



Club News

July, 2003

John Kocijanski, Editor

Jim McKeegan,	President
John Kocijanski,	Vice President
Brian Deis,	Secretary
Bud Wertheim,	Treasurer

Catskills Astronomy Club News

7/1/03

Club News:

The June 7th observation session was held on June 6th due to poor weather predicted for the 7th. The sky conditions on the 6th were poor but a break in the clouds allowed some observing to be done. Five people attended the session. Jupiter and the first crescent moon were observed through the clouds. As the sky cleared a bit a few globular clusters such as M13 and M92 were observed. The Ring Nebula was also seen. Some double stars were also observed. Albireo, Mizar, and Cor Caroli were viewed. The clouds soon rolled in and the session was ended.

The June 28th observation session was held as well. The sky conditions were very clear at times but passing clouds hindered viewing. A total thirteen people attended. There a number of large aperture telescopes present including a Meade 16 " dobsonian, Meade 10" SCT, Meade 12" SCT, Celestron 14" SCT, and two 12.5 Starmaster dobsonians. There were also three 8" SCTs present. The evening started but viewing Juptier and its four large moons through passing clouds. A number of globular clusters were viewed including M80, M5, M13, and M92. Bill Browning of Brooklyn provided a great view of M80 through his 16" Meade dobsonian. Some of the stars around the edge of the cluster were easily resolved by the big scope. Geoffery Ginos of Brooklyn provided a beautiful view of M13 through his binocular viewer mounted on a Starmaster 12.5 " dobsonian. The planetary nebulae M57 and M27 were also observed. Some of the participants decided to stay late to view Mars. The pictures below show some of the telescopes being set up before sunset.



The observation sessions for July are on the 5th and 26th.
The makeup date is July 19th.

**** I need some input with the next two items. I'm running out of material. - John****

Anyone interested in submitting an astronomical observation or photograph for the newsletter, please contact John at kocis@catskill.net.

Each month the photo section of our newsletter will highlight the telescopes and equipment of club members. If you have a photo of your scope or equipment and a brief description of it that you would like to contribute please send it to John at kocis@catskill.net.

The club has selection of astronomy books, Stardate audio CDs, a Macintosh computer with astronomy software, and a Meade eight inch reflector for members to borrow. Please contact John at 791-5240 or kocis@catskill.net if you are interested in borrowing any of these.

Astronomy News:

Here are some articles from various sources that might be of interest.

From: "HST NEWS RELEASES" <hst-news@stsci.edu

To: <public@stsci.edu

Sent: Thursday, June 05, 2003 9:02 AM

Subject: SUPERNOVA SHOCK WAVE PAINTS COSMIC PORTRAIT

(STScI-PRC03-16-Heritage)

FOR RELEASE: June 5, 2003

PHOTO NO.: STScI-PRC03-16

SUPERNOVA SHOCK WAVE PAINTS COSMIC PORTRAIT

Remnants from a star that exploded thousands of years ago created a celestial abstract portrait, as captured in this NASA Hubble Space Telescope image of the Pencil Nebula. Officially known as NGC 2736, the Pencil Nebula is part of the huge Vela supernova remnant, located in the southern constellation Vela. Discovered by Sir John Herschel in the 1840s, the nebula's linear appearance triggered its popular

name. The nebula's shape suggests that it is part of the supernova shock wave that recently encountered a region of dense gas. It is this interaction that causes the nebula to glow, appearing like a rippled sheet.

The Hubble Heritage Team used the Advanced Camera for Surveys in October 2002 to observe the nebula. The region of the Pencil Nebula captured in this image is about three fourths of a light-year across. The Vela supernova remnant is 114 light-years (35 parsecs) across. The remnant is about 815 light-years (250 parsecs) away from our solar system.

