

The Custer Comment

★ For The Curious ★

October, 2005

Volume XXXV, Issue 10

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John Dobson at Custer!



Image, courtesy Tom Madigan

World renowned telescope maker, amateur astronomer, monk, celebrity and philosopher, John Dobson, speaks to an enthralled audience following his lecture of Saturday night, September 17th. Custer board member and Observatory technician Kurt Massey looks on as John fields a question regarding Cosmology and the formation of spiral galaxies. This author had the privilege and honor of providing John's transportation to Custer on the afternoon of his lecture. I had picked him up at the ferry terminal in Port Jefferson and for the next hour we conversed about everything from telescope making to his days at the Vedanta Hindu Monastery. He was born amid modest surroundings at a Methodist mission on September 14, 1915 in Peking, China. His mother was a musician and his father a professor of Zoology at Peking University. With beginnings such as these, it's a small wonder that he would go on to become the person that he is today: full of life (at 90-years-old!), humble, tenacious, intelligent; a person who has a love for people, diversity, his God and the universe around him. We are all enriched for having met him.

Thank you, *John Dobson*, for brightening our doorway. May your life continue to be full and may you receive the blessings so richly deserved by a person who has touched the lives of so many.

Via con Dios, John!

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Announcements & General Interest

Dome replacement underway;

Please look for updates in upcoming issues of the Custer Comment.

Editor's Column

<p>Tom Madigan, Editor Tom Madigan 99 North Summit Ave. Patchogue, NY 11772-2226 tmadigan@optonline.net 631-714-4388</p> <p>Cutoff for submissions is the 15th of the month preceding publication</p> <p>Visit the new Custer Website at http://www.custerobservatory.org Custer Comment Archive: http://tmadigan.home.netcom.com/custer</p>	<p>The Custer Comment is published monthly by</p> <p>Custer Institute P.O. Box 1204 Main Bayview Road Southold, NY 11971 631-765-2626</p> <p><i>"I have loved the stars too fondly to be fearful of the night."</i></p> <p style="text-align: right;"><i>Sarah Williams</i></p>
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I continue my new column, AstroBytes, this month, discussing Celestia, a great program that turns your PC into a super planetarium. In addition, have a glance at our upcoming Jamboree schedule on page 8 with the other exciting events for October through the rest of the year described on the pages that follow.

Best,
 Tom
Tom Madigan, Editor

Gift Corner & Classifieds

<p>WE HAVE METEORITES.</p> <p>Great sets mounted in beautiful display cases. Perfect for gifts.</p> <p>Custer coffee mugs, only \$4. Do you have <i>yours</i> yet?</p>	<p>The Gift Shop still has a dwindling number of copies of <i>ASTRONOMY FOR ALL AGES</i>, by Philip Harrington & Edward Pascuzzi, just \$20. As an added bonus, copies are signed by Ed Pascuzzi. We also have copies of <i>PARALLAX</i> by Alan W. Hirshfeld, guest speaker at the 2003 Jamboree. Quantities are limited so hurry and add this well-written and informative volume to your collection while supplies last.</p>	<p>We have Susan Harder's patented & dark sky friendly PARSHIELD[®] OUTDOOR FLOODLIGHT SHIELDS for PAR 38 type bulbs. Controls glare, reduces light trespass & allows you to direct the light where you need it. Two shields per box in your choice of Off White or Bronze finish for \$20.00, tax incl.</p>
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AstroBytes

By Tom Madigan

Celestia

What if you could travel through the Local Group of galaxies at many times the speed of light; what if you could view the solar system from Voyager 2, a still-functioning, soon-to-be starship that has just crossed the Termination Shock, the transitional region of the Heliosphere where the Solar wind's velocity abruptly slows from 500 Km/sec as the tenuous Interstellar wind meets the Solar Wind head on; what if you could visit any star out of 2,100,000 catalogued stars, at any distance; what if you could do any of these things and much more right from the keyboard of your home PC? With *Celestia*, you can. Unlike other programs that cost upwards of \$50.00, *Celestia* is freely downloadable, is complete with documentation, is expandable with many options and addins and runs on all Microsoft operating systems, LINUX, and MacIntosh OS-X. Redshift, version 4, is the only other program of note that even comes close to the stunning graphics, the functionality and versatility of *Celestia*. In addition, the source code, the actual program code that is compiled to produce the software module that executes (runs) on your computer, is 'Open Source'.

