The Skyscraper

Vol. 36 No. 11 November 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 7pm - 9pm

Please note that the observatory may be inaccessible for several weeks following a winter storm. See **www.theSkyscrapers.org** for updates.

North Scituate Community Center

All of our winter meetings (Nov-Mar) are held at the Community Center. From Seagrave Observatory, the Community Center is the first building on the right side going south on Rt. 116 after the intersection of Rt. 6 Bypass (also Rt. 101) and Rt. 116. Parking is across the street.

November 2009

●	2	Full Moon
	5	Mercury at greatest Western elongation (18°)
◑	9	Last Quarter Moon
	9	Moon 3°S of Mars
●	16	New Moon
	17	Leonids Meteor Shower peaks
◑	24	First Quarter Moon

November Meeting with Rick Lynch

Friday, November 6th
at North Scituate Community Center

Astronomy, Templars and Freemasons

Recent documentaries, books, and movies have inspired new interest in the Templars and their descendents; The Freemasons. What is not known, is that Astronomy was a major part of the foundation of these societies and continues to be today. My lecture will present the prominent role of astronomy in the religious concepts as well as show, the great medieval churches were all constructed with astronomical alignments as part of their layout. We will visit, Egypt, Malta, Jerusalem, Canada and right here in New England to see how astronomy, religion and history all come together.

Rick is along time member of Skyscrapers, a 32 Degree Mason, and a historical researcher who has traveled the world in search of these mysteries.

Veil Nebula photo by Bob Forgiel.

President's Message

Bob Horton

New England amateur astronomers are an especially dedicated group of people. Our region of the country is not privileged with the number of clear nights that other areas, like the southwest, get to enjoy. Regardless, our passion for astronomy remains strong nonetheless.

This past year is sure to be remembered by anyone with a passion for astronomy as a particularly cloudy one. Skyscrapers offered a series of CCD imaging workshops this past spring, and all but one was clouded out. The summer months were much the same, with a spectroscopy workshop and many of our public nights suffering the same fate.

Autumn usually brings clear skies to New England, and in the past 30 years I can only recall one or two times that we had rain during an AstroAssembly. So even though the spring and summer may have had a lot of cloudy nights, the weather was bound to be nicer for AstroAssembly this year…or so I thought.

It didn't work out that way.

AstroAssembly 2009 will be remembered, I believe, as one of the best ones Skyscrapers has ever put on. Yes, it rained. And at times heavily. But a lot of hardy New England amateur astronomers showed up, regardless of the weather, to enjoy a truly wonderful program.

Congrats to Chairperson Steve Hubbard for putting together a fine program of speakers and organizing all of the various tasks that needed to be accomplished. I would also like to take this time to thank all of the members who contributed their time and effort to making AstroAssembly such a fine event. This includes the Trustees and members of the Observatory Committee who worked several weekends prior to Astro Assembly getting our buildings and grounds cleaned up. And a special thank you to the members who braved the elements to help with parking, the registration table, and operating the "Star Dust Grill".

I think one of our guests this year put it best when he recently wrote us a thank you note, saying "Even though AstroAssembly only happens once a year, whenever I go, I feel like I'm at home, among good friends".

I am sure all of us feel exactly the same way.

Executive Committee Meeting

Wednesday, November 4 @ 7pm
Ladd Observatory
All Members Welcome

CCD Imaging Workshops

will resume on Saturdays beginning November 7th at Seagrave Observatory
stargazerbob@aol.com

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.

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 **no later than November 20** 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.

November Astronomical Highlights

Dave Huestis

Before I preview some of November's sky events, it is important to remember that at 2:00 am on Sunday, November 1, we revert to Eastern Standard Time. The mnemonic is "Spring forward, Fall back" (or some variation thereof). So before bedtime it's best to set your clocks back one hour. Don't put it off until you wake up, because you'll likely forget and be an hour early for any Sunday morning activity.

While it will be several months before we will be able to observe Mars at a decent hour of the night, that doesn't mean it can't be observed now. Mars spends November in the constellation Cancer and rises around midnight. Give it an hour or so to move higher into the sky and Mars will be easily visible as a red star-like object in the eastern sky. If you need another clue to its location, during the first few days of November, Mars will be within the Beehive Cluster of stars. A dark sky and a pair of binoculars will reveal a beautiful image.

Since the distance between the Earth and Mars closes during the next couple of months, Mars' brightness will increase as will its image size when viewed through a telescope. Unfortunately this close approach to us will not be one of the red planet's best. It will only come as close as 61,721,726 miles on January 27, 2010, Regardless, I will present a Mars observing guide in a future column so you can try your hand, eh, "eye," at coaxing some detail out the somewhat tiny telescopic image.

The first principal meteor shower of November is the Taurids. This shooting star display spans about a week (Nov. 5-12), with the peak of activity on or about the 5th. The waning gibbous to last quarter Moon will blot out all but the brightest of these meteors. However, the slow and yellow Taurids are also known for producing fireballs that frequently fragment into multiple meteors! To help you see the most meteors possible, try to block the Moon from view. The Taurids radiate out of the sky in the constellation Taurus the Bull (visible soon after sunset in the eastern sky), not too far from the Pleiades star cluster.

The second meteor shower of the month is the famous Leonids. Remember the incredible display back in 2001 when hundreds of meteors were blazing across the sky before dawn? While we can't expect to see a repeat of that performance for another two plus decades, several researchers believe we may experience an enhanced peak this year.

Based upon an analysis of the streams of debris left behind by Comet 55P/Temple-Tuttle in 1466 and 1533, the potential is for enhanced numbers of a couple of hundred meteors per hour on the morning of the 17th from around 1:30 am to dawn's early light. This enhanced activity may only last an hour or so, with Far East locations favored.

