

The Custer Comment

★ For The Curious ★

February 06

Volume XXXVI, Issue 2

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HST Records Gossamer Beauty of Spiral Galaxy NGC 1309



Spiral Galaxy NGC 1309  HUBBLESITE.org

Image, Courtesy Space Telescope Science Institute (<http://StSci.edu>)

This latest image from the Hubble Space Telescope shows the ethereal beauty and intricacy of NGC 1309, a classic spiral galaxy, 100 million light years away in Eridanus and NASA's 'Astronomy Picture of the Day' (<http://antwrp.gsfc.nasa.gov/apod/archivepix.html>) for 9 February, 2006. NGC 1309 was also the home of Supernova 2002fk (see program highlights, inside). As discussed during the 2nd lecture in our Winter, 2006 Course Offering on January 28th, hot, young stars, identified by the blue cast and pinpoint images, can be seen in the spiral arms, with older, population II stars congregating in the center.

Highlights for February 06

- February 18th, 8: 00 PM; Concert, featuring Custer Board Members Anna and Alarico Verticchio's daughter Ann as the principal musician;
- February 18th and 25th, 4th and 5th installments in our Winter, 2006 Course offerings; please see inside for details.

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Editor's Column

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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://tmadigan.home.netcom.com/custer>

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

Sarah Williams

Please excuse the extreme lateness of this month's issue. The primary hard disk drive in my PC experienced a general failure last Saturday, February 4th. Consequently, I have been without a PC until Friday, February 10th.

A warm-hearted '*Thank You*' goes out to all who attended my lecture on January 28th. For those who couldn't attend, I'll be repeating the lecture in the spring. In addition, and to all, if you'd like a copy of the Power Point presentation that I produced and used during the lecture, please send me an email with 'Stellar Evolution, PPT' as the subject. Further, please see my 'Lecture Highlights' page for a synopsis of all lectures in our Winter, 2006 course offerings to date.

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

"The Planets"

By Dava Sobel

A Book Review by Custer member Tom Haeberle

When we think of planets, most people think of big round objects floating around the Sun. They conjure up childhood memories of school days of perhaps building a model solar system for a school project. In Dava Sobel's "The Planets" {Viking Publishing -- price: \$24.95} she too has her own planetary perspective mired on personal memories. Amusing and smartly written this book is quite different than her best-selling books "Longitude" and "Galileo's Daughter." Critics beware that this is no scholarly work; it is simply meant to entertain.

Sobel starts fittingly with the Sun, because it was once a planet in the eyes of the ancients. She describes the birth of the Solar System planets as if retelling the Genesis story. "We see the Sun as a blazing circle in the sky no bigger than the full Moon. These 'two great lights' as described in Genesis are a matched pair. As the sole light-giving body, the planets return the favor of the Sun's light by reflecting its rays, in this manner they pretend to shine."

The following chapter is on Mercury, that messenger deity of mischief and thievery, which we are told was born on the mountain Cyllere. "That sly Cyllenuis" would write Pierre Gassendi about the planets elusive nature. Known as well as the god of music and commerce for which he's remembered by the words merchant and mercantile; many astronomers would complain that they never witnessed its presence in the sky. Kepler realized that it might be possible to capture it crossing the Sun. He would not live to see his prediction ring true, but Gassendi would stay vigil and see it traverse the solar disk in 1639. Mercury would be bestowed the honor of being the one planet that would prove correct Einstein's theory of relativity.

Something we generally take for granted, you couldn't talk about planets without including the Earth. The essay "Geographia" named after Ptolemy's second great work that followed the "Almagast" in which the latter places the Earth at the center of the universe. Geographia is an atlas with instructions for creating globes as well as flat maps. "He could never have attempted mapping the ground before mastering the sky," writes Sobel, "because he needed the position of the Sun, Moon and the stars rising and setting times in different parts of the world, to guide the placement of Earthly features." It's unfortunate that Sobel didn't give us pictures of these ancient maps. In fact the entire book lacks illustrations or pictures of any kind; something that would have added immensely to the value and enjoyment of the book.

"Lunacy" starts out fittingly with a story about a girlfriend of the author who ate some moon dust, a sample she obtained from a lovesick NASA astronomer. When reading this, one wonders if this is true or purely fiction. Her friend "Carolyn the Moon Goddess had mated herself to the Moon and that is what made me jealous. It illuminated her body's dark recesses like pixie powder. Its sacred presence changed her very nature."

The "Beauty" chapter embraces Venus as both deity and wanderer. "Venus, goddess of beauty, far exceeds the most luminous star." Robert Frost, William Wordsworth, Diane Ackerman and others neatly sprinkle this essay with poems. Like something out of a Herman Melville novel, Sobel starts the Mars essay "Sci-Fi" with "call me it or Alan Hills 84001" which is written from the perspective of a Martian rock. Martian maniacs would know it as the meteorite from Antarctica, AH 84001. Though she nicely details the rock's journey through time and space; I found this work the less interesting of the book.

