



May 03

Volume XXXIII, Issue 4

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Radio Astronomy Chair
631-218-2350
bvanson@aol.com

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631-298-4857

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631-722-3850
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631-727-8393

Custer Is the Bright Star of The North Fork!

NY Post for 4/8/2003 gave Custer rave reviews!

<http://specialsections.nypost.com/news/nypost/travel/20030408/p54.asp>

Stars of the North Fork

By Emily Lambert

YOU don't have to go to the Hamptons to star gaze on the East End. The North Fork, though not exactly known for its after-dark hangouts, has its own scene: Think more Orion and Gemini, less Baldwin bros. The East End claims some of the darkest skies on Long Island, a boon for star-starved city dwellers.

Read the entire article at the above link. If you don't have access to a computer or the Internet, contact Tom Madigan.

Mt. Stromolo Observatory almost a 'Total Loss'

January 18th saw a freak, ferocious brushfire sweep across the western outskirts of Canberra, Australia, destroying the extensive facilities of Mount Stromolo Observatory. This tragedy largely destroyed much of Australia's Astronomical infrastructure. The fireball was so swift and so severe that the 80-member resident staff had nary 20 minutes to evacuate or face certain death. For the complete story, see Sky & Telescope for April, 2003.

NASA Mission Updates

Galaxy Evolution Explorer Ready To Study Galaxies

NASA's Galaxy Evolution Explorer (GALEX) spacecraft successfully launched Monday, April 28, 2003 from a Pegasus XL rocket released by an L-1011 aircraft off the coast of Florida's Cape Canaveral Air Station at 7:59:57 a.m. Eastern Daylight Time (EDT). Carrying into space an orbiting telescope that will observe a million galaxies across 10 billion years of cosmic history, GALEX will help astronomers determine when the stars and elements we see today had their origins.

Cassini-Huygens, Mission to Saturn & Titan

This landmark mission is right on track with the latest telemetry indicating that the spacecraft is in excellent health. The scheduled rendezvous with the Saturnian system is July 1st, 2004.

Annual Family Astronomy Day & Lunar Eclipse

Mark these on your calendar. *Saturday, May 10, 2003* is the next, annual, Family Astronomy Day. Concurrent with this major event here at Custer, will be the next session of our brand new mirror making class. A 3:30 P.M. demonstration of the class will be provided for the public. *Thursday, May 15, Lunar Eclipse!* A lecture and program hosted by Custer's own George Lomaga to begin at 7:30 P.M. Refreshments and observing to follow.

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Editor's Column

<p>Tom Madigan, Editor Tom Madigan 99 North Summit Ave. Patchogue, NY 11772-2226 tmadigan@optonline.net 631-447-5339</p> <p>Cutoff for submissions or other changes effecting delivery is the 15th of the month preceding publication. If you receive The Comment electronically and your email address has changed, please make sure any changes are submitted no later than the 15th of the month.</p> <p>Visit the new Custer Website at http://www.custerobservatory.org</p>	<p>The Custer Comment is published monthly by</p> <p>Custer Institute P.O. Box 1204 Main Bayview Road Southold, NY 11971 631-765-2626</p>
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Beginning with this issue, the Custer Comment will be published in both electronic and printed form. Please let me know via email or phone if you wish to begin receiving The Comment in electronic form. If you choose the electronic option, you'll need Adobe (<http://www.adobe.com>) Acrobat Reader, available for free download at: <http://cgim.adobe.com/acrobat/reader21/download.cgi>. Those who choose to receive The Custer Comment electronically would be helping greatly from the saved postage and printing costs.

As always, your commentary and article submissions are welcome.

