



The Skyscraper

Vol. 36 No. 4

April 2009

Amateur Astronomical Society Of Rhode Island · 47 PeepToad Road North Scituate, RI 02857 · www.theSkyscrapers.org



Seagrave Memorial Observatory is open to the public
weather permitting







Saturdays 8pm - 10pm
See www.theSkyscrapers.org for updates.

Membership Dues are due in April

There is a renewal form on the back page of this newsletter. Please complete and return it to the Treasurer at or before the April 3 meeting.

April 2009

-  **2** First Quarter Moon
-  **9** Full Moon
- 15** Mars 0.5° S of Uranus
-  **17** Last Quarter Moon
- 23** April Lyrids meteor shower peaks
-  **24** New Moon
- 26** Mercury at greatest eastern elongation

April Meeting with Dr. Sara Seager

Friday, April 3 at Seagrave Memorial Observatory



Extrasolar Planets and the Search for Habitable Worlds

Sara Seager is the Ellen Swallow Richards Associate Professor of Planetary Science and Associate Professor of Physics at MIT. Before joining MIT in 2007, she spent four years on the senior research staff at the Carnegie Institution of Washington preceded by three years at the Institute for Advanced Study in Princeton, NJ. Her PhD is from Harvard University and her BSc in math and physics from the University of Toronto. Professor Seager is the 2007 recipient of the American Astronomical Society's Helen B. Warner Prize.

Professor Seager's research focuses on theoretical models of atmospheres and interiors of all kinds of exoplanets. Her research has introduced many new ideas to the field of exoplanet characterization, including work that led to the first detection of an exoplanet atmosphere. She was part of a team that co-discovered the first detection of light emitted from an exoplanet and the first spectrum of an exoplanet.

From the president



The annual meeting of Skyscrapers will be Friday April 3rd at 7:30 PM at Seagrave Observatory. First the operating budget for the next year 2009- 2010 will be voted on. The vote will be a yes or no vote. There will be no discussion on any line items. The motion on the floor is to accept the 2009- 2010 budget as presented at the March meeting. Keep in mind this is just the operating budget so that we can pay our bills. Extras such as telescope upgrades, computer programs, or special events will be brought back to the membership for approval.

Secondly, voting for all elected positions will take place at the April 3rd meeting. You will receive a ballot via e-mail, newsletter and those not receiving e-mail will receive a hard copy. There are several ways to vote: 1# complete your ballot and mail to Skyscrapers, 47 PeepToad Rd, Scituate RI 02857, with

your name on the envelope not the ballot. 2# complete your ballot and place in and envelope with your name on the envelope not the ballot and bring it to the meeting. 3# if you forget your ballot there will be extra ballots at the meeting for you to complete. Write-ins are acceptable for all positions. The results of the election will be announce before the end of the April 4th meeting. The new officers will assume their duties at the end of the May meeting.

Saturday March 28th is the celebration of EARTH HOUR 2009 from 8:30 – 9:30 PM. This involves turning off as many business, home, street and city lights as possible for 1 hour so that people might actually see the night sky! Wouldn't it be great to see the new I-Way bridge dark for 1 hour? Even if we can't get the I-Way bridge turned off everyone can do their part. It's not just about saving electricity use but also about losing the night sky. Please join us. More info can be found at <http://www>.

earthhourus.org/map.php

Skyscrapers will celebrate 100 hours of Astronomy sponsored by the International Year of Astronomy, Saturday April 4th. Starting at 7:30 PM at Seagrave we will show a video "Genius-Galileo" the video is 1 hour 20 minutes long. After the video, weather permitting, we will open all of the scopes at Seagrave for public and member viewing. This is a rain or shine event. Hope to see you there.

Most importantly is that membership is due at the April meeting. Along with your dues, monies for your annual subscriptions to Sky and Telescope and Astronomy are due. If you choose not to renew your subscriptions at this time you may obtain your special number from the treasure and renew on your own at anytime. Paying for your subscriptions with your dues enables the treasure to conduct just one transaction rather than multiple transactions.

See you at the April 3rd meeting.



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

President

Glenn Jackson skyscraperlenn@aol.com

1st Vice President

Steve Hubbard cstahs@yahoo.com

2nd Vice President

Kathy Siok kathys5@cox.net

Secretary

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Joe Sarandrea jboss2@cox.net

Roger Forsythe galaxy-77@cox.net

Trustees

Tracey Haley mtk99h@cox.net

Steve Siok

Jim Brenek jbrenek@cox.net

Star Party Coordinator

Bob Forgiel bforgiel@cox.net

Librarian

Tom Barbish labtjb@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 by April 15 to Jim Hendrickson, 1 Sunflower Circle, North Providence, RI 02911 or email to jim@distantgalaxy.com.

Email subscriptions

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

Field Trip to

McAuliffe-Shepard Discovery Center

Saturday, April 18

Concord, New Hampshire

www.starhop.com

Itinerary

1. Leave Seagrave Approximately 9:00 AM
2. Travel to Auburn, Massachusetts to visit Goddard Park and Goddard Grave Site
3. Travel to Concord, New Hampshire visit Christa McAuliffe Grave Site
4. Travel to Discovery Center
5. Head for Home after Planetarium Show (dinner on the way home?)

General Admission \$6.00 per person

Planetarium Show \$3.00 per person. Ice Worlds Planetarium Show at 3:00 PM. Explore the critical relationship between ice and life - a tale of friend and foe, enabling, challenging, supporting and adapting - that has developed over millions of years. Will other ice worlds of our solar system have life? Can they help us understand Earth's changing polar habitats? For answers, Ice Worlds explores the two poles of Earth and the other ice worlds nearby.

The planetarium show often sells out, especially this being school vacation week. **We need 15 people to sign on to get the group rates listed above.** I cannot reserve a place for the group. We need to purchase tickets to reserve a place for the show. I will place an order for all of those who have signed up Saturday April 4th. If you don't sign up for the April 4th purchase of tickets you can take a chance that it will not be a sold-out event and pay general admissions which is \$ 9.00 adult plus \$3.00 for the show. If you would like to join us send me an e-mail (Glenn.Jackson6@verizon.net) or sign up at the Monthly Meeting Friday April 3rd.



