



May 2006

Volume XXXVI, Issue 5

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Custer Crowned with New Dome!



Under a mottled, grey sky, Custer's new Ash dome undergoes final adjustment and calibration following a successful installation on April 7th. Please see inside for additional photos, commentary and related press coverage.

Highlights for May 2006

Family Astronomy Day And Concert Combo

Saturday, May 6th, 2 PM Saturday – 12AM Sunday (Midnight)

A full day of fun for the whole family begins with an astronomy-related puppet show performed by Tom Stock at 2, 3 and 4 PM, with additional lectures and demonstrations throughout the day.

Spring Course Offerings for May

- May 13th Re-visiting the Big Bang: What Particle Accelerators Teach Us About the Early Universe;
- May 20th Amateur Radio Astronomy;
- May 27th The Sun and Its Impact on Terrestrial Events

Please see inside for further details, registration instructions and additional events.

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Editor's Column

Tom Madigan, Editor

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Cutoff for submissions is the 15th of the month preceding publication

Visit the new Custer Website at

<http://www.custerobservatory.org>

Custer Comment Archive:

<http://www.tommadigan.net/custer>

The Custer Comment is published monthly by

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"I have loved the stars too fondly to be fearful of the night."

Sarah Williams

With Lyra climbing the Northeastern sky towards midnight along with Cygnus and the rich summer Milky Way following close behind, we're certain that Spring is here and that Summer will soon follow. This is my favorite time of year, a time that harkens me back to younger days to a time when you could see magnitude 5.5 stars and a breathtaking Milky Way from Commack. With the fresh spring air, the sweet smell of Lilacs and Honey Suckle wafting about and the temperature and humidity still moderate, it's truly a pleasure to be out, under the stars.

It was under these delightful conditions that Custer's new dome was assembled and raised atop a refurbished building. For those who missed it or would simply like to own the memories of this memorable event in the annals of Custer Institute, I have compiled a full-featured multi-media production on DVD. Please see our 'Gift Corner and Classifieds' page for ordering instructions. In addition, a low resolution, small scale, introductory version of this production is available on the Custer Archive site I maintain at <http://www.tommadigan.net/custer>; navigate to 'Dome Raising and Installation'.

Best,

Tom

Tom Madigan, Editor

"To the youngsters of today, *I say believe in the future*, the world is getting better; there still is plenty of opportunity. Why, would you believe it, when I was a kid I thought it was already too late for me to make good at anything."

Walt Disney

Too Hot NOT to Handle

An Essay by Tom Madigan

As I approached the entrance ramp to Sunrise Highway on my way out to Custer yesterday, I immediately noticed a thick plume of gray smoke rising from the brush as I gazed north by northeast looking for its source. This event shut down Sunrise Highway from East Patchogue (where I start my journey to points east) for 2 exits, delaying my arrival at Custer by almost one hour. After asking one of the many fatigued and over-stressed policemen who were directing the overflow traffic from Sunrise Highway to lesser roads, I learned that the source of the smoke was another brush fire. It wasn't even 10 days prior that an almost identical scene unfolded in Deer Park, almost 25 miles to the west. I remember the vivid images of 30-foot flames ravaging the low grass and brush, destroying the homes and habitats of the indigenous wildlife, threatening adjacent homes, shutting down the Long Island Rail Road and all adjacent arteries and, in short, causing a commuter's nightmare (<http://www.newsday.com/news/local/longisland/ny-lifire0421.0.6568718.story>). Taken as isolated incidents, these 2 events could be attributed to a particularly dry spate of weather where the right conditions and low humidity conspired to spawn the fires. When seen against the backdrop of all the other weather anomalies of recent memory, not the least of which was Hurricane Katrina, these fires are just another alarming manifestation of a system seriously out of balance; a system that is reacting to the daily addition of prodigious quantities of green house gases and other hydrocarbons. Indeed, the news anchor on Eyewitness News remarked that the **9% humidity** was unprecedented for this part of the country and factored heavily into the conditions that gave rise to the fires. He continued to say that the air was so dry that even the almost omni-present and moisture-laden offshore breeze along Long Island's south shore was unable to form clouds!



Deer Park brush fire as seen from the LIE, looking east from Bagatelle Road.

