

January 2008

Volume XXXVIII, Issue 1

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Winter's Diamonds on Display



Image obtained 3/14/1986; © Tom Madigan

The most famous in the winter showcase of celestial jewels is the Great Nebula in Orion, Messier 42. Flanked by Messier 43 to the left and shining by the intense ultraviolet light of the luminous, O and B stars collectively known as the Trapezium or θ (Theta) Orionis, the ethereal beauty of this H-II region is legendary. The Trapezium is visible in this image just above the nebula's center. Please see the Winter Sky highlights in this month's editor's page for additional commentary and details concerning this object and others.

Highlights for January 2008

- Custer Institute's Winter 2008 Course Offerings
- Heavenly Events By Bob Chapin For January and February
- Member's night, Friday, January 25th*
- Starlab Portable Planetarium Shows*
- Custer receives \$2,888.00 FAR Grant*
- Custer to participate in LISEF*
- The Eclectic Artwork of Custer's Jeff Katz, Ph.D.*
- "Visions of the Cosmos" Astrophotos by David Barnett*

*See President's Message

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Next Month

The **Fredrick C. Hess Memorial Issue** featuring personal accounts and pictures from Fred's life from all of us at Custer and others, far and wide, who knew him and loved him. If you haven't already done so and would like to, please send me your personal story about Fred, any pictures (digital, if possible) or other accounts that would be a fitting and appropriate addition to this humble tribute dedicated to a true giant among men.

Exclusive to Custer

An insider's account of what's happening at the Vatican Observatory. Brother Guy Consolmagno, S.J., the "Pope's Astronomer", provides a rare and incisive look into the relocation of the Vatican Observatory and what effect that will have. Brother Guy provides fresh and colorful commentary in response to recent articles that have appeared in the international press.

Cover Image Details

8" F 7.2; Prime focus; 2, 5 Min exposures, manually guided; HS Ektachrome 400 Stacked and enhanced using MaxImDL and Photoshop CS2

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>

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

Sarah Williams

"The brilliant ones among us see things but darkly; they catch a notion, a fleeting glimpse, a brief insight, a hint that fades and flickers as a candle set atop a desert mountain"

T. Madigan

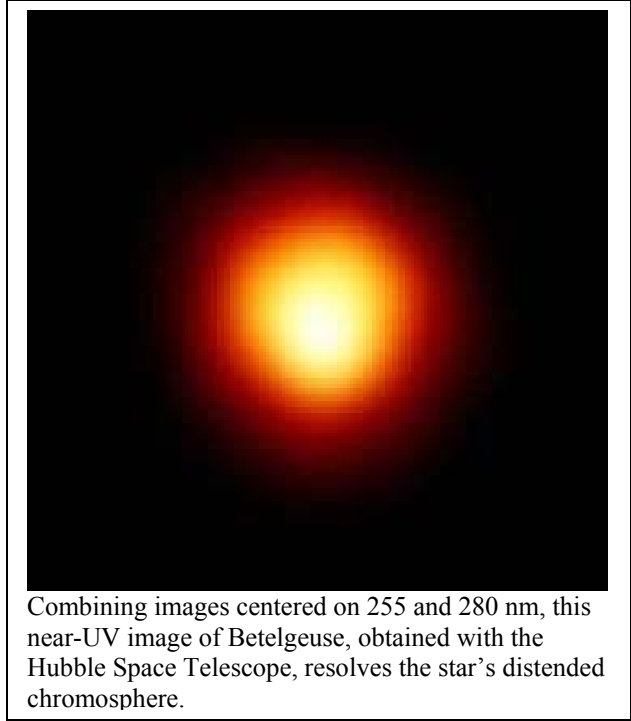
I am working on a Fredrick C. Hess memorial issue of the Custer Comment and will publish it as a supplement to either the February or March issue. If anyone would like to submit an article about Dr. Hess for publication, please send it to me as soon as possible.

