

STARSCAN

*Johnson Space Center
Astronomical Society*

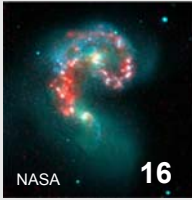
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IN THIS ISSUE



NASA News

- 13** — Genesis Mission Status Report
- 14** — Cassini Finds New Ring and Moon
- 16** — Spitzer Arrives at Scene of Galactic Collision

Special Interest Groups

- 5** — (Observing) Texas Tech at Junction Star Party
- 9** — (Education) Family Space Day
- 10** — (Observing) Fort McKavett Fall Star Party
- 18** — (Novice) Astronomy 101 — Lunar Eclipses
- 19** — (Imaging) CCD Problem Solved
- 20** — (Observing) Libya Solar Eclipse Update
- 21** — (Observing) Pursuing the Messiers
- 22** — (Imaging) Member's Gallery
- 24** — (Observing) Visual Observing
- 29** — (Observing) Star Party News



Club News, Features, and Information

- 3** — *Tunguska Redux?* — November Meeting Preview
- 12** — Sky & Telescope and Astronomy Subscriptions
- 15** — IDA Contact Information
- 17** — Upcoming Events
- 17** — Member Recognition
- 20** — Houston Area Astronomy Clubs
- 26** — JSCAS Library
- 26** — Charlie's Challenge
- 27** — 4th Annual Houston/Beaumont Regional Meeting
- 28** — Astronomy Day at the George — Call for Volunteers
- 30** — Race for the Cure
- 30** — For Sale
- 31** — JSCAS Officers
- 31** — October Meeting Agenda
- 31** — Starscan Submissions
- 31** — Cover Image



Appended to this month's Starscan is an entry form for the IGES 9th Annual Art Contest for Grades 2-4. The theme is *Picture Me! What Kind of Earth Scientist Would I Be?*.

The Institute for Global Environmental Strategies (IGES) conducts education, public policy, and research studies designed to improve understanding of and response to global environmental issues and related mitigation strategies, applying space-based observations and information technology. IGES is a nonprofit (501c3) organization. For more information, see their web site at: <http://www.strategies.org>

Tunguska Redux?

*Suddenly the sky was split in two,
and high above the forest the whole north of the sky was covered with fire.*

— Semyon Borisovich Semyonov, eyewitness

This year marks the 96th anniversary of the greatest cosmic catastrophe visited upon Earth in all of recorded history. In the early morning hours of June 30th, 1908, hundreds of eyewitnesses watched in amazement as *something* streaked through the skies above the Central Siberian Plateau, to crash in the inaccessible hinterlands of the Stony Tunguska river basin.

The Tunguska blast scorched and toppled ancient Siberian forests across an area half the size of Rhode Island. Its shockwave traveled twice — *twice!* — around the globe, and the glow from sunlight scattering off high-altitude debris lit the midnight skies over northern Europe for more than a month. By sheer luck the impact occurred in one of the most desolate places on the face of the globe. If it had happened five hours later, Earth's rotation would have shifted the epicenter to the outskirts of populous St. Petersburg, and the "Tunguska Event" might have left half a million people dead or dying. As it was, all it left were two thousand square miles of smoldering devastation, and one enduring mystery ...



What caused it?

The obvious answer was a meteorite. But that theory suffered a serious setback when the first researchers finally reached the site in 1927 — for there was no crater. With a yield estimated in the tens of megatons — thousands of times more powerful than the atomic bomb dropped decades later on Hiroshima — the explosion should have gouged a hole in the earth's crust to dwarf the mile-wide, 500-foot-deep Great Barringer Crater in Arizona. Instead, all the 1927 expedition found was a peat marsh contorted into a nightmare landscape, and a "telegraph-pole" grove of denuded tree trunks somehow still standing upright in the center of a radial forest thrown-down pattern extending for kilometers in every direction.

Ever since then, the "Great Siberian Explosion" has been fair game for increasingly bizarre conjectures: The collision of the Earth with fragments of a comet? The test-firing of a "death-ray" by inventor Nikola Tesla? A solar plasmoid ejected by the sun? The crash of a nuclear-powered alien spaceship? A chunk of in-falling antimatter?

But perhaps most outlandish of all was the explanation concocted some six and a half decades after the event, by two young astrophysicists at the University of Texas in Austin. Writing in the September 14, 1973 issue of *Nature*, Albert A. Jackson IV and Michael P. Ryan Jr. had the audacity to claim that what had struck the earth on that summer morning in 1908 was a remnant of the Big Bang. That the bizarre circumstances of the impact all pointed to a cause that could only have been engendered in the unimaginable heat and pressure attending the birth of the universe itself. That the Tunguska Event was nothing less than a collision between the earth and a submicroscopic black hole.

* * *

But the so-called Jackson-Ryan hypothesis found itself in hot water almost from the moment it was published. So much so that it was effectively written off within a year of its proposal.

(Continued on page 4)

(Continued from page 3)

The trouble was the exit: With its enormous mass, high velocity, and atom-sized cross section, a primordial black hole would have sliced down through the solid body of the earth like a knife through hard vacuum — and out the other side. As Al and Mike themselves wrote, “This exit provides a check for the whole hypothesis.” Any such “exit event” should have been accompanied by air and undersea shock waves no less spectacular than those of the Tunguska explosion itself. Yet, careful inspection of meteorological and oceanographic records for June 30, 1908 revealed nothing out of the ordinary.

With these findings, the Jackson-Ryan hypothesis seemed destined for the dustbin of astrophysical history. Carl Sagan went out of his way to deride it in Episode IV of his *Cosmos* TV series. Russian researchers routinely went ballistic at the mere suggestion that Tunguska might have been caused by a black hole. Even the theory’s own creators seemed to feel it was best forgotten.

So matters remained for three decades.

But now a new book, *Singularity* by Bill DeSmedt, has exhumed the hypothesis, and shown how — with a few additional tweaks — it might be right after all.

That’s the good news. The bad news is that if the updated version of Jackson-Ryan is correct, it means the micro-black hole that started it all might still represent a deadly danger to the entire Earth!

* * *

Singularity has already created something of a buzz in the astrophysical community, as exemplified by these advance comments:

I very much enjoyed Bill DeSmedt’s *Singularity*. Aside from a few implausibilities, Bill got the vast majority of the physics right, which is highly unusual — especially in a book that is such a good read.

— Kip Thorne, Feynman Professor of Theoretical Physics,
California Institute of Technology, and author of the national best-seller *Black Holes and Time Warps: Einstein’s Outrageous Legacy*

Singularity is an uncommonly good science thriller, quite free of what always bothered me: the poetic license writers take with the laws of nature in order to put together the yarn. ... I can certainly recommend it.

— Jacob D. Bekenstein, Michael Polak Professor of Theoretical Physics,
Hebrew University, Jerusalem, co-discoverer of Bekenstein-Hawking black-hole radiation

As a specialist in black hole astrophysics, I would also have to say that this is one of the most creative uses of primordial black hole theory in literature.

— Scott A Hughes, Assistant Professor,
MIT Department of Physics and Center for Space Research

* * *

So, it is with great pleasure that the Johnson Space Center Astronomical Society will, at its November 12th meeting, host a *Singularity* world-premiere reading and discussion by the author Bill DeSmedt. Appearing on stage with Bill will be JSCAS’s own Al Jackson, co-creator of the Jackson-Ryan hypothesis, to share his reminiscences of the origins and aftermath of this celebrated theory.

In the meantime, you can check out the science behind *Singularity* on the web, at:

<http://www.vurdalak.com>.

Texas Tech at Junction Star Party

Ken Lester

On September 1st and 2nd, a three member team from JSCAS traveled to the Junction campus of Texas Tech University. The purpose of the trip was to provide astronomy support to a very worthwhile educational program at Tech's Outdoor Learning Center. As described on their web site, <http://www.depts.ttu.edu/hillcountry/junction/>, the Learning Center "...provides students with a four day, three night hands-on residential experience. Students and classroom teachers stay on campus and outdoor instructors create an individualized week filled with science, math, social studies, reading and writing curriculum. All instruction is provided using hands-on, real world experiences. The students become scientists, gaining curiosity and using ideas of their own to accomplish required tasks."

Our association with Tech began when we were contacted by the Outdoor School coordinator, Kaycie Sullivan, seeking assistance with two telescopes purchased for their program. That story can be found in the *Astronomy 101* article appearing in the [June 2004 issue of the Starscan](#). As a result of our assistance, Kaycie invited up to 10 JSCAS astronomers to come to their campus to enjoy their dark skies and to share our observing experience with their students by making a brief presentation on a subject of our choice, followed by a short one night star party. Room and board was provided in the offer and we could stay several days to observe on our own.

Not wanting to pass up the opportunity to discover a new dark sky observing site, president Bob Taylor accepted the invitation with the trip planned for the first of September when students from Junction Elementary would be on site. Bob extended the invitation to the general membership at the August meeting. Only Bob, myself, and Triple Nickel were able to arrange time to make this first, of what could be many, trip to the Tech campus.

It was decided that my enclosed utility trailer was large enough to carry our three telescopes plus luggage. That allowed us to carpool to reduce expenses. Our adventure began early Wednesday morning when I pulled up to Triple's house with my trailer. It took no time at all to load up the trailer. We were on the road by 8:15 a.m.

Our first encounter with adventure occurred shortly after the trip began. We were flagged down by a nice little old lady telling us that one of the trailer tires had gone flat. I was wondering why she also pulled over when we stopped. Her motive for stopping became apparent when she threw some reading material into my truck that I'm sure she thought was going to save our souls. After she left and while we were changing the flat, a man pulled up on a bicycle and started talking to us. He was young, with a rather battered face, mumbling something about "borrowing the bike" from a church, San Antonio and some arrest form he had from the police. He eventually went away and with the tire changed, we were back on the road.



Bob and Ken at Stonehenge II
Image by Triple Nickel

Since we didn't need to be on campus until dinner time, we decided to take the scenic route. Our first stop was for lunch at the Clear Springs Café on highway 46 near New Braunfels. If you love onion rings, this is the place to eat! After lunch we continued on to Boerne where we connected with I-10. We left I-10 at Kerrville and headed south on highway 39.

Our next stop was at Stonehenge II on highway 1340 outside of Kerrville. We all know Stonehenge was used for astronomy, right? So it fits that this place was worthy

(Continued on page 6)

(Continued from page 5)

of our visit. It was conceived in 1989 by Al Shepperd and Doug Hill and built by Doug Hill on Al Shepperd's field. It's not a reproduction of the original. Rather, it's 2/3 the size of the original, doesn't have a Sun orientation and is depicted as it would have looked when first built. It took 9 months to build. There are two Easter Island statuaries there as well. After a "photo-op" we continued our drive to Junction. While the skies were mostly overcast the entire trip, it started raining after leaving Stonehenge II. However, by the time we arrived on campus, the rain had stopped.