The *GNU Open Source* license (<http://www.gnu.org/copyleft/gpl.html>) allows you, the end user, to contribute to a specific project that is covered by the license. Suppose you have an idea that you feel would enhance a particular project, in this case *Celestia*; you would suggest your ideas in an online forum, collaborate with the originators of the project and / or other developers and submit your modified version for trial. If accepted, your changes will be incorporated into the next release. If not accepted, you still have the right under the *Open Source* license to enjoy and use your changes without fear of the software police knocking on your door. The *Open Source* project is a worldwide endeavor; a project made possible with the instant and worldwide communication capabilities of the Internet and is a radical departure from the old paradigm promoted and enforced by software giants, so loath to disclose their intellectual property. By using and contributing to the *Celestia* project, you'll be helping to promote and advance *Open Source*, an idea that has come of age, one that seeks the perfection of a software project by the collaboration of programmers, artists and developers from all corners of the planet, one where the inflated bottom line of a corporate giant is not a factor. In addition to submitting programming enhancements, upgrades or bug fixes, *Celestia* provides you, the end user, with the ability to submit additional images, textures and graphics to further enhance the product, currently at version 1.3.2.

The limited space available to me on this single page is woefully insufficient to describe what can be done with *Celestia*. Whatever your imagination can conceive of within the realistic context of space travel, from a journey to the moon out to the Large Magellanic Cloud or M-33, you can do with *Celestia*. I highly recommend *Celestia* for anyone who is serious about advanced Planetarium software for the PC.

To use *Celestia* on any of the popular versions of the Microsoft Windows operating system, simply navigate to <http://www.shatters.net/celestia>, click 'download' then click [Windows XP/2000/98/ME](#). For LINUX or Mac, select those links to download the respective installer. To use *Celestia* you'll need a minimum of a Pentium III processor running at 800 Mhz, at least 128 Mb of RAM and an accelerated video graphics card capable of running OpenGL. Any PC that's been produced within the past 2 or 3 years should be adequate. This author's PC has a 1,000 Mhz (1 Ghz) Pentium III processor with 512 Mb of RAM and *Celestia* runs just fine.

Editor: For those interested in reading about the capabilities of *Celestia*, the documentation for the current version is available at the Custer Comment Archive: <http://tmadigan.home.netcom.com/custer>.

"10th Planet" has a Moon!

By Tom Madigan with Contributions from Joe Rao

As reported in last month's Custer Comment, there has been the discovery of a "10th Planet" (September, 2005, Custer Comment: *10th Planet And Other Kuiper-Belt Objects Discovered*) beyond Pluto. Now it seems as though a satellite associated with this new planet has been discovered, as well. The following has just been released from embargo at CalTech:

For Immediate Release
September 30, 2005

Tenth Planet Has a Moon

**** Embargoed until 11:00 a.m. PST, Monday, October 3, 2005 ****

PASADENA, Calif. --The newly discovered 10th planet, 2003 UB313, is looking more and more like one of the solar system's major players.

It has the heft of a real planet (latest estimates put it at about 20 percent larger than Pluto), a catchy code name (Xena, after the TV warrior princess), and a Guinness Book-ish record of its own (at about 97 astronomical units-or 9 billion miles from the sun-it is the solar system's farthest detected object). And, astronomers from the California Institute of Technology and their colleagues have now discovered, it has a moon.

The moon, 100 times fainter than Xena and orbiting the planet once every couple of weeks, was spotted on September 10, 2005, with the 10-meter Keck II telescope at the W.M. Keck Observatory in Hawaii by Michael E. Brown, professor of planetary astronomy, and his colleagues at Caltech, the Keck Observatory, Yale University, and the Gemini Observatory in Hawaii. A paper about the discovery was submitted on October 3 to *Astrophysical Journal Letters*.

"Since the day we discovered Xena, the big question has been whether or not it has a moon," says Brown. "Having a moon is just inherently cool-and it is something that most self-respecting planets have, so it is good to see that this one does too."

Brown estimates that the moon, nicknamed "Gabrielle"-after the fictional Xena's fictional sidekick-is at least one-tenth of the size of Xena, which is thought to be about 2700 km in diameter (Pluto is 2274 km), and may be around 250 km across.

To know Gabrielle's size more precisely, the researchers need to know the moon's composition, which has not yet been determined. Most objects in the Kuiper Belt, the massive swath of miniplanets that stretches from beyond Neptune out into the distant fringes of the solar system, are about half rock and half water ice. Since a half-rock, half-ice surface reflects a fairly predictable amount of sunlight, a general estimate of the size of an object with that composition can be made. Very icy objects, however, reflect a lot more light, and so will appear brighter-and thus bigger-than similarly sized rocky objects.