However, the new Moon will not interfere at all with observing, and should the skies be clear locally, I for one would hate to miss the opportunity to see a minor "storm" of meteors should any variation of the predictions come true.

Regardless, the Leonids' normal peak, with 10 to 15 meteors per hour, will most likely occur the following morning of the 18th from midnight to dawn,

The Leonids are bright and fast shooting stars, hitting the Earth's atmosphere and disintegrating at 44 miles per second. Most of the Leonids appear to be green or blue in color, are noted for producing fireballs, and about half of them leave trains of dust which can persist for minutes. These meteors radiate from the constellation Leo, which can be seen well above the eastern horizon around 3:00 am on the above dates. Find reddish Mars and Leo (part of it looks like a backwards question mark) will be below it and to the left.

Good luck with all your sky watching adventures.

Keep your eyes to the skies.

Attached is a shot I took on Saturday September 25th at 11:35AM. I had read about the recent report about some activity so I took a look. The photo was taken with an Orion Star Shoot CCD on a iOptron, SmartStar E R80 Refractor utilizing a red #21 filter and processed with MaxIm DL. We are in Solar Cycle 24 and the (2) spots just above center are Sun Spot 1027. Photo by Tom Thibault.

TAKING THE BROAD VIEW: Skywatching with your Naked Eyes

Craig Cortis

2009 has somehow been officially designated as the International Year of Astronomy, coinciding with the supposed 400th anniversary of the telescope, certainly a highwater mark in the history of science and in humankind's gradual delving into the mysteries of nature. I used the word "supposed" because I don't believe we can know with certainty whether someone prior to Galileo (1564-1642) may possibly have used a rudimentary optical arrangement by which enhanced views of sky objects would've been made possible. If so, did the person actually see anything that his or her naked eyes alone could not reveal? I guess it's a moot point, owing to the fame of Galileo and his first-in-history recorded observations made with a telescope that he fabricated and improved the design of, but did not actually invent. Perhaps Hans Lipperhey of Holland was the originator in 1608, as is widely believed. Maybe one of Lipperhey's spectacle-making contemporaries developed the first telescope, or some unknown optics experimenter years or even decades before was the inventor – how can we be sure?

A fine treatment of this subject is given by astronomer Fred Watson in his 2004 book, *Stargazer: The Life and Times of the Telescope*, ISBN number 0-306-81432-3. Chapters 3 and 4 of this book feature some of the best coverage I've read anywhere on the fascinating early possible development of telescopic lenses. Also, there's a splendid article by Raymond Shubinski in the August 2008 35th anniversary issue of *Astronomy* magazine on this question of the actual originator of the telescope. My point in this is that people have only been using optical devices for looking at sky objects for the last 400 years, which isn't really all that long in the overall scheme of things, all the important telescopic discoveries and leaps in astronomy notwithstanding. Obviously, for untold thousands of years prior to Galileo's first observations in 1609, those who looked up and out at the night sky did so only with their own eyes. After all, Tycho Brahe (1546-1601) managed to amass an astoundingly rich trove of celestial data based on naked-eye observations that were of a level of precision good to between 1-2 *minutes* of arc! Granted, he had the advantage of using the best instruments that had ever been available to an astronomer before and during his time, but a telescope was not among them. Tycho's observations were recorded and compiled through a career spanning about 35 years. No wonder Johannes Kepler (1571-1630) couldn't wait to get full access to all of Tycho's hard-won data. Kepler was spared all the monumental observing work done by Tycho and, instead, was able to use existing data for his own mathematical and theoretical work on planetary orbits, in particular the orbit of Mars.

You are unnecessarily shortchanging yourself if you've come to believe that astronomy can only be enjoyed by viewing everything in the very limited confines of telescopes or binoculars.

The majority of the currently-defined 88 constellations making up the whole sky were conceptualized and originated many centuries ago by people who saw the stars as they were naturally presented to one's naked-eye vision, without any optical aid at all. In other words, they viewed the night sky as a sweeping, continuous panorama, quite unlike the tiny and highly-restricted patches of sky we commonly can see in the field of a telescope. True, binoculars show much more but *still* impose an inescapable limit to how large a segment of the sky we can view at one time.

I'm the sort of astronomer who often prefers taking the easy way out, even after driving 90 miles from my home south of Worcester, Massachusetts to Arunah Hill in the Berkshires, a beautiful site for observing and known to many who share our interests. Elevation near the summit is nearly 2,000 feet and the sky quality ranks among the very best anywhere in southern New England. For me, the easy way out means not even bothering to set up a scope or take out binoculars, heretical as that may sound to some of you. The grandeur of the entire night sky as seen only with my eyes is easily worth the trip, particularly in late summer when the best, most concentrated and luminous Milky Way star clouds decorate the sky. Even an all-night session does not grow tedious for the lack of optical equipment in such a place as Arunah Hill, although I'd have to admit that most amateurs would regard this as purposeless.

There's an important reason behind my subject this month. I hope to change the minds of those who tend to not see any point in viewing the night sky for very long without doing so through the eyepiece of a telescope. There's a different way of considering astronomy, a way that just might be surprisingly pleasant, easy, and rewarding for you. Sure, by all means enjoy your scope and related equipment—you've spent money to acquire such things and it's obvious that numberless fine sights in the sky can *only* be revealed and appreciated by optical aid. The old saying about not being able to see the forest for the trees pretty much makes my point here, though. You are unnecessarily shortchanging yourself if you've come to believe that astronomy can only be enjoyed by viewing everything in the very limited confines of telescopes or binoculars. Your eyes don't require any setup time, nor will they dew over on damp nights. (Fogged eyeglasses are another matter.) If there are too many mosquitoes or if it's just too cold to

warrant spending more than a few minutes outside, forget your optical gear and just use your eyes.

