STARSCAN

Johnson Space Center Astronomical Society

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August 2005

IS YOUR SKY & TELESCOPE OR ASTRONOMY SUBSCRIPTION READY FOR RENEWAL? JSCAS MEMBERS GET A DISCOUNT. SEE INSIDE FOR DETAILS.

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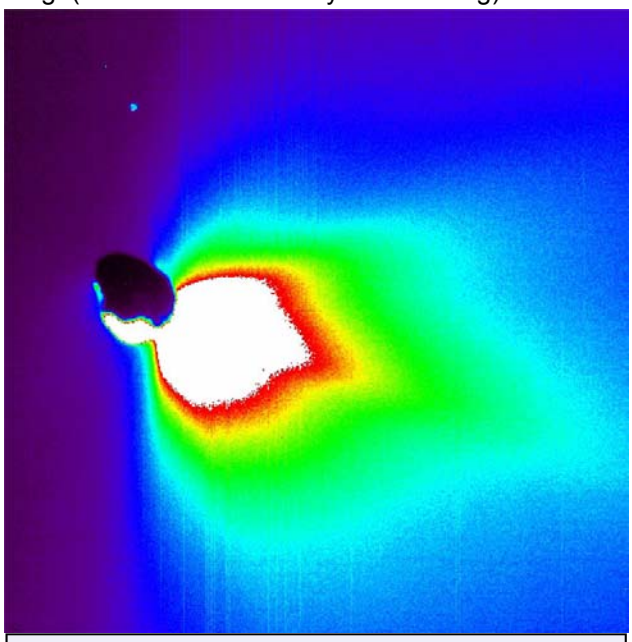
NASA's Deep Impact Tells a Tale of the Comet

News Release: 2005-113 July 8, 2005

Data from Deep Impact's instruments indicate an immense cloud of fine powdery material was released when the probe slammed into the nucleus of comet Tempel 1 at about 10 kilometers per second (6.3 miles per second or 23,000 miles per hour). The cloud indicated the comet is covered in the powdery stuff. The Deep Impact science team continues to wade through gigabytes of data collected during the July 4 encounter with the comet measuring 5-kilometers-wide by 11-kilometers-long (about 3-miles-wide by 7-miles-long).



This false-color image shows comet Tempel 1 about 50 minutes after Deep Impact's probe smashed into its surface. The impact site is located on the far side of the comet in this view. The image was taken by the mission's flyby spacecraft as it turned back to face the comet for one last photo opportunity.

The colors represent brightness, with white indicating the brightest materials and black showing the faintest materials. This brightness is a measure of reflected sunlight. The Sun is located to the right, out of the picture.

Because the sunlit portion of the comet is brighter, it appears white. The comet's nucleus is silhouetted against the light reflected from surrounding dust.

The large plume of dust that was kicked up upon impact can be seen as the colorful, drop-shaped object. This plume was very bright, indicating that the comet's surface material must be very fine, like talcum powder.

The blue speck in the upper left corner is a star.

This picture was taken by Deep Impact's high-resolution camera. Image credit: NASA/JPL-Caltech/UMD

"The major surprise was the opacity of the plume the impactor created and the light it gave off," said Deep Impact Principal Investigator Dr. Michael A'Hearn of the University of Maryland, College Park. "That suggests the dust excavated from the comet's surface was extremely fine, more like talcum powder than beach sand. And the surface is definitely not what most people think of when they think of comets -- an ice cube."

How can a comet hurtling through our solar system be made of a substance with less strength than snow or even talcum powder?

"You have to think of it in the context of its environment," said Dr. Pete Schultz, Deep Impact scientist from Brown University, Providence, R.I. "This city-sized object is floating around in a vacuum. The only time it gets bothered is when the Sun cooks it a little or someone slams an 820-pound wakeup call at it at 23,000 miles per hour."

The data review process is not overlooking a single frame of approximately 4,500 images from the spacecraft's three imaging cameras taken during the encounter.

"We are looking at everything from the last moments of the impactor to the final look-back images taken hours later, and everything in between," added A'Hearn. "Watching the last moments of the impactor's life is remarkable. We can pick up such fine surface detail that objects that are only four meters in diameter can be made out. That is nearly a factor of 10 better than any previous comet mission."

The final moments of the impactor's life were important, because they set the stage for all subsequent scientific findings. Knowing the

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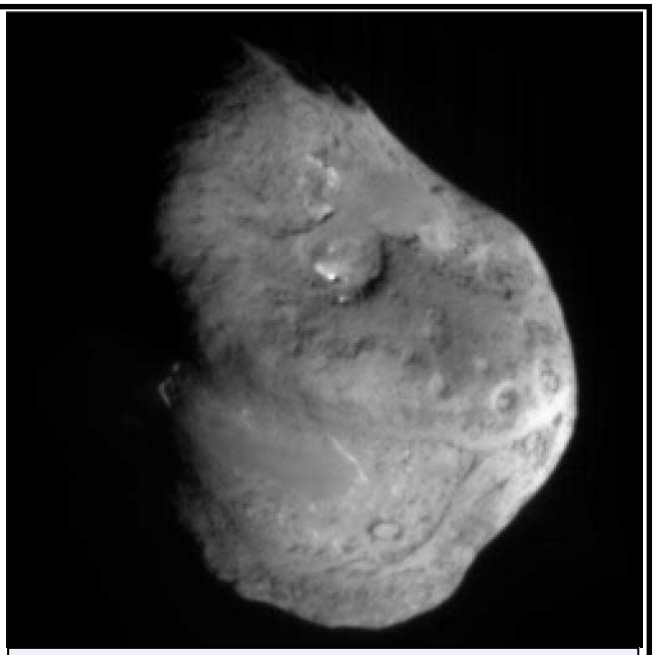
location and angle the impactor slammed into the comet's surface is the best place to start. Engineers have established the impactor took two not unexpected coma particle hits prior to impact. The impacts slewed the spacecraft's camera for a few moments before the attitude control system could get it back on track. The penetrator hit at an approximately 25 degree oblique angle relative to the comet's surface. That's when the fireworks began.

The fireball of vaporized impactor and comet material shot skyward. It expanded rapidly above the impact site at approximately 5 kilometers per second (3.1 miles per second). The crater was just beginning to form. Scientists are still analyzing the data to determine the exact size of the crater. Scientists say the crater was at the large end of original expectations, which was from 50 to 250 meters (165 to 820 feet) wide.