Further observations of the moon with the Hubble Space Telescope, planned for November and December, will allow Brown and his colleagues to pin down Gabrielle's exact orbit around Xena. With that data, they will be able to calculate Xena's mass, using a formula first devised some 300 years ago by Isaac Newton.

"A combination of the distance of the moon from the planet and the speed it goes around the planet tells you very precisely what the mass of the planet is," explains Brown. "If the planet is very massive, the moon will go around very fast; if it is less massive, the moon will travel more slowly. It is the only way we could ever measure the mass of Xena-because it has a moon."

The researchers discovered Gabrielle using Keck II's recently commissioned Laser Guide Star Adaptive Optics system. Adaptive optics is a technique that removes the blurring of atmospheric turbulence, creating images as sharp as would be obtained from space-based telescopes. The new laser guide star system allows researchers to create an artificial "star" by bouncing a laser beam off a layer of the atmosphere about 75 miles above the ground. Bright stars located near the object of interest are used as the reference point for the adaptive optics corrections. Since no bright stars are naturally found near Xena, adaptive optics imaging would have been impossible without the laser system.

"With Laser Guide Star Adaptive Optics, observers not only get more resolution, but the light from distant objects is concentrated over a much smaller area of the sky, making faint detections possible," says Marcos van Dam, adaptive optics scientist at the W.M. Keck Observatory, and second author on the new paper.

The new system also allowed Brown and his colleagues to observe a small moon in January around 2003 EL61, code-named "Santa," another large new Kuiper Belt object. No moon was spotted around 2005 FY9-or "Easterbunny"-the third of the three big Kuiper Belt objects recently discovered by Brown and his colleagues using the 48-inch Samuel Oschin Telescope at Palomar Observatory. But the presence of moons around three of the Kuiper Belt's four largest objects-Xena, Santa, and Pluto-challenges conventional ideas about how worlds in this region of the solar system acquire satellites.

Previously, researchers believed that Kuiper Belt objects obtained moons through a process called gravitational capture, in which two formerly separate objects moved too close to one another and become entrapped in each other's gravitational embrace. This was thought to be true of the Kuiper Belt's small denizens-but not, however, of Pluto. Pluto's massive, closely orbiting moon, Charon, broke off the planet billions of years ago, after it was smashed by another Kuiper Belt object. Xena's and Santa's moons appear best explained by a similar origin.

"Pluto once seemed a unique oddball at the fringe of the solar system," Brown says. "But we now see that Xena, Pluto, and the others are part of a diverse family of large objects with similar characteristics, histories, and even moons, which together will teach us much more about the solar system than any single oddball ever would."

For more information on the discovery and on Xena, visit www.gps.caltech.edu/~mbrown/planetlila

Contact: Kathy Svitil
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Editor: This release has been reproduced exactly as received. No modifications have been made, nor does Custer Institute claim any responsibility or credit for its content. The California Institute of Technology (CalTech) is the originator of this press release.

CONTROLLING LIGHT POLLUTION

A Lecture by Susan Harder of the Dark Sky Society

When: Saturday, October 8th, 8:00 PM
Where: Custer Institute, Main Bayview Road, Southold, NY
Topic: **“CONTROLLING LIGHT POLLUTION”**; An illustrated lecture on the effects of light pollution on health and the environment and what you can do about it.

"Controlling light pollution: the financial & environmental costs of poorly implemented outdoor lighting."

Custer member and Dark Sky Advocate, Susan Harder, will present an illustrated lecture about light pollution, with examples of successful efforts to control it on Long Island. The discussion will include such topics as "Main Street" light fixture retrofits; site plan lighting requirements; municipal guidelines; examples of "acceptable fixtures"; local, state, county, and federal legislation; what people can do to help in their communities; long term goals; and the adverse effect of light pollution on health and the environment. Refreshments and observing the night sky through Custer's telescopes (weather permitting) will follow.

MARS IS BACK!

A Presentation by Kurt Massey

When: Saturday, October 22nd, 8:00 PM
Where: Custer Institute, Main Bayview Road, Southold, NY

In 2003, Mars passed as close to the Earth as it had in nearly 60,000 years. This fall, it will again be favorably placed providing, yet again, another opportunity for detailed observation, study and photography. While not as close as it was back in 2003, it is still favorably placed and we will have to wait until June, 2018 for another chance to observe it so close.

Custer Board and Observatory Committee member, Kurt Massey, will take us on a journey from Mars' formation to the present, discussing such topics as Mars' retrograde motion, the disparity in distance from one opposition to the next as well as some of the exciting new findings and pictures from the still-functioning and highly-successful Mars landers *Spirit* and *Opportunity*. The lecture will most likely be less than an hour, will be followed by questions and answers and then, finally, observing, weather permitting. As always, refreshments will be available. Suggested admission is \$5.

