



the Skyscraper

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September 2013

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



Friday, September 6

7:00pm at Seagrave Memorial Observatory

History and Significance of Planetary Photography

by Pete Schultz

In 1839 the famous astronomer Arago first announced the discovery of the daguerreotype with the prediction that perfect maps of the Moon would now be possible. This prophetic statement, however, would take more than 50 years to come true. Nevertheless, Arago's statement revealed that astronomers immediately recognized the importance of photography as a data-gathering tool. Even after 150 years, the photochemical process of capturing images ruled. Why was photography so important? What took so long for photographic astronomy to come into general use? How did astronomers give back to the field of photography? We'll explore these themes from the beginning of the daguerreian era to the dawn of the space age.

Peter H. Schultz received his Ph.D. in Astronomy at the University of Texas at Austin in 1972. After working as a research associate at the NASA Ames Research Center, and a Staff Scientist at The Lunar and Planetary Institute, he became an Associate Professor in the Department of Geological Sciences at Brown University in 1984. He was promoted to full Professor in 1994. In addition to his research and teaching responsibilities at Brown, Pete has served as Director of the Lunar and Planetary Institute Planetary Image Facility, and is currently the Director for both the Northeast Planetary Data Center and the NASA/Rhode Island University Space Grant Consortium.

In this issue

- 2 President's Message
- 3 September Sky Bites & Potential Observing Hazards
- 4 Perseids 2013 Observing Report
- 5 Observing Uranus in 2013
- 6 The Legacy of Kepler Space Telescope & Our Own Solar System's Robotic Explorers
- 7 Sunrise, Sunset
- 8 Binary Star: 61 Cygni
- 9 Open Cluster in Cepheus NGC 6939
- 10 Nova Delphini 2013
- 12 Secretary
- 12 Treasurer
- 13 Size Does Matter, But So Does Dark Energy



Photo by Tom Thibault



President's Message

Ed Haskell

I am concerned about the survival of Skyscrapers, Inc.

You may be surprised, or even shocked, at that statement, so let me elaborate.

Essentially all clubs and societies in the United States have been, for a number of years, experiencing growing problems in attracting and retaining new members. An effect of this is that the average age of the membership increases by nearly a year every year. At the same time, these organizations are finding it increasingly difficult to get members to engage, to the extent that the burdens of the organizations can be spread over a large enough base of volunteers so that needed work gets performed. It is predictable, then, that Skyscrapers will experience these same problems.

We are doing better than many on the first problem, attracting and retaining new members, and are experiencing the second problem of volunteerism but not as badly as many organizations. Well then, you might be forgiven for asking, why am I worried about our survival?

Since this is a societal problem it will continue to present challenges for us. If we do not adopt strategies to address these challenges then we will suffer predictable consequences.

This is not a sudden realization. My first action as President was to focus the Board's attention on increasing the real and perceived value of membership in Skyscrapers so as to retain current members and attract new ones. Based on Member feedback and new Membership applications those efforts have been appreciated and are showing results. However, if we are to continue and extend positive results we must have a sustained and expanded effort to deliver value

to current Members and to enlarge the pool of potential volunteers so the Society's work can be done. To this end I am taking the following actions.

As provided for in the Society's By-Laws (Article II, Section 2) I am creating the office of Vice- President, Membership, who will be responsible for the following:

1. In concert with the President, design and oversee initiatives for increasing membership, including but not limited to North Scituate based events, public outreach events, contact with local media and schools.

2. Devise activities for the benefit of existing members.

3. Maintain contact with members of less than 2 years, through email, in-person contact, the telephone, and other means, to ensure connection with the organization.

4. Be responsible for identifying newer members at all meetings, and performing in-person greeting and welcome at monthly meetings and member activities.

5. In concert with the Treasurer, identify non-paying or late-paying members and establish contact with same to learn member intentions or reasons for terminating membership.

I am appointing long-time Member Pat Landers to this important position who will serve until the end of my term (as provided for in the By-Laws). It is my intention to propose an amendment to the By-

Laws to make this position permanent in recognition of the essential role these responsibilities play in the success of the Society.

Please direct questions and ideas related to this new position to the undersigned. Thanks for all you do for Skyscrapers.



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

President

Ed Haskell haskell.ed@gmail.com

1st Vice President

Kathy Siok ksiok@cox.net

2nd Vice President

Bob Horton Robert_Horton@brown.edu

Secretary

Tom Thibault DeepSpaceViewer@aol.com

Treasurer

Linda Bergemann lbergemann@aol.com

Members at Large

Pat Landers pbl64@comcast.net

Ernie Ross ginnypony@juno.com

Trustees

Steve Siok ssiok@cox.net

Conrad Cardano cardanoc@verizon.net

Jim Crawford jrcrawford@cox.net

Outreach Coordinators

Conrad Cardano cardanoc@verizon.net

Bob Forgiel bforgiel@cox.net

Librarian

Alex Bergemann astroalex@verizon.net

Historian

Dave Huestis dhuestis@aol.com

Editor

Jim Hendrickson jim@distantgalaxy.com

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 **September 20** to Jim Hendrickson, 1 Sunflower Circle, North Providence, RI 02911 or e-mail to jim@distantgalaxy.com.

E-mail subscriptions

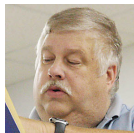
To receive The Skyscraper by e-mail, send e-mail with your name and address to jim@distantgalaxy.com. Note that you will no longer receive the newsletter by postal mail.



Seagrave Memorial Observatory Open Nights

Saturdays at 8:00 pm
weather permitting





September Sky Bites & Potential Observing Hazards

Dave Huestis

More times than not my column starts out as a weather report. It makes sense. Unless we have clear skies we can't observe the heavens with the naked-eye or with our telescopes. This fact is lost on some folks who visit the local observatories during cloudy nights. (More on this scenario later.) The spring weather was often cloudy and rainy, while most of Rhode Island received more than ten inches of rain in June. We experienced more thunderstorms than we have gotten over an entire summer season.

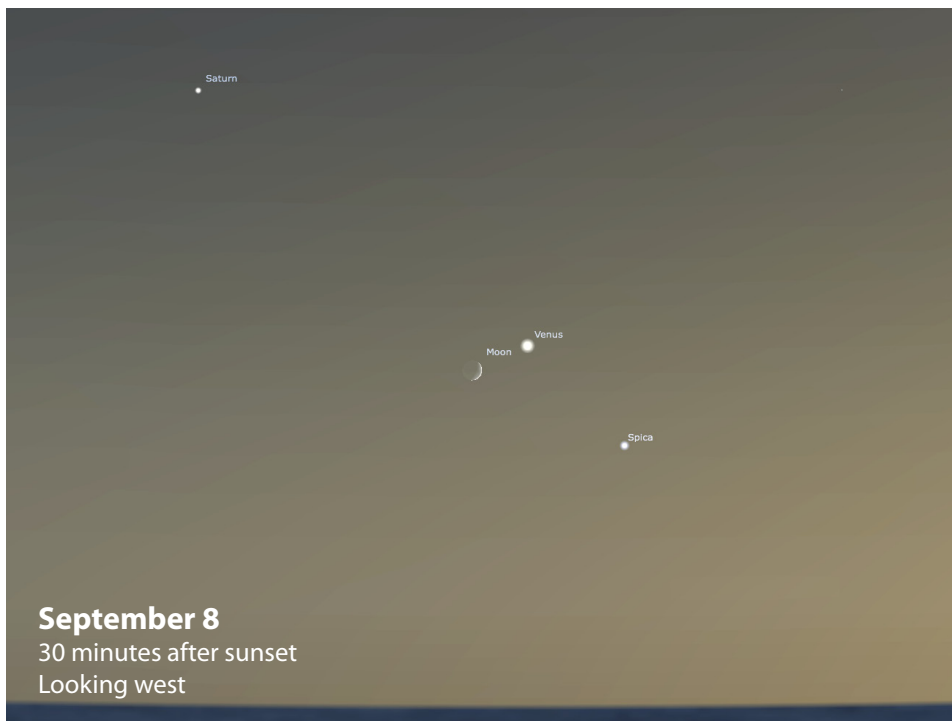
Add to that the heat, high humidity and hazy skies when it did clear, and local astronomers have not been happy campers. Mix in an abundance of mosquitoes and we can't wait for summer to end.

