, and then on to Mars. At the same time, the contributions of the space shuttle and international space station will be critical steps in that journey and we remain committed to their success."

Coats replaces Jefferson D. Howell, Jr., who is on assignment as a visiting professor to the Lyndon B. Johnson School of Public Affairs at the University of Texas at Austin.

Astronomers Find Smallest Extrasolar Planet Yet Around Normal Star

January 25, 2006
STScI-PR06-06

Using an armada of telescopes, an international team of astronomers has found the smallest planet ever detected around a normal star outside our solar system.

The extrasolar planet is five times as massive as Earth and orbits a red dwarf, a relatively cool star, every 10 years. The distance between the planet, designated OGLE-2005-BLG-390Lb, and its host is about three times greater than that between the Earth and the Sun. The planet's large orbit and its dim parent star make its likely surface temperature a frigid minus 364 degrees Fahrenheit (minus 220 degrees Celsius). This temperature is similar to that of Pluto, but the newly found planet is about one-tenth closer to its star than Pluto is to the Sun.

Its detection, however, opens a new window in the search for Earth-like worlds.

"This finding means that Earth-mass planets are not that uncommon," said Kailash Sahu of the Space Telescope Science Institute in Baltimore, Md., and a founding member of the Probing Lensing Anomalies Network team (PLANET) that helped detect the new planet. "If we found one, there must be more."

Upcoming Events

Deep South Texas Stargaze 2006 will be held at the Escondido Ranch, which is nine miles west of Freer, Texas, from February 22nd through the 26th. This ranch is located in one of the darkest skies in the country and provides the optimal environment for deep sky observing. It is recommended that you book early. Currently all family rooms are booked. There are bunk rooms, RV sites and camp sites available. For more information visit http://raychamp1.tripod.com/DSTS2006/dsts2006.html.

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2006 Texas Star Party will be held April 23rd through 30th at the Prude Ranch. Visit their web site at : http://www.texasstarparty.org/ for more information.

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2006 Bat Flight Breakfast and Celebration of the Night at Carlsbad Caverns — Mark your calendars! The staff of Carlsbad Caverns National Park have set aside the last weekend in July for the 49th annual Bat Flight Breakfast and 2nd annual Celebration of the Night. This year's Celebration of the Night star party will begin the evening of July 28 and continue into the early morning hours of July 29. The Bat Flight Breakfast follows the star party, beginning at 5 am, Saturday morning.

Historically held the second Thursday in August, the park broke with tradition in 2005 and moved the breakfast to a Saturday in an effort to encourage more participation. This year, park staff moved both events to July and selected a weekend night optimal for night-sky viewing.

"If we had stayed with the second week in August, we would have had to contend with a nearly full Moon," said Shannan Marcak, the star party's coordinator. "Moving the star party to the end of July, just after the New Moon, will give us good night-sky viewing opportunities."

Activities will begin on Friday, July 28, with the evening's Bat Flight program, where visitors watch as an estimated 300,000 Mexican free-tailed bats exit Carlsbad Cavern in search of their favorite meal—insects! "We hope visitors will attend the Bat Flight program on Friday night, stay up for the star party, have a good breakfast and watch the bats fly back into the cave!" said breakfast coordinator Avelina Childress. "We can have over a thousand people watching the bats fly out of the cave each evening, but very few people experience the in-flight."

The Bat Flight Breakfast began in the late 1950s as a way to encourage visitors to see the bats' morning return flight. Before entering the cave in the morning, the bats circle several hundred feet overhead and then dive in clusters into the cave entrance. Unlike the shorter nighttime exodus out of the cave when the bats spiral up and leave the cave, the sunrise return to the cave normally spans several hours.

This year's breakfast will include cereal; ham, turkey and cheese croissants; yogurt and fruit; and juice, milk and coffee. Breakfast is $7 for adults and $3 for children age 12 and under. The cost includes free entrance to the self-guided portions of Carlsbad Cavern.

