



The Crab Nebula from VLT
Credit: FORS Team, 8.2-meter VLT, ESO

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★ STARS & SCOPES ★
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The Newsletter of the Rocky Mountain Astronomy Club (RMAC)
Due to some problems the website is not available at this time.
Editor not responsible for errors, misprints, etc.

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Picture top left courtesy of : <http://antwrp.gsfc.nasa.gov/apod/archivepic.html>
Picture top left : Crab Nebula from VLT
Credit & Copyright: FORS Team, 8.2 meter VLT, ESO

Welcome and greetings from the RMAC Board & Editor.

-- NOTICE ---New Building & Room ---

Regular RMAC Meetings will now meet in the Physics/Math Building, (directly west of the Technology Building (old meeting room's building)) **Meeting will be in rm #126 for Monday's meeting.**

The RMAC Annual Meeting will be in September and the election of club officers. All RMAC Board positions are open. *Please note that Phil Brown and Bob Adams will not run for any board position, since they have work conflicts.* A Board position usually involves about 1 hour a month and this is before the Regular RMAC Meeting. At the end of the newsletter will be a ballot. Please bring the ballot to the September, 13, 2004 RMAC meeting or send it to me the editor, either by e-mail or US Post, before the 09/13/04 meeting.

Upcoming RMAC Events
Club Star Watch
Sept. 18th So. Fishing Area
Oct. 16th, Nov. 13th
To be determined.
Public Star Watch
Sept. 11th, Oct. 09th,
Nov. 06th, Dec. 11th
At the Raptor Center &
CSUP Observatory.

Science News, Vol. 166, #8, 08/21/04 article title: "3-D solar eruptions" By R. Cowen
Solar eruptions known as coronal mass ejections (CMEs) can disrupt radio communications, satellite links, and power systems. To better gauge the angle at which CMEs emerge from the sun and predict their arrival time at Earth, NASA plans to launch in 2006 a pair of spacecraft called S'T'EREO (Solar-Terrestrial Relations Observatory). By examining CMEs from two angles, the twin craft will record the three-dimensional structure of these eruptions. But two researchers, using data from a single craft already in orbit, have already accomplished this feat.

In the July 2 Science, Joseph M. Davila of the Catholic University of America in Washington, D.C., and Thomas G. Moran of NASA's Goddard Space Flight Center in Greenbelt, Md., describe their method, which compares several two-dimensional images of an eruption recorded by the Solar and Heliospheric Observatory through a polarizing filter.

Although light from the sun isn't polarized, it becomes so when photons bounce off electrons in various parts of a CME. CME structures polarize more light the greater their angle from the line of sight between Earth and the sun. Measuring the ratio of polarized to unpolarized light for each part of a CME therefore provides the missing third dimension by giving the distance of that component from Earth.

With the technique, the team has confirmed that CMEs directed toward Earth take the shape of an expanding series of loops.

CSUP Observatory Open House

Open house will continue on Tuesdays nights.
About 1 hour after sunset.
Directions: Take Pueblo Blvd. to 11th street. Turn west on to 11th street. About 0.6 mile & at the top of the hill turn left into the Raptor Center Parking lot.
At the end there is a trail leading up to the Observatory. Please take a flashlight with you.
The observatory is run by volunteers & they may not be there always on time. Please be patient. The Observatory will not open during high winds (over 20 mph), rain, overcast, & snow.

Celestial Events

October 28, 2004
Total Lunar Eclipse, this event will have good viewing for N. America.

Regional Star Parties

Okie-Tex Star Party
Kenton, Oklahoma 10/10-17/2004
www.okie-tex.com/header.html
Enchanted Skies Star Party
Socorro, NM 10/5-9/2004
www.socorro-nm.com/starparty

Science News, Vol. 166, #8,08/21/04 article title: "Cassini finds two new moons and lightning" By R. Cowen

An analysis of images taken by Cassini in early June, several weeks before the craft settled into orbit about Saturn, has revealed two tiny moons orbiting the ringed planet. Size estimates suggest that the orbs are the smallest ever found around Saturn. Earlier this month, other scientists described short-lived storms in Saturn's atmosphere.

