



Club News

March, 2003

John Kocijanski, Editor

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

An observation session was held on February 8th at the Town of Thompson Park in Monticello. Despite the cold three members attended. We observed some open clusters, the Orion Nebula, and the double star cluster. Saturn and Jupiter were also observed. The highlight of the evening was observing Io move behind Jupiter. Below is a photo of the session.



On February 15th six members had dinner together at Brother Bruno's restaurant in Monticello. We met at 6:00 and stayed until after 8:00. The dinner and conversation were great. Hopefully we can do this again in the future and make it a regular club activity.

The Northeast Astronomy Forum will be held at Rockland County Community College on May 17th and 18th. Our club has been offered a free space for a table on the balcony for the show. Last year we went on Saturday. Anyone wishing to volunteer to man the table can contact John at kocis@catskill.net. The table worked out well for us last year and gave the club some exposure. We handed out observing schedules and newsletters.

A few members of the club have been discussing the possibility of having a public solar observation day on April 5th.

Since that was a date set for an evening observation session a later date in the month may work out better. April 19th may work out better. The session may be held at the Galleria Mall in Middletown. We would have to work on getting permission from the mall to do this.

Walnut Mountain Park is apparently snowed in for the time being. The town park officials say that their plow is unable to get into the park and it may not be plowed out until some of the snow melts. We do have permission to use the Town of Thompson Park in Monticello as a secondary observing site. Here are directions for the park from Rte. 17.

If you are coming west on 17 get off at exit 106. Make a left at the end of the ramp and stay on that road to going into Monticello. The road is Broadway. Go into town and through four lights. At the fifth light by St. Peter's Church make a right. Go out of town on this road. The turn for the park is about 4.1 miles from the church. On the left side of the road there is a sign for the park. At that sign make a left. Bear left and go all the way down hill. The park entrance will come up on the left. There is a parking lot on the left as you pull in.

If you are coming east on Rte. 17 get off at exit 104 (by the raceway) and go straight through the light at the end of the ramp. Stay on this road and go into town. Turn left at the light on Broadway and make a left at the next light at St. Peter's Church. Go out of town on this road. The turn for the park is about 4.1 miles from the church. On the left side of the road there is a sign for the park. At that sign make a left. Bear left and go all the way down hill. The park entrance will come up on the left. There is a parking lot on the left as you pull in.

The February observation sessions for the club on the 1st and 22nd canceled due to poor weather. The March observation sessions are scheduled for the 1st and the 29th. There is also a makeup session on the 8th.

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.

We have a new column that is starting this month on our newsletter from NASA called Space Place. Below is part of an email that describes their service.

Our NASA Space Place column is written by Dr. Tony Phillips especially for astro club newsletters. It is available free of charge to these clubs. We just ask that you use the column with the proper credit — either the oval NASA Space Place header (which we would send you if you sign up — or the words “NASA Space Place” as a title for the column.ive you a feel for the column, our latest column is below — minus the image — which we would send you — if you sign up. We try to do various different angles on space exploration — not just the straight solar system only stuff.

Our columns (and accompanying images) would be sent to you each month — usually the last week of the month.

The club has selection of astronomy books, Stardate audio CDs, a Macintosh computer with astronomy software, and a Meade 8 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:

Astronomy magazine has recently been redone. Starting with the March issue it has more in depth hobby and science coverage. It appears to be more in line with what Sky and Telescope offers. One article reviews finder scopes. In that article Howie Glatter’s Skypointer finder is featured. (Howie is a member of our club.) There is also a good article on what we can expect from Mars this summer. Overall the new format makes Astronomy magazine worth looking at.