The annual breakfast is sponsored by the Carlsbad Caverns Activity Association and Cavern Supply Company in cooperation with the National Park Service and the Carlsbad Caverns Guadalupe Mountains Association.

More detailed breakfast and star party information will be forthcoming in the next few months. For

more information, contact visit the park's website at http://www.nps.gov/cave/ or Bridget Litten at 505.785.3024.

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Dates for the **23rd Annual Okie-Tex Star Party** have been announced. Astronomers will return to Camp Billy Joe on September 16th through 23rd. For more information visit http://www.okie-tex.com/.

Star Party News

Ken Lester

Our first public star party will be at Mood Gardens on March 4th. This will be followed by our Spring Fort McKavett star party from Mach 30th through April 2nd.

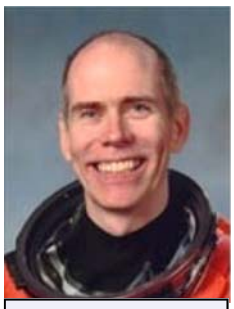
At the time star party dates were set with Moody Gardens, our Star Party Chairperson had not been informed that the date of Astronomy Day had already been set. This resulted in a conflict in dates. Lisa will be working with Moody to reschedule the October Moody event.

We have been invited to do star parties at the Crenshaw School on Bolivar Peninsula some time in 2006. We will pass on information about this as it becomes available.

Event	Date	Sun Set	Moon			Jupiter		Saturn		Mars		Venus	
			Illum.	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set
Moody Gardens	Mar 4	18:20	27%	9:37	23:50	23:15	10:03	15:12	04:53	10:53	00:54	04:10	14:57
Fort McKavett	Mar 30 - Apr 2	18:56	2%	07:11	20:42	21:49	08:34	13:41	03:29	10:23	00:40	04:17	15:19
Haak Winery	Apr 22	19:50	34%	03:32	14:28	20:46	07:39	12:56	02:38	10:36	00:45	04:45	16:23
Texas Star Party	Apr 23 - 30	20:27	23%	04:46	16:12	21:19	08:09	13:25	03:11	11:06	01:22	05:20	16:59
Moody Gardens	Aug26	19:47	7%	09:17	21:18	12:13	23:12	05:40	19:03	08:20	20:45	05:37	19:02
Haak Winery	Sep 23	19:13	1%	08:05	19:48	10:44	21:37	04:05	17:20	07:53	19:45	06:28	18:52
Fort McKavett	Oct 19 - 22	19:02	6%	05:28	17:47	09:48	20:28	02:52	16:08	07:51	19:09	07:35	19:03
Moody Gardens	Oct28	18:35	36%	13:31	23:46	08:59	19:42	02:02	15:12	07:22	18:30	07:30	18:38
Astronomy Day	Oct 28	18:35	36%	13:31	23:46	08:59	19:42	02:02	15:12	07:22	18:30	07:30	18:38
Haak Winery	Nov11	17:25	61%	23:17	12:33	07:18	17:54	00:11	13:20	06:12	17:04	06:58	17:38

Astronaut Survivor

Ken Lester



Credit: NASA

TV's reality show, Survivor, takes on a new twist starting February 2nd when former astronaut Dan Barry competes against 15 other contestants for the $1,000,000 prize. Dan, who is 52, is from South Hadley Massachusetts. He flew on STS-72 Endeavour, STS-96 Discovery, and STS-105 Discovery. He has walked in space 4 times for a total of 25 hours and 49 minutes. He has a doctorate in electrical engineering/computer science from Princeton and a doctorate in medicine from the University of Miami. Can he Outwit, Outplay, and Outlast?

Help turn off the lights...

Join the
International Dark-Sky Association (IDA)
http://www.darksky.org
"To preserve and protect the nighttime environment and
our heritage of dark skies through quality outdoor lighting."

Visit the homepage of the Texas IDA affiliate of the International Dark-Sky Association. Their web site is at: http://www.texasida.org/.

