



the Skyscraper

vol. 40 no. 3

March 2013

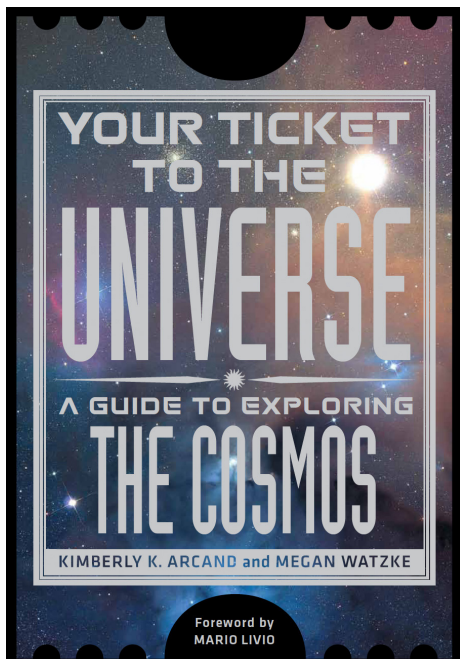
AMATEUR ASTRONOMICAL SOCIETY OF RHODE ISLAND * 47 PEEPTOAD ROAD * NORTH SCITUATE, RHODE ISLAND 02857 * WWW.THESKYSCRAPERS.ORG

Friday, March 1, 7:00pm at North Scituate Community Center

How to Color the Universe by Kim Arcand

Pink planets? Green galaxies? Purple blobs? Is space really so colorful? Take a tour of the multiwavelength universe from our local neighborhood, the solar system, and out to the farthest destinations in human knowledge. With data from NASA's Chandra X-ray telescope, Spitzer space telescope and Hubble, along with ground-based images from observatories and amateur astronomers from around the world, we'll take a look at what goes into the kaleidoscope of color we enjoy from our vantage point on Earth.

Kimberly Kowal Arcand directs communications for NASA's Chandra X-ray Observatory, which has its headquarters at the Smithsonian Astrophysical Observatory in Cambridge, Massachusetts. Her research interests include studying the perception and comprehension of science images across the novice-expert spectrum. Kim is active in the creation, distribution, and evaluation of large-scale science exhibitions in public spaces such as parks, libraries, malls, and metros. Most recently, she has co-authored a non-fiction book "Your Ticket to the Universe: A Guide to Exploring the Cosmos" for Smithsonian Books, available April 2, 2013.



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Seagrave Memorial Observatory Open Nights

Saturdays at 7:00 pm
Spring hours begin on March
16 with opening time at
8:00pm
weather permitting





President's Message

Ed Haskell

Since Dave Huestis was president February has been a time for the Skyscrapers president to be seeing \$stars as the annual budgeting gets underway. Before you turn the page I promise that I am not going to review the budget in this message, but the process did cause me to reflect on the importance of one item that may not have been noticed by many of you.

Two Members mentioned to a Board member this year that they did not understand why we have so many star parties and they thought we should do less of that and devote those volunteer hours to something else. Those are reasonable questions and the answers may be a surprise to some of you.

Star Party Donations in the first ten and a half months of the fiscal year about to close amount to one dollar in seven of our income for that period. This is forty four percent of the amount raised as Dues. Since star parties do not have a direct cost to the Society this is a net number and would require a sizable increase in Dues if we were to discontinue the activity.

While we do not keep statistics on how many new members are first attracted to Skyscrapers by attendance at a star party we know that a fair proportion of new members learn of us that way. We do know from attendees' comments and from the size of donations received that the public is impressed by these opportunities to see the heavens and to have their questions answered by our members.

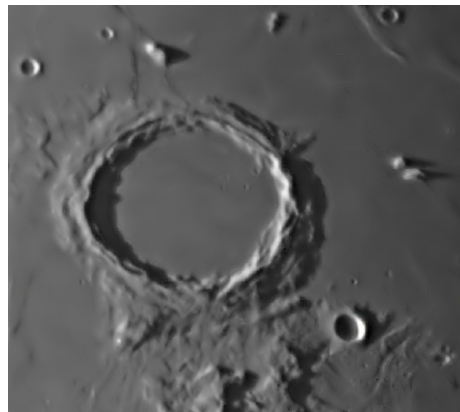
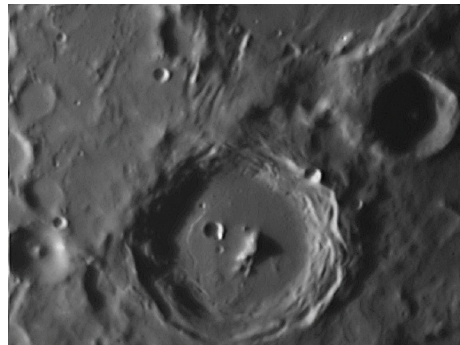
These public outreach activities are the primary reason the Town of Scituate is willing to abate our real property taxes to the benefit of the Society amounting to nearly as much as the entire income from Dues. In purely financial terms the two quantifiable impacts of star parties makes it possible for us not to have to increase dues to about two hundred and forty percent of their present levels.

There are, of course, other benefits to public observing sessions, not the least of which is the fellowship enjoyed by the members who give their spare time to share the joys of observing with each other as well as the public. Astronomy, by its very nature is a solitary pursuit. Star parties, Open House night, and member observing sessions all provide an opportunity to be less a hermit about our hobby.

After looking more broadly at the line item for Star Party Donations and seeing the nuances not immediately connected thereto I will be taking the same approach in examining the other budget categories as well. Who knows what other hidden gems may lie there in those dry numbers.

This is plainly a good time to thank Bob Forgiel, our outreach coordinator, and the host of Members who volunteer their time and telescopes to make these observing sessions happen for so many hundreds of our fellow citizens each year.

Thanks to all of you for all you do for the Society.



Lunar images by Steve Hubbard; February 18; 2 minute AVI's, ASI2, Gimp2, Neatimage.



The Skyscraper is published monthly by Skyscrapers, Inc. Meetings are held monthly, usually on the first or second Saturday of the month. Seagrave Memorial Observatory is open every Saturday night, 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 **March 15** 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.





Spring

Francine Jackson

Every year, on February 2nd, the world waits for Punxsutawney Phil to crawl out of his burrow in anticipation of learning how much winter we have left; sorry, Phil, regardless of whether you see your shadow or come out of your home shadowless, spring-time is still six weeks away.

February 2nd is one of four cross-quarter days, the one right in the middle of the season. The new season, spring, starts this year at 7:02 A.M., DST, Wednesday, March 20th. Yes, Daylight Saving Time begins early, on March 10th, meaning you probably won't even notice the change from winter to spring; but, knowing exactly what time spring begins is very useful, as the moment of the seasonal change points out the most important position in the sky: The zero point for right ascension, or celestial longitude.

Not having a real building in space to use as the origin of east-west positioning

in the sky - the International Space Station doesn't count, as it's only been up a few years - a zero point for celestial longitude was necessary, and, as the beginning of the season of spring was considered the most important time of the year, this indicator was utilized. Spring begins when the two great circles, the ecliptic - the Sun's apparent path through the zodiacal constellations - and the celestial equator - ours continued upward into the sky - intersect as the Sun, which has been below the celestial equator, will appear to rise that day directly eastward, travel across the sky, then set exactly west. From our perspective, if we didn't have the advantage of an atmosphere, we would theoretically have equal daytime and equal night conditions that day, giving rise to the name for the first day of spring: The vernal equinox. From then, and for the next six months, the Sun will rise and set north of east and west, respectively.