Saturn's Disappearing Rings

Dave Huestis

The title of this column may sound alarming to some. And if you took a quick telescopic look at Saturn on the next clear night it would appear that the sixth planet from the Sun seems to be losing its ring system. While astronomers believe Saturn's rings will eventually all "rain" down onto his cloud tops in 50 to 100 million years and cease to exist, the current scenario is not so dire.

In the course of Saturn's almost 29-year orbit of the Sun, our Earthly perspective affords us a view of this magnificently ringed world from different angles. Sometimes Saturn's north pole is tilted away from us, allowing us to view the southern or bottom "surface" of the rings (this is the current situation). At other times the north pole is tilted towards us, and we see the northern or top surface of the rings.

However, in between these views is a time when our perspective allows us to see the rings edge-on, an event called a ring-plane crossing. Imagine a piece of paper slicing through Saturn at his equator, and that you are looking directly at that thin edge of the paper. Ring plane crossings occur about every 15 years. Please visit the following website to view a diagram showing the reason for the changing aspect of Saturn's rings as seen from the Earth:

http://astrocoffeehut.files.wordpress.com/2008/03/changing-aspect-saturn-rings_sm.jpg

I've seen this edge-on view on a couple of occasions during my 35+ years of observational astronomy. I knew another ring plane crossing was going to occur this year, but until last fall I did not realize we would not be able to see the upcoming one on September 4. Why? Saturn will be too close to the Sun in our sky to be seen from the Earth. And what's even worse, the next one in 2025 will not be a favorable event either.

However, if you've not seen Saturn for quite some time, you will be somewhat surprised when you observe it now. During the beginning of March the rings were tilted only 2.3 degrees from the horizontal, and we were still

looking at the southern surface of the ring system. Through the beginning of May the rings will open up just a little wider (the tilt increases so we see more of the rings). Then the tilt begins to shrink until we lose Saturn in the Sun's glare.

If you wish to observe Saturn with your own telescope you can still find him in the constellation of Leo. Regulus is the bluish-white star at the bottom of the "sickle-shaped" pattern that marks the head and front quarters of the lion. (This asterism also looks like a backwards question mark, with Regulus in the location of the period.) Saturn will be down and to the left. On April 1 at 7:30 pm Saturn will be about 40 degrees above your southeast horizon.

Or visit Seagrave Observatory in North Scituate (<http://www.theskyscrapers.org>) or Ladd Observatory (<http://www.brown.edu/Departments/Physics/Ladd/>) in Providence to observe beautiful Saturn through the larger telescopes at each facility. Check out the websites for the public night schedules.

Even with a small telescope with

lesser quality optics you'll still see the rings despite their almost edge-on appearance. Your view will even be better than what Galileo saw when he first observed Saturn in July 1610 at a magnification of 30 times with his one-inch in diameter lens telescope. He was unable to resolve or distinguish the rings. He observed what he believed to be two moons on either side of Saturn's disk (it looked like Saturn had ears or handles), which didn't change position like Jupiter's moons did. Galileo soon lost interest.

When he next visited Saturn the moons were gone! This event was something Galileo could not explain, and he died before the true nature of his observation was discovered. It just so happens that when Galileo revisited Saturn the Earth was crossing the ring-plane, and the rings (Galileo's two moons) disappeared.

It is amazing Saturn's rings are visible at all, considering the planet's distance from the Earth (at the beginning of April - 788,000,000 miles), and the fact that the ring plane is only about 328 feet thick (just larger than the

Saturn's Moons

Glenn Chaple

Every fifteen years, thanks to the nuances of Earth's and Saturn's orbits, Saturn's rings appear edge-on to our line of sight. During a "ring plane crossing" these incredibly thin ornaments virtually disappear in all but the largest telescopes.

We might bemoan the loss of Saturn's rings (they are a major draw at public star parties), but without the glare they produce, we can better view Saturn's retinue of moons. 8th magnitude Titan is the easiest and can be glimpsed in a common 60mm refractor. Rhea (magnitude 9.5), Tethys (10.0) and Dione (10.2) will require 4 to 6 inch scopes. An adventurous skygazer, using a telescope in this size range, might try for magnitude 11.5 Enceladus

Now that Saturn is past opposition and well-placed in the evening sky, take the opportunity to view and identify some of those moons you're never before seen. A moderately high magnification will increase contrast and make the fainter moons more readily



visible. Carefully sketch the field, then go inside to confirm your "kills." If you're fortunate enough to own a copy of the RASC Observer's Handbook 2009, turn to pages 245-248 for a graphic showing the positions of Saturn's major moons at any date and time of the year. You can also use Sky and Telescope's interactive Saturn moon finder. Go to www.skyandtelescope.com, scroll down to "Interactive Observing Tools," click on "Saturn's Moons," then submit the date and time of your observation. You'll need to register to obtain this service, but it's free.

Take advantage of the current Saturn ring-plane crossing. We won't experience another until 2025!

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

length of a football field). Detail usually seen in the rings all but disappears at this time. By the time of the ring-plane crossing on September 4, Saturn will have moved away from us and will be over 968,000,000 miles from the Earth.

The rings are comprised of irregularly shaped dirty snowballs, ranging in size from grains of dust to many particles the size of pebbles. There are also some “boulders” as large as a car or small house sized bodies. They all orbit Saturn along the planet’s equatorial plane.

It is indeed unfortunate we do not witness the ring plane crossing, but the narrow aspect of the rings does allow us to concentrate on the disk of Saturn himself and to follow some of his retinue of Moons more easily. Though you can focus your attention on the planet’s salmon-colored cloud tops, the bands in Saturn’s upper atmosphere are much less prominent than those of Jupiter. (Very little cloud detail can be seen in small telescopes.) And a few of Saturn’s brighter moons will be more apparent as they parade around

the planet. The brightest will be Titan, which orbits Saturn in 16 days.