Editor: For additional info and details for both events, please visit Custer's website at: <http://www.custerobservatory.org>, call 631-765-2626 or contact Donna McCormick at mccormick@scientific-consultants.com or 631-696-3333.

27th Annual Astronomy Jamboree!

When: Friday Evening, November 4th, 2005 through Sunday, November 6th, 2005

Where: Custer Institute, Main Bayview Road, Southold and Southold High School

Program

Friday Night, November 4th

7:00 PM; **Registration begins;**

7:30 PM; **An evening of refreshment and friendship featuring:**

Long Island's own *Home Grown String Band*;

The evening includes poetry reading, lead by our long-time supporter and member Bob Chapin. Bring your favorite astronomical poem. Added to the festivities will also be the singing of the Astronomers Drinking Song with musical accompaniment. The evening will be topped off with observing, weather permitting.

Saturday, November 5th

9:30 AM; **Registration;**

10:00 AM; **Workshops, Talks, Films;**

- Solar Imaging, Kurt Massey;
- Build a Planisphere, David Cohn;
- Telescope Making, Tom Madigan;
- A Sidewalk Astronomer, A film about Cosmology and John Dobson;

12:00 PM **Lunch;**

1:30 PM **Welcome to the Custer Institute Astronomy Jamboree;** Welcome address by Custer Vice President Bob Vanson;

1:45 PM **Detecting Radio Emissions from Jupiter and the Sun;**

Ronnie Milione, PhD, Engineering Project Manager, BAE Systems;

2:45 PM **Life in the Universe, Fact or Fiction;**

Frederick M. Walter, PhD, Professor of Astronomy, SUNY, Stony Brook;

3:45 PM **Stellar Duets: How Companions Shape the Life and Evolution of Stars;** Orsola De Marco, PhD, Research fellow, American Museum of Natural History;

Dinner; Discuss the day's events with a kindred soul or dine solitaire while you enjoy some of the best seafood in New York State. Some of the local eating establishments are among the who's who of fine restaurants;

8:00 PM **The 7th Annual Dr. Fred Hess Lecture: Naked Astronomy;**

Phil Harrington, Author, Contributing Editor, Astronomy Magazine;

9:00 PM **Door Prize Raffle;**

Sunday, November 6th

Sunrise (6:26 AM) **Pre-sunrise observations;** Join us at Orient Point State Park;

Green Flash Watch; With some good fortune, we hope to observe this rare and elusive event, observable preceding sunrise on a clear, eastern horizon;

Post Green Flash Nature Walk; Join Custer members on a bird watching and nature expedition. Bring your camera and binoculars.

Editor: This page is included as a courtesy and as a quick reference. If you're a Custer member in good standing, you'll receive the full Jamboree schedule and itinerary, either by standard US mail or electronically.

HEAVENLY EVENTS TO WATCH FOR OCTOBER, 2005

“There once was debate on the science, was met with initial defiance, left many confused; My hobby’s not cool? I’ll leave those that think so to the lions!”

- Sent to me by Joe Peselli

All month, MERCURY lurks in the evening sky, but not so you’d notice. JUPITER is there too, during the first week of October, but our chances of spotting either are practically nil. VENUS continues to plod southward low in the southwest at nightfall, setting by 8:30 PM. The “star” attraction is MARS as Earth prepares to catch and pass it once again. On the 1st Mars is at -1.7 magnitude, rises by 9 AM and is due south by 4 AM; by month’s end it’s at -2.3 magnitude (about 75 % brighter), rises just after sunset, is due south shortly after midnight and

is magnificent all night long. Things happen fast when we catch up to Mars! SATURN, in Cancer the Crab, rises around 1 AM at midmonth and is well up in the southeast by daybreak. During the month URANUS can be found about 2° northeast of the 4.8 magnitude star σ (Sigma) Aquarii, about one magnitude fainter than that star, and is due south around 10 PM. And 7.9 magnitude NEPTUNE is about 2° northeast of the 4.1 magnitude star θ (Theta) Capricorni, and shares the same field of view with the 6.9 magnitude star SAO 164177 all this month.