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

>Date: Thu, 6 Feb 2003 21:10:19 -0500 (EST)

>From: NASANews@hq.nasa.gov

>Subject: NASA UPDATES COLUMBIA ACCIDENT INVESTIGATION

>Sender: owner-press-release@lists.hq.nasa.gov

>To: undisclosed-recipients::;

>

>Glenn Mahone/Robert Mirelson

>Headquarters, Washington Feb. 6, 2003

>(Phone: 202/358-1600)

>

>RELEASE: 03-057

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>NASA UPDATES COLUMBIA ACCIDENT INVESTIGATION

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> The independent board charged with determining what caused the destruction of the Space Shuttle Columbia, and the loss of seven astronauts, began work today at the Johnson Space Center, Houston. Recovery teams continued to search for debris.

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>Under the leadership of retired Navy admiral Harold Gehman, Jr., the Columbia Accident Investigation Board received a briefing from Shuttle Program Manager Ron Dittmore. The board began the process of gathering material collected so far since Columbia's breakup during reentry just 16 minutes before landing on Feb 1.

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>NASA Administrator Sean O'Keefe reaffirmed the Board will act as a "totally independent entity in assessing all of the factors" associated with Columbia's loss. Administrator O'Keefe added, "We will be guided by the findings of the Board."

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>As search teams looked for debris throughout the west, the southwest and the Gulf Coast, Administrator O'Keefe said he met with the International Space Station Partners today following the memorial ceremony for Columbia's astronauts at Washington's National Cathedral. He said the Partners expressed their support for the recovery effort and NASA's vow to find the cause for the accident for the resumption of safe flight operations.

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>O'Keefe indicated Admiral Gehman may consider adding another member or members to the Independent Board that have no affiliation or ties to NASA in further strengthening its charter. The Charter is available on line at:
http://www.nasa.gov/columbia/board_documents.pdf

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>O'Keefe will appear before a joint hearing of the Senate and House Science Committees, Wednesday, Feb. 12, to provide details of the progress of the investigation. In his afternoon briefing, Dittmore described the pace of the inquiry and data and debris collection as "fast and furious". He said the Shuttle program would support Admiral Gehman's Board "in any way we can".

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>Dittmore said more than 1000 pieces of Shuttle debris have been recovered. Items found as far west as California are currently being analyzed to see whether they are from Columbia. As of today, no debris found west of Fort Worth, Texas has been positively identified as coming from Columbia.

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>"No possibility is being ruled out as the root cause for Columbia's loss," Dittmore said. "We are still looking for that elusive missing link." Dittmore said bad weather in the west today hampered efforts to recover additional debris. The forecast calls for improving conditions by the weekend. The recovered debris will be analyzed at Barksdale Air Force

Base, La., before being returned to the Kennedy Space Center for reconstruction to the extent possible and for final disposition.

>

>Dittemore added a fault tree is being developed based on existing Probability Risk Assessments. The investigation team has received a large number of still images and video, which are being examined to determine if they are authentic and to see if they shed light on the investigation. At the memorial service at National Cathedral, Vice President Dick Cheney said of Columbia's astronauts, "They were soldiers and scientists, doctors and pilots, but above all they were explorers." "They were envoys to the unknown," Cheney added. "They advanced human understanding by showing human courage."

>

>Aboard the Space Station, the crew continued to unload the Russian Progress resupply ship that docked Tuesday, carrying one ton of food, fuel and supplies. Payload controllers continued to analyze the new power components installed yesterday in the Microgravity Science Glovebox in the Destiny laboratory to try to determine why a circuit breaker popped after it was powered. The science facility remains off while the troubleshooting effort is underway.

>

>On Friday, a memorial ceremony for Columbia's astronauts will be held at the Kennedy Space Center. Florida Governor Jeb Bush, Administrator O'Keefe and former astronaut Robert Crippen, Columbia's first pilot on its maiden flight, STS-1, on April 12, 1981, will attend. The ceremony will be broadcast live on NASA Television at 8:15 a.m. EST, the exact time of Columbia's deorbit burn last Saturday. NASA TV is on AMC-2, Transponder 9C, vertical polarization at 85 degrees west longitude, 3880 MHz, with audio at 6.8 MHz.