We arrived in time to get settled into our rooms just before dinner. Our rooms were three person dorm suites with two rooms sharing an adjoining shower and toilet. Each room was partitioned in half with each half having its own sink. One half of the room had two beds, the other half had a single bed. There was a refrigerator in each room. There were plenty of unoccupied rooms so we each had a room of our own. In the lobby were two computers with high speed Internet connections so we could check our E-mail and browse the web. There were also microwaves in the lobby.



Image by Ken Lester

Easter Island Statue



Observing pad, with scopes covered.
Image by Triple Nickel

Dinner was served at 5:30 at the cafeteria style dinning hall. The evening menu was chicken and beef fajitas, rice, and beans. We had our choice of soft drinks, milk or juices to drink. There were approximately 60 children eating dinner plus their teachers and the Tech staff. After the meal, the children cleared their own dishes, wiped down the tables and swept the floor. It was quite impressive how organized and disciplined the children were.

Not far from the dinning hall is a large field which was the site of a driving range and putting green. The driving range is no longer

used. The putting green, topped with artificial turf and still having the embedded cups is now used as an observing pad. We set up our scopes on the observing pad. While we were setting up, there was a very light mist/sprinkle. After about 15 minutes, the wet went away. We covered our scopes and kept our fingers crossed that the clouds would go away by dark. Our original plan was to do a 20 minute brief on the scale of the Solar System in the dinning hall, followed by viewing through the telescopes. By night fall, it was about 80% cloud covered. Bob Taylor presented the Solar System brief. Triple Nickel then did a question and answer session while we waited for the sky to clear. When it became



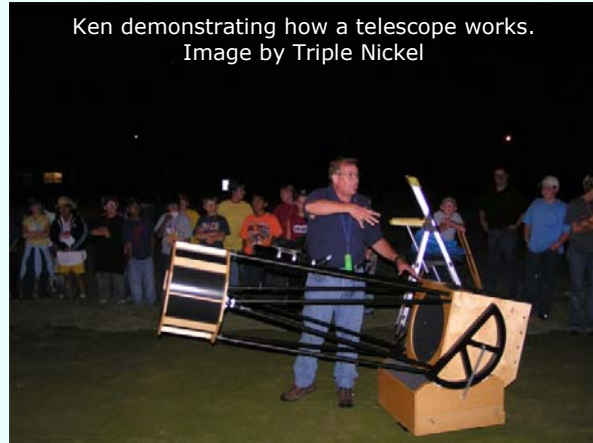
Bob's Solar System Brief. Image by Ken Lester

(Continued on page 7)

(Continued from page 6)



Triple's Q&A
Image by Ken Lester



Ken demonstrating how a telescope works.
Image by Triple Nickel

evident that the sky was not going to clear, the children were brought out to the field where I gave an explanation of how telescopes worked and the different kinds of telescopes. The kids were disappointed that they didn't get to see through the scopes, but we promised to try again the next night. We also volunteered to set up Triple's scope for solar viewing in the late afternoon.

We skipped breakfast, choosing to sleep in past the 8:00 a.m. call to breakfast. A typical breakfast there consists of either cereal or eggs and bacon with biscuits. When we finally did get going, we took a road trip out to Fort McKavett to see the staff and get an update on their electrical problems.



Ft. McKavett Parade Grounds Ken Lester

The fort is so green. Everyone out there says that it has never been this green during August. The center room of the barracks now has a floor and will be available for our use. They have about 50 new aluminum cots that are available for sleeping. The room is very large and capable of holding a lot of people. There are four 110V electrical outlets in the room, each on its own breaker. The north end of the barracks is still off-limits for lodging. It contains a permanent display of how the barracks might have looked in the mid 1800's. If needed, we will still be able to use the south rooms of the barracks.

Repairs to the fort's electrical service have not yet begun. Currently, there is still power to the headquarters building, the barracks, Buddy's house, and the shop area. If repairs are underway at the time of our October star party, electrical service to the headquarters building and the barracks

(Continued on page 8)

(Continued from page 7)

might be shut off. If it is, Buddy has arranged for a generator to power the telescopes. However, there won't be power available for the RVs that would normally park near the barracks. Buddy says that the new fire department building has space for three RVs. The fire station is a short walk north of the barracks. There are water and electrical hookups at that location. There is also a dump station, for draining holding tanks. If needed, Buddy will run water and electrical next to his house and some RVs can park there.



Lum's BBQ
Image by Triple Nickel

After leaving the fort, we decided to eat lunch at some place new. Near the KOA in Junction, is Lum's BBQ. The food was very good, rivaling Cooper's (another excellent BBQ place in Junction). After lunch, we decided that a survey trip to Texas Tech wouldn't be complete without checking out their pool. It's a beautiful pool, with lots of lounge chairs and tables. While Triple swam, Bob took a nap and I took some pictures.



Bob Doing What Bob Does
Best
Image by Ken Lester

The Thursday night meal was a cookout down at their pavilion. Hot dogs and s'mores were on the menu. While that sounded good, we opted to go back into Junction and try out La Familia, a really good Mexican restaurant. After dinner we stopped by a local gas station and replaced the trailer tire destroyed at the beginning of this trip. We then returned to the campus to check in with Kaycie.

We had arranged to give the kids a chance to do some solar observing in the late afternoon. Unfortunately, the clouds returned shortly before the time

we were to set up. The cloud cover was almost 100% by dark and the kids didn't get a chance to have their star party. We went ahead and packed the scopes and most of our belongings in the trailer that night so we could get an early start home on Friday. We did go outside again around 10:30 p.m. to find that most of the clouds had dissipated. From what we could tell, this will be a fairly dark site. The light from Junction was concentrated to the north and rose about 20-30 degrees above the horizon. There are some lights around the area, but most of those can easily be turned off.

The trip home was very pleasant. We avoided I-10, taking back roads from



Tech's Pool. Laps by Triple Image by Ken Lester

(Continued on page 9)

(Continued from page 8)

Junction to Boerne. We drove past Lost Maples State Park, had some delicious apple pie for breakfast at Love Creek Orchards in Medina, then went through Bandera on the way to Boerne. We saw some of the prettiest scenery in all of Texas. I highly recommend taking the scenic route home from our October Fort McKavett star party. Its worth it!

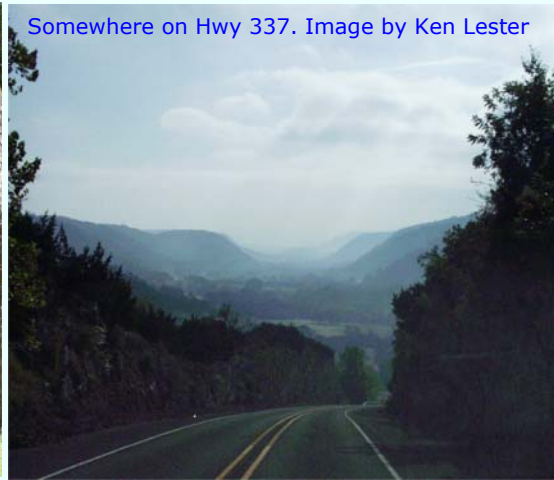
Although the kids didn't get their star party, Tech was very grateful for our time and the lectures we provided. We were treated very well, not to mention how relaxing and enjoyable the trip was. Considering the hospitality that Tech provided, this was a win-win event. I'm sure we will be asked back and I hope to be able to go to the next one.



Love Creek Orchards. Image by Triple Nickel



Kids hard at work. Image by Triple Nickel



Somewhere on Hwy 337. Image by Ken Lester

Family Space Day at LPI

Ken Lester, images by Matt Hommel

The September Family Space Day sponsored by LPI featured telescopes and lunar eclipses. The children were able to build their own refractors out of cardboard and lenses, decorating their OTAs with brightly colored pictures of stars, animals, or whatever their artistic imaginations could think up. JSCAS members Ed and Eleta Malewitz brought 2 of their telescopes for show and tell. Bob Taylor brought an 8" Dob, mirror blanks and other mirror making equipment, giving the kids some hands-on play time grinding a mirror. Chris Randall assisted Bob. There was also a simplified explanation of how eclipses happen. Surprisingly, some 3 and 4 year old kids knew the answers to some of the questions posed by the presenter. The next event will be October 27th at 7 p.m. to observe the lunar eclipse.



Fort McKavett Fall Star Party

Ken Lester

On October 7th through 10th, JSCAS will hold its 12th star party under the dark skies of west Texas. I visited the fort on September 2nd and found that the grounds are lush and green. The hill country has had an abundant amount of rain this year. The grass didn't crunch under my foot steps. As



Image by Ken Lester

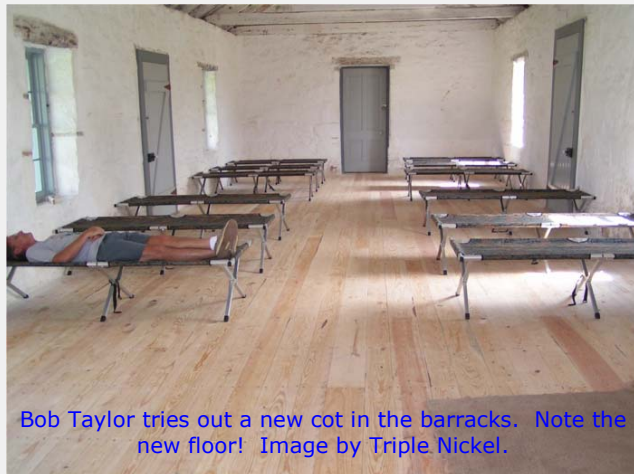
usual, we will have the park to ourselves on Thursday and Friday nights. On Saturday night, we will host the public, sharing our love of telescopes and the night sky.

Saturday at noon, we will partake of BBQ at the school house. A donation of \$10.00 per person is requested to cover the cost of the BBQ. Following the BBQ, the annual meeting of the Friends of Fort McKavett (the Friends) will be held. All are invited to attend the meeting. Past JSCAS president Hernan Contreras and Star Party Chairperson, Lisa Lester, are officers of the Friends. Many JSCAS members are also members of the Friends. JSCAS has been a strong

supporter of this organization since its founding several years ago. At this year's BBQ, JSCAS, the Friends, and the park staff will be honoring the memory of Don Huss, who recently passed away. Don was a founding member of the Friends and a long time supporter of Fort McKavett.

Situated at latitude 30-49-46.5, longitude 100-06-24.1 (elevation is ~ 2000 FT. AMSL), Fort McKavett is northwest of Junction, Texas. It's about a 6.5 hour drive from the greater Houston area. The fort lies at the headwaters of the San Saba river. This Army post dates back to 1852 and consists of beautifully restored buildings and displays.

The park has recently completed installing a floor in the center room of the barracks, our primary sleeping facility while at the fort. This is a long room, with four electrical outlets, each on their own breaker. The fort has also acquired a large supply of new cots. As always, bring your own bedding.



Bob Taylor tries out a new cot in the barracks. Note the new floor! Image by Triple Nickel.