What can you really see this way? Well, what you saw and were impressed by as a child, before getting involved in all the things so many of us have wound up regarding as the "official" way to do astronomy. Pick out the constellations and asterisms that our ancestors knew, or train yourself to better identify them if you're a bit rusty or are just starting out. Note the stars that stand out in color among the majority that appear just white. Look for a few of the better-known variable stars that brighten or dim noticeably, or others that disappear outright for long periods, then gradually reappear as if by magic. If you're lucky enough to have access to fairly dark skies when a bright Moon is absent, follow the course of the Milky Way—it's enchanted people since we first came about on Earth. Meteors and meteor showers can't possibly be taken in by an observer having his or her eye glued to an eyepiece. Large, scattered star clusters (M7 in Scorpius or the Alpha Persei OB Association in Perseus) might seem a bit more alluring to the naked eyes than when glimpsed in instruments, possibly because you *can* see them *at all*, just as the ancients did minus any optical help.

It's sometimes easy to fall into what might be called the "equipment trap", whereby you end up endlessly fussing with lengthy setups and subsequently thinking you're somehow obligated to concentrate solely on all your gear in order to view sky objects. Meanwhile, the entire sky above you can be seen immediately by merely looking up! Yes, we live in a modern, technical age that seems to so often be defined by the devices and material things that are the backdrop of our lives, but remember: If you had lived prior to 1609 and loved looking out at the night sky, you would've seen it just as everyone else down through history before you had seen the sky—with your naked eyes alone.

β Persei
(Algol, the ¨Demon Star´)

Glenn Chaple

Are you ready for the eclipse of November 13th? I'm not talking about the sun or moon. I'm referring instead to an eclipse of the fascinating star ß Persei (Algol).

Algol is arguably the best-known example of an eclipsing binary. Every 2.867 days like clockwork, Algol dims from magnitude 2.1 to 3.4. The entire fade-away and return to normal brightness takes about 10 hours. Algol's variability was first described by Italian astronomer Geminiano Montanari in 1667. However, its Arabic name (from Al Ra's al Ghul "The Demon's Head") suggests that Algol's odd behavior was noted centuries earlier.

Algol is comprised of a bright B8 main-sequence star orbited so closely by a fainter K-type subgiant that the two appear as a single star. Because their orbital plane is nearly edge-on to our line-of-sight, the faint member periodically passes in front of the primary, the eclipse causing a temporary dimming of the system's light.

There are two windows of opportunity for viewing an Algol eclipse. First, you'll need an evening from mid autumn to late winter when Perseus is well-placed in the sky. Next (unless you're a night owl who doesn't mind being out during the wee hours of evening) you'll want an eclipse that begins after sunset and winds down around midnight.

According to the RASC Observer's Handbook 2009, a favorable Algol eclipse will occur on Friday, November 13th, with mid-eclipse predicted for 8:21 pm, EST. Although the complete event takes about ten hours, most of the action can be seen within a 6-hour span. Starting about 3 hours before mid-eclipse (around 5:20 pm, or as soon as darkness permits), record your initial magnitude estimate. Use the accompanying chart, which shows the magnitudes of nearby comparison stars (to the nearest tenth, with decimals omitted). Continue at 15-minute intervals until Algol has returned to its original brightness. Special equipment won't be necessary – Algol is readily visible to the unaided eye. One hint: go outside an evening or two before the eclipse to identify Algol and its comparison stars. You'll avoid a lot of confusion and wasted time on eclipse night.

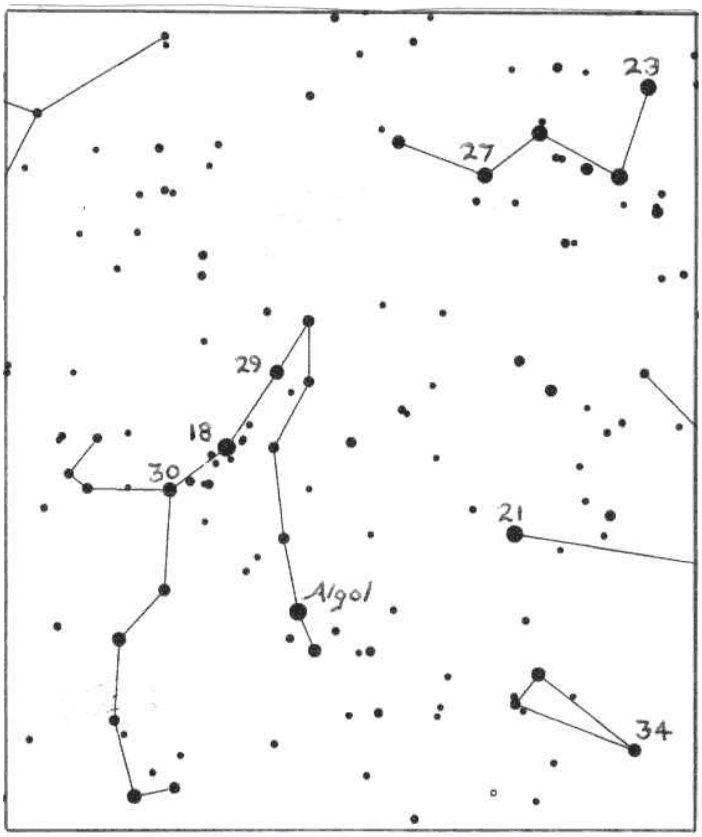

Chart for beta Persei
From Cartes du Ciel
Magnitudes to nearest tenth with decimals omitted
(courtesy AAVSO)

Observing an eclipse of Algol is a great group project for an astronomy club. I took part in one a few years ago with members of the Boston ATMs. Between estimates we had time to conduct regular skygazing through our telescopes – a combination which made for a fun and fast-paced evening. Should clouds prevail on the 13th, you can scout out future Algol eclipses by consulting the Observer's Handbook or a current issue of Sky and Telescope. Observing and recording an eclipse of Algol should be on every backyard astronomer's "to-do" list.