- 1 Retrograde begins for Mars along the Taurus-Aries border.
- 3 New Moon. An annular solar eclipse may be seen along a path across Portugal and Spain, thence across Africa from Algeria to Somalia.
- 7 Astrophysicist Niels Bohr was born 120 years ago today.
- 8 Don’t be surprised by an occasional slow-moving meteor out of Draco in the north after dark this evening. It’s likely to be a Draconid from Comet 21P/Giacobini-Zinner.
- 12 Around 10:25 PM the 4.7 magnitude star ϵ (Epsilon) Capricorni will suddenly disappear behind the darkened upper-left edge of the waxing gibbous Moon.
- 14 Algol, β (Beta) Persei, is in mid-eclipse at 9:11 PM.
- 17 Full Hunter’s Moon sets around sunrise. Shortly before it does, sharp-eyed observers might notice the Moon entering the penumbral phase of a partial lunar eclipse. (Look in the area around Mare Humorum and the crater Grimaldi.)
- 18 The bright gibbous Moon rises above Mars this evening, and to the left of Mars tomorrow evening.
- 25 The fat waning crescent Moon rises ahead of Saturn in the early morning hours.
- 26 Retrograde ends for Neptune, which is only about 12 arcminutes northwest of SAO 164177. (Faint star alongside fainter planet; do they appear different?)
- 29 Daylight Saving Time ends tonight. Use the extra hour to ogle Mars, which experiences closest approach to us tonight - about 43 million miles away. Its disk diameter is now 20.2 arcseconds.
- Nov. 3 Both Venus and Mercury are at greatest elongation east of the Sun; but don’t expect to spot Mercury, even with a razor-thin crescent Moon just to its left.
- Nov. 5 Venus and the thin waxing crescent Moon pair up in the southwest sky this evening.

Prepared by Robert Chapin

WELCOME TO OUR NEW OR RETURNING MEMBERS:

Welcome one and all!

New, returning or regular members:

Do you own or have access to a personal computer? Do you have Internet access? If the answer to both of these questions is “yes”, why not send me your email address and receive the Custer Comment electronically? Some of the immediate benefits are:

- Immediate delivery to your inbox; no lost, late or tattered issues;
- Print only what you want;
- Active links to relevant websites and content;
- Color photos;
- Electronic bulletins and alerts delivered directly to your inbox;
- No postage, mailing or printing expenses, providing an immediate cost savings for Custer. The saved revenue can be used to help fund all the exciting new projects and initiatives currently underway.

To receive the Custer Comment electronically, simply send an email to tmadigan@optonline.net with your name and “Electronic Mailing” in the subject line and I’ll take care of the rest.

If you’re not already, please consider becoming a member of Custer. Custer Institute is a nonprofit organization that was established in 1927. We’re staffed entirely by volunteers and rely on dues, proceeds from events, and the generosity of the community for our survival. Your membership will not only help us continue to provide educational, cultural and research programs, but will support our current efforts to expand our facility and services.

ACKNOWLEDGMENTS

Programs Committee Chairperson, Donna McCormick, would like to thank the following people for helping to make the evening with John Dobson such a successful event:

John Dobson for making a special trip to spend the evening at Custer;

John's associate, **Andy Pineros**, for facilitating the arrangements;

Tom Madigan, AOS, ASLI, and AAA for quickly spreading the word about the talk;

David and Carmella Cohn for inviting John to be their overnight guest;

Tom Madigan for dropping everything and transporting John to Custer at literally a moment's notice;

Rich Huber, Bob Farrell, and Susan Harder for filming John's talk;

Slide projector angels **David Cohn, Kurt Massey, Rich Huber, Tom Madigan and Jeff Katz** for scrambling to solve the eleventh hour broken equipment problem and **Doug Hardy** for saving the day by rushing over with his own projector;

Barbara Lebkuecher for her help at the registration desk;

Anna and Rico Verticchio for thoughtfully getting John a birthday cake and **Sylvia Cohn** for presenting it;

Jill Howell for making Custer so neat and clean.

It takes a talented, dedicated team of great people to make an event like this succeed when there's only 10 days from start to finish. You made it happen. Thanks, guys!

Editor: Thank you, Donna, for the recognition. It was an honor and a privilege for me to be John's chauffeur. It is I that is in your debt for having afforded me that opportunity.

Upcoming Events at Custer

Aside from the events and activities for the month of October that are covered in this issue, please make a note of the following:

- Custer's annual Astronomy Jamboree; November 4th – 6th (see page 8 of this issue);
- Custer's annual Holiday Party; Saturday, December 10th, 4 PM;
- Ongoing; Every Saturday From Sunset Until Midnight;
Weather permitting, each Saturday, Custer staff will be on hand to assist you in observing the night sky using Custer's telescopes, and to answer your questions about astronomy and the organization itself.

Next Month

New paradigm for Paleontology and fossil research: Soft tissue found in T. Rex fossil!

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