



The Skyscraper

Vol. 36 No. 6

June 2009

Amateur Astronomical Society Of Rhode Island · 47 PeepToad Road North Scituate, RI 02857 · www.theSkyscrapers.org



Seagrave Memorial Observatory is open to the public weather permitting



Saturdays 9pm - 11pm
See www.theSkyscrapers.org
for updates.

Membership Dues were due in April

If you have not yet renewed, please complete the form on the back page of this newsletter and submit with your dues to the Treasurer at the June meeting.

June 2009

- 5 Venus at greatest Western elongation
- 7 Moon occults Antares
- 7 Full Moon
- 13 Mercury at greatest Western elongation
- 15 Last Quarter Moon
- 21 Summer Solstice
- 22 New Moon
- 23 Pluto at opposition
- 29 First Quarter Moon

June Meeting with Robert Naeye Friday, June 5 at Seagrave Memorial Observatory

Mars in 3D!

Skyscrapers is pleased to have *Sky & Telescope* Editor in Chief, Robert Naeye, as our monthly speaker. He will present the latest and best images of Mars in realistic 3-Dimensions. Robert will provide updates on the status of the various ongoing Mars missions, and explain what we have learned about the history of water on the Red Planet. NASA missions, such as Mars Global Surveyor and the rovers Spirit and Opportunity, have shown that liquid water once flowed on Mars. On Earth, wherever we find liquid water, we also find life. 3D viewers will be provided.

Robert Naeye is Editor in Chief of *Sky & Telescope*, the worlds most respected and influential popular astronomy magazine. Robert has a Master's degree in science journalism from Boston University (1992), and later worked

on the editorial staffs of *Discover* and *Astronomy* magazine. After serving as Editor in Chief of *Mercury* magazine (published by the Astronomical Society of the Pacific) from 2000 to 2003, he was a Senior Editor at Sky & Telescope from 2003 to 2007. He then went to NASA's Goddard Space Flight Center as a Senior Science Writer for the Astrophysics Science Division. In 2008, he returned to Sky & Telescope to serve as Editor in Chief.

Robert Naeye is the author of *Through the Eyes of Hubble: The Birth, Life, and Violent Death of Stars* (Kalmbach, 1997) and *Signals from Space: The Chandra X-ray Observatory* (Turnstone, 2000). He also contributed to two other books, and has won several awards for his writing and outreach activities.

President's Message

Bob Horton

Dear Fellow Skyscrapers,
I am very proud to be your newly elected President, and I look forward to working with all of you in the coming year. Skyscrapers is a wonderful organization, full of friends whose company I have enjoyed since I joined 35 years ago.

On behalf of Skyscrapers, I would like to thank outgoing President Glenn Jackson for his dedication to our organization. Glenn joined Skyscrapers about 10 years ago and has played an active role ever since. He has served Skyscrapers not only as President, and previously as 1st Vice President, but has also organized star parties, Messier

Marathons, club trips, and always being on hand to help out with work sessions at the observatory.

Summer will be arriving soon, and hopefully we will be enjoying many starry nights at Seagrave Observatory.

To get things started, we have a wonderful program planned for the June monthly meeting. Robert Naeye, Editor in Chief of Sky and Telescope magazine, will present some incredible 3D images of Mars for us to enjoy. This will be a lot of fun and I hope all of you can attend this meeting.

Although we have been clouded out several times in a row, we continue to plan on conducting CCD imaging

workshops for our members on Saturday nights for the rest of this month and continuing for the month of June. Currently we have about 20 members signed up to participate in these workshops. If you haven't signed up to learn how to use a CCD camera, it's not too late. Just send me an e-mail at Robert_Horton@brown.edu.

The Springfield Telescope Makers have extended a wonderful invitation to members of Skyscrapers to join them for a pre-Stellafane star party at their club house and observatory on top of Breezy Hill, in Springfield, Vermont, on June 20th. About a dozen of our members so far have expressed an interest in going. If you would like to go, or need more information, please let me know.

For those of you that prefer to stay closer to home, we have a special program also planned for June 20th at Seagrave Observatory. Brown University Professors Savvas Koushiappas and Ian Dell'Antonio will be presenting a workshop on Stellar Spectroscopy. The workshop will begin with an indoor presentation to help us understand the significance of spectroscopic observations. Brown University will also be loaning us a Sbig spectrograph for the evening. Weather permitting, participants will have the opportunity to collect and compare the spectra of different classes of stars. We will send out more information

concerning this program as we firm up the details.