The fort is currently experiencing electrical problems. The power grid for the hospital (visitor's center) has failed. The headquarters building, the barracks, and the shop area are not affected. However, there is a possibility that repairs could cause power to be shut down to the barracks and headquarters building. If that occurs while we are there, generators will be available to power the telescope field. Unfortunately, if power does get shut off, there will be no electricity for the RVs parked along the barracks ruins. As a solution, there are three RV spots with water and electricity at the new Fort McKavett fire station. The new station is a short walk from the observing field. In addition, Buddy can run electrical lines and water for a few RVs near his home next to the com-

(Continued on page 11)

(Continued from page 10)

manding officers quarters ruins.



Bob and Ken making plans with Buddy Garza for the October Star Party. Image by Triple Nickel.

Regular star party attendees know that JSCAS usually visits one of the area's elementary schools on Friday. We will not be doing that this year. Instead, we will be working on establishing a memorial to the crew of the Columbia.

Once again, Lisa Lester, our star party chairperson, is taking on the job of coordinating this exciting star party. Contact Lisa if you think you might attend (e-mail: lesteln@swbell.net or home phone: (281-479-1102). She needs a count of attendees to let our host, Buddy Garza, know how much food to prepare for the BBQ on Saturday. In addition to tracking the attendance, Lisa will be

coordinating the sleeping arrangements. There is plenty of room in the barracks for singles. There is limited space for couples and families in the headquarters building. Contact Lisa to reserve a spot.

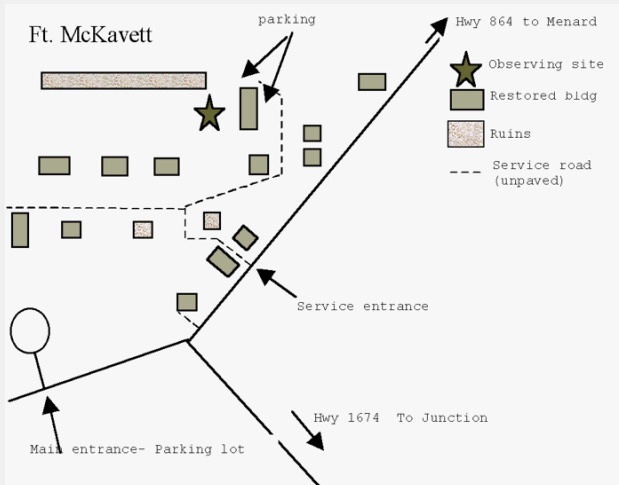
Want to tent camp? There is plenty of room just outside (or within) the walls of the ruins on the north side of the parade grounds (our observing field), for pitching a tent. RV campers, check with Lisa to see if there is room for your RV or pop-up. There is no dump station at the fort but there is one at the new fire station.

There are grocery stores and restaurants in Menard and Junction. Closer to the fort, there is a restaurant on the road to Eldorado (turn left on Hwy 190).

Our club has what I would call "favored" status. Buddy has always had high praise for

the way our members have observed the rules, helped keep the park clean, and respected the park staff. Remember, that this is an active state historical site. Doors open at 8:00 am and close at 5:00 pm, 7 days a week. While you're sleeping after a long night of observing, there may be visitors, both adults and children, touring the facilities. Unfortunately, we can't ask these visitors to be quiet. Please help Buddy out by keeping our equipment, camps and living spaces neat and clean. Here are a few things to remember:

- No tents on the field, unless they are reproduction army tents from the mid 1800s. This includes equipment tents.
- Keep your living area neat and don't erect any structures like sun or wind breaks which detract from the ambiance of the park.
- Don't leave cooking fires unattended, ever!
- Dispose of smoking materials properly.



(Continued on page 12)

(Continued from page 11)

- No alcohol should ever be displayed during park hours.
- Pick up all trash before going to bed, not when you wake up.
- Park behind the barracks never on the parade grounds.

These trips are the highlight of the year for most who attend. The dark skies, friendship, and relaxed atmosphere rejuvenate the astronomer and non-astronomer alike. I have posted much more information on my web site about Fort McKavett and how to get there. Please take a look at <http://www.riverofstars.net/JSCAS/StarParties/starparty.htm>.



Image by Triple Nickel

To reach Fort McKavett, take I-10 just past Junction (other side of San Antonio) until you come to Hwy 1674. Take 1674 north until you reach Ft. McKavett. Once at the fort, turn right onto Hwy 864 then take the second gate into the fort. Drive slow, don't kick up dust. Follow the map (on pg 11) to the parking area behind the barracks. Find Lisa Lester to check in. **CAUTION:** There are a lot of deer in the last twenty something miles. Be very careful driving, especially at night and at dusk.

See you there!

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

We have established contact with Sky & Telescope publishers to obtain the "Club Discount". Many of you, including myself, have taken advantage of that. We need to have at least five subscriptions through the club in order to get the "club" rate. I have received three letters in the mail this week. One was from Sky & Telescope stating that we are in danger of losing our club discount. They supplied a list of subscribers and there were only four. The other two letters were from JSCAS members wanting their subscription to be under the plan. This barely gets us under the wire by one subscription. I would also like to remind those of you that are not taking advantage of the discount that you can subscribe to Sky and Telescope for \$10 off the normal price (\$32.95 with the club discount). I would like to see more members take advantage of this program so the club doesn't lose its discount.

Contact with Astronomy magazine has now been established. They are offering a discount too. JSCAS members can subscribe to Astronomy for \$29 a year. We need to have/keep a minimum of five subscribers to take advantage of the discount. I would like to start Astronomy ASAP, and not buy it at Barnes&Noble anymore. I need **four** more people to sign up. 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. I will be at the next three meetings and at the Ft. McKavett Star Party. Clear skies!

David Haviland
Vice-president and Secretary

Genesis Mission Status Report

September 16, 2004

Genesis team scientists and engineers continue their work on the mission's sample return canister in a specially constructed clean room at the U.S. Army Proving Ground in Dugway, Utah. As more of the capsule's contents are revealed, the team's level of enthusiasm for the amount of science obtainable continues to rise.

At present, the science canister that holds the majority of the mission's scientific samples is lying upside down - on its lid. Scientists are very methodically working their way "up" from the bottom portion of the canister by trimming away small portions of the canister's wall. The team continues to extract, from the interior of the science canister, small but potentially analyzable fragments of collector array material. One-half of a sapphire wafer was collected Tuesday - the biggest piece of collector array to date.

The mission's main priority is to measure oxygen isotopes to determine which of several theories is correct regarding the role of oxygen in the formation of the solar system. Scientists hope to determine this with isotopes collected in the four target segments of the solar wind concentrator carried by the Genesis spacecraft. The condition of these segments will be better known over the next few days, after the canister's solar wind concentrator is extricated. At this time, it is believed that three of these segments are relatively intact and that the fourth may have sustained one or more fractures. There are no concrete plans regarding the shipping date of the Genesis capsule or its contents from Dugway to the Johnson Space Center in Houston. The team continues its meticulous work and believes that a significant repository of solar wind materials may have survived that will keep the science community busy for some time.

The Genesis sample return capsule landed well within the projected ellipse path in the Utah Test and Training Range on Sept. 8, but its parachutes did not open. It impacted the ground at nearly 320 kilometers per hour (nearly 200 miles per hour). For more information regarding the recovery and analysis of Genesis samples please contact Bill Jeffs of NASA Johnson Space Center at 281-483-5035 or via email at william.p.jeffs@nasa.gov.

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Jet Propulsion Laboratory, Pasadena, Calif.

Bill Jeffs (281) 438-5035
Johnson Space Center

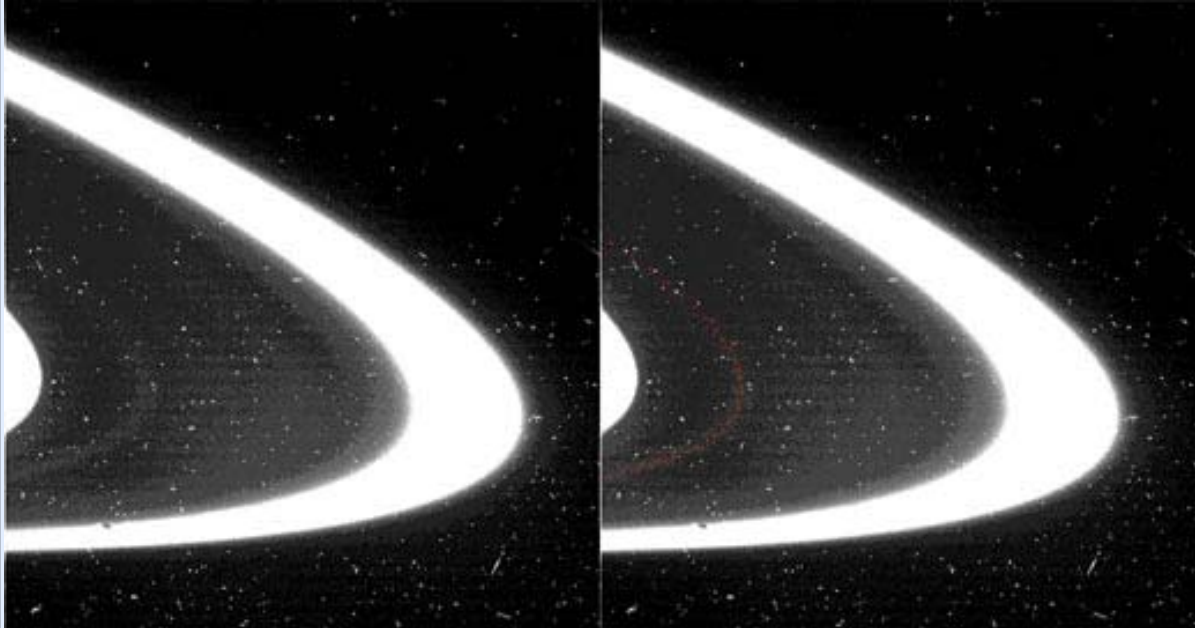
Donald Savage (202) 358-1547
NASA Headquarters, Washington, D.C.
2004-231

Left: Genesis Sample Return Capsule as it looked to long range cameras moments before hitting the desert floor.
Right: After impact at 197 mph, the capsule buried itself in the ground. Credit: NASA



Cassini Finds New Ring and Moon

A newly found ring of material, S/2004 1 R, in the orbit of Saturn's moon Atlas has been seen in this view of the region between the edge of Saturn's A ring and the F ring.



Credit: NASA/JPL/Space Science Institute

New Ring

The image was taken by the Cassini spacecraft wide angle camera on July 1, 2004, just after the spacecraft had crossed the ring plane following Saturn orbit insertion.

The maximum radial resolution is approximately 7 kilometers (4 miles) per pixel. The region from the A ring to the F ring spans some 3,500 kilometers (2,200 miles). The image has been enhanced to show the presence of faint ring material just beyond the edge of the A ring and in the orbit of Atlas (indicated by the red line in the image on the right). The moon Prometheus (102 kilometers or 63 miles across) can be seen close to the F ring at the lower left of the image.