>The next STS-107 Accident Response briefing is on Friday at 4:30 p.m. EST from the Johnson Space Center. It will be

on NASA TV, with question and answer capability for reporters at NASA centers.

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>For more information, view NASA on the Internet at:

>www.nasa.gov

<http://www.noao.edu/outreach/press/pr03/pr0303.html>

National Optical Astronomy Observatory

FOR IMMEDIATE RELEASE: February 4, 2003

RELEASE NO: NOAO 03-03

NASA Should Lead More Focused Program to Reduce Threat from Hazardous Asteroids

For More Information:

Douglas Isbell

Public Information Officer

National Optical Astronomy Observatory

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NASA should be assigned to lead a new research program to better determine the population and physical diversity of near-Earth objects that may collide with our planet, down to a size of 200 meters, according to the final report of a workshop on the scientific requirements for the mitigation of hazardous comets and asteroids.

The workshop's report also recommends that the U.S. Department of Defense (DoD) work to more rapidly communicate surveillance data on natural airbursts of smaller rocky bodies, and it concludes that governmental policy makers must "formulate a chain of responsibility" to be better prepared in the event that a threat to Earth becomes known.

"As our discussions proceeded, it became clear that the

prime impediment to further advances in this field is the lack of assigned responsibility to any national or international governmental organization,” said planetary scientist Michael Belton, organizer of the September 2002 workshop. “Since it is part of NASA’s newly stated mission to ‘understand and protect our home planet,’ it seems obvious that this responsibility should reside in NASA.”

Belton presented the findings of the workshop today in Washington, DC, to officials at NASA, the National Science Foundation, and the Office of Management and Budget, and the report was delivered to the U.S. Congress.

About 2,225 near-Earth objects (NEOs) have been detected, primarily by ground-based optical searches, in the size range between 10 meters and 30 kilometers, out of a total estimated population of about one million; some information about the physical size and composition of these NEOs is available for only 300 objects.

The total number of objects a kilometer in diameter or larger, a size that could cause global catastrophe upon Earth impact, is now estimated to range between 900 and 1,230. The NASA-led Spaceguard Survey has a congressional mandate to detect 90% of these kilometer-sized objects by 2008, and it is making “excellent progress” on this goal, the report says.

However, a full survey of objects that could cause significant damage on Earth should reach down to NEOs at least as small as 200 meters, the report says, which should be within the capability of proposed ground-based facilities such as the Large Synoptic Survey Telescope and the PanStarrs telescope system. Ground-based radar systems will remain a “critical contributor” to obtaining the most accurate possible data on the orbits of many hazardous objects, the report says.

The workshop report discusses a preliminary roadmap based on five themes: more complete and accurate surveys of the orbits of potentially hazardous objects; improved public education about the risk; characterizing the physical properties of a range of asteroids and comets; more extensive laboratory research; and initial physical experiments toward a realistic plan to intercept and divert a future incoming object.

In order to keep maximum annual expenses on the order of a typical spacecraft mission (approximately \$300 million), the report estimates that it would take about 25 years to accomplish this roadmap.

The Final Report of the NASA Workshop on Scientific Requirements for Mitigation of Hazardous Comets and Asteroids, held in Arlington, VA, from September 3-6, 2002, is available on the Internet at:

<http://www.noao.edu/meetings/mitigation/report.html>

The workshop was attended by 77 scientists from the United States, Europe and Japan. It was co-sponsored by Ball Aerospace, Science Applications International Corp., Lockheed Martin Corp., the National Optical Astronomy Observatory and the University of Maryland.

>Date: Tue, 11 Feb 2003 14:31:11 -0500 (EST)

>From: NASANews@hq.nasa.gov

>Subject: NASA RELEASES STUNNING IMAGES OF OUR INFANT UNIVERSE

>Sender: owner-press-release@lists.hq.nasa.gov

>To: undisclosed-recipients;;

>

>Nancy Neal

>Headquarters, Washington February 11, 2003

>(Phone: 202/358-2369)

>

>Bill Steigerwald

>Goddard Space Flight Center, Greenbelt, Md.