Image Credit: NASA and The Hubble Heritage Team (STScI/AURA) Acknowledgment: W. Blair (JHU) and D. Malin (David Malin Images)

To see and read more about the Pencil Nebula, please click on

<http://hubblesite.org/news/2003/16>

<http://heritage.stsci.edu/2003/16>

<http://www.gsfc.nasa.gov/news-release/releases/2003/03-65.htm>

Bill Steigerwald June 10, 2003
NASA Goddard Space Flight Center
(301) 286-5017

Release 03-65

HEADLESS COMETS SURVIVE PLUNGE THROUGH SUN'S ATMOSPHERE

A run through the jungle is too easy; for the ultimate reality show contest, try a race through the Sun's atmosphere, where two comets recently lost their heads. The tails from a pair of comets survived a close encounter with the Sun, even

after the Sun's intense heat and radiation vaporized their heads (nuclei and coma), an extremely rare event photographed by the Solar and Heliospheric Observatory (SOHO) spacecraft.

On May 24, 2003, a pair of comets arced in tandem towards the Sun, their paths taking them to just 0.1 solar radii above the Sun's surface, deep within the searing multimillion-degree solar atmosphere (corona).

They belong to the Kreutz family of sun-grazing comets, often seen by the SOHO spacecraft while diving towards their final rendezvous with the Sun. But as in humans, twins are rare. Even more so, this pair showed another very unusual trait: What looks like a faint tail (or "puff of smoke") can be seen moving away from the Sun, seemingly emanating from a point in the orbit beyond the comet's closest approach. Normally, sungrazers simply fade and disappear at an earlier stage, obliterated by the Sun's intense heat and radiation pressure.

Another pair of Kreutz sungrazers with such a "headless tail" was observed in June 1998, when the observing geometry was very similar. But out of more than 600 sungrazing comets observed during more than six years by SOHO, this is only the third showing any signs of such behavior. However, this seems now likely to confirm the existence of such comets.

"Everyone who's seen this agrees it's a very interesting observation," said Dr. Douglas Biesecker, a solar researcher at the National Oceanic and Atmospheric Administration's Space Environment Center in Boulder, Colorado, and the head of SOHO's comet discovery program. SOHO has become the most prolific comet finder in history.

The tail is most likely the dusty remains of the comet's

nucleus, being pushed out by sunlight (radiation pressure) after all the ice in the nucleus has evaporated, thus eliminating the processes maintaining a bright coma surrounding the nucleus. Studies of the dust cloud may reveal clues to the size distribution of the dust grains.

"The fact that the tail 'holds together' so well probably means that the dust is mostly the same size," said Biesecker.

Comets are chunks of ice and dust that zoom around the solar system in elongated orbits. This "dirty snowball" is the nucleus of the comet; it ranges in size from a large boulder to a large city. As the comet gets close to the Sun, solar heat and light liberate gas and dust from the nucleus, forming the coma, which is an extensive, bright cloud around the nucleus, and one or more tails. A comet's dust tail can be millions of miles (kilometers) long and is pushed away from the Sun by sunlight. Comets also have a tail of electrically charged particles (ions) that is usually fainter and is pushed away from the Sun by the solar wind, a thin stream of electrified gas that blows constantly from the Sun. Both tails point away from the Sun, even for comets that are traveling back outwards in the solar system. Studies of the tails can reveal changes in solar wind structure and radiance of the Sun.

SOHO is a project of international cooperation between the European Space Agency and NASA. For images and movies of this event, refer to:

<http://soho.nascom.nasa.gov/pickoftheweek/old/27may2003/>

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Guy Webster (818) 354-0880
Nancy Lovato (818) 354-9382
Jet Propulsion Laboratory, Pasadena, Calif.

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

News release: 2003-089 June 20, 2003

Mars Rover Spirit Mission Status

NASA's Spirit spacecraft, the first of twin Mars Exploration Rovers, performed its first trajectory correction maneuver today.

Following commands from the Mars Exploration Rover flight team at NASA's Jet Propulsion Laboratory, Pasadena, Calif., the spacecraft first performed a calibration and check of its eight thrusters, then fired the thrusters to fine-tune its flight path toward Mars.

The main burn had two components. Thrusters that accelerate the rotating spacecraft along the direction of the rotation axis burned steadily for about 28 minutes. Then, thrusters that accelerate the spacecraft in a direction perpendicular to the rotation axis fired in pulses timed to the spacecraft's rotation rate — with 264 pulses totaling about 22 minutes of burn time. The total maneuver increased Spirit's speed by 14.3 meters per second (32 miles per hour).

