

Amateur Astronomical Society of Rhode Island * 47 Peeptoad Road * North Scituate, Rhode Island 02857 * www.theSkyscrapers.org

November Meeting with Josh Grindlay

Friday, November 5, 7:30pm at Seagrave MEMORIAL OBSERVATORY

Running the 100-Yard DASCH: Back to the Future for Time Domain Astronomy

Over the past five years we have designed, built, tested and now begun to operate a very high speed astronomical plate scanner to initiate DASCH: Digital Access to a Sky Century @ Harvard. Our goal is digitize and put on line the ~550,000 glass plates of the Harvard College Observatory collection, the world's largest and most complete (full sky) coverage of repeated images of the sky from c. 1880 - 1985 (with some gaps). With generous support from the National Science Foundation, we have built the scanner and now have developed a high speed processing Pipeline for accurate astrometry (-larcsec) and photometry (~0.1mag) and high speed storage and access of the data in a MySQL database. Other steps need to be done to begin "production scanning" of up to 400 plates per day, which would allow the full project to be completed in 3-4 years. We are seeking volunteers to help with the scanning and plate processing. I will describe the overall project and how it fits in to the emerging field of "Time Domain Astronomy" as well as some of our early results.

Fellow Skyscrapers Members,

October has come and gone and what a great month it was for Skyscrapers. October 1st and 2nd was AstroAssembly which was enjoyed by many of us. We kicked off the event on Friday evening with presentations by Mike Umbricht, Glenn Jackson, Al Hall, and Bob Napier. On Saturday the 2nd, we had a fantastic line-up of speakers that included our featured speaker, Bob Berman of Astronomy Magazine. We were all treated to beautiful autumn New England weather the entire day. The grounds at Seagrave looked great thanks to our Trustee's and all the volunteers who helped in preparing for the event. We again had the grills fired up and dogs and burgers were on the menu, perfect food for the day that was bestowed upon us.

As noted in last month's letter, Dave Huestis' surprise was revealed, we are now in possession of Frank Evans Seagrave's infamous hat, which was generously

President's Tom Thibault Message

> donated by Lewis Boss's granddaughter recently along with some photos, books, and documents. We were all also treated to the restored Alvan Clark telescope in all its glory. Al Hall and Dick Parker with many volunteers dedicated numerous hours of time, which can only be described as a labor of love based on the end result. Jim Brenek did a great job refurbishing the observatory, a new floor, observing table, and many more touches that brought it all together.

> Throughout the day astronomical viewing was taking place, telescopes and binoculars at the swap tables were setup and providing views of the moon. Gerry Dyck's solar scope provided nice views of prominences coming off Sol's limb. Jack Szelka brought his homemade 12-inch Dobsonian and was providing views of Venus. Venus was also the target for the Alvan Clark. Many members and guests took advantage of peering through our beautifully restored refractor. It was stunning with its fire-engine

Seagrave Memorial Observatory is open to the public weather permitting

Saturdays 7pm - 9:00pm

Please note that the observatory may be inaccessible for after extended periods of heavy rain. See web site for updates.



OTHER NOTABLE EVENTS: S. Taurid meteors peak on the 12th. N. Taurid meteors peak on the 10th. Leonid meteors peak on the 17th. The Moon is 0.5° S of Juno on the 29th.

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red painted tube and freshly polished and lacquered brass fittings, I'm sure Frank Seagrave is smiling from above.

The finale to this year's AstroAssembly, was our banquet held at the Scituate Community Center. We all enjoyed a great catered meal, presentation of raffle prizes to our lucky winners, and a stimulating presentation by Bob Berman. Bob's talk on "Light and Color in the Universe" was entertaining and informative and was well received by all who attended.

I can honestly say we will be hard pressed to top this year's AstroAssembly. Skyscrapers really put on a great event this year with the help of many volunteers. Thank you all. Let me extend a special thank you from all of our members to Steve Hubbard and Kathy Siok. Steve and Kathy were instrumental for the success of this year's AstroAssembly and deserve the praise and thanks of our society. Thank you Steve and Kathy.

I would also like to again extend a special thank you to Gene Kusmierz and his wife for their generous donation of the ocular lenses to restore the Alvan Clark to its original configuration. In addition, Gene's three children matched his donation based on the enthusiasm shown by Gene and his description of our society and its dedicated members.

