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JSCAS: Making History, Again

Paul Maley

Last year, while researching the transit of Venus, I learned that Asaph Hall, who led an expedition to San Antonio in 1882 to observe the Transit of Venus that year, also was the discoverer of Deimos and Phobos, the only known moons of the planet Mars.

I made several trips to Washington D.C. to see if I could find out if the house where Hall lived during that fateful time in 1877 was still in existence. Washington is one of the few places in the U.S. where history tends to get preserved. Sure enough, after some digging I found the address of the house and learned the street had disappeared. Rather it had been renamed. That led me to try to see if I could correlate street names and numbers with those of the time. This was tough and it was only through a stroke of luck that I located a historic photo taken in 1900 of the house on what is now N Street in the historic DC suburb of Georgetown. The house is located right where Hall lived and is indeed the same house with a few modifications to the front that had been enacted over the years.

Mars has been a centerpiece of wonder for centuries ever since Jonathan Swift published *Gulliver's Travels*. In this book he described how scientists from Lilliput had discovered Mars' two satellites. Real astronomers in the decades thereafter attempted to visually detect them. Such observations were thwarted at every turn until Hall was fortunate enough to have found the first one using the then "Great Refractor" in the area known as Foggy Bottom.

Today, Hall's former residence is now a church. In February, I made a presentation to the current owners in which I proposed that the JSCAS create a plaque commemorating this remarkable but little known discovery. The church elders agreed. The design is shown below and will be folded into a relatively small 9 x 12 inch plaque. The reason for this is the incredibly difficult nature of working around regulations for preserving historic sites in Georgetown. I am having it made through a local business called Awards of Distinction in Clear Lake.

The dedication will be at 1 pm on August 14th at the Alexander Memorial Baptist Church in Georgetown (2715 N St. NW). This date was chosen since the moon discoveries were made on August 11



ASAPH HALL, ASTRONOMER WITH THE U.S. NAVAL OBSERVATORY, LIVED AT 2715 N ST. NW (FORMERLY 18 GAY ST.) DURING THE TIME OF HIS IMPORTANT DISCOVERY OF THE TWO MOONS OF MARS (DEIMOS AND PHOBOS). IN AUGUST 1877 HALL FOUND THEM WITH THE 25-INCH TELESCOPE AT FOGGY BOTTOM. PRESIDENT LINCOLN GAVE HIM A COMMISSION AS PROFESSOR OF MATHEMATICS, US NAVY, IN 1864. HALL ALSO OBSERVED THE TRANSITS OF VENUS IN 1874 FROM VLADI-VOSTOK, RUSSIA AND IN 1882 FROM SAN ANTONIO, TEXAS. THE LARGEST CRATER ON PHOBOS IS NAMED 'STICKNEY' IN HONOR OF HALL'S WIFE ANGELINA WITHOUT WHOSE ENCURRAGEMENT, IN HIS OWN WORDS, HE WOULD HAVE ABANDONED THE SEARCH FOR THE MOONS.

ERECTED 2005 BY THE NASA JOHNSON SPACE CENTER ASTRONOMICAL SOCIETY, HOUSTON TEXAS.

and August 17. August 14th is the weekend that coincides with these dates.

The Superintendent of the U.S. Naval Observatory will be the guest speaker at the plaque dedication. Following the dedication, there will be a tour of the USNO with its 26-inch refractor at 3 pm for all guests who register by August 1st. Any JSCAS members who would like to attend the dedication should contact me at 281.2440208. I will need your full name and birth date for the USNO registration.

In addition I have contacted the local astronomical society (National Capitol Astronomers) to try to get representation there.

Please do not forget that we are also working to set up a similar historical marker installation in San Antonio at the site of the Belgian Transit of Venus expedition of 1882. I expect that this will occur within the next 4 months. That dedication will also be set during a weekend.

3D Imaging

Don Taylor

I've been playing around with 3D imaging for a while, but not related to astronomy. When a friend of mine, Jeff Winship, created an animation of 20,000 minor planets in orbit, we sort of challenged



Lunar Eclipse imaged in May 2003

For the best results use Cyan/Red 3D glasses. However the classic Red/Blue glasses will work. Place the red lens over your left eye and the cyan (or blue) lens over your right eye. If you don't have any 3D glasses, try some cellophane, or if you're an astronomer, use a red and blue eyepiece filters.

each other. I suggested he create and combine two movies, one with the camera moved laterally relative to the other, to create a 3D movie of the minor planets. I never ask anyone to do something I wouldn't do myself, so I started to do my own 3D images.

The 3D lunar eclipse image at left was processed from a 2D image taken in May, 2003. It was shot with a Canon 10D DSLR through a Celestron C-11 working at f/6.3. The camera was set at ISO 100, with 1/8 second exposures. The 2D version of it is located on my "Planetary and Lunar" web page (http://home.houston.rr.com/ dontaylor/astrophoto/planetary.htm).

Before I explain how I create 3D images, I should briefly mention the types of 3D technology.

Currently, red/cyan is the premier method for creating the illusion of 3D. It was believed that varied polarized 3D had great promise, but it's limitations outweighed its benefits. Red/ cyan is the evolution of the old red/

blue, sometimes red/green in Canada, technique of the 50's. In the world of light, cyan (equal amounts of blue and green) is the exact opposite of red.

Rather than bore you with theoretical rhetoric, I'll just tell you how to do it.

In order to create the illusion of 3D, the subject must be imaged from two different positions approximately 2.5 to 3 inches apart. This allows the camera see the subject from both the left and the right eye's perspective. That's fine if you're imaging a rose or a mountain goat, but how would you do that if your subject is the moon? The short answer is, you can't.

To be honest, it could be done, but it would be expensive, time consuming and require the highly coordinated efforts of many people. The cheap and dirty way to create 3D images is to use Photoshop. Simply take a full disk image, in this case the moon, and make a duplicate copy of it. Choose a vertical axis through the center of the disk. Use the "skew" function to compress the left half and stretch the right half. This will become the "right eye" image. Do the same thing to the duplicate copy, except stretch the left half and compress the right half. This one will be the "left eye" image.

(Continued on page 5)



With the left eye image, use the levels command to decrease the G and B (green and blue) channels keeping only the red. Using the right eye image, decrease the M and Y channels (CMYk mode).

Change the opacity of both images to 50%. Drop one on top of the other, put on your red/cyan glasses and move the dropped image horizontally until you like the results.

If the red features are to the right of the cyan features it makes the image appear to pop out of the Doing the opposite screen. makes the image appear to be

There are some third party applications that will create a finished 3D image for you by using your left and right images. However, Photoshop gives you complete control over the whole process while nothing else, that I'm aware of, will. That's all there is to it, no magic, not fantastic astronomy, just a bit of image processing.