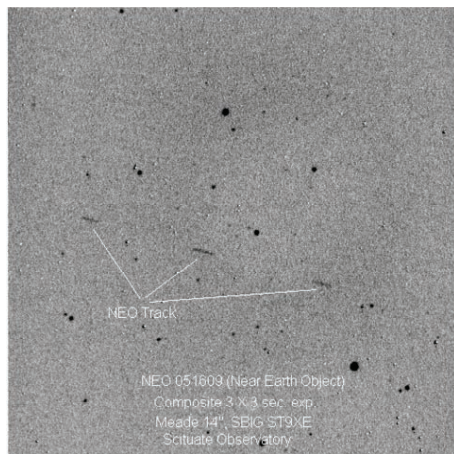
Skyscrapers
Summer Cookout
Saturday, July 11
Seagrave Observatory
Members & Guests
\$7.50 per person
Advanced reservation required

Mark your calendar for the Skyscraper Summer Cookout on July 11th. We need to get a head count to best determine how much food and supplies we need to purchase. So if you do plan to go, we will be collecting money for the cookout (only \$7.50 per person) at the June meeting. If you can't attend the next meeting, just let me know if you plan to go to the cookout, and we will reserve a spot for you.

Finally, if you have not yet paid your membership dues, please take this opportunity to renew your membership. You may mail in your dues using the form found in this issue of the Skyscraper, or you may pay them at the next meeting. Your continued support is greatly appreciated.

I look forward to seeing you all at the June 5th meeting.
 Clear Skies.

Previously uncataloged NEO?



While powering up and initializing my 14" Meade for remote observing and intending to image the two new observatory telescopes, Herschel and Planck, just launched on May 14 by ESO/NASA. I found this NEO (Near Earth Object) going through the field of the scope while doing the CCD focus routine. The object's track was in the area of the bright star, Spica (Alpha Virgo) at about 13.4 RA, and -11.2 DEC. It was manually tracked for about 8 minutes and took about 8 images. This image is a stack of three 3-second exposures. The previous NEO I imaged was about 50,000 miles away. Judging from the length of the trail of that NEO for a 10 second exposure and the three second exposure of this object with almost the same trail length, I would estimate that this object was much closer to the earth, perhaps in the 15,000 to 20,000 mile range. As far as I know, this NEO was not announced on the Minor Planet Center Confirmation Page. Perhaps no one saw it except me.... Image by Bob Napier.



The Skyscraper is published monthly by Skyscrapers, Inc. Meetings are usually held on the first Friday of the month. Public observing is usually held every Saturday night at Seagrave Memorial Observatory, weather permitting.

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Directions

Directions to Seagrave Memorial Observatory are located on the back page of this newsletter.

Submissions

Submissions to *The Skyscraper* are always welcome. Please submit items for the newsletter by June 15 to Jim Hendrickson, 1 Sunflower Circle, North Providence, RI 02911 or email to jim@distantgalaxy.com.

Email subscriptions

To receive *The Skyscraper* by email, send email with your name and address to jim@distantgalaxy.com. Note that you will no longer receive the newsletter by postal mail.

Searching for Extraterrestrial Signals

Dave Huestis

Recently our home galaxy, the Milky Way, doubled in size. I didn't notice anything unusual. Did you? Well, it didn't just suddenly expand. The expansion was the result of the diligent research of many astronomers and astrophysicists whose observations and calculations compelled us to accept that the Milky Way was actually much larger than originally thought. In fact, the estimated number of stars went from 200 billion to 400 billion. That doubling of star systems most certainly increased the number of possible planets contained in the Milky Way as well.

While many planets (347 to date) have been discovered orbiting distant suns, many of these planets are gas giants, many even more massive than Jupiter. Finding an earth-sized planet, or at least a rocky body with an atmosphere within a star's habitable zone, is like finding the proverbial needle in a haystack. It is only those exoplanets that may harbor sentient life.

Are there any extraterrestrial civilizations out there in our galaxy capable of transmitting a deliberate signal that we earthlings can detect? A signal saying, "Here we are!" Most likely they would not be sending that specific message, but the fact that they could send the signal would indicate their presence.

There have been several major projects looking for such signals over the decades. And nothing has been detected so far. Vast amounts of radio signals are collected at specific frequencies, and this data must be processed to detect any signal. Much computing time is required for this analysis, so the data is not analyzed in real time; rather it is stored for processing at a later time.

An important SETI (Search for Extraterrestrial Intelligence) project that you can participate in has just celebrated its 10th anniversary in May. It's the SETI@home project. This ambitious program uses the Arecibo radio telescope in Puerto Rico to collect the radio signals to analyze. When the project first started, researchers thought it would take years and costly computer time to process all the collected signals. Then, someone got an absolutely brilliant idea. Where can one find lots of

smaller computers sitting idle most of the time? Home computers! So began the idea of "distributed processing," and the SETI@home project was born in May 1999.

The signal data captured at Arecibo is stored at UC Berkeley. A computer program there "chops up" segments of the data into units 107 seconds each. Computer users at home can download free software that not only contains a nice screen-saver, but also provides the number-crunching processing program required to perform a detailed analysis of the downloaded data.