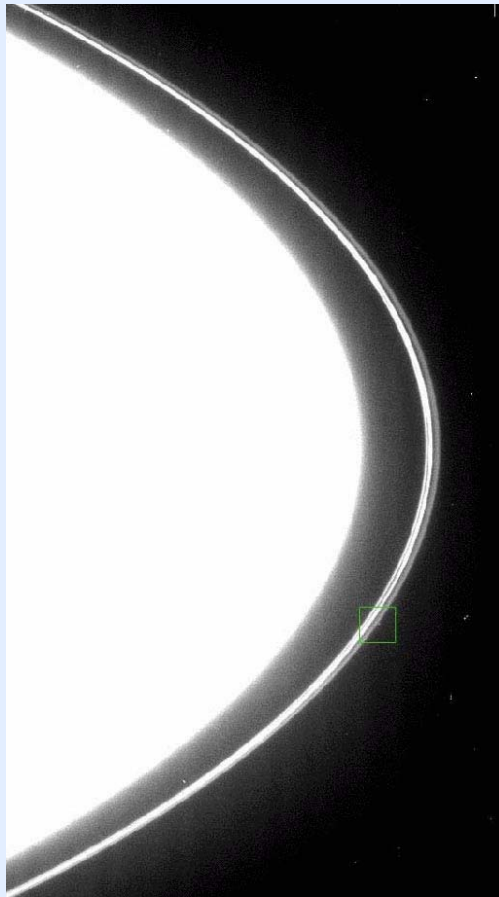
The Cassini-Huygens mission is a cooperative project of NASA, the European Space Agency and the Italian Space Agency. The Jet Propulsion Laboratory, a division of the California Institute of Technology in Pasadena, manages the Cassini-Huygens mission for NASA's Science Mission Directorate, Washington. The Cassini orbiter and its two onboard cameras were designed, developed and assembled at JPL. The imaging team is based at the Space Science Institute, Boulder, Colo.

New Moon?

A small, newly found object, temporarily designated S/2004 S 3, has been seen orbiting Saturn's outer F ring. The tiny object, seen centered in the green box in the image on the next page, orbits the planet at a distance of approximately 141,000 kilometers (86,420 miles) from the center of Saturn. Its nature, moon or clump, is not presently known.

(Continued on page 15)

(Continued from page 14)



A movie sequence of 18 images was taken with the Cassini spacecraft narrow angle camera on June 21, 2004. Images were taken every eight minutes over the course of two and one-quarter hours. Each image has been enhanced to show the presence of the newly detected object. The clip can be seen at:

<http://saturn.jpl.nasa.gov/multimedia/images/small-moons/images/PIA06115.gif>

In the first frame, the small moon Atlas (32 kilometers or 20 miles across) can be seen near the main rings at lower left. About one-third of the way through the sequence, the moon Janus (181 kilometers or 112 miles across) appears in two images at upper right. The size of the object has been estimated to be four to five kilometers (two to three miles) across. Because it is so small, it is not resolved and appears as a faint point of light just barely visible above the background noise.

These images, which are part of a sequence specifically designed to search for small new moons in the inner Saturnian system, have not been cleaned of artifacts but have been greatly enhanced in contrast to increase visibility. Consequently, the main rings are overexposed, and many cosmic ray hits and noise patterns are clearly apparent. The image scale is approximately 40 kilometers (25 miles) per pixel.

The Cassini-Huygens mission is a cooperative project of NASA, the European Space Agency and the Italian Space Agency. The Jet Propulsion Laboratory, a division of the California Institute of Technology in Pasadena, manages the Cassini-Huygens mission for NASA's Science Mission Directorate, Washington. The Cassini orbiter and its two onboard cameras were designed, developed and assembled at JPL. The imaging team is based at the Space Science Institute, Boulder, Colo.

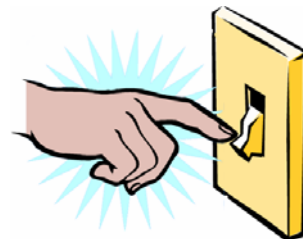
For more information about the Cassini-Huygens mission, visit <http://saturn.jpl.nasa.gov> and the Cassini imaging team home page, <http://ciclops.org>.

Credit: NASA/JPL/Space Science Institute

Help turn off the lights...

Join the
International Dark-Sky Association (IDA)
<http://www.darksky.org>

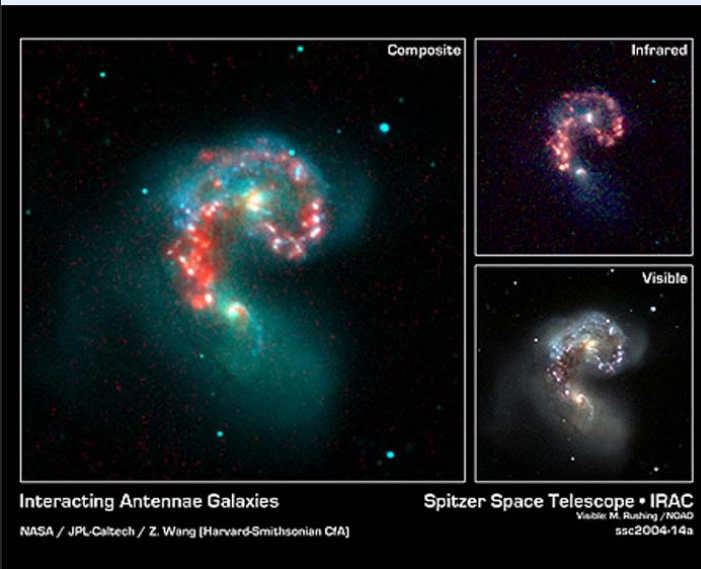
"To preserve and protect the nighttime environment and our heritage of dark skies through quality outdoor lighting."



Spitzer Arrives at Scene of Galactic Collision

For Release: September 7, 2004

NASA's Spitzer Space Telescope has set its infrared sight on a major galactic collision and witnessed not death, but a teeming nest of life.



The colliding galaxies, called the Antennae galaxies, are in the process of merging together. As they churn into each other, they throw off massive streamers of stars and dark clouds of dust. Spitzer's heat-seeking eyes peered through that dust and found a hidden population of newborn stars.

The new Spitzer image is reported in one of 86 Spitzer papers published in the September issue of *The Astrophysical Journal Supplement*. This special all-Spitzer issue comes just after the one-year anniversary of the observatory's launch, and testifies to its tremendously successful first year in space.

"This abundance of Spitzer papers just one year after launch shows that the telescope is truly providing a new window on the universe," said Dr. Michael Werner, project scientist for Spitzer at NASA's Jet Propulsion Laboratory, Pasadena, Calif. "These papers report the earliest results, so the best is yet to come."

In the latest Antennae galaxies study, led by Dr. Zhong Wang of the Harvard-Smithsonian Center for Astrophysics, Cambridge, Mass., Spitzer uncovered a new generation of stars at the site where the two galaxies clash.

The Antennae galaxies are a classic example of a galactic merger in action. These two spiral galaxies, located 68 million light-years away from Earth, began falling into each other around a common center of gravity about 800 million years ago. As they continue to crash together, clouds of gas are shocked and compressed in a process thought to trigger the birth of new stars. Astronomers believe that the two galaxies will ultimately merge into one spheroidal-shaped galaxy, leaving only hints of their varied pasts.

Galactic mergers are common throughout the universe and play a key role in determining how galaxies grow and evolve. Our own Milky Way galaxy, for example, will eventually collide with our closest neighbor, the Andromeda galaxy.

Previous images of the Antennae taken by visible-light telescopes show striking views of the swirling duo, with bright pockets of young stars dotting the spiral arms. At the center of the galaxies, however, where the two overlap, only a dark cloud of dust can be seen. In the new false-color Spitzer image, which has been combined with an image from a ground-based, visible-light telescope to highlight new features, this cloud of buried stars appears bright red. The visible-light information, on the other hand, is colored blue and indicates regions containing older stars. The nuclei, or centers, of the two galaxies are white.

(Continued on page 17)

(Continued from page 16)

"This more complete picture of star-formation in the Antennae will help us better understand the evolution of colliding galaxies, and the eventual fate of our own," said Dr. Giovanni Fazio, a co-author of the research and an astronomer at the Harvard-Smithsonian Center for Astrophysics." Fazio is principal investigator for the infrared array camera on Spitzer, which captured the new Antennae image.

JPL manages the Spitzer Space Telescope mission for NASA's Science Mission Directorate, Washington. Science operations are conducted at the Spitzer Science Center at the California Institute of Technology in Pasadena. JPL is a division of Caltech. Spitzer's infrared array camera was built by NASA Goddard Space Flight Center, Greenbelt, Md.

Information about Spitzer can be found at <http://www.spitzer.caltech.edu>.

Whitney Clavin
(818) 354-4673
Jet Propulsion Laboratory, Pasadena, Calif.

jpl2004-218
ssc2004-14

Upcoming Events

Fort McKavett Star Party: JSCAS will hold its fall star party at Fort McKavett, Texas on October 7-10. Contact Lisa Lester for more information.

OKIE-TEX STAR PARTY: The 21st annual Okie-Tex Star Party will be held October 9-17 at Camp Billy Joe, Kenton, Oklahoma. Sponsored by the Oklahoma City Astronomy Club, activities include speakers Brian Lula and Dick Parker, vendors, door prizes and dark sky observing. For more information contact Larry Beatty, ldbeatty@aol.com or to register, go to <http://www.okie-tex.com>.

ELDORADO STAR PARTY: The second Eldorado Star Party (ESP), to be held October 13-16, is now taking registrations. For more information, visit <http://www.eldoradostarparty.org>.

All Clubs Meeting: JSCAS will once again participate in the all clubs meeting held just prior to Astronomy Day at the George. This year's meeting will be on October 22nd at St. Thomas University.

Astronomy Day at the George: Join the fun at the George Observatory in Brazos Bend State Park. This year's event will be held on October 23rd from 3 p.m. to 11 p.m. and will consist of booths, presentations, speakers, youth activities and evening observing. For more information, visit <http://www.AstronomyDay.com> or <http://www.AstronomyDay.org>.

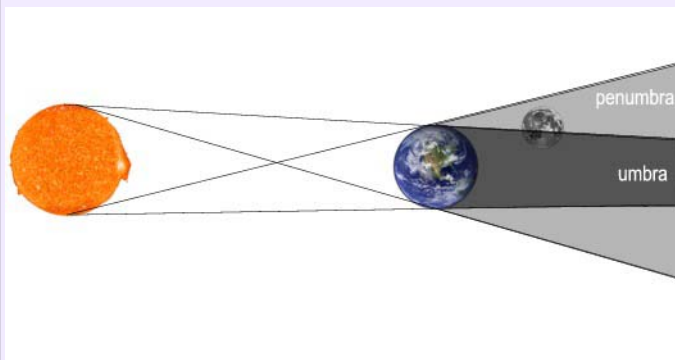
Member Recognition

Becky Ramotowski's day time image of the Moon (see page 2) was featured on Spaceweather.com on September 6th. Becky also imaged a NASA science balloon high over Tijeras, New Mexico that appeared on Spaceweather.com on September 18th.