There are many paths a discussion such as this could take at this point. We could discuss the complete lack of any coherent or effective US energy policy. We could discuss the deliberate relaxation of federal pollution standards in conjunction with windfall tax breaks to oil companies, fostering the notion that its business as usual, the environment be damned. We could discuss the lack of any personal responsibility for the current condition of our environment and air quality. We could discuss the complete and utter moral vacuum at the corporate level on the part of US automakers who refuse to bring to market existing technologies that could substantially decrease our dependence on fossil fuels. These corporations continue to produce vehicles whose weight, size and fuel efficiency are comparable to vehicles produced in the 1960s and 1970s. While we've eliminated the noxious emissions caused by leaded fuels that were such egregious health hazards during the 1950s through the mid-1970s, we're still left with the production of greenhouse gases by even the most efficient and 'environmentally friendly' vehicles. We could discuss the willful ignorance by government officials at the highest level of the Executive who, ignoring clear and compelling scientific evidence, evidence that's in the daily headlines and on TV screens across the civilized world, choose to characterize anyone who raises the specter of 'Global Warming' as a political enemy. For those of us who love astronomy and have dedicated a major part of our lives to it, there ought to be a commensurate concern for

the quality of our environment, an environment where the sky conditions are inexorably linked to the burning of fossil fuels for transportation and power generation. We pine away for the day when we can once again see the night sky in all of its ethereal beauty, a night sky where 4th magnitude stars, seen against a garish and sickening orange-gray background, aren't the naked-eye limit. Do we actually consider our own actions and choices within the context of a broader environmental problem with Light Pollution an ugly consequence of ignorance and the wanton squandering of our natural resources and the destruction of our environment? What legacy do we leave for our children and our grand children? Do we encourage research and development of emerging technologies, supplant the limited and rapidly-diminishing fossil fuel supply with these alternate energy sources or do we stay with the status quo and leave this enormous problem to our children and grandchildren to solve?

Of all these things that could be discussed, I'm going to discuss a coherent energy policy with an eye towards personal responsibility for the quality of our environment, air quality and sky conditions.

One has to wonder why, with the effects of global warming all around us, there isn't a mental connection between the conservation of energy and the direct impact that conservation will have on air quality. Is there no mental link between turning on of a light switch or air conditioner and what effect that action will have on the environment? Does it occur to anyone that simply 'turning off the lights' when they're not needed would go a long way in reducing the demand on power generation facilities with the resulting improvement in air quality and the reduction in overall greenhouse gas production? When applied regionally or on the state level, just think of the improvement such action would have on local air quality and overall night sky conditions. Applied on a national level, we could substantially reduce our dependence on foreign oil, improve air quality regionally, lower the demand on power generation facilities and dramatically reduce Light Pollution. How often have you seen empty parking fields lit up from dusk to dawn? How many kilowatt hours could be saved, not only reducing the tax load for public facilities or reduction in rents for commercial properties, if there was an ounce of forethought given to what benefit lighting up an empty parking field all night would provide? Sadly, Light Pollution is rarely ever discussed within the wider context of the general degradation of the environment. The causes of Light Pollution include: over lighting, the lack of any coherent federal, state, regional or local regulations regarding outdoor lighting, the irrational fear of the dark with the concurrent fallacy that by turning night into day security will be obtained, lighting up a road simply because it's there, the installation of outdoor lighting without any regard for others (this is often referred to as 'light trespass'), untoward political or commercial relationships between elected officials, municipalities, electrical contractors and certain (not all) utility companies, poorly designed lighting fixtures, architectural designs that include outdoor lighting merely as an afterthought without any regard to esthetics, light trespass, glare and safety.

Each of us has to do our part. Turn off that light switch when it's not needed. Call your local public works or highway department and request that full cutoff fixtures be installed in your area, stay abreast of legislation that is specifically designed to address Light Pollution, participate in your Utility's alternative energy initiatives (for **LIPA** customers, please visit <http://www.lipower.org/cei/cei.html> and <http://www.lipower.org/cei/offshore.html> ,

http://www.tommadigan.net/custer/Power_Authority_Unveils_Pair_Of_100-Foot_Wind_Turbine.pdf), support your local chapter of IDA (<http://www.darksky.org> , <http://www.selene-ny.org>) and, most importantly, stay informed.

Long Island's primary power generation company, LIPA (<http://www.lipower.org>), under the direction of Chairman Richard Kessel, is to be applauded for their forward thinking initiatives, environmentally sound energy programs and dark-sky friendly lighting solutions. Please visit LIPA's lighting solutions page (<http://www.lipower.org/commercial/lightsol>) and see, first hand, what LIPA is doing to meet the energy demands of Long Island in the 21st century while remaining environmentally friendly and dark-sky aware. All the lighting fixtures featured in this brochure (<http://www.lipower.org/pdfs/company/pubs/brochures/lightolutions.pdf>) would meet or exceed the standards and requirements of the most demanding Dark Sky advocate! Thank you, chairman Kessel! We thank you and our children thank you!

