



# the Skyscraper

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September 2012

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

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Saturday, September 8, 7:30pm  
at Seagrave Observatory

## Members Presentations

**Steve Siok**

A Novel Way to Discover Variable Stars

**Tom Thibault**

The Age of Affordable Imaging

**John Leonelli**

My Homemade 6" Reflector

**Al Hall**

Progress Report for the 3/4 Scale

Alvan Clark Reproductions

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## AstroAssembly

September 28 & 29 · 60th Anniversary

Citizen Science and Astronomy

Featuring presentations by Ed Turco, Conrad Cardano, Gerry Dyck, Tony Costanza, Dr. Carie Cardamone, Dr. Meg Schwamb, and Dr. Bethany Cobb Kung.

Bring your entries for the Astrophotography & Astro Bake-off contests.



# President's Message

Ed Haskell

One of the initiatives the Board is furthering is a focus on really rewarding meetings for members of all technical levels. Our First Vice President, Bob Horton, is doing an outstanding job of arranging a diverse menu of talks and events to appeal to all interests.

So that you may mark your calendar well in advance, **tentative meeting dates have been established for the rest of this fiscal year: October - no meeting, November 2, December 1 - Christmas party, January 4, February 1, March 1, April 5.**

**All of these are on Friday except for the Christmas party which is traditionally held on Saturday.** As always these dates are subject to change as circumstances dictate.

Not all activities are connected with the regular meeting nights. For example, Skyscrapers will be participating in International Observe the Moon Night, September 22, with public observing. This would be a great opportunity for members to bring their own telescopes to the Observatory. It does not require a big instrument to observe the moon. The website for this event is at <http://observethemoonnight.org>

There is no October meeting because the end of this month sees our annual AstroAssembly at Seagrave Observatory (this event is under the supervision of Second VP

Kathy Siok). Amateurs from all over New England will gather on Friday, September 28, and Saturday, September 29, to help us commemorate six decades of AstroAssembly.

The program this year is devoted to Citizen Science and Astronomy. More details may be found at <http://www.theskyscrapers.org/astroassembly>. Members are encouraged to attend. If you have not been to an AstroAssembly before you have missed a really rewarding experience.

The November meeting is a rare opportunity to hear an objective and unemotional discussion of the potential of global warming. Dr. Brad Marston of Brown University will speak on The Quantum Mechanics of Global Warming

Quantum mechanics plays a crucial role in determining the Earth's climate. Richard Feynman's famous double slit experiment gives us the key to understanding climate. In November's talk Professor Marston will use this understanding to present a simple physical picture of what will happen to the Earth as the concentrations of greenhouse gases such as carbon dioxide continue to increase.

These are exciting times for Skyscrapers, don't miss out.

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 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 **September 21** to Jim Hendrickson, 1 Sunflower Circle, North Providence, RI 02911 or e-mail to [jim@distantgalaxy.com](mailto: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](mailto:jim@distantgalaxy.com). Note that you will no longer receive the newsletter by postal mail.



# September Sky Highlights

Jim Hendrickson

September brings evenings that are cooler, longer, and often the best of the year for observing. As darkness falls, we're looking into the heart of the Milky Way Galaxy and one doesn't need to wait late into the evening to begin exploring the autumn sky as the Milky Way arches high overhead.

We have lost our evening planets Saturn and Mars in the evening twilight, although you can still follow Mars for a few more weeks. Watch the waxing crescent Moon pass close to Mars on the 19th.

Jupiter rises around midnight early in the month and becomes the evening sky's only prominent planet, rising before 10:00pm at the end of the month. The most notable event for Jupiter in September comes on

the morning of the 8th, when the last quarter Moon passes within 1.5 degrees of the giant planet and its Galilean moons. This should be a spectacular view in binoculars and small telescopes. Look for Aldebaran and the Hyades cluster just a few degrees to the southwest of Jupiter.

Mercury appears low in the eastern sky just before sunrise during the first few days of the month, but quickly disappears in the glow of the Sun until late in the month when it reappears in the evening sky, although it remains very low and difficult to observe.

Venus continues to dominate the morning sky. Watch it pass M44, the Beehive cluster in Cancer on the 13th after the wan-



ing crescent Moon passes by on the 12th. Keep watching Venus late in the month as it closes in on Regulus, passing just 10' from the heart of Leo the Lion on October 3.

With the evening sky mostly devoid of naked-eye planets, we have the opportunity once again to observe our solar system's outer members, Uranus, Neptune and Pluto. See page 00 for detailed information on observing them.

The large asteroids Ceres, Vesta, and Pallas remain favorable for viewing this month, with a lunar occultation of Ceres on the morning of the 9th. The occultation begins at approximately 3:45am and lasts approximately 20 minutes as the Moon's south polar grazes the giant asteroid.

## Phases of the Moon

### Last Quarter Moon

September 8 13:15

### New Moon

September 16 2:11

### First Quarter Moon

September 22 19:41

### Full Moon

September 30 3:19

# International Observe the Moon Night

Saturday, September 22  
Seagrave Memorial Observatory

Please join members of Skyscrapers, Inc. at Seagrave Memorial Observatory on Saturday, September 22, from 7-10pm, as we celebrate the 3rd Annual "International Observe the Moon Night."

**Not only will the society's main telescopes be focused on the first quarter Moon, but also our members will provide great views of our desolate neighbor through their personal instruments as well.**

If you haven't observed the Moon with great optics and a steady mount before, then this evening of lunar observing will certainly take your breath away. The first quarter phase is an ideal time to see a lot of detail on the Moon's surface, especially near the terminator (the "line" that delineates the sunlit moonscape from the unlit portion). At that time, if you were standing anywhere along the terminator, the sun would be rising. This scenario creates long shadows, thereby revealing much crater and lunar mountain details.

One phenomenon to especially look for occurs near the terminator. Mountain tops and crater rims will catch the first rays of sunlight, while the landscape surrounding them will remain in darkness.

Please visit the Skyscrapers website for further information as September 22 nears. This special observing program will be held weather permitting.

If you'd like to prepare yourself for this viewing experience, you can read two articles up on the Skyscrapers website. One explains the reason for the phases of the moon, and another describes lunar features that are prominent during the first quarter phase.

We hope you can join Skyscrapers as we celebrate this year's "International Observe the Moon" event.



## September Harvest Moon

Francine Jackson

The September Full Moon is the one known to everyone; because this is when the corn was ready to be harvested, it is traditionally considered the Harvest Moon. We even have an old song about it. As the Moon travels around the Earth, it, like the planets, travels close to the Sun's defined path, the ecliptic, at this time of year it is near the position of the spring, or vernal equinox. To us, that means we see the Full Moon rising not close to an hour later each night, but only about 20 minutes later. On Earth, that resulted in the ground staying lighter longer, giving our ancestors extra time for their daily work.

We also see celestial evidence of harvest time by observing Scorpius, one of the most recognizable constellations of our warm weather sky. The scorpion's stinger was often seen by the Native Americans as rabbit tracks. The placement of this group

of four stars helped determine the planting season. When the rabbit tracks first appeared above the horizon, it was planting time; its appearance due south and low to the ground was the sign the plants should have been at their best; and when the scorpion, and his stinger/rabbit tracks were falling below the horizon, as is happening now, it was harvest time.