And thanks to the many vendors who provided items for our raffle and door prizes. We appreciate their generous support of Skyscrapers and our annual AstroAssembly event.

Clear Skies





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 no later than **November 19** to Jim Hendrickson, 1 Sunflower Circle, North Providence, RI 02911 or e-mail to jim@distantgalaxy. com.

E-mail subscriptions

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

Shooting Stars of November Dave Huestis

Everybody likes a good display of shooting stars. They don't require a telescope to observe, and anybody with good eyesight and a dark sky can relax outdoors, casually skywatching for comet remnants to blaze across the sky.

November presents two opportunities for meteor watching. The first meteor shower of the month is the Taurids. In fact, it is actually two showers, the North and South Taurids, which appear during a week's time from the 5th though the 12th. While the rate is only about five meteors per hour over this time-frame, the Moon will not severely interfere since it will be between New and First Quarter.

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 well known and easily visible Pleiades star cluster.

These fragments of Encke's Comet enter our atmosphere at approximately 17 miles per second. They are usually slow (yes, that speed is considered slow for a meteor entry) and yellow, and often explode as fireballs and then fragment into multiple meteors.

The second meteor shower of November peaks on the morning of the 17th. Many of you reading this column are quite familiar with the Leonids. Do you remember the Leonid meteor storm of 2001? Let's take a quick trip down memory lane. Here's part of my observing report from nine years ago:

For a couple of hours after midnight we were experiencing about 200 meteors per hour. Between 2:45 am and 3:45 am I personally counted 120. Oh well, you can't cover the entire sky! Then just after 4:00 am the rate started to increase and soon, between 4:30 and 5:30 am, the rate fluctuated between 600 and 800 per hour.

In one instance I saw 5 or 6 meteors radiate simultaneously from the radiate point in Leo. When I did a 360 degree look around, I often saw 3 or 4 meteors in the sky at once. Most left persistent trains of dust. There were quite a few fireballs as well. One in Orion left a dust train that lasted 5 to 6 minutes.

I wish I could say the Leonids would be even one-tenth that good this year, but a storm level Leonid display is still a couple of decades in the future. I simply wanted you to think back to that beautiful morning and reminisce about the wonderful event that it was and to encourage you to spend a couple of hours to view the display this year.

While the shower is at its best between midnight and dawn, a waxing gibbous Moon (between First Quarter and Full), won't set until around 3:00 am. That leaves only a couple of hours of dark sky before dawn's early light to observe about 20 bright, blue or green meteors per hour hitting our atmosphere and disintegrating at 44 miles per second ... much faster than the Taurids since the Earth plows into the meteor stream

nearly head-on. This latter fact results in many fireballs, and about half of them leave trains of dust which can persist for minutes.

The Leonid meteors radiate from the constellation Leo, which can be seen well above the eastern horizon around 3:00 am. I would suggest getting up around moonset and find a good spot from which to observe with an unobstructed easterly view. Block any stray lights from your vision, and do dress warmly.

And finally, Ladd Observatory (http:// www.brown.edu/Departments/Physics/ Ladd/) on the corner of Hope Street and Doyle Avenue in Providence has reopened. Renovations have been completed and public viewing has resumed on every clear Tuesday evening from 7-9pm. The lens of the 12-inch Brashear refractor has also been cleaned, and the view of Jupiter and the Moon has been spectacular. Come see for vourself.

Additionally, the famous 81/4-inch Alvan Clark refractor at Seagrave Memorial Observatory (http://www.theskyscrapers.org) on Peeptoad Road in North Scituate has recently been refurbished and reinstalled. It is once again available to provide great astronomical views of the heavens during our public observing sessions every clear Saturday night from 7-9 pm. Member volunteers will be happy to share their love of astronomy with you using the many telescopes available at the Seagrave facility.

The Great Glenn Chaple's World Wide Star Count

Last March, I participated in the 2010 GLOBE at Night Campaign, sponsored by the University Corporation for Atmospheric Research and the National Center for Atmospheric Research (UCAR and NCAR). Globe at Night is a citizen-based project designed to help scientists around the world map light pollution.