The following are examples of good and bad lighting fixtures.

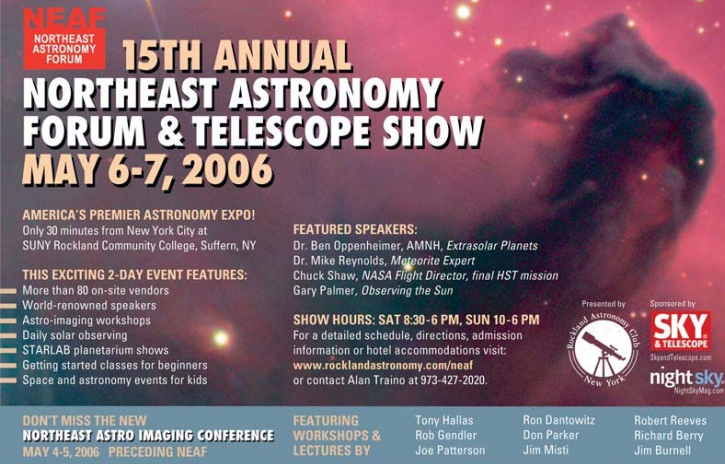


From the standpoint of glare, temporary blindness and eye fatigue, sky glow, light trespass and privacy, this design is arguably the worst. This fixture is often referred to as a 'street light' when, in fact, its design lights up everything *except* the street! The optical geometry of the glass enclosure is such that the ground area immediately below the fixture receives a scant 10% of the light generated with the remaining 90% of the light indiscriminately lighting up everything in a 360° pattern.



This is an example of a Full Cutoff or FCO fixture as it's referred to in industry parlance. Compare the light emitted from this fixture with that of the fixture above. The light is completely focused on the ground where it's needed, not in every direction, lighting up everything in a 360° pattern. Not only are these fixtures easy on the eyes, esthetically pleasing, produce no appreciable light trespass and go a long way in reducing sky glow, they *require a bulb of lesser wattage* than that of a brute force lighting fixture, an example of which is pictured above. Simply geometry shows that *all* light rays that would have non-vertical paths (undesirable paths that cause glare, eye fatigue, light trespass and sky glow) are now redirected and reflected down to the ground, *effectively doubling the efficiency* of any bulb used!

NEAF 2006



NEAF
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Dr. Mike Reynolds, *Mercurio Expert*
Chuck Shaw, NASA Flight Director, *final HST mission*
Gary Palmer, *Observing the Sun*

SHOW HOURS: SAT 8:30-6 PM, SUN 10-6 PM
For a detailed schedule, directions, admission
information or hotel accommodations visit:
www.rocklandastronomy.com/neaf
or contact Alan Traino at 973-427-2020.

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No star party entrance fee, or registration required.

**BRING A PIECE OF CLEAR SKY TO SHARE WITH VENDORS AND
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For further information, please visit our websites:

<http://www.rocklandastronomy.com> , <http://mysite.verizon.net/resqx7hr/ssp2005/nssp2005.htm>

Gift Corner & Classifieds

We Have Meteorites!

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Custer coffee mugs, only \$4.
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2 Payment Options:

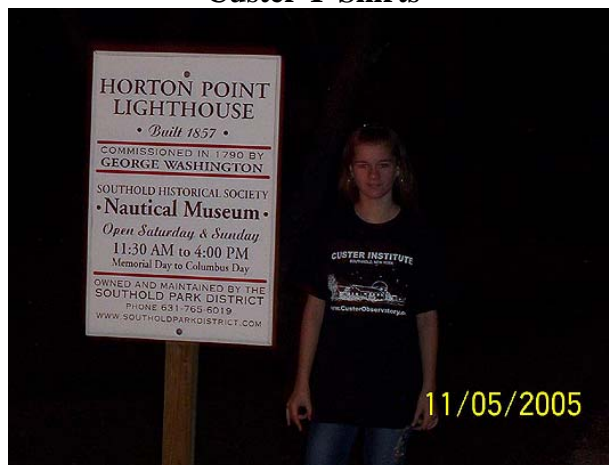
1) Mail a check or money order, payable to Custer Institute, to this editor's address with a note indicating how many copies you would like; 2) Paypal to CusterPaypal@yahoo.com followed by an email to this editor indicating the number of copies ordered and shipment instructions. Before shipment, I will confirm with Barbara that payment has been made. All my contact info is always published on page 3.