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

Steve Hubbard & Al Hall

Al Hall


Thomas Levenson


Mike Mattei


John Briggs


Steve Siok & Joel Cohen at the stardust grill

AstroAssembly Guest Speakers

On Friday Oct 2nd, our Master of Ceremonies, Scott Tracy introduced long time member **Al Hall** to kick off this years AstroAssembly with a talk on the Reconstruction of the Clark Drive at Seagrave.

On Saturday Oct 3rd, Scott Tracy introduced the following speakers with some great talks on a variety of subjects:

Thomas Levenson "The (Criminal) Education of Issac Newton"

Professor Levenson is the winner of the Peabody Award (shared), New York Chapter Emmy, and the AAAS/Westinghouse award and currently the interim head of the Writing and Humanistic Studies department at MIT.

Mike Mattei "Strange Cloud Formations on the Terminator of Venus."

Mike has been an active observer for many decades and a member of ALPO and AAVSO. He worked at Harvard Observatory's Agassiz Station (now Oak Ridge Observatory),

John Briggs "The Untold Saga of the Largest Refractor on Earth" John was a last minute replacement for Bill Sheehan.

Ronald Florence author of "The Perfect Machine, The Building of The Palomar Telescope."

Ronald is a historian and novelist. Educated at Berkeley and Harvard, where he received a PhD in French and German history.


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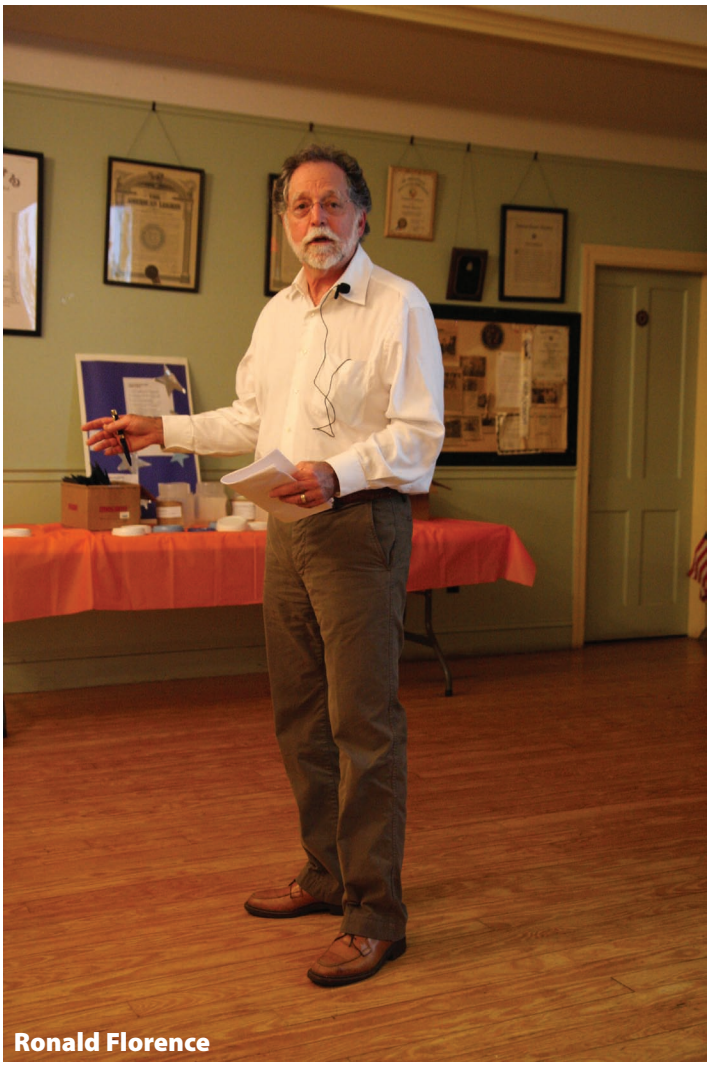

Ronald Florence


Scott Tracy


Steve Hubbard

At AstroAssembly, a quilt (1) by Sara Schechner depicting the US Naval Observatory's 26" Clark Telescope was shown by Ken Launie (2).

The catered buffet dinner (3) preceeded the evening presentation by Ronald Florence.

As has been tradition at AstroAssembly, Scott Tracy provided his services as master of ceremonies and audio-visual technician. Second Vice President & AstroAssembly chairperson Steve Hubbard gave the introduction to the evening program.

On Friday night, after Al Hall's presentation on restoring the Clark governor, the sky cleared enough to get a brief look at the Moon through the Clark. Al Hall is vieing through the scope (opposite, top left) as the newly restored governor drives the telescope (right).

Photos provided by Jim Crawford, Jim Hendrickson, & Steve Hubbard.

NASA's Space Place

Staring at Lightning

There's something mesmerizing about watching a thunderstorm. You stare at the dark, dramatic clouds waiting for split-second bursts of brilliant light — intricate bolts of lightning spidering across the sky. Look away at the wrong time and (FLASH!) you miss it.