Expectations for Deep Impact's flyby spacecraft were exceeded during its close brush with the comet. The craft is more than 3.5 million kilometers (2.2 million miles) from Tempel 1 and opening the distance at approximately 37,000 kilometers per hour (23,000 miles per hour). The flyby spacecraft is undergoing a thorough checkout, and all systems appear to be in excellent operating condition.



This image shows comet Tempel 1 approximately 5 minutes before Deep Impact's probe smashed into its surface. It was taken by the probe's impactor targeting sensor. The Sun is to the right of the image and reveals terrain varying in brightness by a factor of two. Shadows and bright areas indicate surface topography. Smooth regions with no features (lower left and upper right) are probably younger than rougher areas with circular features, which are most likely impact craters. The probe crashed between the two dark-rimmed craters near the center and bottom of the comet.

The nucleus is estimated to be about 5 kilometers (3.1 miles) across and 7 (4.3 miles) kilometers tall.

Image credit: NASA/JPL-Caltech/UMD

The Deep Impact mission was implemented to provide a glimpse beneath the surface of a comet, where material from the solar system's formation remains relatively unchanged. Mission scientists hoped the project would answer basic questions about the formation of the solar system by providing an in-depth picture of the nature and composition of comets.

The University of Maryland is responsible for overall Deep Impact mission science, and project management is handled by JPL. The spacecraft was built for NASA by Ball Aerospace & Technologies Corporation, Boulder, Colo. JPL is a division of the California Institute of Technology, Pasadena, Calif.

For information about Deep Impact visit: http://www.nasa.gov/deepimpact.

Just for Fun….

Visit http://moon.google.com/ for a fun look at NASA's lunar landing sites. Be sure to zoom in for a really close-up look at the Moon's surface.

Star Party News

Ken Lester

Our summer star party break is coming to an end. Be sure to mark your calendars for our August 13th Moody Gardens Star Party. So dust off your telescopes and join the club at Moody Gardens.

There will be two star parties in September. The Challenger 7 star party is September 10th while our fall Fort McKavett Star Party begins September 29th.

For those who have not yet attended the Fort McKavett star party, it is a 3 day Thursday through Saturday event. It is held at the beautiful Fort McKavett State Historical Park, Fort McKavett, Texas. The star party is free with a suggested donation of $10 per person to cover the cost of the Saturday noon BBQ, which is prepared by the Friends of Fort McKavett organization.

In addition to the BBQ, there is a Friday night "bring your own main dish and a side to share" cookout. We are already taking lodging requests for Fort McKavett. Contact Lisa Lester with your housing request if you plan to attend. For more information visit the JSCAS star party web site and click on Fort McKavett Star Party (http://www.riverofstars.net/JSCAS/StarParties/starparty.htm).

The Observing Field at the Fort McKavett Star Part—October 2002
Credit: Ken Lester

Event	Date	Sun Set	Moon			Jupiter		Saturn		Mars		Venus	
			Illum.	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set
2005													
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
Ft McKavett	Sep 29 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

New Observatory SIG Formed

Al Kelly

Hi Folks,

As announced at the July meeting, I want to activate an Observatory SIG centered around the use of the 32" telescope at Danciger. For starters, I would like to compile an e-mail list of participants who want to be notified when the 32 will be open for observing. Please e-mail me (akelly@ghg.net) if you want to be added to the notification list.

Goals of the SIG are:

1. Provide dark-sky observing opportunities using the 32" scope and other scopes SIG members bring to the Danciger site.
2. Develop trained operators of the 32" scope facility.
3. Provide planned and near-real-time observing availability for trained users and other visitors.

I would appreciate any input or suggestions from other JSCAS members.

Al Kelly

Al Kelly (4th from left) held an observing session at Danciger Observatory in January, 2005. The new SIG offers JSCAS members the opportunity to use a really fine, very large aperture instrument.

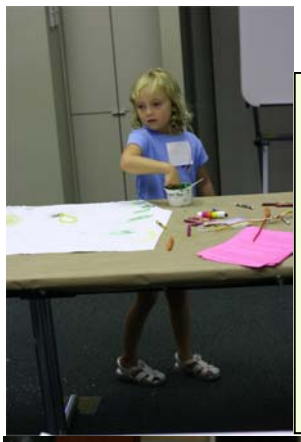
Credit: Randy Brewer

Family Space Day

This Month's Family Space Day theme was Deep Impact, comets, asteroids and other solar system leftovers. This was an especially enjoyable family space day since the kids got to make comets out of ice cream and cookie crumbs. I have never seen kids so enthusiastic about learning. The comets were delicious. There were arts and crafts with, you guessed it, glitter and glue as well as coloring. There was a movie about Deep Impact showing actual footage as well as computer animation. Mike was good enough to simulate the darkness of space by executing a planned power outage in the building. Actually the power did go out forcing a slightly early end to this month's Family Space Day, but everyone had a great time anyway.

Till next month,
Matt Hommel.

All images by Matt Hommel



The *Space Shuttle* will be the theme for the August 20th Family Space Day, from 10:00 am to 1:00 pm at the Lunar Planetary Institute, 3600 Bay Area Blvd.

Children between the ages of 5 and 8 are invited to bring their families to explore space science! Families are encouraged to bring lunch and to enjoy a picnic on the Lunar and Planetary Institute's grounds, weather permitting. Hands-on activities and demonstrations will allow the children and their families to explore the theme of the day for themselves. For more information contact Mike Madera, Education Specialist, 281-244-2040.

Houston Astronomical Society's 50th Anniversary Event September 24, 2005

Fifty years ago, in September, the Houston Astronomical Society was formed. The Society has done many new things over the years. One of the major accomplishments since the founding of the Society was the building of our Columbus Observatory. The land surveying started in 1979, and in 1982 the current observatory building was dedicated. Three years later a time capsule was placed in the ground on the south side of the building.

On Saturday, September 24, we will have our annual picnic. At the picnic we will unearth and open the capsule. To help celebrate our 50th anniversary, we are inviting all the area clubs to attend our picnic. As usual, the HAS will supply the food for the picnic, including meats and sides, you bring the drinks. We will also have the observatory open for our visitors, a constellation tour at twilight, and the usual observing session when it gets dark. Bring your own telescope to test our night skies and plan to spend the night.

We will need an RSVP by September 10th if you are planning to attend. Bob Taylor will be your SPOC (Special Point of Contact). Watch for details in the coming weeks. Mark your calendar now for September 24.