>(Phone: 301/286-5017)

>

>RELEASE: 03-064

>>NASA RELEASES STUNNING IMAGES OF OUR INFANT UNIVERSE

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> NASA today released the best "baby picture" of the
>Universe ever taken; the image contains such stunning
detail that it may be one of the most important scientific
results of recent years.

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>Scientists using NASA's Wilkinson Microwave Anisotropy
Probe (WMAP), during a sweeping 12-month observation of
the entire sky, captured the new cosmic portrait, capturing
the afterglow of the big bang, called the cosmic microwave
>background.

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>"We've captured the infant universe in sharp focus, and
from this portrait we can now describe the universe with
>unprecedented accuracy," said Dr. Charles L. Bennett of the
>Goddard Space Flight Center (GSFC), Greenbelt Md., and
the WMAP Principal Investigator. "The data are solid, a real
gold mine," he said.

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>One of the biggest surprises revealed in the data is the first
generation of stars to shine in the universe first ignited only
200 million years after the big bang, much earlier than many
scientists had expected.

>

>In addition, the new portrait precisely pegs the age of the
>universe at 13.7 billion years old, with a remarkably small
>one percent margin of error.

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>The WMAP team found that the big bang and Inflation

theories continue to ring true. The contents of the universe include 4 percent atoms (ordinary matter), 23 percent of an unknown type of dark matter, and 73 percent of a mysterious dark energy. The new measurements even shed light on the nature of the dark energy, which acts as a sort of an anti-gravity.

"These numbers represent a milestone in how we view our universe," said Dr. Anne Kinney, NASA director for astronomy and physics. "This is a true turning point for cosmology."

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>The light we see today, as the cosmic microwave background, has traveled over 13 billion years to reach us. Within this light are infinitesimal patterns that mark the seeds of what later grew into clusters of galaxies and the vast structure we see all around us.

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>Patterns in the big bang afterglow were frozen in place only >380,000 years after the big bang, a number nailed down by >this latest observation. These patterns are tiny temperature >differences within this extraordinarily evenly dispersed >microwave light bathing the universe, which now averages a frigid 2.73 degrees above absolute zero temperature. WMAP resolves slight temperature fluctuations, which vary by only millionths of a degree.

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>Theories about the evolution of the universe make specific >predictions about the extent of these temperature patterns. >Like a detective, the WMAP team compared the unique >"fingerprint" of patterns imprinted on this ancient light with fingerprints predicted by various cosmic theories and found a match.

>

>WMAP will continue to observe the cosmic microwave background for an additional three years, and its data will reveal new insights into the theory of Inflation and the nature of the dark energy.

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>"This is a beginning of a new stage in our study of the early universe," said WMAP team member Prof. David N. Spergel of Princeton University, N.J. "We can use this portrait not only to predict the properties of the nearby universe, but can also use it to understand the first moments of the big bang," he said.

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>WMAP is named in honor of David Wilkinson of Princeton University, a world-renown cosmologist and WMAP team member who died in September 2002.

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>Launched on June 30, 2001, WMAP maintains a distant orbit about the second Lagrange Point, or "L2," a million miles from Earth.

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>WMAP is the result of a partnership between the GSFC and Princeton University. Additional Science Team members are located at Brown University, Providence R.I., the University of British Columbia, Vancouver, BC, the University of Chicago, and the University of California, Los Angeles. WMAP is part of the Explorer program, managed by GSFC.

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>For more information, including high-quality images, videos and press products, refer to:
<http://www.gsfc.nasa.gov/topstory/2003/0206mapresults.html>

>

<http://map.gsfc.nasa.gov>

February 14, 2003

Europa surface missions necessary step in extraterrestrial search

Scientists have long considered Europa, the smallest of the four Galilean moons orbiting Jupiter, as a prime candidate for life outside Earth because it is one of the few places in

the solar system where liquid water may be found. Any future Europa exploration should focus on the identification of sites where signs of past or present life can be found and studied, says Ron Greeley, an ASU geology professor.

