

ASTRAL PROJECTIONS

FEBRUARY 2005

ASTRA MEETING SCHEDULE 2005

Fri. Jan 14th - Mars Video
Sat. Jan 15th - Telescope workshop 7PM
Fri. Feb 11th - Rich Gamba Astro Nova / Solar Filter Review
Fri. Mar 11th - Phil Zollner
Sat. April 2nd - Star Party with O.C. Parks @ Wells Mills 6PM Setup 7PM public.
Fri. April 8th - Equipment Review (planning meeting?)
Sat April 16th - Astronomy Day (Spring Star Watch 8PM)

Fri. May 13th - Richard Fink
Fri. Jun 10th - John Endreson - Digital Photography
Fri. July 8th - Bob Salvatore - "Famous Astronomers Past and Present"
Fri. July 15th - Summer Star Watch 9PM
Sat Aug 13th - Perseid Picnic 2PM
Fri. Sept 9th - Sky Atlas Review / Bob Salvatore - Asterisms
Thurs. Sept 22 International Year of Physics Einstein in the 21st Century
Special guest lecturer: Dr. Mike Shara
Curator-in-Charge, American Museum of Natural History-- Department of Astrophysics
Fri. Oct 7th – Fall Star Watch 8PM
Fri. Oct 14th – Planning Meeting for Committees and 2006 Schedule
Fri. Nov 11th - Rich Brady - Eyepieces
Fri. Dec 9th - Awards, Elections- Video

DUES ARE DUE: If you have not paid your dues we'll be happy to receive them at the next meeting. Dues are payable January 1 each year, and past due as of the end of the March business meeting. Whether you mail your payment or bring it in person, **please include the form that was previously provided.** It's the only way we can keep track of your payment.

February Meeting Friday Feb 11th 8PM Room P-109 of the Planetarium

Rich Gamba will be discussing Project Astro Nova and there will be a Solar Filter Review, everyone is asked to speak about Solar Filters they own or ask questions about Solar Filters as they may wish to know about.

We will also discuss purchasing a Solar Filter for ASTRA's Refractor.

ASTRA Committee Chair Persons:

Astronomy Day Committee: Rich Gamba
Membership Committee: Richard Fink
Newsletter Committee: John Endreson
Publicity Committee: Gloria Villalobos
SRC (Setup-Refreshment-Cleanup) Committee: Sarah Waters
Star Party Committee: Ro Spedalieri
Telescope Loan Committee: Gene Russo
Workshop Committee Randolph J. Walton

Newsletter Deadline: Material for *ASTRAL Projections* must be received 21 days before the next meeting. E-mail to Newsletter@astra-nj.org or mail to: John Endreson at: 722 Maple Road Lanoka Harbor, NJ 08734

Planetarium office: 732/255-0343 weekdays 9 AM - 4 PM. Hot line: 732/255-0342. Touch 5 for ASTRA.

Visit our Web page at <http://astra-nj.org> Visit the Planetarium page at <http://ocean.edu/planet.htm>

Executive Board: President – J. Randolph Walton; Vice President-Secretary - Paul Gitto; Treasurer - Ro Spedalieri; Webmaster - Paul Gitto; Newsletter Editor - John Endreson

February Celestial Events: supplied by J. Randolph Walton (Randy)

Day	Date	Time (LMT)	Event
Tue	1	04:20	Mars Rises
		06:10	Saturn Sets
		06:27	Venus Rises
		06:53	Mercury Rises
		07:08	Sunrise
		10:33	Moon Set
Wed	2	00:49	Moon Rise
		02:27	Last Quarter Moon
		17:22	Sunset
		22:35	Jupiter Rises
Tue	8	04:15	Mars Rises
		05:40	Saturn Sets
		06:30	Venus Rises
		07:01	Sunrise
		17:11	Moon Set
		17:28	New Moon
		17:29	Sunset
		22:10	Jupiter Rises
Tue	15	10:22	Moon Rise
		17:37	Sunset
		17:40	Mercury Sets
		19:16	First Quarter Moon
Wed	16	00:00	Moon 1.2 deg. S of the Pleiades
		04:07	Mars Rises
		05:10	Saturn Sets
		06:30	Venus Rises
		06:51	Sunrise
		17:18	Moon Rise
Wed	23	17:46	Sunset
		18:25	Mercury Sets
		21:05	Jupiter Rises
		23:54	Full Moon
		17:49	Sunset
Sat	26	19:10	Zodiacal Light in W after evening twilight for two weeks
Sun	27	03:55	Mars Rises
		04:23	Saturn Sets
		06:25	Venus Rises
		06:37	Sunrise

