



AU AstroNews

The Newsletter of the Astronomical Unit

April 2003

Sponsored by the Santa Barbara Museum of Natural History

The Cassini Saturn Mission

Many thanks to Dr. Steve Edberg for his talk last month about the Cassini spacecraft mission to Saturn. Steve spoke to a full house of 73 people, and some prominent AU members described the talk as “exciting” and “wonderful”! The first flyby of Cassini will be June 2004. Then, on or around July 1, 2004, the engines will burn, slowing the spacecraft to begin its 75 orbits around Saturn. The Cassini Mission is intended to answer a number of questions about Saturn and its 9 moons. Titan, the largest moon, will receive the Huygens Probe around Christmas 2004. The probe will broadcast data for only 4 hours! The mission will also investigate how the other eight icy moons formed, and how the ones with huge craters stay together. There will also be some extensive studies of Saturn and its ring system. For example, how were the rings formed, why do some areas have “spokes”, and why does Saturn’s magnetosphere shift poles periodically? Stay tuned for answers to these questions. Steve predicted that the data received from this mission will re-write textbooks, and yield many PhDs. Finally, if you want to amaze your astronomy friends, you can use his mnemonic tip for remembering the order of Saturn’s larger moons, going out from the planet: “MET DR THIP”. You can use this to remember Mimas, Enceladus, Tethys, Dione, Rhea, Titan, Hyperion, Iapetus, and Phoebe. That is, if you have a good memory anyway. Whew!

The AU also wishes to thank Dr. Timothy Ferris for his inspirational public lecture on February 28. Tim fascinated the audience with tales of how amateur astronomers have greatly contributed to our knowledge of the cosmos. He mentioned how current amateur astronomers can take better astrophotos than were possible with the 200 inch Hale reflector at Mt. Palomar when it saw first light about 50 years ago, mainly due to advances in computer and CCD technology. Tim finished off by mesmerizing the crowd with an incredible display of amateur astrophotos, presented at a rate of about one

a second. Everyone in the audience was picking their jaw off the floor after this! If you missed this one, you owe it to yourself to see him at the next possible opportunity.

April Speaker

David Lunt will speak on “Filtering the Sun”, or “How to be an astronomer and still sleep at night.”

David Lunt is chief scientist and co-founder of Coronado Technology Group. These are the people who make the really cool looking specialized solar telescopes you see advertised in Sky and Telescope, et al. David can trace his astronomical beginnings as far back as his 5th birthday, when he received an astronomy book by the great Sir James Jeans. After university, he became involved in making optics for the U-2 spy planes, the first lasers at Bell Labs, and working on filter technology for the SDI (Starwars) program. Through Coronado, he has brought all this within the reach of the amateur astronomer.

March Outreach Volunteers

Special thanks go to outreach volunteers Jim Bailey, Art Harris, Pat and Chuck McPartlin, Edgar Ocampo, Helen Osenga, Ron Pembleton, Tom Whittemore, and Jim Williams, who wowed 645 customers with the wonders of the night sky since the last newsletter.

AU Events for April

Friday, April 4, 7:30 PM – Monthly meeting in Farrand Hall at SBMNH. Speaker is Dave Lunt of Coronado Instruments (solar scopes!)

Saturday, April 5, time TBA – A Coronado Filters person will have a solar viewing at SBMNH.

Saturday, April 5, 7 - 10 PM – **National Dark Sky Week event at SBMNH. Special Event — Please, we need your help!** See page 2 for details.

Monday, April 7, setup 6:30 PM – IDP event, telescopes only. Contact Chuck for details.

Tuesday, April 8, setup 5:30 PM – Slide show and telescopes for Brandon School Science Night.

Thursday, April 10, setup 6 PM – Telescopes for Science Night at Laguna Blanca School, San Ysidro Road campus.

Saturday, April 12, 4 PM – AU planning meeting at SBMNH at Krissie's office. Everyone's welcome - get involved in AU activities!

Saturday, April 12, 7:30 PM – Monthly Public Star Party at SBMNH.

Friday, April 18, 7:30 PM – Monthly Public Observation at Westmont College's Van Kampen Observatory.

Thursday, April 24, 7 PM – Telescopes for Hollister School Open House.

Wednesday, April 30, 11:50 AM – Slides shows for Dunn High School and another Santa Ynez Valley school. Details not available yet, contact Chuck.

Remember that outreach events often change at the last minute. Contact Edgar or Chuck for the latest developments. See page three for contact info.

Who Turned On The Stars?

April 1 - 8 is the second National Dark Sky Week. Turn off your outdoor lights from 9 PM to 11 PM Pacific Time. Contact Jennifer Barlow at nationaldarkskyweek@yahoo.com for details. Saturday, April 5, from 7 - 10 PM there will be a **National Dark Sky Week event at SBMNH**, sponsored by SBMNH, the AU, and the Women's Environmental Watch (WEWatch) of the Santa Ynez Valley. There will be a planetarium show on light pollution, classroom activities for kids, and telescopes set up by the AU. The Museum will turn off all lighting from 8:30 to 9:00. Admission to this event is free. They expect at least 500 people, so we'll need lots of scope volunteers, who will be invited to a small reception before the event. **Please members, we will need all the hands we can get!** Anyone with telescopes, crowd guidance abilities, or constellation tour knowledge, please contact Chuck or Edgar if you want to help out. This is so important

that Chuck is even giving us his pager number (Chuck McPartlin, macpuzl@west.net, home: 964-8201 and pager: 564-9002).