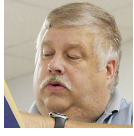
Now, although we normally refer to the Full September Moon as the Harvest one, that isn't always true. The actual definition of the Harvest Moon is the first Full Moon after the autumnal equinox; therefore, the Harvest Moon can occasionally be the Full Moon of October. But, this year, it does occur about a week after our change of season, on Saturday, September 29th, which for us is AstroAssembly. That night, enjoy the beauty of the September Harvest Moon.

Extra



Skyscrapers 75th anniversary book: *75 Years of Skyscrapers* is now available for download!

[theSkyscrapers.org/75book](http://theSkyscrapers.org/75book)



# Autumnal Equinox and Observing the Outer Solar System

Dave Huestis

Thank goodness summer is almost over. **Autumn, or fall, begins on September 22 at 10:49 am EDT.** For most of the country, 2012 has been a very hot and dry year. And for us in southern New England, we've had more than our fair share of heat, humidity, and severe thunderstorms. I for one will be happy to welcome in the cooler days of fall that usually bring less hazy skies for all local stargazers.

What do the starry heavens have in store for us during the next several months? How about the planets of the outer solar system? Beginning on September 1, I encourage anyone with an interest in astronomy to visit one of the local observatories to catch a glimpse of **Uranus, Neptune and yes, Pluto.** While Pluto was demoted to dwarf-planet status back in 2006, I still like to consider it to be a more prominent solar system member.

Unless you know specifically where to look, these distant bodies can be difficult to locate. Uranus can be seen in a dark sky with the naked-eye, but Neptune requires at least binoculars to find it. Both planets reveal a blue-green disk with medium to high magnification. A fairly large computer-controlled telescope is required to locate Pluto. This dwarf-planet will look like one of the many faint stars occupying the same field of view. Assuming the computer correctly positioned the telescope, Pluto will be one of those points of light you can see through the eyepiece.

Here's how the rest of 2012 plays out for observing our distant planetary (regular or dwarf) neighbors:

On September 1 at 9:00 pm, Pluto will be about 28 degrees above the southern horizon in the constellation of Sagittarius, a little west (to the right) of the north/south meridian. It can be found above the "teapot" asterism amongst the stars of the Milky Way, and less than one degree from the open star cluster M25. Pluto is very dim, at about 14th magnitude. Not surprising since it is then 2.9 billion miles from the Earth. Locally one can see stars down to a magnitude of 5.5 to 6 with the naked-eye in a dark sky. Without a computer-controlled telescope Pluto can be quite a challenge to locate visually by reading star maps and star hopping across the sky to find it.

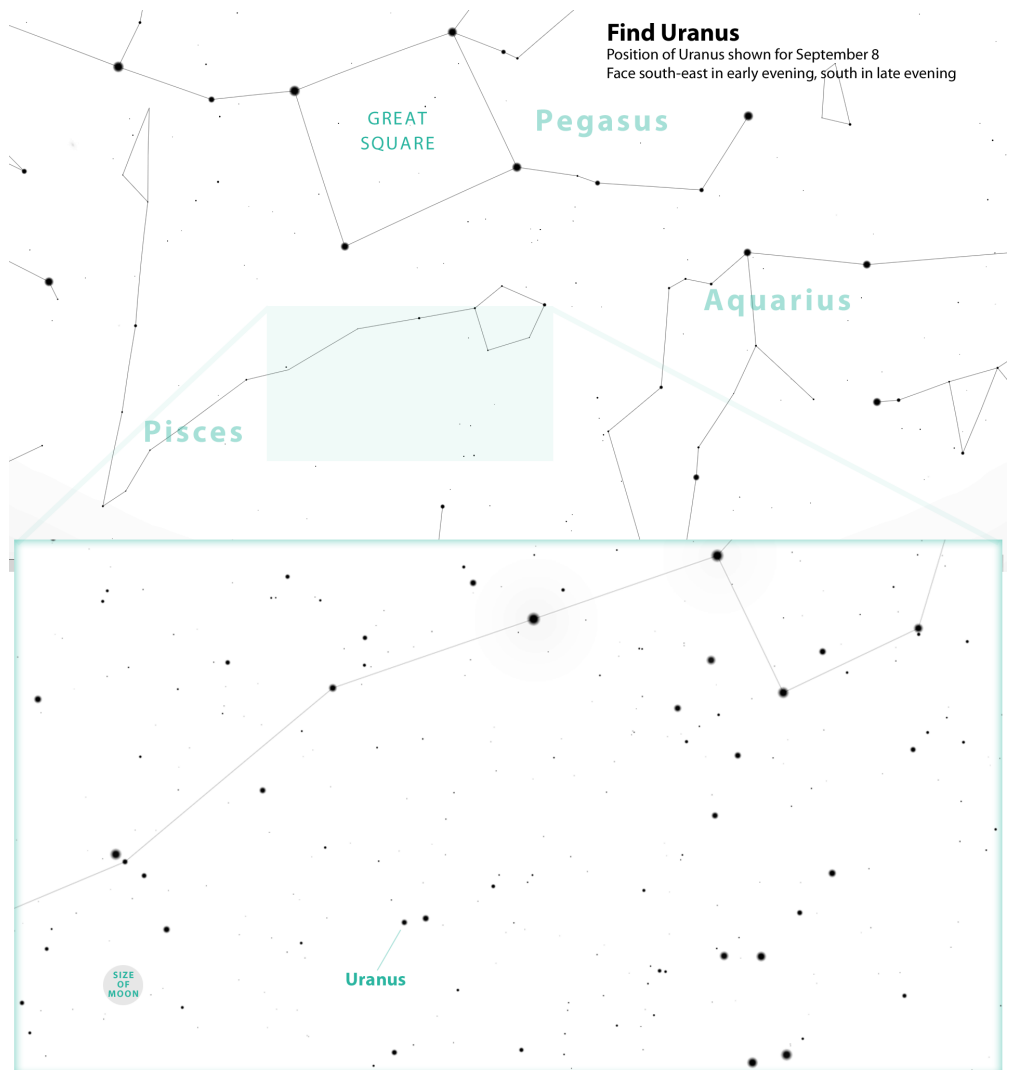
Many of the local observatories' telescopes are computer-guided, so don't hesitate to ask the volunteer operator to dial up Pluto.