I found her Jupiter essay called "Astrology" to be the most intriguing with her usage of astrological natal charts for the astronomer Galileo himself and his namesake space probe "born October, 1989 at Cape Canaveral its launch date. It would meet its demise in 2003 as it descended into Jupiter's clouds. The final hour of the odyssey of this spacecrafts 'horoscope' showed Saturn the planet of endings well inside the eighth house, the mansion of death."

Some critics have taken umbrage at this because of her intuitive understanding of astrology. Others have gone as far as to say this undermines her scientific reputation. Her knowledge of astrology should not be surprising because the great astronomers for whom she studied, such as Galileo and like Kepler as well depended on astrology as a livelihood. It was around this era that astronomy and astrology went there separate ways.

The Saturn chapter is tied to music, she writes, "a natural affinity between astronomy and music has prevailed since the six century BC." Philosophers and astronomers of old have described the cosmic order as "music of the spheres" and "celestial harmony." Many have tried to assign musical notes to each planet. Saturn's ring system evokes this harmony, "the ring system, a product of gravity and harmony, suggest a template for cosmic design. They recall the birth of our solar system and echo now in the so called proto-planetary disks discerned around young distant stars."

Her Uranus & Neptune essay, "Night Air" is set-up with a letter from Caroline Herschel and Maria Mitchell the latter and an American astronomer/comet hunter. Caroline is the sister of William Herschel discover of Uranus. It's an intriguing correspondence between two female astronomers a rarity in that field in that era. The Notes section in the back of this book delves further in the writing of the letter. The Notes support each essay and are just as interesting as the chapters themselves and provide good insight to the author's objectives.

The Pluto essay, "UFO" begins with the story of Sobel's grandparents coming to the United States as an immigrant, aliens to a new world. She writes, "The idea that aliens could come from other planets as oppose to the 'old country' took credence in 1896." In that year, Percival Lowell was inspired to set-up an observatory in Arizona for the sole purpose of studying life on Mars. Having observed "canals" on Mars for many years; the observatory was losing its credibility amongst professional astronomers.

Lowell would be the first to begin a search for Planet X but not live to see Clyde Tombaugh finish the search. The discovery of Pluto would be a sort of a vindication for the Lowell observatory, restoring its reputation. But Pluto would soon prove to be disappointment as more was learned about the new world. With new discoveries of similar objects at the outer edge of our solar system, the author muses on the odd nature of Pluto as somewhere in between a "planet" and "other."

With all the controversy going on to what is a planet; this book is a refreshing change that takes you back to the basics and lets ones mind wander with imagination. Will we have advanced science if we define Sedna to be a planet - or Pluto not to be? The question of taxonomy in the planet world is not to be addressed here. She is only conveying to her readers how exciting and interesting each of the planets truly are.

Pointless Fight Over an Observatory

The East Hampton Star for 9 February, 2006

A proposed observatory in Theodore Roosevelt County Park would seem an unlikely subject for some people in Montauk to get bent out of shape about. But a mini-war erupted this winter in the easternmost hamlet over something that in the end is probably a good idea.

A bill sponsored by Suffolk Legislator Jay Schneiderman that would have helped pay for an observatory in the park was vetoed last year by County Executive Steve Levy. Mr. Levy, a Democrat who can appear almost apoplectic in his reactions to Mr. Schneiderman, a Republican, denied the \$200,000 appropriation as a budget-buster. However, Mr. Levy did in the end sign a county authorization for a nonprofit organization that would pay for the observatory. A benefit party for the project will be held in New York City in March, and its Web site can be viewed at montaukobservatory.com.

But this has not gone over well in Montauk, where, notably, some members of the citizens advisory committee had a snit last month when a representative of the observatory's board tried to talk with them about the project. Some on the committee were irritated that the planning had advanced as far as it did before they were consulted.

The advisory committee chairwoman, Lisa Greci, imperiously dismissed a representative of the project, announcing that their paperwork was not in order. This is a ridiculous and contradictory complaint since citizens advisory committees are not supposed to take the place of the town planning and zoning boards, but are meant to listen to people talk freely about whatever they choose. Ms. Greci both lambasted the project representatives for not talking to her committee earlier and, when one of them tried to speak to the committee, sent her away with a list of demands.

Of course, you can expect that there is more going on under the surface here, including longstanding animosity among some of the players - basically, Ms. Greci's dislike of Mr. Schneiderman. But that petty battle aside, some of those who have objected to the idea may be responding, perhaps subconsciously, to a sense that the observatory is not an end in itself but rather part of a "dark-sky" promotion. Indeed, Susan Harder, a tireless advocate for controlling light pollution who lives in Springs, has called the observatory project part of an effort to bring more attention to the sky at night. That is an unimpeachable goal, but getting her aims tangled up in a proposed development in the county park was probably a miscalculation.

Whether or not the public would actually make an observatory at the park a success remains to be seen. A sky-watching constituency is apt to be small under the best of circumstances. Unheated observatories - thermal distortion produced by a heated room can obscure stars - can be an unpleasant surprise for the uninitiated. For the immediate future, this summer, for example, it might be best to first expand and publicize ongoing astronomy programs in the park. Then, if there were a strong and continuing turnout, it would make sense to move forward with raising the money to build an observatory.