The first day of spring is also important as it, when coupled with the first Full Moon following it, determines the dates for several specific annual moveable days of feasting, celebration and inner reflection. This

year, the Full Moon for March, referred to as the Full Worm, is reached at 5:27 A.M. Wednesday, March 27th. By decree, the first Sunday after the first Full Moon after the first day of spring (the vernal equinox) is set as the celebration of Easter, which brings it this year to March 31st, making the Friday directly before, March 29th, Good Friday. Forty days (excluding Sundays) before Easter signals the start of the religious season of Lent, on Ash Wednesday, February 13th, and then, of course, the well-known Southern celebration, Fat Tuesday, or Mardi Gras, February 12th.

Phases of the Moon

Last Quarter Moon

March 4 21:53

New Moon

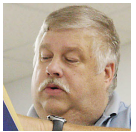
March 11 19:51

First Quarter Moon

March 19 17:27

Full Moon

March 27 09:27



New Comet to be Visible in March

Dave Huestis

When is the last time you observed a naked-eye comet? For many of you the answer will most likely be 1997. And the comet was the beautiful Hale-Bopp. Here in southern New England Hale-Bopp was well placed for observers during the last week of March into the first week or so of April. In fact, the accompanying image was taken on April 1 from my backyard as I stood in 18-inches of fresh snow!

While there have been many other comets since then, quite a few of them have been better observed from the southern hemisphere. Others were not as bright as Hale-Bopp, or only appeared during a short observing window, like Comets McNaught and Machholz.

Comet Holmes, in late 2007, was an exception. It exhibited the most rapid outburst ever observed, which helped the comet develop the largest coma (halo) in recorded history. Comet Holmes set a record by becoming the largest object in the solar system - amazingly surpassing the diameter of the Sun. It was even a naked-eye object in the light-polluted skies of Ladd



Observatory in Providence. While at that time it did not exhibit a tail from our viewing perspective, the sheer size of the comet was impressive.

On any clear night there are tens of comets visible in the night sky. The majority are faint and require large telescopes to view them visually. They can be detected because they shine by reflected sunlight, just like all the planets and moons in our solar system. Once in a while a new comet will be discovered that shows potential for putting on a good show that anyone in a dark sky can observe and appreciate.

Back on June 6, 2011, a new comet was discovered on its journey towards the in-

ner solar system and an encounter with the Sun. This long-period comet (orbital period greater than 200 years) originated in the Oort Cloud, a theoretical spherical cloud or halo of perhaps several trillions of comets encompassing our solar system and extending perhaps up to 465 billion miles from the Sun.

Comets are likened to "dirty snowballs," a 1950 theory proposed by an old friend of Skyscrapers, the late Dr. Fred Whipple (1906-2004) of Harvard College Observatory. They are some of the leftovers from the creation of the solar system and are irregularly shaped objects composed of ice, small rocks, dust, various gases, and organic compounds. While in their cold and cozy orbit within the Oort Cloud, comets are inactive. Occasionally one of them gets nudged by the gravity of a nearby star, sending the comet on its long journey towards our Sun. Comet PANSTARRS is one of those comets. Named after the 70.7-inch Panoramic Survey Telescope & Rapid Response System on Mount Haleakala in Maui, which discovered it, Comet PANSTARRS could

wind up being the best comet in a long time for northern hemisphere observers.

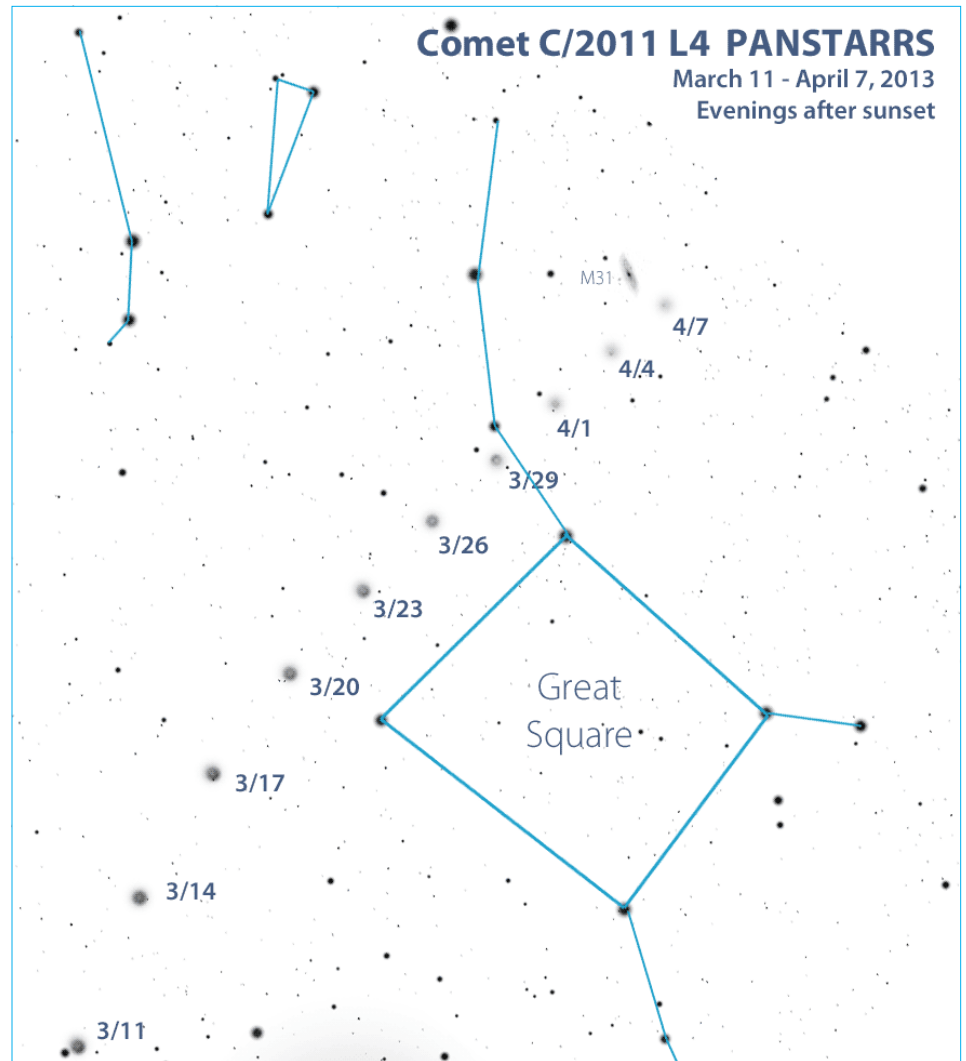
Just how “dirty” are the surfaces of comets? They have the darkest surfaces of any object in the solar system. In fact, Comet Halley, being a very old comet, is so dark it reflects only about four percent of the light that bathes it. I can’t stress enough how dark that is. A little quick research revealed that asphalt reflects seven percent of the light it receives! For those of you who live around New England, think about the snow on the side of the road in mid to late March. It’s full of sand, dirt and small rocks. It’s so dirty you almost want it to snow again just to cover over the unsightly mess. Well, a comet’s surface is many times more “dirty.”

When a comet reaches the orbit of Jupiter (mean distance of approximately 483,500,000 miles), it starts to feel the influence of solar radiation. The comet reaches what is known as the H₂O turn on point. It begins to heat up. Subsurface ice melts and the pressure forces the material out through cracks or vents on the surface of the comet. Jets of this material spew out into space like geysers (remember the scene in the movie *Armageddon*?). This process is called outgassing. All this expelled material forms the cloud of nebulous material, called the coma, which envelops the nucleus.

The solar wind (a stream of particles radiating from the Sun) not only sandblasts loose material off the comet’s surface, but also starts pushing dust, gasses and rocky material away from the comet, forming two tails. One is the dust tail which is usually curved. The dust tail is responsible for producing a trail of debris along the comet’s orbital path. If the Earth happens to pass through this debris we experience a meteor shower. The second tail is the ion tail, comprising gases that always points directly away from the Sun. So unless you observe the comet over a period of time, you really can’t tell if it’s coming or going!