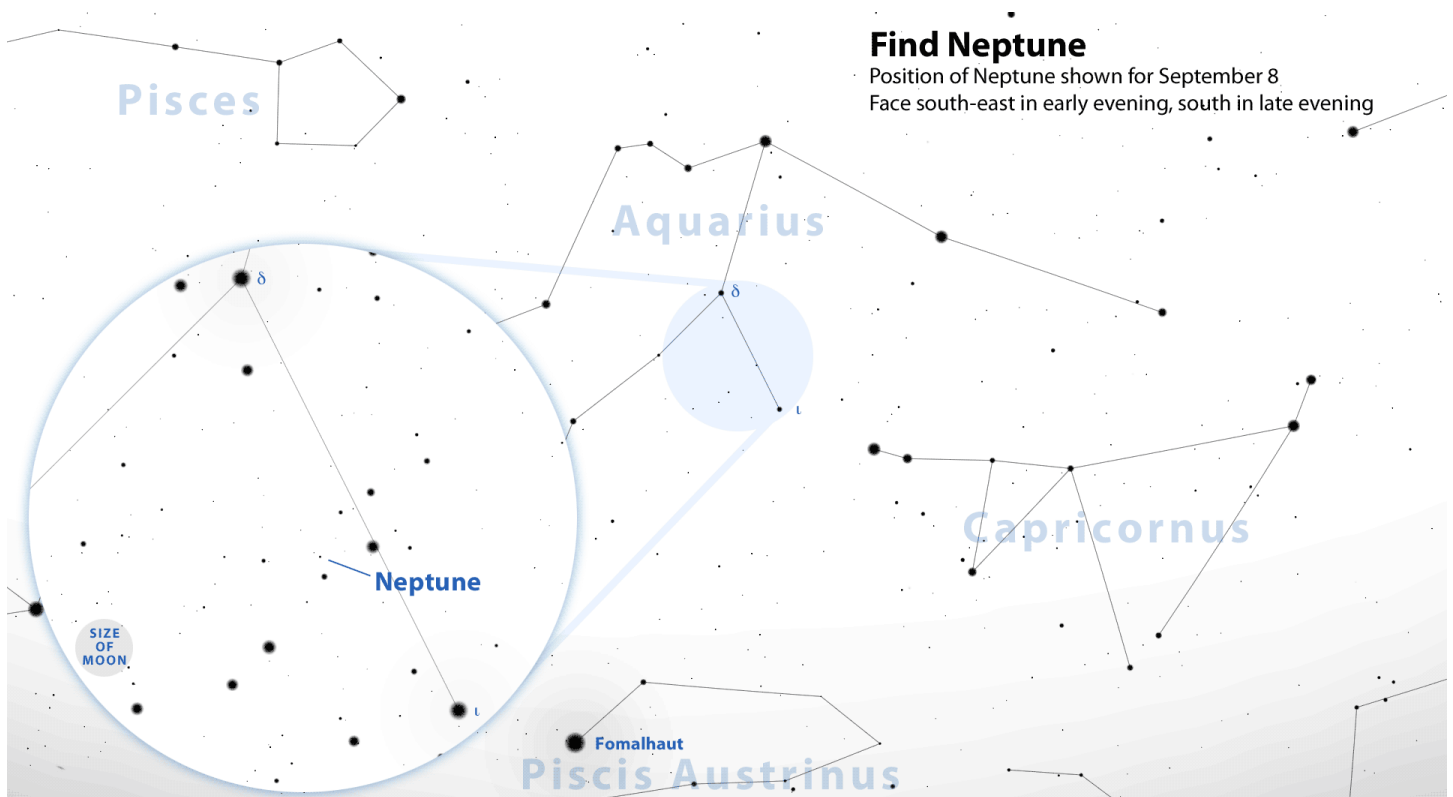
Pluto now has five known moons, the latest discovered by the Hubble Space Telescope on July 11 of this year. None of these moons can be seen in any amateur telescope. A spacecraft named New Horizons is currently en route to Pluto to conduct a mapping mission during its fly-by of this distant "former" planet. It was launched on January 19, 2006, and will arrive at Pluto on July 14, 2015. That's a nine and a half year journey. And you thought that summer vacation drive with your family was long!

On the same night and time **Neptune**, about 2.7 billion miles from the Earth, can be found about 20 degrees above the southeast horizon in the constellation of Aquarius, shining at a magnitude of 7.8.

When viewed through a telescope an observer can see the bluish-green disk of the planet. You won't be able to see any details in the cloud tops of this cloud-enshrouded world, but how many people can say they actually observed Neptune? This world has 13 known moons. The largest one, Triton, can be viewed with a 10-inch telescope.

Also on that evening at 9:00 pm, **Uranus**, shining at magnitude 5.7, can be located only seven degrees above the eastern horizon in the northern part of Cetus on the Pisces border. Many of the local observatories are not located in an area that affords them a view of objects this close to the horizon. You'll have to wait until later in the evening, or wait until mid to late September for Uranus to move higher into the sky. Uranus will show a much larger bluish-green planetary disk than Neptune,





### Find Neptune

Position of Neptune shown for September 8  
Face south-east in early evening, south in late evening

but this cloud enshrouded world will also not reveal any details in its cloud tops. Uranus will be about 1.8 billion miles from the Earth. It has 27 known moons. The five major ones are Titania, Oberon, Ariel, Umbriel and Miranda. The first two require a 14-inch telescope to observe, while the second two only need a ten-inch scope. Miranda requires something a little larger.

By mid-month our distant planetary neighbors will be farther west of their early month positions. Uranus will be much easier to observe as it rises above the tree-line and out of the horizon haze to the east. On September 16 Uranus will move into the constellation of Pisces, and it will be at its closet distance to the Earth on September 29.

As year progresses, the planets will be moving west each successive evening. On

October 1 Pluto will be in the southwest, around 20 degrees above the horizon. Neptune will be about 34 degrees above the south-southeast horizon. And finally Uranus will be high in the east-southeast about 29 degrees above the horizon.

Beyond October we will be able to continue to observe Pluto until mid to late November. Neptune will be observable through December at least, while Uranus will be visible to about mid-February 2013. Of course, these visibility forecasts are all dependent upon the area of the sky not being blocked by trees and buildings at the local observatories.

In conclusion, if you don't own a telescope capable of showing Uranus, Neptune or Pluto, or you can't seem to find them on your own, then visit one of the facilities below. The volunteer telescope operators will

be more than happy to provide a glimpse of these planetary bodies that reside in the outer depths of our solar system.

Seagrave Memorial Observatory (<http://www.theskyscrapers.org>) in North Scituate is open for public viewing every clear Saturday night. Our current hours are from 8:00 – 10:00 pm, weather permitting.

The darkest skies in Rhode Island are available to stargazers every clear Friday night at Frosty Drew Observatory (<http://www.frostydrew.org/>) in Charlestown. Please check the website for open times.

Ladd Observatory (<http://www.brown.edu/Departments/Physics/Ladd/>) in Providence plans on reopening on September 4. Check the website for any updates.

Good luck and keep your eyes to the skies.

## Upcoming Meetings

### Friday November 2

November Meeting at Seagrave Memorial Observatory  
**Professor Brad Marston** presents "Quantum mechanics plays a crucial role in determining the Earth's climate"

### Saturday December 1

Holiday Party Meeting at North Scituate Community Center

### Friday January 4

January Meeting at North Scituate Community Center

### Friday February 1

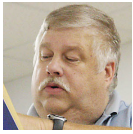
February Meeting at North Scituate Community Center  
**Prof. Ralph Milliken** works on the Mars Science Laboratory mission at JPL and will give a presentation about the mission.

### Friday March 1

March Meeting at North Scituate Community Center  
**Dr. Kim Arcand** will be presenting.

### Friday April 5

April Meeting at Seagrave Memorial Observatory



# Observing the First Quarter Moon

Dave Huestis

The Moon is an easy target for even the cheapest of small telescopes. Even binoculars can show a casual stargazer the more prominent features that populate the lunar landscape.

With those parameters in mind, I'm going to highlight some of the major features that are easily discernible if you know where to look and what to look for. During the monthly lunar cycle an observer can watch the sunlit portion of the Moon wax (get bigger) and wane (get smaller). I don't want to overwhelm you if you're just a budding amateur astronomer, so I've restricted this observing session to the first quarter Moon, technically a waxing phase that can be observed during the early evening hours after sunset.

The accompanying first quarter Moon map has my selection of features labeled which I will now highlight.