(The computer analysis is too complex to present here. When you decide to visit the SETI@home website you can click on all the links that describe the screen-saver display characteristics and what they represent. Also you'll find information on the various calculations performed on the data to detect any potential signal.)

Once a unit has been processed, the program will signal the user to login to the website and transmit the results and get another unit of data (or the program can automatically dial the website, send the processed data and retrieve another "work unit"). Downloading a unit used to take me a couple of minutes on a dial-up connection. With any broadband connection it is instantaneous. Processing the data is another story. On a Pentium 4, 2.53 Ghz computer it takes an average of about 4 hours and 30 minutes to complete the analysis with nothing else running.

There are several options you can choose. You can set it to run only when your machine is idle (like a regular screen-saver), or you can have the calculations always running, and the screen-saver will still kick-in when the machine has been idle for a set time. It's really simple to do, and it's really important.

Millions of computer users around the world have analyzed SETI data in this manner. Researchers promise that the user whose computer detects a true signal will get a co-discovery credit. Since the inception of SETI@home the researchers have processed the initial acquisition of signal data, and are

now re-analyzing signals that showed "potential." Some require re-observation to determine whether we have kindred spirits out there amongst the 400 billion stars of the Milky Way.

A couple of years ago the original SETI@home platform was replaced by a more ambitious program called BOINC (Berkeley Open Infrastructure for Network Computing). It has been developed as a distributive processing application that can be adapted to any scientific discipline. The SETI@home project now runs under the BOINC platform.

In addition, if SETI isn't to your liking, there are other projects which now benefit from the enhanced architecture that BOINC provides. Think about it. Climate and global warming models require enormous computing power. So does cancer research. You can select which projects you wish to support and play a big role in lending your computer's idle time to scientific endeavors.

Please visit the SETI@home website at <http://setiathome.berkeley.edu/> and follow the directions provided in the "Get Started" section and soon you will be contributing to mankind's search for the ultimate discovery. Maybe your computer will detect that signal from an alien intelligence. You, and the entire human race, will never be the same.

Don't forget you can sample the local neighborhood of our galaxy with optical telescopes at Seagrave Memorial Observatory on Peepoad Road in North Scituate every clear Saturday night. Check our web-site www.theskyscrapers.org for starting times as we move into the summer months. Admission is free.

Keep your eyes to the skies and your SETI screen-saver number-crunching those signals.

**Executive Committee
Meeting: Saturday,
June 13
4:00pm at Seagrave
Observatory
All Members Welcome**

Sky Object of the Month - June 2009

44 Boötis

Glenn Chaple

Rule #1: Never write about a deep-space object you haven't seen.

Rule #2: Ignore Rule #1.

In the early 1970s, during my tenure as a "rookie" backyard astronomer, I observed double stars with relentless abandon. My instrument of choice at the time was a 3-inch f/10 reflecting telescope, made by Edmund Scientific. For a reference, I chose the 1966 edition of Norton's Star Atlas.

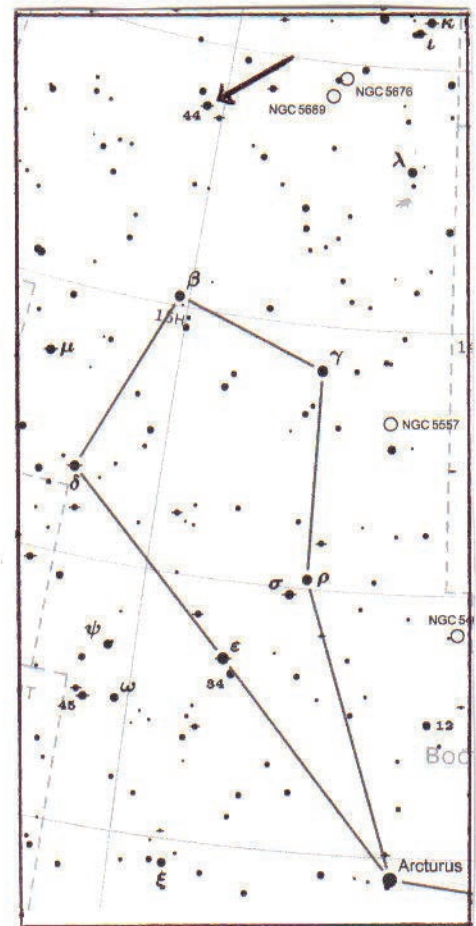
One evening, I decided to dine on double stars in the constellation Boötes. According to Norton's, one particular pair, 44 Boötis, had a separation of 2.6 seconds of arc – close, but not impossible in a 3-inch scope. To my surprise and disappointment, I couldn't split the pair – not that night or on subsequent evenings. Had I read Norton's more carefully, I would have seen a note describing 44 Boötis as a binary pair that was closing. I would later learn that its magnitude 5.3 and 6.2 components were separated by a mere 0.4 arc-seconds at the time of my futile attempts.