Member Recognition

Triple presents Ken with his Messier Certificate
Image by Lisa Lester

The February Issue of *Astronomy Magazine* features **Al Kelly**'s image of the globular cluster M2 on page 102.

At the January meeting, Triple Nickel presented **Ken Lester** a certificate for observing all 110 Messier objects. Ken's first logged Messier objects were M45 and M42 using 10x50 binoculars on November 9, 1996. His last logged Messiers were M41, M43 and M78 on October 1, 2005 at Fort McKavett, Texas.

February Speaker Change

Bob Taylor

Astronaut Ed Lu has been called away for a trip that makes him unavailable for our February meeting. Cynthia Gustava has agreed to come in his place and speak on "The Mysteries of Orion".

Houston Area Astronomy Clubs

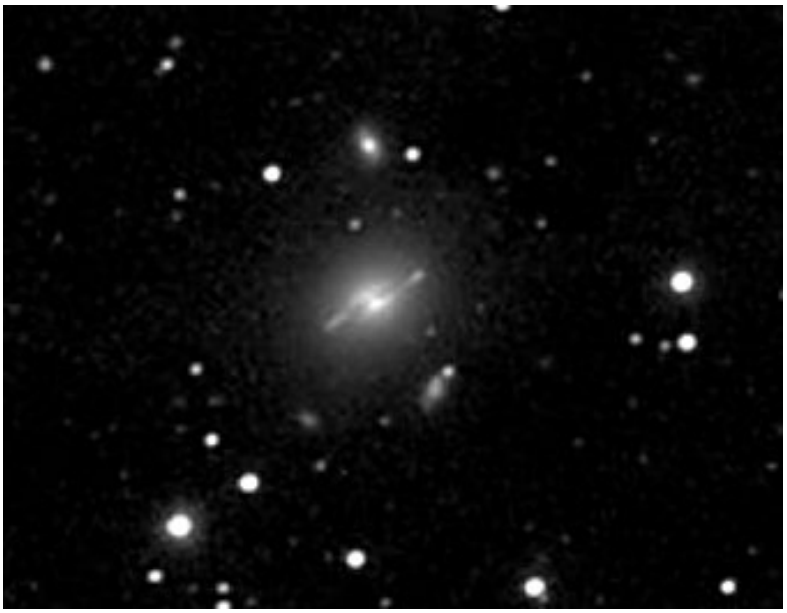
Brazosport Astronomy Club
Meets the Third Tuesday of the month, 7:45 p.m.
At the Planetarium
400 College Drive
Clute, Texas
For more information, contact Judi James at the Planetarium
979-265-3376

Fort Bend Astronomy Club http://www.fbac.org/
Meets the third Friday of the month, 7:00 p.m.
First Colony Conference Center
3232 Austin Pkwy
Sugar Land, Texas

Houston Astronomical Society http://spacibm.rice.edu/~has/
Meets the first Friday of the month, 8:00 p.m.
University of Houston, University Park
Science and Research Building, room 117

North Houston Astronomy Club http://www.astronomyclub.org/
Meets the fourth Friday of the month, 7:30 p.m.
In the Teaching Theater at Kingwood College
20000 Kingwood Drive
Kingwood, Texas