Some comets develop extensive tails, which can be many tens of millions of miles long. What we observe from the Earth depends upon our viewing angle. Astronomers originally had high expectations for Comet PANSTARRS, as they believe this is the first time it has made the plunge towards our Sun. That means there is most likely a lot of loose material on the comet’s surface which will be blown off by the solar wind creating a large and bright coma, as well as a lengthy tail.

However, as I was finishing up this article in mid-February to meet publica-



tion deadlines, the magnitude/brightness expectations for PANSTARRS were being forecast downward. Since this was the comet’s first encounter with the Sun, most of the loose surface material was likely stripped off early, making it initially very bright. With that material now absent, the comet has dimmed significantly. It may now be a little fainter than most of the stars in the Big Dipper asterism of Ursa Major, or about the same magnitude as Albireo in Cygnus.

Still, a word of caution about forecasting a comet’s behavior is called for here. David Levy, famed comet discoverer (remember Comet Shoemaker-Levy that impacted Jupiter back in July 1994), is fond of saying, “Comets are like cats. They have tails, and they do precisely what they want.” My sentiments exactly. The only thing predictable about comets is that they are unpredictable.

On Comet PANSTARRS’ inbound race to towards the Sun, it will glide by the Earth on March 5 at a safe distance of about 102 million miles. It will then only be visible from the southern hemisphere. Five days later the comet will reach perihelion (clos-

est approach to the Sun), coming within roughly 28 million miles of our life-giving star. Just before perihelion PANSTARRS will become visible to northern hemisphere stargazers. The comet’s dust and ion tails, as well as the coma, could still be very well developed after this close encounter. (Visit <http://www.shadowandsubstance.com/> for a great animation showing the projected path of this comet through the inner solar system.)

On March 8 you might still be able to catch a glimpse of Comet PANSTARRS very low in the west after sunset. You’ll need a completely unobstructed western view, since the comet will be within five degrees of the horizon (half a fist held at arm’s length provides this approximate unit of measure) just after sunset. The tail will extend up and to the south (left). Each successive night the comet will appear a little higher above the horizon and farther to the north (right) as the comet recedes from the Sun and Earth on its journey back into deep space. All the while the comet’s brightness will diminish even further and the tail will shorten as each day passes.

On the 12th an exquisite waxing crescent Moon (only one percent illuminated) will complement the sky scene, although it may be extremely difficult to observe in a bright twilight sky due to its downgraded brightness. However, on the following evening the Moon will be higher in the sky, and the comet's tail may sweep behind the Moon's disk. That's the night you want to be able to snap a few images with your camera.

On the 15th the comet's tail will point perpendicular to the sunset location. Afterwards the tail will point up towards the right. By March 30 the comet's tail may extend to a position just below the Andromeda Galaxy. From April 2-4 the nucleus of Comet PANSTARRS will pass by the Andromeda Galaxy. (Keeping in mind that PANSTARRS' forecast brightness has been significantly reduced, many of the early to

mid-March viewing opportunities noted above may be compromised.)

While a dark sky might still show the comet after April 4 depending on how well it performs, binoculars and telescopes will be able to follow it for some time afterwards as PANSTARRS moves into a circumpolar sky, never setting below our horizon in southern New England. The Shadow and Substance website noted above also has an animation showing the comet's position against the western horizon through the first week of April.

When Comet PANSTARRS is at its best and a naked-eye object, it will be too low in the sky for most of the local observatories. However, as it rises away from the western horizon it may become accessible. Please check the following local observatory websites to see if any observing opportunities will be available. Accessibility

conditions permitting, Seagrave Memorial Observatory (<http://www.theskyscrapers.org>) in North Scituate is open every clear Saturday night. Ladd Observatory (<http://www.brown.edu/Departments/Physics/Ladd/>) in Providence is open every Tuesday night. Frosty Drew Observatory (<http://www.frostydrew.org/>) in Charlestown is open every clear Friday night. Winter hours for Seagrave and Ladd are 7:00-9:00 p.m., while Frosty Drew begins at 6:00 p.m. with no set end time.

Make every attempt to catch a glimpse of Comet PANSTARRS, for it is not expected to return to the inner solar system for perhaps 110,000 years!

Viewing updates will be forthcoming as warranted by the comet's performance.

Keep your eyes to the skies!



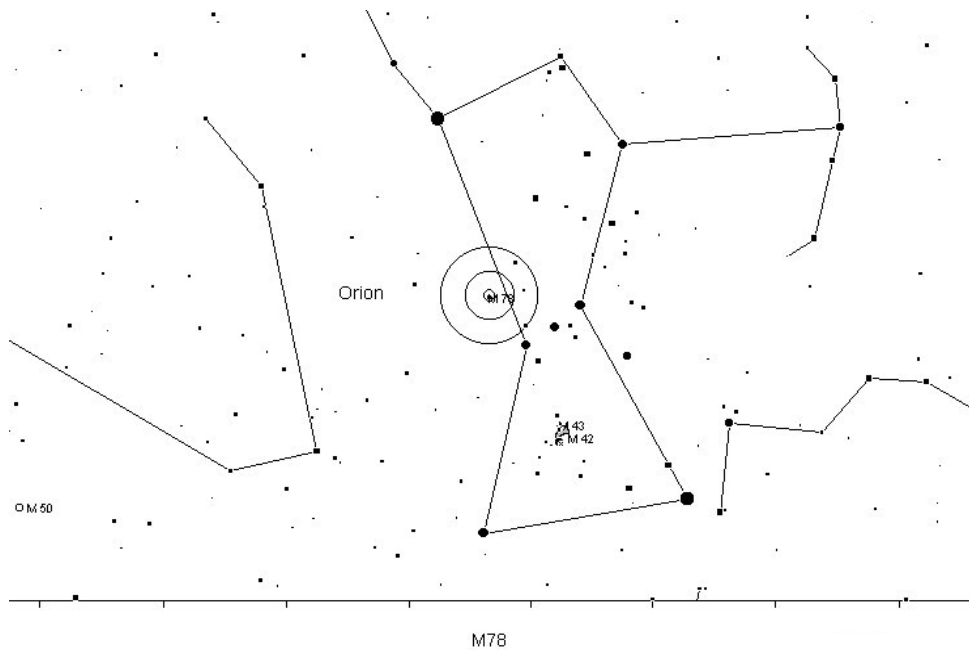
Reflection Nebula in Orion

M78

Glenn Chaple

In his guidebook *The Messier Objects*, author Stephen James O'Meara confides, "Before beginning this book, I had looked at M78 only once." Yours truly hasn't fared much better. Prior to writing this column, I had seen M78 on three occasions –first in the late 1970s when I viewed all of the Messier objects with a 3-inch reflector, and more recently during two Messier Marathons.

It's understandable that M78 should be overlooked by backyard astronomers. Not far away is the much brighter, much



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Photo by Mario Motta

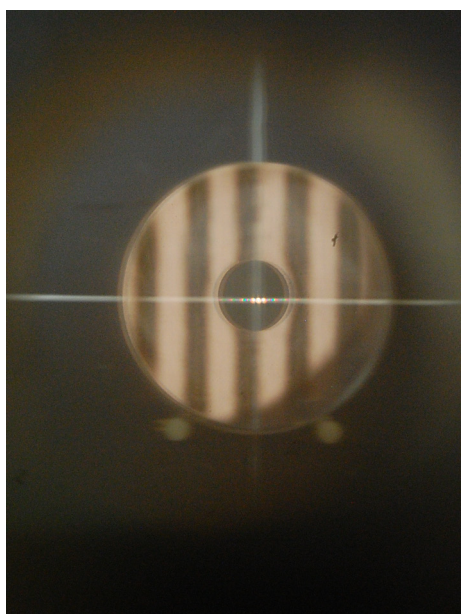
more easily found, and much, much more spectacular M42 - the Orion Nebula. This deep-sky masterpiece was spectacular even through the eyepiece of my 3-inch scope. M78, on the other hand, was a faint blob that seemed to sport an off-center nucleus.