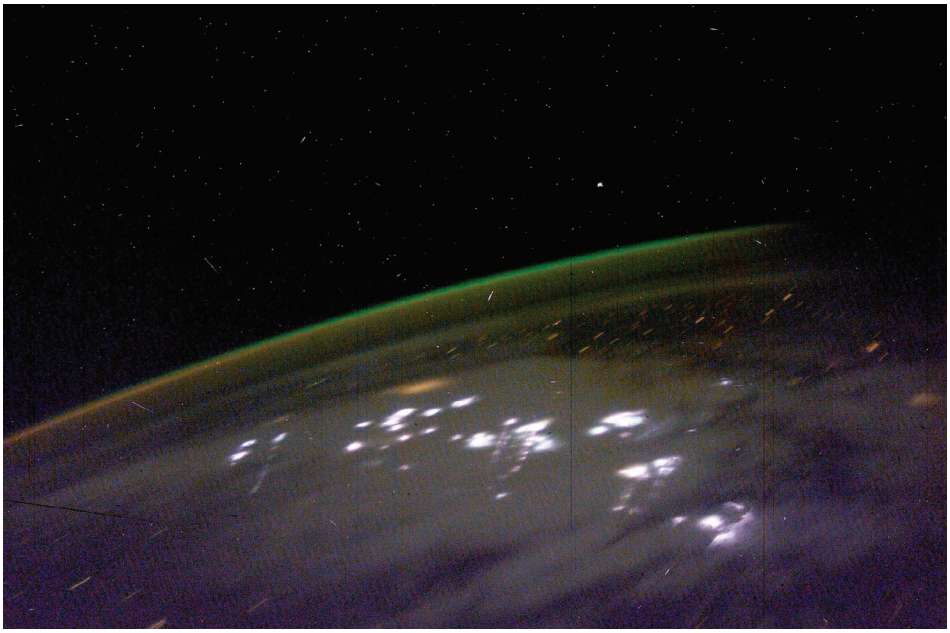
Lightning is much more than just a beautiful spectacle, though. It's a window into the heart of the storm, and it could even provide clues about climate change.earth_lightningThe

Strong vertical motions within a storm cloud help generate the electricity that powers lightning. These updrafts are caused when warm, moist air rises. Because warmth and lightning are inextricably connected, tracking long-term changes in lightning frequency could reveal the progress of climate change.

It's one of many reasons why scientists want to keep an unwavering eye on lightning. The best way to do that? With a satellite 35,800 km overhead.

At that altitude, satellites orbit at just the right speed to remain over one spot on the Earth's surface while the planet rotates around its axis — a "geostationary" orbit. NASA and NOAA scientists are working on an advanced lightning sensor called the Geostationary Lightning Mapper (GLM) that will fly onboard the next generation geostationary operational environmental satellite, called GOES-R, slated to launch around 2015.

"GLM will give us a constant, eye-in-the-sky view of lightning over a wide portion of the Earth," says Steven Goodman, NOAA chief scientist for GOES-R at NASA's Goddard Space Flight Center. Once GLM sensors are flying on GOES-R and its sister GOES-S, that view will extend 18,000 km from New Zealand, east across the Pacific Ocean, across the Americas, and to Africa's western coast.



The Geostationary Lightning Mapper (GLM) on the next generation of GOES satellites will detect the very rapid and transient bursts of light produced by lightning at near-infrared wavelengths. This image was taken from the International Space Station and shows the Aurora Australis and lightning.

With this hemisphere-scale view, scientists will gather an unprecedented amount of data on how lightning varies from place to place, year to year, and even decade to decade. Existing lightning sensors are either on the ground — which limits their geographic range — or on satellites that orbit much closer to Earth. These satellites circle the Earth every 90 minutes or so, quickly passing over any one area, which can leave some awkward gaps in the data.

Goodman explains: "Low-Earth orbit satellites observe a location such as Florida for only a minute at a time. Many of these storms occur in the late afternoon, and if the satellite's not overhead at that time, you're going to miss it."

GLM, on the other hand, won't miss a thing. Indeed, in just two weeks of observations, GLM is expected gather more data than NASA's two low-Earth orbiting research sensors did in 10+ years.

The new data will have many uses beyond understanding climate change. For example, wherever lightning flashes are abundant, scientists can warn aircraft pilots of strong turbulence. The data may also offer new insights into the evolution of storms and prompt improvements in severe weather forecasting.

Staring at

(FLASH!) Did you miss another one? The time has come for GLM.

Want to know how to build a weather satellite? Check the "how to" booklet at scijinks. gov/weather/technology/build_satellite.

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

October Meeting Notes

Jim Crawford

Monthly Meeting 7:30 p.m.

Bob Horton welcomed all members. The business meeting was kept short due to our annual AstroAssembly being held this weekend.

Secretary's Report: September report accepted by membership.

Financial Report: September report submitted with no corrections.

1st VP Bob Napier: No Report.

2nd VP Steve Hubbard: No Report.

Historian Dave Huestis: No Report

Librarian Bruce Merrill: No Report

Star Party Coordinator Bob Forgiel: No report.

Trustee Jim Brenek: No Report

New Business: The following new members were introduced: Tom Conlin, William Page and Lucille Laliberte. New members will be voted into Skyscrapers at the November meeting.

Old Business: Jim Brenek made a motion at September meeting to spend up to $4000.00 to install a new roof. Three quotes were received, the highest was over $5000.00. President Bob Horton asked for a vote to approve installation of the new roof shingles. Members approved.