The map is oriented north/south, top/bottom, the way the Moon appears to the naked eye. Your telescope may invert the image, or may shift it right to left. If this is the case, you'll have to mentally allow for these differences when referencing the map. When binoculars are used, the Moon's image will be as the eye sees it in the sky. Though manned and unmanned missions to the Moon have unveiled its secrets, one can relax in the backyard and explore the Moon. For the beginning observer, as well as the seasoned amateur astronomer, the Moon is quite an exciting world to discover with binoculars or telescope.

Though the Moon reaches first quarter on October 29, you may begin observing it anytime after new moon on the 22nd. If you get a chance to observe each night, you'll see new features emerge from lunar night into sunlight. This sunrise point, called the terminator, is a wonderful

area to train your telescope or binoculars. Much detail can be seen here because the sun is low on the lunar horizon, thereby casting exceedingly long shadows. As the sun rises higher into the lunar sky, you'll see the same features "change" their appearance. You'll see what I mean when you observe the phenomena firsthand.

We will begin our exploration of the first quarter Moon with the six seas that can be seen best during this lunar phase. Lunar

## Seas/Mare

- A – Frigoris (Cold)
- B – Serentatis (Serenity)
- C – Tranquillitatis (Tranquillity)
- D – Nectaris (Nectar)
- E - Crisium (Crises)
- F – Foecunditatis (Fertility)

## Craters

- G – Aristoteles ( 55 / 12,000 ft )
- H – Hercules ( 45 / 12,500 ft )
- I – Atlas ( 54 / 10,000 ft )
- J – Posidonius ( 60 / low, walled plain )
- K – Pliny ( 27 / 10,500 ft )
- L – Hipparchus ( 93 / 10,800 ft –  
lava filled/wall impact )
- M – Albategnius ( 81 / 14,400 ft )
- N- Theophilus ( 65 / 23,300 ft )
- O- Langrenus ( 85 / 16, 200 ft )



seas are not seas as we know them on the Earth, though early astronomers thought they were bodies of water. Rather, they are seas of solidified lava.

When huge meteors struck the lunar surface billions of years ago, lava welled up through the resultant craters and flowed out onto the low plains. These "maria," or seas, are the smooth plains we can easily view with the naked eye. Since lunar seas formed after the heavy bombardment

of cosmic debris, the sea floors are marred only by a small number of craters. This will be quite evident in binoculars and telescopes.

Six major seas can be seen at first quarter. Start your observations at the northern (top) portion of the Moon. You will see (A) Mare Frigoris, Sea of Cold; (B) Mare Serentatis, Sea of Serenity; (C) Mare Tranquillitatis, Sea of Tranquillity; (D) Mare Nectaris, Sea of Nectar; (E) Mare Crisium, Sea of Crises; and (F) Mare Foecunditatis, the Sea of Fertility. The names applied to these features indicate that early astronomers had quite a different landscape in mind for our desolate neighbor.

Next we'll examine some prominent craters that can be seen at first quarter. Just south of the Sea of Cold (A) is the crater Aristoteles (G). It is 55-miles in diameter and about 12,000-feet deep. On the crater floor are two central peaks that should be easy to spot with a small telescope. Notice the massive crater walls -- they remind me of the terraced farmlands of China. To the east (right) of Aristoteles is a close pair of interesting craters, Hercules (H) and Atlas (I). Hercules is 45-miles in diameter and 12,500-feet deep, whereas Atlas is 54-miles in diameter and 10,000-feet deep. Both have very steeply terraced walls and are well preserved ---- they have not been obliterated by later impacts. Hercules has a small crater on its floor just south of its center. Atlas also has many interesting features on its floor, including a crisscrossing of six rilles or clefts, which were caused by the collapsing of material below. (It looks similar to earthquake faults or sinkholes.) So much detail is visible in this region that you could easily spend an entire evening observing Hercules and Atlas. However, this is just an introduction to lunar observing. Additional craters merit more than a casual glance as well.

South of Hercules and Atlas and on the northeast edge of the Sea of Serenity (B) is found one of the Moon's finest craters, Posidonius (J). Posidonius is 60-miles

in diameter and has very low and narrow walls. Considered to be a walled plain, it is the remnant of an ancient crater that was partially melted and filled with lava. An inner ring spirals out from north of Posidonius' center toward its south wall. There are also several central peaks visible on the floor, as well as an impact crater. Several other craters can be found on and just outside of Posidonius' northeast crater rim.

At the juncture of the Sea of Serenity (B) and the Sea of Tranquillity (C) lies a 27-mile wide crater called Pliny (K), standing like a sentinel between the two seas. Pliny has a very bright floor 10,500 feet below the crater rim. It is also well preserved, having been of fairly recent origin. The small central peak, however, looks like it has been pulverized by some past action.

A good distance to the southwest lies ancient crater Hipparchus (L). Not only has this crater been lava flooded, but also just inside the north wall is another impact crater. Its south wall has been breached by an additional impact as well. Though Hipparchus is one of the largest craters, its heyday as a lunar showpiece was perhaps billions of years ago, before it was dramatically altered by impacts and lava flows.

In stark comparison to the crater Hipparchus is Albategnius (M), a neighbor to the south. It too is an old feature, but unlike Hipparchus, it has not been obliterated. Albategnius is 81-miles in diameter and 14,400-feet deep. Solidified lava has also partially filled it. A large impact crater is visible on its southwestern wall. This 30-mile scar almost reaches the small central peak on Albategnius' floor. This too has been filled with lava, though a central peak remains visible.

To the east we find Theophilus (N) on the shores of the Sea of Nectar (D). This extremely well-preserved crater is 65-miles in diameter and 23,300-feet deep. Its walls are very steep and full of detail. The southwest wall encounters another crater of almost identical size. (I call them the "Siamese Craters.") Theophilus also has a multiple central peak region that catches the early sunlight while the deep floor remains in darkness. This peak stands out like a beacon when the terminator approaches the eastern wall of the crater.

The last feature we'll explore today resides on the edge of the Sea of Fertility (F). It is an 85-mile wide crater called Langrenus (O). This crater stands in great contrast to the lava plain. The crater walls rise about 6500-feet from the floor of the plain, then

steeply descend 16,200-feet to the crater floor. A small telescope will show a small central peak at the bottom.

In conclusion, please do not observe only the features I have outlined. There are many more craters, as well as majestic mountain ranges, to behold. Hundreds of rilles and valleys also await your gaze. If you've enjoyed the challenge of locating the features detailed in this column, please continue your lunar exploration by acquiring a detailed Moon map. Remember, we have looked at the Moon only during first quarter. There's yet another half of the lunar surface which faces the Earth that we haven't even examined!

Keep your eyes to the skies!!



# Remembering Neil Armstrong: A Perspective

Francine Jackson

With the passing of the first man to walk on the Moon, the world is a different place. Gone is a real hero, who made history by doing what many would only dream of.

Over dinner, Jim and I realized that there are two different people in the world: The baby boomers - and older - who were able to see firsthand the miracle of 20th Century technology, as two men walked on the Moon, and the Gen Xers and younger for whom the event is a bump in their history books. It was thought it might be a good idea to view this first - and original - Moonwalk from the two differing perspectives.