At the end of the trajectory correction, Spirit performed an attitude turn that adjusted its orientation in space to maintain the optimal combination of facing its solar array toward the Sun and pointing its low-gain antenna toward Earth. The spacecraft's next trajectory correction maneuver is scheduled for Aug. 1 and its next attitude turn for July 22.

All systems on the spacecraft are in good health. As of today at 6 a.m. Pacific Daylight Time, Spirit had traveled 27,390,000 kilometers (17,020,000 miles) since launch on June 10, and was at a distance of 2,660,000 kilometers (1,653,000 miles) from Earth. It was traveling at a speed of

32.22 kilometers per second (72,100 miles per hour) relative to the Sun. Spirit will arrive at Mars on Jan. 4, 2004, Universal Time (evening of Jan. 3, 2004, Eastern and Pacific times). The rover will examine its landing area in Mars' Gusev Crater for geological evidence about the history of water on Mars.

Spirit's twin, Opportunity, is being prepared at Cape Canaveral Air Force Station, Florida, for a first launch opportunity at 12:27:31 a.m. June 26, Eastern Daylight Time (9:27:31 p.m. June 25, PDT).

JPL, a division of the California Institute of Technology, manages the Mars Exploration Rover project for NASA's Office of Space Science, Washington, D.C. Additional information about the project is available from JPL at <http://mars.jpl.nasa.gov/mer> and from Cornell University, Ithaca, N.Y., at <http://athena.cornell.edu> .

-end-

<http://www.llnl.gov/llnl/06news/NewsReleases/2003/NR-03-06-02.html>

Lawrence Livermore National Laboratory News Release

Contact: Anne Stark FOR IMMEDIATE RELEASE

Phone: (925) 422-9799 June 5, 2003

E-mail:stark8@llnl.gov NR-03-06-02

Astrophysicists Simulate Comet X-Ray Emissions In Laboratory

LIVERMORE, Calif. - Physicists from the Lawrence Livermore National Laboratory have produced X-ray emissions in a laboratory setting by recreating the conditions that exist when solar winds collide with gases surrounding comets. Using the electron beam ion trap

facility located at Livermore Laboratory, physicists Peter Beiersdorfer, Hui Chen and Mark May created charge exchange between heavy ions to produce X-ray emissions, similar to what happens when solar wind and gases collide in a comet.

In collaboration with researchers from NASA Goddard Space Flight Center, Columbia University Department of Physics and the University of Missouri-Rolla Department of Physics, the team will present "Laboratory Simulation of Charge Exchange-Produced X-ray Emission From Comets" in the June 6 edition of Science.

The researchers studied charge exchange-induced cometary X-ray emissions by installing the spare X-ray microcalorimeter spectrometer (XRS) from the ASTRO-E satellite mission onto Livermore's existing electron beam ion trap. The XRS was designed to view distant objects such as supernova remnants with a higher spectral resolution than is available at the Chandra X-ray Observatory.

Beiersdorfer said that cometary X-rays can serve as a diagnostic for solar activity and hence "space weather" by measuring the quantity and composition of the heavy ion flux in solar wind. In addition, recent work has shown that emissions can be a potential tool to gauge the speed of the solar wind.

"Because comets enter the solar system from different directions in and out of the ecliptic, they probe regions that are not covered by spacecraft," he said.

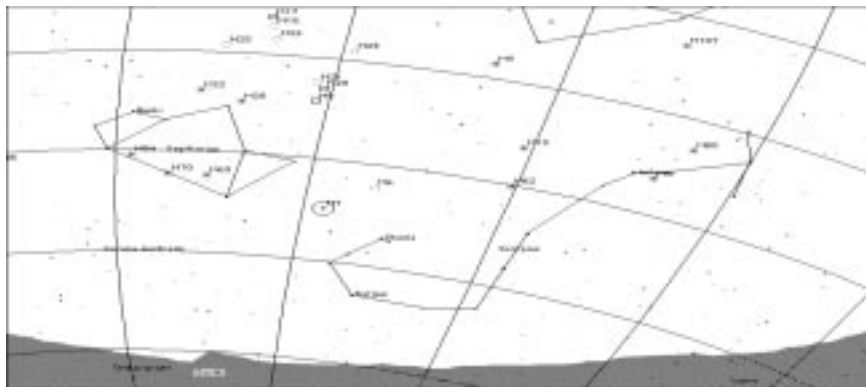
Cometary X-ray emissions form when a continuous stream of charged heavy ions in the solar wind collide with the gases surrounding the nucleus of a comet.. The collision is believed to neutralize the solar wind ions and induce them to give off X-rays characteristic of the ions and gases involved in the collision.