At a recent star party, I had the opportunity to look at M78 with a 16-inch Dobsonian-mounted reflector. The view was amazing! Two "eyes" (a pair of 10th magnitude stars that illuminate the nebula) peering out of a misty patch of light took on the ominous form of a cosmic ghost! The eerie

visual effect was repeated when I made a follow-up observation with my 10-inch scope.

The accompanying finder chart shows the location of M78 relative to Orion's Belt. At 8th magnitude, it covers an area 6' by 8' and is best seen with magnifications of 100x or more. A scan of the immediate area will pick up several other nebulas, including NGC 2071 situated 15' NNE of M78. M78 was discovered by Pierre Mechain early in 1780. He was the first to see it – why not be the latest?

ATM UPDATE



Bob Horton completed a 6-inch f/6 mirror at Dick Parker's ASGH mirror workshop on Saturday, February 16, which was his tenth completed mirror at the workshop.



Tackling the Really BIG Questions

By Diane K. Fisher

How does NASA get its ideas for new astronomy and astrophysics missions? It starts with a Decadal Survey by the National Research Council, sponsored by NASA, the National Science Foundation, and the Department of Energy. The last one, New Worlds, New Horizons in Astronomy and Astrophysics was completed in 2010. It defines the highest-priority research activities in the next decade for astronomy and astrophysics that will “set the nation firmly on the path to answering profound questions about the cosmos.” It defines space- and ground-based research activities in the large, midsize, and small budget categories.

The recommended activities are meant to advance three science objectives:

Deepening understanding of how the first stars, galaxies, and black holes formed,

Locating the closest habitable Earth-like planets beyond the solar system for detailed study, and

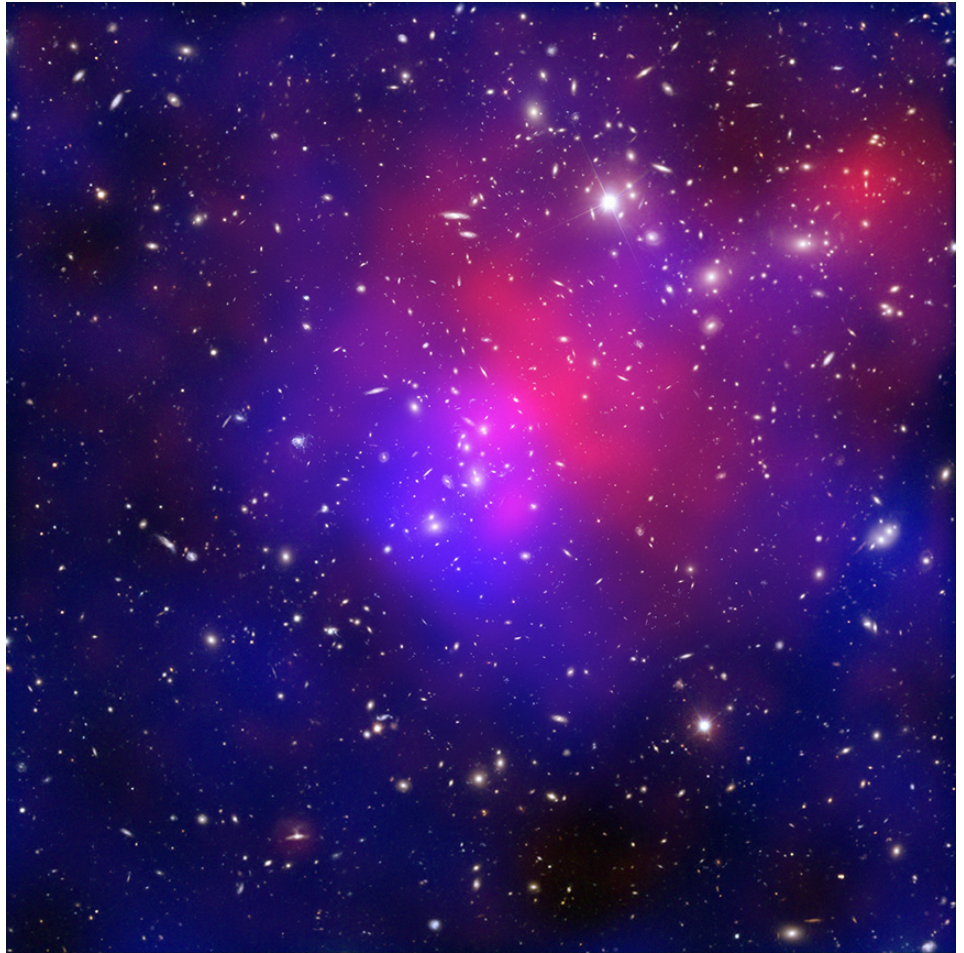
Using astronomical measurements to unravel the mysteries of gravity and probe fundamental physics.

For the 2012-2021 period, the highest-priority large mission recommended is the Wide-field Infrared Survey Telescope (WFIRST). It would orbit the second Lagrange point and perform wide-field imaging and slitless spectroscopic surveys of the near-infrared sky for the community. It would settle essential questions in both exoplanet and dark energy research and would advance topics ranging from galaxy evolution to the study of objects within the galaxy and within the solar system.

Naturally, NASA's strategic response to the recommendations in the decadal survey must take budget constraints and uncertainties into account.

The goal is to begin building this mission in 2017, after the launch of the James Webb Space Telescope. But this timeframe is not assured. Alternatively, a different, less ambitious mission that also address the Decadal Survey science objectives for WFIRST would remain a high priority.

The Astrophysics Division is also doing studies of moderate-sized missions, including: gravitational wave mission concepts



Clusters of galaxies collide in this composite image of “Pandora’s Cluster.” Data (in red) from NASA’s Chandra X-ray Observatory show gas with temperatures of millions of degrees. Blue maps the total mass concentration (mostly dark matter) based on data from the Hubble Space Telescope (HST), the European Southern Observatory’s Very Large Telescope (VLT), and the Japanese Subaru telescope. Optical data from HST and VLT also show the constituent galaxies of the clusters. Such images begin to reveal the relationship between concentration of dark matter and the overall structure of the universe.

that would advance some or all of the science objectives of the Laser Interferometer Space Antenna (LISA), but at lower cost; X-ray mission concepts to advance the science objectives of the International X-ray Observatory (IXO), but at lower cost; and mission concept studies of probe-class missions to advance the science of a planet characterization and imaging mission.

For a summary of NASA’s plans for seeking answers to the big astrophysics

questions and to read the complete Astrophysics Implementation Plan (dated December 2012), see <http://science.nasa.gov/astrophysics/>. For kids, find lots of astrophysics fun facts and games on The Space Place, <http://spaceplace.nasa.gov/menu/space/>.

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





Astronaut's kids see dad's office from Ladd

By Kevin Stacey, Brown University

Space Station Commander Kevin Ford exchanged Valentine's Day greetings with his adult kids Heidi and Anthony — he speeding by about 220 miles above Providence and they watching him fly past from Brown's Ladd Observatory.

PROVIDENCE, R.I. [Brown University] — Rhode Islanders with their eyes skyward around 6 p.m. last Thursday might have noticed a curiously bright speck speeding across the evening sky. No, it wasn't a UFO or an asteroid. It was the International Space Station, and for Providence resident Heidi Ford, it was dad's office.

Heidi's father Kevin Ford is currently the commander of the ISS. And with the help of Brown's Ladd Observatory and astronomer Robert Horton, Heidi and her brother Anthony, who was visiting from Houston, got to see last week's flyby close up while they talked to their dad on the phone.

"One of the things [Anthony and I] like to do is to pop outside to watch dad fly over, which you can do on occasion when the timing is just right," Heidi said. "We were looking at the schedule to see when the flyover would be so we could go see him. I remembered that the Ladd was open to the public, so I thought I'd call over there and see if this is something we could visit the Ladd to do."