Fast forward four decades to the present. 44 Boötis, whose 210-year orbit is highly inclined to our line-of-sight, has opened up. Orbital data indicate that its component stars are separated by 2.2 arc-seconds. Time for a feast!

I haven't yet seen 44 Boötis, at least not double. But I'll be outside this month trying. Although a 2+ arc-second separation is within reach of a 3-inch, I'm going "loaded for bear." My instrument of choice this time will be a 5-inch f/12 Maksutov-Cassegrain telescope, paired with an eyepiece that magnifies at least 150X. To be safe, I'll conduct the observation on a night of above average seeing. Instead of my reporting what I ultimately see, check out 44 Boötis for yourself, and we'll compare notes.

Your comments on this column are welcome. E-mail me at gchaple@hotmail.com.

Answer to last month's question: The faint star between Mizar and Alcor is known as Sidus Ludovicianum.



Finder chart for 44 Boötis.
From Mag-7 Star Atlas
(Copyright Andrew L. Johnson)

Hubble Servicing Mission is the Culmination of the Space Shuttle Program

Jim Hendrickson

This past week, the crew of STS-125 on Space Shuttle Atlantis completed the fifth and final Hubble Space Telescope servicing mission. Usually, I will watch Space Shuttle launches and landings on NASA TV online, but only take a passing interest in the missions themselves by reading the occasional status update from NASA or even from one of the major national news outlets. However, for this mission I was tuned into NASA TV for the entire duration, from launch, grapple, five spacewalks, press conferences, and even the mundane tasks of heat shield inspections and other "housekeeping" tasks aboard Atlantis. I was so enthralled with the mission that when NASA posted the Hubble Release video on Youtube Tuesday night, taken from the flight

deck of Atlantis, I watched it four or five times.

As someone who was born in the post-Apollo era, the Space Shuttle has been all I have seen of America's manned spaceflight efforts. The first launch of Columbia on April 12, 1981 occurred when I was 7 years old, when I was barely cognizant of world events and what the Space Shuttle really meant. I knew we had gone to the Moon, but as a young kid it was "long before my time" and with regular Space Shuttle flights as long as I could recall, to me it was a given, something we had always done, and a routine endeavor which carried no significant meaning.

At the same time, my interest in space and astronomy was being greatly accelerated by the Voyager flybys of

the outer planets. I don't specifically remember the Jupiter flybys, but seeing the glossy photos of Saturn, its rings and moons in *Time* and *National Geographic Magazine* was truly awe-inspiring. A few short years later I got my first telescope and began my own exploration of the Universe, and I eagerly awaited January 1986, when Voyager 2 would beam back pictures from Uranus.

It was another event in January 1986, however, that would turn the nations attention on space exploration. On January 28, 1986, Space Shuttle Challenger would take its final flight, lasting just 73 seconds to, as Ronald Reagan so poetically described "slip the surly bonds of Earth to touch the face of God."

I began to take notice of our manned spaceflight efforts and recognize the significance and importance of what we were doing. I made an effort to learn all I could about the Space Shuttle and read about the past missions to the Moon. Even though I looked forward to the resumption of Space Shuttle flights, and made an effort to watch every launch and landing, my primary interest remained in astronomy and the robotic exploration of the solar system.

Given my interest in astronomy, I had known of the Hubble Space Telescope since grade school and waited for it to go into operation with great anticipation. When the optical flaw was discovered soon after it was launched, I was a bit disappointed, but somehow I wasn't concerned about it. I was certain that such an important project wouldn't be abandoned. I figured since it was delivered to orbit by a Space Shuttle, it could also be retrieved by a Space Shuttle and perhaps brought back to the ground for repair work and relaunched on a later flight.

To my surprise, NASA did take action to repair the telescope, but not by recovering it—it would be repaired in flight! The repair mission was a success for the Space Shuttle, for the Hubble Space Telescope, and for the advancement of astronomical research.

In the years following, the Space Shuttles flew three more servicing missions to keep the Hubble Space Telescope in peak operating condition, but following the tragic loss of Columbia during re-entry on February 1, 2003, future missions that did not involve a docking with the International Space Station, including a fifth planned space telescope servicing mission, were deemed too risky to undertake. It was also decided that the Space Shuttle fleet would be forced into retirement at the end of 2010, when the remaining ISS assembly missions were completed.

Fortunately NASA had an about-face and decided to proceed with the fifth Hubble servicing mission after a contingency plan was devised to rescue the Atlantis astronauts should the orbiter lose its flight-worthiness during the mission. All week, Space Shuttle Endeavor has stood at the ready if needed, but fortunately it was

not. It did, however, provide an awe-inspiring sight of two Space Shuttles at both launch pads simultaneously.