The process was simple. I observed Orion and compared what I saw with a set of charts showing Orion's appearance at magnitude limits between 1 and 7. I emailed my finding (I got a magnitude limit of 5) to the Globe at Night website. Mine was one of 17,805 observations forwarded by individuals from

86 countries. The results, plus an overview of the Globe at Night Campaign can be found at <u>www.globeatnight.org/</u>.

If you missed the 2010 Globe at Night Campaign, you'll get another chance. Through the auspices of UCAR and NCAR, the National Earth Science Teachers Association will conduct the Great World Wide Star Count from October 29 to November 12. The format is the same as that of the Globe at Night Campaign. This time, Cygnus will serve as the light pollution barometer. The Great World Wide Star Count offers the backyard astronomer an opportunity to add some ammunition to

Sky Project of the Month

the war on light pollution. Not only is this a worthwhile project for the individual; it makes a fine activity for teachers who want their students to learn about the night sky while involving them in science research. To find out more about this project and how to participate, go to <u>www.windows2universe.</u> org/citizen science/starcount/. By the way, the Windows to the Universe website is a valuable resource for educators. Check it out!

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



The month of August this year required that I take an 11 day business trip to Honolulu, Hawaii, to review the progress of a number of construction projects under way for the company. My wife Lisa, who has never shown a great interest in my work, for some reason insisted she accompany me on this grueling trip. This trip I intended to spend a little more time in Hawaii than the last, which involved two days in San Francisco, three days in Honolulu, and ending with two days in LA. During that trip it was all work and no play. This visit I made a point of including some personal time of which astronomy would be part of the agenda.

The flight out included a stop and overnight stay with my brother-in-law in North

Hollywood, CA. We arrived around noon, grabbed something to eat, and made our way up to Griffith Observatory. It sits atop one of the highest peaks within Griffith Park. The road winds up the sides of the Hollywood Mountain, and as you approach the bright white walls of the observatory and domed roofs can be seen perched high above. The Griffith Observatory is a beautiful structure with an Art Deco, Moderne, Greek Revival, Beaux influenced architecture. This year it is celebrating its 75th Anniversary and above its central entrance is a banner hung proudly announcing it. While they cannot boast the longevity of Skyscrapers, it appears they have done pretty well for themselves.

The observatory's large dome houses the Samuel Oschin Planetarium that regularly provides presentations throughout the day. This structure has a promenade walkway at the back that provides panoramic views of the LA basin below. Once inside we were treated to a wide array of astronomical displays. They ranged from astronomical history to solar, planetary, and deep space observations. The picture below shows the center dome slit open, to allow the operation of the solar scope. A two-foot diameter live projection is displayed in the structure below. This room is completely dedicated to our sun with pictures and video clips in various filtering wavelengths.

The other small dome structure houses history related displays, including a replica of Galileo's telescope. It has working examples of focal length, glass diameter, and its effect on magnification, brightness and resolution. It also houses a scale model of the Palomar Observatory where visitors can operate the dome and scope rotation as well opening\closing the dome slit. This was just the start to the trip, Hawaii was next and I







had plans for there as well.

The weather was fantastic our entire trip, I did have to work, but the early mornings and evenings were mine. Each morning before sunrise I was greeted by Orion to the west, Taurus a little higher and the Pleiades almost directly overhead. I had brought a small pair of binoculars and M45 could be made out easily. Late in the day our moon stood out brightly against the deep blue sky. As sunset approached, Venus stood out brightly to the west. On the evening of the 13th, Venus was positioned directly over the Crescent Moon viewed above the ocean from Waikiki Beach. When darkness fell, Sagittarius and Scorpius hung over the ocean with Scorpius between 30-40 degrees above the horizon. Jupiter would rise at around 9:30PM in the southeast and my small binoculars had enough power to watch its moon-dance from night to night.

I had the opportunity one evening while walking to a late dinner to take in the view of the moon through a 6-inch SCT. A fellow amateur astronomer had set up in the crowded streets and was treating all those interested close-up glimpses of the moon high above. It's not often one can be provided with this sight in the busy streets of a city. I had read an article on a previous trip about a gentleman that provided Astro-Tours from his home observatory close to Honolulu. I was unable to visit him on that trip, but was determined to meet him during my stay this time.