If you've got a computer and a graphics application, like Photoshop or Paintshop Pro and a pair of 3D glasses, you've got everything you need to create your own 3D images.

Looking for 3D products, including glasses? Try http://www.3dstereo.com. They have some interesting and fun 3D products including cheap disposable paper red/cyan glasses. They also have Anachrome Anaglyph (http://www.3dstereo.com/viewmaster/gla-ana.html) which are the ones I recommend and use myself. The other version, Mirachrome Anaglyph glasses, are better for TV, movies, games, etc.

Don Taylor came to astronomy from a photographic background. Since the age of 10, he has been interested in cameras and their associated optics. According to Don "I was given an old second, possibly third hand, 60mm Tasco, which I immediately took apart and adapted to a camera. It wasn't long before I turned it skyward and took star trail images. Once I had resolved and imaged Jupiter and its four Galilean moons, I was hooked."

Don is a member of the North Houston Astronomy Club. Until last year, he was the club's webmaster, winning the Astronomical League's Webmaster of the Year award in 2004. He has since stepped aside to let other's have the opportunity to recreate the website according to their own visions.

He now has more time to devote to imaging. He's been involved in astronomy to one degree or another for 30 years. His real passion in astronomy is solar observations and imaging, especially H-alpha.

Don's web page can be found at: http://home.houston.rr.com/dontaylor/

"The Astronomer"

Becky Ramotowski

It occurred to me that TV needs just one more reality show.

Not some farce like "The Bachelor" or "The Apprentice" but something on the astronomical side. Let's see..... For un-originalities sake let's call this one "The Astronomer."

The winner receives a year-long all-inclusive at any large observatory of their choosing anywhere on the planet. Just a few of the amenities included are endless supplies of caffeine, sugar, and other so-called dietary no-no's that astronomer's fuel themselves with. No wake up calls before noon, and a stockroom full of charged batteries, red LED's, Naglers and emergency liquor.

"Billions and billions" of wannabes have filled out guestionnaires and have been individually interviewed by a panel consisting of Steve O'Meara, David Levy and Billy-Bob Thornton, (Yes Billy-Bob, this is a TV show remember) that has been narrowed down to a final 10.

The 10 finalists will compete weekly for the prize. So what might some possible challenges be?

Well, I was thinking of some easy stuff to begin with like:

Week #1: Contestants have to recite from memory, "The Star Splitter" with a red flashlight in their mouth and be understood with-out drooling.

That's simple enough right?

Week #2: Contestants have to find Pluto with 6" of aperture or less and sketch the field for 6 consecutive nights. Piece of cake!

Week #3: Contestants have a race assembling and polar aligning a Losmandy G-11 accurately.

Week #4: Contestants are asked to name all of the constellations in right ascension order.

Week #5: Contestants are given blank star charts and have to plot all of the Messiers within 2 degrees of their correct positions.

Week #6: The five finalists have to hand grind and then figure a 10" mirror to 18th wave.

Week #7: Since 3 contestants were eliminated during last weeks mirror grinding challenge we only have 2 weeks remaining.

Week #8: The last 2 finalists each have to build a telescope with the mirror they made the week prior with additional pieces scavenged from a junkyard. (I could not do a show without incorporating something from junkyard wars.)

In all likelihood, this means there will be secondary mirrors made from rearview mirrors, primary mirror cells made out of hubcaps, truss tube assemblies made out of welded together shock absorbers, and dew shields made with spare tires.

A modified retractable cup holder for drinks and eyepieces would probably show up on at least one if not both of the scopes.

The junkyard scopes might also incorporate self cleaning mirrors using left over windshield wiper

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blade assemblies. Or maybe not. Perhaps a blinking turn signal light used to indicate which direction of travel the telescope is going next might be a feature.

Of course there's got to be some built in motorized goto feature. So let's hope to see at least one of the finalists with a hacked GPS system formerly used in a Hummer. The system could utilize the indash map sets except the maps would be replaced with star atlases and by using a scope mounted steering wheel from a wrecked Lexus. The astronomer could just steer to the desired coordinates on the chart and the object would be visible through the scope. A voice would dictate driving directions. Hearing "Turn Left at Orion" would not be unusual.

The winning scope might have some fuzzy dice dangling from the finder scope which has been crafted out of a piece of tailpipe.

Oh my gosh! Do I hear a Hemi in one of those beasts? And who found that NASA antennae ball that's stuck on that dew shield? Look at those astronomers go! And check out that Jaguar hood ornament on top of that guy's finder!!! And look over there, that guy used a propeller for a mirror cooler.

And now, as an anticlimactic final week, the first wannabe that discovers a previously unknown asteroid with their junkyard scope wins.

But look, the final two contestants are Chuck Shaw and Bob Taylor and they won't leave the junkyard because they are each trying to find all the red LED's there.

That's okay guys, I'll take the prize.

Let's see do I want Keck or Kitt Peak?

* Please note this is what happens when there are more hours of daylight than dark. An astronomer's brain just doesn't function properly and it makes them write ridiculous things about telescopes.

* Also note that if "The Donald" is in anyway offended by this, then he should just get a real life and buy a telescope. Heck, he could just buy his own observatory.



L/RGB image of Sharpless2-142. It is associated with NGC 7380 in Cepheus. Made by Al Kelly from images digitized from red, blue, and green-sensitive photographic plates provided to the public by the Palomar Observatory Sky Survey (POSS).

Imaging with the Digitized Sky Survey

I keep finding good candidates for making DSS color composites and for future imaging. I was recently asked about the steps I used to create images from DSS.

I use the Internet to download images from the Space Telescope Science Institute's Digitized Sky Survey (STScI DSS) website at http://stdatu.stsci.edu/cgi-bin/dss_form. I then use AIP4WIN and Photoshop to do the processing and compositing. The key is to use the POSS2 red, blue and HST Phase 2 (green) images. These were made on glass plates emulsified for peak sensitivity in those regions of the visual spectrum. Only the northern

(Continued on page 8)

(Continued from page 7) hemisphere is available in these plates.

The total processing is simpler and quicker than using my own images, since I have no calibrating or stacking to do. I use AIP to resample, crop, and register the images. I then stack them all and process the stack as a luminance layer for L/RGB compositing in Photoshop. The AIP luminance processing is very simple, since nonlinear and linear stretching are all that is needed. Sometimes I will do a little background smoothing.

In Photoshop, the RGB channels are stretched to equalize the backgrounds and treatment of the histograms. Also, I will usually turn up color saturation quite a bit after compositing the RGB channels with the luminance channel. Sometimes there are other little filters and color tweaks, but usually that's about it!