Following the tremendous success and achievements of the STS-125 mission, I am left with the thought that this is the culmination of the entire Space Shuttle program. Sure there are still eight planned flights left, but none of them will embark on a mission like the HST servicing operations. STS-125 represented the fullest extent of the capabilities of the Space Shuttle program, and those capabilities will likely not be repeated for many years to come.

I'm saddened by the fact that the Space Shuttle fleet will be permanently grounded after next year. America's only spacecraft I have known will no longer fly, and the next generation Orion/Ares spacecraft is still many years away. It is unfortunate that we are giving up a spaceflight capability which we have invested so much into, while we still have good hardware, infrastructure, and know-how to continue operating as long as the three orbiters have at least a few flights left in them. I see the STS-125 mission as the Apollo 17 of the Space Shuttle program.

The Orion/Ares project is certainly exciting—a new rocket with a new crew capsule with new capabilities, including the ability to go back to the Moon. I look forward and will watch with eager anticipation as this project progresses forward, but it will not be

as flexible as the Space Shuttle has been with respect to working with hardware in orbit, such as the HST servicing missions. There is also the issue that the termination of a functional human spaceflight program without an immediate replacement is ceding America's four-decade long leadership in manned space exploration. For the next four years, and likely more because development delays for a project of this scale are inevitable, America will have to outsource its access to space. The Space Shuttle is a true marvel of engineering, and its nearly three decades of service over 126 missions are a tribute to all those who made it possible.

The Hubble Space Telescope represents a perfect melding of NASA's manned and unmanned space exploration programs that will be remembered as one of NASA's greatest achievements. Because of the human touch that Hubble has received, not only has our knowledge of the Universe been greatly expanded, but the pictures it has provided have done great deeds in increasing the public's awareness and interest in astronomy. With the newest upgrades, the telescope should provide another decade of service in astronomical research, a fitting tribute to Galileo on this International Year of Astronomy. The investments poured into this project will no doubt pay dividends for many generations to come.



Scoring More Energy from Less Sunlight

For spacecraft, power is everything. Without electrical power, satellites and robotic probes might as well be chunks of cold rock tumbling through space. Hundreds to millions of miles from the nearest power outlet, these spacecraft must somehow eke enough power from ambient sunlight to stay alive.

That's no problem for large satellites that can carry immense solar panels and heavy batteries. But in recent years, NASA has been developing technologies for much smaller microsatellites, which are lighter and far less expensive to launch. Often less than 10 feet across, these small spacecraft have little room to spare for solar panels or batteries, yet must still somehow power their onboard computers, scientific instruments, and navigation and communication systems.

Space Technology 5 was a mission that proved, among other technologies, new concepts of power generation and storage for spacecraft.

"We tested high efficiency solar cells on ST-5 that produce almost 60 percent more power than typical solar cells. We also tested batteries that hold three times the energy of standard spacecraft batteries of the same size," says Christopher Stevens, manager of NASA's New Millennium Program. This program flight tests cutting-edge spacecraft technologies so that they can be used safely on mission-critical satellites and probes.

"This more efficient power supply allows you to build a science-grade spacecraft on a miniature scale," Stevens says.

Solar cells typically used on satellites can convert only about 18 percent of the available energy in sunlight into electrical current. ST-5 tested experimental cells that capture up to 29 percent of this solar energy. These new solar cells, developed in collaboration with the Air Force Research Laboratory in Ohio, performed flawlessly on ST-5, and they've already been swooped up and used on NASA's svelte MESSENGER



Helen Johnson, a spacecraft technician at NASA's Goddard Space Flight Center, works on one of the three tiny Space Technology 5 spacecraft in preparation for its technology validation mission.

probe, which will make a flyby of Mercury later this year.

Like modern laptop batteries, the high-capacity batteries on ST-5 use lithium-ion technology. As a string of exploding laptop batteries in recent years shows, fire safety can be an issue with this battery type.

"The challenge was to take these batteries and put in a power management circuit that protects against internal overcharge," Stevens explains. So NASA contracted with ABSL Power Solutions to develop spacecraft batteries with design control circuits to prevent power spikes that can lead to fires. "It worked like a charm."

Now that ST-5 has demonstrated the safety of this battery design, it is flying on NASA's THEMIS mission (for Time History of Events and Macroscale Interactions during Substorms) and is slated to fly aboard the Lunar Reconnaissance Orbiter and the Solar Dynamics Observatory, both of which are scheduled to launch later this year.

Thanks to ST-5, a little sunlight can go a really long way.

Find out about other advanced

technologies validated in space and now being used on new missions of exploration at nmp.nasa.gov/TECHNOLOGY/scorecard. Kids can calculate out how old they would be before having to replace lithium-ion batteries in a handheld game at spaceplace.nasa.gov/en/kids/st5_bats.shtml.