While the first frost is still some weeks away, now that September is here we soon expect cooler temperatures to prevail and the skies to become more transparent. The Harvest Moon (the Full Moon nearest the autumnal equinox, which itself begins on the 22nd at 4:44 p.m. EDT) occurs at 7:12

a.m. on September 19.

But before we get that far ahead, there are a couple of sky scenes I'd like you to look for at the beginning of the month. On September 1 you can still spot brilliant Venus less than ten degrees (a fist held at arm's length provides this measurement) above the horizon after sunset. To the left of it you'll see blue Spica, Virgo's brightest star. To Spica's upper left you can pick out the beautiful ringed-world Saturn. While this magnificent planet has been lost to many of the local observatories due to its low position in the sky, if you have a portable telescope you can still find a location with a good unobstructed western view to get some final views for this year during evening hours.

Venus and Spica will move closer to the horizon each night as the month progresses. On the 8th a waxing crescent Moon will pass within one degree down and to the left of Venus. While Spica will disappear from view around mid-month, Venus will remain just barely visible by month's end. While Saturn will draw closer to Venus, it will get no closer than three and a half degrees on September 18. By month's end



Phases of the Moon

New Moon

September 5 11:36

First Quarter Moon

September 12 17:08

Full Harvest Moon

September 19 11:13

Last Quarter Moon

September 27 03:55

4th Annual International Observe the Moon Night
 Saturday, October 12, 7pm
 at Seagrave Observatory

INTERNATIONAL OBSERVE THE MOON NIGHT
InOMN

Saturn will be too low to be observed.

In contrast, the outer planets Uranus and Neptune will be easily observable during September and October. These gas giants look like little blue-green marbles through the telescopes available for public viewing in Rhode Island. Be sure to ask any of the scope volunteers to acquire them for you to observe. Not many casual stargazers can boast they've seen these distant worlds.

Around here in southern New England I never felt I was in any danger when I went out to observe. Depending upon the time of year you had to watch out for skunks. I've heard coyotes howling nearby at Seagrave Observatory and in the woods near my home in Burrillville. A pair of red fox sauntered through my yard one evening, though not while I was observing. Fisher cat are a lot more prevalent now, and you don't want to tangle with one.

And in recent years at least one brown bear has been sighted all over the state. If you are observing with a group of people, these critters will likely avoid making their presence known. But, while you are observing alone I would suggest making your presence known on occasion. Play a radio, but not loud enough to disturb your neighbors. I prefer my Ursa Major to remain

high in the sky.

We also must be careful about mosquitoes, for now they might carry EEE and the West Nile virus. Still, this area of the country is not as hazardest as others. My good friend and former Skyscrapers member Greg Shanos moved to Florida. One night he was observing with a group of amateur astronomers from the Myakka River State Park. They had set up in an open area near the parking lot. While they were observing they started to hear some noise in the darkness. They shone their flashlights in the general direction of the noise and all they could see were many eyes staring at them.

You see, this night is noted for its alligators. I've bird watched there and it is downright scary even in the daytime. The gators sit right on some of the paths. And they are huge! One of the guides told my wife and I that at night there are only two things in the water at the park – alligators and alligator food!! Greg and the group quickly but cautiously packed up their equipment and left the site.

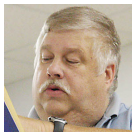
So observing in Rhode Island isn't all that bad!

Finally, if you plan on visiting one of the local observatories, please check the sky conditions before you venture out. At

Seagrave Observatory and Ladd Observatory people have visited on completely overcast nights expecting to observe the sky. When we have explained that the skies were cloudy, on two occasions the question posed to us was, "Isn't the scope powerful enough?" Optical telescopes need light from an astronomical object to produce an image. Clouds block the light, so no image. Perhaps we need to invest in a radio telescope!

There are many more wonders of the heavens that await your gaze at the local observatories. 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 clear Tuesday night. Frosty Drew Observatory (<http://www.frostydrew.org/>) in Charlestown's Ninigret Park is open every clear Friday night. Be sure to check all the websites for the schedules and opening times before visiting these facilities.

While the mosquitoes may still continue to bother us in September, I can promise you won't encounter any alligators in Peep-toad Pond!



Perseids 2013 Observing Report

Dave Huestis

After many years of bad weather and interfering moonlight, the Perseid meteor shower was well observed from Rhode Island.

Because the peak of activity was forecast for 3pm on August 12, I suggested in my monthly column that observers should attempt to observe this shooting star display on two nights: August 11-12 and 12-13.

The weather forecast for the 12-13 timeframe (Monday-Tuesday) did not look promising, so I decided to conduct an observing session on Sunday night into Monday morning (11-12).

I arranged to view the Perseids with my young apprentice, Alex Bergemann, from the dark skies of his home in Gloucester.

We began promptly at 11pm. While we did view a total of 12 meteors from that time until 12:35 am, many were dim. I'm sure some of those weren't even visible from more light polluted locations throughout the region. It was still an enjoyable night,

lying out under the stars.

The sky was very transparent, and the temperature was in the low 60s. No mosquitoes! There was some moisture in the air, which scattered some of the ambient light from the more populated centers to the east. However, the Milky Way was very prominent, as was the famous Double Cluster between Cassiopeia and Perseus. At times the meteors were few and far between. Still, I never tire of scanning the sky for "burning rocks" to blaze across the sky.

Just as Alex was preparing to retire for the morning, we saw a brilliant Perseid, brighter than Venus, travel from zenith down the Milky Way towards the southwest. It was a nice conclusion to our observing session.

Within 30 minutes I was back home on my porch. I decided to spend another hour, hoping to see some even brighter Perseid fireballs (meteors brighter than -4 in magnitude). From 1:00am until 2:00am, I saw

an additional 15 Perseids. While no fireballs presented themselves, it appeared that the meteors were getting a little brighter as the morning progressed. It was obvious that the rate of meteors per hour was also increasing.

Unless you have participated in this activity it is unlikely you can understand how peaceful and relaxing it can be. I often become very contemplative when I am stargazing. As you gaze up at the stars and see a portion of our Milky Way galaxy, you can really begin to comprehend how insignificant we all are in the vast Universe.

Are we alone? As I considered that question early this morning while I scanned the sky in the constellation of Cygnus, I imagined that perhaps one of the exoplanets discovered by the orbiting (and now inoperable) Kepler telescope may harbor intelligent life that may be looking back in my direction.



Observing Uranus in 2013

Jim Hendrickson

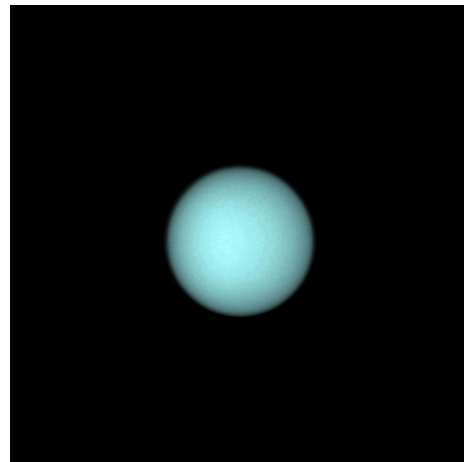
At nearly twice the distance from the Sun as Saturn, Uranus is the first planet to be discovered during the age of the telescope. Although (just barely) naked-eye visible, it had not been known since ancient times like the five classical planets we often feature in our telescopes during observatory hours.