One other thing worth mentioning: the HST Phase 2 (green) plates have a lower signal to noise ratio (i.e., not as deep) as the red and blue plates, so I frequently create a pseudo-green channel by stacking the R, B, and G frames in a 25%, 25%, 50% ratio, respectively.

Copyright Information: According to the STScI DSS web site, If you're using images for research, teaching purposes or other <u>non-profit</u> activities, you may use the images freely, provided you acknowledge the source. Commercial applications require a license.

Meteor Observed on Mars

Observing the sky with the green filter of it panoramic camera on March 7th 2004, the Mars Exploration Rover Spirit came across a surprise: a streak across the sky. The streak, seen in the middle of this mosaic of images taken by the navigation and panoramic cameras, was probably the brightest object in the sky at the time.

The Observatoire de Paris has reported that a team of French and American scientists has deter-



mined that the streak is a meteor that belongs to a regular shower cause by debris ejected from comet Wiseman-Skiff. The streak was aligned with the theoretical radiant associated with Wiseman-Skiff. The nature of the meteor and its original comet were confirmed by the light curve of the meteor, the entry velocity and the configuration of the observation (angular distance between the streak, the radiant, the elevation, the orientation compared to the horizon).

Comet Wiseman-Skiff was first identified in 1987 by US astronomers Jennifer Wiseman and Brian Skiff.

For more information visit: http:// www.obspm.fr/actual/nouvelle/jun05/ meteor.en.shtml.

Family Space Day



Family Space Day's theme for June was *Galaxies*. The kids got to make paper plate galaxies with (you guessed it) glitter and glue. Everyone had a blast. There were also many posters showing different galaxies and where we are in relation to other known galaxies as well as the location of our solar system within our own galaxy.

Ed Malewitz was kind enough to bring out his H-Alpha solar scope so everyone could see the solar flares. There were a lot of flares including a fish hook shaped one that had to be at least a hundred times the size of the earth.

There was an added bonus: Mike Madera finished yet another year of experience being 29 now. To celebrate, Stephanie and Meredith had sodas and a cake, complete with candles, that required 'off key' singing. It was a blast. We all got a sugar high to go with the free caffeine that the folks at LPI always provide.

> Till next Month... Matt Hommel



NASA Announces Spectacular Day of the Comet

Impact: 0052 CDT, July 4th !!

NASA TV encounter coverage begins July 3, 10:30 p.m. CDT News Release: 2005-098 Media Relations Office Jet Propulsion Laboratory California Institute of Technology National Aeronautics and Space Administration

After a voyage of 173 days and 431 million kilometers (268 million miles), NASA's Deep Impact spacecraft will get up-close and personal with comet Tempel 1 on July 4 (EDT).

The first of its kind, hyper-speed impact between space-borne iceberg and copper-fortified probe is scheduled for approximately 1:52 a.m. EDT on Independence Day (10:52 p.m. PDT on July 3). The potentially spectacular collision will be observed by the Deep Impact spacecraft, and ground and space-based observatories.

"We are really threading the needle with this one," said Rick Grammier, Deep Impact project manager at NASA's Jet Propulsion Laboratory, Pasadena, Calif. "In our quest of a great scientific payoff, we are attempting something never done before at speeds and distances that are truly out of this world."

During the early morning hours of July 3 (EDT), the Deep Impact spacecraft will deploy a 1-meterwide (39-inch-wide) impactor into the path of the comet, which is about half the size of Manhattan Island, N.Y. Over the next 22 hours, Deep Impact navigators and mission members located more than 133 million kilometers (83 million miles) away at JPL, will steer both spacecraft and impactor toward the comet. The impactor will head into the comet and the flyby craft will pass approximately 500 kilometers (310 miles) below.

Tempel 1 is hurtling through space at approximately 37,100 kilometers per hour (23,000 miles per hour or 6.3 miles per second). At that speed you could travel from New York to Los Angeles in less than 6.5 minutes. Two hours before impact, when mission events will be happening so fast and so far away, the impactor will kick into autonomous navigation mode. It must perform its own navigational solutions and thruster firings to make contact with the comet.

"The autonav is like having a little astronaut on board," Grammier said. "It has to navigate and fire thrusters three times to steer the wine cask-sized impactor into the mountain-sized comet nucleus closing at 23,000 miles per hour."



Artist's concept showing impactor spacecraft approaching comet Tempel 1. Image credit: Maas Digital.

The crater produced by the impact could range in size from a large house up to a football stadium, and from two to 14 stories deep. Ice and dust debris will be ejected from the crater, revealing the material beneath. The flyby spacecraft has approximately 13 minutes to take images and spectra of the collision and its result before it must endure a potential blizzard of particles from the nucleus of the comet.

"The last 24 hours of the impactor's life should provide the most spectacular data in

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the history of cometary science," said Deep Impact Principal Investigator Dr. Michael A'Hearn of the University of Maryland, College Park. "With the information we receive after the impact, it will be a whole new ballgame. We know so little about the structure of cometary nuclei that almost every moment we expect to learn something new."

The Deep Impact spacecraft has four data collectors to observe the effects of the collision. A camera and infrared spectrometer, which comprise the High Resolution Instrument, are carried on the flyby spacecraft, along with a Medium Resolution Instrument. A duplicate of the Medium Resolution Instrument on the impactor will record the vehicle's final moments before it is run over by Tempel 1.

"In the world of science, this is the astronomical equivalent of a 767 airliner running into a mosquito," said Dr. Don Yeomans, a Deep Impact mission scientist at JPL. "The impact simply will not appreciably modify the comet's orbital path. Comet Tempel 1 poses no threat to the Earth now or in the foreseeable future."

Deep Impact will provide a glimpse beneath the surface of a comet, where material from the solar system's formation remains relatively unchanged. Mission scientists expect the project will answer basic questions about the formation of the solar system, by offering a better look at the nature and composition of the frozen celestial travelers we call comets.

The University of Maryland is responsible for overall Deep Impact mission management, and project management is handled by JPL. The spacecraft was built for NASA by Ball Aerospace & Technologies Corporation, Boulder, Colo.

For more information about Deep Impact on the Internet, visit: http://www.nasa.gov/deepimpact.

