

# The Custer Comment

★ For The Curious ★

September, 2005

Volume XXXV, Issue 9

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[wbogardu@optonline.net](mailto:wbogardu@optonline.net)

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631-727-8393

[akam10@optonline.net](mailto:akam10@optonline.net)

**Dr. Jeffrey Katz '07**

631-696-3333

[katz@scientific-consultants.com](mailto:katz@scientific-consultants.com)

**Rich Huber '06**

631-598-4613

[raflash99@aol.com](mailto:raflash99@aol.com)

**Kurt Massey '06**

631-325-2123

[kamassey@peconic.net](mailto:kamassey@peconic.net)

## **Custer Dome Replacement Underway!**



Image, courtesy Charles A. Cardona III

Monday, August 22<sup>nd</sup>, under a brilliant blue sky, workers dismantle Custer's 50-year-old dome in preparation for the August 29<sup>th</sup> delivery of the brand-new, fiberglass Ash dome. The plywood-panel dome, pictured above, saw many a sparkling night sky, protecting both telescope and observer alike. Over the years, this author enjoyed many a star-studded night under its protective mantle, from the famous Martian Opposition of May 31<sup>st</sup>, 1969 to the public observing sessions currently hosted by Custer every Saturday night. In its heyday, this dome was the landmark of note in Southold and has seen no less than 2 major repair projects. For additional photos, please visit the Custer archives at <http://tmadigan.home.netcom.com/custer>.

### **Major Events for September**

- Astronomy course, *Discover Astronomy*; September 10<sup>th</sup>, 6:00 PM; details inside.
- Concert and Musical History Program; Saturday, Sept. 24, 7:00 PM; details inside.

## Table of Contents

September, 2005	Volume XXXV, Issue 9	1
Executive Board		1
<b>PRESIDENT</b>		1
<b>VICE PRESIDENT</b>		1
<b>TREASURER</b>		1
<b>SECRETARY</b>		1
<b>FINANCE CHAIR</b>		1
<b>DIRECTORS</b>		1
Custer Dome Replacement Underway!		1
Major Events for September		1
Table of Contents		2
Announcements & General Interest		2
Errata		2
Editor's Column		3
Gift Corner & Classifieds		3
HEAVENLY EVENTS TO WATCH FOR SEPTEMBER, 2005		4
10th Planet And Other Kuiper-Belt Objects Discovered		5
AstroBytes		6
BOINC		6
Welcome To Our New Or Returning Members		7
Fall 2005 Astronomy Class: Discover Astronomy		8
Upcoming Events At Custer		9
Discover Astronomy;		9
Saturdays, Sept. 10, 17, Oct. 1, 8 & 15, 6:00 - 7:30 P.M.		9
Concert And Musical History Program;		9
Saturday, Sept. 24, 7:00 P.M.		9
Custer's 27th Annual Astronomy Jamboree		9
November 4 - 6.		9
Observing Every Saturday From Sunset Until Midnight		9
Next Month		9
Look for the following next month or in a future issue		9

### Announcements & General Interest

#### Errata

August issue, page 7, first paragraph: "velocity abruptly slows from 500 Km/hr"  
*should read* "velocity abruptly slows from 500 Km/sec".

## Editor's Column

<p><b>Tom Madigan, Editor</b>          Tom Madigan          99 North Summit Ave.          Patchogue, NY 11772-2226  <a href="mailto:tmadigan@optonline.net">tmadigan@optonline.net</a>          631-714-4388</p> <p>Cutoff for submissions is the 15<sup>th</sup> of the month preceding publication</p> <p>Visit the new Custer Website at  <a href="http://www.custerobservatory.org">http://www.custerobservatory.org</a>          Custer Comment Archive:  <a href="http://tmadigan.home.netcom.com/custer">http://tmadigan.home.netcom.com/custer</a></p>	<p><b>The Custer Comment is published monthly by</b></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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Please see my new 'AstroBytes' Column, debuting in this month's issue. Each month I'll explore exciting new software and computer-related projects that will enhance your observing experience, your study of astronomy and nurture that curiosity that compels all of us to ponder the universe around us and our place in it.