Astronomy 101

Ken Lester

The last total lunar eclipse visible anywhere on Earth until March 2007, will occur the evening of October 27th. With that in mind, this month's Astronomy 101 will review the basics of lunar eclipses, including some not so well known facts.



A lunar eclipse always occurs when the Moon is full as it moves through the shadow of the Earth. The Earth's shadow consists of two parts: the **umbra** and the **penumbra**. The umbra is the area of total shadow. If you were in space, within the umbra, and looked back toward the Earth, you would not be able to see any part of the Sun. If you were within the penumbra, you would see a portion of the Sun around one edge of the Earth.

A penumbra lunar eclipse occurs when the Moon moves into the penumbra but not into the umbra. A penumbra eclipse is very difficult to detect since the dimming of the Moon is very slight. A partial lunar eclipse occurs when only a portion of the Moon passes through the umbra. A total lunar eclipse occurs when the entire Moon enters the umbra. Totality of a lunar eclipse may last as long as 1 hour and 45 minutes¹, though the timing depends upon where the Moon crosses the umbra.

The French astronomer André Louis Danjon proposed a useful five point scale for evaluating the visual appearance and brightness of the Moon during total lunar eclipses. 'L' values for various luminosities are defined as follows²:

- L = 0 Very dark eclipse. Moon almost invisible, especially at mid-totality.
- L = 1 Dark Eclipse, gray or brownish in coloration. Details distinguishable only with difficulty.
- L = 2 Deep red or rust-colored eclipse. Very dark central shadow, while outer edge of umbra is relatively bright.
- L = 3 Brick-red eclipse. Umbral shadow usually has a bright or yellow rim.
- L = 4 Very bright copper-red or orange eclipse. Umbral shadow has a bluish, very bright rim.

The appearance of the Moon during a total eclipse depends upon its path through the umbra as well as the Earth's atmosphere. If the Earth had no atmosphere, the Moon would appear black. Earth's atmosphere however, bends the Sun's rays into the shadow, causing some light to shine on the Moon. Dust and moisture suspended in the atmosphere, cause the bent sunlight to take on a variety of different colors and hues. During periods of high volcanic activity, very dark, red eclipses can occur.

Some tables of lunar eclipses show a umbral magnitude associated with the eclipse. Umbral magnitude is the fraction on the Moon's diameter immersed in the umbra at maximum eclipse. For values greater than 1.0, it is a total eclipse. For negative values, it is a penumbral eclipse. You would expect the magnitude of a total eclipse to be 1, because the entire lunar diameter is covered by the umbra of the earth, but the umbra of the Earth is larger than the diameter of the Moon. So we could have a larger moon and still have the total eclipse. The magnitude of a total eclipse represents how much the Moon's diameter could be increased without the total eclipse turning into a partial one. The eclipse on October 27th has a magnification of 1.31³.

Since a lunar eclipse only occurs when the Moon is full, why don't we see an eclipse every 29.5

(Continued on page 19)

(Continued from page 18)

days? Since the Moon's orbit around the Earth is tilted about 5° to the Earth's orbit around the Sun, the Moon usually lies above or below the Earth's shadow⁴.



©Shane Ramotowski

Why does the Moon seem to have a bright, hot spot, even during totality? Seen here is an image taken by Shane Ramotowski of the Moon during totality on November 8, 2003. Notice the bright area in the lower left. If the center of the Moon doesn't pass through the exact center of the umbra, the light refracted by the Earth's atmosphere will be more intense at that spot farthest away from the axis of the umbra.

Now that you have all the facts about lunar eclipses, bring your telescope to the next total lunar eclipse on October 27th at LPI (Lunar and Planetary Institute). JSCAS will be supporting LPI's monthly Family Space Day. The event starts at 7:00 p.m. We will be setting up our scopes in the field just west of the entrance driveway.

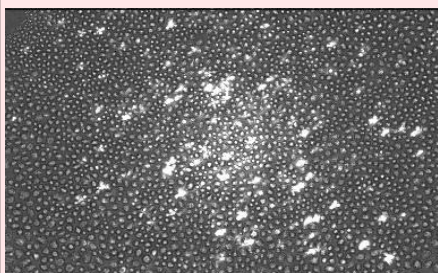
¹ M. A. Seeds, *Horizons* (Wadsworth Publishing Co., 4th edn., 1993) - JSCAS Library book

² <http://sunearth.gsfc.nasa.gov/eclipse/OH/Danjon.html>

³ J. Meeus, *Astronomical Tables of the Sun, Moon and Planets* (Willmann-Bell, Inc., 2nd edn., 1995)

⁴ T. T. Amy, *Explorations an Introduction to Astronomy* (Mosby, 1994) - JSCAS Library book

CCD Problem Solved



Original problem image of M22

Chris Wells, recently posted a CCD question on the JSCAS list server. Chris writes "... After several hours last night, the best I could come up with is the attached image of M22. ... My main concern is the uniform background pattern on the image and why this is there? Is my camera OK? I did subtract a dark frame but that's all the processing that I did." Chris was using a Meade 416XDE CCD camera.

Randy Brewer and Dick Miller responded to Chris' plea for help, suggesting the CCD chip was frosting over. According to Chris "I finally got the frost issue sorted out on my 416XTE CCD camera. The problem was a pinched O-ring allowing moisture to enter and saturate the internal desiccant packs. The procedure involved splitting the circuit board and CCD chip from the Peltier cooling device (a nerve racking experience) to reveal the hidden desiccant packs and baking the desiccant per Randy's suggestion. So far this seems to have solved the problem. Thanks again for all those who helped out."



M22 (left) and M57 (right)
after repairs were made.



The Next Total Solar Eclipse Tour Is Going Fast Libya 2006

By Paul Maley

November 2003 was the last total solar eclipse visible on earth, and we saw it from an airplane over Antarctica. It will not be until March 2006 before another solar blackout occurs. The JSCAS Ring of Fire Expedition #32 will be going to Libya for this 4 minute 5 second spectacular. You would think that we could just casually make the announcement in the STARSCAN and you would have lots of time to think about it. I mean, its 18 months away! The trip is scheduled for March 25-April 1, 2006 and was announced formally on the internet on September 10th. By September 17th it was sold out, all 16 spaces! This was truly a 'first' in the sense of having a trip sold out from under us in the span of a week.

A second tour was opened by Carlson Wagonlit Future Travel to Libya and is also limited to 16 persons. It will spend one additional night in the desert to view the sky from our eclipse camp compared to tour #1. We don't even have the details ready but as of September 21st, this tour has just 6 spaces remaining. If any JSC Astronomical Society members want to go with us, you had best decide quickly, although we will have a waiting list. As usual, the information can be found at <http://www.eclipsetours.com>.



Severan Forum in Leptis Magna

I will be leading tour #1 and astronaut Claude Nicollier will be in charge of tour #2. I will be coordinating the observations of the eclipse itself for both groups. The details of tour #2 should be posted in October. The tour will last 8 days and cost almost the same as tour #1 (~\$2410 land only). Participants can either use frequent flier miles or find the best deal to fly to Tripoli, Libya. Based on the climatology, Libya has the best weather prospects for this eclipse and the huge demand for Libya tourism has caught up with us. The next really long eclipse will not be until 2009 when 5 minutes 43 seconds of totality can be viewed from Shanghai, China. Of course, we will be there too!

HOUSTON AREA ASTRONOMY CLUBS

Brazosport Astronomy Club
Meets the Third Tuesday of the month, 7:45PM
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://spacsun.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

Pursuing the Messiers

John Erickson

I got lucky at a JSCAS meeting in 1998 and won the book "The Messier Album" by John Mallas and Evered Kreimer as a door prize. I took my new 17.5 inch Coulter Dob and my book to a friend's farm in Navasota, Texas on March 20, 1999 where I observed the Crab Nebula, M1. It seemed like a good place to start. I was not in a rush. I just thought I would log the objects I saw at star parties in the back of the book. But the book ended up on a bookshelf so the next entry is from the trip to Ft. McKavett on October 27, 2000. There were clouds drifting around on that trip but I logged a lot of great objects in one night. I logged M57 - the ring nebula and M13 the globular in Hercules. For M31 and M32 I wrote "...they were bright but fuzzy due to the clouds". For M33 I wrote "... the galaxy was large but faint, then the sky got clear and it looked great". I kept a three ring notebook with a plastic cover for a working log that contained observing plans and drawings, then I would make entries in the back of the Mallas and Kreimer book.

I completed the list on a trip to Canada in June, 2004. I had a portable Celestron C5i in a nice plastic padded suitcase that could be taken on a plane. I flew to Seattle and drove up to Vancouver with my friend Linda. We picked raspberries and had them on cereal for breakfast. Later we took Linda's daughter, Polly, and her husband out to eat at a wonderful Salmon restaurant overlooking the city.

The next day we got on the British Columbia (BC) ferry to Galiano Island, 48 deg 58' N, 123 deg 33' W. There is one problem observing up there: in the summer, it doesn't get dark until 10:30 or 11:00 p.m. I needed to log M4, M9, M11 and M14. It was a very clear dark sky with no wind. The Milky way was visible in Cygnus. I observed M4 on Friday June 18th at 11:19 p.m. at 50x using the C5i 25mm eyepiece.

It took five years, but when I look back at the log book, which is mostly an interesting journal of trips to Ft. McKavett and Brazos Bend, it has a lot of good memories in it. I even logged a couple of objects, M19 and M62 at a star party at Moody Gardens (June 29, 2001).

I have lots of favorite objects. That's one reason it took five years to complete the list. First, if Orion is up, I needed to look at M42. The same goes for M13, M31 and M32 and M57. Now I think I'll need to look at some additions, those where you can get two objects in the same low power eyepiece, like M81 and M82, The owl nebula M97 and galaxy M106, and galaxies M65 and M66.

The toughest area to find all the objects is the Virgo cluster. There are so many galaxies that it is easy to search around and get the wrong one. I followed paths like M84 - M86 - M89 - M90 -M91, but somehow missed M87 and M98 and it took another year to get them.



I made quick simple sketches of most of the objects. That way I could remember what I had actually seen, versus what I had wanted to see on a list of "observing plan" objects.

So, what am I going to do next? I have already observed NGC 457 (the E.T. cluster) so I think I'll work on the NGC list. I'd also like to learn how to take quick digital pictures through the telescope.

As reported in last month's Starscan, John was awarded his Messier certificate at the August meeting.