Susan Harder: And there is no conflict, which I could have told him if he'd called me or anyone on the Observatory Board before writing this. A representative of the Advisory Board met with the people who had expressed concerns, and all can and will be met.

Editor: This editorial was reproduced in its entirety from The East Hampton Star for 9 February, 2006 with no modifications or alterations of any kind. The opinion expressed herein is that of The East Hampton Star and does not necessarily represent the opinion of this editor or that of Custer Institute or its Board of Directors. Susan Harder is a member of Custer Institute, president of The Dark Sky Society of East Hampton, a member of the International Dark Sky Association and its local affiliate, SELENE-NY. She has spoken with high-level public officials on the deleterious effects light pollution has on wildlife and the environment, not to mention the disenfranchisement of the night sky by institutional greed and public ignorance; she is a nationally recognized expert on light pollution and is eminently qualified to opine on the subject.

Adirondacks Seen As Dark Skygazer Paradise

By Michael Virtanen, Associated Press Writer, Sat Jan 28, 2006

TUPPER LAKE, N.Y. - High altitude, low population and little light pollution make the Adirondacks a stargazer's dream location. Look up from New York's northern forest and with the naked eye watch a cascade of stars. With a good telescope, see the rings of Saturn in color.

Subzero winter nights are particularly good, with low humidity and clear, magnified skies, amateur astronomer Mark Staves said. That's when he likes to take his telescope outside in Tupper Lake. Staves, fellow amateur astronomer Tim Moeller and other enthusiasts plan to build the first public observatory in New York's northern mountains to expand the stargazing audience.

The not-for-profit Adirondack Public Observatory in its first year has raised about \$40,000 toward a \$500,000 goal, according to board members. They have chosen a site in Tupper Lake, about 110 miles north of Albany. The parcel, at 1,600 feet in elevation, overlooks the town beach and campground at Little Wolf Pond.

"We are in what's called a dark puddle here," Staves said, noting the contrast in nighttime satellite images of the Earth. "We can actually see the Milky Way, which is something you can't actually see most places now."

An observatory site was offered near the Natural History Museum of the Adirondacks, scheduled to open this summer on the other side of the village of Tupper Lake, but there was too much light pollution from nearby Sunmount hospital, said Jan Wojcik, observatory board member. Board members are considering a telescope with a 16- to 20-inch aperture, more powerful than the one at Clarkson University in Potsdam, where Wojcik is a humanities professor and observatory director. They expect to spend about \$20,000 for the instrument.

"You could make out detail in distant galaxies," Wojcik said. "You could see craters on the moon that look so detailed you could almost imagine climbing down the walls and walking across."

At California's Palomar Observatory, the comparable 18-inch Schmidt Telescope, first operational in 1936 and now retired from research, was used to discover nearly 50 comets, including Shoemaker-Levy 9 in 1993. By contrast, Caltech's Hale Telescope, considered the world's largest until 1993, has a 200-inch aperture.

Meanwhile, Tupper Lake's municipal utility is replacing old street lights with recessed fixtures that aim beams downward to reduce local light pollution. "Eventually it'll save the village money," said former Mayor Sandra Strader, "and once we knew the observatory was going to happen, we decided it would help them also."

Staves, 43, observatory president, grew up in Tupper Lake and works as a utility lineman. He says the clarity of the night sky has diminished somewhat since he started looking through a telescope as a boy, likely degraded by more light pollution, including some from Montreal.

The Adirondack Park Agency, which regulates development inside the 6-million-acre park, considers exterior lighting plans before approving building permits, spokesman Keith McKeever said. Permit conditions include full cut-off outdoor fixtures that direct light downward and motion detectors to shut lights off automatically.

While some Adirondack municipalities that issue building permits are new to the technology, Wojcik said satellite pictures of the region at night still show marked contrast. "Our place, the park, is one of the few dark places in the country. Hardly any light makes it far enough for the satellite to pick up."

The observatory, which organizers hope to complete in three to five years, is planned to have a domed building with the large telescope, imaging equipment and a digital camera, which would be used for research and education and could be connected to the natural history museum's theater during significant celestial events, Staves said.

It would have a second building for public viewing, with other telescopes and a roll-off roof, and a control center with a classroom, computers and quarters for visiting students. "On most clear evenings, it'll be open and people can come in and learn about basic astronomy and learn a few of the constellations," Staves said.

Enthusiasts already gather for "star parties" around the Adirondacks. "Anybody shows up," Wojcik said. "You can look at any number of telescopes. ... Different scopes focus on different things. Usually there's a line behind each one."

Susan Harder: Mark Staves is a fellow dark sky advocate working with me on the NY State legislation.

Gift Corner & Classifieds

We Have Meteorites!

Great sets mounted in beautiful display cases. Perfect for gifts.

Custer coffee mugs, only \$4.
Do you have yours yet?