Astronomy Courses: Planetarium staff offers a number of mini-courses on astronomy. Call the OCC Department of Continuing and Professional Education, 732/255-0404, for information or to register.



The Astronomical League is composed of over two hundred and forty local amateur astronomical societies from all across the United States. These organizations, along with our Members-at-Large, Patrons, and Supporting members form one of the largest amateur astronomical organizations in the world. .

The mission of the Astronomical League is clearly stated in the masthead: to promote the science of Astronomy. The major benefit of belonging to this organization is receiving the quarterly newsletter, *The Reflector*, which keeps you in touch with amateur activities all over the country. The chance to meet the people you read about there occurs during our annual National Convention, or at one of the ten regional conventions that the AL sponsors.



Welcome to the Night Sky Network!

We are a nationwide coalition of amateur astronomy clubs bringing the science, technology and inspiration of NASA's missions to the general public. We share our time and telescopes to provide you with unique astronomy experiences at science museums, observatories, classrooms, and under the real night sky.

Senator Vows to Fight for Hubble

By Richard Tresch Fienberg



Senator Barbara Mikulski (D-Maryland), a staunch defender of the Hubble Space Telescope, greets crew members of the last Hubble servicing mission in 2002. Courtesy the Office of Sen. Barbara Mikulski.

January 22, 2005 | Amid new rumors that NASA plans to abandon the Hubble Space Telescope (HST), a powerful US senator has vowed to continue fighting to keep the observatory operating. Senator Barbara Mikulski (D-Maryland), one of Hubble's staunchest supporters in Congress, wasted no time before responding to reports that NASA's budget for fiscal year 2006, to be made public on February 7th, contains no money to repair and upgrade the telescope.

"It is essential that we have a safe and reliable servicing mission to Hubble," Mikulski said in a statement distributed to reporters on Friday afternoon, January 21st, just hours after Space.com published comments from unnamed sources suggesting that NASA cannot afford to service Hubble again. "I will continue to advocate for this mission: I led the fight to add \$300 million to NASA's budget last year for a Hubble servicing mission, and I plan to lead the fight again this year," Mikulski pledged. "This is what the American people expect and deserve."

This is just the latest chapter in a controversy that has been raging for a year now, ever since outgoing NASA administrator Sean O'Keefe announced in January 2004 that he was canceling the next Space Shuttle mission to Hubble out of concerns for astronaut safety. When many astronomers, congressional representatives, and members of the public reacted with outrage, O'Keefe

relented and agreed to service Hubble again if it could be done robotically.



On March 9, 2002, the Hubble Space Telescope was released back into free flight by the astronauts of the shuttle Columbia, who completed a series of repairs and upgrades over the preceding 5 days. Courtesy NASA.

The National Research Council (NRC) was called in to examine the pros and cons of such an approach and concluded in December 2004 that Hubble was too important to let die in orbit. The panel of outside experts recommended that NASA proceed with a shuttle mission to Hubble as originally planned, saying that the robotic alternative is too complex and unlikely to succeed before the telescope succumbs to the loss of its remaining batteries and gyroscopes.

O'Keefe, who announced his resignation just days after the NRC report was released, has not commented on the latest rumor, and nobody at NASA has come forward to confirm it. But one agency insider told *Sky & Telescope* that even if the rumor is true, Hubble's fate is far from sealed. NASA has a lot more flexibility in its budget now, thanks to the agency's newly granted authority to move money around internally. Congress used to specify how every dollar was spent.

"Rumors like this sometimes are just trial balloons," says a NASA astronomer on the Hubble project. "This agency has found a way to pay for four prior servicing missions to HST. It can do it again."