Just like the rest of the world, my eyes

were glued to the TV set as Armstrong walked down the ladder of the Eagle, on his way to set foot on what, up to then, had been the unknown world only visible by reflected sunlight. And, what an effort! Any and all ideas about the surface of the Moon had been described, including the possibility that the regolith could have covered the surface for several feet, and the little craft might just set down and continue, perhaps like an animal in quicksand. But, it didn't happen. As Armstrong opened the hatch and looked down, he noted the Canadian footpads were hardly imbedded in the lunar soil at all. And then he came down the ladder - and made the first of the footprints

that will outlive us all.

This happened during the summer before my first year in Illinois, as I was waiting to begin my degree in Astronomy. This night solidified my resolve to continue in the sciences, for, even though we know the Apollo program was meant to show the advanced science and technology of the United States, and therefore to show that we were victors of the alleged Cold War, that exploration was alive and living in the '60s, and hopefully beyond. All of us watching history right off our television set believed we were observing just the start of manned space travel continually to the Moon - and beyond. The work of Armstrong, Aldrin and Collins on this first of several lunar landings wasn't supposed to end. And, now, with the passing of Armstrong, a major part of the dream has ended.



# Remembering Neil Armstrong: A Perspective

Jim Hendrickson

History's most significant moments are often invoked by those who experienced them with question "where were you when?". For me, it was the loss of the Space Shuttle Challenger on January 28, 1986. Until that time, I had no recollection of a time when spaceflight was not a routine affair. I had known that men had been to the Moon, and the name Neil Armstrong was familiar to me, but never knowing a time when men hadn't been to the Moon, the Apollo Moon landings didn't stand out as momentous an accomplishment as it would have for those who lived and experienced them.

For many of my friends in Skyscrapers, their "where were you when" moment was Neil Armstrong's "one giant leap" on July 20, 1969. This event and the Cold War space race that lead up to it were the inspiration for many of them to become interested in space and astronomy.

Since I cannot relate to the actual moment of the first Moon landing, I do recall first learning about it. In the early 1980's my family would take vacations at Old Orchard Beach in Maine. We would often visit a seafood take-out place up the street from the motel where we stayed, which involved placing your order at the order win-

dow, and waiting outside the pickup window until your number was called.. Dad and I would always go to pick up the order while Mom and my sister waited back at the motel. There was this one particular time we went late, just after the Sun had set and a waxing crescent Moon hung high in the sky. As it always seemed like an eternity before the food was ready, Dad and I got to



talking about the Moon, and he mentioned that men had landed there in the past, but not anymore. I was intrigued by this, and I became somewhat more interested in looking at the Moon that night. When we got home he took out an old issue of

National Geographic and showed me what the Apollo missions looked like. I found it interesting, but would not really be captivated by the significance of it until a few years later.

While the Challenger accident was indeed a very sad event, I would eventually come to recognize that it had become my own personal inspiration to learn more about human spaceflight and the courageous adventures of the men and women who took part in it. In short time I learned about Sputnik, Yuri Gagarin, Mercury, Gemini, and Apollo, and for the first time realized that Wow! Men have walked on the Moon!

Up until now, I have lived during the same time period as Neil Armstrong, the first man on the Moon.. So while I was not here for the first moonwalk, Neil and I have walked the Earth during the same time period. This may not sound like a note of significance but it is important to consider that Neil left his mark not only on the Moon, but also on humanity itself. His first footsteps on another world for all mankind will remain in the collective consciousness of human civilization for all of eternity, and as such it is remarkable to think that I have lived during the lifetime of one of the most significant people in all of human history. Carl Sagan once quipped "How lucky we are to live in this time—the first moment in



human history when we are in fact visiting other worlds.”

I am pleased that with Neil Armstrong's passing has come not a mourning of his death but a celebration of his life. For it was not just his courageous accomplishments, but also his dignity and humility that have shown us what the character of a truly great human being should be. He made this world a better place by expanding the boundaries of knowledge and significantly raising the bar on what is possible, and he did it for all mankind.

Never stop wondering. Never stop exploring. Rest in peace, Neil.

“The surface of the Earth is the shore of the cosmic ocean. On this shore, we've learned most of what we know. Recently, we've waded a little way out, maybe ankle-deep, and the water seems inviting. Some part of our being knows this is where we came from. We long to return, and we can, because the cosmos is also within us. We're made of star stuff. We are a way for the cosmos to know itself.” – Carl Sagan



## The Coathanger Asterism in Vulpecula

Glenn Chaple

If you slowly scan the southern part of Vulpecula (the lower left part of the accompanying finder chart) with binoculars or rich-field telescope, you'll come across a remarkable asterism comprised of 10 stars arranged in the distinct form of a coathanger. Six line up to form the bar, while four others create the hook. It's quite an eye-opening sight!

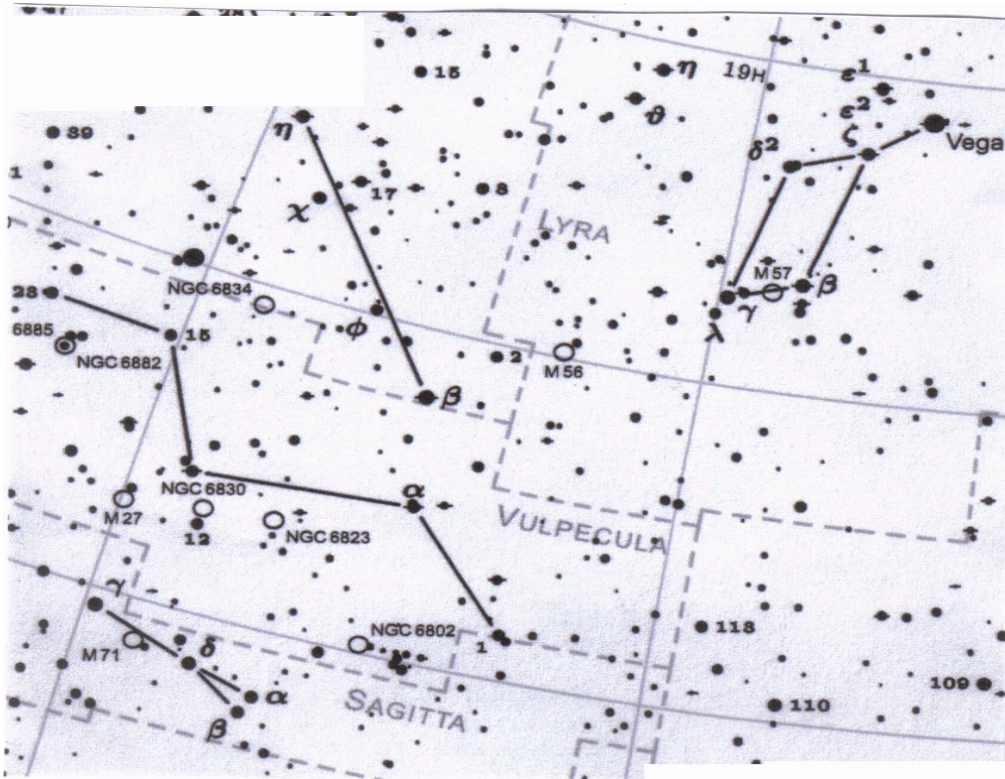
The Coathanger was seen as a nebulous

spot in 964 AD by the Persian astronomer Al Sufi and was rediscovered by the 17th century Italian astronomer Giovanni Battista Hodierna. Because of its large size (a 1 1/2 o span), the Coathanger wasn't included in the catalogs of Messier, Herschel, or the NGC. In the 1920s, the American amateur astronomer Dalmiro Brocchi sketched it in a finder chart for the American Association of Variable Star Observers (AAVSO).