Celestron CG-5 second generation GEM with single-axis clock drive, dovetail mounting plate, accessory tray (not shown in photo), and adjustable aluminum tripod. Excellent condition, well cared for. Asking \$250. E-mail: phil@philharrington.net

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: \$15 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 \$18.75 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 In February 06

“Well, I’ll see that comet.
I feel it’s my fate.
It’s back in 75 years
And I’m gonna wait.
If you’d like to find out
Just how well I’ve done,
Look for an old, cold body
on Jones Beach
In the year 2061! “

- John Gallagher

The last half of February has been chosen by MERCURY to make its best appearance in the evening sky for this year. Catch it low over the western horizon by 7 PM at the latest! At midmonth it glows at -1.0 magnitude, but then it will quickly fade to +0.5 magnitude by month’s end as it becomes a tiny crescent as seen in our telescopes. VENUS has sprung into the morning sky and gleams brilliantly at -4.5 magnitude. Find Venus low in the southeast by 5 AM. Speeding eastward past the Pleiades of Taurus this month, MARS continues to drop farther behind the swifter planet Earth. On the 19th Mars reaches eastern quadrature (90° east of the Sun,) which means a line from Mars to the Sun is the hypotenuse of a right triangle having the Earth at the location of the right angle. (Geometry 101!) Look for Mars high in the southwest after nightfall. Now in Libra the Scales, JUPITER rises in the southeast by 1 AM and is due south around daybreak. At midmonth SATURN, in Cancer the Crab, is due south around 11 PM, and sets in the west before sunrise. Saturn begins February at the southern edge of the vast Beehive Cluster, M44.

- 3 The first spaceprobe to soft-land on the Moon, the Soviet Luna 9, touched down on February 3, 1966, 40 years ago.
 - 4 Clyde Tombaugh, discoverer of the planet Pluto, was born February 4, 1906, 100 years ago today.
 - 5 First quarter Moon drops in the west above Mars this evening.
 - 9 Comet Halley, out of view around the solar farside, reached perihelion less than 55 million miles from the Sun on February 9, 1986, 20 years ago today. It will return in 2061.
 - 10 The waxing gibbous Moon leads Saturn westward tonight. Tomorrow night Saturn will lead.
 - 12 Full Snow Moon tonight.
 - 17 Train binoculars or telescope on the upper-right darkened edge of the waning gibbous Moon in the eastern sky tonight. At about 11:03 PM the bright 1.2 magnitude star Spica, α Virginis, will burst forth from behind that upper-right limb. Enjoy!
 - 20 In the predawn sky Jupiter gleams above the slightly gibbous Moon as they climb in the southeast. And tonight Algol, β Persei, is in mid-eclipse at 9:02 PM.
 - 23 Around 4:50 AM this morning the 4.3 magnitude star W Sagittarii will suddenly emerge from the darkened (but earthlit) lower right edge of the waning crescent Moon.
 - 24 The crescent Moon is well below and to the right of Venus this morning. And tonight, Mercury reaches greatest elongation east of the Sun. It sets around 7:15 PM, at the end of twilight.
 - 27 Tonight’s New Moon coincides with perigee. Beware of extreme tides and flooding if there is a storm.
- March 1st This evening’s waxing crescent Moon stands well above the setting Mercury.

Prepared by Robert Chapin

Highlights for February 06

Winter 2006 Class: Special Topics In Astronomy

Custer Board and Staff members will teach this five-week course. Each week a different instructor will present a topic of special interest. You can register for as many of the sessions as you like (a discount is available to those who register for all five). After class, students are invited to remain at Custer for the evening, participate in any other events that are scheduled, and enjoy refreshments while Custer staff show you around the night sky. Classes will be held Saturdays from 6:00 P.M. to 7:30 P.M., Jan. 21, 28, Feb. 4, 11, and 18.

February 18th; Cosmology, Science, and Science Fiction: What is Really Possible?

Board member, Jeffrey Owen Katz, Ph.D., will present an illustrated lecture on the universe as seen through the eyes of science fiction writers and modern physicists. If you've ever wondered about worm holes, cosmic strings, black holes, faster-than-light communication and space travel, ET, or if Scotty could ever really beam anyone up, this is the class for you.

February 25th; An Introduction to Astrophotography

Board Member, Kurt Massey, will take students through step-by-step instruction on how to get started photographing the night sky and deep space objects. Students will learn how to select and use the necessary equipment, as well as process and polish the resultant photos. There will be demonstrations and illustrations of the wondrous objects that can only be seen through the camera's eye.

Class and membership applications are ***accepted at the door***. If it's the last minute and you still want to attend, please come. Your application and payment will be accepted at the door.

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).

Custer Class and Membership Application

Name _____ Email _____

StreetAddress _____

City _____ State _____ Zip _____ Phone _____

I am a Custer Member: ___ All 5 classes at \$35, or the following sessions at \$10 each: ___ 1/21, ___ 1/28, ___ 2/4, ___ 2/11, ___ 2/18;

I am not a Member: ___ All 5 classes at \$50, or the following sessions at \$13 each: ___ 1/21, ___ 1/28, ___ 2/4, ___ 2/11, ___ 2/18;

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

_____ 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.

Classical Music Concert

Violinist, Ann Verticchio, daughter of Custer Board Members, Rico and Anna Verticchio, will be performing Beethoven's Violin Concerto in D-major, Op. 61, with full orchestral accompaniment. Seating is limited and reservations are required. If you plan on attending, please email Donna McCormick (CusterDonna@yahoo.com) or call Barbara Lebkuecher (631-722-3850).