Ephemeris for 9P/Tempel 1								
provided by John Erickson, generated at http://ssd.jpl.nasa.gov/cgi-bin/eph								
Observer site name: Clear Lake City, Tx Coordinates: 95°04'40.1"W, 29°31'48.0"N Listings for night time observations from Clear Lake, Tx								
Date_HR:MN	R.A.	DEC	Mag	Cnst				
2005-Jul-01 00:00	13 32 28.99	-08 21 55.3	9.46	Vir				
2005-Jul-01 01:00	13 32 33.22	-08 22 54.4	9.46	Vir				
2005-Jul-01 21:00	13 34 00.39	-08 42 41.3	9.47	Vir				
2005-Jul-01 22:00	13 34 04.62	-08 43 40.5	9.47	Vir				
2005-Jul-01 23:00	13 34 08.86	-08 44 39.6	9.47	Vir				
2005-Jul-02 00:00	13 34 13.14	-08 45 38.6	9.47	Vir				
2005-Jul-02 01:00	13 34 17.45	-08 46 37.6	9.47	Vir				
2005-Jul-02 21:00	13 35 46.14	-09 06 23.3	9.48	Vir				
2005-Jul-02 22:00	13 35 50.45	-09 07 22.3	9.48	Vir				
2005-Jul-02 23:00	13 35 54.77	-09 08 21.3	9.48	Vir				
2005-Jul-03 00:00	13 35 59.12	-09 09 20.3	9.48	Vir				
2005-Jul-03 01:00	13 36 03.51	-09 10 19.1	9.48	Vir				
2005-Jul-03 21:00	13 37 33.71	-09 30 03.2	9.49	Vir				
2005-Jul-03 22:00	13 37 38.09	-09 31 02.2	9.49	Vir				
2005-Jul-03 23:00	13 37 42.49	-09 32 01.1	9.49	Vir				
2005-Jul-04 00:00	13 37 46.92	-09 32 59.9	9.49	Vir				
2005-Jul-04 01:00	13 37 51.38	-09 33 58.7	9.49	Vir				
2005-Jul-04 21:00	13 39 23.06	-09 53 40.8	9.50	Vir				
2005-Jul-04 22:00	13 39 27.52	-09 54 39.7	9.50	Vir				
2005-Jul-04 23:00	13 39 32.00	-09 55 38.5	9.50	Vir				
2005-Jul-05 00:00	13 39 36.50	-09 56 37.2	9.50	Vir				
2005-Jul-05 01:00	13 39 41.04	-09 57 35.8	9.50	Vir				
2005-Jul-05 21:00	13 41 14.20	-10 17 15.7	9.52	Vir				
2005-Jul-05 22:00	13 41 18.73	-10 18 14.4	9.52	Vir				
2005-Jul-05 23:00	13 41 23.28	-10 19 13.1	9.52	Vir				
2005-Jul-06 00:00	13 41 27.86	-10 20 11.6	9.52	Vir				

Icy Jupiter Moon Throws a Curve Ball at Formation Theories

News Release: 2005-089

May 31, 2005

Scientists studying data from NASA's Galileo spacecraft have found that Jupiter's moon, Amalthea, is a pile of icy rubble less dense than water. Scientists expected moons closer to the planet to be

rocky and not icy. The finding shakes up long-held theories of how moons form around giant planets.

"I was expecting a body made up mostly of rock. An icy component in a body orbiting so close to Jupiter was a surprise," said Dr. John D. Anderson, an astronomer at NASA's Jet Propulsion Laboratory, Pasadena, Calif. Anderson is lead author of a paper on the findings that appears in the current issue of the journal Science.

"This gives us important information on how Jupiter formed, and by implication, how the solar system formed," Anderson said.



Four images of Amalthea from the Galileo Mission. NASA/JPL

Current models imply that temperatures were high at Amalthea's current position when Jupiter's moons formed, but this is inconsistent with Amalthea being icy. The findings suggest that Amalthea formed in a colder environment. One possibility is that it formed later than the major moons. Another is that the moon formed farther from Jupiter, either beyond the orbit of Jupiter's moon Europa or in the solar nebula at or beyond Jupiter's position. It would have then been transported or captured in its current orbit around Jupiter. Either of these explanations challenges models of moon formation around giant planets.

"Amalthea is throwing us a curve ball," said Dr. Torrence Johnson, co-author and project scientist for the Galileo mission at JPL. "Its density is well below that of water ice, and even with substantial porosity, Amalthea probably contains a lot of water ice, as well as rock." Analysis of density, volume, shape and internal gravitational stresses lead the scientists to conclude that Amalthea is not only porous with internal empty spaces but also contains substantial water ice.

One model for the formation of Jupiter's moons suggests that moons closer to the planet would be made of denser material than those farther out. That is based on a theory that early Jupiter, like a weaker version of the early Sun, would have emitted enough heat to prevent volatile, low-density material from condensing and being incorporated into the closer moons. Jupiter's four largest moons fit this model, with the innermost of them, lo, also the densest, made mainly of rock and iron.

Amalthea is a small red-tinted moon that measures about 168 miles in length and half that in width. It orbits about 181,000 kilometers (112,468 miles) from Jupiter, considerably closer than the Moon orbits Earth. Galileo passed within about 99 miles of Amalthea on Nov. 5, 2002. Galileo's flyby of Amalthea brought the spacecraft closer to Jupiter than at any other time since it began orbiting the giant planet on Dec. 7, 1995. After more than 30 close encounters with Jupiter's four largest moons, the Amalthea flyby was the last moon flyby for Galileo.

The Galileo spacecraft's 14-year odyssey came to an end on Sept. 21, 2003. JPL, a division of the California Institute of Technology in Pasadena, managed the Galileo mission for NASA.

Additional information about the mission is available online at: http://galileo.jpl.nasa.gov/.

NASA Telescope Catches Surprise Ultraviolet Light Show

News release: 2005-088

May 31, 2005

It was a day like any other for a nearby star named GJ 3685A – until it suddenly exploded with light. At 2 p.m. Pacific time on April 24, 2004, the detectors on NASA's Galaxy Evolution Explorer ultraviolet space telescope nearly overloaded when the star abruptly brightened by a factor of at least 10,000. After the excitement was over, astronomers realized that they had just recorded a giant star eruption, or flare, about one million times more energetic than those from our Sun.

Findings on this intriguing event were presented today at the 206th meeting of the American Astronomical Society in Minneapolis, Minn. Movies based on images of the flare are available online at http://www.nasa.gov/centers/jpl/missions/galex.html and http://www.galex.caltech.edu/.

This dramatic flare is just one of many serendipitous discoveries made by the Galaxy Evolution Explorer since its 2003 launch.

Though the telescope was originally designed to spot galaxies, it has repeatedly witnessed a sky flickering with ultraviolet flares, bursts and fast-moving streaks. While the flares and bursts are from different types of stars, the streaks are asteroids, satellites or possibly space debris floating across the telescope's field of view.

The findings have led astronomers to conclude that the ultraviolet sky, once thought to be a quiet backdrop for viewing galaxies, is, in fact, a rather festive place.