Greeley, who heads up the Europa Astrobiology research at ASU, is co-author of an abstract paper on potential Europa habitats presented at the 2003 NASA Astrobiology Institute General Meeting held Feb. 10-12 at ASU. The meeting brought more than 500 researchers from throughout the United States to discuss the latest developments in astrobiology. The NASA Astrobiology Institute includes a multitude of diverse disciplines including chemistry, biology, geology, microscopy and astronomy.

Greeley said assuming life arises quickly under appropriate formative conditions, life could be present wherever there is liquid water, a source of energy and essential elements. Europa is roughly the size of the moon, and is believed to have a rocky interior and an outer shell of ice — and possibly liquid water — about 60 to 100 miles thick. Scientists say mounting evidence for the existence of a salty liquid ocean beneath Europa's icy crust is exciting because that is just the environment that could provide favorable conditions for present life, or where signs of past life may be preserved.

Europa has been studied for years by examining data collected by the unmanned Galileo spacecraft's onboard science instruments, but Greeley and his NASA colleagues believe future studies of Europa will need to focus on surface units, particularly in areas where geologic processes have caused the satellite's icy crust to melt, and where organisms would be protected from radiation and provided with an adequate food supply.

"Now that the Galileo mission is nearly completed, it is

time for researchers to sift through the images to shape the current state-of-knowledge about the satellite and pose scientific questions to be addressed by future missions,” said ASU researcher Patricio Figueredo, Greeley’s colleague, and first author of the Europa habitat paper. Although it is not clear to researchers how far a liquid ocean is from the surface, Figueredo says scientists must now piece together the visible evolution history of Europa and determine how different pathways of energy, materials and nutrient interactions would affect possible ecosystems in the satellite.

A second paper presented at the conference starts from the idea that a liquid ocean is present on Europa to offer one explanation as to why sulfate is found on the surface of the satellite. Sulfate has been readily observed on Europa’s surface by a stereoscopic instrument aboard Galileo. If the sulfate is from a liquid ocean, it is likely to have been formed by high-temperature fluids released at the oceanic floor from the satellite’s silicate mantle.

When these high-temperature fluids are cooled quickly, it would provide the right conditions to support life, says ASU’s Mikhail Zolotov and Everett Shock, geology researchers who presented the paper, “Autotrophic Sulfate Reduction in a Hydrothermally Formed Ocean on Europa.”

The differentiated internal structure of Europa implies that high temperature interaction of water and rocks occurred at least once in the satellite’s history. It is plausible some volcanic activity is also occurring on present day Europa, driven by tidal forces. The authors believe high-temperature fluids from the satellite’s rocky core flow into the icy-cold ocean above.

Similarly, this phenomenon occurs on Earth, under the

ocean floor within mid-ocean ridge volcanoes. These deep-sea hydrothermal vents — known more commonly as black smokers — force sulfur-rich, high-temperature water (about 350-degrees Celsius) out onto the ocean floor through chimney-like, volcanic rock structures. As the hot, mineral-rich water rushes out of the chimney and mixes with cold ocean bottom water, it precipitates a variety of minerals as tiny particles that, in turn, provide energy to marine life. When sulfate from seawater mixes with the vent fluid, it can be a source of energy for life through a process called autotrophic sulfate reduction.

”On Earth, sulfates can be reduced through biologic activity in oxygen-free sedimentary basins or in organic-rich oceanic sediments,” said Shock. “Although the amount of energy on Europa could be insufficient to allow these biologic organisms to persist throughout the ocean’s history, a periodic supply of organic compounds or other environmental factors introduced into the ocean could maintain life over time. If this process is detected in the chemical composition of Europa’s oceanic water, it would be highly suggestive of the involvement of ancient life.”

DC Agle (818) 393-9011
Jet Propulsion Laboratory, Pasadena, Calif.