Steve Goldberg
Event Chairman

Schedule of Events for September 24th

- Gates open 10AM on Saturday
- Unearthing of time capsule at 3pm
- BBQ served at 5PM
- Observing at any time
- Gates close Noon on Sunday

Time capsule and plaque taken when the time capsule was buried in 1985. Credit: HAS

The Columbus Observatory is an exceptional facility with concrete observing pads, electricity, RV hookups, full restrooms and an observatory building with three telescopes in the 12.5" to 14" aperture range.

The observatory is just southwest of Columbus Texas, about a 1.5 to 2 hour drive from the Clear Lake Area. Bob Taylor will give you directions to the site when you RSVP.

At Steve and Amelia Goldberg's presentation during the July meeting, a show of hands indicated about 20 JSCAS club members were interested in attending this event.

This event will be an excellent opportunity to gear up for the Fort McKavett Star Party beginning the following Thursday.

For information about HAS and their observatory, visit their web site: http://spacsun.rice.edu/~has/.

For information about the picnic visit: http://spacibm.rice.edu/~has/AnniversaryPicnic.htm.

Hope to see you there.
Ken Lester

Upcoming Events

HAS speaker: Don Machholz, one of the premier visual comet hunters in North America (with ten comets discovered visually), will be the speaker at the next Houston Astronomical Society Meeting on August 5th at 8 p.m. Please join us to hear his presentation on "My Life as a Comet Hunter." Don most recently discovered C/2004 Q2 (Machholz) in August of last year, which became the brightest comet during the past year. Don has been active with ALPO and has been hunting for comets since 1975.

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Central Texas Star Party: A free star party for Amateur Astronomers will be held August 5 & 6, 2005 at the Eagle Eye Observatory, Canyon of the Eagles Lodge and Nature Park, On Lake Buchanan.

Each year, the Austin Astronomical Society (AAS) sponsors the Central Texas Star Party (CTSP). This is a Star Party organized by an astronomy club for amateur astronomers. CTSP 2005 will be held at the Eagle Eye Observatory, located at our dark sky Canyon of the Eagles site within the 940-acre Canyon of the Eagles Nature Park.

Observing Field at the 2004 CTSP Credit Matt Hommel

CTSP 2005 will have two observing challenges, as well as the summer Celestial Passport. This year's speakers are Barbara Wilson, Manager/Director, George Observatory: *Dark Sky Observing at the Edge* and Don Olson and Russell Doescher, Department of Physics, Texas State University - San Marcos: *The Moonrise Photographs of Ansel Adams*. Additionally, there will be door prizes, camaraderie, and skies filled with the Summer Milky Way. A special observing area for "Young Astronomers" with adult mentors will highlight a focus on the next generation of astronomers. (Online registration will soon be available). Visit http://www.austinastro.org/ctsp.html for more information.

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Moody Gardens Star Party: The next JSCAS star party will be held at Moody Gardens, August 13th. For more information visit: http://www.riverofstars.net/JSCAS/StarParties/starparty.htm.

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ArkLaTex Star Party: The Red River Astronomy Club (RRAC) will host the first ArkLaTex Star Party from September 1st through Labor Day, September 5th 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 surround Nashville, including a diamond mine, an Indian village and canoeing.

For more information, please visit: http://www.rrac.org.

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The 14th JSCAS **Fort McKavett Star Party** will be held from September 29th through 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.

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The 22nd annual **Okie-Tex Star Party** will be held at Camp Billy Joe from October 1st - October 9th. 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.

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Astronomy Day 2005 will kick off with the 5th Annual Houston/Beaumont Regional Astronomy Meeting on Friday, October 21, 2005 from 8:00 to 10:30 pm at the Houston Community College. This will be followed by Astronomy Day on Saturday, October 22, 2005 from 3:00 to 11:00 pm at the George Observatory at Brazos Bend State Park. All events are open to the public. Event details can be found on http://www.astronomyday.org as soon as they are available.

JSCAS is an active participant in these two events and volunteers will be needed to make them successful. Barbara Wilson, George Observatory Manager/Director, estimates that there were at least 1200 people that attended last year's Astronomy Day. This is the largest event of its kind in the Houston area and our best chance to spread the "astronomy bug".

Constellations Commemorative Stamps

The US Postal Service is set to release a new stamp set called Constellations on October 3rd (date subject to change). The set consists of four 37-cent commemorative stamps, available in a pane of 20. Stamps feature the constellations Leo, Lyra, Pegasus, and Orion.

The designs are original artwork created by well-known illustrator, graphic designer and educator McRay Magleby of Provo, UT. Magleby used star maps by Wil Tirion as reference for the placement and size of the stars depicted in the stamp art. Tirion, who lives in the Netherlands, has been called "this generation's foremost celestial cartographer."

http://www.usps.com/communications/news/stamps/2004/sr04_076.htm

NASA Scientist Finds World With Triple Sunsets

Jet Propulsion Laboratory, Pasadena, Calif.

News Release: 2005-115 July 13, 2005

A NASA-funded astronomer has discovered a world where the sun sets over the horizon, followed by a second sun and then a third. The new planet, called HD 188753 Ab, is the first known to reside in a classic triple-star system.

Artist's concept of the triple-star planetary system.
Credit: NASA/JPL/Cal Tech

"The sky view from this planet would be spectacular, with an occasional triple sunset," said Dr. Maciej Konacki (MATCH-ee Konn-ATZ-kee) of the California Institute of Technology, Pasadena, Calif., who found the planet using the Keck I telescope atop Mau na Kea mountain in Hawaii. "Before now, we had no clues about whether planets could form in such gravitationally complex systems."

The finding, reported in this week's issue of Nature, suggests that planets are more robust than previously believed.

"This is good news for planets," said Dr. Shri Kulkarni, who oversees Konacki's research at Caltech. "Planets may live in all sorts of interesting neighborhoods that, until now, have gone largely unexplored." Kulkarni is the interdisciplinary scientist for NASA's planned SIM PlanetQuest mission, which will search for signs of Earth-like worlds.

Systems with multiple stars are widespread throughout the universe, accounting for more than half of all stars. Our Sun's closest star, Alpha Centauri, is a member of a trio.

"Multiple-star systems have not been popular planet-hunting grounds," said Konacki. "They are difficult to observe and were believed to be inhospitable to planets."