The newly detected moons, each of which takes about a day to orbit Saturn, lie between the paths of two larger satellites, Mimas and Enceladus. One of the new moons, dubbed S/2004 S1, was measured at 194,000 kilometers from Saturn's center and has an estimated diameter of 3 km. It may be the same object spotted in a single image taken by one of the Voyager space-craft in 1981. The second body, referred to as S/2004 S2, lies 211,000 km from Saturn's center and has a diameter of about 4 km.

The moons provide new evidence that the Kuiper belt, a reservoir of icy bodies at the solar system's outer edge, might not have quite as many small, house-size comets as planetary scientists have assumed, Cassini imagines team leader Carolyn Porco says. Small Kuiper belt comets whiz past Saturn at speeds several times as fast as that of a bullet. If such comets were common, some probably would have collided with Saturn's small moons, breaking the satellites into bits too small for Cassini to detect, says Cassini imaging-team member Luke Dones of the Southwest Research Institute in Boulder.

The suggestion that the Kuiper belt may have a lower-than-expected number of small comets dovetails with a finding about Jupiter's moon Europa made by the Galileo spacecraft several years ago, Dones notes. Galileo observed that Europa has few craters that are small, an indication that few small comets have pummeled its surface over the past 50 million years or so.

During a teleconference with reporters on Aug. 5, researchers announced that Cassini had detected bursts of radio waves generated by lightning. The intensity of the bursts varied greatly from day to day, indicating that they had come from several different short-lived storms at mid to high latitudes, says Cassini researcher Bill Kurth of the University of Iowa in Iowa City.

That's in contrast to findings from Voyager, which observed long-lived storm systems at low latitudes in the early 1980s. The difference may be traced to changes in the shadow cast by Saturn's rings. Two decades ago, the rings cast a shadow near Saturn's equator, so the cold, shaded part of Saturn's atmosphere resided next to the hottest part. Turbulence between the hot and cold parts could have led to long-lived storms.

Cassini finds a different set of conditions. Summer reigns in Saturn's southern hemisphere and the rings have cast a broad shadow over Saturn's northern hemisphere. In this configuration, hot and cold regions in the planet's atmosphere are much farther apart, and long-lived storms may be less likely.

Science News, Vol. 166, #7,08/14/04, article title: "The sound of rings" By R. Cowen

Arriving at Saturn on June 30, the Cassini spacecraft sped through a 24,730-kilometer gap in the giant planet's rings. Three hours later, it crossed back in the other direction. These pin-point crossings helped shape the craft's orbit about Saturn.

The ring gap that Cassini traversed isn't entirely empty. It contains bits of dust, which Cassini plowed into at a speed of roughly 20 km per second. The smoke-size dust particles did no harm to the craft, which encountered about 100,000 hits in less than 5 minutes during each of the ring crossings, Cassini investigator Donald A. Gurnett of the University of Iowa announced July 9.

He and his colleagues could determine this number because whenever a dust particle strikes Cassini, the impact produces a puff of ionized gas. An instrument counted as many as 680 of these puffs in a single second during the crossings. Gurnett's team converted these hits into audible sounds, which "resemble hail hitting a tin roof," he says.

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Binocular & Small Telescope
Objects
Late Summer
M 11, 26 in Scutum
M 16 in Serpens
M 08, 17, 18, 20, 21, 22, 23,
24, 25, 28, 54, 55, 69, 70, 75
in Sagittarius

Science News, Vol. 166, #6,08/07/04 article title: **"A little bit of Mars on Earth"**
By R. Cowen

Sending rovers on a 500-million-kilometer journey to explore the Martian landscape isn't the only way to uncover the history of the Red Planet. Chunks of rock that have been chipped from Mars by ancient impacts and then pulled to Earth by our planet's gravity provide planetary scientists with rare and inexpensive opportunities to investigate the Red Planet's past. To date, researchers have studied about 24 martian meteorites.