"We had no idea that the ultraviolet sky would be filled with so many things that go



Image credit: NASA/JPL-Caltech

bump in the night," said Dr. Barry Welsh, University of California, Berkeley, co-discoverer of some of the flares. "All of these objects are a bonus to astronomers, since the observations come free when the telescope is aimed at distant galaxies."

"I was surprised by how often we have observed stellar flares and by the amazing size of some of them," said Dr. Chris Martin, principal investigator of the Galaxy Evolution Explorer, California Institute of Technology, Pasadena. "Nature rarely disappoints us."

So far, the Galaxy Evolution Explorer has recorded 84 bonus astrophysical events occurring on flaring stars, binary stars called dwarf novae, and pulsating stars, as well as countless pieces of space debris. These data are already being collected into public databases for other astronomers to study. For example, astronomers are using the new set of flare stars to test their flare theories.

The Galaxy Evolution Explorer is surveying the entire sky at ultraviolet wavelengths for clues to how the earliest galaxies evolved into mature galaxies like our own Milky Way. To detect these early, faint galaxies, the telescope was outfitted with specialized cameras that allow the arrival of each photon of ultraviolet light to be timed with a precision of about a microsecond.

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"The telescope's detectors have provided an unprecedented time resolution of these astrophysical events," said Welsh. "Now, we can say what happens during each one-hundredth of a second of a flare event. That's better information than most video cameras have when they take slow motion shots of athletes."

A preliminary analysis of the enormous flare witnessed by the Galaxy Evolution Explorer around GJ 3685A – the largest ever recorded in ultraviolet light – shows that the mechanisms underlying these stellar eruptions may be more complex than previously believed. Evidence for the two most popular flare theories was found.

Flares are huge explosions of energy stemming from a single location on a star's surface. They



Artist's concept of GALEX in orbit around the Earth. Credit: NASA

happen regularly on many types of stars, though old, small "red dwarf" stars like GJ 3685A tend to experience them most frequently and dramatically. These stars, called flare stars, can erupt as often as every few hours, and with an intensity far greater than flares from our Sun. One of the reasons astronomers study flare stars is to gain a better picture and history of flare events taking place on the Sun.

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.

For more information about the Galaxy Evolution Explorer, visit http://www.galex.caltech.edu/.

Spitzer Captures Fruits Of Massive Stars' Labors Image Advisory: 2005-087 May 31, 2005

The saga of how a few monstrous stars spawned a diverse community of additional stars is told in a new image from NASA's Spitzer Space Telescope.

The striking picture reveals an eclectic mix of embryonic stars living in the tattered neighborhood of one of the most famous massive stars in our Milky Way galaxy, Eta Carinae. Astronomers say that radiation and winds from Eta Carinae and its massive siblings ripped apart the surrounding cloud of gas and dust, shocking the new stars into being.

"We knew that stars were forming in this region before, but Spitzer has shown us that the whole environment is swarming with embryonic stars of an Credit: NASA/JPL-Caltech/N. Smith (Univ. of Colorado at Boulder)



(Continued on page 15)

(Continued from page 14)

Press Release: 2005-090

unprecedented multitude of different masses and ages," said Dr. Robert Gehrz, University of Minnesota, Twin Cities, a member of the team that made the Spitzer observations.

The results were presented yesterday at the 206th meeting of the American Astronomical Society in Minneapolis by Dr. Nathan Smith, lead investigator of the Spitzer findings, University of Colorado, Boulder.

Previous visible-light images of this region, called the Carina Nebula, show cloudy finger-like pillars of dust, all pointing toward Eta Carinae at the center. Spitzer's infrared eyes cut through much of this dust to expose incubating stars embedded inside the pillars, as well as new star-studded pillars never before seen.

Eta Carinae, located 10,000 light-years from Earth, was once the second brightest star in the sky. It is so massive, more than 100 times the mass of our Sun, it can barely hold itself together. Over the years, it has brightened and faded as material has shot away from its surface. Some astronomers think Eta Carinae might die in a supernova blast within our lifetime.

Eta Carinae's home, the Carina Nebula, is also quite big, stretching across 200 light-years of space. This colossal cloud of gas and dust not only gave birth to Eta Carinae, but also to a handful of slightly less massive sibling stars. When massive stars like these are born, they rapidly begin to shred to pieces the very cloud that nurtured them, forcing gas and dust to clump together and collapse into new stars. The process continues to spread outward, triggering successive generations of fewer and fewer stars. Our own Sun may have grown up in a similar environment.

The new Spitzer image offers astronomers a detailed "family tree" of the Carina Nebula. At the top of the hierarchy are the grandparents, Eta Carinae and its siblings, and below them are the generations of progeny of different sizes and ages.

"Now we have a controlled experiment for understanding how one giant gas and dust cloud can produce such a wide variety of stars," said Gehrz.

The false colors in the Spitzer picture correspond to different infrared wavelengths. Red represents dust features and green shows hot gas. Embryonic stars are yellow or white and foreground stars are blue. Eta Carinae itself lies just off the top of image. It is too bright for infrared telescopes to observe.

NASA Selects New Frontiers Mission Concept Study

June 1, 2005

NASA today announced that a mission to fly to Jupiter will proceed to a preliminary design phase. The mission is called Juno, and it is the second in NASA's New Frontiers Program.

The mission will conduct an in-depth study of the giant planet. The mission proposes to place a spacecraft in a polar orbit around Jupiter to investigate the existence of an ice-rock core; determine the amount of global water and ammonia present in the atmosphere; study convection and deep wind profiles in the atmosphere; investigate the origin of the Jovian magnetic field; and explore the polar magnetosphere.

"We are excited at the prospect of the new scientific understanding and discoveries by Juno in our continued exploration of the outer reaches of our solar system during the next decade," said Dr.

(Continued on page 16)



The New Frontiers Program is designed to provide opportunities to conduct several of the mediumclass missions identified as top priority objectives in the Decadal Solar System Exploration Survey, conducted by the Space Studies Board of the National Research Council.

The first NASA New Frontiers mission will fly by the Pluto-Charon system in 2014 and then target another Kuiper asteroid belt object.

NASA's Phoenix Mars Mission Gets Thumbs up for 2007 Launch News Release: 2005-093 June 2, 2005

NASA has given the green light to a project to put a long-armed lander onto the icy ground of the far-northern martian plains. NASA's Phoenix lander is designed to examine the site for potential habitats for water ice and to look for possible indicators of life, past or present.

Today's announcement allows the Phoenix mission to proceed with preparing the spacecraft for launch in August 2007. This major milestone followed a critical review of the project's planning progress and preliminary design since its selection in 2003.