Although it is a large planet at nearly four times the diameter of Earth, and it shines relatively brightly in our sky (compared with some of our solar system's smaller or more distant objects), Uranus fails to exhibit much detail in even the largest telescopes and but it is nonetheless rewarding to find and observe.

At magnitude 5.8, Uranus is certainly naked-eye visible to observers with good vision and access to a dark site, but it is best observed in binoculars, in which its subtle aqua-green color becomes apparent and its lack of twinkle helps to distinguish itself from the background stars. Throughout 2013 and 2014, our seventh planet spends its time among the stars of Pisces, the fishes about 13 degrees southeast of Algenib (γ Peg), the southeasternmost star

of the Great Square. Along this section of the ecliptic we are looking at a fairly steep angle southward out of the plane of the Milky Way galaxy and as such the sky is rather sparsely populated. This notable lack of dense starfields will make Uranus rather easy to find.

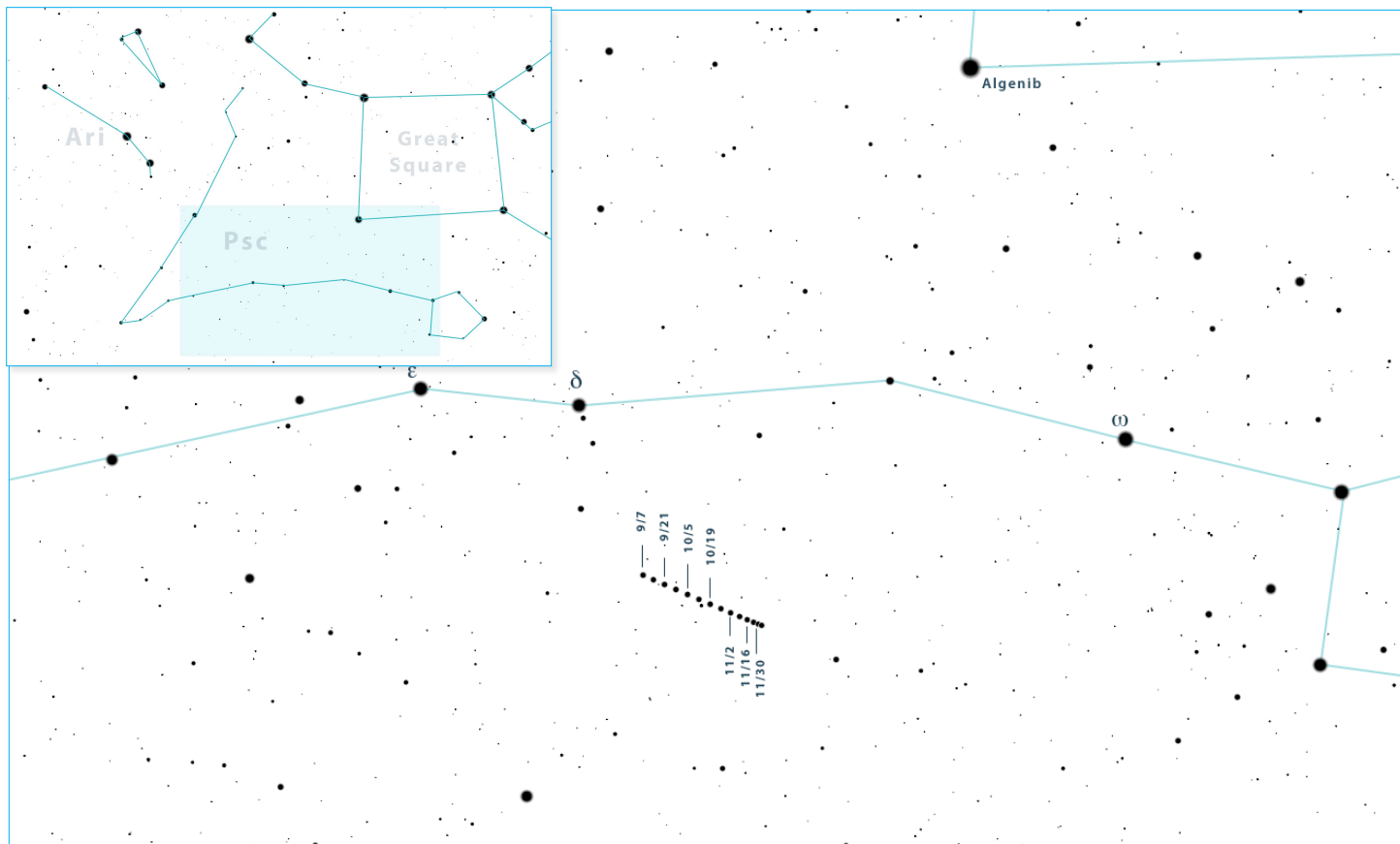
To get yourself oriented, first locate the Great Square. Note the distance between Alpheratz (α And) and Algenib (γ Peg), the two stars that make up the eastern side of the square. Over the next several months, Uranus will be about the same distance south by southeast of Algenib. If Aries is visible, a second frame of reference can be made by drawing a line from Hamal (α Ari) through Sheratan (β Ari) and extended about five and one-half times the distance towards the west. Once you get in the neighborhood of Uranus, you'll probably want to use the 4.4 magnitude star δ (delta) Piscium as your reference star in your binoculars or finder scope. Delta will be about 4.5 degrees northeast of Uranus, so place the star towards the top of your field of view. Once you've located this star field, the star chart below will help you locate Uranus



Uranus image captured by Hubble Space Telescope. NASA/JPL/STScI

for the remainder of 2013. The points on the map correspond to its position on each successive Saturday night and indicate the westward (retrograde) motion of the planet until it is stationary on December 18.

At opposition on October 4, Uranus will be 19 AU (2.85 billion kilometers) from Earth. While most of the other planets will vary significantly in brightness as



their relative distances from Earth change, Uranus is far enough away that the change in distance is relatively small, and as such, its brightness in our sky varies by less than a quarter magnitude. At its brightest (at opposition) it shines at magnitude 5.7. The fact that it varies so little in brightness helps to make it more easily identifiable once you are familiar with how it appears in your sky and optics.

Now that you have seen Uranus, watch its changing position over the course of a few days or weeks, as this is likely the only dynamic aspect of observing this relatively featureless planet you'll notice. On a night

of excellent seeing, even the largest telescopes will not reveal much in the way of "surface" detail on the planet's 3.7 arcsecond disc. Observing visually, you might notice limb darkening in a larger scope, which gives the planet a distinct 3-D appearance. A CCD imager with the right filters might be able to eke out some subtle cloud detail. If you have a larger telescope (12 inches or larger) you can try to spot some of its brighter satellites. Of its 27 known moons, four of them shine at or brighter than 15th magnitude. Titania and Oberon are your best bets, as they are about magnitude 14.5 and will be elongated to just

over 30 arcseconds from the disc of Uranus. Keep in mind that Uranus' rotational axis and the orbital plane of its larger satellites is tilted 98° relative to the ecliptic, so the moons will be best observed when they are elongated roughly north and south of the planet. There is a handy moons of Uranus finder utility on *Sky & Telescopes'* web site at <http://www.skyandtelescope.com/observing/objects/javascript/3310476.html>.

Have fun observing our solar system's enigmatic seventh planet, and let us know if you're able to spot it naked-eye. We'd also like to publish your images or Uranus and its moons in a future issue of *The Skyscraper*.