Actual X-ray emissions have been observed at the Chandra X-ray Observatory. In the Livermore experiments, the Goddard microcalorimeter recorded X-ray data that explained the emission seen from comets in the solar system.

"Next to the Sun, the process we demonstrated here at Livermore makes comets the strongest X-ray emitters in the solar system," Beiersdorfer said.

Middle Evening Observing Highlights for July

The brighter stars in the sky are Antares, Arcturus, Spica, Vega, Deneb, and Altair. Antares is in the southern sky in the constellation Scorpius. It has an orange. The globular cluster M4 can be found just to the west of it. Spica is in the western part of the sky in the constellation Virgo. Arcturus is in the western sky in the constellation Bootes but it is higher in the sky than Spica. Arcturus has a "ginger ale" tint. Vega, Deneb, and Altair are in the eastern sky. They form the asterism known as the Summer Triangle. Vega is in the constellation Lyra. Deneb is in the constellation Cygnus (the Northern Cross). Altair is in the constellation Aquilla. The Keystone of the constellation Hercules is almost directly overhead (in the zenith). In the middle of the western side of the Keystone the globular cluster M13 can be seen. In the southeastern sky the constellation Sagittarius can be seen. It has a "teapot" shape. The Lagoon Nebula (M8) can be found to the north-west of the "teapot". The globular cluster M22 can be found just to the east of the top of the teapot. The center of our galaxy is located near Sagittarius. The plane of our galaxy (the Milky Way) stretches from the south to the north across the sky. Full moon is on July 13th and new moon is on July 29th. The chart below shows the middle evening southern sky.



Observations and Photographs

The picture below was taken by John Kocijanski using a Pentax K1000 with a 100mm telephoto lens piggybacked on a Celestron SPC-8. It shows the North American Nebula in Cygnus.



Member's Telescopes and Equipment

John Kocijanski recently purchased a Stellarvue AT1010 Nighthawk short tube 80mm f/6 refractor. It has a focal length of 480mm and weighs about 6 ½ pounds. It has a retractable dewcap to help make its minimal tube length 16 ½ inches. It

gives sharp views of the sun, moon, Jupiter, and double stars. It is shown here with a bader solar filter.



BARLOW BOB'S CORNER

Barlow Bob is a member of the Rockland Astronomy Club.

This story came from Audrey Salvatore of RAC.

Black God of Fire:

In the days before the stars were made, The Navajo gods of creation met in their Hogan to discuss how to make the world and what to put in it. Black God joined them after the others had arrived. Attached to his ankle he carried the small group of stars called the Dilyehe (dil-YEH-heh) (pleiades). Several of the other Gods noticed the stars and asked what they were. But The Black God said nothing, but wishing to display his power, he stamped his foot hard four times. Once for each direction: south, west, north, and east. With the first stamp, Dilyehe jumped to his knee. The second stamp they jumped to his hip, on the third one they went to his shoulder.

And on the fourth and final stamp, they went to his left temple. There it shall remain. Even today when Black God of Fire dances the small constellation is always painted on the left temple of his mask.