The new planet belongs to a common class of extrasolar planets called "hot Jupiters," which are gas giants that zip closely around their parent stars. In this case, the planet whips every 3.3 days around a star that is circled every 25.7 years by a pirouetting pair of stars locked in a 156-day orbit.

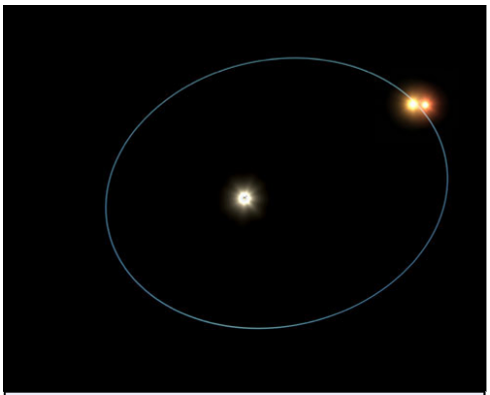

Illustration of the orbits of the triple-star system called HD 188753. Credit: NASA/JPL/Cal Tech

The circus-like trio of stars is a cramped bunch, fitting into the same amount of space as the distance between Saturn and our Sun. Such tight living quarters throw theories of hot Jupiter formation into question. Astronomers had thought that hot Jupiters formed far away from their parent stars, before migrating inward.

"In this close-knit system, there would be no room at the outskirts of the parent star system for a planet to grow," said Konacki.

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Previously, astronomers had identified planets around about 20 binary stars and one set of triple stars. But the stars in those systems had a lot of space between them. Most multiple-star arrangements are crowded together and difficult to study.

Konacki overcame this challenge using a modified version of the radial velocity, or "wobble," planet-hunting technique. In the traditional wobble method, a planet's presence is inferred by the gravitational tug, or wobble, it induces in its parent star. The strategy works well for single stars or far-apart binary and triple stars, but could not be applied to close-star systems because the stars' light blends together.

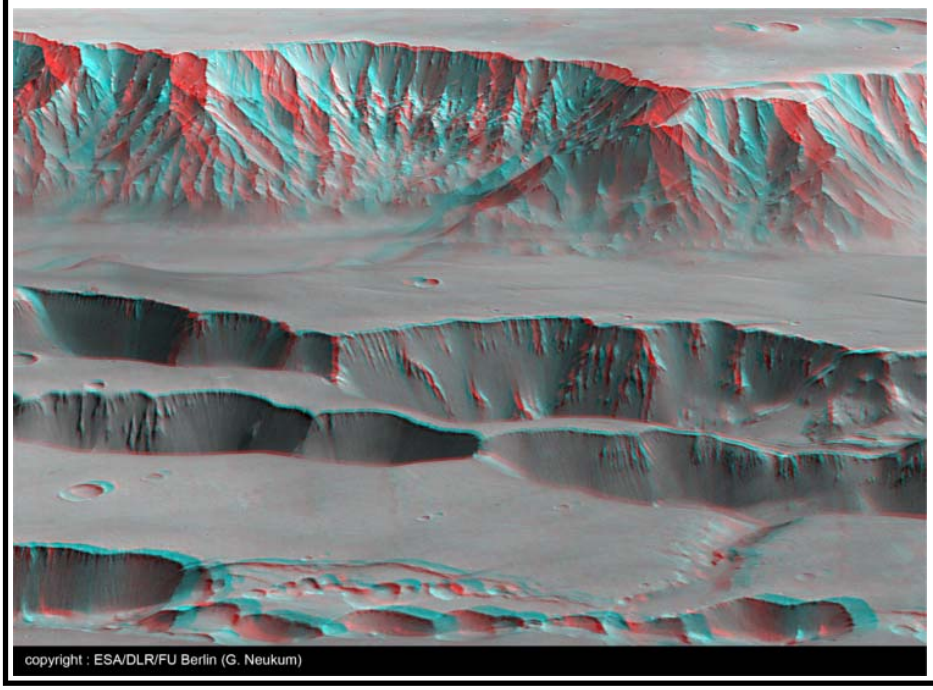
By developing detailed models of close-star systems, Konacki was able to tease apart the tangled starlight. This allowed him to pinpoint, for the first time, the tug of a planet on a star snuggled next to other stars. Of 20 systems examined so far, HD 188753, located 149 light-years away, was the only one found to harbor a planet.

Hot Jupiters are believed to form out of thick disks, or "doughnuts," of material that swirl around the outer fringes of young stars. The disk material clumps together to form a solid core, then pulls gas onto it. Eventually, the gas giant drifts inward. The discovery of a world under three suns contradicts this scenario. HD 188753 would have sported a truncated disk in its youth, due to the disruptive presence of its stellar companions. That leaves no room for HD 188753's planet to form, and raises a host of new questions.

The masses of the three stars in HD 188753 system range from two-thirds to about the same mass as our Sun. The planet is slightly more massive than Jupiter.

3D Perspective View of Coprates Chasma and Catena - Looking North

http://www.esa.int/SPECIALS/Mars_Express/SEMVQ95V9ED_0.html



The HRSC on ESA's Mars Express obtained this 3D perspective view on 28 May 2004 during orbit 449 with a ground resolution of approximately 48 meters per pixel. The scene shows the region of Coprates Chasma and Coprates Catena, over an area centred at about 13.5º South and 300º East, looking north.

Credits: ESA/DLR/FU Berlin (G. Neukum)

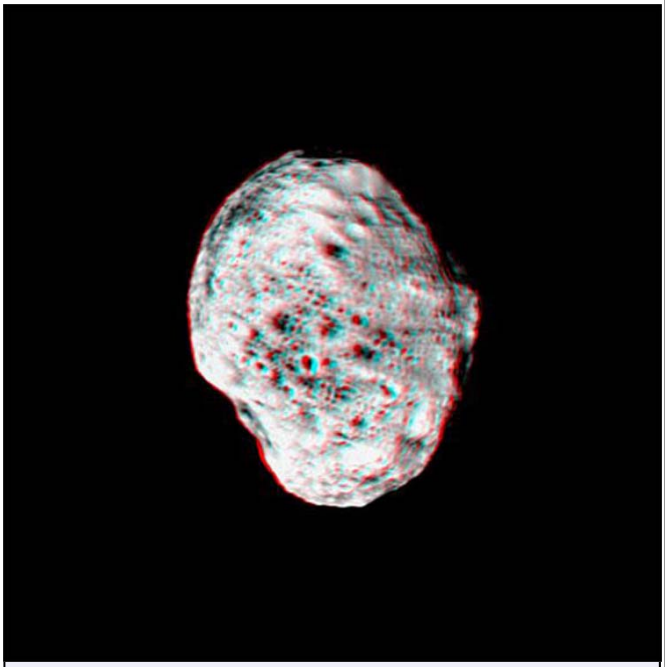
Spongy-Looking Hyperion Tumbles Into View

NASA/JPL Image Advisory: 2005-114 07.11.05

Two new Cassini views of Saturn's tumbling moon Hyperion offer the best looks yet at one of the icy, irregularly-shaped moons that orbit the giant, ringed planet.