Best,
 Tom

Tom Madigan, Editor

Gift Corner & Classifieds

<p>We have meteorites.</p> <p>Great sets mounted in beautiful display cases. Perfect for gifts.</p> <p>New Custer logo coffee cups ONLY \$4 EACH</p>	<p>The Gift Shop still has a dwindling number of copies of ASTRONOMY FOR ALL AGES, by Philip Harrington & Edward Pascuzzi just \$20. As an added bonus, copies are signed by Ed Pascuzzi. We also have copies of PARALLAX, the book that was referred to in the recent lecture. Quantities are limited so hurry and add to your collection while supplies last.</p> <p>For Sale Meade 10" Schmidt-Cassegrain with Clock Drive, Wedge and Tripod. \$1,200.00. Call 631-369-1100 during business hours and ask for Charles Cardona.</p>	<p>For Sale Super C-8 Telescope, Richfield Finder, Tripod Wedge, Polaris Pointer, Polar Axis Finder, Case liner, Handle, Handbook-\$1307. No-tool knob set for C-8- \$12. Illuminated Reticule ocular assembly for C-8 including 12.5MM ocular rheostat-\$66. 2 inch Premium grade Deep Sky filter and 1 1/4 inch ocular adaptor-\$121. Observer's Chair with adjustable height-\$47. Rubber eyeguards (4)-12. Vernon mounted glass filters- neutral density, blue 80A, violet 47, light red-\$23A, green 58, orange-\$51. Adapter for Celestron 1 1/4 inch non-threaded oculars-\$10. Rich Field Adaptor with TeleCompressor and 20mm Erfle ocular-\$150. 8mm Brandon-\$69. 12mm Brandon-\$59. 2.4X Dakin Barlow-\$59. 25mm Kellner-\$28. 40mm Kelner-\$28. Declination Motor & Accutrack Telescope Drive Corrector, Dual Axis-\$199. Counter Weight set-\$30. Astronomer's Flashlight-\$7. Omni-axis Camera Mount-\$ 50. Accessory tray-\$30. Accessory Case-\$25. Helical Focuser-\$28. Dewcap-\$40. T-adaptor-\$20. Eyepiece projection adapter: teleextende-\$20. Best offer or \$1600 for the whole. Original cost \$2468. Contact Bill Richards at 631-957-2032, 98 Laurel Road, Lindenhurst, NY 11757-1705.</p>
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HEAVENLY EVENTS TO WATCH FOR May 03

Wednesday, May 7th.

- **Mercury Transit of the Sun.** When this innermost planet passes between the Earth and the Sun on May 7th, it will appear as a tiny black "sunspot" in small telescopes. No matter where on Earth you live, Mercury will start forming a dent on the Sun's limb within two minutes of 5:13 [Universal Time](#). This occurs near the north point on the Sun's disk, at position angle (p.a.) 15° or 16° eastward along the limb. By about 7:52 UT Mercury will be some 12' from the Sun's center, or 4' inside the northwestern edge (see the diagram on the next page). The planet finally leaves the Sun at around 10:32 UT at p.a. 290° or 291°.

Thursday, May 8

- Bright Jupiter shines below the Moon tonight.
- Jupiter's Red Spot transits around 11:24 p.m. EDT.

Friday, May 9

- First-quarter Moon (exact at 7:53 a.m. EDT).

Saturday, May 10

- The brightest star shining high in the east after dark during May is Arcturus. Very high in the north, look for the Big Dipper floating upside down. Look low in the northeast for brilliant Vega on the rise.

Thursday, May 15th Total Lunar Eclipse.

On Thursday night, May 15–16, the full Moon will pass through the northern part of the Earth's shadow, providing a colorful spectacle for observers throughout the Americas, Europe, and Africa. Lunar eclipses get their colorful red-orange hues from sunlight that is filtered and bent by the Earth's atmosphere before it reaches the Moon. Skywatcher Mary Ward of Dublin, Ireland, once likened the totally eclipsed Moon to a "red-hot penny" in the star-filled sky — a description as apt today as it was for her on February 7, 1860.

In western North America the eclipse will already be under way as darkness falls on May 15th, while east of the Mississippi River the entire event can be seen later in the evening.

Total Eclipse of the Moon, May 15–16, 2003					
Eclipse stage	UT	EDT	CDT	MDT	PDT
Moon enters penumbra	1:05	9:05 p.m.	8:05 p.m.	--	--
Partial eclipse begins	2:03	10:03 p.m.	9:03 p.m.	8:03 p.m.	--
Total eclipse begins	3:14	11:14 p.m.	10:14 p.m.	9:14 p.m.	8:14 p.m.
Mideclipse	3:40	11:40 p.m.	10:40 p.m.	9:40 p.m.	8:40 p.m.
Total eclipse ends	4:06	12:06 a.m.	11:06 p.m.	10:06 p.m.	9:06 p.m.
Partial eclipse ends	5:17	1:17 a.m.	12:17 a.m.	11:17 p.m.	10:17 p.m.
Moon leaves penumbra	6:15	2:15 a.m.	1:15 a.m.	12:15 a.m.	11:15 p.m.

WELCOME TO OUR NEW OR RETURNING MEMBERS:

Kim Mueller of Mattituck, NY and Karen C. Brown of Southold, NY. Welcome one and all!