An Evening With John Dobson

VHS or DVD format, \$15.00, \$3.75 S & H

On September 17, 2005, noted sidewalk astronomer and cosmologist, John Dobson, visited Custer. He presented his classic cosmic slide show, packed with information and delivered with inimitable wit; he shared stories about his life as a monk, secretly grinding mirrors, making telescopes and introducing the public to the wonders of the night sky. Board member, Rich Huber, filmed this memorable event and has made copies on VHS and DVD. Running time is approx. 90 minutes. The cost: \$10 with 25% of the proceeds going to John Dobson's San Francisco Sidewalk Astronomers Association and a nominal \$3.75 for shipping and handling. You can pay for your tape using Paypal by sending \$13.75 to CusterPaypal@yahoo.com or by sending a check or money order (made payable to *Custer Institute*) to: Dobson at Custer, P.O. Box 1204, Southold, New York 11971. Please specify whether you would like VHS or DVD. If you have any questions, please contact Donna McCormick at mccormick@scientific-consultants.com.

Custer T-Shirts



Image, courtesy Tom Madigan

The editor's daughter, Kaitlin, sporting a Custer T-Shirt at Horton Point Lighthouse on Jamboree '05 night! The shirts are 100% heavy-weight cotton, machine-washable, and are available in adult sizes S-M-L-XL-XXL. The cost is \$15 plus \$3.75 S & H and the shirts are available only while supplies last. Custer would also like to *thank the East End Shirt Company* in Port Jefferson for their generosity and for having done an excellent job in producing such fine quality shirts on such short notice.

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. \$20.00, tax incl.

ASTRONOMY FOR ALL AGES

By
Phil Harrington & Ed Pascuzzi

The Gift Shop still has a number of copies of this latest volume by Phil Harrington with co-author Ed Pascuzzi. Get your copy while supplies last. At just \$20, this is a real bargain! As an added bonus, copies are signed by Ed.

PARALLAX

By
Alan W. Hirshfeld

We also have a limited number of copies of this excellent volume by 2003-Jamboree guest speaker Alan Hirshfeld. Quantities are limited so hurry and add this well-written and informative volume to your collection while supplies last.

Heavenly Events To Watch For May, 2006

“ We landed on the moon today - we’re there! -
And found that it was really made of cheese.
We don’t know if it’s Roquefort or Gruyere,
Cheddar, Edam, or perhaps none of these.
Such research will take time. We want to learn
All that we can of this phenomenon.

P.S. Dear scientists, how very nice
Of you it was to orbit up us mice ! “

- Elizabeth Shafer

Don’t look for MERCURY in May. VENUS now waits
until shortly after daybreak to rise along the eastern horizon, but by
4:45 AM her radiance easily perforates the brightening dawn.
Crossing Gemini this month, 1.6 magnitude MARS is fairly low in
the west after dark. The 0.3 magnitude SATURN, drifting
eastward toward Cancer’s Beehive Cluster, waits for Mars to arrive
in mid-June. Watch these two draw together in the following
weeks. Grabbing the spotlight, JUPITER starts the month at
opposition in Libra, maxing out at -2.5 magnitude and is visible all
night.

The comet 73P/Schwassmann-Wachmann (which can be
called S-W 3 for simplification) is likely to be “comet of the year”. SW-3 was discovered in 1930, when
it came within 6 million miles of the Earth. It experienced a breakup in 1995, splitting into at least four
pieces. As it approaches now we can see at least two of them, several arcminutes apart. On May 12 SW-
3 will miss Earth by about 7.3 million miles. It will be faint, even in larger portable telescopes, unless it
experiences flares as it has in the past. Good binoculars may be effective in revealing it due to their low
magnification. The path of Comet SW-3 is shown in Ottewell’s “Astronomical Calendar 2006”, pp. 62-
63, and May’s Sky & Telescope, pp. 61-62. However the paths shown in these two sources differ
somewhat, so check both if you have them. Avoid moonlight if and when you can. Try these areas for
SW-3: May 1-2, The Keystone of Hercules; May 8, The bright stars of Lyra south of Vega; May 10, In
Cygnus between Albireo and Sadr; May 18 Near ζ and ξ Pegasi (in the Horse’s Neck); May 21-22, In the
Circlet of Pisces;