As always, refreshments will be served with observing to follow, weather permitting.

When: Saturday, February 18th, 2006; 8:00 PM;
Where: Custer Institute, Main Bayview Road, Southold
Suggested donation: \$8 Custer members, \$12 non-member

Custer Clean-Up

The Observatory Staff is in the process of doing an inventory of Custer's equipment and other resources. During the course of this project, a major clean-up will be undertaken; the basement is the main target. If you have any personal items stored at Custer, and you would prefer not to see them thrown into the dumpster, absorbed into Custer's collection, or sold, please contact Jeff Katz (katz@scientific-consultants.com or call 631-696-3333) as soon as possible. If you would care to assist in the clean-up project, let him know because we could sure use the help!

Skilled Labor Wanted

The renovation of the dome is underway. The Observatory Staff is going to need assistance to complete this project and other related ones. If you have any skill with carpentry, electrical work, painting, etc., and could volunteer a few hours of your time, please contact Jeff Katz (katz@scientific-consultants.com or call 631-696-3333) as soon as possible.

Observatory & Other Staff Wanted

Custer is in the process of improving its facilities and expanding the services it offers to the public. The Observatory Committee is looking for individuals who are interested in volunteering just a few hours a month. People are needed for all kinds of jobs-from helping to give the public a tour of Custer and the night sky on Saturday nights, to assisting with events, research, fund raising, secretarial work, and even providing refreshments to our guests. If you are able to lend a hand on a regular basis or would just like to volunteer to help with a specific project, please contact Donna McCormick (mccormick@scientific-consultants.com or call 631-696-3333).

Thank You!

The Board of Directors would like to express their deepest thanks to the following Members who responded to the recent outreach for financial assistance. It's only through such thoughtful generosity that we are able to sustain our beloved organization, and expand its services to Members and the community:

Thomas Burton, Joann Delafield, Don Fisher, Ray Gurriere, Susan Harder, Fred Hess, Susan and Robert King, John Vassil, John Vogt;

And the following Members will have their names listed on a plaque in the observatory as a special thanks for their support of our dome project:

William Bogardus (Sponsor), John C. Haeberle (Sponsor), Mary Maran (Patron), Frank and Joann Gumper (Angels), Barbara Lebkuecher (Angel)

Winter Festival Press Party At Custer

On January 25th, Custer served as the venue for the Winter Festival kick-off party and press conference. The Festival is being sponsored by the East End Arts Council, the LI Wine Council, Suffolk County, and others (<http://www.liwines.com/default.ihtml?page=winterfestival>). Custer will do its share by providing Festival passport holders a discount to its February events.

In addition to the facility, Custer provided the music: a newly formed string quartet composed of gifted high school students (Shaul Yahil, Ryan Foley, Tova Harris, and Filip Savatic) who call themselves "The Four Strings." On display were the paintings of Custer Member, Tim Haley, and those of landscape artist, Isabelle Haran-Leonardi (the exhibit will be running for the next several weeks). Custer's own Jeff Katz and Rico Verticchio provided tours of the night sky, and AOS Observatory Director and Custer Board Members, Rich Huber and Bill Bogardus, manned the AOS dome.

The party began at 4:00 PM and went on until 7:00. Attendees included members of the press, NY State Assemblyman Marc Alessi, Suffolk County Legislator Ed Romaine, Suffolk County Commissioner of Economic Development Jim Morgo, as well as executives from the East End Arts Council, the North Fork Promotional Council and, of course, Custer's Board of Directors.

Custer Secretary, Donna McCormick, said: *"We were pleased to host this affair, as it provided an opportunity for Custer to serve the community through cooperation with other Long Island nonprofits and businesses. In addition, it gave us a chance to introduce Custer to many distinguished individuals, and to demonstrate why this is such a special organization that is worthy of their support."*

The Board of Directors wishes to extend a heart-felt 'Thank You' to all those Custer members who helped make this memorable event a resounding success.

Nominating Committee Appointed

The following Custer members have been appointed as this year's nominating committee:

- Ruth Makofske, **Chairperson**;
- Anna Verticchio, **Committee Member**;

Any Custer Members interested in being considered as a candidate for a position on the Board of Directors should contact Ruth (goya@optonline.net) by March 15.

Board Vacancy

The position of 'Auditor' has been created. Any Custer members interested in being considered for this position or for further details, please contact Ruth Makofske or Anna Verticchio.

Lecture Highlights

January 21st; Comets and Other Small Bodies in Our Solar System

Custer member and Tupper Planetarium Director, David Cohn, presented an illustrated talk on asteroids, Kuiper belt and Oort cloud objects, including comets and Plutinos. Recent NASA / JPL missions investigating such objects were also covered. These included Deep Impact, Stardust and the New Horizons mission to Pluto.