Phoenix is the first project in NASA's Mars Scout Program of competitively selected missions. Scouts are innovative and relatively low-cost complements to the core missions of the agency's Mars exploration program.

"The Phoenix Mission explores new territory in the northern plains of Mars analogous to the permafrost regions on Earth," said the project's principal investigator, Dr. Peter Smith of the University of (*Continued on page 17*) (Continued from page 16)

Arizona, Tucson. "NASA's confirmation supports this project and may eventually lead to discoveries relating to life on our neighboring planet."

Phoenix is a stationary lander. It has a robotic arm to dig down to the martian ice layer and deliver samples to sophisticated analytical instruments on the lander's deck. It is specifically designed to measure volatiles, such as water and organic molecules, in the northern polar region of Mars. In 2002, NASA's Mars Odyssey orbiter found evidence of ice-rich soil very near the surface in the arctic regions.

Like its namesake, Phoenix rises from ashes, carrying the legacies of two earlier attempts to explore Mars. The 2001 Mars Surveyor lander, administratively mothballed in 2000, is being resurrected for Phoenix. Many of the scientific instruments for Phoenix were built or designed for that mission or the unsuccessful Mars Polar Lander in 1999.

"The Phoenix team's quick response to the Odyssey discoveries and the cost-saving adaptation of earlier missions' technology are just the kind of flexibility the Mars Scout Program seeks to elicit," said NASA's Mars Exploration Program Director, Doug McCuistion.

"Phoenix revives pieces of past missions in order to take NASA's Mars exploration into an exciting future," said NASA's Director, Solar System Division, Science Mission Directorate, Dr. Andrew Dantzler.

The cost of the Phoenix mission is \$386 million, which includes the cost of launch. The partnership developing the Phoenix mission includes the University of Arizona; NASA's Jet Propulsion Laboratory, Pasadena, Calif.; Lockheed Martin Space Systems, Denver; and the Canadian Space Agency, which is providing weather-monitoring instruments.

"The confirmation review is an important step for all major NASA missions," said JPL's Barry Goldstein, project manager for Phoenix. "This approval essentially confirms NASA's confidence that the spacecraft and science instruments will be successfully built and launched, and that once the lander is on Mars, the science objectives can be successfully achieved."

Much work lies ahead. Team members will assemble and test every subsystem on the spacecraft and science payload to show they comply with design requirements. Other tasks include selecting a landing site, which should be aided by data provided by the Mars Reconnaissance Orbiter launching in August, and preparing to operate the spacecraft after launch.



NASA's Opportunity Rover Rolls Free on Mars

News Release: 2005-095

June 06, 2005

Engineers and mission managers for NASA's Mars Exploration Rover mission cheered when images from the Martian surface confirmed Opportunity had successfully escaped from a sand trap.



From about 174 million kilometers away (about 108 million miles), the rover team at NASA's Jet Propulsion Laboratory, Pasadena, Calif., had worked diligently for nearly five weeks to extricate the rover. The longdistance roadside assistance was a painstaking operation to free all six wheels of the rover, which were mired up to their rims in the soft sand of a small Martian dune.

"After a nerve-wracking month of hard work, the rover team is both elated and relieved to finally see our wheels sitting on top of the sand instead of half buried in it," said Jeffrey Biesiadecki, a JPL rover mobility engineer.

Traction was difficult in the ripple-shaped dune of windblown dust and sand that Opportunity drove into on April 26. In the weeks following, the rover churned 192 meters (629 feet) worth of wheel rotations before gaining enough traction to actually move one meter (about three feet). The

rover team directed the drives in cautious increments from May 13 through June 4.

"We did careful testing for how to get Opportunity out of the sand. Then we patiently followed the strategy developed from the testing, monitoring every step of the way," Biesiadecki said. "We hope to have Opportunity busy with a full schedule of scientific exploration again shortly."

Mars Global Surveyor: Mars Orbiter Camera's 200,000th Image MGS MOC Release No. MOC2-1111 NASA/JPL/Malin Space Science Systems

SA/JPL/Malin Space Science Syste 03 June 2005

On 17 May 2005, the Mars Global Surveyor (MGS) Mars Orbiter Camera (MOC) acquired its 200,000th image since the spacecraft began orbiting Mars on 12 September 1997. The image (left, MOC2-1111a), showing details on the floor and in the ejecta blanket of a northern middle-latitude Martian crater, was received on Earth the following day.

This image marks a milestone for the Mars Global Surveyor mission, which has returned nearly four times the number of images of both the Viking 1 and Viking 2 orbiters, combined, in the late 1970s. An additional point of comparison, the two Viking camera systems returned about 70 Gbytes of data; MOC thus far has returned 365 Gbytes (after decompression).

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The MOC is really a system consisting of three cameras: (1) a narrow angle camera, essentially a telescope, that obtains extremely high resolution views ranging from about 0.5 to about 14 meters per pixel; (2) a red wide angle camera that is used to take context images, daily global maps, and other selected images; and (3) a blue wide angle camera that also acquires daily global maps, views of the Martian limb, and other selected targets. Both wide angle cameras can obtain images with resolutions in the range of 0.24 to 7.5 kilometers per pixel.

The first images acquired by MOC were taken during the third orbit of MGS on 15 September 1997. MGS conducted a pre-mission series of observations between mid-September 1997 and February 1999. Then, MGS conducted its one Mars year Primary Mission from March 1999 through January 2001. The Extended Mission phase for MGS began in February 2001 and continues to this day.

Data from the MGS MOC have contributed greatly over the past eight years to the on-going revolution in Mars science. As less than 5% of the Martian surface has been covered by MOC's high resolution (narrow angle) camera system.



Infrared Image of Titan Volcano

June 8, 2005

This high-resolution infrared image was taken during the Cassini spacecraft's closest approach to Titan on Oct. 26, 2004. These images were obtained by Cassini's visual and infrared mapping spectrometer instrument and show a bright, circular feature (8.5 degrees latitude, minus 143.5



degrees longitude) with two elongated wings extending westwards. Scientists think this feature might be a volcano. The resolution in the image varies from 2.6 kilometers (1.6 miles) per pixel to 1.8 kilometers (1.1 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 mission for NASA's Science Mission Directorate, Washington, D.C. The Cassini orbiter and its two onboard cameras were designed, developed and assembled at JPL. The visual and infrared mapping spectrometer team is based at the University of Arizona.