PRESIDENT'S MESSAGE

Thank to our program chairman Chuck Cardona, and others, this spring has started off with a substantial number of programs for members and the public alike. If you have children or grandchildren, you want to bring them to the May 10th Family Astronomy Day. And for the more intellectual of you, you shouldn't miss that evening's lecture with Brother Guy Consolmagno, author and astronomer at the Vatican Observatory. Then, George Lomaga's Lunar Eclipse program on Thursday evening May 15th is just the thing for all of you who are allowed to stay up late.

If the repairs to the shed roof can be completed in time, it is hoped that the dedication of Custer's new Celestron CGE-1400 14" Goto Schmidt-Cassegrain Telescope can take place during the Annual BBQ and Membership Meeting on Saturday June 14th.

Elsewhere in this issue is the George Vratton's Nominating Committee recommendations. During the Annual Membership Meeting, members will have the opportunity to nominate other members, who are present, to also run for the available board positions. This will be followed by a vote of the membership. See you out at Custer!

Bob Vanson

Announcements & General Interest

YOUR HELP IS STILL NEEDED!

There is STILL a lot of fixing up, cleaning up, indoor, and outdoor work that needs doing around Custer. Your help is still needed, even if on a solitary basis. If you can donate a day or two to help, or have a specialty we may require, give Bob Vanson a call at 631-218-2350 or email him at bvanson@aol.com.

NOMINATING COMMITTEE

All current board members and officers wish to run again. This would include all 5 officers, and the 2 members of the board whose terms expire this year. During the Annual Membership Meeting, members will have the opportunity to nominate other members, who are present, to also run for the available board positions. This will be followed by a vote of the membership.

TELESCOPE MIRROR MAKING CLASS

Enrollment is still open for the Custer Mirror making class. We've already had our first class on April 26, with 3 enrolled, thus far. The next class is to be held concurrently with Custer's Annual Family Astronomy Day, Saturday, May 10. Contact Tom Madigan via email or phone if you wish to view the heavens with an optic of your own making!

WEBSHOTS (<http://www.webshots.com>) is featuring these stunning, hi-res photos: <http://www.webshots.com/g/tr/v85-sh.html> , <http://www.webshots.com/g/56.html> .

THE LIFE AND DEATH OF PLANET EARTH

Forwarded by *Tom Haeberle* and reprinted with permission from an article appearing in *The Eyepiece*, the Newsletter of the Amateur Astronomers Association of New York.

We've all heard stories about the end of the world and wondered how it would happen. Would there be one last perfect day for us to enjoy before the end comes? Peter Ward, Professor of Geological Science and Zoology at University of Washington, spoke at the Hayden Planetarium Space Theater on Monday, March 3 about such a possibility.

In his book "the Life and Death of Planet Earth" (Times Books \$25), Ward, a geologist, and astronomer Don Brownlee team up to attempt to understand Earth's inevitable fiery end. Co-authors of a previous book, "Rare Earth", which presents the concept that complex life found on earth, is probably unique in the vast expanses of the universe. They now present a sequel, the hypothetical story of the second half of our planet's future. Here they show our planet has a pretty bleak future ahead of it, one that emulates its past.

Ward explained what could happen to a planet by making comparisons to worlds in our own solar system. "When looking at Earth, Mars and Venus one can see how things can go from good to bad to worst" he said. Earth with its almost perfect biosphere compared to Venus with its runaway greenhouse effect, but it was not always that way on Earth. The writing of the first book made them ponder about how planets aged. Earth started out much like Venus is today with a thick carbon dioxide atmosphere. Life spawned from the sea as rain washed away carbon dioxide from the air. Along the way catastrophic events occurred that almost put an end to life. "In the 1860's John Phillips came up with a time line divided into separate time zones. The three major zones (or Era's) were the Cenozoic, Mesozoic and the Paleozoic." These Eras's are further broken down to periods in which the Permian and the Triassic periods connect the Paleozoic going into the Mesozoic. At this P/T boundary a near mass extinction occurred. "You hear allot about the K/T or Cretaceous-Tertiary extinction were the reign of the dinosaurs ended and the mammals began. But at the end of the Permian period, 90% of all species were wiped out. Global warming killed off many of the species mainly due to the release of methane in the atmosphere."

In his book Ward claims that human civilization has flourished during an 11,000-year warm interlude in a recurring cycle of ice ages. "Global warming, while possibly harmful in the short term, may help postpone the return of the ice. But in a thousand or even hundreds of years from now, towering glaciers will again stretch across North America as far south as New York City, and civilization will be driven toward the equator to survive. "The build up of carbon dioxide will add to the moisture in the atmosphere. More moisture means more snow. Earth being whiter means an increased albedo with more light reflected than absorbed (more heat is reflected into space) the planet will cool," warned Ward. So the Earth will die as a snowball? Not exactly. Plate tectonics are like a thermostat helping to recycle carbon through the ocean. Eventually carbon dioxide will build up again as in the past and the whole cycle will repeat itself. As stated in his book, "Further into the future, it is argued, the complex give and take between carbon trapped in rocks, water and oxygen in the sea, and carbon dioxide in the atmosphere-the latter playing the most important role in climatic change-will eventually turn earth into a barren sibling of Mars."