Best,  
 Tom  
*Tom Madigan, Editor*

## Gift Corner & Classifieds

<p><b>WE HAVE METEORITES.</b></p> <p><b>Great sets mounted in beautiful display cases. Perfect for gifts.</b></p> <p><b>Custer coffee mugs, only \$4.</b>          Do you have yours yet?</p>	<p>The Gift Shop still has a dwindling number of copies of <i>ASTRONOMY FOR ALL AGES</i>, by Philip Harrington &amp; 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 &amp; dark sky friendly <b>PARSHIELD®</b> <b>OUTDOOR FLOODLIGHT SHIELDS</b> for PAR 38 type bulbs. Controls glare, reduces light trespass &amp; 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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## HEAVENLY EVENTS TO WATCH FOR SEPTEMBER, 2005

“ Now I, even I, would celebrate  
In rhymes inapt the great  
Immortal Syracusan, rivaled nevermore,  
Who, in his wondrous lore,  
Passed on before,  
Left men his guidance  
          how to circles mensurate. “

- Robert E. Moritz (?)

(What is this about? Why was it written?)

During the first week of September MERCURY can be found low over the eastern horizon after daybreak (around 5:30 AM), then it's gone. A far more dramatic display is the pairing of -3.9 magnitude VENUS and -1.7 magnitude JUPITER low in the west-southwest on the evening of the 1<sup>st</sup>, followed by their gradual separation as the month progresses. By month's end Jupiter will be gone from view. MARS is “putting on the brakes” (as seen by us,) coming to a “stop” just inside Taurus' border with Aries on October 1. After that the red planet will appear to “back up” in retrograde motion as we catch up and pass it this fall. During September Mars brightens from -1.0 to -

1.7 magnitude as we draw closer. SATURN spends the month in Cancer, drifting eastward past M44, the Beehive Cluster. It rises over the eastern horizon by 3 AM at midmonth. Both URANUS and NEPTUNE are up and ready by nightfall this month, so include them in any telescope session. Try to track their slow westward creep through their surrounding starfields. By month's end Uranus (in Aquarius) is due south around 11 PM, and Neptune (in Capricornus) is due south around 9:30 PM.

- 1 Venus and Jupiter are only 1.2° apart, low in the west-southwest after sunset. Look for them around 8:30 PM, before end of twilight. Venus is about 8 times brighter than Jupiter this evening. If you see a star off to their left, that will be the 1<sup>st</sup> magnitude star Spica,  $\alpha$  (Alpha) Virginis.
- 2 Around 5:30 AM, check the east-northeast horizon for Mercury and a very thin waning crescent Moon.
- 6 Be on hand around 8:15 PM for another look along the western horizon, where an awesome foursome has gathered (within a mere 6° of space) for your viewing pleasure. Joining Venus, Jupiter and Spica (now close beneath Venus) is the very thin waxing crescent Moon. Must see!
- 11 Venus and Jupiter are now 10° apart. From now on Jupiter will be progressively harder to find.
- 14 Happy 90<sup>th</sup> birthday, John Dobson!
- 17 Full Fruit Moon - and Harvest Moon as well - tonight.
- 21 By 10 PM Mars and the waning gibbous Moon are rising together in the east.
- 22 Fall begins at 6:23 PM. The Sun, low in the west, is astride the celestial equator.
- 28 The waning crescent Moon joins Saturn in the predawn sky.
- Oct. 1 Mars has come to a stop just inside Taurus. Now it will begin to drift westward (retrograde) back into Aries, getting closer and brighter throughout the month.

*Prepared by Robert Chapin*

## **10th Planet And Other Kuiper-Belt Objects Discovered**

By Tom Madigan

Contrary to what might be expected with the discovery of the long-sought after 'Planet X', much of the mainstream press was largely silent with the news that a trans-Plutonian planet had been discovered. Gone is the celebration that accompanied the discovery of Pluto by Clyde Tombaugh in 1930. Like the continually growing family of satellites orbiting Saturn, discovered through the ongoing and brilliant success of the Cassini-Huygens mission to Saturn, it is now apparent that each of the gas giants is a microcosm and model of the solar system; indeed, the solar system is a macrocosm of the Saturnian system and the other gas giants. It now seems that our discovery of these **Kuiper Belt Objects**, or KBOs for short, has been limited by our technology; as our imaging technology improves, both in sensitivity and resolution, so does our ability to detect these exceedingly faint and elusive objects. Gone is the notion that our Solar System has a fixed number of planets.