The latest addition to this exclusive club was uncovered on Dec. 15, 2003, on an ice field in the Transantarctic Mountains, about 750 kilometers from the Smith Pole. Designated MIL03346, the 715.2-gram black rock has the mineral composition, texture, and isotope content of rocks from Mars, say scientists at the Smithsonian Institution's National Museum of Natural History in Washington, D.C. Details of the find have been posted on a special online edition of the Antarctic Meteorite Newsletter (<http://curator.jsc.nasa.gov/curator/antmet/amm/amm.htm>).

The new specimen is the seventh known member of a group of martian meteorites called the nakhlites, which scientists propose originated within thick lava flows that solidified on Mars some 1.3 billion years ago.

Science News, Vol. 166, #9,08/28/04 article title: **"Martian ice could be sculpting surface patterns"** By R. Cowen

Images taken by the Mars Global Surveyor, now orbiting the Red Planet, suggest that most areas with geological features known as patterned ground appear at high latitudes, the same regions where large quantities of ice may lie just under the planet's surface.

At hundreds of Martian sites, the landscape is covered with mosaics of polygons, each of which measures between 30 and 200 meters across. Some areas of patterned ground are heavily cratered or eroded, which probably indicates their great age. Most large areas of more intact patterned ground are located at latitudes above 55°, says William C. Feldman of the Los Alamos (N.M.) National Laboratory.

On Earth, patterned ground is formed by cycles of freezing and thawing in water-soaked soil or by the repeated expansion and contraction of subterranean ice. The patterned ground on Mars appears in regions where orbiting instruments have previously detected high concentrations of hydrogen, which scientists propose is locked in water ice in the topmost layer of soil.

Science News, Vol. 166, #8,08/21/04 article title: **"Meteorites quickly reach Earth"** By S.P.

Fragments from collisions between large bodies in the asteroid belt, which lies between the orbits of Mars and Jupiter, can reach Earth in as little as 100,000 years, chemical analyses of such material suggest.

Continued on page 4.

— Directions —
— RMAC Meetings —
Take Hwy. 47 to CSUP, Pueblo, CO. In the Math & Physics building, room #126 at 6:00 pm for Board meetings and 7:00 pm for club meetings. The Math & Physics building is to the west of the radio station.

— Raptor Center —
Directions: Take Pueblo Blvd. to 11th street. Turn west on to 11th street. About 0.6 mile & at the top of the hill turn left into the Raptor Center Parking lot.

Please take a flashlight with you.
— So. Fishing Area —
From Pueblo Blvd., turn west on Hwy. 96 (toward Wetmore) and travel about 10.6 miles. Sign lake pueblo state park on right Make a right turn. Stay on the paved road for 1.6 miles and take it till it ends.

— Graneros Gorge —
From Pueblo, take I25 south to exit 71 Graneros Road. (Next exit past Colo. City.) Go over interstate & make left (north) on the frontage road. Pavement ends, make right over cattle guard onto dirt (&bumpy) road stay right, go 1 mile, road ends in a cul-de-sac.

Observing Request
If anyone is interested in trying some astrophotography or would just like to get out and do some viewing, please contact Klaus Priebe at 719-240-0020 or e-mail me at kpphoto7@hotmail.com. Thanks! Klaus

"Meteorites quickly reach Earth" Continued from page 3.

Excavations at a quarry in southern Sweden have yielded more than 50 meteorites. Those stones fell into a shallow sea about 480 million years ago, when the carbonate-rich sediments that eventually became limestone were accumulating, says Rainer Wieler, an astrochemist at the Swiss Federal Institute of Technology in Zurich. Chemical analyses of chromite mineral grains from nine of the meteorites, found at various levels in the quarry, mark the stones as pieces of a single extraterrestrial body, says Wider.

The chromite grains' concentrations of neon-21, an isotope produced when cosmic rays strike minerals, provides a measure of how long the meteorites traveled through space after the collision of asteroids that most likely produced them. Space rocks found highest in the limestone strata fell to Earth about 1.2 million years after the purported collision. The lowest-lying meteorites in the quarry reached our planet earlier, between 100,000 and 200,000 years after the impact.