Take this opportunity to view Saturn from a fairly unique perspective. After September 4, Saturn’s north pole will begin to tilt towards us, the rings will begin to open up, and we will then see the northern or top surface of the rings until the next ring-plane crossing in 2025.

As always, keep your eyes to the skies.

A Better Galaxy Guide: Early Spring

Craig Cortis

We all know about the wealth of galaxies that populate the sky beginning around this time of year, but if you’re not an experienced deep-sky observer, where do you begin? There are so many catalog listings, seasonal magazine articles, great books by fine astronomy writers, innumerable blogs and observing websites, you name it—the information’s out there, all around us. So, too, are galaxies, but the vast majority of these **island universes**—lying several to many millions of light years removed from us—are impossibly faint little flecks of fluff against the night sky, invisible to small and medium-sized instruments and tough to locate and verify by even veteran amateurs. Maybe you’ve got a small scope or average binoculars and lack the wherewithal or knowledge to do serious deep-sky hunting. If you’re interested in finding some galaxies, their bewildering number alone—not to mention how hard most of them are to see at all—can make this a forbidding, nearly hopeless chore instead of a pleasant little exercise in amateur astronomy.

This situation prompted me to come up with a handy “short list” of mainly galaxies along with a few other worthwhile objects, things that are bright enough to actually see in smaller telescopes of 4-inch to 8-inch aperture. Most of my choices can, in fact, be readily seen in instruments of 5” or less; many can be glimpsed in binoculars of 50 to 80mm aperture or so. Naturally, your local observing conditions

will dictate what can be viewed. Haze and skyglow from area light pollution, altitude of a given object above the horizon corresponding to optimal times of night to “catch” a better view through denser air down low, or interference from moonlight will be limiting factors. In April of this year, the Moon is at Last Quarter on the 17th and will be New on the 24th. Mid-to-late April will therefore be prime observing times.

I had several basic ideas in mind for planning the listing. 1) A band, or range, of right ascension running from approximately 7h 30m to 12h, west-to-east. This coincides with reasonable evening viewing hours in late April—all the constellations involved are well (or nearly so) presented with respect to altitude. 2) Selection of constellations both rich in bright galaxies and adjacent ones not ordinarily considered as favorable for easier galaxies. 3) Criteria of both brightness and ease of star-hopping to the chosen galaxies. Even so, every galaxy here ranks among the very best to be seen in its constellation. 4) Inclusion of certain important, highly worthwhile objects other than galaxies for those constellations lacking easily seen galaxies. (The very first object, NGC 2419 in Lynx, is a case in point.) 5) Ordering of object listings by right ascension within constellations featuring two or more objects. 6) Avoiding the listing of any galaxies too far south in declination to be reasonably detectable in a non-perfect observing locale, which is pretty much everywhere! 7) A separate section of

potentially useful notes following the list—these serve as valuable star-hop suggestions for observers who might not own computerized scopes. (Only two objects on the list lack this accompanying information. A trio of galaxies in Ursa Major has no star-hop info and the final object on the list, NGC 2655, is not covered in the notes.) 8) Indication of pairs or groups of galaxies that are close together in one spot within a constellation—see the asterisks.



Altogether you’ll find 19 of the top-rated galaxies on this list, plus 2 open clusters and 1 each of a globular cluster, planetary nebula and red carbon star. A few fine galaxies in Draco and Camelopardalis were omitted due to placement in the sky at this time of year. The galaxy-rich constellations Virgo, Coma Berenices, and Canes Venatici are further east in RA than my selected group and are not as well seen in April; the month of May is better. Covering them entails a separate article for next month or next year, depending on my ability and time. This was a lot of work and I hope some of you will be able to make use of it!

Notes:

NGC 2419: 3.25° SE of mag 6.2 66 Aurigae. Hard to find and see; at E end of short row of two mag 7.5 stars. Highly significant and worth the effort – may be approximately 300,000 light years distant and qualify as an extragalactic cluster. Named the **Intergalactic Wanderer**.

NGC 2683: Marks NW “crook” of coathanger-type triangle with easy double star mag 4.2 Iota Cancri (which is SSW by 4.8°) and mag 3.1 Alpha Lyncis (at 6° to the ENE).

Object	Type	R.A.	Dec.	Mag.	Size
Lynx					
NGC 2419	GC	07h 38.1m	+38° 53'	10.3	4.2'
NGC 2683	Sp Gx	08h 52.7m	+33° 25'	9.8	9x2.5'
Cancer					
M67	OC	08h 50.4m	+11° 49'	6.9	30'
NGC 2775	Sp Gx	09h 10.3m	+07° 02'	10.2	4.5x3.5'
Leo					
NGC 2903	Sp Gx	09h 32.2m	+21° 30'	9.0	12.6x6'
*M95	Sp Gx	10h 44.0m	+11° 42'	9.7	7.4x5'
*M96	Sp Gx	10h 46.8m	+11° 49'	9.2	7x5'
*M105	El Gx	10h 47.8m	+12° 35'	9.3	4.3x4'
NGC 3521	Sp Gx	11h 05.8m	-00° 02'	9.0	10.5x5.5'
*M65	Sp Gx	11h 18.9m	+13° 05'	9.3	9.5x3'
*M66	Sp Gx	11h 20.2m	+12° 59'	9.0	8.5x4.2'
Leo Minor					
NGC 3344	Sp Gx	10h 43.5m	+24° 55'	10.0	7x6.5'
Sextans					
NGC 3115	S0?	10h 05.2m	-07° 43'	9.0	8.3x3'
Hydra					
M48	OC	08h 13.8m	-05° 48'	5.8	53'
NGC 3242	PN	10h 24.8m	-18° 38'	7.8	25"
U Hydrae	Var	10h 37.6m	-13° 23'	4.7-6.5	red star
Ursa Major					
NGC 2841	Sp Gx	09h 22.0m	+50° 58'	9.2	7.5x3.5'
*M81	Sp Gx	09h 55.6m	+69° 04'	6.8	25x14'
*M82	Irr Gx	09h 55.8m	+69° 41'	8.4	11.5x5'
*NGC 3077	El/Irr?	10h 03.3m	+68° 44'	9.8	5x3.8'
NGC 3184	Sp Gx	10h 18.3m	+41° 25'	9.8	7.3x7'
M108	Sp Gx	11h 11.5m	+55° 40'	10.0	8.3x2.5'
Draco					
NGC 4125	El Gx	12h 08.1m	+65° 11'	9.7	5.5x3.7'
Camelopardalis					
NGC 2655	Sp Gx	08h 55.6m	+78° 13'	10.1	5.5x4.5'