Don Savage (202) 358-1727
NASA Headquarters, Washington D.C. February 20, 2003

News Release: 2003-023

NASA Solves Half-Century Old Moon Mystery

In the early morning hours of Nov. 15, 1953, an amateur

astronomer in Oklahoma photographed what he believed to be a massive, white-hot fireball of vaporized rock rising from the center of the Moon's face. If his theory was right, Dr. Leon Stuart would be the first and only human in history to witness and document the impact of an asteroid-sized body impacting the Moon's scarred exterior.

Almost a half-century, numerous space probes and six manned lunar landings later, what had become known in astronomy circles as "Stuart's Event" was still an unproven, controversial theory. Skeptics dismissed Stuart's data as inconclusive and claimed the flash was a result of a meteorite entering Earth's atmosphere. That is, until Dr. Bonnie J. Buratti, a scientist at NASA's Jet Propulsion Laboratory, Pasadena, Calif., and Lane Johnson of Pomona College, Claremont, Calif., took a fresh look at the 50-year-old lunar mystery.

"Stuart's remarkable photograph of the collision gave us an excellent starting point in our search," said Buratti. "We were able to estimate the energy produced by the collision. But we calculated that any crater resulting from the collision would have been too small to be seen by even the best Earth-based telescopes, so we looked elsewhere for proof."

Buratti and Lane's reconnaissance of the 35-kilometer (21.75-mile) wide region where the impact likely occurred led them to observations made by spacecraft orbiting the Moon. First, they dusted off photographs taken from the Lunar Orbiter spacecraft back in 1967, but none of the craters appeared a likely candidate. Then they consulted the more detailed imagery taken from the Clementine spacecraft in 1994.

"Using Stuart's photograph of the lunar flash, we estimated the object that hit the Moon was approximately 20 meters (65.6 feet) across, and the resulting crater would be in the range of one to two kilometers (.62 to 1.24 miles) across. We

were looking for fresh craters with a non-eroded appearance,” Buratti said.

Part of what makes a Moon crater look “fresh” is the appearance of a bluish tinge to the surface. This bluish tinge indicates lunar soil that is relatively untouched by a process called “space weathering,” which reddens the soil. Another indicator of a fresh crater is that it reflects distinctly more light than the surrounding area.

Buratti and Lane’s search of images from the Clementine mission revealed a 1.5-kilometer (0.93 mile) wide crater. It had a bright blue, fresh-appearing layer of material surrounding the impact site, and it was located in the middle of Stuart’s photograph of the 1953 flash. The crater’s size is consistent with the energy produced by the observed flash; it has the right color and reflectance, and it is the right shape.

Having the vital statistics of Stuart’s crater, Buratti and Lane calculated the energy released at impact was about .5 megatons (35 times more powerful than the Hiroshima atomic bomb). They estimate such events occur on the lunar surface once every half-century.

“To me this is the celestial equivalent of observing a once-in-a-century hurricane,” said Buratti. “We’re taught the Moon is geologically dead, but this proves that it is not. Here we can actually see weather on the Moon,” she said.

While Dr. Stuart passed on in 1969, his son Jerry Stuart offered some thoughts about Buratti and Lane’s findings. “Astronomy is all about investigation and discovery. It was my father’s passion, and I know he would be quite pleased,” he said.

Buratti and Lane’s study appears in the latest issue of the space journal, *Icarus*.

The NASA Planetary Geology and Planetary Astronomy

Programs and the National Science Foundation funded Buratti's work. The California Institute of Technology manages JPL for NASA.

More information about NASA's planetary missions, astronomical observations, and laboratory measurements is available on the Internet at <http://pds.jpl.nasa.gov> .

Information about NASA programs is available on the Internet at www.nasa.gov .