With Orion crossing the meridian during mid-evening and Canis Major in tow to the south and east, we are certain that winter is in full



Looking south, one observes the stunning winter sky. To the south and east of Orion, the Winter Milky Way can be seen running through Canis Major with Sirius front and center and brilliant Orion to the North and West

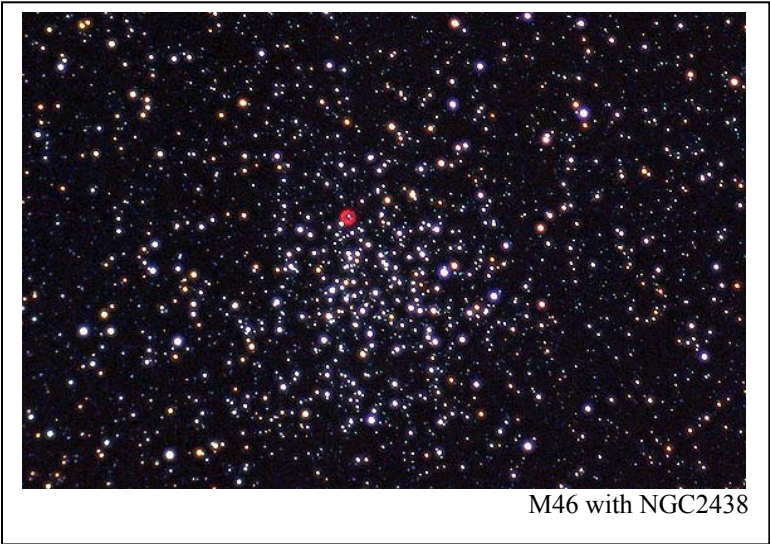
swing and that the cold, clear winter nights so characteristic of this season will allow us to behold the stunning, celestial jewels that abound in this part of the sky. The well-known favorite of these jewels is the Great Nebula in Orion, Messier 42, over 1,300 light years distant and featured on the cover page of this month's issue. Looking out through one of the primary spiral arms of our galaxy, the Orion arm and the arm that contains our sun and solar system, the Orion-Canis Major-Puppis region is a diverse treasure trove of celestial objects, jewels that suit the naked eye observer, those who choose to observe with binoculars or those who have access to large telescopes. Observing the winter sky under dark conditions and starting with the ethereal Winter Milky Way running North-South through Canis Major into Orion and north up through Cassiopeia, one quickly notices the concentration of bright stars and gets a sense of the richness of the region. Located 430 light years distant, bright red Betelgeuse, marking Orion's right shoulder, is a highly-evolved M2 Red Supergiant and is only one of 2 stars that can be spatially resolved from earth. This image, obtained with the Hubble Space Telescope, reveals the bloated, extended disk of the star and, under additional scrutiny, will reveal mottling and structure consistent with sunspots and features observed on our own sun. If placed at the center of the solar system, Betelgeuse would engulf the orbit of Jupiter. In order for Betelgeuse to subtend the same angular size as the sun in the sky, one would need to be on a planet orbiting the star at a distance of 570 astronomical units (12 times the distance of Pluto)!



Combining images centered on 255 and 280 nm, this near-UV image of Betelgeuse, obtained with the Hubble Space Telescope, resolves the star's distended chromosphere.

Aside from the old favorites, I would like to briefly discuss three stunning open star clusters, M46, M41, NGC2362 and a stunning, little planetary nebula, NGC 2438 that is physically associated with M46.

South-southwest of Sirius in Canis Major lies a beautiful open cluster, M-41. Stunning in binoculars or an RFT reflector, this object is another winter favorite. Puppis, south of Canis Major is another constellation that is often overlooked but is, nonetheless, home to a real gem. M-46 contains a 10th magnitude planetary nebula, NGC2438 that is easily visible in a 6 inch reflector. This beautiful, red smoke ring is gravitationally bound to the cluster and appears to float in front of the background stars. M46 can be easily found by scanning due east of Sirius with a wide-field eyepiece. Once found, higher magnification will show the tiny, stunning smoke ring.