Types: Sp Gx = Spiral Galaxy, El Gx = Elliptical Galaxy, Irr Gx = Irregular Galaxy, S0 = Lenticular Galaxy (see notes), OC = Open Cluster, GC = Globular Cluster, PN = Planetary Nebula, Var = Variable Star

M67: One of the most ancient open clusters known and is a great novelty in this regard. Located 1.7° due W of mag 4.3 Alpha Cancri.

NGC 2775: Located 3.7° ENE of mag 3.1 Zeta Hydrae. (Look for “Head of Hydra” first.)

NGC 2903: Easily found at 1.5° due S of mag 4.3 Lambda Leonis.

M95: One of three bright galaxies forming a compact triangle, along with **M96** and **M105**. All three can be seen together in a low power, wide field view. M105 is at the NE tip of triangle, midway between stars 52 and 53 Leonis, mag 5.5 and 5.3 respectively – M95 is at W tip.

NGC 3521: Located 0.5° due E of mag 6.0 62 Leonis.

M65: One of a pair of bright galaxies that can be seen in a wide field view along with **M66**, which lies just E. M65 is midway between stars Theta and Iota Leonis, mag 3.5 and 4.0 respectively.

NGC 3344: Located 2.75° due W of the fine mag 4.3 double star 54 Leonis (separation of components about 7”) and midway between stars 40 and 41 Leo Minoris, mags 5.5 and 5.1.

NGC 3115: Find mag 3.6 Lambda Hydrae and go due N by 4° to the 0.2° wide pair of stars 17 and 18 Sextantis, each about mag 5.75, oriented W to E. NGC 3115 will be found 1.5° WNW of this pair’s center. This is the **Spindle Galaxy** and has an uncertain classification, thus my “?” after the S0. The shape suggests it may be a transitional type between a highly flattened elliptical and a lenticular S0 type of disc galaxy.

M48: Located by imagining it to be the southern tip of an equilateral triangle with mag 4.3 Zeta Monocerotis (about 3° to the NNW) and mag 3.9 C Hydrae (3.5° to the NE). C is the brightest of a compact little row of three stars close together.

NGC 3242: This is the famous **Ghost of Jupiter**, one of the most striking and brighter planetary nebulae in the entire sky. Located 1.8° S of mag 3.8 Mu Hydrae, it’s a splendid object even at the relatively low declination of -18° 38’. The greenish-blue color is a dead giveaway—hope you enjoy!

U Hydrae: A fine red carbon star located in the general vicinity of NGC 3242, to the NE by several degrees. U forms the northern tip of a triangle with Mu (about 4.5° to the SW) and mag 3.1 Nu Hydrae (4° to the SE). The period of this variable is about 450 days but the star stays sufficiently bright so as to be easily seen throughout its range in magnitude.

NGC 2841: Located about 1.8° WSW of mag 3.2 Theta Ursae Majoris.

M81: Also known as **Bode’s Nebula**. M81 is the brightest of a group of galaxies along with the strange **Exploding Galaxy M82** (just due N of M81 and visible in the same very low power, wide field view) and **NGC 3077**, the faintest of these three, found 0.75° to the ESE of M81.

NGC 3184: Located 0.75° due W of mag 3.0 Mu Ursae Majoris.

M108: Located 1.5° SE of mag 2.4 Beta Ursae Majoris, Merak – the southern of the two Big Dipper “pointer” stars.

NGC 4125: Check star atlas; note how NGC 4125 forms an almost perfect triangle with mag 1.8 Alpha Ursae Majoris, Dubhe (lead “pointer”) and mag 3.3 Delta, Megrez. Should be a workable star hop.

Apollo Upgrade

The flight computer onboard the Lunar Excursion Module, which landed on the Moon during the Apollo program, had a whopping 4 kilobytes of RAM and a 74-kilobyte “hard drive.” In places, the craft’s outer skin was as thin as two sheets of aluminum foil.

It worked well enough for Apollo. Back then, astronauts needed to stay on the Moon for only a few days at a time. But when NASA once again sends people to the Moon starting around 2020, the plan will be much more ambitious—and the hardware is going to need a major upgrade.

“Doing all the things we want to do using systems from Apollo would be very risky and perhaps not even possible,” says Frank Peri, director of NASA’s Exploration Technology Development Program.

So the program is designing new, more capable hardware and software to meet the demands of NASA’s plan to return humans to the moon. Instead of staying for just a few days, astronauts will be living on the Moon’s surface for months on end. Protecting astronauts from harsh radiation at the Moon’s surface for such a long time will require much better radiation shielding than just a few layers of foil. And rather than relying on food and water brought from Earth and jettisoning urine and other wastes, new life support systems will be needed that can recycle as much water as possible, scrub carbon dioxide from the air without depending on disposable filters, and perhaps grow a steady supply of food—far more than Apollo life-support systems could handle.

Next-generation lunar explorers will perform a much wider variety of scientific research, so they’ll need

vehicles that can carry them farther across the lunar surface. ETDP is building a new lunar rover that outclasses the Apollo-era moon buggy by carrying two astronauts in a pressurized cabin. “This vehicle is like our SUV for the Moon,” Peri says.