Mid Evening Observing Highlights for March

Saturn can be found high in the western sky. Jupiter is almost overhead. It is very close to the Beehive Cluster (M44) in Cancer. This view of Jupiter and M44 will be a nice photo opportunity. Orion is also prominent in the western sky. There are many open clusters that can be viewed in the southern sky such as M41, M46, M47, M48, and M50. Leo and Virgo are rising in the eastern sky. The Big Dipper is standing on its handle in the northeastern sky. The bright star Arcturus can be seen rising in the east just above the horizon. Spring is the time of year to observe galaxies. Many can be found in Leo, Virgo, and Coma Berenices. Full moon is on March 18th and new moon is on March 2nd. The image below was taken as a screen shot of the Voyager II planetarium program showing the locations of the open clusters discussed. The date would be March 15th at 10:00 looking toward the southwest.



Observations and Photographs

If you are interested in submitting an observation or photograph please contact John at kocis@catskill.net.

Here is a photo of the moon taken by John Kocijanski with an Olympus D550 digital camera through a 25mm Orion Sirius plossl eyepiece on a Celestron SPC-8. Mare Humorum and the crater Gassendi dominate the right center of the image.



Member's Telescopes and Equipment

The photo below is of a set of Bob's Knobs for collimation of schmidt-cassegrain telescopes. John Kocijanski purchased a set for his Celestron SPC-8. They replace the allen screws used for collimation on the secondary mirror. They are easy to install and use. Collimation is made easier since a small allen wrench is no longer needed. They go for \$16 and can be ordered at www.bobsknobs.com.

BARLOW BOB'S CORNER

Barlow Bob is a member of the Rockland Astronomy Club.

The HD H-Alpha Filter

I purchased the TV 102i, with a Bino Vue, from High Point Scientific, Inc. in Montague, NJ. High Point shipped the telescope to Coronado Filters in Tucson, AZ. I also shipped my 90 MM Coronado H-Alpha filter to Coronado. Coronado permanently installed a 60 MM Coronado H-Alpha filter inside, in the back of the TV 102i and the 90 MM filter on the front. Coronado designed a new two-inch blocking filter, allowing two inch eyepieces to focus, in a star diagonal.

The TV 102i looks and acts like a Genesis, with attitude. It is an F8.6 880 MM FL refractor, designed to use with a TV Bino Vue binocular viewer, holding two eyepieces. I bought two new TV 16 MM Nagler type 5 eyepieces, to use in the Bino Vue. After trying a variety of eyepieces, in the Bino Vue, the new 16 Nagler type 5, produced the best image of the Sun, through these H-Alpha filters.

The TV 102i is the ultimate accessory for a Bino Vue. I understand that at this time, there are only two TV 102i, in the world with 90 and 60 MM Coronado filters. There is one in Japan and mine.

Ralph Marantino, from Old Bridge, NJ, is the "Grand Poobah" of solar astronomy.

He has observed the Sun daily for many years, through his

SDF Genesis refractor and a 0.65 Angstrom University model Daystar H-Alpha filter. When the weather permits, he draws the image of the Sun, for 15 minutes. Ralph and I observed first light through this new telescope, in late December. I left Ralph at the telescope drawing the Sun and went in his house, to get a cup of coffee. When I returned, thirty minutes later, he was still drawing the Sun. He said that he was observing more solar details, through these filters. He saw a faculae wrap around the limb and become a prominence, for the first time.

We also put the Bino Vue in Ralph's SDF Genesis and observed the moon. The image of the Moon, through the Bino Vue, looked 3-D, as if you were observing the Moon from the Lunar Command Module.

Dan Pontone, from Red Bank, NJ, compared the image through these filters, to watching an HD television.

We removed the TV 102i, with attached Coronado filters from the case and set the telescope on my Tele Vue equatorial systems mount.

We removed the 1.25 Inch Everbrite star diagonal and Bino Vue. We replaced this, with a two-inch Everbrite star diagonal, extension tube and the 31 MM Nagler type 5 eyepiece. The image produced, in this two inch eyepiece, was just as impressive, to a Cylopes.