Horton was happy to oblige. The Ladd's main telescope doesn't have the ability to track fast-moving objects like the ISS, but Horton had a few at home that could do the job. So he set one of them up at the

Ladd and prepared to track the station during its six-minute pass.

Just before the flyby, Heidi's phone rang. It was her dad calling from the station.

"He told her, 'I'm over Texas. I'll be there in a few minutes,'" Horton recalls. "Sure enough the point of light appeared in the sky and we started to track it. They could look through the eyepiece and actually make out the solar panels while they were talking with him."

Heidi had let her dad know earlier in the day the she and Anthony would be watching. "He's able to call down whenever he has a break in his schedule," she said. "It worked out that he was able to call then and we were able to talk as he flew over."

It was the first time Heidi and Anthony had gotten to see the ISS close-up through a telescope.

Not only that, but father and kids were able to exchange pictures from their own perspectives. The ISS had flown over Rhode Island earlier in the day. Commander Ford had taken a few pictures out the window that he e-mailed down. In return, Heidi and Anthony sent a few pictures Horton had taken earlier with his telescope to show what they were seeing.

It all made for a very special Valentine's Day flyby, Heidi said. She and her brother were also quite impressed with Ladd Observatory.

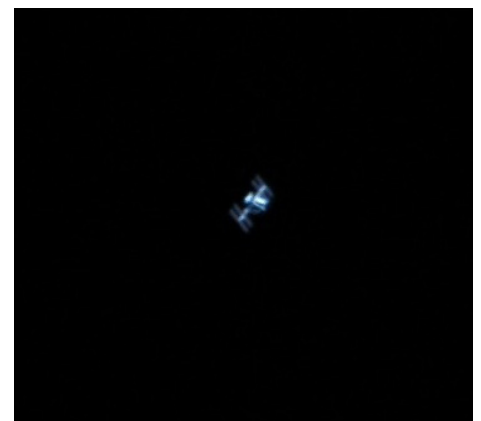
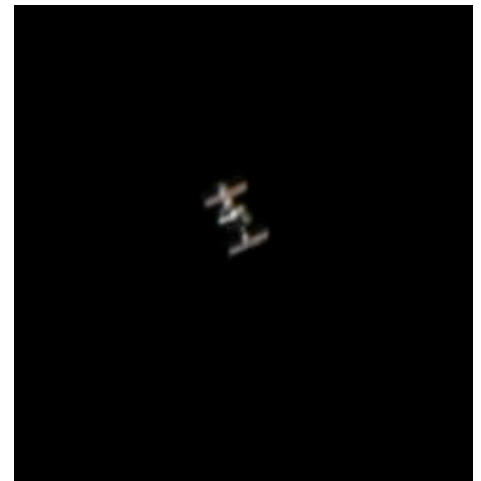
"Obviously I'm pretty interested in space in general just because of my dad's career," Heidi said, "but we were still really shocked by how well we were able to see the moon and stars and even Jupiter through the Ladd's telescope — especially when you think about it being a century old. It's a really great thing in the middle of Providence that I think a lot of people don't realize is there."

It was a special evening for Horton as well, even though he found himself a little tongue-tied when Heidi handed him the phone to talk with her father.

"I can think of a thousand questions to

ask him now that I'm not on the phone with him," Horton said. "But, frankly, I was awestruck at the time."

The observatory is open to the public every Tuesday from 7 to 9 p.m. The ISS website can figure out when the Space Station will again be visible from Providence or any other location: spaceflight.nasa.gov/realdata/sightings/index.html.



Rhode Island on a clear day
Commander Ford photographed
Narragansett and Mt. Hope bays
from the International Space Station.
His adult kids watched him fly by
from the Ladd Observatory, near the
top edge of the photo, just right of
center.

Opposite ends of the telescope
Commander Ford had the grand
view of Rhode Island. Heidi and
Anthony could just make out the
Space Station's solar panels through
the telescope at Ladd Observatory.
Credit: Robert Horton/Brown
University

FEBRUARY REPORTS



Secretary

Tom Thibault

Skyscrapers January Meeting Minutes – 2/1/13

President Ed Haskell, called the Skyscrapers January Members Meeting to Order at 7:30PM.

President, Ed Haskell: Ed welcomed the attendee's to the Skyscrapers Members Meeting.

Nomination Committee Chairman and Historian, Dave Huestis: Election Committee Members are Bob Forgiel and Jim Hendrickson. • All Positions are open and anyone with interest can contact either him, Bob, or Jim. • Preparations have begun around planning for the 100th Anniversary of Seagrave Observatory. • Dave requested the membership to submit any pictures they may have relating to the Observatory's history or past events and noted visitors by June 1st. • Dave showed a graph of Sun Spot Count result to date from (5) contributors, trend is down which may be an indicator peak has passed. • Dave noted he has read Comet Panstarrs projected brightness has been downgraded, but optimism for Comet ISON is still high.

2nd Vice President, Kathy Siok: The upcoming Science Fair is looking Judges, those with an interest can contact Kathy. • Announced the name tags project is continuing to improve and anyone needing a tag should inform her. • Anyone planning to bring refreshments to the meetings, feel free to contact her to coordinate items.

Trustee, Steve Siok: No Public Viewing Saturday 2/5/13. • Automation Project continues to progress, any members interested in contributing are invited to join the working committee.

Good of the Organization: Member Observations • Jim Crawford noted that (3) copies of the speakers presentations are made, (1) for the presenter, (1) for the library, and one for our archives. • Al Hall informed all of Dick Parker's Mirror Making Program and indicated space was available for those with an interest. • Francine Jackson reminded all that Frosty Drew has Public Viewing Nights on Friday evenings and invited all to come and enjoy a night of viewing at the Darkest Skies in Rhode



Ralph Milliken

Island.

Speaker, Ralph Milliken Provided a great presentation on the progress of the Curiosity Rover and indicated he would return in the future with updates.

Ed Haskell closed the meeting at 9:13PM.

Submitted by Tom Thibault - Secretary

Skyscrapers Board Meeting Minutes – 2/19/13

Attendees: Ed Haskell, Bob Horton, Kathy Siok, Tom Thibault, Jim Hendrickson, Pat Landers, Steve Siok, Conrad Cardano and Dave Huestis

Meeting called to order at 7:03PM Off-site.

Bob Horton, 1st VP: Members Meeting speakers through June have been confirmed. • Members should be encouraged to share their Projects though Member Presentations. • Meeting will begin at 7:00 with Refreshments after Aprils Meeting. Speakers at 7:30

Kathy Siok, 2nd Vice President:

The Scituate Community has been reserved in October for AstroAssembly. • The Caterer has been booked for the event. • AstroAssembly theme was discussed and possible guest speakers.

Tom Thibault, Secretary: No items to report.

Dave Huestis, Historian/Nominations Chairman: Committee has not been contacted by any interested members. • Discussed the upcoming 2014 Centennial Celebration with a focus on pursuing ideas of possible mementos to commemorate the occasion.

Steve Siok, Trustee/Automation Chairman: Recent weather has slowed

progress, but work is continuing. • Meeting is being scheduled with Josh Lake to discuss his experience in Automating the Pomfret School.

Ed Haskell, President: Discussed creation of a Membership Committee • Committee would be responsible for Tracking, Accounting, Recruitment, and PR • Kathy Siok and Pat Landers to outline the committee's responsibilities. • Discussed preparation of the 2013/14 Operating Budget to be presented at the March Members Meeting. • Asked Jim Hendrickson to pursue PayPal as a means to allow Membership Dues. • Membership Dues are due within 3 months of renewal date; there is a 3 month grace period. Failure to do so within 6 months will require re-application for membership. • Upcoming non-member recognitions were discussed.

Trustees: Seagrave will be closed till snow cover has cleared. • Conrad Cardano will be re-scheduling the Telescope Workshop to April. • Steve Siok suggested the society prepare for the ISON Comet and the accompanying public interest it will generate.