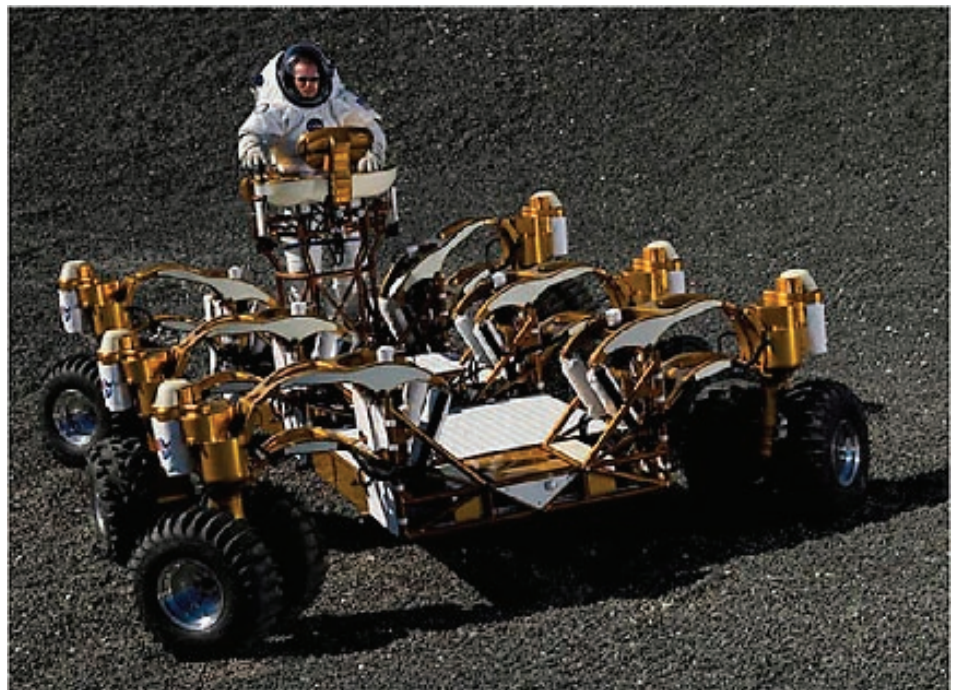
The Exploration Technology Development Program is also designing robots to help astronauts maintain their lunar outpost and perform science reconnaissance. Making the robots smart enough to take simple verbal orders from the astronauts and carry out their tasks semi-autonomously requires vastly more powerful computer brains than those on Apollo; four kilobytes of RAM just won’t cut it.

The list goes on: New rockets to carry a larger lunar lander, spacesuits that can cope with abrasive moon dust,

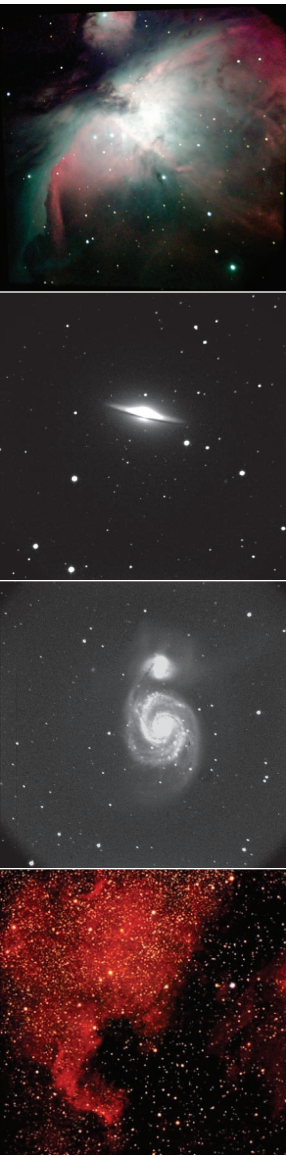
techniques for converting lunar soil into building materials or breathable oxygen. NASA’s ambitions for the Moon have been upgraded. By tapping into 21st century technology, this program will ensure that astronauts have the tools they need to turn those ambitions into reality.

Learn more about the Exploration Technology Development Program at www.nasa.gov/directorates/esmd/aboutesmd/acd/technology_dev.html. Kids can build their own Moon habitat at spaceplace.nasa.gov/en/kids/exploration/habitat.

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



The Chariot Lunar Truck is one idea for a vehicle equal to the lunar terrain. Each of the six wheels pivot in any direction, and two turrets allow the astronauts to rotate 360°.



CCD ASTRONOMICAL IMAGING WORKSHOPS

Dear Members,

I am pleased to announce a series of CCD imaging workshops for our members, scheduled to begin later this spring and lasting into the summer. This will be a collaborative effort between Skyscrapers and Brown University Department of Physics' public outreach program.

Several of our members have been taking beautiful astronomical images for years now. You probably enjoyed seeing these images displayed at our monthly meetings or published in our newsletter, but thought it all seemed too difficult or expensive to pursue yourself.

With these workshops you will be able to learn not only how to take some great images of your favorite objects, but also how to collect scientifically valuable data such as photometric measurements of variable stars and stellar spectra. Brown's Physics Department will be loaning us some great equipment to use, such as a SBIG ST4000XCM CCD camera, a SKYnyx2-1 high resolution planetary camera, a 4" Vixen Apochromatic refractor, a Coronado 90mm H-alpha solar telescope, and a SBIG stellar spectrograph. Best of all, these workshops will be free of charge to our membership!

All of our workshops will be held at Seagrave Observatory every Saturday in May and June, with a few additional dates later in the summer. Our instructors will include several of our own members, as well as Brown University Physics Professors Ian Dell'Antonio and Savvas Koushiappas, who will be instructing us in CCD photometry and stellar spectroscopy.

To sign up for these workshops, or to request additional information, please send an e-mail to Robert_Horton@brown.edu or call me at 401-743-4277.

Clear Skies,
Bob Horton

Star Party Report

Bob Forgiel

The night went well with around 12 scopes. A few members that weren't on the list had also showed up so we had a good turn out. We probably only had around a total of 150 students, parents and teachers that show up for the event. It seems they came in a few waves. The temperature was around the freezing mark but the wind let up so it wasn't too bad. We had first intended to set-up in the parking lot but the has been long gone and the ground on the north side of the building seemed firm. The lights in the parking lot went off at 7:30 and the lights on the building, that they were unable to shut off last year, were shut off just after 8:15 or so. I had a live CCD image of comet Lulin running for those interested and this was our first event with the binocular table that was setup with donated binoculars. Bob Magnuson, a member of ASSNE was also able to join us. As the night went on the clouds slowly thickened. By 9:45 it was

cloudy and everyone started to pack it in. Newport Bridge toll \$2.00 each way...what can you do.