Another motion at September meeting was to sell the 11" Maksutov Telescope. It was suggested that Dick Parker could test the scope before selling it. Bob asked for vote to approve selling the scope. Members approved.

Good of the Organization: Nothing to Report

Business Meeting Adjourned at 8: pm

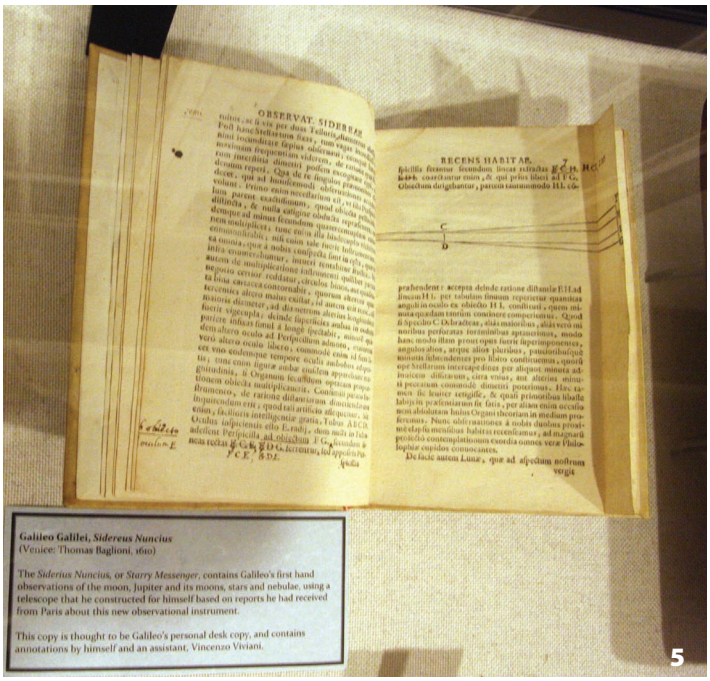
During past AstroAssembly conventions Skyscrapers, often held Telescope Making and Astrophotography competitions. Then we added a very unique competition: the Astro Bakeoff. Guests and members alike were encouraged to make an astronomy related culinary creation. Pretty much the only rule was that it had to be edible. The entry above was submitted by Steve Siok. It was a pizza created to look like Jupiter's moon Io. He used an image of Io taken by Voyager 1 in 1979 as his model. The similarities were remarkable. Was it edible? Perhaps it tasted like Io as well. Ask Steve the next time you see him. I for one would like to see the Astro Bakeoff return to the AstroAssembly lineup. Submitted by Dave Huestis, Historian.

Treasurer's Report

9/16/2009 through 10/24/2009

Lloyd Merrill

INFLOWS	
Astroincome	
Astro-banquet	816.00
Astro-Donation	75.00
Astro-grille	313.00
Astro-raffle	599.00
Astro-registration	1037.00
TOTAL Astroincome	2840.00
Dues	
Family	50.00
Regular	120.00
TOTAL Dues	170.00
TOTAL INFLOWS	**3010.00**
OUTFLOWS	
Astroexp	
Astro food Fri-Sat	121.61
Astrocater	840.00
Astrogrille	138.46
Astromisc	27.79
Astrosupplies	51.36
Astrowine-cheese	135.39
Speaker Fee	500.00
Other Astroexp	585.00
TOTAL Astroexp	2399.61
Electric	28.06
TOTAL OUTFLOWS	**2427.67**
OVERALL TOTAL	**582.33**
Banking Accounts	
Citizens Bank Checking	7,396.54
Capital One Money Market	16,274.63
Total Cash	**23,671.17**

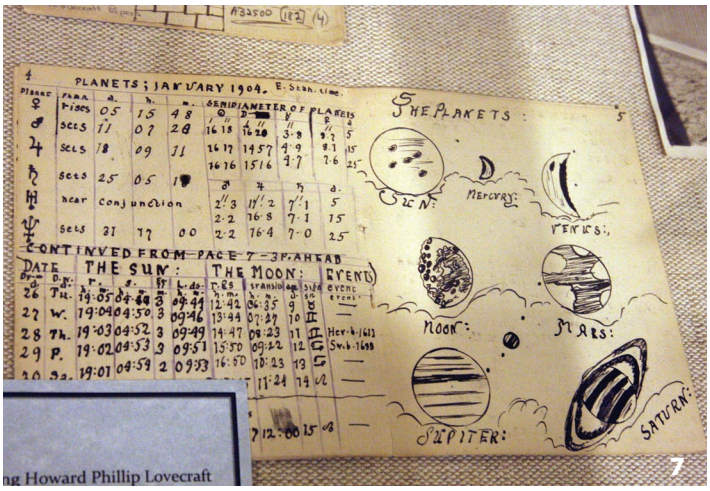


In celebration of the International Year of Astronomy, the Brown University Library, the Brown Department of Physics, and the Ladd Observatory have collaborated to present "Beyond the Moon: 400 Years of Astronomical Observation." This exhibit displays texts and images dating from the early 17th century drawn from the Library's incomparable history of science collections, historical records of the Ladd Observatory, and a range of astronomical instruments of the 18th century to the present day used for observation by Brown astronomers. Main Gallery and Lobby, John Hay Library; through October 2009.

The exhibit featured many items pertaining to the history of astronomical observations in Rhode Island.

On October 7 a reception was held, Dave Targan (2) and Ian Dell'Antonio (3) each gave a brief address as an introduction.

On display were telescope (4), a copy of Galileo's starry messenger (5) containing his own handwritten notes in the margin, telescope (6), H. P. Lovecraft's Astronomy journal



(7).