Misc: Sale of unused Skyscrapers equipment will be reviewed.

Meeting adjointed at 9:30PM

Submitted by Tom Thibault - Secretary

For Sale



Meade 12" LX200

Contact Bob Stahlbush 401-965-7739
rstahlbush@gmail.com

Upcoming Meetings



Treasurer

Lloyd Merrill

Category Description 4/1/2012-2/17/2013

INFLOWS

Astro Assem	
Banquet-Registration	2,648.00
Grille	327.00
Misc	147.00
Raffle	600.00
TOTAL Astro Assem	3,722.00
Donation	
Misc Donations	903.05
Refreshment Donation	5.00
Starparty Donations	1,210.00
TOTAL Donation	2,118.05
Dues	
Family	730.00
Junior	30.00
Regular	1,400.00
Senior	620.00
TOTAL Dues	2,780.00
Misc Income	
Book Income	33.00
Interest Inc	32.24
Sale of Items	240.00
TOTAL Misc Income	305.24
TOTAL INFLOWS	8,925.29

OUTFLOWS

Astro Assem Exp	
Caterer	960.00
Food Fri-Sat	43.19
Grille	208.08
Misc	12.95
Reception	127.24
Speaker Fee	108.00
Tent Rental	585.00
TOTAL Astro Assem Exp	2,044.46
Facilities Expense	
Electric	146.66
Insurance, Property	2,573.00
Propane	80.25
Property Maintenance Fund	445.00
Trustee Exp	888.26
TOTAL Facilities Expense	4,133.17
Misc Expenses	
Corporation, State Fee	22.00
Postage and Delivery	18.00
Refreshment Expense	250.78
TOTAL Misc Expenses	290.78
TOTAL OUTFLOWS	6,468.41
OVERALL TOTAL	2,456.88
Cash and Bank Accounts	2/17/2013
	Balance
Capital One Bank	12,295.54
Checking	10,186.84
PayPal Account	0.00
TOTAL ASSETS	22,482.38

Friday, April 5 at Seagrave Memorial Observatory

Glenn Chapple will give a presentation titled "Double stars are twice the fun!" in which he will cover the nature of double stars, the history of double star astronomy, and techniques for observing them.

Friday, May 3 at Seagrave Memorial Observatory

William Vaughan, a graduate student in geological sciences at Brown, will give a talk about what the MESSENGER mission to Mercury has revealed concerning the interior structure, chemistry, and the geological processes operating on Mercury.

Saturday, June 1 at Seagrave Memorial Observatory

Our June speaker will be David Gow, who did the restoration work on the Ladd Observatory clock drive system.

Skyscrapers "Double Star Challenge"

April 5, 2013 (rain date is the next clear Friday evening)

For our April meeting, members are encouraged to set up their telescopes at Seagrave for a "Double Star Challenge", and we can have some fun testing the optical limits of various telescopes, whether commercially or home-made. Many of us believe that our 8" Clark telescope to have some of the finest optics to be found. Let's see how well the Clark performs compared to other telescopes. Perhaps someone's telescope has even better optics?

So plan on spending this enjoyable spring evening at Seagrave Observatory. The spring peepers will be singing in the pond next door, and we'll have a great time observing together.

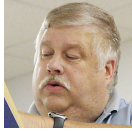
The "Double Star Challenge" will begin immediately after our April meeting, around 9pm.



The photo of Jupiter attached was taken by Tom Thibault at around 6:30PM on 1-7-13. It came out rather well and thought I would share. The photo shows Jupiter with its (4) Galilean moons, Europa is the closest on the right, followed by Callisto and Io. The moon far to the left by itself is Ganymede. Note the dark spot on the northern hemisphere, it is the shadow of Europa being cast onto the cloud surface of the planet.

The photo was captured through a C11 SCT with a Orion webcam. It is the results of images from 6 – 20 sec video's that had 25-50 quality frames stacked each. Frame stacks were processed through Registax, resulting in 12 images that were stacked and processed through MaximDL, with final tweaks through Photoshop.

Skyscrapers Sunspot Count Project Update



Dave Huestis

I am providing the following web sites for you to use to help refine your sunspot counts.

All in all everyone is pretty close. There is not much variance between the five observers.

Sometimes it may be difficult to determine whether one cluster is one group or two.

You can use the following sites to help make that determination.

I only want you to reference these after you have made an attempt on your own to provide a count.

By doing so I think it will help you to become a better observer of the groups and spots.

Submit what you originally counted, but perhaps note the difference in the comments section on the spreadsheet.

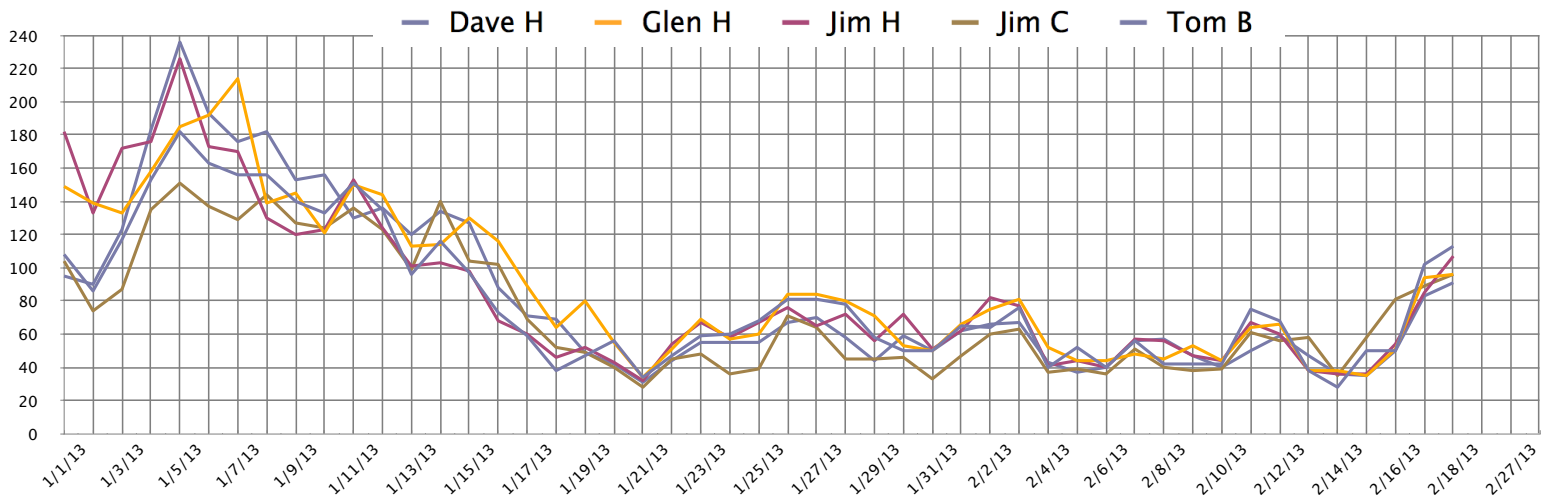
http://obs.astro.ucla.edu/cur_drw.html

<http://www.specola.ch/e/drawings.html>

Be careful, the images provided above are reversed. Takes a little getting used to.

On the SOHO screen, click on HMI Magnetogram, then same as usual. This will show a magnetogram image of the solar disk. Read the info about this. Briefly, the white and dark polarities (+ or -) of a group can help determine if a cluster is one group or two. However, sometimes it can still be tricky and inconclusive. Notice the reversal of polarities between north and south solar latitudes. You can refresh your knowledge about the magnetogram images by referencing my solar lab doc.