I contacted Ray Young at astrotourshawaii@hotmail.com first by e-mail and then by telephone, and made arrangements to meet the evening of August 14th at 8:00PM. Ray asked for my phone number and indicated he would contact me at 6:00PM and provide a "Good to Go" or "No Go" based on weather reports. He called with a "Good to Go", so we made our way to Ray's home for an evening of stargazing. Ray lives on top of Makakilo Mountain in the town of Kapolei, around 30 miles west of Honolulu. Ray's home and observatory is located at the end of a cul-de-sac at the very top of a residential area. The observatory is a 12' x12' Roll-Off Roof style with a porch of the same size that provides the entranceway. It is located downhill in his backyard behind his home. This position shields his observatory from the home and street lighting in the area. Ray met us in front of his home, along with a family of five who had also arranged for a tour that evening.

We followed Ray to his observatory where he proceeded to identify the constellations viewable in the sky above. He informed us of the Hawaiian names for the stars, folklore, and how the stars were used for their navigation of the ocean. He also pointed out the galactic center of the Milky Way which showed nicely stretching across the sky overhead. We then moved into his observatory equipped with a 12-inch Maksutov Cassegrain on a Losmandy mount, a pair of 100's binoculars with inter-changeable eyepieces, a smaller pair of handheld binoculars, and a nice sound system playing in the background. Ray really knew his stuff and provided a great tour of the night sky. The skies were clear when we began looking thru his equipment. The moon was setting so we started there before it slipped away. Clarity was very good, so the views were crisp ... very nice. The tour included a

number of staples overhead: M13 and M57, and then on to M4 and M7 in the constellation of Sagittarius, followed by M20 and NGC6530 in Scorpius. The clouds began to roll in and we had to call it a night. It's really too bad. I could have spent all night taking in the dark skies at Ray's home. Really nice. I would highly recommend to anyone whose travels bring them to Oahu, to contact Ray and arrange for their own Astro-Tour. Ray's website <u>http://astrotourshawaii.com/</u> provides more information on Ray and the offerings of a fellow amateur astronomer.

My trip turned out to be a real pleasure, even with work occupying a majority of time during the daylight hours. I would urge all to take advantage, regardless of whether your travels are for work or with your families, to take advantage of the Astronomical Pleasures those locations have to offer.





Francine Jackson Sky Notes

One of the great things about being in astronomy is this field is so small that if any news happens, we are able to learn about it rather quickly. At a recent planetarium conference, I found the number of discovered exoplanets has reached over 700, and also early results concerning the tiny spacecraft Hayabusa.

If is weren't for the fact that it recently returned to Earth - as it had been programmed to do - a lot of us probably wouldn't have really known much about it. Hayabusa left Earth in May of 2003, its destination the tiny asteroid 36 Itokawa. Unfortunately, this craft did have a few problems, including the fact that, once



Jupiter and Earth just had a close en-

it arrived at its destination, it was unable to land properly. A second attempt got Hayabusa down, but it wasn't able to collect surface material as it was programmed to do.

And then came its return to Earth. For a time it seemed to be lost, that it had joined the ranks of so many spacecraft before it. Hayabusa disappeared for several months; but, suddenly it reappeared and was able to be guided back home. Finally, although it hadn't been able to scoop up part of the asteroid's surface, the landing actually kicked up part of the ground, and pieces stuck to the little craft. This will now be our first chance to actually touch an asteroid. on what had gotten him into the astronomy profession. For him, it was a seventh grade homework assignment he did with his brother, to learn the night sky by means of H. A. Rey's Find the Constellations. It got me thinking about my own introduction to the subject - most likely two books in the Golden Guide series (you remember, the same as Insects, Rocks, Butterflies and Moths) by Herbert Zim, Stars, and The Sky Observer's Guide, both library books which were in my possession more than the library shelves. And, how about all of you? Was it a book that brought you to the depths of space? That might be a good discussion some night.

One of my associates recently gave a talk

Close Encounters with Jupiter

By Dr. Tony Phillips



The Juno mission, arriving at Jupiter in July 2016, will help to solve the mystery of what's inside the giant planet's core.

a heavy core?"