This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.

**Astronomical Society of
Greater Hartford
presents:**

**StarConn
Saturday, June 6
Wesleyan University
Middletown, Connecticut**

May Meeting Notes

Friday, May 1, 2009; Seagrave Observatory
Nichole Mechnig

Monthly Meeting 7:31pm
Glenn Jackson Welcomed all members

Steve Hubbard introduced Guest speaker:

Mark J. Reid who is the Senior Radio Astronomer at the Smithsonian Astrophysical Observatory

Mark is using Parallax to help determine the size of the Milky Way. He and his research team have discovered that the Milky Way is much larger than first expected. Since Earth is in the Milky Way this just an observation. Mark is using Radio waves as the radio waves are not affected by dust. Mark is using VLBA; it is a system of 10 radio telescopes controlled remotely. The array works together as the world's largest dedicated Full time astronomical instrument using the technique of Very Long Baseline Interferometry.

Business Meeting 9:05pm

Secretary's Report was accepted by the membership

Financial Report was accepted by the membership

1st VP Steve Hubbard: June 5 Guest speaker open • July Dr. Kristine Larsen

2nd VP Kathy Siok: Nothing to report

Historian Dave Huestis: Last copy of the 75th Anniversary book is being used at the star parties



Librarian Tom Barbish: Skyscraper Year in Review 2008 is available online

Star Party Coordinator Bob Forgiel: Same as last month

Trustees Tracy Haley: Thank You to Al Hall with the Clark Drive • Next Saturday Executive Meeting May 9, 2009

Repairs at the observatory • Decree has been issued about laser pointers • Nothing over 5mw are to be used until further notice

New Business: New Members Dave Emond & Joe St. Martin will be voted into membership at the next meeting

Old Business: None

Good of Organization: CCD Imaging Workshop starting May 9th, 17 members have signed up • Sky and Tele magazines are up for sale as well as Astronomy Magazines please see Dave Huestis

Presidential Info: Dave Huestis and Lloyd Merrill spent 5½ hours going over the financial books and they found them to be in excellent shape all documents were accounted for and entries were very well organized • To our Members-at-Large Roger Forsythe and Joe Sarandrea Thank You • Help with the clean up after the meeting Please • Glenn Jackson turned the Organization over to incoming President Bob Horton • Meeting adjourned at 9:32pm

Treasurer's Report

4/1/2009 through 5/19/2009
Lloyd Merrill

INFLOWS

Bookincome	
75th Anniversary Book 2nd Print	35.00
Other Donation	134.10
Dues	
Contributing	10.00
Family	500.00
Junior	10.00
Regular	1,000.00
Senior	180.00
TOTAL Dues	1,700.00
Interest Inc	33.53
Magincome	
Astronomymaginc	170.00
Skytelmagincome	296.55
TOTAL Magincome	466.55
Starparty	284.00
TOTAL INFLOWS	2,653.18

OUTFLOWS

Collation	-16.00
membersubscriptions	
Astronomymagexp	170.00
Skytelexp	296.55
TOTAL membersubscriptions	466.55
Presidents Fund	25.00
Trusteexp	85.00
Electric	18.89
TOTAL OUTFLOWS	579.44

OVERALL TOTAL 2,073.74

Checking Account Balance 5,367.42
Capital One Account Balance 18,197.38

Skyscrapers Magazine Sale

Dave Huestis

Sky & Telescope

Complete Years: \$15/yr – 12 issues; **1999 complete** - \$15; **2001 complete** - \$15; **2004 complete** - \$15

Single Issues: \$2.00/each

1997: May, Oct; **1998:** Apr, Jun, Oct, Nov, Dec; **2000** - Jan, Feb; **2003:** Jan, Mar, Apr, May (2), June, July (2), Aug (2), Sept, Oct, Nov (2), Dec (2); **2004:** Jan-June, Aug, Sept, Oct, Dec; **2005:** Jan, Mar, Apr, May, June, July, Oct; **2006:** Jan, Apr, July, Aug, Sept, Nov; **2007:** Jan, May, June, July, Aug, Sept, Nov, Dec; **2008:** Apr, June, Aug

Sky & Telescope – Skywatch 2004 - \$2.00

Astronomy Magazine

All \$2.00 each; **1982:** March, May, June, July, Aug, Nov; **1995:** Nov; **1996:** Feb; **1997:** Sept; **1998:** Jan; **2004:** Oct, Nov; **2005:** Jan-Nov; **2006:** Feb, May, July, Aug, Sept, Oct, Dec; **2007:** May, June, Sept; **2008:** 2008

Odds And Ends

\$1.00 each; **Air & Space** Aug/Sept 1986 (2), **National Geographic** – Jan 2004 Mars, **Scientific American** Nov 2004, **Smithsonian** April 2004, **Smithsonian** Nov 2003, **Night Sky** May/June 2005, **Night Sky** May/June 2004

Discounts for volume buying.