The Legacy of Kepler Space Telescope & Our Own Solar System's Robotic Explorers

Francine Jackson

With all the hype of space craft all over the solar system, some of them sending us unbelievable images from our outer planets, especially Mars and Saturn, plus the previous generation Pioneer and Voyager travelers in the outer reaches of our neighborhood, it's sometimes hard to remember that these are machines, giving us information that we never in our wildest dreams could see from our home Earth. Many of them seem to have lives of their own, being incredible energetic bunnies, going and going and... Cassini has been introducing us to the wonders of Saturn for years; all the Martian craft have shown incredible lifetimes, moving and digging and imaging the planet almost miraculously, and the MSL, Curiosity, also is planned to continue much longer than its projected time.

Totally amazing to me are the Pioneer and Voyager. These little machines, using technology as modern as the TRS-80 (look it up if you're not sure what that is), still have the potential to phone home if asked to, even though they all require a full-day round-trip response.

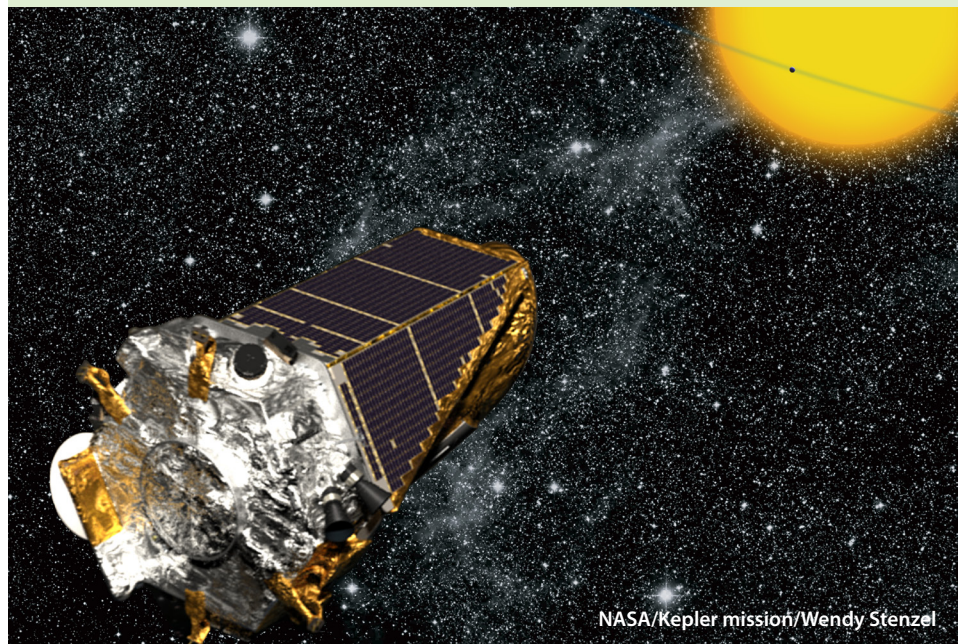
This is why it's very sad that we're losing what was hoped to be a workhorse among craft, a machine that has introduced us to thousands of potential new worlds. The Kepler, launched to try to locate planetary systems around other stars within a very tiny region of sky in Cygnus, the Swan, has been considered possibly at the end of its major mission. Although its actual time frame was until November, 2012, it had been

hoped to continue for an extended period of time - possibly up to several years; but, last July, one of its gyroscope-type wheels began to fail. Then, a second acted up just this past May. To function perfectly, three of these are required. Without these two to assist in precisely pointing the craft, its future is now in doubt.

Scientists are looking to evaluate Kepler for any potential research it can do with its

remaining two functioning wheels, so it is hoped that more discoveries can be gotten. However, don't forget - Kepler has discovered thousands of possible planetary candidates, and has confirmed way over a hundred. Unlike some of our other craft, Kepler doesn't appear it will have the longevity of a Spirit/Opportunity or Pioneer/Voyager, but let us be thrilled as to what it has done for the astronomical community.

Even though Kepler Space Telescope is no longer collecting data its mission is still going on and there are still discoveries to be made. You can help analyze Kepler Space Telescope data by participating in the PlanetHunters.org citizen science project.



NASA/Kepler mission/Wendy Stenzel



Sunrise, Sunset

Mark Sweberg

I fashion myself a crepuscular mammal; alert and active at dawn and dusk, I gain inspiration from the subtle interplay of the changing light at the ends of the day. Be it hopeful anticipation as the rising sun infuses the sky with its warm radiance, or the peace and serenity evoked as it sets, I love these times of day.

I'm reminded of a 12 year old camper casually asking his counselor why the sun is red at dawn and dusk. And I'm still appreciative of his skill in answering the question. Sensing a teaching moment, he clearly and thoughtfully enthralled me with his reply. It is in honor of that moment etched in time that I attempt to succinctly explain why our brilliant sun should appear as it does at these magical times of the day. To the extent that I succeed, I owe it to a young man who captured a child's imagination, and forged an appreciation of these truly miraculous moments.

We know that the atmosphere of earth exists within a narrow band enveloping the earth, gradually giving way to the black void of space about 62 miles/100 km high. So, if space is black, as is common knowl-

edge, why does the sky appear blue during the day, and at other times yellowish, orange, or, red?

Turns out it has to do with the angle of the Sun, and the amount of atmosphere that the sunlight passes through. As well, different colors within light's spectrum tend to scatter, more, or less, depending on their wavelength. Finally, particulate matter, such as dust or smoke in the atmosphere, also affects the color of the setting and rising Sun.

During the day, the Sun's blue light rays are selectively scattered by air molecules, and produce the blue sky away from the Sun's direction. The Sun's violet light is scattered even more efficiently than blue rays, but our eyes aren't as sensitive to violet, and there is not much violet light coming from the Sun, anyway. And, green light is not scattered as efficiently as blue, so blue becomes the predominant color of the daytime sky.

The setting Sun, however, progresses through a range of color, from white to yellow, to orange and, sometimes, to red. As the Sun rises in the east, the color progression is reversed. Why the changing colors?

Closer to the horizon, sunlight travels through a longer atmospheric path, causing more scattering of light. Yellow, orange, and red light are scattered out of your line of sight less than violet, blue, or green. The

yellow, orange, or red light is more likely to reach our eyes, making the Sun appear that color.

Also, violet and blue light are more easily absorbed by dust and smoke in the air, as is green light to a lesser degree. The more smog, dust, or other pollution in the air, the more absorption of violet, blue, and green light there will be, producing a more orange or red sunrise or sunset. Our reddest sunrises and sunsets are produced by our smoggiest skies. Of course, any present clouds reflect the setting Sun's rays, adding color and beauty to the sky.

Sunrise and sunset are powerful times of the day. They call forth strong emotions, and easily bring to mind several refrains within musical lyrics, one being:

"Sunrise, sunset. Sunrise, sunset. Swiftly flow the days. Seedlings turn overnight to sunflowers, blossoming even as we gaze. Sunrise, sunset. Sunrise, sunset. Swiftly fly the years. One season following another, laden with happiness and tears."

Sunrise and sunset are our clocks. They mark and frame our days' and our time on earth. They are always different, and always truly beautiful.

May you enjoy all your sunrises and sunsets!

Your comments on this column are welcome. E-mail me at mark.sweberg@gmail.com.



Binary Star: 61 Cygni

Scott MacNeill

With Summer well under way the beautiful Summer Triangle asterism is hanging high overhead. The summer triangle, made up of the three bright stars Deneb, Vega and Altair, is full of many fascinating objects, considering the bright Milky Way cuts right through the middle. Among this collection of celestial awesomeness, at only 11 light years distant, is a rather dim, yet famous, binary star. This binary star was the first ever star (aside from the sun) to have its distance measured from Earth, is the 15th known closest star to Earth (not including the sun), and has a relatively large change in angular position over time (proper motion). This month we will zoom in on the stunning binary star, 61 Cygni - The Flying Star.