Juno will improve the situation without actually diving into the clouds. Bolton explains how. "Juno will spend a full year in close polar orbit around Jupiter, flying over all latitudes and longitudes. We will thus be able to fully map Jupiter's gravitational field and figure out how the interior is structured."

But that's not all. Researchers have good reason to believe that much of Jupiter's interior is filled with liquid metallic

counter—and it was a good one. In late September 2010, the two worlds were 31 million km (about 19 million miles) closer than at any time in the past 11 years. Soaring high in the midnight sky, Jupiter shone six times brighter than Sirius and looked absolutely dynamite through a backyard telescope.

Planetary scientist Scott Bolton of the Southwest Research Institute isn't satisfied. "I'd like to get even closer," he says.

Bolton will get his wish in July 2016. That's when a NASA spacecraft named "Juno" arrives at Jupiter for a truly close-up look at the giant planet. Swooping as low as 5,000 km (about 3,000 miles) above the cloud tops, Juno will spend a full year orbiting nearer to Jupiter than any previous spacecraft.

The goal of the mission is to learn what lies inside the planet.

Astronomers have been studying Jupiter since the invention of the telescope 400 years ago, but in all that time the planet's vast interior has remained hidden from view. Even the Galileo probe, which dived into the clouds in 1995, penetrated no more than about 0.1% of Jupiter's radius.

"Our knowledge of Jupiter is truly skin deep," says Bolton, Juno's principal investigator. "There are many basic things we just don't know—like how far down does the Great Red Spot go? And does Jupiter have hydrogen, an exotic metal that could form only in the high-pressure, hydrogen-rich core of a giant planet. Jupiter's powerful magnetic field almost certainly springs from dynamo action inside this vast realm of electrically conducting metal.

"Juno's magnetometers will precisely map Jupiter's magnetic field," says Bolton. "This map will tell us a great deal about planet's inner magnetic dynamo—what it's made of and how it works."

Finally, Juno will probe Jupiter's atmo-

sphere using a set of microwave radiometers. "Our sensors can measure the temperature 50 times deeper than ever before," says Bolton. Researchers will use that information to figure out how much water is underneath Jupiter's clouds. "Microwave measurements of Jupiter's water content are particularly exciting because they will help discriminate among competing theories of the planet's origin."

Now *that's* a close encounter. Stay tuned for Juno.

Find out more about the Juno mission at http://www.nasa.gov/mission_pages/juno. Play the new Solar System Explorer super game, which includes the Juno Recall minigame at http://spaceplace.nasa.gov/en/kids/ solar-system. It's not just for kids!

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

AstroAssembly 2010 Photo Gallery















Master of Ceremonies

Scott Tracy







Historian Dave Huestis gave a presentation during AstroAssembly to commemorate the sesquicentennial of Frank Evans Seagrave. Dave promised to reveal a surprise during his presentation, which is revealed here. He presents the hat worn by Frank Seagrave at the observatory.



Right: Al Hall looks at Venus (above right) through the Clark telescope. Steve Hubbard captured the image of Venus through the Clark telescope.





Left: Ed Turco admires the newly flyball governor on the restored Alvan Clark telescope. Below left, John Davis and Bob Howe attend AstroAssembly. Below right, Penny Lesperance, Steve Hubbard, and Kathy Siok.







Above: Steve and Kathy Siok get ready to prepare lunch at the Skyscrapers Grille. Right: Gerry Dyck shows Scott Tracy the sun through H-alpha and white light solar filters.









The power of Photoshop is unbelievable for astrophotography, I continue to learn more and more of the commands and am amazed by the results that are achieved. I can only imagine the results if I had a better CCD camera. Attached is a photo showing the before and after results of my resent picture of M31. Photos by Tom Thibault.



The Sculptor Galaxy, NGC 253, a starburst galaxy, is about 11.4 million light years distant. 130mm refractor @ f/4.8, 30 seconds ISO 800, Canon 40D unmodified. Photo by Jim Hendrickson.



The Great Orion Nebula, M42, a star-forming region 1,344 light years distant. 130mm refractor @ f/4.8, 30 seconds ISO 800, Canon 40D unmodified. Photo by Jim Hendrickson.



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.



47 Peeptoad Road North Scituate, Rhode Island 02857