All monies realized from the sale of these magazines will be allocated to the Archive Preservation Fund.

Contact Skyscrapers Historian Dave Huestis by email(dhuestis@aol.com) if you wish to reserve specific issues. Magazines will be available at the June meeting. Check is the preferred method of payment, though exact cash will also be accepted.

Astro Funnies by Dave Huestis

CloudsFree H₂O Filters

from Aquarius LTD

Now your telescope can be powerful enough to penetrate clouds. Say goodbye to those cancelled star parties and postponed public outreach programs.

New CloudsFree (patent pending) technology to be introduced in the US.

After initial success among amateur astronomers in Europe, Aquarius Optics LTD will soon be offering its CloudsFree technology filters to the US market.

In June the company will be taking pre-orders for its US introductory series of H₂O filters.

Series Introduction



Cirrus I \$29.95 US

For the budget-minded amateur astronomer. Good for those pesky high thin cirrus that can occasionally ruin an observing or digital imaging session.



Cumulus II \$49.95 US

Our most popular filter. Cuts through low cloud decks and patchy fog.



Nimbus III \$129.95 US

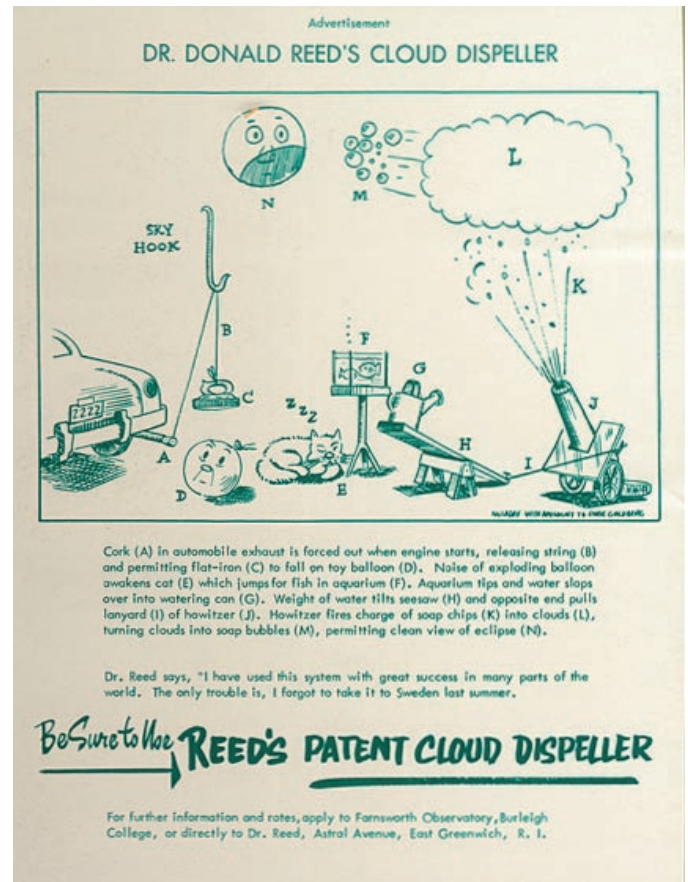
Tired of all the cloudy nights when you could be observing. Our best filter to-date penetrates most cloud layers. Due to high demand in Europe, the price has recently risen to \$179.95 US.