More New Equipment

Chuck and Pat McPartlin recently invested in 2 green laser pointers, mostly out of curiosity, and they arrived in time for the Star Party at the Museum on March 8. When Pat did the exit poll, she found that Saturn, of course, was the highest point winner, but the laser pointers were a close second. Pat says they are awesome. They are bright, they trail right to the place pointed, and they are easy to use. Definitely recommended! Chuck has the seller info.

Good "Webb" Site

Greg Brinser forwarded this site to us from Brian Webb. You may be familiar with his "Rawhide Space Page II" <http://home.earthlink.net/~kd6nrp> that contains space and astronomy information such as the Vandenberg AFB Launch Schedule and Southern California Astronomical Events calendar. He has recently added much Southern California specific information, including ephemeris data. Greg also forwarded a site from John Reagan that can help you build an equatorial platform for Dobsonian telescopes to track the earth's rotation. <http://www.geocities.com/reaganjj>

How Much Do You Love YOUR Scope?

Greg Brinser also contributed a poem written by a man who made him a shakuhachi (Japanese bamboo flute) for Christmas. Apparently the man has acquired such an interest in astronomy that he has gotten to the point of writing love poems about his telescope. I am sure we can all relate...

MY TELESCOPE

*MY TELESCOPE IS A CRYSTALLINE WINDOW,
A BENDING OF LIGHT AN OPENING OF MIND, BROADENING
INTO VAST ANCIENT TIMES AND SPACES, BRINGING THEM
SOMEHOW NOW.*

*A WORK OF SCIENCE/ART A SILENT CREATION ITS
MECHANISM STILL... A MATTER OF CRAFTSMANSHIP AND
MATERIALS. A GEM THAT IS ALIVE WITH POTENTIAL.*

*MY TELESCOPE GIVES ITS VISION FREELY TO ANYONE WHO
WOULD LOOK, WITHOUT RECOURSE TO A BOOK, THERE IS NO
TAX OR PERTURBATION, ONLY UNLIMITED FASCINATION.*

*FORGIVE ME IF I SOUND LIKE DR. SUESS - BUT WHEN I THINK
OF MY TELESCOPE MY MIND BECOMES LOOSE.*

-J. NIEMI, OSAKA, 12/15/02



Musical Satellites by Dr. Tony Phillips

If light were sound, then chemicals would play chords. Water: C major. Cyanide: A minor. Chlorophyll: G diminished 7th. (Please note that the choice of chords here is only for the sake of illustration, and not meant to reflect the actual spectra of these chemicals.)

It's a loose metaphor, but an apt one. Musical chords are combinations of frequencies of sound (notes), while chemicals leave unique combinations of dips in the frequency spectrum of reflected light, like keys pressed on a piano. Spectrographs, machines that recognize chemicals from their "chords of light," are among the most powerful tools of modern chemistry.

Most earth-watching satellites, like the highly successful Landsat series, carry spectrographs onboard. These sensors measure the spectra of light reflected from forests, crops, cities, and lakes, yielding valuable information about our natural environment. Current satellites do this in a fairly limited way; their sensors can "hear" only a few meager notes amid the symphony of information emanating from the planet below.

EO-1 could change that. Short for "Earth Observing 1," EO-1 is an experimental NASA satellite in orbit since 2000. It's testing out a more advanced "spectrometer in the sky"-the Hyperion hyperspectral imager. How good is it? If Landsat were "chopsticks," EO-1 would be Gershwin's "Rhapsody in Blue."

The Hyperion sensor looks at 220 frequencies in the spectrum of visible and infrared light (0.4 to 2.5 microns) reflecting off Earth's surface. Landsat, in contrast, measures only 10. Bryant Cramer, who manages the EO-1 project at the Goddard Space Flight Center, puts these numbers in perspective. "If we flew Landsat over the northeastern United States, it could readily identify a hardwood forest. But using hyperspectral techniques, you probably can . . . tell the oak trees from the maple trees."

Future earth-watching satellites may use Hyperion-like instruments to vastly improve the environmental data they provide. EO-1 is paving the way for these future missions by taking on the risk of flight-testing the sensor for the first time.

For farmers, foresters, and many others, this new remote sensing technology will surely be music to the ears.

Read about EO1 at <http://eo1.gsfc.nasa.gov> . Budding young astronomers can learn more at http://spaceplace.nasa.gov/eo1_1.htm .

AU Information Box

President:	Pat McPartlin	964-8201
	parsnip7@yahoo.com	
Vice President:	Chuck McPartlin	964-8201
	macpuzl@west.net	
Secretary:	Craig Prater	683-5784
	craig@di.com	
Treasurer:	Bob Brown	683-2138
	BobBrownSB@cox.net	
Outreach:	Edgar Ocampo	964-0914
	eocampo26@earthlink.net	
Webmaster:	Paul Winn	685-5646
	strg8zn@cox.net	
Refreshments:	Jim Williams	736-4723
	j_alison_w@hotmail.com	
Newsletter:	Ken Pfeiffer	687-2327
	Keagle10@cox.net	

AU Astronomy Information Pager

(leave a short message) 564-9002

SBMNH Astronomy Program Coordinator

Krissie Cook 682-4711x316
kcook@sbnature2.org

SBMNH Astronomy Program Tape

Updated weekly 682-4711x405

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Our address is:

Astronomical Unit
C/O Santa Barbara Museum
of Natural History
2559 Puesta Del Sol Road
Santa Barbara, CA 93105-2998

On the Web: www.sbau.org