MEMBER'S GALLERY



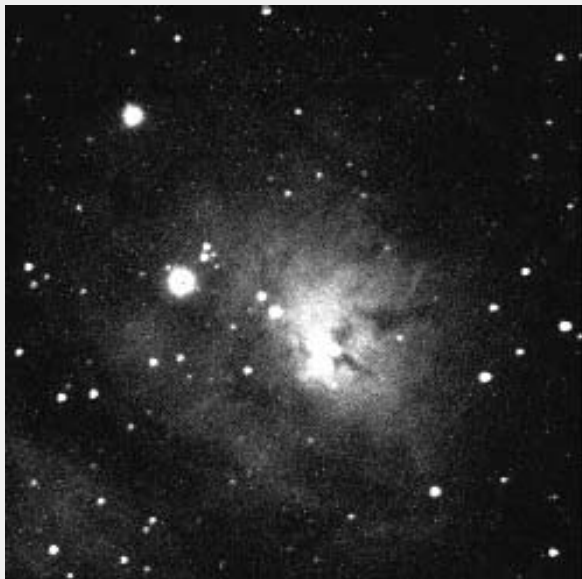
Crescent Moon
Becky Ramotowski©

Taken with a Nikon 5000 digital camera hand held to Celestron Ultima 8 x 56 binoculars. 1/4 second exposure

NGC 7133
Al Kelly©

An L/RGB color composite of the reflection nebula NGC 7133 in Cepheus. Made from images digitized from red, blue, and green-sensitive photographic plates provided to the public by the Palomar Observatory Sky Survey (POSS). Image was processed in AIP4WIN and Photoshop. This object would be a great candidate for CCD imaging by those with hi-res scopes and tracking.



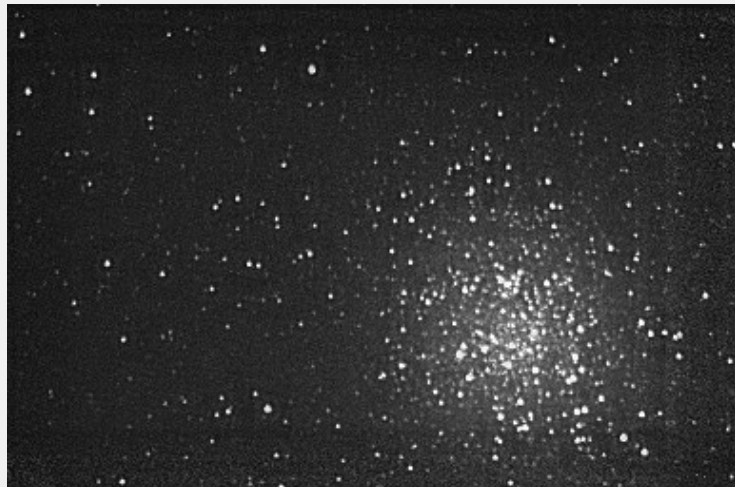


M8
Chris Wells©

This image of M8 was taken on September 9, 2004 from League City, Texas with a 416XTE camera with analog binning turned on (Meade Pictor software). The camera was attached to a Meade 8" SCT with F6 focal reducer on an equatorial mount. Four - 5 second images were stacked using RegiStax2.

M22
Chris Wells©

This image of M22 was taken on September 4, 2004 from League City, Texas with a 416XTE camera with analog binning turned on (Meade Pictor software). The camera was attached to a Meade 8" SCT with F6 focal reducer on an equatorial mount. One 5 - second, two - 1 second, and one - 1/2 second image were stacked using RegiStax2.



M13
Al Kelly©



L/RGB image of globular cluster M13 in Hercules, made from images taken with a Starlight Express MX916 and a 17.5" f4.5 Newtonian on 9/10/04 from Friendswood, Texas, using Schuler RGcBc filters. Three 300-second unfiltered sub-exposures, two 240-second sub-exposures in red, two 240-second sub-exposures in green, and two 240-second sub-exposures in blue were self-guided in Astroart and processed in AIP4WIN and Photoshop.

Visual Observing for October 2004

Chris Randall

This month's list is straying from the normal format due to the annual Fall Fort McKavett Star Party. For you that are going, I have developed a list of objects to delight and tease you when you arrive. This list covers many areas of the sky and object types. Just observe and enjoy the night sky. If you make the observations and turn them into me, you will receive a special 2004 Fort McKavett Observing Certificate. The detailed list of objects and instructions are below. Most important, have fun observing at the Fort.

Fort McKavett Challenge List for October 2004

This list covers many areas of the sky and object types. No formal logging is required for this program, just observe and enjoy the night sky. This list contains objects for beginners to experts and should be fun or a serious challenge whichever you choose. This list should be able to be completed using just binoculars. I recommend trying them first then progressing to the telescope.

Rules:

- From the following lists of 50 objects, select and observe 25 objects.
- Find and observe your selected objects, mark the date and time observed and what instrument you used. For example; Naked Eye, 10x20 Binoculars, 4" Refractor, 22" Dob, or something with a hole in it (SCT).
- Although not required, **share** your view of the objects with others on the field, especially the tough ones. Help others find these objects if they have trouble. So they can log on their log sheet.
- Helping each other is welcome, but **light leach logging is not permitted**.
- All observations must be done during this Fort McKavett Star Party.
- When you have completed the requirements, turn them into Chris Randall. You will receive a special 2004 Fort McKavett Observing Certificate. Don't forget to put your name on the sheet. The logs will be returned to you.

Most important, have **FUN** observing at the Fort.

Name: _____

Date Submitted: _____

Instruments Used: _____

Solar System

Object	RA	Dec	Mag	Size	% Illum	Const	Rise	Set
Sun	12h 59m	-06° 20'	-26.7	32'	100	Vir	07:39	19:15
Comet Neat (C/2001 Q4)	14h 49m	+68° 37'	9.4	---	95	UMi	----	----
Pluto	17h 19m	-14° 46'	13.9	1"	99	Ser	12:22	23:17
Neptune	21h 00m	-17° 06'	7.9	2.3"	100	Cap	16:09	02:52
Uranus	22h 21m	-11° 03'	5.7	3.6"	100	Aqu	17:15	04:29
Asteroid Vesta (4)	23h 41m	-14° 25'	6.1	---	99	Aqr	20:17	07:10
Comet Machholz (C/2004 Q2)	05h 02m	-27° 24'	9.2	---	94	Cae	00:43	10:24

(Continued on page 25)

(Continued from page 24)

Object	RA	Dec	Mag	Size	% Illum	Const	Rise	Set
Saturn	07h 54m	+20° 43'	0.7	18"	100	Gem	01:30	15:18
Moon	09h 20m	+20° 13'	---	29.7'	25	Cnc	02:09	16:31
Venus	10h 33m	+09° 49'	-4.1	15"	73	Leo	04:38	17:28

The coordinates for the solar system objects are for October 8, 2004 at 22:00 CDT.

Open Clusters

Object	Type	RA	Dec	Mag	Size	stars	Con	SA
Cr 386	OC	18h 39m	+05° 26'	4.6	52'	80	Ser	16
Cr 399	OC	19h 26m	+20° 06'	3.6	60'	40	Vul	8
NGC 7380	OC	22h 47m	+58° 06'	7.2	12'	40	Cep	3
NGC 7686	OC	23h 30m	+49° 07'	5.6	14'	20	And	9
NGC 7789	OC	23h 57m	+56° 43'	6.7	15'	255	Cas	3
NGC 457	OC	01h 19m	+58° 17'	6.4	13'	80	Cas	1
NGC 663	OC	01h 46m	+61° 13'	7.1	16'	80	Cas	1
NGC 884 & 869	OC	02h 20m	+57° 08'	6.1, 5.3	29', 29'	150, 200	Per	1
Cr 26	OC	02h 32m	+61° 27'	6.5	21'	40	Cas	1
Mel 25 (Hayades)	OC	04h 27m	+15° 56'	0.5	330'	---	Tau	11

Globular Clusters

Object	Type	RA	Dec	Mag	Size	Con	SA
NGC 6229	GC	16h 46m	+47° 31'	9.4	4.5'	Her	8
M71	GC	19h 54m	+18° 47'	8.4	7.2'	Sge	16
NGC 6934	GC	20h 34m	+07° 24'	8.9	7.1'	Del	16
NGC 7006	GC	21h 01m	+16° 11'	10.6	3.6'	Del	16
M 15	GC	21h 29m	+12° 10'	6.3	18'	Peg	17
M 2	GC	21h 33m	-00° 49'	6.6	16'	Aqr	17
M 30	GC	21h 40m	-23° 10'	6.9	120'	Cap	18
NGC 288	GC	00h 52m	-26° 34'	8.1	130'	Scl	18
M 79	GC	05h 24m	-24° 31'	7.7	9.6'	Lep	18
NGC 2419	GC	07h 38m	+38° 52'	10.3	4.6'	Lyn	5

Nebulae

Object	Type	RA	Dec	Mag	Size	C. Star	Con	SA
NGC 6210	PN	16h 44m	+23° 47'	9.3 (P)	30"	12.6	Her	8
NGC 6572	PN	18h 12m	+06° 51'	9.0 (P)	11"	13.1	Oph	16
M 27	PN	19h 59m	+22° 43'	7.6 (P)	6.7'	13.9	Vul	8
NGC 7000	BN	20h 58m	+44° 20'	----	120'	----	Cyg	9
NGC 7293	PN	22h 29m	-20° 50'	7.5 (P)	16'	13.5	Aqr	17
NGC 7662	PN	23h 25m	+42° 32'	9.2 (P)	37"	13.2	And	9
NGC 1360	PN	03h 33m	-25° 52'	9.6 (P)	6.4'	11.3	For	18
NGC 1535	PN	04h 14m	-12° 44'	9.6 (P)	60"	12.1	Eri	11
M 42	BN	05h 35m	-05° 25'	3.0	60'	----	Ori	11
NGC 2024	BN	05h 42m	-01° 48'	----	30'	----	Ori	11

Galaxies

Object	Type	RA	Dec	Mag	Size	Const	SA
NGC7015	Gal	21h 05m	+11° 24'	13.3 (B)	1.5'x1.5'	Equ	17
NGC 7331	Gal	22h 37m	+34° 25'	9.4 (V)	14.5'x3.7'	Peg	9
NGC 7448	Gal	23h 00m	+15° 59'	11.6 (V)	2.5' 1.2'	Peg	9

(Continued on page 26)

(Continued from page 25)

Object	Type	RA	Dec	Mag	Size	Const	SA
NGC 2	Gal	00h 07m	+27° 40'	14.1 (V)	1.2'x0.7'	Peg	4
M31	Gal	00h 42m	+41° 16'	4.4 (B)	192'x62'	And	4
NGC 253	Gal	00h 47m	-25° 173'	8.0 (B)	27'x6.7'	Scl	18
NGC 300	Gal	00h 54m	-37° 40'	8.7 (B)	22'x16'	Scl	23
IC 1639	Gal	01h 04m	+02° 07'	9.9 (B)	16'x14'	Cet	10
M33	Gal	01h 33m	+30° 39'	6.3 (B)	65'x38'	Tri	9
NGC 404	Gal	01h 09m	+35° 43'	11.2 (B)	3.4'x3.4'	And	4

Lunar Eclipse October 27, 2004

Don't miss the Lunar Eclipse here in Houston on October 27, 2004. It starts before the moon rises at 7:05 PM, and ends around 01:03 AM. The table below shows key points throughout the eclipse.