M46 with NGC2438

Another stunning gem in this treasure chest that is the winter sky in and around Canis Major and Orion is Tau Canis Majoris, and the associated open cluster NGC 2362. It is still uncertain if this O8 spectral type star is gravitationally bound to the cluster. If it is, as mounting evidence seems to indicate, then Tau Canis Majoris would be one of the most luminous supergiant stars known with an absolute magnitude of -7.0 and an aggregate luminosity of 50,000 solar luminosities. This beautiful little cluster is a personal favorite, is made up of about 60 stars and is only about 25 million years old. To locate NGC 2362, scan approximately 1° northeast of Wezen (Delta Canis Majoris) and this neat little cluster will dance into view.

Tau Canis Majoris Surrounded by NGC 2362



Image obtained 2/28/1986; © Tom Madigan
Image details: 8" F 7.2; Prime focus; 2, 5 Min exposures, manually guided; HS Ektachrome 400; Stacked and enhanced using MaxImDL and Photoshop CS2

Imagine, if you will, a planet orbiting τ (Tau) Canis Majoris, a luminous O8 star embedded in NGC 2362 and surrounded by dozens of young, luminous stars. What would your night sky look like? Then also image that this star will live no more than 20 million years and is a likely candidate for a Type II supernova, the same fate that will befall θ 1 (Theta-1) Orionis, a luminous, blue-white O6 star, the most luminous of the stars in the Trapezium and the principal source of the intense UV light that is causing M-42 to shine. In about 20 million years we had better keep our eyes on this part of the sky because, as the Chinese astronomers of 1054 observed in Taurus, we will be witness to the terrible beauty of a Type II Supernova, the most energetic event in the universe, a spectacle that will be observed in a location none other than what used to be the sword of Orion!

Best,

Tom

Tom Madigan, Editor

Fellow, RAS

Member, AAS

"If the Stars should appear one night in a thousand years, how would men believe and adore; and preserve for many generations the remembrance of the city of God which had been shown! But every night come out these envoys of beauty, and light the universe with their admonishing smile"

~Ralph Waldo Emerson

Letters To The Editor

Bi-Lingual Lectures Inappropriate By George Lomaga

Although I can appreciate your attempt to accommodate the Spanish population in our community and their introduction to astronomy and Custer Institute, I do not favor any lecture at Custer Institute being given in any language other than English.

As an educational entity, we should welcome new immigrants and encourage them to more fully assimilate themselves into our country and society by fostering and promoting the ways, customs and language of their new country. To do otherwise would be a disservice. As an individual with an Ukrainian-Polish heritage, I was always taught the necessity of learning the ways of America. It was an asset to be able to understand another language as Ukrainian or Polish, *but* English was always first.

Why not encourage any individual from any nationality to attend lectures at Custer and offer any needed assistance in translation if requested. If this is a trend, to offer lectures in any language other than English, then I look forward to the day when one will be given in Polish about Copernicus.

George

Dark Sky Corner

Brookhaven Township Adopts Tough new Amendments to Lighting Law Riverhead to follow suit

The following is the full text of my announcement following the 4th December, 2007 Public Hearing and subsequent vote at Brookhaven Town Hall

Announcement

A unanimous vote last evening by the Town Of Brookhaven Town Council puts in place a series of amendments that completes the township's existing lighting law, enacted one year ago. Among other items, the amendments include:

- 1). A sunset clause that will compel those who operate non-compliant lighting to bring it into spec within 10 years;
- 2). A tough-as-nails streetlighting provision that compels the town to install replacement streetlights and any new streetlights with full-cutoff luminaires. Existing streetlights will be replaced over time with full-cutoff luminaires and are subject to the 10-year sunset provision;
- 3). All due diligence to be performed when evaluating roadway lighting applications and a determination made as to whether the purpose of the lighting could be achieved through passive means with an eye towards energy conservation. This is essentially the concept of a lighting warrant;
- 4). Language that clearly addresses light trespass and glare with very specific remedies;
- 5). 11:00 PM lighting "curfew" (lights out after 11:00 PM unless you're open all night – this includes shopping malls and convenience stores, shopping centers and all those who think that dusk-to-dawn is the way to go);
- 6). Gives authority to code enforcement to determine if a lighting fixture or installation is a public safety hazard and that lighting fixture or installation be removed or brought into compliance immediately.