ORION TELESCOPES SOLD TO IMAGINOVA

In a move that caught the astronomical community by surprise, on January 13th Imagenova Corp. announced its purchase of Orion Telescopes & Binoculars. Based in Watsonville, California, Orion is a major manufacturer and distributor of telescopes and other accessories for the amateur-astronomy market. Negotiations between the two companies began about six months ago; financial terms of the transaction were not disclosed.

"The acquisition of Orion Telescopes & Binoculars brings one of the most prestigious brands in astronomy into the Imagenova family of media and consumer products," said Daniel Stone, Imagenova's president and chief executive officer, in a press release.... http://SkyandTelescope.com/news/article_1440_1.asp

Get the Picture? By Mike Montana

Oddly, astronomy is quite a 'group' hobby. The key phrase to the entire hobby is "Did you see that?" Without sharing views the hobby gets rather dull, expensive, and lonely as you sit in the cold dark for hours staring up into the sky. Might as well be a monk.

Along with the excited "Did you see that?" comes, "Let me show you..." Sometimes it's easy to share something you've seen – step back from the scope and let someone else look. It's a sweet moment, but, fleeting, and elusive. It's elusive if the onlooker has no experience around a scope, they will bump the scope, squint, grab the eyepiece like a microphone, and announce, "I don't see anything!" We've all been there, on both sides of sharing an exclusive view of the skies.

Despite elusive, the shared view is fleeting, as you can't share the emotion of the view beyond the immediate moment. You simply don't get a response when at work you say "last night, I saw this really neat open-cluster". Somehow, it doesn't compare with saying "last night, I saw this really neat pass in the third quarter". But the opposite is very true. Hang a picture of the moon occulting Venus on your desk, and people will sincerely ask, "Wow – what's that?" You won't get the same reaction if you hang a newspaper clipping of a key 3rd quarter pass. "Its the moon passing over Venus – I took the picture myself" is a conversational piece, but, "I clipped the picture of the catch from the newspaper" is a non-starter.

So, pictures are part-and-parcel to the hobby. Admit it, the only reason you read astronomy magazines is *for the pictures*. Gorgeous, glossy, sexy shots – that's what its all about. And, the spouse even encourages it. What could be better? Taking photos is the next obvious step in the hobby. For years the only way to get pictures was to attach your 35mm camera body to the eyepiece of the scope, let it expose, and wait. And...wait. When the picture was done exposing, you would wait for the film to be developed. When the photos came back, you got small fuzzy underexposed smears. Try again...

In college I took a class on photography. ISO-settings, baths, prints, developer... it required more attention than I was willing to devote, so I never bothered trying to use film with a telescope. But last year things changed – I got a digital camera. I've learned that digital cameras are difficult with any scene that isn't well lit because they do such a good job at taking pictures in normal daylight. The digital-camera will compensate in every conceivable manner to get a picture that looks good. More expensive digital cameras are more sensitive to dimmer lighting, but rather than go up in price and complexity, I decided to go *down* in price and complexity. I saw web-cams available for \$20 on eBay. Sure they were probably going to be terrible, but, for \$20, how bad could it be?

There are thousands of webcams on eBay, averaging \$20 to \$60. What will you get for \$20? Usually, a color web cam, USB based, 320x200 resolution, 24bit color. The color is not "true" 24 bit color, usually the hardware is much less, but for compatibility reasons, the color is transmitted as 24 bits resulting in colors that are peculiar. The webcam does a complex job of balancing the light conditions, contrast/balance, exposure and encoding leaving the coloring to be the least important feature.

They also use plastic lens with a short focal length – resulting in fish-eye distortions with poor contrast. The resolution is an important consideration. Most web-cams will state a supported resolution of 160x100, 320x200, 640x480 and 1280x1024. It's been my experience that the underlying hardware is only capable of 320x200, and will stretch the image as needed. If the application program requests a 640x480 sized image, the webcam simply doubles the pixels – resulting in a stretched image that has poor contrast and plainly looks terrible. The image on the left is a 320x200 image, and the right is the same scene, switched to 640x480.