Since then, the Coathanger has been particularly known as Brocchi's Cluster. Its formal identity on most star atlases is Cr 399, the 399th entry in a 1931 catalog of star clusters produced by the Swedish astronomer Per Collinder. Surprisingly, the Coathanger Cluster isn't a true star cluster at all, but a chance alignment of stars ranging from 200 to 1100 light years away.

Before leaving the Coathanger, get out your telescope and train it on 7 Vulpeculae – the easternmost star in the Coathanger. Less than a degree to its east is NGC 6208, a 9th magnitude open cluster that spans about 3 arc-minutes. In small scopes, NGC 6802 appears as a faint, slightly elongated smudge. In larger instruments, you'll see what Walter Scott Houston described as a “delicate splash of celestial fire.”

In his “Binocular Universe” column for the Cloudy Nights website, Phil Harrington features the Coathanger and NGC 6802. You'll find it at [www.cloudynights.com/item.php?item\\_id=2026](http://www.cloudynights.com/item.php?item_id=2026).



12 SEPTEMBER 1977 SOME HAZE  
(10:00-10:35 PM EDT)

COLLINDER 399, a cluster  
in Vulpecula - sight of a  
recent Nova

8X50 Binoculars

## SEPTEMBER REPORTS



## Secretary

Tom Thibault

### Board of Directors Meeting Minutes – 7/27/12

**Attendees:** Ed Haskell, Bob Horton, Kathy Siok, Lloyd Merrill, Tom Thibault, Jim Hendrickson, Bob Napier, Pat Landers, Steve Siok, Conrad Cardano, Dave Huestis, and Jim Brenek.

Meeting called to order at 7:30PM at Seagrave.

The following discussions occurred:

**Ed Haskell, President:** Ed proposed nominating Peter Schultz with an Honorary Membership to Skyscrapers. The B.O.D. discussed and approved Ed's proposal. It is planned to have Peter Schultz nominated at AstroAssembly for consideration and vote by the membership at the next Annual Members Meeting in April of 2013 as prescribed in the Constitution and Bylaws.

Ed noted the continued efforts to address late membership dues to date. Treasurer Lloyd Merrill provided an updated status of those currently in arrears. The following next steps and possible solutions will be considered to resolve this continuing issue: • Send letter to past due members. • Contact via phone by BOD members • List paid members in newsletter • Create a list of those in to be considered for removal from voting role. • Develop On-line payment system.

It was noted that the budget line items regarding Membership Cookout no longer apply and should be removed. The associated funds will be reallocated appropriately.

Ed requested Dave Huestis to speak on the following items: A letter received from Chris Iozzi of the Foster Conservation Committee. Chris was so impressed with his recent visits to Seagrave and inquired on membership categories that may accommodate groups such as theirs. It was discussed and determined membership should be handled within our current category structure. • Begin the practice of emailing an acknowledgment of new membership acceptance including noting the organizations requirement to be present for both introduction and vote of acceptance. Additionally, a copy of the New Members Guide would be included within the email. • Con-

tact by "The Valley Breeze" which requested permission to produce an article on Seagrave, Skyscrapers, and to coincide with the upcoming Perseid Meteor Showers. Ed and Dave met with them and expect the article will be in an upcoming August edition. • Ed noted Bob Napier, with his wife's assistance, has arranged for Skyscrapers to have a display on the grounds of the Scituate Library during the Scituate Art Fair. Volunteers will be needed and members will be solicited. • It was proposed and approved to adopt the rule that a count of four (4) BOD members constitutes a quorum.

**2nd Vice President, Kathy Siok:** Presented a draft of the AstroAssembly Program. Kathy is considering sending a copy to the membership and attendee's based on past year registration.

1st Vice President, Bob Horton:

Bob noted that Septembers Meeting will feature Member presentations.

Discussed results to date of the practice of holding Summer Meetings on Saturday. The consensus was the practice has overall been successful and appeared to be well received. Members remaining to view through the organizations telescopes after the meeting increased at the 2nd such meeting and anticipation is for increases to continue with the continuation of this format.

Discussion followed on whether the Saturday format should continue beyond the summer season. It was noted that AstroAssembly and the Holiday Meeting occur on Saturday and to include November as such. Ed would contact the Scituate Community Center to determine availability of Saturday Evening in the winter months prior to considering the change as a yearlong format going forward.

**Member at Large, Bob Napier:** Discussed observations of operations at Public Night. It was noted this fall under the umbrella of the Trustee's and the Observatory Committee. Steve Siok indicated an Observatory Committee meeting would be scheduled in this regard.

It was also noted that information on the automation of the 16" Meade was needed. Tom Thibault noted a meeting of the committee tasked with this endeavor would be scheduled. Meeting would center around determining current equipment and cost of procuring that needed to complete Phase 1, the link between the 16" Meade and the

meeting hall and projection of images from the 16" Meade.

**Misc items:** Discussion regarding Alex Bergemann's scout troop camping at Seagrave on an evening in November.

Scott Bergemann's completion of removing a family of squirrel's from the ceiling of the meeting hall and subsequent needed to repair holes in the structure to avoid a repeat of this condition.

Meeting adjourned at 9:30PM

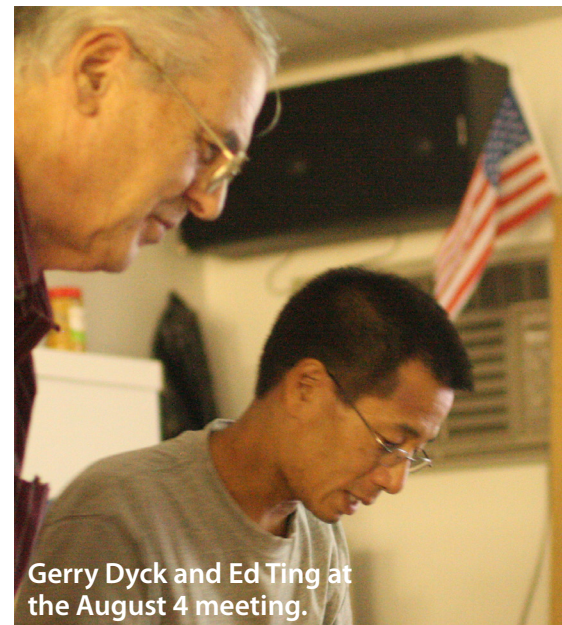
### Skyscrapers August Meeting Minutes – 8/4/12

The August Meeting began at 5:30 with a Pot Luck meal. The 3rd in the summer series of pot luck dinner membership meetings.

In the absence of President Ed Haskell, **1st Vice President Bob Horton** called the Skyscraper August Meeting to order at 7:30PM.

Bob outlined the meeting format and noted the following items to the membership:

Bob, on the behalf of 2nd Vice President Kathy Siok informed those attending that volunteers are needed for AstroAssembly. A poster size sign-up sheet was displayed with a variety of activities needing volunteers. • Those interested in providing a Member presentations for the Friday evening of AstroAssembly, please contact Kathy Siok. • Linda Bergemann is now accepting AstroAssembly registrations at the discounted rate of \$17.00 until September 1st. • Membership Dues are past due and



Gerry Dyck and Ed Ting at the August 4 meeting.