Full details will be available shortly on the Town Of Brookhaven public website at <http://www.brookhaven.org>.

These amendments, once filed with the NY State Secretary of State, become effective and enforceable immediately.

The Town Of Brookhaven Town Council is to be commended for this landmark legislation and congratulations to all involved on a brilliant job well done! Special recognition is to be given to Councilman Kevin McCarrick who originally sponsored the legislation, his office staff, John Kreutz, his legislative aide, Councilman Steve Fiore-Rosenfeld for his enthusiastic support and to the Town of Brookhaven Ad Hoc Lighting Committee (Susan Harder, Phil Harrington, David Cohn, Tom Madigan and Alan Stadler) who worked closely with Councilman McCarrick's office and with Councilman Steve Fiore-Rosenfeld to enact these amendments thereby completing a lighting law that we can all be proud of, that will preserve and protect the night sky and our environment for generations to come and that will be a standard and a model for others to aspire to.

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?

Custer Dome Assembly and Raising DVD

\$10.00

2 Payment

Options:

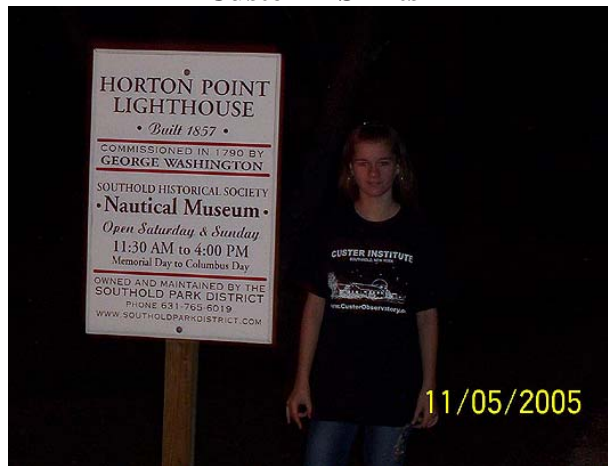
1) Mail a check or money order, payable to Custer Institute, to this editor's address with a note indicating how many copies you would like; 2) Paypal to CusterPaypal@yahoo.com followed by an email to this editor indicating the number of copies ordered and shipment instructions. Before shipment, I will 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, \$10.00, \$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 \$12 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.

Montauk Sunset Screensaver

PC compatible screensaver with musical accompaniment; please send a check in the amount of \$10, payable to Custer Institute, to this editors mailing address, published on the editor's page. Allow 7 - 10 days for your CD to arrive.

Heavenly Events To Watch For January 2008

“ Now breaking through the barricades of sound and gravity, we know Canaveral will be, one day, to others, looking back, as Kitty Hawk to us. “

- Myra Perrings

After December's "Great Alignment of 2007" - (of which Mars and the full Moon were the only visible nocturnal participants) - January's planetary driftings are less flashy until late in the month, when the two brightest planets stage a super conjunction in the dawn sky. MERCURY makes a brave leap into the evening dusk during the weeks of mid-January, but is hampered by its approaching perihelion. VENUS still rises before daybreak, but is quickly losing altitude. At month's end JUPITER, rising out of the dusky dawn, surprises Venus. Look for this dynamic duo an hour before sunrise, low in the southeast. MARS, now past opposition, is well placed for high-magnification viewing between the horns of Taurus the Bull. SATURN rises in Leo the Lion around 8:30 PM at midmonth, and is due south around 3 AM. Telescopes will show that the rings have closed to about 7° to our line of view. We'll be seeing the south face of these rings all year, but by next January they'll appear razor thin.