320 x 240



640 x 480

Lastly, a webcam is not sensitive to light. Faint nebulae, or delicate star clusters will not image properly, mostly because the webcams are limited to an exposure length of $1/25^{\text{th}}$ of a second. There are ways of modifying the webcam for longer exposures by opening the unit and performing circuit-surgery (search Google for 'extended exposure web cam').

That said, what could you do with a webcam? The moon is the easiest and most pleasing target for a webcam'scope as the picture below shows:



Not bad for a \$20 eBay special! Out of the box, a webcam will not attach to your 'scope. You will need to make/buy a small adapter, and remove the fish-eye lens from the webcam.



Plastic Adapter

In nearly all webcams, the fish-eye lens simply unscrews from the base. There are some advantages to removing the lens. For one, you will be free of the distortion caused by the little lens. The light will now fall directly on the CCD chip, from your scope's primary mirror to the chip directly – no eyepieces involved, which results in good amount of light, and surprising clarity. Lastly, removing the fisheye lens results in an image roughly equivalent to looking through a 4mm eyepiece. I have great frustrations trying to get objects centered properly then quickly trying to swap in the web cam.

One of the fun things to do is make photo mosaics of the moon. By taking lots of overlapping web-cam shots, and assembling them with programs like Adobe Photoshop, a very detailed image of the moon can be made. The example below is my first attempt at a photo-mosaic, the resulting assembled image is roughly 530x600 pixels, or in a more interesting perspective, each pixel covers 7 by 7 miles.



In a follow up column, I will show star and planetary imaging with the web cam. Mike would greatly appreciate feedback, comments and questions at: MikeMontana@Hotmail.com



Stardust Up Close

by Patrick L. Barry and Dr. Tony Phillips

Like discarded lumber and broken bricks around a construction site, comets scattered at the edge of our solar system are left-over bits from the "construction" of our solar system.

Studying comets, then, can help scientists understand how our solar system formed, and how it gave rise to a life-bearing planet like Earth.

But comets have long been frustratingly out of reach -- until recently. In January 2004 NASA's Stardust probe made a fly-by of the comet Wild 2 (pronounced "vilt"). This fly-by captured some of the best images and data on comets yet ... and the most surprising.

Scientists had thought that comets were basically "rubble piles" of ice and dust -- leftover "construction materials" held together by the comet's feeble gravity. But that's not what Stardust found. Photos of Wild 2 reveal a bizarre landscape of odd-shaped craters, tall cliffs, and overhangs. The comet looks like an alien world in miniature, not construction debris. To support these shapes against the pull of gravity, the comet must have a different consistency than scientists thought:

"Now we think the comet's surface might have a texture like freeze-dried ice cream, so-called 'astronaut ice cream': It's solid and can assume odd, gravity-defying shapes, but it's basically soft and crumbles easily," says Donald Brownlee of the University of Washington, principal investigator for Stardust.

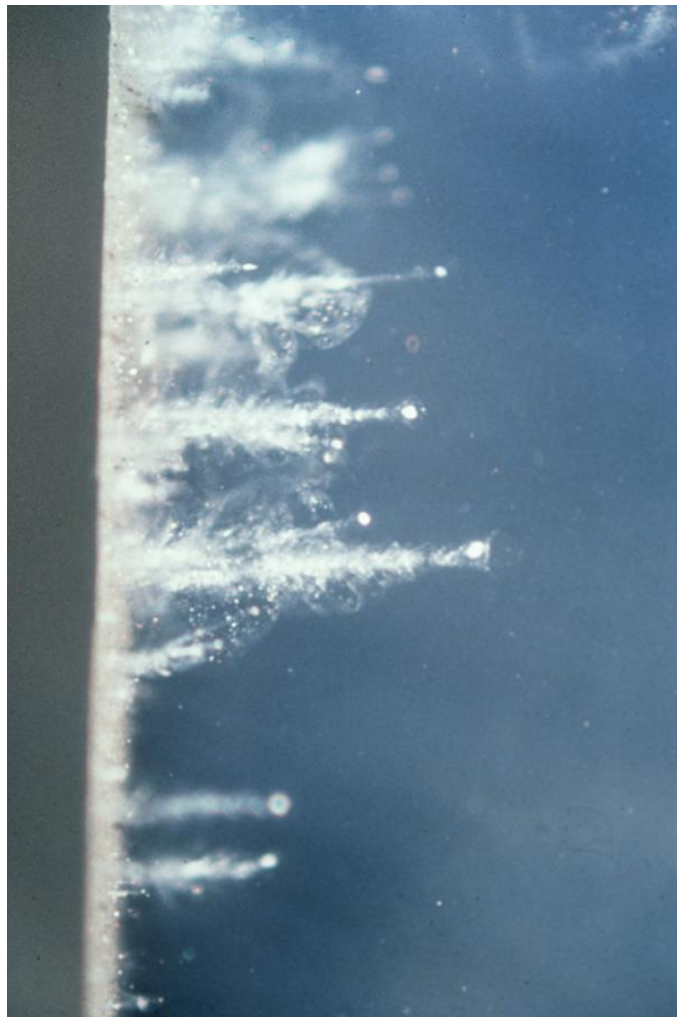
Scientists are currently assembling a 3-D computer model of this surface from the photos that Stardust took. Those photos show the sunlit side of the comet from many angles, so its 3-dimensional shape can be inferred by analyzing the