# Treasurer

Lloyd Merrill

submittals continue to be accepted. • Our September Meeting will be held on September 8th at Seagrave. This will be the last

of our Pot Luck summer meeting for this year and will begin at 5:30 on Saturday as have the previous.

Bob then turned the floor over to the following members.

**Historian Dave Huestis:** Dave informed the attending members of upcoming Valley Breeze article that will be featuring Skyscrapers. Dave and Ed met at Seagrave with Valley Breeze Staff Writer, Meghan Kavanaugh. Meghan was putting together an article on the upcoming Perseids meteor shower and felt Skyscrapers would be a great tie in and source of information. Keep an eye out, the article should be featured in the August 2-8 edition.

**Trustee Conrad Cardano:** An Observatory Committee Meeting will be held at Seagrave on August 13th at 7:00PM. Attendance is requested of all Observatory Committee Members.

**Bob Horton** then introduced our 1st presenter of the evening, our very **Gerry Dyck**. Gerry showed a couple of photos he had captured of the recent Venus Transit and Solar Eclipse. Gerry then followed with a slide show featuring photos of past Stellafane events accompanied by his Stellafane Poem to highlight this year's upcoming event.

Bob Horton then introduced our featured speaker, **Ed Ting**. Ed provided a interesting and informative presentation on webcam imaging. Ed highlighted the equipment used, cost factors and processes involved. Ed displayed photo's captured by himself and other members of the NH. Astronomy Club in Manchester, NH... This was followed by photos of those at the top of their field of this type of Astrophotography from around the world, what amazing work.

Bob Horton closed the formal meeting at 9:05PM and indicated that our telescopes were open for the viewing pleasure of the membership.

YTD Budget 4/1/2012 to 8/21/2012

2012-2013 Budget

Actual

Difference

**INCOME**

Astroincome	\$3,500.00	\$0.00	-\$3,500.00
Donation, Other	\$300.00	\$317.05	\$17.05
Dues	\$3,310.00	\$2,110.00	-\$1,200.00
Interest Inc	\$60.00	\$16.20	-\$43.80
Starparty Donations	\$200.00	\$455.00	\$255.00
<b>TOTAL INCOME</b>	<b>\$7,370.00</b>	<b>\$2,898.25</b>	<b>-\$4,471.75</b>

**EXPENSES**

Astroexp	-\$2,750.00	\$0.00	-\$2,750.00
Cookoutexp ** Removed	\$0.00	\$0.00	\$0.00
Corporation, State Fee	-\$22.00	\$22.00	\$0.00
Domain Name	-\$15.00	\$0.00	-\$15.00
Donations	-\$50.00	\$50.00	\$0.00
Electric	-\$175.00	\$71.80	-\$103.20
Other Insurance, Property	-\$2,600.00	\$0.00	-\$2,600.00
Postage and Delivery	-\$225.00	\$0.00	-\$225.00
Presidents Fund	-\$150.00	\$0.00	-\$150.00
Printing and Reproduction	-\$83.00	\$0.00	-\$83.00
Propane	-\$100.00	\$80.25	-\$19.75
Property Maint Fund	-\$200.00	\$297.00	\$97.00
Refreshment Expense	-\$350.00	\$129.00	-\$221.00
Trustee Exp	-\$700.00	\$772.12	\$72.12
<b>TOTAL EXPENSES</b>	<b>-\$7,420.00</b>	<b>\$1,422.17</b>	<b>-\$5,997.83</b>

**Net Cash Flow**

**\$1,476.08**

**Cash Assets**

Citizens	\$9,362.26
Capital One	\$12,273.25
<b>Total</b>	<b>\$21,635.51</b>





Gerry Dyck and Rick Lynch observe the sun after the potluck dinner before the August 4 meeting.

## Upcoming Outreach Events

Please volunteer for one or more of these fun events. Bring your telescope and share the wonders of the night sky. Contact Bob Forgiel: [bforgiel@cox.net](mailto:bforgiel@cox.net)

**Saturday Sept. 15th**  
home schooling group visit to Seagrave  
Brief program in meeting hall at  
7:30 / Viewing at 8:00PM

**Thursday, Sept. 20th**  
Scouts visiting Seagrave  
program in meeting hall at 6:30  
viewing by 7:30 sunset 6:44

**Friday, Sept. 21**  
Steere Farm  
Dave Huestis coordinating

**Saturday, September 22nd**  
International Observe the Moon  
Night at Seagrave Observatory

**Friday, Oct. 19th / rain date of Saturday,  
October 20, 2012**  
Woman's Wilderness Weekend  
URI Alton Jones Campus

**Monday, Oct. 22nd**  
Callahan Elementary School  
Dave Huestis coordinating

**Friday, November 9th / Rain date of  
Nov. 16th**  
Portsmouth Middle School



Al Hall helps Glenn Jackson collimate his 6-inch f/5 reflector at Stellafane.

## Skyscrapers at Hartness House Workshop



Jim Hendrickson

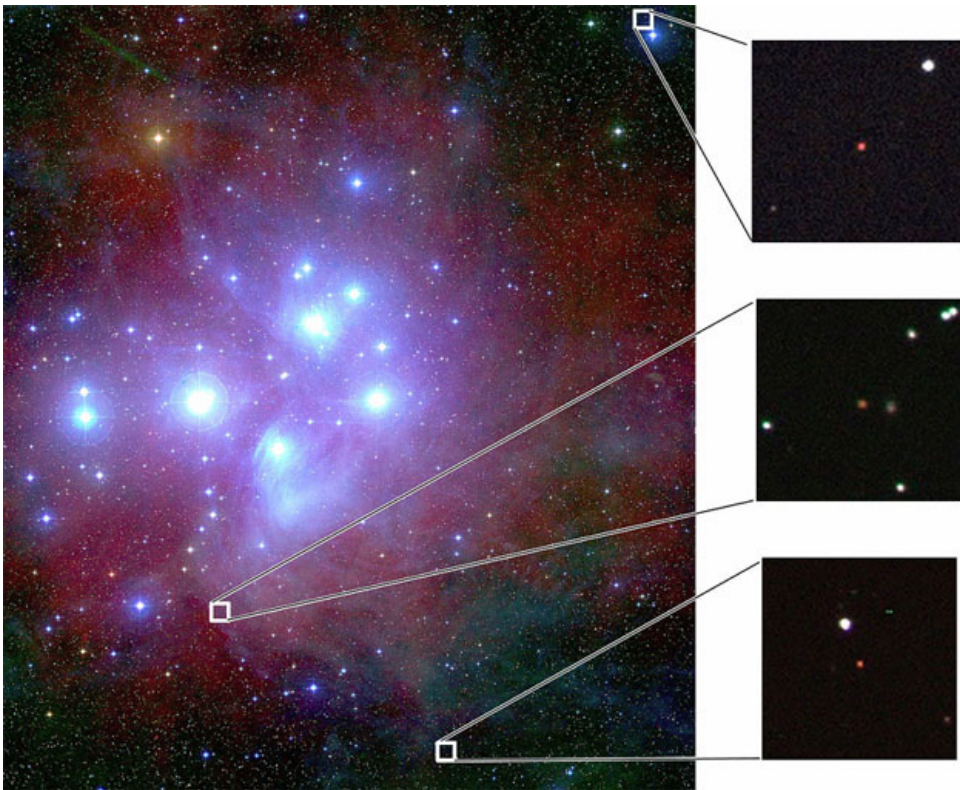
On Thursday, August 16, the day before Stellafane, 13 members of Skyscrapers, Inc. attended the fourth annual Hartness House Workshop in Springfield, VT. The event is organized by members John Briggs and Dan Lorraine and this year's event focused on antique telescopes and instruments. Among the presentations were Al Hall and Dick Parker giving an update on the progress of their 3/4 scale Alvan Clark telescope reproductions, including a display consisting of the completed lens cells and working governors from the twin telescopes. Following the workshop was a prime rib dinner at Hartness House



and observing with the 1910 Hartness Turret Telescope. We hope that even more Skyscrapers members will be able to attend next year.