At the very edge of visibility, 61 Cygni has a visible magnitude of 5.2, lies 11.35 light years distant and is found just outside the boundaries of the Summer Triangle in the constellation Cygnus. This super wide binary system is made up of two stars at 28 arcseconds of separation. The primary star, 61 Cygni A is 30% less massive than the Sun, has a spectral classification of K5 displaying a strong deep yellow / orange. The companion star, 61 Cygni B is almost 11% less massive than the primary star at 63% the mass of the Sun, has a spectral classification of K7, displaying an almost identical deep orange with a touch of red. Both stars are separated by an average distance of 84 AU, which is twice the distance of Pluto from the Sun, though the 61 Cygni system's distances vary from 44 AU at their closest to 124 AU at their most distant due to a rather elliptical orbit that takes 659 years to complete a full orbital cycle.

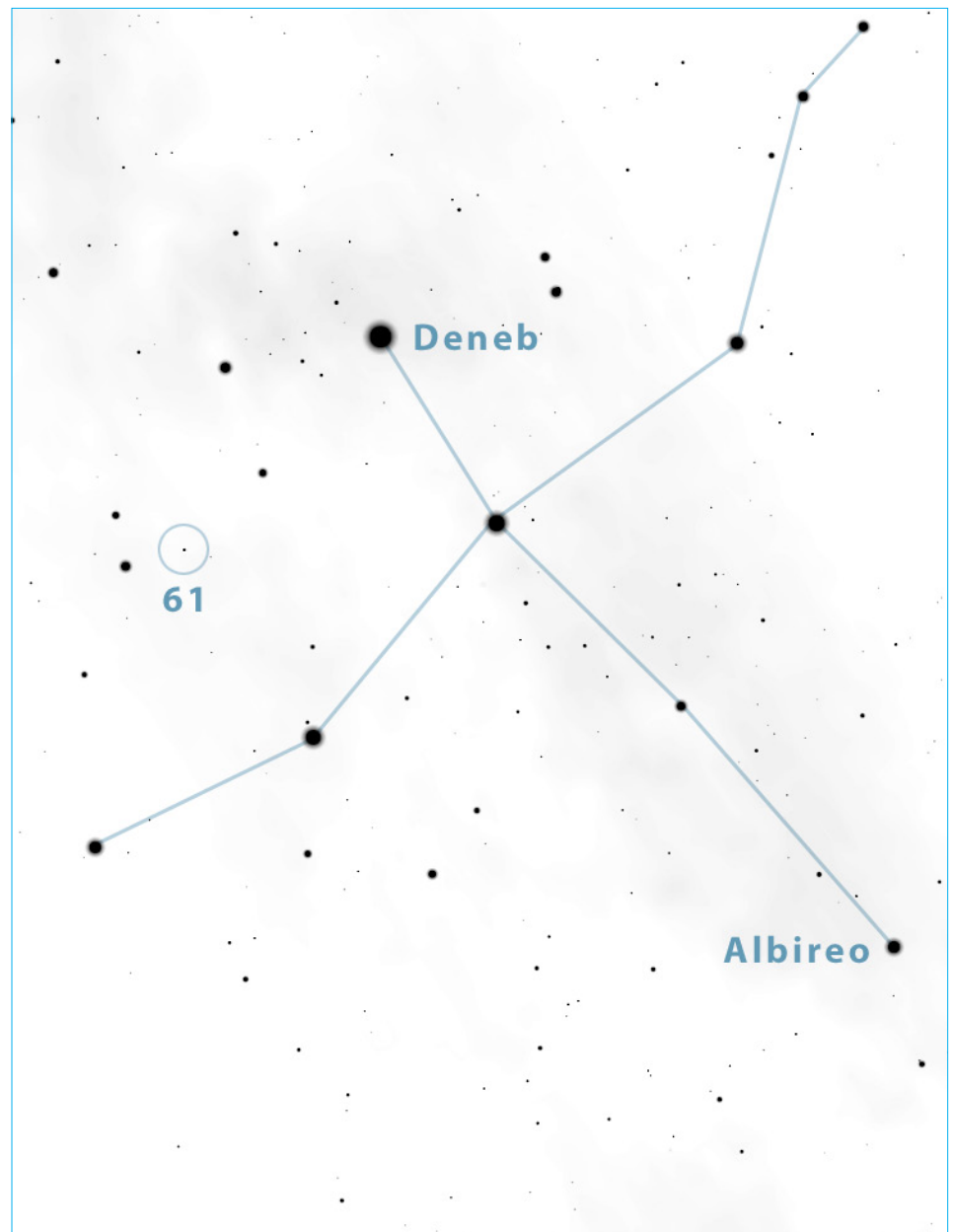
Finding 61 Cygni will be quite a challenge. At visible magnitude 5.2 this chic will be quite dim especially when viewed from even minimally light polluted skies. If viewing from urban locations, a trip outside of the city will surely be warranted. Once twilight comes to an end, face East and look almost straight up to find the easily identifiable Summer Triangle asterism. Deneb, the brightest star in Cygnus, will be the north-most star of the three points of the triangle. Deneb is also the top of the Northern Cross asterism which is found inside the Summer Triangle. Once the Northern Cross asterism is identified, make

a square using the stars: Deneb, Sadr (the center of the cross), and Gienah Cygni (the eastern-most star in the cross), 61 Cygni will be at the fourth point of your square.

Observing 61 Cygni will be total pie. With 28 arcseconds of separation you can identify distinction between the stars using binoculars. Any backyard telescope will easily resolve this binary set with higher quality backyard telescopes showing off the fantastic depth of color. Expect a widely placed binary system with one star appearing just slightly dimmer and smaller than the other. Colors will be super apparent with deep yellow to ruddy orange hues

blasting off each star resembling two Seville oranges positioned upon a curtain of night.

Take a good look at this historic binary star. Once you have had a long relaxing look, star hop around the Summer Triangle and find some of the fantastic celestial objects visible there. Then come back to 61 Cygni and ponder on this set of stars that are the fourth closest naked eye visible stars to mid-latitude northern stargazers and make a note to regular visit the Flying Star to see if it has changed its position among the cosmos.





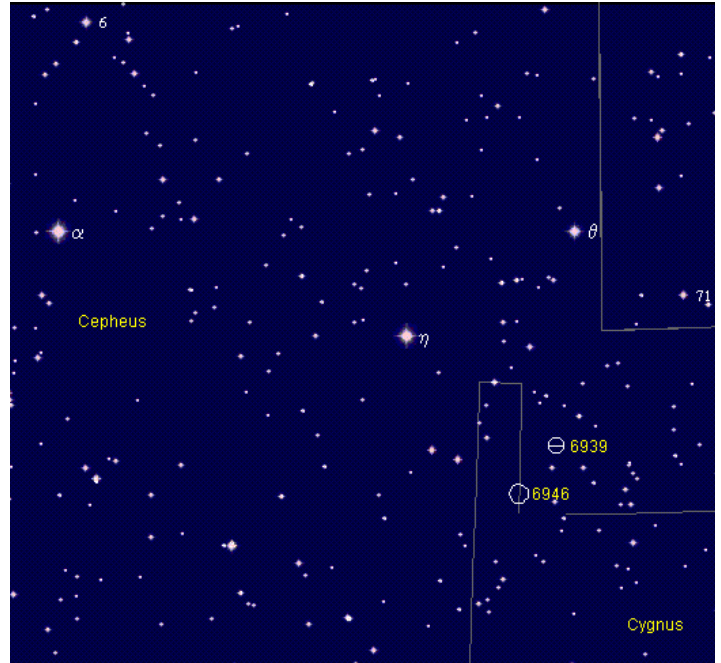
Open Cluster in Cepheus NGC 6939

Glenn Chaple

Our September “Sky Object of the Month” takes us to the southwest corner of Cepheus and the 8th magnitude open cluster NGC 6939. Discovered by William Herschel in 1798, it contains some 80-100 stars occupying an area 7 arcminutes across.