January 28th; Stellar Evolution: The Life Cycle of Stars

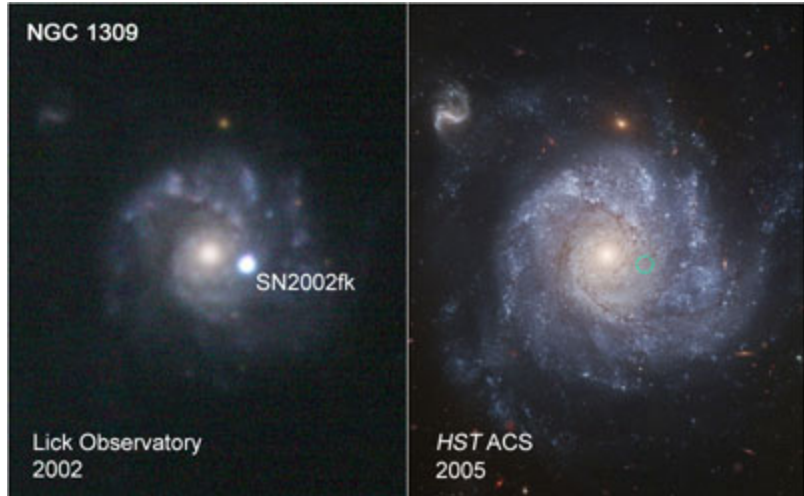


Image obtained by Mary Madigan; provided, courtesy, Tom Madigan

Custer Comment Editor and former Vanderbilt Planetarium Associate staff Astronomer, Tom Madigan, presented an illustrated lecture on the evolution of stars from birth to death. Topics included:

- history of cosmological models from the ancient Greeks and Egyptians to the Copernican model. Copernicus and a select few from his day, without data or observations from telescopes to confirm their theories and suffering the scourge of an ignorant and superstitious clergy, published their theories which proved to be revolutionary in their insight and far reaching in their scope. Copernicus is considered the father of modern Astronomy;
- early ideas on the composition of the stars and their distance;
- the relationship between spectral class luminosity, the Main Sequence, Red Dwarfs, stellar collapse, supernovae and more;
 - one point that merits further discussion, as I only briefly touched on it during my lecture, is the production of heavy elements in the cores of super massive stars and the events leading up to a supernova. By definition, a main sequence star is a star whose outward radiation pressure is balanced by gravitational collapse. When that balance ends, a star is said to 'leave the main sequence'. Simply put, a supernova occurs when the gravitational pressure of all the outer layers of a star, composed of the products of nucleosynthesis of all prior phases of the star's evolution, causes those layers to collapse catastrophically. All elements up to Iron have been fused into the next heaviest element in late A, B and O type stars. Iron, due to its low binding energy, cannot produce energy through fusion but, instead, requires the input of energy to be fused into the next element. This property of Iron causes the cessation of nucleosynthesis by ordinary means. With the sudden and [almost] complete loss of outward radiation pressure from thermonuclear reactions occurring in the star's core, the nuclear ash left over from previous stages in the star's evolution collapse onto the super-hot core. For a brief moment in time, blazing with the light of 200 million suns, ***the radiant output of this object exceeds that of the entire galaxy!***

A thumbnail of NGC 1309, the same image that is featured on the front page of this month's issue, is seen on the right; on the left is the same galaxy imaged by Lick Observatory's KAIT 0.76 meter telescope showing the appearance of Supernova 2002fk.



Image, Courtesy Space Telescope Science Institute (<http://StSci.edu>)

- Hertzsprung-Russell Diagram with in-depth descriptions of each stellar type and examples;
- The various types of thermonuclear reactions that occur inside a star and what conditions are necessary for the initiation of each were discussed. These included the Proton-proton chain, the Triple-Alpha process and other high-order processes;

Editor: if you'd like a copy of the Power Point presentation that I produced and used during the lecture, please send me an email with 'Stellar Evolution, PPT' as the subject.

February 4th; Telescopes and Binoculars

Custer Board Member and AOS Observatory Director, Rich Huber, presented a hands-on class on observing equipment and the basics of getting started in amateur astronomy. The discussion included optics, the designs of various types of telescopes, binoculars, and accessories, as well as advice on purchasing equipment to fit every budget.

February 11th; An Introduction to Astrophotography

Postponed until February 25th due to inclement weather

Upcoming Events at Custer

Constellations Tonight: A Starlab Planetarium Show and Book-signing Event

A planetarium show is one of the best ways to become quickly familiar with the night sky. This evening, **Steve Tomecek** will introduce you to the constellations and other celestial bodies using StarLab, a portable planetarium. As founder of Science Plus, Steve has provided science enrichment programs to schools, museums and libraries around the world. He is also a science consultant for Scholastic Inc. and National Geographic, was Science Program Supervisor for the NY Hall of Science, and has written over 20 books. Steve will also discuss how science can be made fun and easy to learn.

When: Saturday, March 11th, 2006; 8:00 PM;

Where: Custer Institute, Main Bayview Road, Southold

Suggested donation: \$5, Custer members, \$7, non-members

As always, refreshments will be served with observing to follow, weather permitting.