The image products include a movie sequence which is available at http://saturn.jpl.nasa.gov, http://www.nasa.gov/cassini and http://ciclops.org .

The views were acquired between June 9 and June 11, 2005, during Cassini's first brush with Hyperion.



3D image of Saturn's unusually shaped moon, Hyperion.
Image credit: NASA/JPL/Space Science Institute.

Hyperion is decidedly non-spherical and its unusual shape is easy to see in the movie, which was acquired over the course of two and a half days. Jagged outlines visible on the moon's surface are indicators of large impacts that have chipped away at its shape like a sculptor.

Preliminary estimates of its density show that Hyperion is only about 60 percent as dense as solid water ice, indicating that much of its interior (40 percent or more) must be empty space. This makes the moon more like an icy rubble pile than a solid body.

In both the movie and the 3D image, craters are visible on the moon's surface down to the limit of resolution, about 1 kilometer (0.6 mile) per pixel. The fresh appearance of most of these craters, combined with their high spatial density, makes Hyperion look something like a sponge.

The moon's spongy-looking exterior is an interesting coincidence, as much of Hyperion's interior appears to consist of voids. Hyperion is close to the size limit where, like a child compacting a snowball, internal pressure due to the moon's own gravity will begin to crush weak materials like ice, closing pore spaces and eventually creating a more nearly spherical shape.

The images used to create these views were obtained with Cassini's narrow-angle camera at distances ranging from approximately 815,000 to 168,000 kilometers (506,000 to 104,000 miles) from Hyperion. Cassini will fly within 510 kilometers (317 miles) of Hyperion on Sept. 26, 2005.

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, D.C. 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.

NASA's New Mars Orbiter Will Sharpen Vision of Exploration

News Release: 2005-118 July 21, 2005

NASA's next mission to Mars will examine the red planet in unprecedented detail from low orbit and provide more data about the intriguing planet than all previous missions combined. The Mars Reconnaissance Orbiter and its launch vehicle are nearing final stages of preparation at NASA's Kennedy Space Center, Fla., for a launch opportunity that begins Aug. 10.

The spacecraft will examine Martian features ranging from the top of the atmosphere to underground layering. Researchers will use it to study the history and distribution of Martian water. It will also support future Mars missions by characterizing landing sites and providing a high-data-rate communications relay.

"Mars Reconnaissance Orbiter is the next step in our ambitious exploration of Mars," said NASA's director, Mars Exploration Program, Science Mission Directorate, Douglas McCuistion. "We expect to use this spacecraft's eyes in the sky in coming years as our primary tools to identify and evaluate the best places for future missions to land."

The spacecraft carries six instruments for probing the atmosphere, surface and subsurface to characterize the planet and how it changed over time. One of the science payload's three cameras will be the largest-diameter telescopic camera ever sent to another planet. It will reveal rocks and layers as small as the width of an office desk. Another camera will expand the present area of high-resolution coverage by a factor of 10. A third will provide global maps of Martian weather.

The other three instruments are a spectrometer for identifying water-related minerals in patches as small as a baseball infield; a ground-penetrating radar, supplied by the Italian Space Agency, to peer beneath the surface for layers or rock, ice and, if present, water; and a radiometer to monitor atmospheric dust, water vapor and temperature.

The Mars Reconnaissance Orbiter as it orbits over the Martian poles. Image credit: NASA/JPL

Two additional scientific investigations will analyze the motion of the spacecraft in orbit to study the structure of the upper atmosphere and the Martian gravity field.

"We will keep pursuing a follow-the-water strategy with Mars Reconnaissance Orbiter," said Dr. Michael Meyer, Mars exploration chief scientist at NASA Headquarters. "Dramatic discoveries by Mars Global Surveyor, Mars Odyssey and the Mars Exploration Rovers about recent gullies, near-surface permafrost and ancient surface water have given us a new Mars in the past few years. Learning more about what has happened to the water will focus searches for possible Martian life, past or present."

Dr. Richard Zurek of NASA's Jet Propulsion Laboratory, Pasadena, Calif., project scientist for the orbiter, said, "Higher resolution is a major driver for this mission. Every time we look with increased resolution, Mars has said, 'Here's something you didn't expect. You don't understand me yet.' We're sure to find surprises."

The orbiter will reach Mars in March 2006. It will gradually adjust the shape of its orbit by aerobrak-

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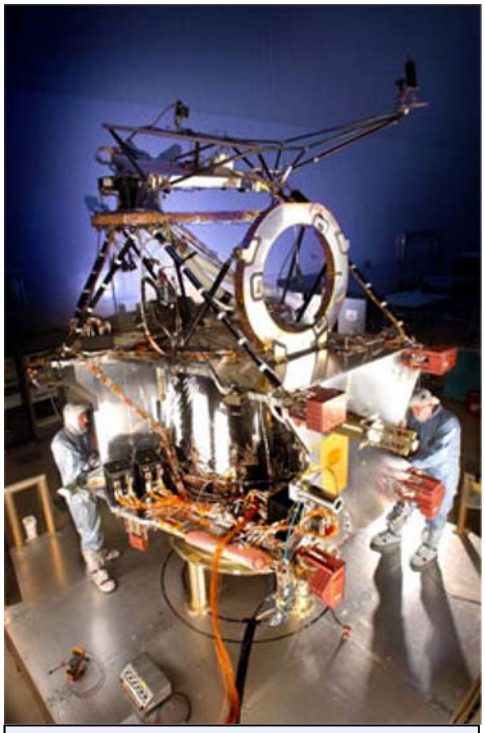
ing, a technique that uses the friction of careful dips into the planet's upper atmosphere. For the mission's 25-month primary science phase, beginning in November 2006, the planned orbit averages about 190 miles above the surface, more than 20 percent lower than the average for any of the three current Mars orbiters. The lower orbit adds to the ability to see Mars as it has never been seen before.