- 1 The waxing crescent Moon pairs up with Mars this evening.
- 3 Saturn chases the Moon down in the west this evening.
- 4 Jupiter is at opposition today, about 410 million miles beyond us as we pass between it and the
Sun. Telescopes will show Jupiter’s disk with an equatorial diameter of $44\frac{1}{2}$ arcseconds. Don’t
forget to check out the wide double star Zubenelgenubi, α^1 and α^2 Librae, just 1° south of Jupiter.
- 5 Any bright fast-moving meteors streaking out of the southeast after 4 AM this morning are likely
to be Comet Halley’s Eta Aquarids.
- 10 A fine occultation of 1.2 magnitude Spica, α Virginis, is in store for us this evening. Around 6:31
PM Spica will disappear at the dark left edge of the waxing gibbous Moon (easily observed), and
about 7:36 PM it will emerge at the bright upper-right edge.
- 11 Albert Einstein presented his General Theory of Relativity on this date in 1916, 90 years ago.
- 12 Tonight’s Full Flower Moon chases Jupiter across the sky.
- 16 Observers in extreme northern New Jersey and in New York City may experience a grazing
occultation of the 4.3 magnitude star W Sagittarii along the Moon’s bottom edge around 12:30
AM this morning. Long Island observers should see an occultation lasting a few minutes.
- 24 The waning crescent Moon rises to the left of Venus in the dawn sky.
- 30 Mars has moved into line with the Twin’s stars Pollux and Castor, and this evening the waxing
crescent Moon inserts itself between those stars and Mars. Now only 9° up and to the left of
Mars, Saturn is again approaching the southern suburbs of M44, the Beehive Cluster.
- 31 This evening the crescent Moon is above Saturn, with the Beehive Cluster between them.
- June 2 On this date in 1966, 40 years ago, Surveyor 1 touched down on the Moon’s Oceanus
Procellarum and prepared to take the first color pictures of the lunar surface.

Prepared by Robert Chapin

Highlights for May, 2006

Spring Course Offerings for May

May 13th Revisiting the Big Bang: What Particle Accelerators Teach Us About the Early Universe

Insight into the origins of matter and the properties of the universe at its beginning has resulted from recent discoveries made at one of the world's most powerful instruments for high-energy collisions of atomic nuclei, the Relativistic Heavy Ion Collider (RHIC) at Brookhaven National Laboratory (BNL). **Instructor, Thomas W. Ludlam, Ph.D.**, is Associate Chair for Nuclear Physics in BNL's Physics Dept., was instrumental in making the RHIC a reality at BNL and oversaw the development of its four successful experimental detectors.

May 20th Amateur Radio Astronomy

A complete overview of amateur radio astronomy, from its history to equipment basics, targets studied, and how amateur astronomers can get started. **Instructor, Mike Kozma**, is an electrical engineer who has designed communication equipment for both military and commercial applications and who teaches at Queensborough Community College. He has been involved in optical and radio astronomy for over 35 years, is an amateur radio operator and a member of AOS and NARC.

May 27th The Sun and Its Impact on Terrestrial Events

The Canadian power grid shuts down; the Thames River freezes over; the stock market crashes; a war breaks out. Should we blame these events on the Sun? The discussion will examine the Sun, what similar stars can tell us about it, solar phenomena and their impact on the space program, our health, our lives and the *upcoming research program at Custer*. **Instructor, Dr. Jeffrey Owen Katz**, is Custer's Observatory Director and a Board Member. He has a diverse background in the sciences and in finance, has authored several books, and is president of Scientific Consultant Services Inc.

PRE-REGISTRATION REQUIRED

Cost for Custer members: \$35 for all 5 weeks or \$10 per session; Non-members: \$50 for all 5 weeks or \$13 per session. We accept Paypal (to the account of CusterPaypal@yahoo.com), checks or money orders (made out to Custer Institute). Please send the form below to: Custer Winter Class, P.O. Box 1204, Southold, NY 11971. For further information contact Donna McCormick (mccormick@scientific-consultants.com or 631-696-3333).

Please consider becoming a member of Custer, a 501(c)(3) New York nonprofit organization (est. 1927). We are staffed 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.

Name _____

Email _____

Street Address _____

City _____ State _____ Zip _____ Phone _____

I am a Custer Member: ___ All 5 classes at \$35, or the following sessions at \$10 each: ___ 4/22, ___ 4/29, ___ 5/13, ___ 5/20, ___ 5/27

I am not a Member: ___ All 5 classes at \$50, or the following sessions at \$13 each: ___ 4/22, ___ 4/29, ___ 5/13, ___ 5/20, ___ 5/27

I would like to become a Custer Member: ___ \$45 Individual; ___ \$60 Family; ___ \$25 Senior (65+); ___ \$25 Junior (12-18) or Student

_____ I have made payment via Paypal or _____ enclosed my check/mo (payable to Custer Inst.) for \$ _____. **Confirmation of registration will only be sent by email.** Please mail your form to: Custer Institute, P.O. Box 1204, Southold, New York 11971.