	Dave	Glen	Jim H	Jim C	Tom B
1/1/13	108	149	182	104	95
1/2/13	86	139	133	74	90
1/3/13	117	133	172	87	123
1/4/13	153	158	176	135	183
1/5/13	182	185	226	151	236
1/6/13	163	192	173	137	193
1/7/13	156	214	170	129	176
1/8/13	156	139	130	144	182
1/9/13	140	145	120	127	153
1/10/13	133	121	123	124	156
1/11/13	151	150	153	136	130
1/12/13	135	144	124	123	136
1/13/13	96	113	101	99	120
1/14/13	116	114	103	140	134
1/15/13	97	130	98	104	127
1/16/13	73	116	68	102	88
1/17/13	59	89	60	69	71
1/18/13	38	64	46	52	69
1/19/13	47	80	52	49	49
1/20/13	56	55	43	40	42
1/21/13	34	34	32	28	31
1/22/13	47	51	54	45	44
1/23/13	59	69	67	48	55
1/24/13	60	57	58	36	55
1/25/13	68	60	67	39	55
1/26/13	81	84	76	71	67
1/27/13	81	84	65	64	70
1/28/13	78	80	72	45	58
1/29/13	58	71	56	45	44
1/30/13	50	53	72	46	59
1/31/13	50	50	51	33	50
2/1/13	65	66	62	47	62
2/2/13	64	75	82	60	66
2/3/13	76	81	77	63	67
2/4/13	40	52	41	37	43
2/5/13	52	44	44	39	37
2/6/13	40	44	40	36	40
2/7/13	56	48	57	51	56
2/8/13	42	45	56	40	57
2/9/13	42	53	47	38	47
2/10/13	42	44	44	39	40
2/11/13	75	64	67	61	50
2/12/13	68	66	60	56	59
2/13/13	38	38	38	58	47
2/14/13	28	38	36	35	36
2/15/13	50	35	36	58	35
2/16/13	50	51	54	81	50
2/17/13	102	94	85	89	83
2/18/13	113	96	107	96	91



Constitution

ARTICLE I: NAME

The name of this Society shall be "Skyscrapers, Inc. (Amateur Astronomical Society of Rhode Island)."

ARTICLE II: OBJECT

The object of this Society shall be to educate the membership and general public on matters pertaining to astronomy. It shall be an educational, nonprofit organization.

ARTICLE III: LEGAL STATUS

This Society is incorporated as an educational not-for-profit corporation under the laws of the State of Rhode Island conforming to IRS Section 501(c)(3).

ARTICLE IV: MEMBERSHIP

§1 Membership classes in this Society shall be Junior, Regular, Family, Senior, and such other classes as are specified in the By-Laws.

§2 An applicant for Junior, Regular, Family, and Senior shall submit the standard form of Membership application together with noted dues, shall be proposed by an existing member at a regular meeting, and shall become a member upon receiving a favorable majority vote at a subsequent regular meeting of the Society. The proposed member must be present at both the regular meetings just described.

§3 Junior members shall be persons under 18 years of age, and upon reaching 18 years of age shall automatically become Regular members without payment of additional dues for the dues year in which this occurs. Junior members shall be entitled to all the privileges of Regular members except those of voting and holding office (except such office as is specifically designated for Junior Members).

§4 Regular members and Senior members shall have the privilege of voting and holding office. Regular members must be 18 years of age or older; senior members must be 65 years of age or older.

§5 Family members shall be Regular members who pay the additional dues prescribed. They shall be entitled to all the privileges of Regular and Senior members. Family membership provides voting privileges for (2) two individuals over 18 years of age, who are to be listed individually on the membership list.

§6 Honorary membership may be conferred upon any person for unusual and outstanding accomplishment in science. It may be conferred upon a non-member for outstanding contribution to the Society. Honorary membership is conferred by unanimous vote of those present at any Annual Meeting, the name having been proposed at a previous regular meeting of the Society. An honorary member shall have all the privileges of a Regular member except those of voting and holding office. This

membership shall be for life and no dues shall be required.

§7 Membership in this Society shall provide all classes the right to have guests attend and participate in all membership functions

excluding activities requiring vote by the membership.

§8 Membership Dues in this Society are as listed within the Membership Application.

§9 An individual may hold more than one class of membership simultaneously.

ARTICLE V: OFFICERS

§1 The officers shall consist of a President, First Vice-President, Second Vice-President, Secretary and Treasurer. Their duties shall be such as are implied by their respective titles, and as prescribed by the By-Laws.

§2 Qualifications: Officers must have been voting Members for at least one year prior to nomination.

Nominees for an office should have experience in the area of responsibility of the office. This may be a result of one's job or previous successful experience in a similar position in another organization. Nominees may be asked to provide this information upon the request of the nominating committee.

§3 The officers shall be elected by secret ballot at the Annual Meeting for a term of one year or until their successors are elected and take office. A majority of valid ballots cast shall be required to elect.

§4 No member shall hold the same office for more than two consecutive full terms.

§5 Vacancies occurring in office may be filled by appointment of the President until successors are elected at the next annual Election and take office. Should the president resign, the First Vice-President, with the assistance of the remaining board members should conduct the business of the Society until the elections at the next annual Election.

ARTICLE VI: MEETINGS

§1 The Annual Meeting shall be held in April of each year at the call of the President. The membership shall be notified 10 days in advance thereof.

§2 Regular meetings shall be held at the call of the President

§3 Special meetings may be called by the President or on a petition directed to the Board of Directors and signed by any 10 voting eligible members. The call shall state the pending business and no other business shall be transacted. The call shall be provided to the membership at least 10 days in advance of the special meeting.

ARTICLE VII: BOARD OF DIRECTORS

There shall be a Board of Directors, whose membership and powers shall be as prescribed by the By-Laws.

ARTICLE VIII: BOARD OF TRUSTEES

There shall be a Board of Trustees, whose membership and powers shall be as prescribed by the By-Laws.

ARTICLE IX: AMENDMENTS

The Constitution may be amended at any regular meeting by two-thirds (2/3) vote of all voting eligible members present.

provided said amendment has been presented in writing and read at a previous regular meeting, and a notice incorporating said amendment has been provided to the membership

ARTICLE X: BUDGETS AND EXPENDITURES

§1 The President and Board of Directors shall present a proposed yearly operating budget for membership approval at the annual meeting, or other subsequent duly called meeting.

§2 The Board of Directors shall have the authority to approve unbudgeted expenditures only if these expenditures can be accommodated without exceeding the approved budget, in which latter case the approval of the Society is required at a duly constituted meeting thereof.

§3 The Board of Directors shall have the authority to approve any expenditure deemed necessary to protect the assets of the Society during emergency situations. When an emergency situation occurs, the Board of Directors is required to inform the Society of the nature of the emergency, the steps taken to protect the property of the Society, and the amount of money that was spent, at the next monthly meeting.

ARTICLE XI: CODE OF CONDUCT

Any individual that violates Local, State, or Federal Law, or conducts themselves in any behavior that compromises the reputation of the Society, will be referred to a disciplinary board consisting of the Board of Directors and the Board of Trustees.

Bylaws

ARTICLE I: FISCAL YEAR & DUES

§1 The fiscal year shall be from April 1 through the following March 31. The dues year shall be the same as the fiscal year.

§2 Dues are payable on April 1 for the dues year then beginning. The annual dues shall be set out in the Membership Application (revised annually). Persons applying for membership during the months of April through December pay the above stated annual dues for the current fiscal year (April – March). Persons applying for membership during the months of January through March pay the above stated annual dues, but their membership extends through the next fiscal year. Persons making donations over and above their membership dues shall be called Contributing Members. Four distinguished categories of Contributing Members shall be designated: Sponsors (\$60); Supporters (\$100); Patrons (\$250); and Benefactors (\$500).

§3 The Secretary shall, with the approval of the Board of Directors, drop from membership any member who is three months or more in arrears. Members who are not current with their dues may not vote.

ARTICLE II: OFFICERS

§1 The regular term of all Officers, Members-at-Large and Junior Trustee shall commence at the adjournment of the April meeting.