NASA's Mars Reconnaissance Orbiter, slated for launch in August 2005, in the final assembly phase at the Lockheed Martin Space Systems, Denver.
Credit: NASA/JPL

To get information from its instruments to Earth, the orbiter carries the biggest antenna ever sent to Mars and a transmitter powered by large solar panels. "It can send 10 times as much data per minute as any previous Mars spacecraft," said JPL's James Graf, project manager. "This increased return multiplies the value of the instruments by permitting increased coverage of the surface at higher resolution than ever before. The same telecommunications gear will be used to relay critical science data to Earth from landers."

To loft so big a spacecraft, weighing more than two tons fully fueled, NASA will use a powerful Atlas V launch vehicle for the first time on an interplanetary mission.

The mission is managed by JPL, a division of the California Institute of Technology, Pasadena, for the NASA Science Mission Directorate. Lockheed Martin Space Systems, Denver, is the prime contractor for the project and built the spacecraft.

For information about Mars Reconnaissance Orbiter on the Web, visit http://www.nasa.gov/mro.

Houston Area Astronomy Clubs

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

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

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

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

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

Sky & Telescope offers a "Club Discount" on subscriptions. You can subscribe to Sky and Telescope for $10 off the normal price ($32.95 with the club discount). Astronomy magazine is also offering a club discount. JSCAS members can subscribe to Astronomy for $29 a year. We need to have a minimum of five subscribers to take advantage of the discount. 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

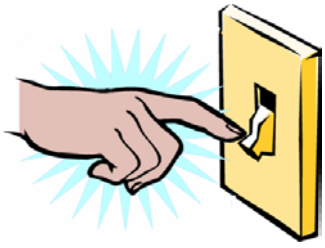
Ed Grafton's images of Mars were featured on SpaceWeather.com's web site July11th and July 24th.

Space.com's *Amazing Images, the Best User-submitted Space Images* featured **Randy Brewer's** images of M 51 and NGC 3718. His image of M 51 was a top vote getter for many weeks. The Hall of Fame is located at http://www.space.com/amazingimages/.

Just before the early July shuttle launch was scrubbed, an image of two of the shuttle astronauts and their support personnel, including JSCAS' **Triple Nickel**, was featured on NASA's *Return To Flight* web page.

Triple Nickel (L) with shuttle astronauts Credit: NASA

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/.

Outdoor Lighting Associates, Inc., a source for outdoor light shields and a long time member and supporter of IDA, has relocated to Texas. If you're not familiar with their current offerings, check out their web site at http://www.outdoorltg.com/. Because of a similarly named company already doing business in Texas, they are changing their name to Original Outdoor Lighting Associates, Inc.

MEMBER'S GALLERY

M20 ▲
©Chris Wells

Taken July 13, 2005 from League City, Texas with a Televue Genesis 101mm clear aperture f5.4 on a PM1 equatorial mount. There wasn't enough in-focus in this scope to use a color filter wheel so this image is luminance only.

Processed in AIP4WIN from 24, 30 seconds images and 6, 40 second images.

Cloudy Nights ►
©Ken Lester

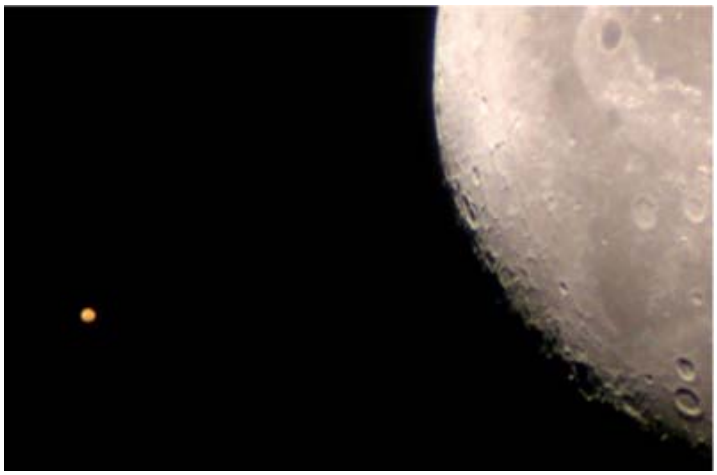
As I went outside on June 20th, a near full Moon was back-lighting the clouds, producing a very eerie effect. The clouds, brown with light brown edges were like islands swimming on the steel-gray ocean of night sky.

Taken with a Nikon D70 using an 18 to 70 zoom lens set at 24mm. Exposure was 2 seconds at f3.8, ASA 250 on a stationary tripod.

M14 ▲
©Al Kelly

L/RGB image of globular cluster M14, made from images taken by Al Kelly with a Starlight Express MX916 and an 8" SCT on July 3, 2005 from Friendswood, Texas, using Schuler RGcBc filters. Five 600-second unfiltered exposures, two 600-second sub-exposures in red, two 600-second sub-exposures in green, and three 600-second sub-exposures in blue were self-guided in Astroart and processed in AIP4WIN and Photoshop.

According to Al, “This was my first post-retirement imaging effort. It's going be strange imaging on nights other than Friday or Saturday!”



◄ Mars Meets the Moon
©Becky Ramotowski

There's been a lot of chatter about Mars the past month. Currently, it's an early morning object and will be much nicer and easier to look at later this year. However, there is some bad astronomy out there stating that Mars will be as big as the Moon when viewed. I don't think so.

Here's a shot taken in July 2003 when Mars and the Moon had a close encounter, as seen from Earth. Photo taken with Nikon 5000 hand held up to the eyepiece of an 80mm refractor.

Visual Observing — August 2005

Chris Randall

★**SSO**: (Solar System Objects) Summary for August 15, 2005

Object	Const	Mag	% Ill	Rise Time	Transient	Set Time
Sun	Leo	-26.7	100	06:48	13:24	19:59
Moon	Sgr	--	81	16:51	21:51	01:49
Mercury	Cnc	1.7	15	05:47	12:25	19:06
Venus	Vir	-4.0	79	09:35	15:40	21:48
Mars	Ari	-0.7	85	23:49	06:19	12:49
Jupiter	Vir	-1.8	99	10:52	16:42	22:36
Saturn	Cnc	0.9	100	05:20	12:09	19:01
Uranus	Aqr	5.7	100	20:49	02:30	08:12
Neptune	Cap	7.8	100	19:35	00:59	06:23
Pluto	Ser	13.9	99	15:42	21:13	02:39

Highlighted times denote daylight events.