My first encounter with NGC 6939 was with a 3-inch f/10 reflector at 30X back in September of 1979. I entered the following description in my logbook. “Nice; intriguing object. Surprisingly easy – a dull glow w/slight condensation; almost stellar.” Earlier this summer, I revisited NGC 6939, this time with a 10-inch f/5 reflector and a magnification of 78X. As might be expected, the boost in aperture and magnification garnered more detail. My logbook entry reads, “Seems fan or V-shaped with perhaps a dozen stars mags 11-13, plus a glow from fainter members.”

The finder chart shows the location of NGC 6939 about 2 degrees southwest of the magnitude 3.4 star eta (η) Cephei – and a similar distance south of magnitude 4.2 theta (θ) Cephei. Note the presence of the galaxy NGC 6946 just 40 arcminutes southeast of NGC 6939. Both can be picked up in the same low-power field. Be forewarned, however, that NGC 6946 is no piece of cake. We’ll take a closer look at this elusive spiral next month.



www.nightskyinfo.com



John Mirtle (www.astrofoto.ca)



Nova Delphini 2013

Jim Hendrickson

On August 14 Twitter become abuzz with reports of a naked-eye nova in the constellation Delphinus. It sounded too good to be true, and the weather would hinder our early observations. On Thursday, August 15 Bob Horton, Pat Landers, and Jim Hendrickson gathered at Seagrave Observatory to view through Bob's newly built 4.25-inch f/6.3 reflector. A waxing gibbous Moon brightened the sky, but that was the main subject of our observing session. We viewed the Moon through a few high-magnification eyepieces including a 2.5mm modified orthoscopic and 3.7mm Tele Vue Ethos. It turned out that the Ethos provided the most pleasing views, as its 110 degree field of view allowed the entire Moon to be viewed at a respectably high magnification. Jim brought his 71mm mini-Borg travel scope and viewed a few highlights of the Milky Way including the Lagoon Nebula and Wild Duck Cluster, but nova Delphini 2013 was the primary subject. On this night the nova was shining brighter than magnitude 5.0 and Jim took some photos, but an unanticipated band of thick cloud quickly obscured the view of everything but the Moon. After an hour the conditions hadn't improved so we packed up and left.

Meanwhile, Conrad Cardano was at home capturing a spectrum of the nova with his new 102mm refractor, but he also became hindered by clouds.

On Saturday, August 24 we spotted the nova again during open observatory night. Jim captured the nova and estimated the magnitude to be between 5.8 and 5.9. Gerry Dyck (GPD) had reported on the same night an estimate of 5.9 magnitude.

As of this writing the nova is around magnitude 6.5 according to AAVSO observations and steadily fading about 0.1 magnitude per day.

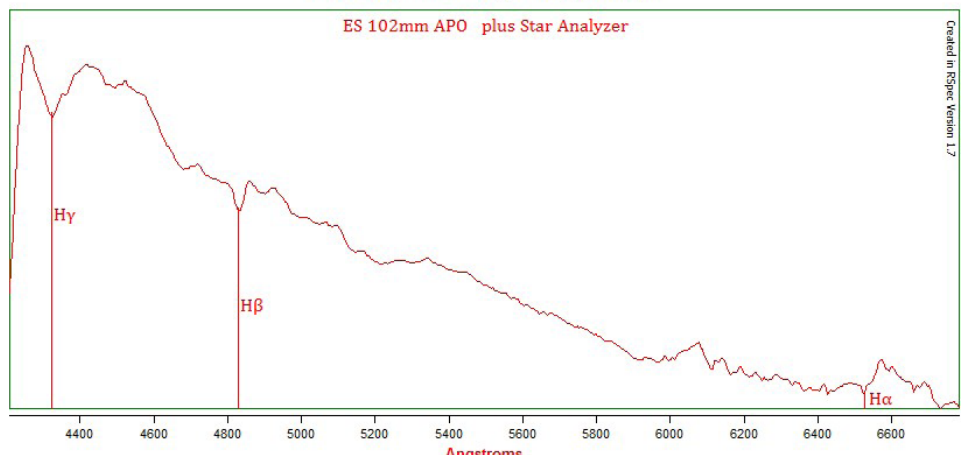


August 15



August 24

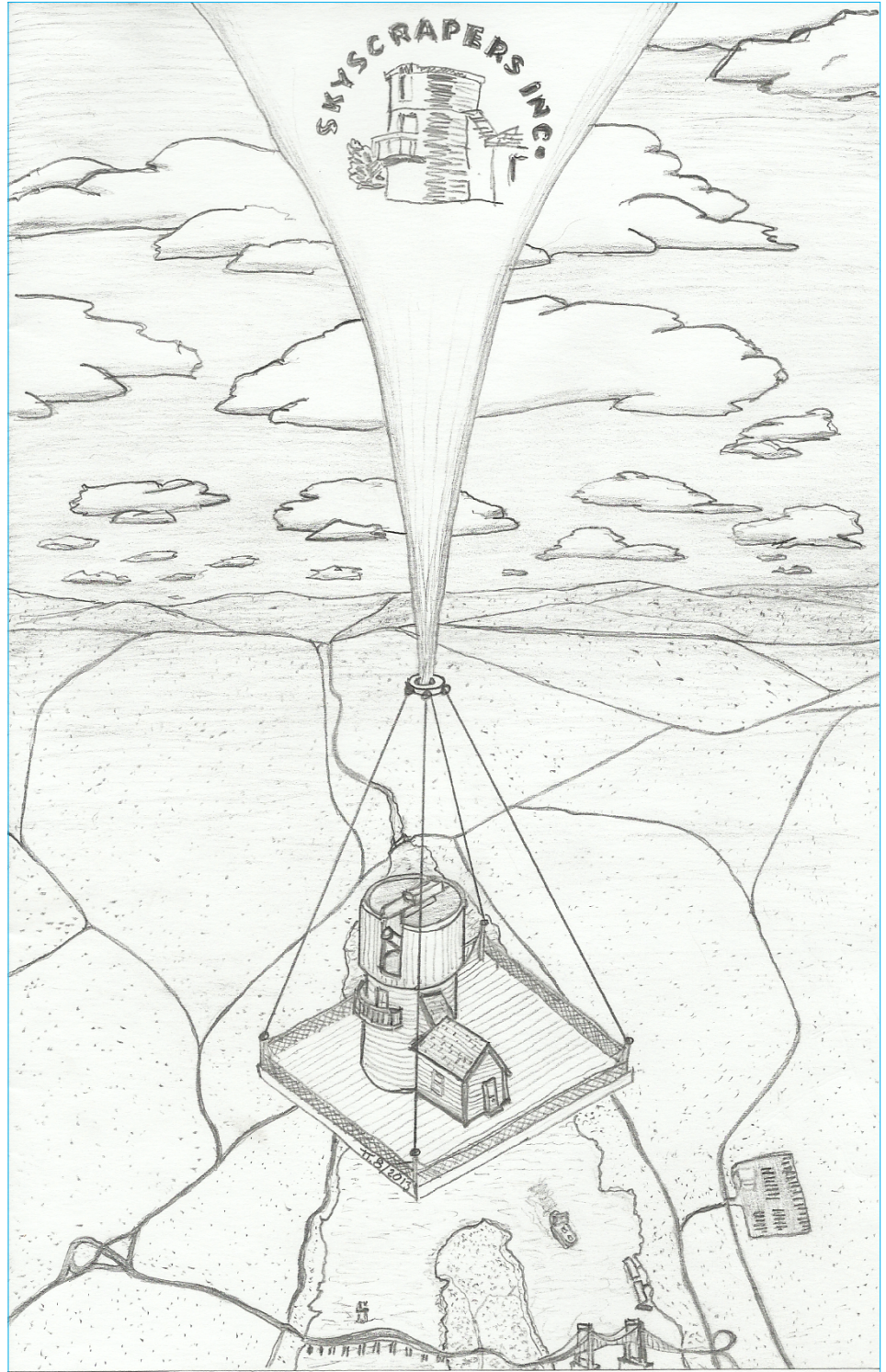
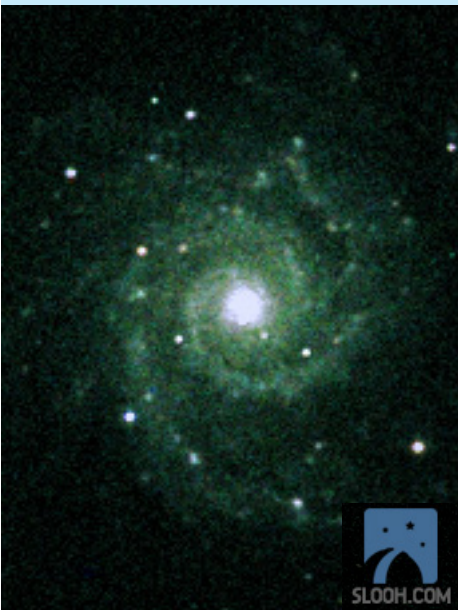
Nova Delphinus Aug 16 @9:00 pm