Below, left to right: Joe Sarandrea, Kathy Siok, Jack Szelka, Jim Hendrickson, Francine Jackson, Anna E. Briggs, John Briggs, Steve Siok, Jim Crawford, Al Hall, Dick Parker, Dan Lorraine, and Glenn Jackson. Skyscrapers member Tony Tripodi also attended the workshop but was not available for the photo.





to brown dwarf progenitor clump). Several other large gas clumps play a gravitational game of bumper cars. In a typical “three’s-a-crowd” interaction, a clump is gravitationally ejected from the system. The clumps left behind may fall into the star or get tidally shredded.

The runaway clump later forms its own separate accretion disk and gravitationally collapses down to a compact object ranging from one-tenth to one-third the mass of our sun. In some cases two brown dwarfs contract out of the clump to make a binary system.

I’m fascinated by this theoretical work because I wonder if it would help explain one of the most legendary and strangest space photos ever taken -- of an unexplained object called TMR-1c:

In 1998, the Hubble Space Telescope



made an infrared photo of a very red pin-point object that is at the end of a ghostly finger of illuminated dust stretching 135 billion miles from a young binary star system. The telltale finger was interpreted as being formed after a large, hot planet was gravitationally ejected from the binary.

It was later dismissed as simply a chance juxtaposition of the dust-reddened light from an old background star with a foreground linear nebulous feature. However, ground-based telescopic observations in 2009 show that the mystery object had gotten brighter and bluer. This is something a normal main sequence star could never do.

The variability in brightness and color is interpreted as a young substellar object surrounded by a spinning thick disk of dust. The colors of TMR-1c could be explained by the presence of a condensed atmosphere, as commonly observed among brown dwarfs.

These detailed computer simulations underscore that star-making, planet-making and even brown dwarf birth is a much more chaotic and messy business than ever before imagined.

Photo credits: ESO, S. Basu, NASA

*This content distributed by the AAVSO Writer’s Bureau.*

## Brown Dwarf Birthing May Explain Mystery Object

Ray Villard, Discovery Space



Some of the most mysterious objects in our galaxy are also among the most numerous. And it turns out that there’s an estimated 100 billion mysterious brown dwarfs scattered among the stars.

They are so ubiquitous that there could be one closer to the Earth than the nearest star system, Alpha Centauri. If a brown dwarf is ever discovered nearby, it would likely be the target of our first interstellar mission.

Brown dwarfs are smaller than the lowest-mass stars but can be dozens of times more massive than Jupiter. They are too low mass to sustain hydrogen fusion and so technically they are not stars by definition. (The term brown dwarf is also misleading because brown is not a color in the visible spectrum. Something like ultra-red dwarfs would be a more appropriate name.)

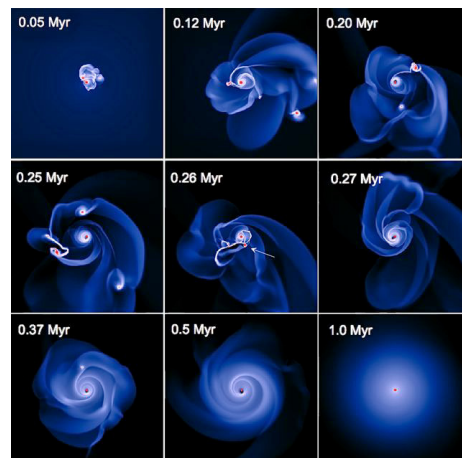
Among the biggest questions is why brown dwarfs aren’t commonly found orbiting normal stars. However, some tend to hang out together in binary pairs of dwarfs. That said, they are found in the vicinity of normal stars but not gravitationally bound to them, as seen in the above photo of the Pleiades star cluster.

A newly published set of dynamical simulations points to brown dwarfs being

born as knots of gas in protoplanetary disks around normal stars. They are then rudely ejected into interstellar space as lone drifters.

“We conclude that gas clump ejection and the formation of low-mass and substellar objects is a common occurrence, with important implications for understanding the formation of stars,” writes Shantanu Basu of the University of Western Ontario and Eduard I. Vorobyov of the University of Vienna.

The team’s simulations show a lumpy, fragmenting gas disk whirling around a forming star (as seen here, arrow points





Skyscrapers, Inc. Presents

# AstroAssembly 2012

Friday & Saturday, September 28 & 29 Citizen Science & Astronomy

**7:30pm** Friday Evening Informal Talks at Seagrave Memorial Observatory  
**Conrad Cardano** and **Tony Costanzo**

**9:00am** Saturday Program at Seagrave Memorial Observatory  
 All day: H-alpha solar observing, raffle, vendor, swap table,  
 Astrophotography Contest & Astro Bake-Off

**11:00am** **Ed Turco** Skyscrapers, Inc.  
*Amateur Astronomy Equipment in 1961 - Early Citizen Science in Astronomy*

**1:00pm** **Gerry Dyck** Skyscrapers, Inc.  
*The Variable Star Observations of Frank E. Seagrave*

**1:15pm** **Dr. Carie Cardamone** Brown University  
*An Introduction to Citizen Science*  
 Dr. Cardamone is actively involved in Citizen Science as a member of the Galaxy Zoo science team ([www.galaxyzoo.org](http://www.galaxyzoo.org)).

**2:30pm** **Dr. Meg Schwamb** Yale Center for Astronomy and Astrophysics  
*Searching for Exoplanets with 340,000 Eyes*  
 Dr. Schwamb is a project scientist for Planet Hunters a citizen science project searching for the signatures of extrasolar planets in the public data obtained from NASA's Kepler mission. Using the results from Planet Hunters classifications she studies planet formation and evolution.

**3:45pm** **Dr. Carie Cardamone** Brown University  
*The Green Pea Galaxy Project*

**5:30pm** Reception at North Scituate Community Center

**6:15pm** Buffet Dinner (pre-registration required)

**7:30pm** Introductions, Raffle, Prizes

**8:15pm** **Dr. Bethany Cobb Kung** George Washington University  
 Dr. Kung is involved with time-domain astronomy, primarily studying gamma-ray bursts and also cataclysmic variables and will highlight this research and the involvement of AAVSO observations in this work.

Name	x	<b>Registrations at \$20 each</b>	Total \$
Address	x	<b>Children under 12 - FREE</b>	
	x	<b>Banquet tickets at \$20 each</b>	
	x	<small>Banquet tickets must be pre-ordered. No tickets will be sold the day of the event.</small>	Total \$
Email	x	<b>Banquet tickets for children under 12 at \$10.00 each</b>	Total \$
		<b>Total \$</b>	

Send completed form and check (made payable to Skyscrapers Inc.) to:

Linda Bergemann  
 41 Ross Hill Road  
 Charlestown, RI 02813-2605

[lbergemann@aol.com](mailto:lbergemann@aol.com)

# 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