★Lunar phases for August

New 	4th 22:05	First 	12th 21:38	Full	19th 12:53	Third 	26th 10:18

★**BSO**: (Bright Sky Objects)

Cr 399 (coat hanger) – Open Cluster in Vulpecula, Magnitude 3.6, Size 60', ~40 Stars.
M 24 (IC 4715) – Open Cluster in Sagittarius, Magnitude 4.6, Size 120'.
IC 4756 (Cr 386) – Open Cluster in Serpens, Magnitude 4.6, Size 52', ~80 stars.
NGC 6656 (M 22) – Globular Cluster, Magnitude 5.2, Size 32'.

★**DSO**: (Dark Sky Objects)

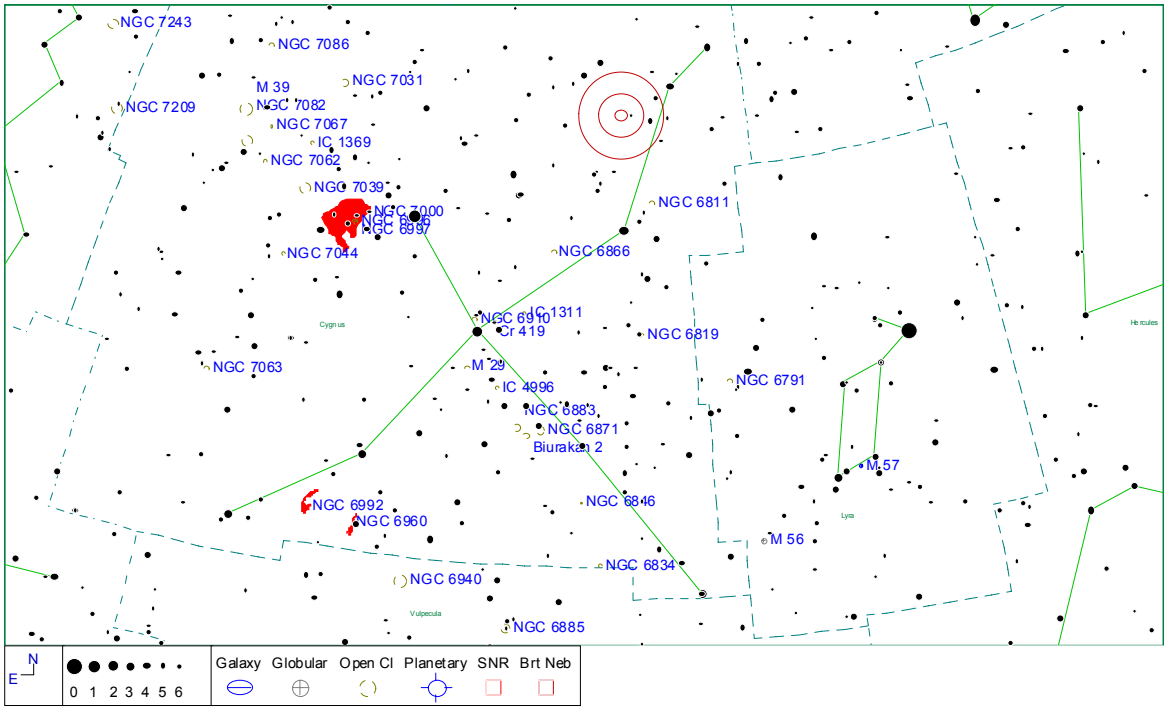
NGC 6705 (M 11, Cr 391, Wild Duck Cluster) – Open Cluster in Scutum, Magnitude 5.8, Size 13', ~682 stars.
NGC 6523 (M 8 IC 1271) – Nebula in Sagittarius, Magnitude 5.0, Size 50' x 40'.
NGC 6541 (C 78) – Globular Cluster in Corona Australis, Magnitude 6.3, Size 15'.
NGC 6853 (M 27) –Planetary Nebula in Vulpecula, Magnitude 7.6, Size 6.7'.

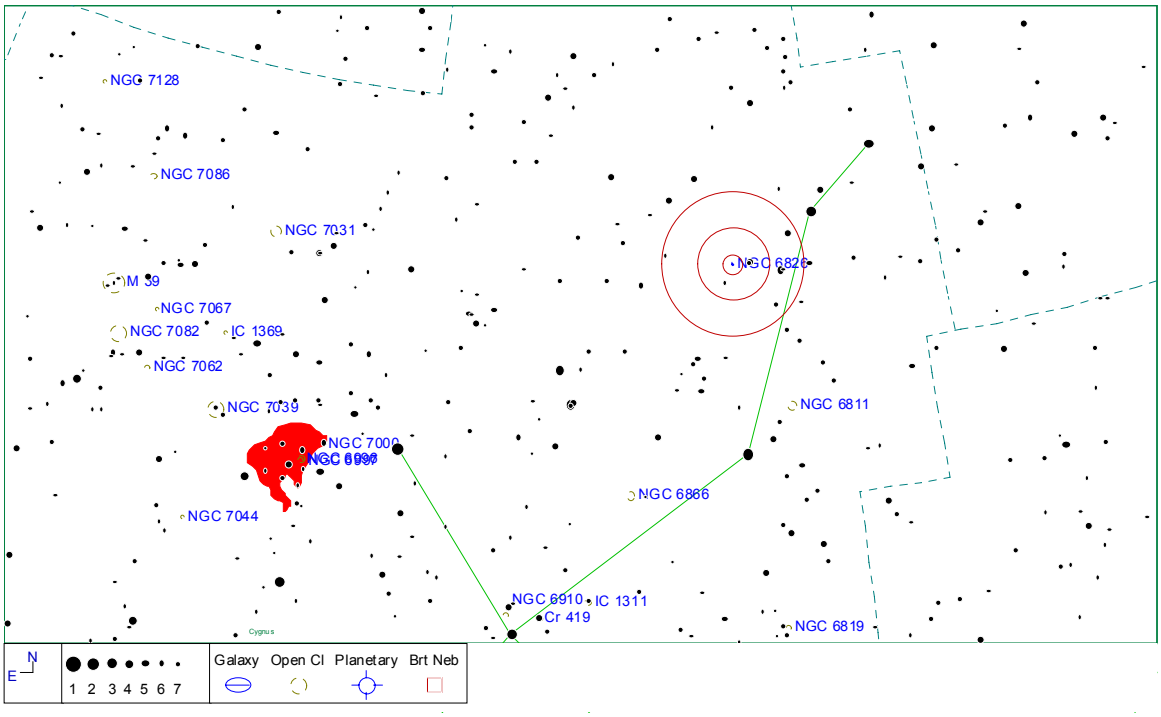
★**CDMP:** (Chris' Don't Miss Pick)