Discovered by Michael E. Brown of Caltech, Chadwick A. Trujillo ( Gemini Observatory, <http://www.gemini.edu> ) and David Rabinowitz of Yale, the new addition to our solar system is temporarily identified by the unromantic name: 2003 UB(313). It orbits the sun once every 557 years at 44° to the plane of the ecliptic, is 2,900 km in diameter or 40% larger than Pluto and 500 km smaller than our own moon. It is currently at it's aphelion of 97 AU or 14.5 billion kilometers from the sun and, as such, it is the most distant object ever observed in the solar system. 2003 UB(313) has a highly elliptical orbit with a perihelion of 38 AU that brings it just outside the orbit of both Neptune and Pluto. Serendipitously, 2003 UB(313) is just about at the same distance from the sun as Voyager 1, Voyager 1 having just crossed the Termination Shock, the transitional region of the Heliosphere where the Solar wind abruptly slows and begins to yield to the pressure of the Interstellar wind. Using the 48-inch Schmidt Telescope at Palomar Observatory, 2003 UB(313) was originally discovered in 2003 as a 19<sup>th</sup> magnitude object in Cetus. Plates dating back to the 1954 Palomar Sky Survey were used to authenticate the discovery and to confirm the orbital elements of this enigmatic new object.

2003 UB(313) is among 2 other sizeable Kuiper Belt Objects recently discovered and is thought to have at least as high an albedo as Pluto. Additional research was conducted by Trujillo using the 8-meter Gemini North Telescope in Hawaii. This research included near-infrared spectroscopy that confirmed the presence of Methane ice largely covering the surface of this cold and distant world whose surface temperature is scanty higher than absolute zero. For further reading and additional details, please visit the following websites:

<http://www.gps.caltech.edu/%7Embrown/planetlila/index.html>

[http://science.nasa.gov/headlines/y2005/29jul\\_planetx.htm?list73275](http://science.nasa.gov/headlines/y2005/29jul_planetx.htm?list73275)

[http://skyandtelescope.com/news/article\\_1560\\_1.asp](http://skyandtelescope.com/news/article_1560_1.asp)

<http://www.gps.caltech.edu/~mbrown/2003EL61/#moon>

**Editor:** If anyone is interested in securing a reprint of the *full-featured* article in the October, 2005 issue of Sky and Telescope that discusses 2003 UB(313) and the events leading up to it's discovery, please drop me a note (preferably email). Also note, the Sky and Telescope article listed above is an abbreviated version of the full article.

## AstroBytes

By Tom Madigan

### BOINC

Would you like to take part in the discovery of Gravity Waves, a prediction and logical corollary of Einstein's General Theory of Relativity, or help discover evidence of Extraterrestrial Intelligence? Do you have a personal computer with at least a 450 MHz Pentium II processor and Internet access? If the answer to these questions is *yes*, then you can become part of the world's largest distributed computing project to date.

Rather than try to process prodigious amounts of data on a single computer, distributed computing uses the computing power of multiple computers in a computer network, *distributing* that same data over these multiple computers. Called **Berkeley Open Infrastructure for Network Computing** or **BOINC** for short, the project, a product and outgrowth of the Berkeley team that conceived of the now famous and highly successful **SETI@Home** project, utilizes whatever computer time you're willing to allocate for it, communicating with the central **BOINC** server at Berkeley over the Internet. **BOINC** manages everything necessary for the smooth functioning of each project, from data acquisition to the return, posting and reconciliation of processed data. Currently, there are 6 projects that are managed by **BOINC** ( <http://boinc.berkeley.edu> ), with the promise of more to come:

1. **SETI@Home** ( <http://setiweb.ssl.berkeley.edu> ) will analyze data collected by the Arecibo Radio Telescope in Puerto Rico, searching for evidence of Extraterrestrial communication amid the data collected at 1420 MHz, the resonant frequency of neutral Hydrogen;
2. **Einstein@Home** ( <http://einstein.phys.uwm.edu> ) will analyze data from the LIGO ( <http://en.wikipedia.org/wiki/LIGO> ) and GEO ( <http://www.geo600.uni-hannover.de> ) gravitational wave detectors in the United States and Germany respectively, searching for spinning neutron stars and the propagation of Gravity Waves. Einstein@home is a World Year of Physics 2005 project supported by the American Physical Society (APS) and a number of international organizations;
3. **LHC@Home** ( <http://athome.web.cern.ch/athome> ) improve the design of the CERN LHC particle accelerator;
4. **Predictor@home** ( <http://predictor.scripps.edu> ) will use your PC to investigate protein-related diseases;
5. **Climateprediction.net** will reduce weather and atmospheric data, helping to build large-scale models of climate change that will allow meteorologists and atmospheric scientists to make predictions about weather in the 21<sup>st</sup> century;
6. **Cell Computing** ( <http://www.cellcomputing.net> ); in Japanese and requiring non-standard client software.

**BOINC** runs on all Microsoft operating systems, LINUX and other UNIX variants and Macintosh OS-X. Once installed, you decide which projects you would like to participate in and **BOINC** does the rest, from the initial install of the project-client software to maintaining the latest versions. **BOINC** is capable of the concurrent execution of multiple projects, as well, and manages that task quite well. If you're a screen saver buff, then **BOINC** won't disappoint. Each of the projects currently supported sports a creative screen saver that graphically displays the data being analyzed in dynamic 3D. **BOINC** is supported by the National Science Foundation ( <http://www.nsf.gov> ) through award SCI/0221529.

Coming next month: **Celestia**, the latest (and best) in desktop Planetarium software for your PC.

## ***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](mailto: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.

## **Fall 2005 Astronomy Class: Discover Astronomy**

Custer Board Member, Jeffrey Owen Katz, Ph.D., will teach this five week course which is primarily designed for newcomers to the field of astronomy, but will also cover subjects of interest to experienced astronomers. Topics will include: astronomy basics, finding your way around the night sky, the use of star and planetary charts and software, observing with the naked eye and through Custer's many telescopes, astrophotography, updates on current NASA missions (including viewing images with 3-D glasses), and much more. There are lots of interesting things to learn and amazing new things to see. Students are invited to remain at Custer for the evening, participate in any other events that are scheduled, and enjoy refreshments while our staff shows you around the night sky.

Classes will be held from 6:00 P.M. to 7:30 P.M. Sat. evenings: Sept. 10, 17, 24, Oct. 1, 8 & 15.

Pre-registration required. Cost: \$35 for Custer members; \$50 for non-members. Send your check or money order with the form below to: Custer Institute, P.O. Box 1204, Main Bayview Road, Southold, NY 11971. For further information call Dr. Katz at 631-696-3333 or email [jeffkatz@scientific-consultants.com](mailto:jeffkatz@scientific-consultants.com).

Please consider becoming a member of Custer. We are a nonprofit organization (est. 1927), staffed by volunteers, and we 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.

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\$45 Individual;  \$60 Family;  \$25 Senior (65+);  \$25 Junior (12-18)

Enclosed is my check (payable to Custer Inst.) for \$ \_\_\_\_\_. **Confirmation of registration will only be sent by email.**

Please mail your payment to: Custer Institute, P.O. Box 1204, Main Bayview Road, Southold, New York 11971.

## ***Upcoming Events At Custer***

Discover Astronomy;

Saturdays, Sept. 10, 17, Oct. 1, 8 & 15, 6:00 - 7:30 P.M.

Custer Board member, Jeffrey Owen Katz, Ph.D. will teach this five week course which is primarily designed for newcomers to the field of astronomy, but will also cover subjects of interest to experienced astronomers. Please refer to the full page course description and enrollment application on page 4 of this issue.

Concert And Musical History Program;

Saturday, Sept. 24, 7:00 P.M.

This evening will feature performance by the Homegrown String Band and discussion of musical history. Refreshments will be available. Observation through Custer's telescopes will follow, weather permitting.

Custer's 27th Annual Astronomy Jamboree

November 4 - 6.

Check back with us closer to the date for the full program and other details.

Observing 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***

Look for the following next month or in a future issue

- Discovery's brilliant 'Return to Flight' Mission;
- Cassini's latest flyby of Titan and other events;
- New Horizons, NASA's mission to Pluto and Charon, approved and funded;
- Dome update;
- Light pollution update

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Tom Madigan, Editor  
The Custer Comment  
99 North Summit Ave  
Patchogue, NY 11772

Address Service Requested

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