Supernova 2013ej in M74

On July 27, a Type IIp supernova was detected in the spiral galaxy M74 in Pisces. Dave Huestis used the Slooh Space camera to capture this image. The supernova peaked at about magnitude 12.3 before beginning to fade.



Astronomy over Rhode Island

Inspired by Professor Tucker's talk in June, the Skyscrapers decided to conduct their own astronomical research using a high altitude balloon.

Concept by: Dave Huestis

Drawn by: Tom Thibault

AUGUST REPORTS



Secretary
Tom Thibault

Skyscrapers August Meeting Minutes – August 3, 2013

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

President Ed Haskell: Ed opened the meeting and the floor for updates from the Trustees, B.O.D. and the membership.

Trustee Steve Siok: Informed the membership the 16" Meade Roof Motor was installed by Tom and Adam Thibault, next aspect of the Automation Program will be to focus on the software to allow remote control functionality.

Treasurer Linda Bergemann: Requested a vote for membership of Bob Derouin, which was approved by the membership, welcome aboard Bob.

Historian Dave Huestis: Displayed two pictures developed from the Smiley archive, one of Seagrave Observatory under construction and the other of Smith Farm on Route 116.

Displayed before and after pictures of M74 with its recent Supernova.

Member Pat Landers: Will be hosting a Members Observing Night on August 30th, all are welcome and encouraged to attend.

Featured speaker Frank Reed: Frank provided a wonderful presentation on the use of Lunar and Celestial observations by mariners prior to the use of chronometers.

Meeting adjourned at 8:45PM

Submitted by Tom Thibault - Secretary

Board of Directors Meeting Minutes – 8/26/13

Attendees: Ed Haskell, Kathy Siok, Linda Bergemann, Tom Thibault, Steve Siok, Conrad Cardano, Jim Crawford, Ernie Ross, Pat Landers, Dave Huestis and Jim Hendrickson

Ed Haskell, President: Meeting called to order at 7:14PM at Seagrave. • Announced the appointment of Pat Landers to the position of Vice President, Membership.

Kathy Siok, 1st Vice President:

September Meeting will occur on Friday, the 6th, speaker will be Peter Schultz. • Suggested Member presentations are considered for the December Meeting. • Will be reviewing date change for the December Members Meeting. • On behalf of Bob Horton, Kathy informed the Board that AstroAssembly planning is progressing well and requests for volunteer assistance will be solicited at the September Meeting.

Linda Bergemann, Treasurer: Financials are in order, but noted the large percentage of Past Due Membership payments • No update to date regarding re-



Treasurer
Linda Bergemann

Cash Flow YTD as of August 22, 2013
(4/1/13 through 8/22/13)

INFLOWS

AstroAssembly	
Banquet	\$80.00
Registration	\$120.00
TOTAL AstroAssembly	\$200.00
Donation	
Misc Donation	\$152.00
Refreshment Donation	\$138.20
Starparty Donations	\$74.00
TOTAL Donation	\$364.20
Dues	
Contributing	\$134.05
Family	\$240.00
Regular	\$840.00
Senior	\$325.00
TOTAL Dues	\$1,539.05
Subscription Income	
Astronomy	\$290.00
Sky & Telescope	\$197.70
TOTAL Subscription Income	\$487.70
FROM Preservation Fund (See note below)	\$96.30
TOTAL INFLOWS	\$2,687.25

OUTFLOWS

Astro Assem Exp	
Raffle	\$5.00
TOTAL Astro Assem Exp	\$5.00
Facilities Expense	
Electric	\$72.10
Propane	\$80.25
Property Maintenance Fund	\$297.00
Trustee Exp	\$388.65
Other Facilities Expense	\$99.00
TOTAL Facilities Expense	\$937.00
Misc Expenses	
Corporation, State Fee	\$30.00
Postage and Delivery	\$9.20
Refreshment Expense	\$72.01
TOTAL Misc Expenses	\$111.21
Subscription Payments	
Astronomy	\$290.00
Sky & Telescope	\$197.70
TOTAL Subscription Payments	\$487.70
TO Checking (See note below)	\$96.30
TOTAL OUTFLOWS	\$1,637.21

OVERALL TOTAL **\$1,050.04**

Note: Designated Preservation Fund monies used to digitize photos for archive.

Cash and Bank Accounts - As of 8/22/2013

Capital One Bank	\$12,313.85
Checking	\$11,907.73
TOTAL Bank Accounts	\$24,221.58



Frank Reed

placement unit for the digital projector.

Tom Thibault, Secretary: Requested updated Membership List to review past due payment of Membership Dues. • Informed that 50% of memberships are currently past due. • Notification will be forthcoming. • PayPal options will be further investigated. • Additional discussions regarding this issue occurred. • Will approach CVS/Caremark on corporate donations.

Dave Huestis, Historian: Progress of

the Seagrave Centennial Calendars continues for completion prior to and sale at AstroAssembly. • Initial purchase of 40 copies was approved and Member Pre-Orders will take place at AstroAssembly. • Comet ISON is looking less promising as far as visibility and will continue to track progress to determine future plans on activities.

Trustees: Steve Siok noted work sessions for ground preparation for AstroAssembly will be scheduled in the near future.

• Motorized roof system has been installed and operating. • Trustees continue to review options regarding the removal and replacement of the ceiling tiles within the meeting hall. • Efforts will continue in regards to determining the sale of surplus telescope equipment.

Meeting adjourned at 9:55PM

Submitted by Tom Thibault - Secretary



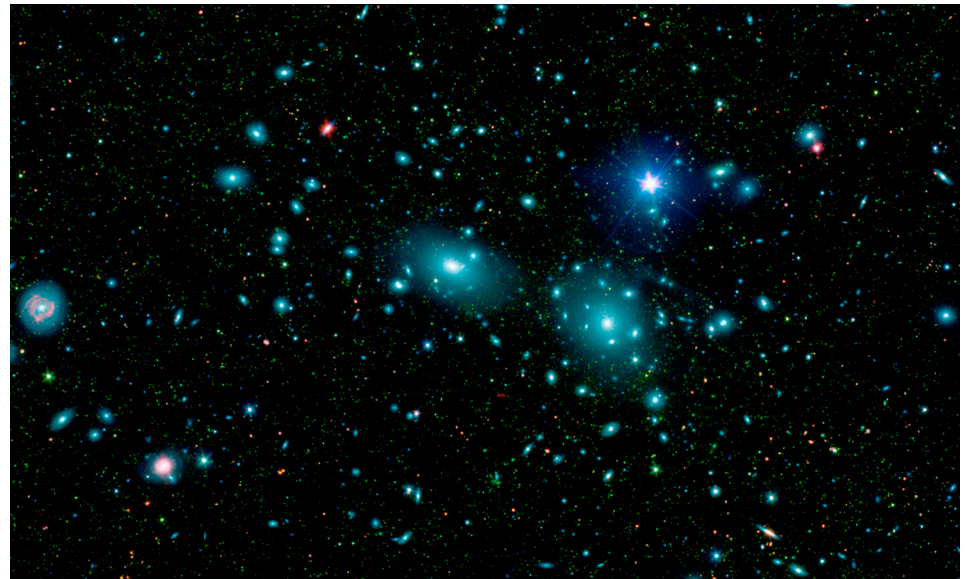
Size Does Matter, But So Does Dark Energy

By Dr. Ethan Siegel

Here in our own galactic backyard, the Milky Way contains some 200-400 billion stars, and that's not even the biggest galaxy in our own local group. Andromeda (M31) is even bigger and more massive than we are, made up of around a *trillion* stars! When you throw in the Triangulum Galaxy (M33), the Large and Small Magellanic Clouds, and the dozens of dwarf galaxies and hundreds of globular clusters gravitationally bound to us and our nearest neighbors, our local group sure does seem impressive.