Annual St. Patrick's Day Dinner Party

Each year Custer hosts its annual St. Patrick's Day dinner party for the benefit of those who are Irish or of Irish extraction and, in a spirit of camaraderie and friendship, to share that tradition with those members who are not. This year represents a slight departure from Custer St. Patrick's Day celebrations of yesteryear. In addition to the sumptuous meal of corned beef and cabbage prepared by Custer President and resident chef, Chuck Cardona, we will be presenting a live concert, featuring Traditional Irish music, performed by Stephen and Susan Sanfilippo, celebrated musicians and music historians. Stephen and Susan have been performing on Long Island since the 1970s.

When: Saturday, March 18th, 2006;

Dinner: 6:00 PM;

Concert: 8:00 PM;

Where: Custer Institute, Main Bayview Road, Southold

Suggested donation

- Dinner: \$10, Custer members, \$12.50, non-members, \$5, children under 12;
- Concert: \$10, Custer members, \$12.50, non-members;

As always, refreshments will be served with observing to follow the concert, weather permitting.

Editor: attendees are encouraged to bring homemade entrees and desserts as an added treat. If you have a favorite recipe or dish, why not share your creation with the rest of us?

Spring 2006 Class: Special Topics In Astronomy

As in our winter course offering, each week a different instructor will present a topic of special interest. Register for as many of the sessions as you like (30% discount if you register for all five). Remain after class, participate in any other events that are scheduled, and enjoy refreshments while Staff show you around the night sky. Classes will be held Saturdays from 6:00 P.M. to 7:30 P.M., April 22, 29 and May 13, 20 and 27. Anyone wishing to enroll in our spring semester of '*Special Topics in Astronomy*', please use the class / membership application elsewhere in this issue.

April 22; Binoculars

Binoculars are NOT just for beginners and you'll learn why. The discussion will include an in-depth look at targets for binocular viewing in the current night sky and tips on how to select astronomically-worthy binos from the vast ocean of choices. Weather permitting, there will be a hands-on outdoor observing session (bring your binos). Instructor: Phil Harrington has authored numerous articles and books, including *Touring the Universe Through Binoculars* and *Star Watch*. He is an astronomy instructor at Dowling College and Suffolk County Community College, and is a Custer Member.

April 29; The Nature and Study of Cosmic Rays

Where do cosmic rays come from? Are they survivors of the early universe? Are they remnants of supernovas? The discussion will include the findings of the MARIACHI Project, a collaboration between faculty at Suffolk County Community College, Brookhaven National Laboratory, physics teachers and students, that attempts to address these questions. Instructor: Dr. Mike Inglis has authored several books, including *Astronomy of the Milky Way* and *Astrophysics is Easy*. He is an assistant professor of astronomy at SCCC, a Fellow of the Royal Astronomical Society, and a NASA Solar System Ambassador.

May 13; Re-visiting 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 20; 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 27; 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, and 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.

News and Noteworthy

NASA's New Horizons Mission to Pluto and Beyond Is Underway



Image, courtesy NASA / Kennedy Space Center

In what was characterized as a 'text book launch', NASA's New Horizons mission to Pluto has begun. At 2:00 PM on January 19th, lifting off from launch pad 41 under 'fair weather' skies, a powerful Atlas V Centaur rocket propelled the New Horizons spacecraft towards a region of the solar system that has not been explored by any terrestrial craft. Combined with the power of the Atlas V Centaur, the most powerful in the USAF's fleet of booster rockets, and the gravity assist of Jupiter, New Horizons will achieve the greatest velocity of any man-made craft to leave Earth orbit. Arriving in the summer of 2015, New Horizons has embarked on a mission that will allow humankind to uncover the secrets of an icy, enigmatic and mysterious world, a world discovered by Clyde Tombaugh almost a century earlier.

For mission updates and to subscribe to weekly email updates and alerts, please visit the New Horizons home page at <http://pluto.jhuapl.edu>.

As an example of what you can expect from the New Horizons email alert, the following is the latest, received on 9 February, 2006.

Pluto Mission News
February 9, 2006
<http://pluto.jhuapl.edu>

The PI's Perspective: Tom's Cruise

New Horizons continues to do well in flight — more than 99% of the journey to Pluto lies ahead, but the team has retired a great deal of risk by getting a good launch and successfully checking out most of the spacecraft's basic functions. In this week's "PI Perspective" column, Alan Stern covers some of the key activities planned in the weeks to come — and reflects on the upcoming phase of the mission named after the first New Horizons project manager.

Click [here](http://pluto.jhuapl.edu/overview/piPerspectives/piPerspective_current.html) for the full story, or visit http://pluto.jhuapl.edu/overview/piPerspectives/piPerspective_current.html.

New Horizons is the first mission to Pluto and the Kuiper Belt of rocky, icy objects beyond. Principal Investigator Alan Stern, of the Southwest Research Institute (SwRI), leads a mission team that includes the Johns Hopkins University Applied Physics Laboratory, Ball Aerospace Corporation, the Boeing Company, NASA Goddard Space Flight Center, NASA Jet Propulsion Laboratory, Stanford University, KinetX, Inc., Lockheed Martin Corporation, University of Colorado, the U.S. Department of Energy, and a number of other firms, NASA centers and university partners. For more information on the mission, visit <http://pluto.jhuapl.edu>.