So Earth will end up like Mars, well maybe not for long. Let's not forget about that aging star of ours. The Sun hasn't always shown this brightly in the past. Since its birth the Sun has increased in brightness thirty times and will continue to do so. Temperatures rise and life must adapt. Plants and trees become scarce as grasslands increase, "grass is the gray hairs of the planet," noted Ward. Eventually mid-latitude grasslands like the great American plains become dust bowls. "Life does not do well at greater than fifty degree Celsius," cautioned Ward. "Evolution begins to run backwards"; the hot Sun compels animals to embark on retreating back to the sea. The depths of the oceans are cooler, but eventually, a swelling Sun will reduce life until only bacteria are the lone survivors. "In the beginning we started out with bacteria and in the end we'll end with bacteria," explained Ward.

In answering a question from the audience, Ward explained there might be a way to prolong the fiery end. "Perhaps by shading the Earth some how with a giant space umbrella or maybe our technologically advanced descendants will have the power to move our world further back from the Sun." Earth could be boosted away by means of gradual nudges. An asteroid could perform repeated flybys of the giant planets and Earth brining with it some of Jupiter's ample orbital energy. As the asteroid flies by our world it tugs our planet forward a trace. Eventually the Sun blows up into a Red Giant and the Earth may burn up. The last good piece of real estate will be Saturn's moon Titan," he said. But in a relatively short time after that all nuclear reactions in the Sun are arrested, the Sun will die becoming a white dwarf. One can only hope that our descendants have long gone to other star systems.

Note: Next month's issue will feature a rebuttal to Professor Ward's thesis by yours truly.

Pioneer Heroes Of The cosmos

By Sven Steen, Museum Curator

In my effort to learn more of our museum, I came across a tape of the voice of the founder of the Custer Institute, Charles W. Elmer. It was of poor quality, and garbled, but still audible. The tone of the tape gave me an insight into the heart of Mr. Elmer's motivations. Why did he create our wonderful institute? Would it not be great if we could be revitalized, with his inspiration, to feel the awe and wonder of the Cosmos as he did?

In these times of the talk of war and terrorism, would it not be comforting to feel part of the greater good of man's achievements and goals?

My research led me first to the library in the town of Southold. There was a kind woman there named Vanessa Patterson, in charge of a section called the Whitaker Collection. There is a file related to the Custer Institute, of many newspaper printouts, including some history of Charles Elmer. Ms. Patterson accessed the Internet, and contacted one Michael Saladyaga, of the library of the American Association of Variable Star Observers. Mr. Elmer was a member of this organization from 1920 to his death in 1954. He served as secretary in 1936, and president in 1937 and 1938. Ms. Patterson was very helpful, and offered her future services. I owe her a debt of gratitude for personally delivering some information to our meeting on Saturday evening at the institute.

I learned that Custer, at one time, had been reduced to a stodgy men's club, a dying organization. With the help of the then president, James P. Knowles, and Professor C. Douglas Hardy, in 1974, Custer was revitalized to include women, arts and humanities to its base of the sciences.

To further stimulate myself, and perhaps Custer, I shall pursue the life of Charles Elmer in future columns. Perhaps we can continue to grow, and spur interest with the spirit of Charles Elmer.

Light Pollution On TV

A parody by Susan Harder

THE SIMPSONS

March 30, 2003

On this episode of "The Simpsons", Lisa decides to become an astronomer. Her father, Homer Simpson buys her a telescope. She notices that she "loses" stars near the horizon, and goes to the local observatory where the resident astronomer tells her that the reason she is having trouble seeing the stars is because of "light pollution".

She circulates a petition and delivers it to the Mayor, asking him to dim the lights. He does so, (actually turning them all off), revealing a star filled sky. The kids, though, take that as a signal to further their hood ornament rampage (although, here in East Hampton, they do that during the day, and in a lighted parking lot). The Mayor then turns the lights WAY up, keeping everyone, including all the animals and birds awake, all the time. After a few days, everyone is ditzzy, and birds are seen digging holes in which to sleep. Lisa and Bart take their dad, Homer (who is zombied out by the lack of sleep), to his job at the Nuclear Plant, and they turn off the electricity, producing the starry night sky again.