- 1 Comet 8P/Tuttle makes its closest approach to Earth today, only 23.5 million miles away in the direction of northern Pisces. This is the closest the comet has come to us since Horace Tuttle saw it in 1858, and it (presently) returns every 13.6 years, Tonight, find 8P/Tuttle by scanning with binoculars, about 3° to the northwest of the 2.6 magnitude star Sheratan, β Arietis. It's moving quickly southward, and by the evening of the 6th the comet will be just west of the star Al Rischa, α Piscium.
- 2 This evening the Earth is at perihelion, closest approach to the Sun, about 91.4 million miles.
- 3 Tonight you might enjoy a fine showing of Quadrantid meteors streaming out of the northeast, away from the end of the Big Dipper's handle. No moonrise until after 4 AM!
- 4 Latest sunrise around this date, about 7:20 AM for Long Island. Since sunset has been occurring later each evening for more than 3 weeks, the days are already getting longer - and have been since winter began.
- 5 Around 6:30 AM (about an hour before sunrise) the thin waning crescent Moon joins the red star Antares (α Scorpii) beneath Venus, very low in the southeast.
- 12 Algol, β Persei, is in mid-eclipse at 9:32 PM, and again at 6:21 PM on the 15th.
- 18 Early this morning the waxing gibbous Moon heads toward the western horizon with the Pleiades Cluster. Around 2:13 AM the 4.4 magnitude star Taygeta, 19 Tauri, will be occulted by the Moon's lower-left edge.
- 19 The nearly-full Moon passes Mars this evening. After midnight, around 1:24 AM, the 4.5 magnitude star 136 Tauri will disappear behind the Moon's lower-left edge.
- 21 Mercury is at greatest elongation east of the Sun. Look very low over the southwest horizon near 5:45 PM.
- 22 Full Wolf Moon sets shortly after sunrise. Start tracking Venus and Jupiter an hour BEFORE sunrise.
- 24 The bright waning gibbous Moon rises next to Saturn after dark.
- 30 Retrograde motion ends for Mars, 2½ months after it began. Next retrograde begins about 2 years from now.
- 31 Fifty years ago today a U.S. Army Jupiter C rocket carried the Explorer 1 satellite into orbit from Cape Canaveral, the first successful American launch of an orbiting satellite. It weighed 31 pounds.

Feb. 1 VENUS and JUPITER a moonswidth apart!

Prepared by Robert Chapin

President's Message

Happy New Year! 2008 started out great for Custer. Earlier this month, The Suffolk Times did a feature story on our receipt of a small grant from the Fund for Astrophysical Research. North Fork editions of Suffolk Life ran a cover story on Custer (click link below to read it):

[The Sky's The Limit For The Custer Institute]:

http://www.zwire.com/site/printerFriendly.cfm?brd=1776&dept_id=6365&newsid=19202855

There's more good news as well. On February 5th, Custer will be judging submissions in the astronomy category in this year's Long Island Science and Engineering Fair (<http://www.LISEF.org>). We'll be awarding \$100 prizes (and a year's complimentary family membership) to winners in the astronomy and computer science categories. Moreover, Custer has plans to hold its own astronomy science fair for grades 8-11 concurrent with this year's Jamboree. To help get students started, we'll be holding a seminar to teach them how to do an astronomy project. We're also planning a several session seminar aimed at helping high school science teachers learn astronomy. If you are a student, a teacher, a potential sponsor, or just interested in helping get these educational programs off the ground, please contact me.



HOW TO USE YOUR TELESCOPE [See editor's note]

Did you just receive a new telescope as a holiday gift? Or is there one gathering dust in the closet because you don't know how to use it? Perhaps you have been using your telescope but it doesn't seem to be working quite right and you're asking yourself: "Is it me or the equipment?" This lecture and workshop will provide all the answers. You'll learn all you ever wanted to know about telescopes and receive practical information that will help you get set up and observing. After the lecture, there will be an opportunity for you to receive hands-on help from the instructor and Custer's Observatory Staff. Instructor: Jeff Norwood is a veteran amateur astronomer, telescope mechanic, & owner of Camera Concepts in Patchogue.