Credit: NASA/JPL/University of Arizona

Visual Observing — July 2005 Chris Randall											
★SSO: (Solar System Objects) Summary for July15, 2005]				
Object	Cons	st	Мад	% III	Rise T	ime	Tra	Transient		Set Time	
Sun	Gen	n	-26.7	100	06:3	0	1:	3:26		20:21	
Moon	Lib			65	14:4	1	20	0:11		01:07	
Mercury	Cnc	;	1.0	30	08:3	4	1	5:07		21:44	
Venus	Leo)	-3.9	87	08:4	5	1	5:23		22:06	
Mars	Psc	;	-0.2	84	00:5	8	0	7:14		13:30	
Jupiter	Vir		-1.9	99	12:3	4	18	8:28		00:26	
Saturn	Cnc	2	0.9	100	07:0	3	1:	3:54		20:49	
Uranus	Aqr	-	5.8	100	22:5	3	04	04:36		10:18	
Neptune	Cap)	7.8	100	21:4	0	03:04			08:29	
Pluto	Ser	-	13.8	99	17:4	6	23:16			04:43	
Highlighted times denote daylight events. Lunar phases for July 05 Central Daylight time New 6 th 07:02 First 14 th 10:20 Full 21 th 06:003 Third 27 th 22:19 ★BSO: (Bright Sky Objects) NGC 6231 (Cr 315) – Open Cluster in Scorpius, Magnitude 2.6, Size 14', ~93 Stars. IC 4665 (Cr 349) – Open Cluster in Oph, Magnitude 4.2, Size 40', ~30 Stars. NGC 6121 (M 4) – Globular Cluster in Scorpius, Magnitude 5.4, Size 30. NGC 6242 (Cr 317) – Open Cluster in Scorpius, Magnitude 6.4, Size 9', ~23 Stars. ★DSO: (Dark Sky Objects) NGC 6167 (Cr 305) – Open Cluster in Nor, Magnitude 6.7, Size 7', ~218 Stars. NGC 6441 – Globular Cluster in Oph, Magnitude 7.4, Size 9.6'. NGC 6441 – Globular Cluster in Oph, Magnitude 7.4, Size 4.8'. NGC 6429 – Globular Cluster in Her, Magnitude 9.4, Size 4.5'. ★CDMP: (Chris' Don't Miss Pick) NGC 6302 (C 69, Gum 60) – Bug Nebula Is a Planetary Nebula in Scorpius, Magnitude 9.6 (v), 12.8 (P) Central Star 21.1, and Size 85" X 44". It lies about 4,000 light-years away in Scorpius. With an estimated surface temperature of about 250,000 degrees C, the central star of this particular planetary nebula is exceptionally hot though – shining brightly in ultraviolet light but hidden from direct view by a dense torus of dust. Cutting across a bright cavity of ionized gas, the dust torus surrounding the central star is nearly edge-on to the line-of-sight. Surprisingly, minerals including water ice, along with complex hydrocarbon molecules have been detected in this hot star's dusty cosmic shroud.											





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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. 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.

David Haviland Vice-president and Secretary

Member Recognition

Becky Ramotowski was featured in the July/August issue of *Night Sky* magazine on page 89. She also had an article about keeping an astronomical journal in that same issue.

Richard Nugent's image of the Sun Appeared on page 48 of the July/August issue of *Night Sky* magazine .

Earth Science Picture of the Day http://epod.usra.edu/ posted Ken Lester's image of the annular eclipse from Panama on May 30th.

Triple Nickel will be a guest speaker at the 20th annual Whirlpool Star Party at Birr Castle in Ireland. Sponsored by the Shannonside Astronomy Club, this is Ireland's premier astronomical event. It will take place October 7th - 9th.

Shannonside Astronomy Club: http://homepage.eircom.net/~sac/whirlpol.htm

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 section of the International Dark-Sky Association. Their web site is at: http://www.texasida.org/.



Houston Area Astronomy		 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 					
	Clubs	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					
Upcoming Events							
ArkLaTex Star Party : The Red River Astronomy Club (RRAC) will host the first ArkLaTex Star Party from September 1 st through Labor Day, September 5 th near Nashville, Arkansas. In a message from Roy Clingan of RRAC, Roy stated: "Armed with new technology, amateurs are contributing vast amounts of data and research to the scientific community. Hear what you can do in the fields of spectroscopy, cataclysmic variables, NEO and super nova searches. There are also presentations on collimation, imaging and a history of amateur contributions." The ArkLaTex Star Party will supply dark skies, plenty of camping space, a vendor (Rex's Astro Stuff), presentations by professional and amateur astronomers, meals, T-shirts, swap meet, showers, electricity, door prizes, movies on a 72 inch screen and broad band internet access on the field via wireless connection. There are also many interesting, beautiful and historic sites surrounding							
Nashville, including a diamond mine, an Indian village and canoeing.							
For more information, please visit: http://www.rrac.org.							
The 14th JSCAS Fort McKavett Star Party will be held from September 29th—October 2nd. The electrical problems at the fort have been solved, so this should be a great time to visit the fort.							
For more information visit http://www.riverofstars.net/JSCAS/StarParties/starparty.htm.							

The 22 nd annual Okie-Tex Star Party will be held at Camp Billy Joe from October 1 st - October 9 th . Camp Billy Joe is located in the Oklahoma Panhandle near the town of Kenton. For more information visit http://www.okie-tex.com/index.htm.							

MEMBER'S GALLERY

As Good As It Gets ► ©Becky Ramotowski

So here's what we've been waiting for... The closest encounter of 2 planets for the year.

Mercury is left of Venus. Saturn is below them just peeking out of the clouds.

See, all this planetary alignment stuff didn't make the world end. It did however bring lots of pesky clouds.



This month's Member's Gallery features the photographic art work of Becky Ramotowski.

For more of Becky's wonderful images visit her blog at http://infinity.my-expressions.com.



◄ Clouds.... ©Becky Ramotowski

They want to hide the sky from me.

The Moon looks kind of neat, and Saturn peeks out as a tiny speck below.

We are looking west here, and the clouds are being illuminated from underneath by the city lights of Albuquerque which is about 27 miles away as the crow flies through the mountains. The color of the sky and the clouds are a bit "off", but it shows just how much light pollution has affected what we see at night. And, consider this view is from 7200 feet.

Nikon 5000 ASA 400 15 seconds on stationary tripod





Jupiter in the Daytime ©Becky Ramotowski

It's no big deal to see the Moon during the day, but Jupiter poses a challenge. I like to use the Moon as a "cheater" to find Jupiter during the day when it's nearby.

It's just a matter of knowing each one's position in the sky and then hunting. On June 15 just such an opportunity presented itself. After finding the 1st quarter Moon, it was fairly easy to locate Jupiter knowing it was close enough to be in the same 6.5 degree binocular field.

The photo above was taken with the rejuvenated D-70 and a tanker 300mm Nikkormat lens.