Mike Unbricht was giving spectroscopy demonstrations upstairs (8).

This collection of items is of interest to Skyscrapers because it is the efforts of Charles Smiley during his eclipse expeditions during the first half of the 20th century.

Photos by Jim Hendrickson.

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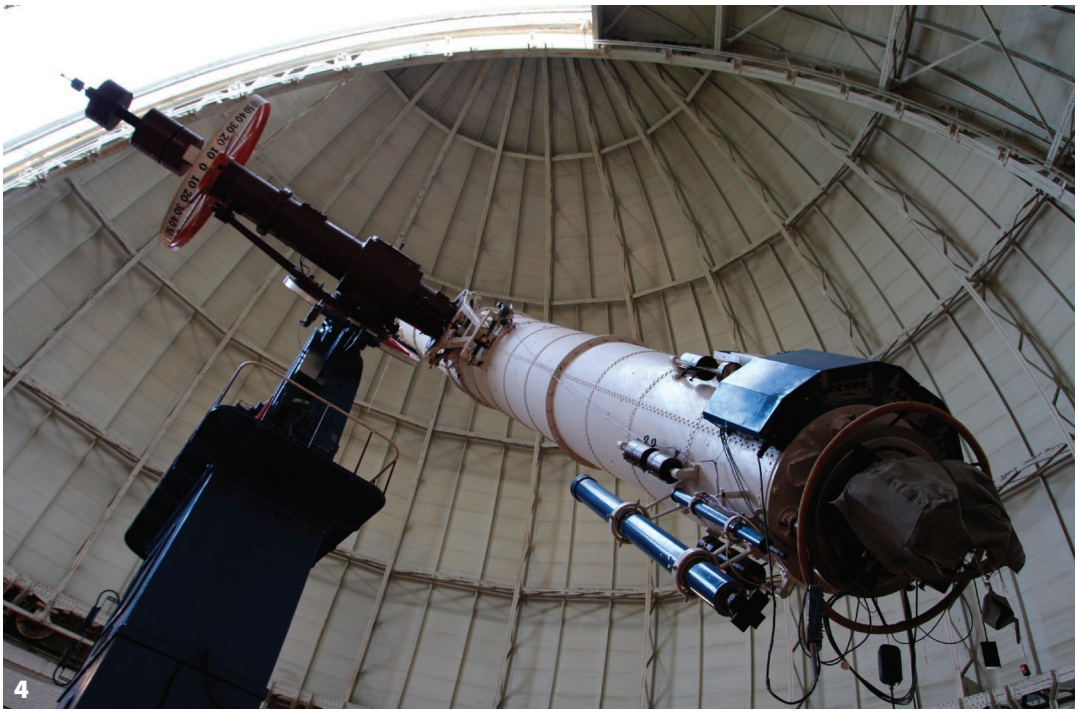
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During the weekend of September 25-27, during a first quarter Moon with cloudy skies predicted, several Skyscrapers visited the Yerkes Observatory in Williams Bay, Wisconsin. Yerkes is home to the largest refracting telescope in the world (40"). 2: The ornate entrance to Yerkes Observatory. 3. Skies cleared at sunset. 4: Looking up at the giant 40" refractor. 5. Our tour guide Richard Dreiser gave us a tour in and around the building before John Briggs took over for the observing portion of our visit. 6: Pointing the big refractor at the Moon. 7: We all took turns standing beside the giant 40" objective for a photo op. 8: Jack Szelka looks at the Moon through the Yerkes telescope. 9: Jack Szelka shows the scale of the equatorial mount. 10: Jim Hendrickson snapped a photo of Jupiter through the Yerkes refractor. Photos by Jim Hendrickson.

Earlier in the day on Saturday, we visited the **Adler Planetarium**. After wandering about the museum a bit and admiring the Dearborn telescope (2). we attended the sky show in the planetarium with the old Zeiss projector (3). Following the show, we attended an extra show in the Atwood Sphere (4), a perforated sphere which was the state of the art planetarium in 1913. When we were getting ready to leave the planetarium, we ran across cosmologist Alan Guth (5). John Briggs spent a good deal of time explaining to Guth how the SLOAN Digital Sky Survey operated (6).