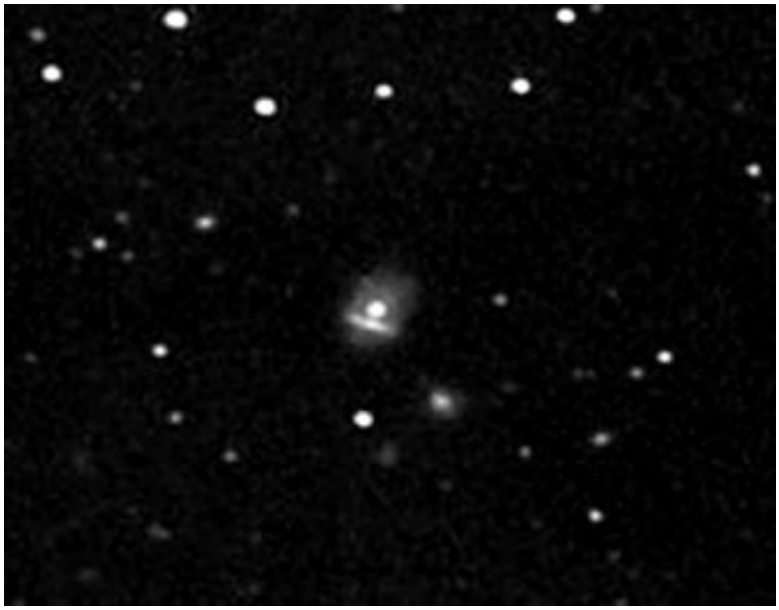
MEMBER'S GALLERY



Arp 292▲
©Dick Miller

These images were shot in early January. Arp 292 was a 32 minute exposure, using a 10" Newtonian and MX716 camera. It is reported to be 1.0' x 0.7' and 13.2 magnitude. Arp 338 was a 34 minute exposure. It's 0.5' in diameter and it doesn't appear that the magnitude has ever been measured. In each case, the image had been cropped to about 10% of the total field and then resized by 150%.

▼ Arp 338
©Dick Miller



Sunspots The Size Of Saturn▲
©Becky Ramotowski

"… the Sun with a string of sunspots that are equal to the size of Saturn. Now that's either really cool, kinda scary or down-right fascinating....depending on your view of the universe. It fascinates me to no end that the Sun is that large, and yet that there are many other stars (suns) out there that make our little ol' Sun look like the runt of the litter. Taken a-focally with a Nikon Coolpix 5000, 80mm Refractor, and 26mm eyepiece."

▼ Lady In The Moon
©Becky Ramotowski

"Here's a photo of the Moon taken through binoculars. I particularly like this one because it makes seeing the 'Lady in the Moon' fairly easy. With a tiny bit of imagination you can see she's looking to the left, with her hair above and flowing out to the right behind her. It's a profile view, and the dark lunar seas mark her hair, with her eye below and a dark area marking where her mouth would be."

Johnson Space Center Astronomical Society

An association of amateur astronomers dedicated to the study and enjoyment of astronomy. Membership is open to anyone wishing to learn about astronomy.

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February Meeting Agenda

February 10th, 7:30 p.m., Center for Advanced Space Studies/Lunar Planetary Institute, 3600 Bay Area Blvd. (at Middlebrook Drive).

- Welcome!!!
- Guest Speaker: Cynthia Gustava: "The Mysteries of Orion"
- Break
- SIG reports, Star Party News
- Astronomical Oddities — Hernan Contreras
- Last Words, Door Prizes

Any unfinished discussions can be continued over food and beverages at a location to be announced at the end of the meeting.

Starscan Submission Procedures

Original articles of astronomical interest will be accepted up to 6 P.M. February 25th.

The most convenient way to submit articles or a Calendar of Events is by electronic mail, however computer diskettes or CDs will also be accepted. All articles should include author's name and phone number. Also include any picture credits. The recommended format is Microsoft Word. Text files will also be accepted.

Submitter bears all responsibility for the publishing of any e-mail addresses in the article on the World Wide Web.

Editor's electronic address is: lesteke@swbell.net. Be sure to include the word Starscan in the subject line for proper routing of your message.

Starscan Staff

Editor	Ken Lester
Associate Editors	Sheila Steele
	Ken Steele

Cover Image
The Rosette Nebula, NGC 2237
Credit: ©Don Taylor

Surrounding open Cluster NGC 2244 in Monoceros, the Rosette is a collection of emission, dark nebulae and Bok Globules. This narrow band image (HST Palette) by Don Taylor was taken with a Takahashi FSQ-106 on an EM200 mount using an ST10XME camera with Astrodon Filters. Exposure times in seconds were: LRGB = Ha(SII, Ha, OIII) = 120, 60, 60, 60. Don is a member of the Houston Astronomical Society. Don's web page can be found at http://www.TheAtomicCafe.com.