Prices in effect until August 1, 2009

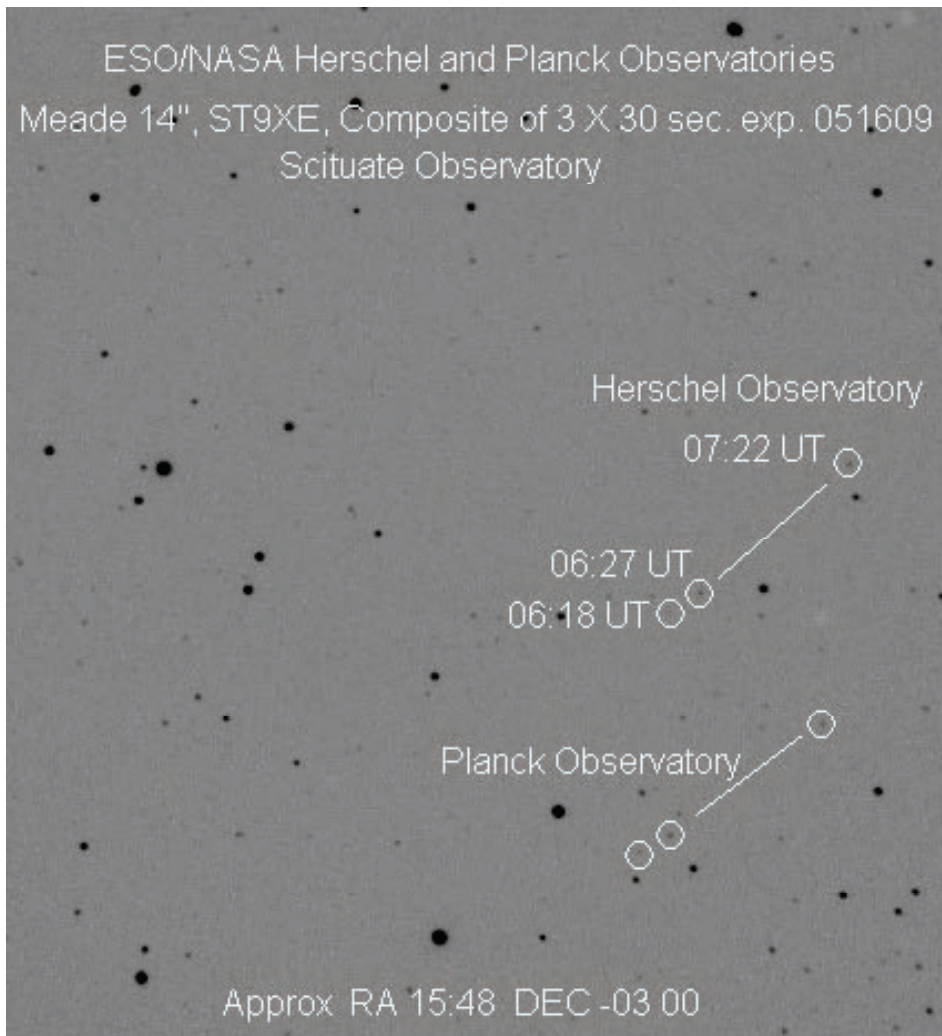
Announcement: A deluxe model of the Nimbus III, called the Cumulonimbus Penetrator, comes with a grounding cable and lightning arrestor for those real stormy nights. Pre-order now and we'll include an Aquarius umbrella to protect your investment.

All filters have image stabilizers to compensate for upper atmospheric turbulence.

CloudsFree technology does not penetrate clouds with snow or ice crystals exceeding 1/2-inch (1.27 cm) in diameter due to a scattering effect.



From the Archives: Because of the bad luck Skyscrapers had with clouds spoiling many Total Solar Eclipse Expeditions in collaboration with Professor Charles Smiley of Brown, it is nice to see Don Reed (a participant in many of those expeditions) had a good sense of humor. I discovered this image in one of Smiley's scrapbooks that The Rockefeller Library/Brown has already scanned (7 out of 13) as part of a digital initiative. It was pasted in the "Sweden" scrapbook, which covers the June 30, 1954 eclipse from Natarn, Sweden with Don Reed and others, as well as Smiley's excursion to Quetta, Pakistan. Only Smiley was successful in photographing totality and conducting other observations.



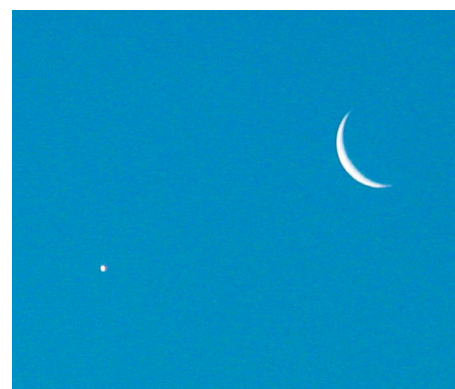
ESO/NASA Herschel and Planck Obs. launched 051409 to Earth's L2 orbit point. Three X 30 sec. exp. stacked images when obs. were about 315,000 km from Earth. Up to 7 or 8 objects imaged by other observers and it is unknown what the other objects were. Image by Bob Napier.



Sun halo at Tasca Field. Jack Szelka was on his way to Seagrave Observatory for the star party on April 25 when he captured this image.



Saturn taken on 4/24/09 with a C11 using an Orion Starshoot CCD. It's a composite of 73 frames combined into 4 frames, processed with MaximDL and then restacked and processed through Adobe Photoshop. Photo by Tom Thibault.



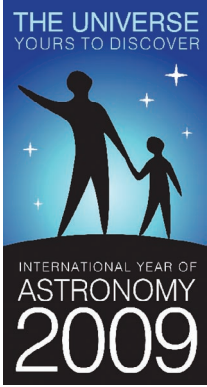
Venus & Moon on the morning of April 22. Photo by Tom Thibault.



Working on a research project with U of Pittsburgh and I stopped to visit the Allegheny Observatory ... great place! 30" Brashear in the large dome!! 13" Fitz (1847) in one of the smaller ones. Brashear was once the director here. Photo by Dan Lorraine.



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