Science News, Vol. 166, #8, 08/21/04 article title: "One of Hubble's Tools Fails: Observatory loses a sharp ultraviolet eye" By R. Cowen

On Aug. 3, a malfunction—possibly a short circuit—developed in a 5-volt power supply that drives moving parts in the observatory's Space Telescope Imaging Spectrograph (STIS). That device's only other power supply had stopped working in 2001. Any hope of reviving the instrument would require a repair mission to the telescope.

The other three scientific instruments on Hubble remain healthy. These include a recently revived near-infrared camera and the Advanced Camera for Surveys, which records both ultra-sharp visible-light images and low-resolution spectra at visible light and near-ultraviolet wavelengths. The fourth instrument takes images in visible light.

NASA is now considering whether it could fix STIS as part of a proposed robotic mission to repair and upgrade Hubble some 3 years from now. The agency's decision will depend on the determination of exactly what went wrong with the power supply and whether the robotic system now under study could handle the repair.

The planned mission would include installation of the Cosmic Origins Spectrograph, which can take ultraviolet spectra of fainter objects than STIS can but doesn't have as high a resolution.

Installed by astronauts during a Hubble servicing mission in 1997, STIS lasted 2.5 years beyond the 5-year lifetime for which it had been designed. The instrument had contributed about 30 percent of all Hubble observations. Like a prism, STIS separated light into its component colors, and it then recorded the intensity of wave-lengths ranging from the near-ultraviolet to the near-infrared. It also took images in both ultraviolet and visible light.

STIS could simultaneously sample some 500 points of light. This enabled the instrument to take a rapid census of super-massive black holes at the centers of galaxies by measuring the telltale velocities of a string of stars on either side of the hole. That same capability enabled STIS to study extended objects, such as the disks around young stars. Those disks have the potential to form planets.

In 1999, a team including David Charbonneau, who is now at Harvard University, used STIS to detect the atmosphere of a planet beyond the solar system and reveal the atmosphere's composition. No other instrument has accomplished this feat.

RMAC Board Highlights

The August 2004, RMAC Board meeting did business as usual.

As usual, the Public Star Watches will be at the Raptor Center Parking Lot and at the CSUP Observatory. Start time at least an hour after sunset. Viewing gets better after the twilight.

The next Club Star Watch will be at the South Fishing Area at the Pueblo Reservoir on September 18th.

The program for September 13, 2004 is "Evolving Concepts of Time From Malicious Gods to the Atomic Clock" by Howard Hayden. This program looks at the way time is generally viewed through out the ages, and at different time periods of during history.

The October 11th, 2004 program will be about taking astrophotography by Klaus Priebe. A must see program for anyone who wants to take photographs of celestial objects.

A Call for Newsletter Submissions

If you would like to contribute an article, observing report, astro-photo, etc. to be published in the Stars and Scopes Newsletter, then submit them to Michael Verry, 1580 N. Cheshire Dr., Pueblo West CO 81007 or e-mail them to rmaceditor1@juno.com.

When sending photos, please send them in JPG format and as large as possible. Please note that I can scan photographs, negatives and slides. I can return your photo/slide/negative at a RMAC meeting or event or contact me & we can work something out. If you would like to see something in the newsletter or would something changed, submit your request.



Here are two more astrophotographs by Klaus Priebe.

PLANET & OTHER OBJECT HIGHLIGHTS. *(Information from Astronomy Magazine)*

Neptune lies south in Capricornus, around 11 PM you can see it and shines at a mag of 7.8. Uranus resides in central Aquarius, near the star Sigma Aquarii, shines at a mag of 5.7 and can be viewed the same time as Neptune. Venus is 62% lit and can be viewed in the early AM. Saturn is in Gemini, south of Castor & Pollux. You can view Saturn in the AM and by the end of the month Saturn will rise about an hour after midnight. Mercury reaches greatest elongation on 09/09/04 and will have a mag of 0.0. Mercury starts rising from 08/29/04 to 09/26/04. Mars and Jupiter can not be seen this month as they pass behind the sun. Jupiter returns to the skies in October and Mars returns to the skies in November.