Upcoming Events

Annual Membership Meeting, BBQ And Concert

Saturday, June 10th

Annual meeting: 4:00 PM;

BBQ: 6:00 PM;

Concert: 8:00 PM;

A full evening of food, music and fun for the entire family. Enjoy BBQ favorites prepared by Chef Chuck Cardona and BBQ duck by Assistant Chef Kurt Massey (one of LI's last duck farmers), along with other homemade entrees and desserts; Suggested donation: no charge for Custer members, \$10 for non-members and \$5 for children under 12. Live Concert at 8 PM; details to be arranged.

Custer's 28th Annual Astronomy Jamboree

Friday and Saturday, October 13th and 14th

The Jamboree begins on Friday night with an evening of food, poetry and live music followed on Saturday by a full day of special lectures. Additional details to be arranged.

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.

A Big Thanks!

Custer Programs Chairperson, Donna McCormick, would like to express her gratitude to one of our newest members, Bruce Alan Martin, who hosts two radio shows on **WUSB** (90.1 FM), "Overture" (Tuesdays, 11 to noon) and "Long Island Liberty" (Tuesdays, Noon to 1PM). Bruce never fails to announce Custer's upcoming events to his listeners, often invites Observatory Director, Jeff Katz, on as his guest, and encourages all to visit when the skies are clear. Bruce is also a college computer science instructor and owner of Tripodics.com, a website hosting and design company, which makes him the quintessential person to speak about computers and the internet, which he will do at Custer on August 19. It might take a village to raise a child, but it takes a membership to keep an organization like Custer flourishing and Bruce is certainly doing his part. So, again, our deepest thanks to one man who is making a difference at Custer!

Final Astronomy Open Night at Stony Brook for 2005-2006 Academic Year

"Understanding Type Ia Supernovae"
By Prof. Michael Zingale

Friday, May 5th, 7:30 PM.

Room 001 ESS Building
Department of Physics & Astronomy

Type Ia Supernovae (SNe Ia) are the most violent thermonuclear explosions in the Universe. Their peak brightness rivals that of their host galaxy, and, as a result, they can be seen across enormous distances. This has led to a large impact on our understanding of the Universe, including the discovery of the acceleration of the expansion rate of the Universe. Despite their observational successes, our theoretical understanding of SNe Ia is far from complete.

We turn to computer simulations to build a model of these events. These simulations show that a thermonuclear burning front must accelerate dramatically as it moves from the center to the surface of the star, consuming the carbon fuel.

In the next in the popular series Astronomy Open Night, *Dr. Michael Zingale* will introduce the subject of SNe Ia, explain what we know about them, and discuss the role of supercomputer simulations.

Prof. Zingale is new at Stony Brook, having joined the faculty this January. Previous to this he did a postdoctoral fellowship at the University of California at Santa Cruz after getting his PhD at the University of Chicago. His interests include massively parallel computing and large scale simulations of flames.

Following the lecture, weather permitting, there will be a viewing session with the University's telescopes.

Pluto Mission News

May 1, 2006

<http://pluto.jhuapl.edu>

The PI's Perspective: 'Exploration at Its Greatest'

With the New Horizons team past the rush of launch events and the spacecraft more than 100 days into flight, mission Principal Investigator Alan Stern recaps a busy period of planning, programming and instrument operations in this month's "PI Perspective" column.

"The New Horizons mission team spent the first couple of months checking out the spacecraft subsystems and making our initial post-launch trajectory correction maneuvers," Stern writes. "All of that went exceedingly well. We have a very healthy spacecraft flying right on its intended course to the Pluto aim point it must reach at Jupiter on February 28, 2007."

Stern also covers the fate of the Centaur rocket that helped propel New Horizons into space; the possibility of studying Neptunian "Trojans" on the way to Pluto; and a new method that could allow New Horizons to double its post-Pluto flyby data transmission rates.

Vistit http://pluto.jhuapl.edu/overview/piPerspectives/piPerspective_5_1_2006_3.php for the full story.

Custer Institute Institutes Good Neighbor Outdoor Lighting Award

Call for nominations for the first annual Custer Institute Good Neighbor Outdoor Lighting Award

We see it in parking lots and shopping centers. We see it on streets and in our neighbors' yards. It seems that no matter where we go nowadays, there are lights wiping out one of our most precious natural resources, the night sky. As stargazers, we are well aware of the increasing problem posed by runaway light pollution.