The other Gods asked Black God to fill the dark night sky with stars to make it beautiful. He took out a pouch that he always carried with him. Opening it, Black God took out a single bright crystal. He reached far out into the sky and carefully placed the first crystal precisely in the North. It became the North Fire, the star that never moves; next he picked out seven crystals and placed them near North Fire. This became Revolving Male (Big Dipper) because it circles the North Fire, After this he placed another set of stars on the opposite side and called them Revolving Female. (Cassiopeia)

Taking more crystals out of his pouch he placed them in each direction of the sky. Giving them all names. Then he made a copy of the Dilyehe on his temple and put them in the sky. Finally he lit up all the crystals, and sat down to admire his work. When along came Coyote, who was always looking for trouble. He said. What are you doing, you didn't ask my advice. The Black God told him to look at the sky and see what beautiful patterns he made. Before he could stop Coyote quickly reached the pouch and snatched it away. Here, let me help you. He said with a grin. Then he blew the remaining crystals across the sky. He scattered thousands of points of light in a disordered jumble. There they remain today. Only the patterns that Black God placed so carefully now have names. The ones Coyote scattered remain nameless, except for one tiny red crystal that he placed in the South. (Antares) But it is only seen in the summer, and when there is a full moon, you cannot see it at all. That is why the Coyote howls at the moon. The Navajos refer to this star as Coyote Star.

NASA Space Place

Monster Trucks on Mars

by Patrick L. Barry and Dr. Tony Phillips

We all know what Mars rovers look like now: Robotic platforms, bristling with scientific instruments, trundling along on small metallic wheels. Planetary rovers of the future, however, might look a little different-like miniature monster trucks!

Enormous, inflatable tires can easily roll right over the rocks and rugged terrain of alien planets, just as they bound over old cars like as many speed bumps.

That's the idea behind a novel concept for robotic planetary rovers known as the "big wheels inflatable rover." Unlike rovers similar to the Sojourner robot that explored the surface of Mars in 1997 that depend on instructions sent from Earth or complex programmed intelligence to steer through rough terrain, this rover has three beach ball-like tires roughly five feet across that make it a true off-road vehicle.

"We sent this rover out to Death Valley, to a place called Mars Hill that has a general geological formation like Mars, and nothing could stop it," says Jack Jones, the mastermind of the inflatable rover concept at JPL. "It just kept going and going and going."

Lots of current research is devoted to developing advanced robotic intelligence that allows rovers to detect rocks in their path and maneuver around them. The alternative to such on-the-spot intelligence is tedium: Ground controllers on Earth working out the maneuvers by hand and waiting an hour or more for the instructions to travel to the distant planet.

A "big wheels" rover would need such computer intelligence to avoid very large boulders, but Jones asks, "Why worry



about every little rock, pebble, and crack when you can just roll right over most of them?”

Jones imagines a scenario where multiple inflatable-wheel rovers could be sent out to explore the Martian terrain-easily and quickly traversing the rugged terrain. Samples gathered by the rovers could be returned to a central, stationary laboratory module for detailed analysis.

”The Martian surface is really very, very rough with a lot of rocks, and to be banging this laboratory equipment up and down over all of these rocks aboard the rovers doesn’t make much sense,” Jones says. “I suspect it might be better to leave it in a central location.”

At the moment it’s all very speculative; NASA currently has no definite plans to send inflatable rovers to Mars. But who knows, one day monster truck-like vehicles could be zipping over Mars’ rough, red surface.

Kids can baffle their friends with a robot puzzle (including a “Big Wheels” rover) they make themselves at http://spaceplace.nasa.gov/robots/robot_puzzle.htm . For adults, find out more about NASA’s inflatable rover program at http://www.jpl.nasa.gov/adv_tech/rovers/summary.htm .

This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.

Caption:

The “Big Wheels” inflatable rover doesn’t mind a few boulder-sized rocks, no matter what planet they’re on!

The dues are changed as shown below. Please snip off the voucher and return it as soon as possible. Thank you,

Bud Wertheim, Treasurer

We have been informed by the Astronomical League that to participate as a full member club. Every member of the club must be assessed three dollars and fifty cents (\$3.50).

The Executive Board has voted on this. The assessment is added in the new dues rate.

Please make out check to: Catskills Astronomy Club

Mail to: Bud Wertheim, Treasurer
143 Covered Bridge Road
Livingston Manor, NY 12758

[] Individual Membership.....\$28.50

[] Renewal Individual.....\$23.50

[] Family Membership..... \$33.50 .

[] Renewal Family.....\$28.50

Name_____

Address:_____

City_____ State_____ Zip_____

email: _____

Family members _____

(names)