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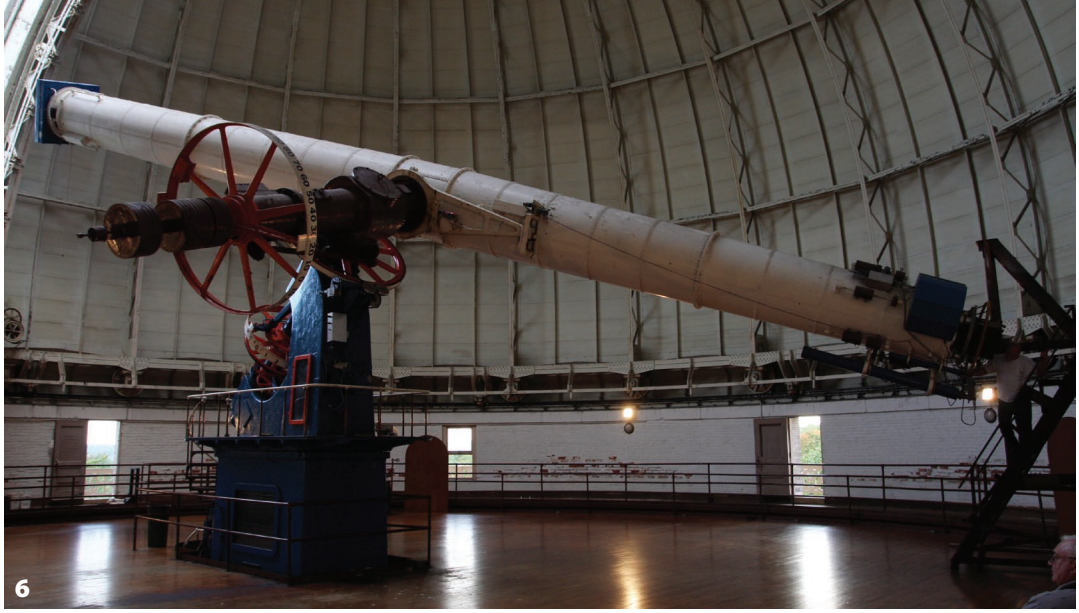
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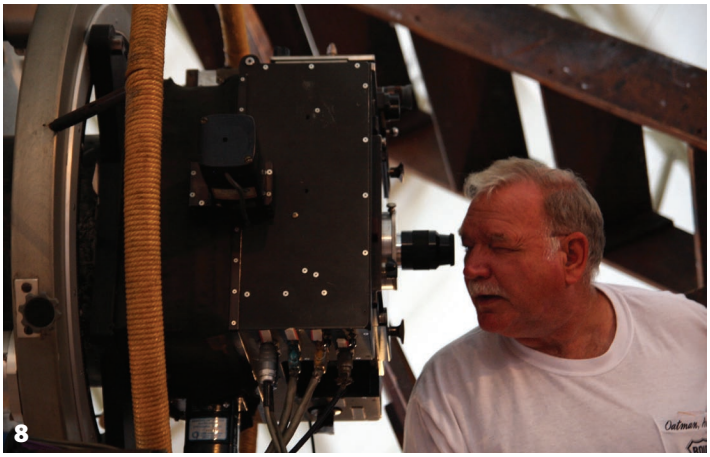
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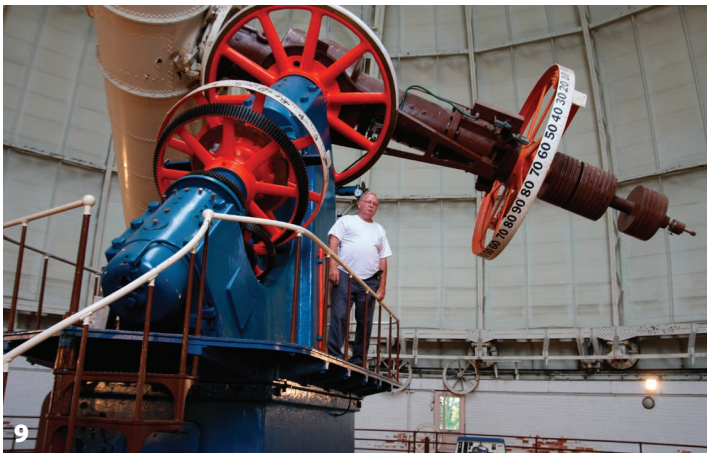
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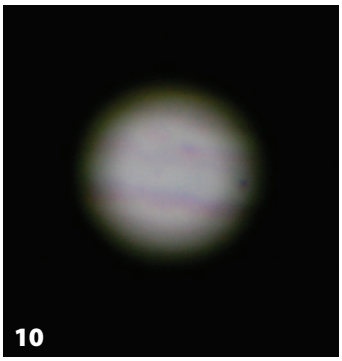
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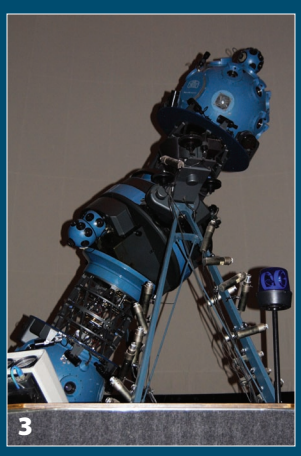
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Directions to Seagrave Memorial Observatory

From the Providence area:

Take Rt. 6 West to Interstate 295 in Johnston and proceed west on Rt. 6 to Scituate. In Scituate bear right off Rt. 6 onto Rt. 101. Turn right onto Rt. 116 North. Peeptoad Road is the first left off Rt. 116.

From Coventry/West Warwick area:

Take Rt. 116 North. Peeptoad Road is the first left after crossing Rt. 101.

From Southern Rhode Island:

Take Interstate 95 North. Exit onto Interstate 295 North in Warwick (left exit.) Exit to Rt. 6 West in Johnston. Bear right off Rt. 6 onto Rt. 101. Turn right on Rt. 116. Peeptoad Road is the first left off Rt. 116.

From Northern Rhode Island:

Take Rt. 116 South. Follow Rt. 116 thru Greenville. Turn left at Knight's Farm intersection (Rt. 116 turns left) and follow Rt. 116. Watch for Peeptoad Road on the right.

From Connecticut:

- Take Rt. 44 East to Greenville and turn right on Rt. 116 South. Turn left at Knight's Farm intersection (Rt. 116 turn left) and follow Rt. 116. Watch for Peeptoad Road on the right.
- Take Rt. 6 East toward Rhode Island; bear left on Rt. 101 East and continue to intersection with Rt. 116. Turn left; Peeptoad Road is the first left off Rt. 116.

From Massachusetts:

Take Interstate 295 South (off Interstate 95 in Attleboro.) Exit onto Rt. 6 West in Johnston. Bear right off Rt. 6 onto Rt. 101. Turn right on Rt. 116. Peeptoad Road is the first left off Rt. 116.

SKYSCRAPERS INC.

47 Peeptoad Road
North Scituate, RI 02857

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