1/22

2/9

2/17

2/24

3/53

3/13

3/17

3/20

Bob Horton took this series of images of **Venus** as it progressed through its phases from January 22 through March 20. They were taken using a 4" refractor and a Nikon Coolpix 995 camera attached to a 15mm eyepiece. The sequence shows both the changing phase as well as the apparent change in size. **3/20 image** was taken on the afternoon of March 20 using Brown's 16" LX200 and a Luminera SKYnyx 2-1 camera. This is about as thin a crescent I have ever seen on Venus. This was taken at prime focus using a red filter to cut down on the bright daytime sky background. **2/24 image** by John Kocur: 8-inch f/6 reflector with 5mm Pentax XW eyepiece; afocal photography with Minolta Z1 hand held to eyepiece.

March Meeting Notes

Friday, March 6, 2009; North Scituate Community Center

Nichole Mechnig

Called to Order by President Glenn Jackson at 7:29pm.

Steve Hubbard introduced guest speaker **Jim Zebrowski** who presented "Thunderstorms from Space" making an Impact in the Solar System.

Jim's talk was about interesting stories on how people came about finding meteorites. Some of his stories are about early 19th century and how people believed that these meteorites are from the atmosphere.



Meeting Minutes started at 8:58pm

Secretary Report for the Month of February Accepted by the membership

Financial Report for the month of February Accepted by the membership

1st V.P. Steve Hubbard - same speakers as listed last month

2nd V.P. Kathy Siok - nothing

Historian Dave Huestis: 2 books left from the 75th Anniversary

Librarian Tom Barbish- Jim Hendrickson donated his book "The Year in Review 2008" Skyscrapers • This book is for sale on the web site and it cost \$32.80

Star Party Bob Forgiel- 6 Scout groups on hold due to the snow at the observatories • Portsmouth Middle School Friday March 13th @ 8pm • 200 or more students • Gerry Dyck will be helping Daniel D. Waterman School in Cranston find their stars that they bought times are TBA • Dr. R. Bruce Ward from Harvard-Smithsonian Center for Astrophysics has ask Skyscrapers to help with the Kuss School in Fall River to have star parties

at least once a week this was referred to us by ATMob, this is a TBA

Trustees Tracey Haley: 16' Meade under repair • Public night sign ups • Movie Night Guidelines were posted and reviewed by the membership

Nomination Committee Jack Szelka, Joel Cohen and Jim Hendrickson: President: Bob Horton • 1st V.P.: Bob Napier • 2nd V.P.: Steve Hubbard • Secretary: Jim Crawford • Treasurer: Lloyd Merrill • Member @ Large (2): Roger Forsythe and Tom Thibault • Trustee: Tom Barbish • A motion was made by Dan Lorraine to add a nominee Dolores Rinaldi as a choice for President • Ballots will be in the April issue of the Skyscraper • If a member is not going to be present for the election than the member may mail the ballot to the Skyscrapers. Their name must be on the outside of the envelope only in order for their choice to be counted.

Budget for 2009-2010: Still running in the black with just over \$1300 • This budget is showing a current reduction of active members by 25% • A motion was made by Steve Hubbard to level fund the current budget • Ray Kenison 2nd the motion • Steve Hubbard then made a motion to remove his first motion of level fund the current budget • Ray Kenison 2nd that motion as well • Steve Hubbard then made a motion to keep Refreshments at \$450.00 and the Cookout at \$350.00 • Dolores Rinaldi 2nd the motion • This motion was voted down by the membership • The motion only to accept or Reject the 2009-2010 Budget will be at the April Monthly Meeting

Old Business: Bill Tillson, Brian Medeiros and Larry Isom are now members of Skyscrapers

Good of the Organization: Sat. 3/21 or 3/28 Messier Marathon Ninigret Park @ Sunset • Sat. 4/4 Public Viewing and or "Movie" Genius-Galileo • Sat 6/6 Star-Con Middletown CT • Sat 6/20 Skyscrapers at Stellafane • Thurs-Sat 8/13-16 Stellafane • Bob Horton with help of fellow Brown students would like to hold an Imaging and CCD and Stellar Spectroscopy workshop for the Skyscraper members only TBA • Bob Napier: Kepler Mission going off at 10:47pm, 3½ year mission to detect

planets orbiting other stars

President Info: Next E-Board Meeting Wed. March 25th 7pm at the Community Center • April Meeting will be at Seagrave • 2009-2010 Membership Dues payable at the April Meeting along with your magazine Subscription • Help with the clean up

Meeting adjourned at 10:28 pm, about 60 members

E-Board Meeting

February 25th

Meeting called to order at 7:08pm by President Glenn Jackson

Agenda:

Nominations for next year's officers has been completed by the nominating committee

Budget for 2009-2010: Glenn Jackson reworked the budget based on 75% membership

Movie night guidelines have been worked out by the Trustees and will be reviewed at the next Monthly meeting

Security at Seagrave has become an issue suggestions were made and the Trustees will be taking all into consideration

Field trips for the members: 3/21 or 3/28 Messier Marathon Challenge • 4/18 Shepard/McAuliffe Museum • 6/6 Star Con • 6/20 Skyscrapers @ Stellafane • 8/13-16 Stellafane

Dr. Bruce Ward from Harvard-Smithsonian Center for Astrophysics would like to know if Skyscrapers would be willing to help out with some Star Parties at Kuss School in Fall River he was referred to Skyscrapers by ATMob this is all TBA at a later date

AstroAssembly Speaker the Skyscrapers are still willing to pay the \$250.00 speaker fee for Ronald Florence "Road to Palomar"