Light pollution does more than hurt our night sky, however. Light pollution is wasteful! In the United States alone, it has been estimated that as much as \$1 billion is wasted every year just to light up the night sky. The cost is not just a higher electric bill, however. There are many other long term ramifications, such as increased air pollution from burning all the extra fuel to generate the "wasted" light.

Light pollution also creates a public safety concern, as unwanted light causes so much glare that it can blind drivers to oncoming traffic and pedestrians. Beyond this, recent medical studies show that there is a possible link between exposure to too much light and melatonin suppression, which can increase a person's risk of developing cancer (specifically, breast cancer).

The problem is everywhere, but at the same time, there are businesses and municipalities that are trying to make a difference. They are limiting their nighttime light output by installing full cutoff light fixtures designed to direct light down toward the ground rather than scattering it into our eyes and up into the sky. We believe that these people should be recognized for the good that they are doing, which is why we are instituting the Custer Institute Good Neighbor Outdoor Lighting Award.

Do you know of a business in Suffolk County that uses environmentally friendly night time lighting (bright enough to see without overlighting)? Nominate them! Each year, nominations will be accepted from Custer members who wish to single out well-done examples of fully-shielded lighting installations at commercial sites, such as a local shopping center or gas stations. The lighting should be well-contained to the site and also illustrate safe, adequate light levels, instead of the blindingly-bright, overdone commercial light levels that are (sadly) often found out there. A simple yardstick is to notice how minimally the lighting intrudes (shines/reflects) beyond the site boundaries -- including upwards.

Send your suggestions to Phil Harrington at phil@philharrington.net. Be sure to include the business' name and address, as well as a sentence or two explaining what makes them worthy of the award. Also drop Phil a note if you would be interested in serving on the awards committee.

Cutoff date for submissions is September 15, 2006. Committee members will review each nomination and choose from among all submission the best example(s) of intelligent, responsible lighting. The winner(s) will be announced at the Custer Jamboree on October xxx. The commercial business will be presented an award plaque by the Custer president and officers.

Phil Harrington

Family Astronomy Day And Concert Combo

Saturday, May 6th, 2 PM Saturday – 12AM Sunday (Midnight)

A full day of fun for the whole family begins with an astronomy-related puppet show performed by Tom Stock at 1, 2 and 3 PM, with additional lectures and demonstrations throughout the day.



Stellar Evolution The Life Cycle of Stars

4 – 5:30 PM;

As an added attraction, I'll be providing an encore presentation of my lecture first given on January 28th. Please see the February, 2006 issue of the Custer Comment (<http://www.tommadigan.net/custer/custercomment-february2006.pdf>) for a synopsis.

6 PM - Dinner;

7 PM - A Jazz / Rhythm and Blues Concert featuring the music of the Ahmad Ali Combo;

As always, Custer's staff will man the many telescopes for public observing both during the day and at the conclusion of the last program event for night-sky observing. Using Custer's many powerful telescopes and further enhancing this year's program will be Solar observing on an ongoing basis throughout the day, weather permitting.

As always, snacks and refreshments will be available.

Benefit Concert Featuring The Music Of Dreamer

A Concert to benefit Custer Institute will be given in the near future by *Dreamer*, an acoustic trio comprised of Charlie and Virginia Ward and Pamela Clark. Dreamer appears regularly at Eastenders Café, 40 East Main Street in Riverhead, on the first Saturday of every other month and specializes in a wide variety of classic covers from the past several decades as well as their own, original music. As a reference, Charlie Ward provided the professional recording services for Custer's mid-Winter classical concert featuring Anna Verticchio as the principal musician. Please see last month's Custer Comment (<http://www.tommadigan.net/custer/custercomment-march2006.pdf>) for a comprehensive synopsis.

Synopsis for April's Course Offerings

April 22nd; Binoculars, a lecture offered by Phil Harrington

Phil Harrington, soon-to-be 9-time author, astronomer, lecturer, professor of astronomy and engineer at Brookhaven National Laboratory presented a lecture on the use and applicability of binoculars as a viable astronomical tool. The material presented was useful for the professional astronomer, the seasoned amateur and the novice alike. As usual, the topic was well researched, supported by his many years as an author and professional educator. Thank you, Phil!

April 29th; The Nature and Study of Cosmic Rays, a lecture offered by Dr. Helio Takai of BNL



Image, Courtesy BNL

Dr. Takai with everyone's favorite mentor!