You are subscribed to New Horizons E-News

Montauk Observatory Officially Underway



Through private funding, a telescope similar to this is being purchased for the Montauk Observatory.

Well, it's official! All the necessary legal hurdles have been overcome, clearing the way for the Montauk Observatory's planning and construction to begin in earnest. Although vetoing public funds for the observatory's 25" telescope, Suffolk County Executive Steve Levy wholeheartedly endorsed the private acquisition of the telescope: *"I fully support the privately raised funds for a telescope that resulted in the public/private partnership that will promise long-lasting benefits to thousands of astronomers in our county. Putting an observatory on the East End will provide a solid foundation for an outstanding environmental center at the county park to complement the history of the Theodore Roosevelt County Park."*

Please visit the Montauk Observatory's official website at <http://www.montaukobservatory.com> and, if your time and resources allow, make plans to attend the fundraiser and kickoff party:

Date and time: TBA;

Where: 50 Warren St., PHN, NYC

For additional details and info about the party, please visit the kickoff-party page at <http://www.montaukobservatory.com/party.htm>.



Montauk Observatory's Board of Directors and Leg. Schniederman at the site recently approved for the Montauk Observatory by the Suffolk County Legislature. Custer's Susan Harder is second from the left with Suffolk Legislator Jay Schniederman third from the right.

Montauk Looking Up

By David Lion Rattiner

Dan's Papers (<http://www.danspapers.com>) for December 19, 2005;

Reproduced at <http://www.montaukobservatory.com/lookingup.htm>.

If you have ever been out to Montauk at night you have noticed how incredibly clearly the stars can be seen. It really is quite striking, especially if you are a city dweller and are not used to seeing stars at night. The night sky in Montauk is so clear that many homeowners in Montauk have set up roof decks on their homes with their own personal telescopes. A warm summer night with a couple of friends, music, drinks and a view of the crystal clear night sky in Montauk is hard to beat.

Making the effort to check out the night sky has been a hidden treasure for those that like to visit Montauk. If you want to check it out through a telescope, you either have to buy your own telescope or know somebody that has one. Tour guides in Montauk don't tell you to check out the night sky in Montauk through a large telescope because there simply isn't a telescope there.

Suffolk County Legislator Jay Schneiderman happens to live in Montauk and, like his neighbors, knows how spectacular the stars in Montauk are. He and others also know that building an observatory in Montauk will draw more tourists to the area. He recently introduced a bill that authorized a licensing agreement between the county and a new non-profit group called Montauk Observatory Inc. The idea is that these two entities will set up and run the observatory in Montauk. Where exactly they are going to build the observatory is still up in the air, but the group is looking into the Theodore Roosevelt County Park as the most likely location for the observatory.

Creating an observatory in Montauk is no easy task, but it is looking more and more like it is going to happen perhaps by next summer.

As with anything these days, coming up with the money to create and run the observatory is the hardest part. During its first rounds of legislation, Schneiderman tried to get tax dollar money to pay for the observatory. Last July, he came up with a measure that would have put the cost of building the observatory, about \$500,000, onto the county. It was passed, but was quickly struck down by County Executive Steve Levy who vetoed the bill. The cost of building the observatory was too much for the county to take on and it didn't seem fair that Montauk would reap all the benefits of it.

Sometimes when you get knocked down, however, you spring back even stronger than before. After the news that the money would not be coming from the county, an effort to raise the money quickly began. Schneiderman and others began finding people who would be willing to give money out of their own pockets in order to build the observatory. In a short amount of time, people interested in contributing to the project started springing up all over and a board of advisors for the observatory was established. People like Dava Sobel, the best-selling author who recently has had a new book published about the planets in the solar system, is a member of the board. "I think the observatory in Montauk is going to be great and I am very excited about it," she said.

Richard Kessel of the Long Island Power Authority and State Assemblyman Fred W. Thiele Jr. are other members. It was reported that Fred W. Thiele was willing to do all of the legal work for setting up the non-profit group the Montauk Observatory Inc. at no cost. This new group of people are going to make the observatory happen themselves, without the help of taxpayer money. County Executive Steve Levy couldn't be happier about it saying that it was saving taxpayer dollars while at the same time getting the project done for the community.

There are many pluses to having the observatory owned privately. The main one is that the county won't own it and therefore won't have to close it if taxpayers fail to put enough money towards it. There is also the benefit of having a dedicated group working towards its success.

The group has been eyeing a telescope in Arizona that has been decommissioned, but is still in good condition and was used at the Biosphere II project in Arizona. They are still waiting for the completion of their fundraising period to make the purchase. They are looking to raise approximately \$500,000 and have already raised close to \$100,000. If you'd like to make a donation, please call 631-329-0456 or go to montaukobservatory.com.

Editor: This article appeared in Dan's Papers for 19 December, 2005 and is reproduced with permission. The opinions expressed herein, if any, are those of David Lion Rattiner and Dan's Papers and do not necessarily represent the opinion(s) of this editor or that of Custer Institute or its Board of Directors.

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