The Moon is obvious, and Jupiter is the small speck in the lower left corner.

The close-up of Jupiter was taken by hand holding a Nikon 5000 up to a 7.5 mm eyepiece on a 80mm refractor.

Tree Trails ► ©Becky Ramotowski

This photo is dedicated to all of the tree lovers out there. This particular tree is a Pecan, and it guards the barracks at Fort McKavett, Texas. (It's not dead, the photo was taken this past Spring before it releafed.)

I made a series of tree shots several years ago going to the same desolated spot and making a photo of a tree skeleton during summer and winter solstices, and both equinoxes showing how much the Sun moves. Go to the Spaceweather archives and look up September 24, 2002 for that image.



Join The Great Princess of Mars Ground Crew

Kelley Knight

As Eleta Malewitz would have wanted it, Kelley Knight of the Johnson Space Center Astronomical Society (JSCAS) will captain "The Great Princess of Mars Ground Crew" during the *Race for the Cure* in Austin on Sunday, November 6, 2005.

Before Eleta left us, she would often say (as it related to all the support and love sent her way) "astronomers are the best people in the world". Let's prove her statement right and make tracks for a cure!

The Austin race was chosen because the one in Houston is the same weekend as the Fort McKavett trip, plus Kelley lives in Austin. Kelley reminds us that the proceeds benefit early detection, support programs and medical costs for a variety of women in five counties. Many of the programs help women in rural areas. "There are lots of races and major outdoor events in Austin. The most positive experience I've ever had at such an event is the *Race for the Cure*." said Kelley.

"This is not a JSCAS or any other specific group team. It is a group of people who want to see more people looking up at the stars than suffering from breast and other cancers," said Kelley.

This year, Kelley would like to increase the number in the ground crew beyond last year's seven members. The goal in fund raising is \$9,800. That amount is 1/10000th of the miles of the round trip from Earth to Mars. The seven ladies raised \$2,500 last year. They received many accolades from the Komen Austin folks because they were one of the smallest teams yet raised as much money as teams of 40 or 50 members.



Kelley and her crew realize that some of you can't make it because of the travel involved. However, you can still be a team member by selecting the "sleep-in" category of racer. This means that you are a team member and you collect pledges but you can sleep in instead of finding out what downtown Austin area looks like before 9 a.m.

"Being a 'Sleep-In' member and collecting pledges is a great way to be a part of the team even though you can't be there in person to race. And every pledge matters", said Becky Ramotowski.

It is also okay to join the team and not collect pledges. The crew realizes that some of you have issues with this.

If closer to the race you decide to make the jaunt to Austin, you can still race. If you still want to sleep in and want all the wonderful benefits from training for such an event, Kelley recommends visiting http://www.runtex.org and click on training. There is a great walking program available with a prize for the one who completes the program.

(Continued on page 28)

(Continued from page 27)

The team will carry a banner that was signed at Eleta's Celebration of Life. Ed currently has the banner. If you can't sign it in person, send Kelley an e-mail closer to November 6th and she'll include your well wishes, dedications to others who have lost their battle or whatever good sentiments you want included. Kelley's e-mail is Kelleyknight@yahoo.com. She just asks that you put something like "Banner dedication" in the heading so she can tell the difference between spam and important e-mails.

To join the team, visit http://www.komenaustin.org, type in "Great Princess of Mars" in the search engine and follow the instructions from there. If you can't join us in the walk or want to become a "sleep in" member, consider sponsoring one of the team members.

Star Party News Ken Lester													
Our next sch	eduled st	tar party	isn't u	until A	ugust ´	13 th .							
Event	Date	Sun	Moon		Jupiter		Saturn		Mars		Venus		
		Set	Illum.	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set
					2	005							
Moody Gardens	Aug 13	20:22	60	15:00	00:31	11:18	23:01	05:43	19:29	00:11	13:12	09:50	22:08
Challenger 7	Sep 10	19:50	45	13:56	23:57	09:51	21:25	04:08	17:47	22:56	12:14	10:34	21:44
Fort McKavet	to Oct 2	19:25	11	04:01	17:47	08:55	20:21	03:03	16:38	21:50	11:14	11:04	21:32
Haak Winery	Nov 5	19:18	7	09:41	20:33	08:37	20:01	02:41	16:16	21:25	10:51	11:14	21:30
Moody Gardens	Nov 12	17:48	89	15:19	02:56	04:48	16:47	23:29	11:53	17:14	05:40	09:33	21:05

Celestia Website

For those wanting the website for the Celestia program demonstrated at the June meeting visit: http://celestia.sourceforge.net/.



Johnson Space Center Astronomical Society	July Meeting Agenda					
An association of amateur astrono- mers dedicated to the study and enjoyment of astronomy. Mem-	July 8 th , 7:30 p.m., Center for Advanced Space Studies/ Lunar Planetary Institute, 3600 Bay Area Blvd. (at Middle- brook Drive).					
to learn about astronomy.	 Welcome!!! Guest Speaker: Dennis Webb—program to be an- 					
	Break					
President	SIG reports, Star Party News					
Bob Taylor Vice President	Astronomical Oddities — Hernan Contreras					
David Haviland	Last Words, Door Prizes					
David Haviland Starscan Editor Ken Lester Star Party Chairperson Lisa Lester Librarian Lisa Lester	Any unfinished discussions can be continued over food and beverages at a location to be announced at the end of the meeting.					
Historian Susan DeChellis	Starscan Submission Procedures					
Scientific Expeditions Paul Maley	Original articles of astronomical interest will be accepted up to 6 P.M. July 25th.					
Web Master Chris Randall SIGS	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					
Observing Awards Triple Nickel	will also be accepted. Submitter bears all responsibility for the publishing of any e-mail addresses					
CCD Imaging	in the article on the World Wide Web.					
Binocular Observing Leslie Eaton	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.					
Telescope Making	Starscan Staff					
Deep Sky Observing Chris Randall	Editor Ken Lester Associate Editors Sheila Steele Ken Steele					
Cover Image Cygnus Loop Supernova Remnant						

Credit: J.J. Hester (Arizona State University), and NASA

This is an image of a small portion of the Cygnus Loop supernova remnant, taken by NASA's Hubble Space Telescope on April 24, 1991. The photo is a combination of separate images taken in three colors. Oxygen atoms (blue) emit light at temperatures of 30,000 to 60,000 degrees Celsius (50,000 to 100,000 degrees Fahrenheit). Hydrogen atoms (green) arise throughout the region of shocked gas. Sulfur atoms (red) form when the gas cools to around 10,000 degrees Celsius (18,000 degrees Fahrenheit).