Dr. Takai, a senior research fellow at Brookhaven National Laboratory, presented a lecture on the nature and study of Cosmic Rays. He is a Japanese native who was raised and educated in Brazil. Cosmic Rays remain mysterious and enigmatic, posing new challenges to our existing cosmological models. Among the questions Dr. Takai discussed was their origin and the possibility that they could be created from Type Ia Supernova events, Type Ia supernovae being the most violent and energetic events in the Universe. Coming equipped with a working Cosmic Ray detector disguised as a *Mariachi* musician, Dr. Takai

discussed the evolution of the MARIACHI project, a collaborative effort between faculty, staff and students of Suffolk County Community College and Brookhaven National Laboratory that study these questions. Dr. Takai was a warm and engaging fellow who, fortunately, will be returning to Custer in the near future to assist us in our Cosmic Ray research and possible participation in the MARIACHI project. Thank you, Dr. Takai, for a memorable evening! We look forward to working with you in the coming months and years.

Announcements & General Interest

Car Pooling To Dark Skies & Custer

Custer member, Rich Rosenberg, would like to hear from amateur astronomers in the NYC area looking for rides, riders or rentals to get to dark-sky locations such as Custer. If interested, contact him at richard.rosenberg@verizon.net.

Hubble Celebrates 16th Birthday with Highest Resolution Image of M82 to Date

To celebrate the Hubble Space Telescope's 16 years of success, the two space agencies involved in the project, NASA and the European Space Agency (ESA), have released the following image of the magnificent starburst galaxy, Messier 82 (M82). This mosaic image is the sharpest wide-angle view ever obtained of M82. The galaxy is remarkable for its bright blue disk, webs of shredded clouds, and fiery-looking plumes of glowing hydrogen erupting from its nucleus and central regions. The image data was obtained in March 2006.



Image, courtesy NASA / JPL

A full compliment of images and corresponding resolutions from this latest release from Hubble / NASA / JPL, some designed for Computer desktop wallpaper, can be obtained at <http://hubblesite.org/newscenter/newsdesk/archive/releases/2006/14/image/a> . In addition to the beautiful images, a full synopsis, complete with technical details and a description of what we believe we are observing, is available, as usual.

Custer Dome Assembly, Raising and Installation

A brief Photo Essay

By Tom Madigan



Unloading the delivery truck



Taking inventory and discussing strategies



Brian takes a break



Rear view



Jim inspects the partially completed dome.



A study in symmetry and size. What's next?



A view looking south with shutter components in foreground



Brian stands atop the scaffolding necessary to access and assemble the shutter track and dome crown section. Rich is to his left.



Larry works on securing the rim and base of the dome.



Perfect weather and many hands made for quick assembly.



As the dome takes shape, a bird's eye view of the hardworking crew from what will be its permanent perch.



David assists in the final assembly and adjustment of the shutter track. The shutter consists of 3 sections, 2 joined together at the top that slide along the track with the 3rd, hinged at the base, that opens out.



Shutter fully open, showing the lower, hinged section opened out with the top section fully retracted at the crown



Lower section closed with the top section open and fully retracted at the crown



Jim makes a final inspection



View looking southwest with completed dome in the foreground



Rich and Myron pose with Custer's new Crown



The completed dome awaits the crane



A view southwest as the sling is affixed in preparation for hoisting



The completed dome being hoisted up and out of the gravity well, on a one-way trip to a refurbished base rim



Having been just placed atop building, the new dome waits to be secured in place



In a view looking northeast, we see David as he removes the sling bolts from their respective mounting points



Looking southwest, we again observe David from a vantage point 180° from the previous image



Everyone works hard as the dome is permanently secured to the base rim



Kurt takes a break and ponders the many new challenges as they present themselves. The electro-hydraulic controls are to his right.



The fully-secured dome stands ready for the next step, the installation of our new, observatory-class telescope.

The Crew!



The Crew, from left to right: Rico, David, Myron, Kurt, Chuck, Me, Brian, Jim and Brian. Others who assisted and provided invaluable support and do not appear in this image include Rich, Anna, Jeff, Donna, Barbara and Larry. It was a pleasure to work with everyone. Brian and Jim, the two on-site engineers from Ash Manufacturing, were a pleasure to work with, displayed exemplary professionalism and were highly competent. All in all, it was a memorable event for me and I look forward to completing this project that will make Custer the Crown Jewel of the North Fork! Don't forget to visit our Gift Corner and Classifieds page for instructions on how to order your copy of the historic DVD I produced that records this event for posterity, complete with music, movies and digital video.

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