images. The result will be a "virtual comet" that scientists can examine from any angle. They can even perform a virtual fly-by. Using this 3-D model to study the comet's shape in detail, the scientists will learn a lot about the material from which the comet is made: how strong or dense or brittle it is, for example.

Soon, the Stardust team will get their hands on some of that material. In January 2006, a capsule from Stardust will parachute down to Earth carrying samples of comet dust captured during the flyby. Once scientists get these tiny grains under their microscopes, they'll get their first glimpse at the primordial makings of the solar system.

It's heading our way: ancient, hard-won, possibly surprising and definitely precious dust from the construction zone.

Find out more about the Stardust mission at stardust.jpl.nasa.gov. Kids can read about comets, play the "Tails of Wonder" game about comets, and hear a rhyming story about aerogel at <http://spaceplace.nasa.gov/en/kids/stardust/>. *This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.*



The Stardust spacecraft used a grid holding aerogel to capture dust particles from comet Wild 2. In this test, high velocity dust particles are stopped unharmed at the end of cone shaped tracks in a sample of aerogel

Note to editor: This image can be downloaded from:
http://spaceplace.nasa.gov/astro_clubs/aerogel_tracks.jpg



Dues are Due...

To renew your membership, all you need to do is fill out the form below and send it with your dues to:

Robert J. Novins Planetarium
ATTN: ASTRA
Ocean County College
Toms River NJ 08754-2001

PLEASE MAKE CHECKS PAYABLE TO ASTRA. You can also pay at the next meeting. If you do, please bring this form with you. Hope we'll see you there!

Annual dues, per family:	\$15.00
Refreshments fee — \$1.00 for each <i>additional</i> Family member who is active in ASTRA:	_____
Telescope fund assessment (only if you wish - Optional for continuing members):	5.00
TOTAL (minimum \$15.00):	_____

Privileges of membership include 12 issues per year of *Astral Projections*, use of Club telescopes (after suitable training), student discount on admission to Planetarium shows, membership in the Astronomical League, and a subscription to the Astronomical League's quarterly newsletter, *Reflector*. Dues are payable January 1 each year, and past due as of the end of the March business meeting.

(Detach and return with your dues payment)

NAME _____ PHONE () _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

NAMES OF OTHER FAMILY MEMBERS JOINING ASTRA (Add \$1.00 for Each):
(Please indicate if member is over 18 - for voting purposes)

_____ <input type="checkbox"/> ¹⁸⁺	_____ <input type="checkbox"/> ¹⁸⁺	_____ <input type="checkbox"/> ¹⁸⁺	_____ <input type="checkbox"/> ¹⁸⁺
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E-MAIL ADDRESS (if applicable) _____

TOTAL AMOUNT PAID (minimum \$15.00) _____

I grant permission to publish the following to *ASTRA* members only (check any that apply):

Phone number e-mail address put me on the star party phone list