Yet that's just chicken feed compared to the largest structures in the universe. Giant clusters and superclusters of galaxies, containing thousands of times the mass of our entire local group, can be found omnidirectionally with telescope surveys. Perhaps the two most famous examples are the nearby Virgo Cluster and the somewhat more distant Coma Supercluster, the latter containing more than 3,000 galaxies. There are millions of giant clusters like this in our observable universe, and the gravitational forces at play are absolutely tremendous: there are literally *quadrillions* of times the mass of our Sun in these systems.

The largest superclusters line up along filaments, forming a great cosmic web of structure with huge intergalactic voids in between the galaxy-rich regions. These galaxy filaments span anywhere from hundreds of millions of light-years all the way up to more than a *billion* light years in length. The CfA2 Great Wall, the Sloan Great Wall, and most recently, the Huge-LQG (Large Quasar Group) are the largest known ones, with the Huge-LQG -- a group of at least



Digital mosaic of infrared light (courtesy of Spitzer) and visible light (SDSS) of the Coma Cluster, the largest member of the Coma Supercluster. Image credit: NASA / JPL-Caltech / Goddard Space Flight Center / Sloan Digital Sky Survey.

73 quasars -- apparently stretching nearly 4 billion light years in its longest direction: more than 5% of the observable universe! With more mass than a million Milky Way galaxies in there, this structure is a puzzle for cosmology.

You see, with the normal matter, dark matter, and dark energy in our universe, there's an upper limit to the size of gravitationally bound filaments that should form. The Huge-LQG, if real, is more than *double* the size of that largest predicted structure, and this could cast doubts on the core principle of cosmology: that on the largest scales, the universe is roughly uniform everywhere. But this might not pose a problem at all, thanks to an unlikely culprit: **dark**

energy. Just as the local group is part of the Virgo Supercluster but recedes from it, and the Leo Cluster -- a large member of the Coma Supercluster -- is accelerating away from Coma, it's conceivable that the Huge-LQG isn't a single, bound structure at all, but will eventually be driven apart by dark energy. Either way, we're just a tiny drop in the vast cosmic ocean, on the outskirts of its rich, yet barely fathomable depths.

Learn about the many ways in which NASA strives to uncover the mysteries of the universe: <http://science.nasa.gov/astronomy/>. Kids can make their own clusters of galaxies by checking out The Space Place's fun galactic mobile activity: <http://spaceplace.nasa.gov/galactic-mobile/>



The Seasons Resort
August 17

Seen any stars at The Seasons this summer? Owner and friend to The Seasons Tom Thibault has generously and frequently set up his telescope for little stargazers to look up into the night skies throughout the summer. He is hoping to set up again September 20-22 if the weather cooperates.

Will you be around to see the stars?

Unlike · Comment · Share

Skyscrapers, Inc. Astronomical Society of Rhode Island, Jennifer Brooks Eldridge, Lisa Beliveau and Lisa Altomari like this.

1 share

Joy MacEachern Colby That was amazing. Thank you Tom
August 17 at 3:21pm via mobile · Like · 1

Write a comment...
Press Enter to post.

Skyscrapers secretary Tom Thibault has been conducting summer star parties at his summer home in New Hampshire.



Pat Landers hosted a members' star party on Friday, August 30. While the weather did not cooperate, about 12 members and guests attended the informal social gathering. Bob Horton gave a presentation of his photography of the International Space Station and Matt White set up a telescope for brief views of M13, Albireo, and epsilon Lyrae through a break in the clouds. Although a date has not yet been set, Pat plans to conduct another session in the near future.



Skyscrapers, Inc. presents



AstroAssembly 2013

Automated Observatories & Remote Astronomy
October 4th & 5th

47 PeepToad Road
North Scituate, Rhode Island
www.theSkyscrapers.org/AstroAssembly2013

Friday Evening Informal Talks & Stargazing

At Seagrave Memorial Observatory

Talks begin at 7pm. Anyone wishing to give an informal talk (15 minutes or less) on Friday night, October 4th should contact Bob Horton at Robert_Horton@brown.edu.

Pomfret's Olmsted Observatory: From Manual to Robotic in Five Years

Josh Lake

Imaging the ISS--It's Easier Than You Think!

Bob Horton

New Views of the Solar System Thanks to 21st Century Technology

Steve Hubbard

Recent Upgrades at Margaret M. Jacoby Observatory

Brendan Britton

Saturday Program

All day at Seagrave Memorial Observatory

Also featured: Swap Tables, Solar Viewing, Astrophotography Contest, Homemade Telescope Exhibit (bring your telescope) and the whimsical Astro Bake-off Contest!

10:00am The Amateur Astronomer's Equipment of the 1960s

Ed Turco

11:00am Astrophotography on The Cheap

Scott MacNeill

12:00pm Lunch at the Skyscrapers Grill

1:15pm MEarth Project: Super-Earths Transiting Nearby Low Mass Stars as Laboratories for Exoplanetary Science

Zachory Berta-Thompson

2:30pm The Best of all Worlds: Creating Unique and Original Hybrid Images from Professional and Amateur Data Sources (with emphasis on mining the Hubble Legacy Archive)

Robert Gendler

3:45pm Harvard's MicroObservatory Project

Frank Siekiewicz

Saturday Evening Program

At North Scituate Community Center

5:00pm Reception, Hors d'oeuvres served

5:45pm Evening Banquet (pre-registration required)

7:00pm Words of Welcome, Awards, and Raffle Prizes

7:30pm A Preview of Seagrave Observatory's Centennial, 1914 to 2014

Dave Huestis

7:45pm Honorary Awards

8:00pm The Design, Construction and Use of a Large Private Research Observatory

Mario Motta

Dr. Mario Motta has been an amateur astronomer and friend of Skyscrapers for many decades. When he and his wife decided to build a house on the North Shore of Massachusetts, Mario decided an integral observatory was essential. In this talk he will describe the design and construction of the telescope and observatory. For years Mario has used the instrument to obtain spectacular deep sky images which he will share with us. However as President of the AAVSO he also uses the observatory for variable star research. Mario will describe the current variable star images he takes and will share ways amateurs can use AAVSONet for their own variable star research. AAVSONet is a network of remotely operated instruments which is used to obtain images used to determine brightnesses of variables and which can be used to report brightnesses to headquarters.

Name _____

Address _____

Send completed form and check (made payable to Skyscrapers Inc.) to:
Linda Bergemann 41 Ross Hill Road, Charlestown, RI 02813-2605

Registrations x \$20 each \$ _____

Registrations (children under 12) Free

Banquet tickets x \$20 each \$ _____

Banquet tickets (children under 12) x \$10 each \$ _____

Total \$ _____

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