	Date	Time	Az	Alt
Moonrise	2004 Oct 27	18:30	75.5	----
Moon enters penumbra	2004 Oct 27	19:05.5	79.6	6.8
Moon enters umbra	2004 Oct 27	20:14.3	87.2	21.3
Moon enters totality	2004 Oct 27	21:23.4	95.5	36.0
Middle of eclipse	2004 Oct 27	22:04.0	101.3	44.6
Moon leaves totality	2004 Oct 27	22:44.6	108.6	53.0
Moon leaves umbra	2004 Oct 27	23:53.7	128.7	66.2
Moon leaves penumbra	2004 Oct 28	01:02.7	173.2	74.0
Moonset	2004 Oct 28	07:59	288.0	----

Times are CST for Houston

Enjoy!

JSCAS Library

There have been many recent donations to the JSCAS Library. We now have over 175 books, videos, articles, and pamphlets that can be checked out. Thanks to all the generous individuals who have made contributions to our library. The library inventory on the web has been updated with all the recent additions. Contact Lisa Lester at lesteln@swbell.net for more information or to check something out.

The complete inventory can be seen at: <http://www.riverofstars.net/JSCAS/Library/Library.htm>.

Charlie's Challenge LAST MONTH'S CHALLENGE

Science Stumper #67: Why is the output of an incandescent bulb excessive in the red and deficient in the blue?

Since there will be no JSCAS meeting in October due to the All Clubs meeting on October 22nd, the answer to Science Stumper #67 and the next challenge, Science Stumper #68, will be presented in next month's Starscan.

For more information on the All Clubs meeting, please visit <http://www.astronomyday.org> or <http://www.astronomyday.com>.

4th Annual Houston/Beaumont Regional Astronomy Meeting

Hosted by North Houston Astronomy Club

Where: University of St. Thomas - Scanlan Hall - Jerabeck Athletic Center

When: Friday, October 22. Refreshments & Registration: 7:30 p.m. The meeting starts at 8 p.m.

Main Speaker: Jay McNeil will speak on "McNeil's Nebula: Backyard Science and Serendipity".

Directions:

1. St. Thomas University is located west of Montrose Blvd. between Richmond and Alabama streets in the museum district west of downtown.
2. Jerabeck Athletic Center is northwest of the intersection of West Main St. and Mt. Vernon St.
3. Scanlan Hall is upstairs and can be accessed from the northern or southern entrance to the building.

Parking:

1. All campus ground-level parking lots will be available at no charge after 7 PM.
2. Parking on the streets is available.
3. The Moran parking garage is southeast of the intersection of West Alabama St. and Graustark St. The charge is \$2.

For a map of University of St. Thomas: <http://www.stthom.edu/parking/pdf/ParkingMap122903.pdf>

Astronomy Day T-shirts:

The Astronomy Day 2004 T-shirts, complete with a Clyde Peterson cartoon on the front and a digital image on the back, will be available at 7:30 PM (\$20). Proceeds will be used to support the regional meeting and Astronomy Day events.

Meeting Agenda

7:30 PM Registration & Refreshments

8:00 PM Introductory Video

8:04 PM Welcome -- Bill Leach, NHAC

8:06 PM Logo Ceremony/Club Introductions -- Barbara Wilson, GO/HNMS

8:16 PM What's Up Doc? -- Aaron Clevenson, NHAC

8:20 PM Astronomy Day Announcements -- Cynthia Gustava, FBAC

8:22 PM Door Prizes -- Ed & Eleta Malewitz, JSCAS; Juan Carlos & Geraldina Reina, NHAC

8:32 PM Break Announcement -- Bob Taylor, JSCAS

8:33 PM Break

8:48 PM Call to Order -- Bill Christian, ASSET

8:50 PM Introduce Speaker -- Larry Mitchell, HAS

8:52 PM Main Presentation Jay McNeil, "McNeil's Nebula: Backyard Science and Serendipity"

10:22 PM Speaker Recognition -- David Jenkins, FBAC

10:24 PM Adjourn -- Steve Sartor, HAS

Astronomy Day at The George — Call for Volunteers

Eleta Malewitz

Astronomy Day at the George Observatory will be Saturday October 23rd. It would be nice to have a few tables devoted to certain aspects of astronomy and get people from each club to help staff them. I'm calling for volunteers from all the clubs. Please remember that (inner) space is very limited, so we're really looking at half of one of the big conference tables, or a small folding card-table, for each of these. If electricity is needed, we need to know so we can round up enough extension cords and place them near outlets. Some of these activities already have people who have volunteered to help staff them, but it's really too much to ask one person to do so all day long, they might want to hear some of the talks, take a turn up on deck, or just rest their voices for a while. I see this as a good way for people with like interests from the different clubs to get to know each other and work together. We don't want to give the impression that we're competing with each other, or that only one club has this type of activity. I've got a couple of volunteers so far, but we need more. Please let me know if you would be willing to help out with any of these. You get free admission to the park, and free food and drinks, plus you get to talk to a lot of interested people and share your enthusiasm with them.

1. Getting Started In Astronomy -- displays of things novices need (books, planispheres, binoculars, Moon maps, that sort of thing).

Volunteers: Ken Steele, Triple and Karen Nickel/JSCAS

2. Light Pollution -- OK, all the IDA members should be helping with this. We have some momentum going from the Ft. Bend County lighting ordinance, so now it's time to do some grass-roots education toward a similar ordinance for Brazoria County.

Volunteers: Phil Inderweisen/FBAC; Ed and Eleta Malewitz/JSCAS

3. CCD Imaging -- This is getting more popular all the time, as prices come down and the skies get too light-polluted for long exposures.

Volunteers:

4. Security -- We also will need volunteers to help provide security for the JSC Rocks From Space Exhibit. We definitely don't want another moon rock heist! NASA has asked us to provide extra security, since there will only be two of their scientists with the display this year, and I believe one of them may also be a speaker. Besides, they'll need to take a break now and then. You don't have to be an expert on any of these, just be there to prevent any rocks from walking off. If you pick up enough data about them to repeat it to visitors while the scientists step away for a sandwich or whatever, great. We need responsible people from all the clubs to help with this, and it would be best if we had enough to rotate in reasonable shifts.

Volunteers: Kurtis Gothreaux/JSCAS

5. Children's activities -- LPI is coordinating this, and they have lots of crafts and educational materials for the kids. What they need is more adults to supervise and assist the kids. We had just a few people doing this last year, and we could use more to help this year. It would be nice to have enough that the same people don't end up working at it all day. This will most likely be a daytime event, if the weather is nice enough to move it outside.

Volunteers: Lisa Lester/JSCAS

6. JSCAS Club Table -- Talk to people about the club, hand out whatever goodies we have. (It's only half a table, due to space constraints, so we can't have much on it.) Each club is coordinating its own table, but some handouts will be available for all clubs to distribute.

Volunteers: Karen & Triple Nickel, Eleta Malewitz/JSCAS

7. Deck Scopes -- FBAC is coordinating this. If you want to bring a scope for evening observing, please let Jack McKaye know. Messages to Jack can be sent via Cynthia Gustava at cynm31@ev1.net.

8. Freebies/Handouts Table -- We have tons of freebies from many donors this year. We will also have plastic bags donated by Kingwood College to hold all the stuff, so it doesn't get dropped all over the grounds and make a mess. Last year, keeping the table stocked was a real challenge, because sometimes the crowds around it were so thick, you couldn't get to it. So we need people to keep it stocked, and replace stuff as it runs low.

Volunteers:

Any other exhibit ideas will certainly be considered, as space allows! We can have a table for automated slide shows and self-running PowerPoint presentations (bring your own laptop), but please don't just show up with it, as electrical outlets are limited. Please let me know in advance if you want to do something like this. Unfortunately, noise levels are too high to allow for sound on any of these, so they would have to be self-explanatory without audio.

I've heard from a couple of other volunteers offering to help out, but no specific assignments yet. Again, the goal is to have enough volunteers that people don't get stuck doing the same thing all day long, but everyone gets to enjoy the talks and other activities. Please, if you do sign up to help at a certain time, be there on time so the volunteers you're relieving can go do something else. Some people are committing to more than one activity, so if their relief doesn't show up on time, it could mess up the other activity's schedule as well.

We have a pretty full slate of indoor and outdoor speakers. As soon as we get time slots finalized, those will be posted on the Astronomy Day Website.

This is shaping up to be the best Astronomy Day yet! Be a part of it, and get your requests for clear skies in early.

Eleta

Star Party News

Lisa Lester

Our last star party was held on September 18th at Challenger 7 Park. The day was beautiful and expectations were high for clear skies. However, as we were arriving to prepare the site for the night's event, clouds started to roll in from the west. By the time we had laid out the electrical cords, it was apparent that we were going to have sucker holes at best.

A group of boy scouts, who had arrived about the time we did, were patiently waiting to look through our scopes. Most had never looked through a telescope before and were impressed as we showed them how a telescope operates. Just before dark, we spotted the thin crescent Moon embedded in the haze and thin clouds and they were able to see a somewhat muddled Moon.

The darker it got, the more the clouds formed. Despite the clouds, we ended up with a good turn out of astronomers. The public, however, for the most part stayed away. We had maybe a dozen visitors attempting to get a look at "anything" through the sucker holes. About 9:30 the clouds started clearing off. The visitors who arrived late were rewarded with views of the Ring Nebula, M13 and some clusters in Sagittarius.

After Fort McKavett and Astronomy Day at the George, our next public star party will be November 6th at Moody Gardens.

Race for the Cure

Cancer has touched the lives of several of our club members over the years. This year is no different. Past president and a very active club member, Eleta Malewitz, the Princess of Mars, has recently been diagnosed with breast cancer. Here's an event where you can help wipe out this disease. Kelley Knight (JSCAS/AAS) is organizing a team for the Race for the Cure. According to Kelley Knight: "We are strapping on our running shoes and plan on being at the starting line (in Austin) at 8 a.m. on Sunday, November 7th for the Race for the Cure. Please become a team member. StarDate has offered t-shirts to all our team members. There might even be passes to the McDonald Observatory for the person who raises the most money. We've had to bump up our fundraising goal several times. Current goal is \$1000.00. So far, we've raised almost \$870 for the Susan G. Komen Foundation. Our team members now include people from Clear Lake to Albuquerque so it is not too late to join fellow astronomers to find a cure."

For more information, contact Kelley Knight or visit, <http://www.komenaustin.org/site/PageServer>, click on *Join a Team or Sponsor a Team* and type in *Princess of Mars Ground Crew*. If anyone wants to donate, they can click on any team member's name and pledge online. If they want to join the team and help raise money, they can also do that online. Team members can be runners or they can choose to "sleep-in for the cure".