A minor meteor shower, the Delta Aurigids will remain active most of the month. Comet C/2001 Q4 (NEAT) continues to sail across the back of Draco the Dragon. Comet C/2003 K4 (LINEAR) is around 6th mag and is to the lower left of 3rd mag Epsilon Virginis, which lies below the bright orange star Arcturus in the western sky.

News release from NASA about the Genesis Canister. Also note that the Stardust project, (collected comet particles) has the same parachutes as the Genesis. We should know the fate of the Stardust mission in about 18 months. Cross your fingers.

Donald Savage Sept. 10, 2004 Headquarters, Washington
DC Agie Jet Propulsion Laboratory. Pasadena, Calif.

RELEASE : 04-296

Genesis Scientists Bouncing Back From Hard Landing

Scientists who conducted the preliminary assessment of the Genesis canister are encouraged by what they see. They believe it may be possible to achieve the most important portions of their science objectives.

"We are pleased and encouraged by the preliminary inspection," said NASA Administrator Sean O'Keefe. "The outstanding design and sturdy construction of Genesis may yield the important scientific results we hoped for from the mission," he said.

"I want to emphasize the excellent work by the navigation team to bring the capsule back exactly on target was key in our ability to recover the science," said Andrew Dantzler, Director of the Solar System Division at NASA Headquarters, Washington. In addition, the robustness of the design of the spacecraft was the reason it could take such a hard landing and still give us a chance to recover the samples," he said.

The mission's main priority is to measure oxygen isotopes to determine which of several theories is correct regarding the role of oxygen in the formation of the solar system. Scientists hope to determine this with isotopes collected in the four target segments of the solar wind concentrator carried by the Genesis spacecraft.

"From our initial look, we can see that two of the four concentrator segments are in place, and all four may be intact," Wens said. The mission's second priority is to analyze nitrogen isotopes that will help understand how the atmospheres of the planets in our solar system evolved. "These isotopes will be analyzed using gold foil, which we have also found intact," Wiens said.

Other samples of solar winds are contained on hexagonal wafers. It appears these are all or nearly all broken, but sizable pieces will be recovered, and some are still mounted in their holders. "We won't really know how many can be recovered for some time, but we are far more hopeful important science can be conducted than we were on Wednesday," Wiens said.

Another type of collector material, foils contained on the canister's lid, were designed to collect other isotopes in the solar wind. It appears approximately three-fourths of these are recoverable, according to Dr. Dave Lindstrom, Mission Program Scientist at NASA Headquarters. However, these foils have been exposed to elements of the Utah desert.

The Genesis sample return capsule landed well within the projected ellipse path in the Utah Test & Training Range on Sept. 8, but its parachutes did not open. It impacted the ground at nearly 200 mph. NASA's Jet Propulsion Laboratory, a division of the California Institute of Technology in Pasadena, Calif., manages the Genesis mission for the agency's Science Mission Directorate. Lockheed Martin Space Systems, Denver, developed and operated the spacecraft.

News and information about Genesis is available on the Internet at: <http://www.nasa.gov/genesis> For background information about Genesis, visit:

<http://genesismission.jpl.nasa.gov> For information about NASA on the Internet, visit:

<http://www.nasa.gov>

**Rocky Mountain Astronomy Club (RMAC)
Absentee Ballot For 2005 Executive Board Officers**

Please note that Phil Brown and Bob Adams will not run for any board position, since they have work conflicts.

President :

Bill Brown _____

Write in _____

Vice President :

Klaus Priebe _____

Write in _____

Secretary :

Doug Knight _____

Write in _____

Treasurer :

Walter Russell _____

Write in _____

Member-at-Large :

Michael Verry _____

Write in _____

Thank You.

All Absentee Ballots must be received before September 13th, 2004 RMAC Regular Membership Meeting.

Please send printed Absentee Ballot to:

Michael Verry
1580 N. Cheshire Drive
Pueblo West CO 81007-3425

Or send e-mail Absentee Ballot to:

e-mail : rmacboardmem5@juno.com

Please note that I will check my e-mail before I go to the RMAC Executive Board Meeting, (which starts at 6:00.) I will leave approximately around 5:30 PM, 09/13/04.