The TV 102i was designed, as the ultimate accessory for a Bino Vue. To Amateur astronomers, dedicated to observing the planets and Moon, It must be sacrilege, to use the TV 102i, as a dedicated H-Alpha solar telescope.

I don't regret using the TV 102i as a state of the art dedicated H-Alpha solar filter system. However, I am saving my money, to buy a second TV 102i, creating a TV 204i.



You can test drive this new toy, along the faculae and prominences on the Sun, at NEAF and the Rockland Astronomy Club Summer Star Party. At star parties, I can share the Bino Vue, from sunset to sunrise, in your telescope. What a country! Summer Star party and other ,

You can attach our photographic, digital, video or CCD cameras on the HD H-Alpha solar telescope. You can take the ultimate images of the H-Alpha Sun with attitude.

Why would Barlow Bob, not own, the first Sky and Telescope Hot New Product of 2004?

Barlow Bob

NASA Space Place

Frisbees in Space

by Dr. Tony Phillips

When Pete Rossoni was a kid he loved to throw Frisbees. Most kids do-it's pure fun. But in Pete's case it was serious business. He didn't know it, but he was practicing for his future career " in space exploration.

Grown-up Pete Rossoni is now an engineer at NASA's Goddard Space Flight Center. His main project there is figuring out how to hurl spacecraft into orbit Frisbee-style.

The spacecraft are small-about the size of birthday cakes. "This wouldn't work with big satellites or heavy space ships like the shuttle," notes Rossoni. But a cake-sized "nanosatellite" is just right.

Nanosatellites-nanosats for short—are an exciting new idea in space exploration. Ordinary satellites tend to be heavy and expensive to launch. The cost alone is a deterrent to space research. Nanosats, on the other hand, can travel on a budget. For example, a Delta 4 rocket delivering a communications satellite to orbit could also carry a few nanosats piggyback-style with little extra effort or expense.

“Once the nanosats reach space, however, they have to separate from their ride,” says Rossoni. And that’s where Frisbee tossing comes in”.

Rossoni has designed a device that can fling a nanosat off the back of its host rocket. “It’s a lot like throwing a Frisbee,” he explains. “The basic mechanics are the same. You need to impart the spin and release it cleanly—all in about a tenth of a second.” (The spinning motion is important because it allows the science magnetometer to measure the surrounding field and lets sunlight to play across all of the nanosat’s solar panels.)

The ST5 nanosats are designed to study Earth’s magnetosphere—a magnetic bubble that surrounds our planet and protects us from the solar wind. But their primary goal, notes Rossoni, is to test the technology of miniature satellites.

“We haven’t done anything like this before,” says Rossoni. Soon, however, the concept will be tested. A trio of nanosats is slated for launch in 2004 on the back of a rocket yet to be determined. The name of the mission, which is managed by JPL’s New Millennium Program, is Space Technology 5 (ST5).

Can groups of nanosats maintain formation as they fly through space? Will their internal systems—miniaturized versions of full-sized satellite components—satisfy the demands of both the harsh space environment and critical science measurements? Is Frisbee-tossing as much fun in orbit as it is on Earth?

ST5 will provide the answers. Read about ST5 at at <http://nmp.nasa.gov/st5> . Budding young astronomers can learn more at http://spaceplace.nasa.gov/st5/st5_tortillas1.htm

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

Catskills Astronomy Club

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Livingston Manor, NY 12758
<http://www.catskillsastro.com>

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Your dues cover a small part of the insurance costs associated with using Walnut Mountain Park, dues in the Astronomical League, but nothing that helps the club grow materially, If you would like to see the club own equipment, offer a discounted membership to seniors and students, host other events, such as professional speakers, or grow in any other way, we need more financial help than your dues. Any time, money or material gift you can donate is of great help and deeply appreciated. Your gift may also be tax deductible. I'd like to donate the following amount: \$5 \$10 \$20 Other Amount \$ _____

Your participation in the Catskills Astronomy Club is greatly appreciated!