For Sale

N90S Nikon Camera System, \$850.00



- N90S Nikon black auto-focus camera body with instruction manual (new \$1119.00)
- 28~80 mm f3.5~5.6 auto-focus Nikkor zoom lens (new \$300.00)
- 75~300 mm F4.5~5.6 auto-focus Nikkor zoom lens (new \$660.00)
- Nikon SB-26 auto-focus Speedlight with case and instruction manual (new \$425.00)
- Nikon MC-20 remote cord (release) with instructions
- 58mm Quantaray polarizing filter
- Quantaray camera bag

For more information, call Ken Lester at 281-744-7720 or e-mail at lesteke@swbell.net

Meade Model 395 Refractor, \$200.00

90 mm equatorial refracting telescope with 25mm eyepiece that yields 40X magnification. Additional eyepieces are available from Meade to take it up to 250X. This telescope was given to me by my wife in 1992. It has been used a few times in my back yard and is in mint condition. It has been stored over the years in an air conditioned environment. I'm trying to find a good home for it. I have checked ads on the Internet and know this is a very good (almost suspicious) price. We are offering it for sale because it is a fine instrument that goes way beyond our interest and capability to use it effectively. We considered giving it to various grandchildren, but feel their level of interest would not be equal to the instrument's capability. If anyone in JSCAS is interested, they can contact me to set up an appointment to look it over.

Richard (Dick) Weinberg (weinber77062@yahoo.com)

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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October Meeting Agenda

There will be **no** regular meeting of JSCAS in October.

Our club is fully supporting Astronomy Day in the Houston area. Astronomy day is Saturday, October 23rd at the George Observatory, Brazos Bend State Park.

The 4th Annual All Clubs meeting precedes Astronomy Day on Friday, October 22nd at St. Thomas University beginning at 8 p.m. The featured speaker will be Jay McNeil, an amateur astronomer and discoverer of McNeil's Nebula.

Our next regular meeting will be November 12th at LPI.

Starscan Submission Procedures

Original articles of astronomical interest will be accepted up to **6 P.M. October 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.

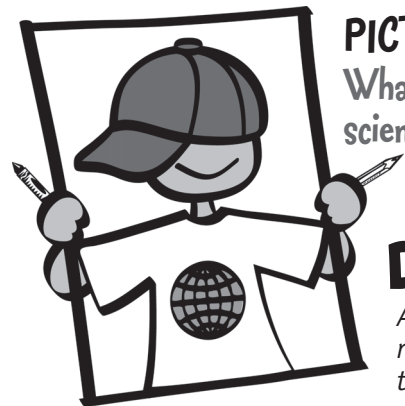
Editor's electronic address is: lesteke@swbell.net. Be sure to include the word Starscan in the subject line for proper routing of your message.

Starscan Staff

Editor	Associate Editors
Ken Lester	Sheila Steele
	Ken Steele

Cover Image by Nico Housen, European Southern Observatory

This view above the ESO La Silla Observatory in the southernmost part of the Atacama desert was obtained by ESO Software Engineer Nico Housen. To the left is the decommissioned 15-metre dish of the Swedish-ESO Sub-millimeter Telescope (SEST), and on the right in the background is the dome of the ESO 3.6-metre telescope. The SEST dish is highly polished and reflects an upside down view of the heavens and the horizon. The bright spot on the dish is light from a distant town.
<http://www.eso.org/outreach/press-rel/pr-2004/phot-27-04.html>



PICTURE ME!
What kind of Earth
scientist would I be?

Don't forget!

*Art contest entries must be
received at IGES no later
than **November 8, 2004.***

For the Teacher or Parent

National Science Education Standards

This year's contest supports the following content standards for K-4 (National Science Education Standards, National Research Council, 1995).

History and Nature of Science

Students should develop an understanding of science as a human endeavor. Fundamental concepts underlying this standard include:

- Science and technology have been practiced by people for a long time.
- Men and women have made a variety of contributions throughout the history of science and technology.
- Although men and women using scientific inquiry have learned much about the objects, events, and phenomena in nature, much more remains to be understood. Science will never be finished.
- Many people choose science as a career and devote their entire lives to studying it. Many people derive great pleasure from doing science.

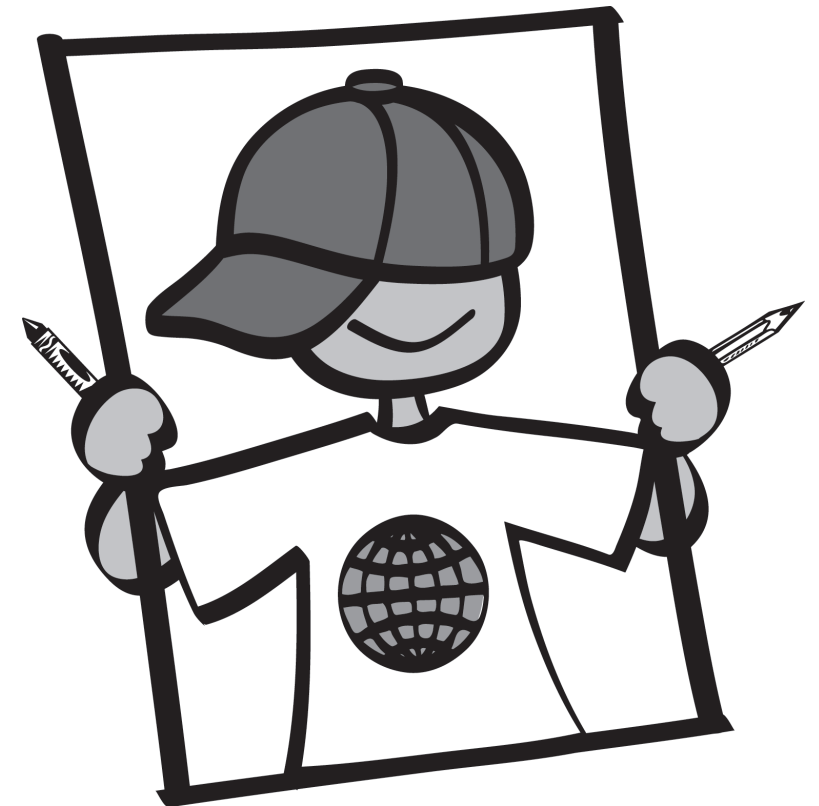
IGES conducts education, public policy, and research studies designed to improve understanding of and response to global environmental issues and related mitigation strategies, applying space-based observations and information technology. IGES is a nonprofit (501c3) organization. For more information, see our Web site at: **www.strategies.org**



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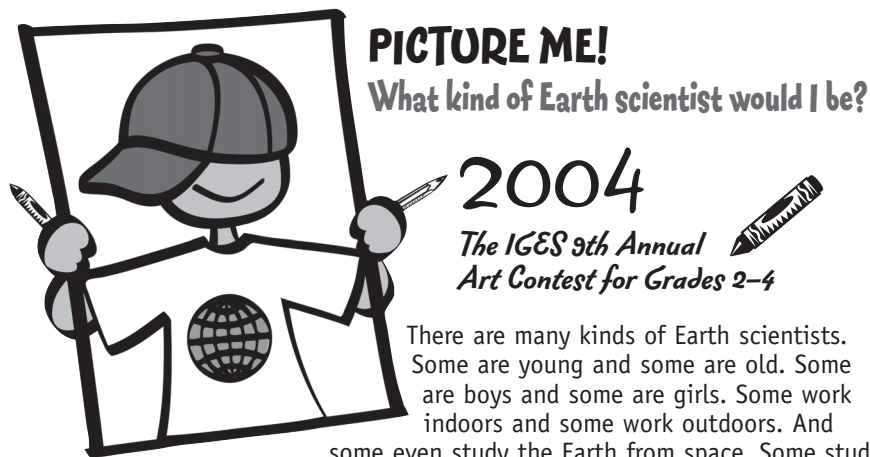
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PICTURE ME!
What kind of Earth
scientist would I be?



Announcing
**9th Annual
Art Contest**
For Grades 2-4





PICTURE ME!

What kind of Earth scientist would I be?

2004

The IGES 9th Annual
Art Contest for Grades 2-4

There are many kinds of Earth scientists. Some are young and some are old. Some are boys and some are girls. Some work indoors and some work outdoors. And some even study the Earth from space. Some study

the land and some study the air. Others study the water or living things. And some study all of those at once!

All Earth scientists have one thing in common. They are all curious about how the Earth works.

What kind of Earth scientist might you be? What would you study? What kinds of tools would you use?

Draw yourself as an Earth scientist. You can make yourself look like you do today. Or you can make yourself look the way you think you will when you grow up. Either way, show how you would explore the Earth.

Teachers may use a variety of resources to get students thinking about the many kinds of Earth scientists, including:

Internet Resources

- NASA's Earth Explorers Series
<http://earth.nasa.gov/education/explorers>
- AGU: What do geoscientists do?
<http://earthinspace.org/careers>
- Careers in Earth Science
<http://kids.earth.nasa.gov/archive/career>
- Careers for Geoscientists Video
<http://www.agiweb.org/career/video/video-real.html>

Books

- **To Space and Back.** Sally Ride and Susan Okie, 1986 (for ages 9-12).
- **Sylvia Earle: Guardian of the Sea (Lerner Biographies).** Beth Baker, 2000 (for grades 4+).
- **Robert Ballard: Oceanographer Who Discovered the Titanic.** Christine Hill, 1999 (for grades 4+).
- **A Dinosaur Named Sue: The Story of the Colossal Fossil: The World's Most Complete T. Rex.** Patricia Relf, 2000 (for grades 3-6).

Entries must be received no later than
November 8, 2004!

GUIDELINES



- One entry per person; must be your original work (not a copy of published art/illustrations).
- Should be creative, bold, and colorful.
- Use pen, pencil, crayon, pastels, marking pens, and/or paint.
- Artwork should be on white stock and not exceed 16" x 20".
- Sign your artwork in the lower right corner.
- Provide a title on the entry form that describes the artwork. Do not use the contest title ("Picture Me: What Kind of Earth Scientist Would I Be?") as your title.
- Tape a completed entry form to the backside of the artwork.

CONTEST RULES



The contest is sponsored annually by the Institute for Global Environmental Strategies (IGES). This contest is limited to U.S. students in grades 2-4. The winning entry will be printed—along with the artist's name, age, school name, and hometown—as the 2004 IGES greeting card.

Additionally, the winning artist will receive a \$250 savings bond. The second-place winner will receive a \$100 savings bond, with a \$50 savings bond awarded to the third-place winner. **Entries must be received by November 8, 2004.** Artwork will be judged by a panel including artists and IGES staff members. All artwork submitted becomes the property of IGES.

Entries must be received by IGES no later than November 8, 2004.

Verification of winning artists' grade levels will be required. Contest results will be posted on the IGES Web site (www.strategies.org) by November 30, 2004. The 1997-2003 winning entries can also be viewed at this site.



PICTURE ME!

What kind of Earth scientist would I be?

2004

The IGES 9th Annual
Art Contest Entry Form

Mail your artwork, with a completed entry form taped to the back, to be received no later than **November 8, 2004**, to IGES:

Institute for Global
Environmental Strategies
ATTN: Art Contest
1600 Wilson Blvd., Suite 901
Arlington, VA 22209

Student Information

Name _____

Home Address _____

City _____

State _____ Zip _____

Home Phone _____

Grade _____ Age _____

Title for Your Entry (up to 10 words) _____

☐ Teacher ☐ Parent Information (Check One)

Name _____

Email _____

If the teacher is submitting the artwork, please complete the following information:

School Name _____

School Address _____

City _____

State _____ Zip _____

Phone _____

Fax _____