Now on exhibit in Custer's Stokes Gallery are the works of two photographers: "The Eclectic Eye" of Jeffrey Owen Katz and "Visions of the Cosmos" astrophotos by David Barnett. Those who donate \$50 or more will receive one of Mr. Barnett's framed photos as a thank you gift; all proceeds to benefit Custer's research and educational programs.

For those of you who are Members, our first Members' Night will be held on Friday, January 25 at 7PM. Members and their guests are welcome to come, mingle and enjoy all that Custer has to offer.

There will be two StarLab Portable Planetarium Shows on Saturday, January 26 at 2:30 and 3:30PM.

Also on January 26, the Winter 2008 class "Introduction to Astronomy" will begin with all new instructors. Each session of the class can stand-alone so you don't have to sign up for all six sessions. See attached flyer.

And if you're as concerned about preserving Southold's dark skies so that you can still see the wonders of the night sky through Custer's telescopes, there is a meeting at Southold Town Hall on Feb. 13 at 7PM. The town is in the process of creating lighting legislation. Custer Member and Dark Sky Advocate, Susan Harder, has been working closely with town officials and will be making a PowerPoint presentation that evening. Please show your support by attending (especially if you're a Southold resident).

If you have any questions about the events or anything else that's Custer-related, don't hesitate to contact me.

Meanwhile...

All the best,

Donna

www.CusterObservatory.org

Editor: Although the date for this event has come and gone, any Custer staff member will be glad to assist you in the setup and use of your telescope. Additional details about Custer's \$2,888.00 FAR award can be found here:

<http://www.tommadigan.net/custer/Times-ReviewNewspapers-MoneyToSeeBeyondTheStars.pdf>

Upcoming Events and Highlights

Stony Brook Science Fridays

1. Astronomy Open Night: "A Clearer View of the Skies Using Adaptive Optics"
Friday, February 1, 2008
Prof. Anand Sivaramakrishnan
2. The Worlds of Physics: "Banning Nuclear Weapons Tests: The Key to Nuclear Abolition"
Friday, February 8, 2008
Prof. Lester Paldy
3. Our Environment: "Long-term Monitoring in western Long Island Sound: Temperature Changes, but maybe not what you'd expect"
Prof. R. Lawrence Swanson, Waste Reduction & Management Inst., Stony Brook University
Sunday, February 10, 2008, 7:00 PM
Room 001 ESS Bldg., 7:00 pm
4. Darwin's Day Lecture: Title: TBA
Wednesday, February 13, 2008
SAC Auditorium, 7:30 pm
Prof. David Sloan Wilson, Distinguished Evolutionary Biologist, Binghamton University
5. The Living World: "Pollution and Rapid Evolution: Answers not in Genesis"
Friday, February 15, 2008
Distinguished Prof. Jeffrey Levinton, Dept. of Ecology & Evolution
Stony Brook University
6. Geology Open Night: "Deciphering the Geology of Mars through Temperature"
Friday, February 22, 2008
Prof. Timothy Glotch, Dept. of Geosciences, Stony Brook University

Note: Unless otherwise specified, all events are held in Room 001, ESS Building at 7:30 pm

Spectrum Thin Film Open House

By Tony Pirera (Tony@spectrumthinfilms.com)

My company manufactures optical coatings for astronomical industries like Televue, Astrophysics, Questar, used to make all of the Coronado Solar Filters line, major observatories throughout the world. We have just relocated to Hauppauge, a 16,000 building with a 3000sq ft clean room, and many more offices. This ***open house will include a tour of the laboratory*** and demo on how optical coatings are produced. We will have party supplies that include light food, deserts, coffee and soda. I will allow people to go into the clean room. I feel this will be a very rare and educational experience for all and people will learn how telescopes and optics are coated. I will also have a raffle where someone will win TeleVue OIII and Nebustar light pollution filters and my dielectric mirrors which I developed many years ago. After I introduced this dielectric mirrors it was highly successful for many years.