§2 The President may at any time appoint such additional officers,

chairmen and committees as may be required. The terms of all of these (except, as appropriate, special committees) shall expire with the term of the appointing President. The President shall be, ex officio, a member of all committees.

§3 In the absence of the President the First Vice-President shall assume the duties of the President. In the absence of both, the second Vice-President shall assume the duties of the President.

§4 The President shall:

1. Preside over all meetings of the Society and Board of Directors meetings.
 2. Establish an operating budget, with the assistance of the Board of Directors, for approval by the members of the Society, per Article X of the Constitution.
 3. Oversee the business and legal responsibilities of the Society.
 4. Be the official spokesperson for the Society.
- §5** The 1st Vice President shall:
1. Provide programs for monthly meetings.
 2. Assist the President in communicating to the general public the activities of the Society.
- §6** The 2nd Vice President shall:

1. Act as the Chairperson of the AstroAssembly Committee.
2. Submit a proposed operating budget for AstroAssembly to the Board of Directors prior to the Annual Meeting.
3. Have the authority to direct the Treasurer to pay any expenses associated with the operation of AstroAssembly, providing said expenses have been given prior approval by the Society, per the approved operating budget, as defined by Article X of the Constitution, or by motions approved by the members of the Society at any regular monthly meeting.
4. Submit a report of all expenses and income from AstroAssembly at the December monthly meeting.

§7 The Secretary shall:

1. Take the minutes of all meetings, regular, special, Annual and Board of Directors, and submit a written report to be published in the Skyscraper newsletter.
2. Maintain an accurate, classified list of the membership of the Society. Membership Applications shall be submitted to the Secretary who shall transmit the attached dues to the Treasurer.
3. Notify applicants for membership of their election or rejection.
4. If required by the President, notify all additional officers, chairmen and committees of their appointment.
5. Send all required notices to the membership.
6. In general, conduct the correspondence of the Society.
7. Have custody of the records of the Society.

§8 The Treasurer shall:

1. Pay on his/her authority any routine bills for periodic, recurring expenses as defined by the operational budget, per Article X of the Constitution.
2. Pay any other non-recurring bills that have been approved.
3. Keep an itemized account of all receipts and disbursements and submit a written report to be published in the Skyscraper newsletter.
4. Submit an annual report of all receipts and disbursements for

the past fiscal year at the Annual Meeting. Auditors appointed by the President shall audit this report, and the report of the auditors shall be submitted at the next regular monthly meeting.

ARTICLE III: BOARD OF DIRECTORS

§1 The Board of Directors shall consist of the President, First Vice-President, Second Vice-President, Secretary, Treasurer, two Members-at-Large, and the Immediate Past President (who shall not have a vote).

§2 The Members-at-Large shall be elected at the Annual Meeting, and their terms shall be the same as those of the officers.

§3 The powers of the Board of Directors shall be:

1. To advise the President and assist in carrying out the duties of the office.
2. To take any action that might be taken by the Society, unless such action is reserved to the Society at Large in the Constitution or By-Laws.

§4 The Board of Directors shall meet at the call of the President or on application of any two members. The President shall be, ex officio, chairman.

§5 Any Officer, Committee Member and/or appointed Board Member upon the termination of their duties or vacancy of position shall immediately turn over all Society records, property, files, documents, policies, etc. to the President for transmittal to the appropriate party.

ARTICLE IV: BOARD OF TRUSTEES

§1 The Board of Trustees shall consist of three Trustees, the term of each to be three years. No Trustee shall serve two consecutive terms. One Trustee shall be elected each year at the Annual Meeting. The Trustee with the longest continuous service shall be the Senior Trustee and serve as the Chairperson of the Observatory Committee.

Vacancies occurring in office shall be filled by the Trustees in consultation with the President. That appointment will serve out the remaining term of the vacated office. Should the Board of Directors disagree with the appointment, that decision may be overturned. See Section 3 below.

§2 The Board of Trustees shall have custody of the grounds, structures and equipment belonging to the Society. They may at any time establish or amend rules for use of said grounds, structures and equipment, and establish policies for members comprising the Observatory Committee. They may at any time grant or withdraw permission to individuals to use the grounds, structures and all equipment belonging to the Society.

§3 The Board of Trustees shall be responsible to the Society. Decisions of the Board of Trustees may also be overruled by five members of the Board of Directors, all voting in the affirmative.

§4 The Board of Trustees shall conduct an annual inventory of equipment and property belonging to the Society, and submit said inventory list to the Board of Directors prior to the Annual Meeting.

ARTICLE V: QUORUM

Twelve (12) voting eligible members shall constitute a quorum for the transaction of business at any meeting as defined in Article VI of The Constitution. At no time shall the lack of a quorum prevent those present from proceeding with the program of the day or evening.

ARTICLE VI: RULES OF ORDER

§1 The rules contained in Robert's Rules Of Order, Revised shall govern the Society in all cases to which they are applicable and in which they are not inconsistent with the Constitution and By-Laws.

§2 When a vote is called for, only voting eligible members may vote. Membership classes conferring the right to vote are enumerated in ARTICLE IX: DEFINITIONS.

ARTICLE VII: DISSOLUTION

Upon dissolution of the corporation (an act which can only be ordered by an open vote of two-thirds of the Board of Directors and confirmed in a duly constituted meeting by the membership of the Society by secret ballot two-thirds of the members present voting in the affirmative, or by order of a court of competent jurisdiction, the Board of Trustees shall after paying or making provisions for the payment of all liabilities of the corporation as determined by the Board of Directors, arrange for the disposal of all of the assets of the corporation in such a manner as to comply with, or to such organization or organizations organized and operated exclusively under, Section 501(C)(3) of the Internal Revenue Code of 1954.

ARTICLE VIII: AMENDMENT

These By-Laws may be amended as necessary by secret ballot at any regular or duly called special meeting, sixty percent (60%) of the quorum present and qualified to vote assenting.

ARTICLE IX: DEFINITIONS

§1 Where the terms NOTICE, PROVIDE, MAIL, or the past tenses thereof, appear in the Constitution or By-Laws such NOTICE and the act of making the notice available (MAIL and PROVIDE) include communication by US Postal service, Federal Express or another express courier, and email.

§2 Voting Eligible Members are those classified as Regular, Senior, Lifetime, and Contributing Members.

§3 Contributing Members. Contributing Members have made financial contributions beyond their regular dues. Four distinguished categories of Contributing Members shall be designated: Sponsors (\$60); Supporters (\$100); Patrons (\$250); and Benefactors (\$500).

§4 Lifetime Members. Lifetime membership may be bestowed upon a member for outstanding service to the Society by recommendation of the Board of Directors and approval by the voting eligible members. A Lifetime member is not required to pay dues, but has all the rights and privileges of a Regular member.

Skyscrapers, Inc. Membership Renewal

NAME _____
 ADDRESS _____

 CITY _____ ZIP _____
 STATE _____
 PHONE _____
 EMAIL _____

Membership Dues

	Annual Dues (choose one category)
JUNIOR (13-17) <input type="checkbox"/>	\$15
REGULAR <input type="checkbox"/>	\$50
FAMILY <input type="checkbox"/>	\$60
SENIOR (65+) <input type="checkbox"/>	\$25
CONTRIBUTING <input type="checkbox"/>	
(any amount in excess of annual dues is gratefully accepted as a donation) \$ _____	

Magazine Subscriptions*

Members may optionally subscribe to the following publications at a significant discount from their regular subscription rates.

*Magazine subscription rates subject to change at any time.

- ASTRONOMY \$34.00*
- SKY & TELESCOPE \$32.95*
 (\$10 savings)

TOTAL \$ _____
 (Make check payable to Skyscrapers, Inc.)
 Mail to: _____
 Membership Secretary
 Skyscrapers, Inc.
 47 Peepload Road
 North Scituate, RI 02857



Tom Thibault's observatory is shoveled out and the roof cleared after the blizzard of February 8, 2013

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.
- or • 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