All the animals are seen plopping down to the ground to sleep, and people are seen sitting around in lounge chairs on their front lawns, looking up at the stars. Then the populace gets all riled up, and they demand that their lights be put back on, until they notice the stars and a beautiful meteor shower. They put down their torches and picket signs, look up, and marvel at the sky. Lisa says that we "see ourselves" in the stars, and people begin to see images of themselves and images that reflect their beliefs; they hug each other, and it fades off with the song, "Starry, Starry Night". The spiritual message was unmistakable.

"The Simpsons" is produced by Fox corporate cousin 20th Century Fox.

Creator Matt Groening, James L. Brooks and Al Jean are the show's executive producers.

The show is averaging 14.3 million viewers this season, according to Nielsen Media Research.

And, The International Dark Sky Association reached 10,000 members this month.

Susan Harder

International Dark-Sky Association , <http://www.darksky.org>

3225 N. First Ave., Tucson AZ 85719 USA

(520) 293-3198 (voice) (520) 293-3192 (fax)

E-Mail: ida@darksky.org

Archive of IDSA Newsletters: <http://www.darksky.org/newsletters/newsletters.html>

The Universe, Past, Present and Future

A treatise by Thomas J. Madigan

First in a multi-part series.

General Overview

I presented this discussion as one of the keynote lectures during the Year 2000 Annual Astronomy Jamboree hosted by the Custer Institute Astronomy Group. I thank them for that honor and thank you, dear reader, for your time and indulgence in considering my remarks.

Over the past 2 decades great strides have been made in our ability to observe the universe around us. These strides have allowed us to probe ever deeper into the universe and further back in time than at any other time in history. Witness the exquisite detail rendered by the Hubble Space Telescope, detail that 20 years ago that was only dreamed of. Witness the exiting new field of Adaptive Optics where the surface(s) of a telescopes' primary optics is changed on a microscopic level to accommodate the ever changing atmosphere of Earth allowing even the largest optical telescopes so equipped to come very close to achieving their theoretical resolution. This technology is already yielding stunning results. The result of this dramatic leap in technology and our ability to use it to observe the Universe has been a refinement of our ideas concerning its present age and confirmation of a number of fundamental questions in Cosmology. This essay will attempt to address a few of these questions.

There are only 3 possibilities for the ultimate fate of the Universe: 1). A closed Universe where there is sufficient gravity from the sum of all the mass to halt the current expansion and cause the Universe to collapse back upon itself, 2); a flat Universe where gravity slows down but never really stops the expansion, this Universe will expand forever at an ever slower rate, approaching but never reaching a standstill and 3); an open Universe that will expand forever, a Universe where its escape velocity is sufficient to ultimately resist the force of gravity. This constant that will ultimately decide the fate of the Universe, referred to as Omega naught, was fixed from the beginning. A value of Omega naught less than 1 indicates an open Universe, a value equal to 1, a flat Universe, a value of Omega naught greater than 1, a closed Universe. Since all the latest research points to a value of Omega naught less than 1, this will be the scenario I will consider. We will look at a Universe evolving and changing over an ever-increasing expanse of time. This holds for me a real fascination, a Universe where it's lifetime thus far is but only an instant when compared to what it may be. The Universe of today is young; warm and rich compared to what it may become in the far, distant future. This will be a future where all the hydrogen, helium and heavier elements have been consumed as nuclear fuel, when the last of the red dwarfs fade into cold, dark embers, when the majestic galaxies of today become dim shadows of what they once were. What then? What will the Universe look like? These are some of the questions I will consider.

In order to accommodate the immense span of time being considered, it is necessary to make use of a logarithmic timeline divided by powers of 10, each division being 10 times older than the previous. Physical constraints necessitate highlighting only the most important events on this timeline.

Conventions

When possible, all discussions of time will be based on log, base 10 arguments. As such, I will express the number followed by its base 10 multiplier in parentheses, for example: 1 million would be expressed as 10(6) or 1 trillion as 10(12). Fractions will also be based on powers of 10 when possible, for example: 1/1000 second will be expressed as 10(-3).

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CUSTER EVENTS CALENDAR

OBSERVATORY DUTY

Any staff on hand will be more than glad to assist in the operation of the telescope.

AT THE INSTITUTE

Public observing every Saturday night, weather permitting; May 3rd 10th 17th 24th and 31st. Special provision will be given this month for the Lunar Eclipse on Thrus, May 15; see inside for details.

The Custer Comment

TOM MADIGAN, Editor
CUSTER COMMENT

99 North Summit Avenue
PATCHOGUE, NY

11772

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