Where: Spectrum Thin Films (<http://www.spectrumthinfilms.com>)
135 Marcus Blvd
Hauppauge, ny 11788

When: Friday, 7th March, 2008; 8:00 PM

Contact Info:

Phone 631-901-1010,

Please email me if you plan on going as I want to get a good idea how many people will be coming.

Introduction To Astronomy

Custer Institute's Winter 2008 Course Offerings

Saturdays, January 26th, February 2nd, 9th, 16th, 23rd and March 1st, 2008

Time: 5:00 - 6:30 PM

Session 1, Cosmology: Understanding The Universe

January 26th 2008

Coverage will include theories about the formation and nature of the cosmos: the Big bang theory, the expanding universe, dark energy & matter, relativity, string theory, and more.

Instructor: **Kenneth Lanzetta, Ph.D.**, is an observational astronomer at the Department of Physics & Astronomy, SUNY Stony Brook; his own original research has led to some very significant (and some say controversial) findings about the early Universe.

Session 2, To The Stars Through Rugged Ways

February 2nd 2008

How did astronomy get to where it is today? An historical look at how our current understanding of the universe evolved.

Instructor: **Sam Storch** has spent over four decades teaching astronomy at such institutions as the Hayden Planetarium & Nassau Community College. Fellow, International Planetarium Society; Secretary, Middle Atlantic Planetarium Society; active member, Astronomical Society of Long Island.

Session 3, The Sun And Stars

February 9th 2008

The nature and structure of our Sun, solar phenomena, classifications of stars and their life cycles.

Instructor: **Frederick Walter, Ph.D.**, Dept. of Physics and Astronomy, SUNY Stony Brook, has studied stellar evolution using the CHANDRA and NEWTON X-ray Observatories, the Hubble Space Telescope, and telescopes in Hawaii and Chile.

Session 4, The Planets

February 16th 2008

The kinds of planets and their formation, solar systems, extra-solar planets, near-earth objects (asteroids, comets, meteors), current space missions and findings.

Instructor: **Sean McCorkle, Ph.D.**, teaches astronomy at Suffolk County Community College and works at Brookhaven National Laboratory as a bioinformaticist.

Session 5, Galaxies & Deep Space Objects

February 23rd 2008

An illustrated lecture on the characteristics of different types of galaxies, black holes, star clusters, nebulae, magnetars, pulsars, and more.

Instructor: **Helio Takai, Ph.D.**, is an experimental physicist at SUNY Stony Brook, Dept. of Physics and Astronomy, and at Brookhaven National Lab. He is also a member of Custer's Research Cmte.

Session 6, Stargazing For Beginners

March 1st 2008

Learn what's up in the night sky and how to find it by star-hopping, the use of planispheres, and other resources. Weather-permitting, part of the session will be spent outdoors for a live demonstration.

Instructor: **Urszula Golebiewska, Ph.D.**, is an experimental biophysicist at SUNY Stony Brook, is on Custer's Observatory & Research Committee, and serves the Board as Assistant to the Secretary.

IN-SERVICE CREDIT

Letters will be provided to registrants upon request. If your district awards one credit for every 15 hours of instruction, one-tenth of a credit may be received for each session or three-fifths of a credit for the entire class.

For further information contact Donna McCormick: CusterDonna@yahoo.com or call 631-765-2626.

Registration For The Winter 2008 "Intro To Astro" Class

Please consider becoming a member of the Custer Institute, a 501(c)(3) NYS educational nonprofit. Custer is staffed by volunteers, and relies on dues, proceeds from events, and the generosity of the community for its survival. Your membership will not only help it continue to provide educational, cultural, and research programs, but will support efforts to improve the facilities and expand services.

PLEASE PRINT CLEARLY

Name _____ Email _____

Street Address _____

City _____ State _____ Zip _____

Phone _____

I would like to join Custer: \$45 Individual; \$60 Family; \$25 Senior (65+); \$25 Full-time Student; \$100 Sponsor

Save nearly 20% by registering for the full class or just register for as many individual sessions as you like.

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Please mail your form to:

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Please note: Confirmation of registration and notices about rescheduling due to weather, etc., **will only be sent by email.**

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