Meeting was Adjourned at 8:30pm

Treasurer's Report

4/1/2008 through 3/15/2009

Jim Crawford

INFLOWS

75th Yr T-Shirt Sales	345.00
Astroincome	
Astro-banquet	1,139.00
Astro-grille	552.50
Astro-misc	18.00
Astro-affle	730.00
Astro-registration	1,420.00
TOTAL Astroincome	3,859.50
Bookincome	
75th Anniversary Book 1st Print	450.00
75th Anniversary Book 2nd Print	693.00
TOTAL Bookincome	1,143.00
Cookoutinc	405.00
Donation	456.50
Dues	
Contributing	135.00
Family	800.00
Junior	10.00
Regular	2,180.00
Senior	340.00
TOTAL Dues	3,465.00
Interest Inc	317.29
Magincome	
Astronomymaginc	306.00
Skytelmagincome	296.55
TOTAL Magincome	602.55
Magsales (Library)	10.80
Preservation Fund	10.00
Starparty	766.00
TOTAL INFLOWS	11,380.64

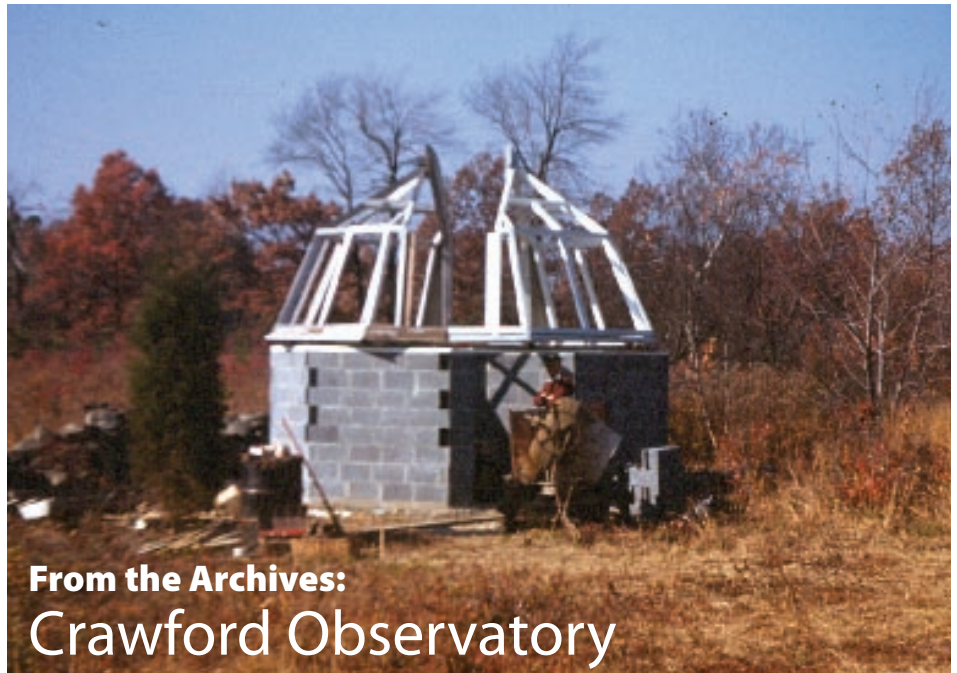
OUTFLOWS

75th Yr T-Shirt Exp	572.56
Astroexp	
Astro food Fri-Sat	39.46
Astrocater	980.00
Astrogrille	212.40
Astromisc	86.72
Astrorestroom	175.00
Astrowine-cheese	125.15
Tentrental	585.00
TOTAL Astroexp	2,203.73
Astronomy Day	30.12
Charity	25.00
Clarkproject	513.50
Collation	446.88
Cookoutexp	677.08
Corporationfee	20.00
Insurance	2,410.00
membersubscriptions	
Astronomymaginc	306.00
Skytelmagincome	296.55
TOTAL membersubscriptions	602.55
Postage and Delivery	194.75
Presidents Fund	160.16
Printing and Reproduction	802.50
Trusteexp	1,759.19
Utilities: Electric	134.51
TOTAL OUTFLOWS	10,552.53

OVERALL TOTAL 828.11

Checking Acct Balance 3,157.41

Capital One Acct Balance 16,163.85



From the Archives: Crawford Observatory

For those of you who are new to Skyscrapers, next time you are out to our property, take a quick look at the **cement pad just north of the meeting hall** along the stone wall to the west. This is all that remains of the **Crawford Observatory**.

Work on the Crawford Observatory was started in September of 1948 with Frank Morrissey, Philip Newmarker, Edward and Cynthia Ryan, Edwin Stevens, Bill Penhallow and a few others. A cornerstone was laid on October 9, 1948. The octagonal cement block building was about six feet tall and about 14 feet in size and was completed within two months on a cold December 5 day. Later atop this structure was placed the 12-foot in diameter Crawford dome. Originally given to Brown along with Reverend Crawford's 13-inch reflector, the dome was given to Skyscrapers by Professor Smiley. Crawford's 6-inch refractor tube assembly was kept in the main observatory and carried out to the Crawford dome when in use.

In 1957, the building of a 16-inch Cassegrain telescope was started by Skyscrapers members. They wanted a rugged instrument that "the kids

could swing on" unlike the delicate 8¼-inch Alvan Clark. The refurbished Crawford dome (which the '54 hurricane Carol had severely damaged) was to house this instrument. Phil Newmarker was put in charge of the mirror grinding and Arthur Howarth in charge of the tube and mounting. What a team! Unfortunately Phil developed glaucoma and his doctor said no more optical work. Arthur completed the tube and mounting. Others worked on the mirror but did not have the skill to do the job. The whole project bogged down and the tube and mounting were put in commercial storage. Many years later, in the mid-1960s, Professor Bill Penhallow of URI purchased the unfinished 16-inch Cassegrain and moved it to his Quonochontaug Observatory in Charlestown.

While dismantling this building, which had become known as the "black hole," in May/June 1982, the late Brian Magaw and myself found the cornerstone of the Crawford Observatory with a time capsule embedded within it. The time capsule and a copy of its contents now resides in the display case in the Seagrave Observatory anteroom.