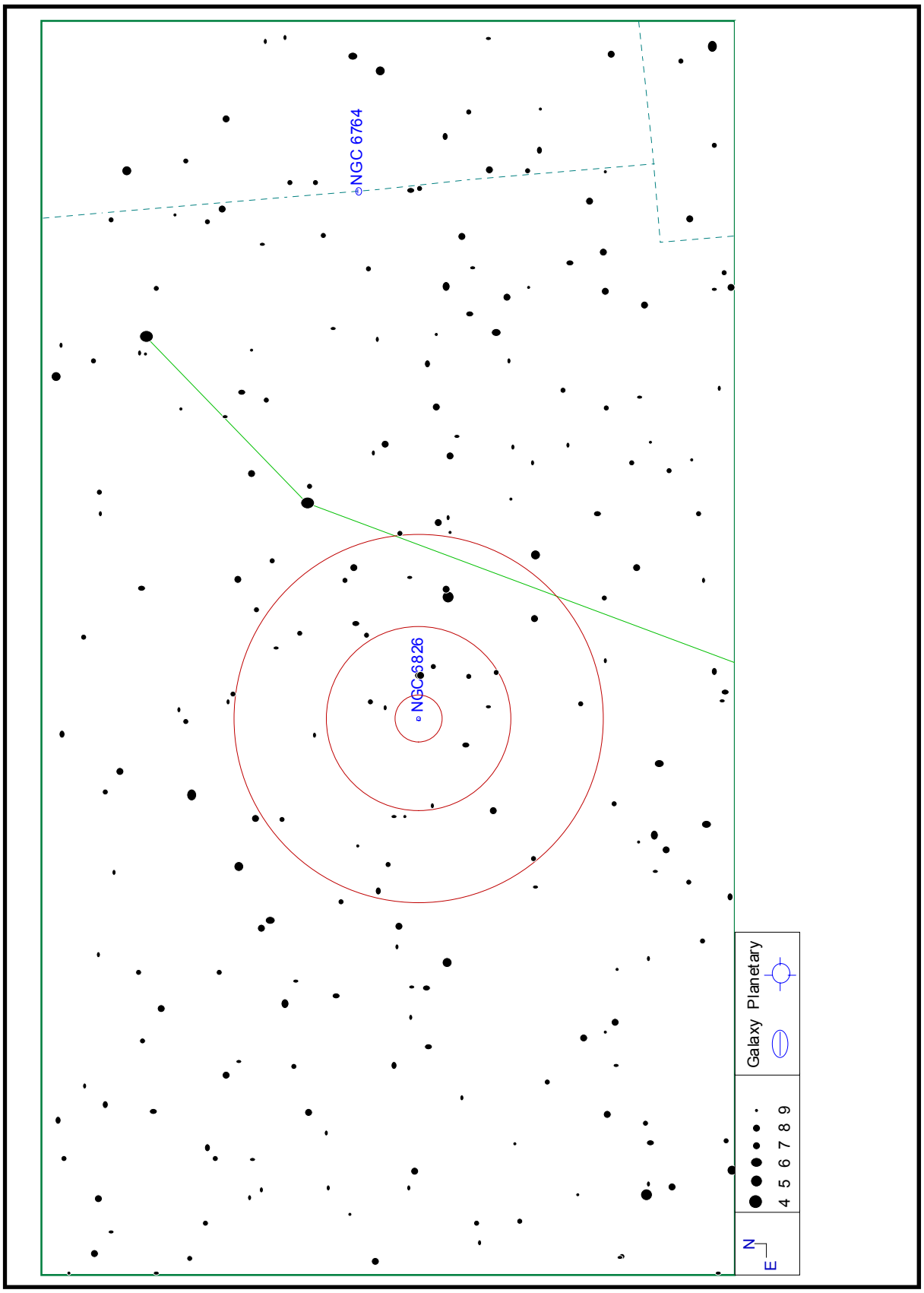
NGC 6826 (C 15) – Blinking Planetary — Planetary Nebula in Cygnus, Magnitude 9.8 (P) Central Star 10.4, and Size 38".

NGC 6826 is a wonderful example of a planetary nebula due to the amount of detail it presents. First of all, the name refers to the nature of human vision and not that of the nebula at all! The nebula appears to "blink" because it is dim. Human eyeballs have their least sensitive cells in the center of the fovea. Thus, staring at this object makes it appear to dim (or even disappear) whereas using averted vision makes the nebula look brighter. In a telescope this nebula glows a neon green with bright central star. For Visual observers, once you've found the nebula, switch from looking at it with straight vision to averted vision and back again. You should then understand why it is called the Blinking Planetary. By switching visions, it "blinks" from central star to planetary nebula. Note: in large apertures it does not work. It works great in an 8-inch telescope.

Star charts for finding the Blinking Planetary.






NGC 6764
NGC 6826
N
E
4 5 6 7 8 9
Galaxy Planetary

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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August Meeting Agenda

August 12th, 7:30 p.m., Center for Advanced Space Studies/ Lunar Planetary Institute, 3600 Bay Area Blvd. (at Middlebrook Drive).

- Welcome!!!
- Guest Speaker: General Howell, the Center Director for JSC. Topic to be announced
- Break
- SIG reports, Star Party News
- Astronomical Oddities — Hernan Contreras
- Last Words, Door Prizes

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

Starscan Submission Procedures

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

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

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

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

Starscan Staff

Editor	Ken Lester
Associate Editors	Sheila Steele
	Ken Steele

Cover Image
Comet Tempel 1
Credit: NASA/JPL-Caltech/UMD

This spectacular image of comet Tempel 1 was taken 67 seconds after it obliterated Deep Impact's impactor spacecraft. The image was taken by the high-resolution camera on the mission's flyby craft. Scattered light from the collision saturated the camera's detector, creating the bright splash seen here. Linear spokes of light radiate away from the impact site, while reflected sunlight illuminates most of the comet surface. The image reveals topographic features, including ridges, scalloped edges and possibly impact craters formed long ago.