Latest Additions to the Library

Tom Barbish

Book: Contributor: Jim Hendrickson

Title: Skyscrapers Inc., Year in Review 2008

5 DVDs: Contributor: Jim Crawford

Title: Astronomy and Mathematics, Caroline Hershel Timeline, Dr. Padma Venkatraman

Title: Searching for a Nova Using a Digital CCD Camera, Mike Mattei Sept. 29, 2007

Title: Seagrave Observatory, Skyscrapers Astro Assembly, Sept. 29, 2007

Title: The Astronaut's Space Suit, Donald Rethke (Dr. Flush), Sept. 2007

Title: My Project Converting a Dobsonian into a Next generation Robotic Telescope, Todd Kozikowski, Sept. 29 2007



Review: Celestron Skymaster 20x80 Binoculars

John Kocur

The swing arm mount is of my own design (patent pending), built in my workshop. It is smooth, stable, and versatile. It allows you to stand free of the tripod. Very comfortable viewing standing, or reclining in a lounge chair.

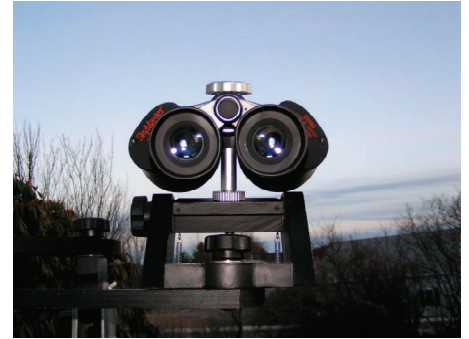
I just purchased a pair of Celestron 20 X 80 Binoculars. Good Binos but unfortunately got one with a defect in the left objective coatings. Got these for the up coming Messier Marathon but have to send them back because of the defect. Observed The Pleiades, Beehive, and Mel 20 open cluster in Perseus. Really brings out the beauty of these objects with a 3.2 field of view. Saw M78 in Orion for the first time with them! I can't wait for the replacement pair to arrive. Bought at Telescopes. Com. They are paying for the return shipping.

Pros: Rugged construction, tight focusing no slop, sharp out to the last 30% of the field, minimal color fringing on the Moon, no internal reflections, baffling grooves all the way down the inside of the tubes, good bracing, good rubber grips and quality rubberized

covering. The collimation is quite good, no double images. Good multicoatings, (except for the defect) green and purple on the objectives, blue and green on the oculars (doesn't show up on the photos). No hassle lifetime warranty. Great price, \$119. No shipping charge. They came with a padded carry case, strap and rubber lens covers.

Cons: Heavy, mounting is a must, at 5.5 lbs that is to be expected. Slight field curvature can be detected when viewing power lines or the top of a roof during the day. The coating defect, looks like something got smeared on the lens and it dissolved the coatings, it's not a scratch. Slight misalignment of right prisms, very slight cats eye exit pupil but I think it could be fine tuned without too much trouble with the collimating screws. Hopefully the next pair will be better.

Astronomical Observations: Of the 3.2 degree field of view, close to 80% of the view is quite good. It starts to get soft about 20% from the edge, so night time use is a little more forgiving than daytime. The whole Sword of Orion can be seen, All of the Pleiades, all of the Beehive Cluster, and all of the Double Cluster. M81 and M 82 are both easily visible in the same field of view. The crescent of Venus was easily seen, I was quite impressed by this. The Andromeda Galaxy was easily seen and also the Owl Cluster - NGC 457, M41, and M35. From a dark sky site, I would say the limiting magnitude would be close to 11. With these binoculars, I was as able to see the down range portion of the Space Shuttle Discovery liftoff from Douglas, MA. I could see the orange / red triangular glow of the shuttle engines pulsing. I was able to follow it for about 10-12 seconds at about 10 degrees above the southern horizon. Quite a sight!



Quantaray Titan tripod with T and T Bino mount and homemade swing arm mount.

My nephew, Nick Cordts, observing Venus.

Conclusion: I would say that these binoculars, if free of defects, are an excellent value and the most bang for the buck. I would recommend them to most amateur astronomers and those on a budget, not beginners and not people who demand Swarovski or Fujinon performance and craftsmanship. These binoculars must be mounted on a tripod. They are just too heavy to use

hand held alone. I use a T and T Bino Mount I bought in 1999. I designed and built the swing arm alt/az mounting system that allows me to use a reclining anti-gravity lounge chair or free stand. I can reach zenith with this system. I feel that I will get many years of enjoyment out of these big binoculars.



SKYSCRAPERS Year in Review: 2008

Continuing in the tradition of "A Quarter Century of Skyscraping" (1957) and "75 Years of Skyscrapers" (2007), this book summarizes the accomplishments of Skyscrapers during 2008.

Edited by: Jim Hendrickson. **Contributors:** Gerry Dyck, Bob Forgiel, Al Hall, Jim Hendrickson, Steve Hubbard, Dave Huestis, Glenn Jackson, Tom Thibault. **Photography by:** Tom Barbish, Chris Chapman, Jim Crawford, Gerry Dyck, Bob Forgiel, Bill Guca, Tracy Haley, Al Hall, Jim Hendrickson, Steve Hubbard, John Kocur, Dan Lorraine, Bob Napier, Pete Peterson, Tom Thibault.

74 pages, 8.25" x 10.75"
www.theskyscrapers.org/year-in-review

International Space Station and Space Shuttle Discovery

Flight path as it rose from the WSW horizon on March 17th at 7:40PM. This is a composite of multiple 8 second exposures to show the flight path. Photo was taken with a Sony DSC-717 digital camera. Photo by Tom Thibault.



Space Shuttle Sighting from Buck Hill

Dave Huestis

Launching the space shuttle into a high inclination orbit to rendezvous with the ISS means anyone along the East Coast of the US can catch a glimpse of the Space Shuttle as it ascends to orbit. Over the duration of the Space Shuttle program I've seen this event many times.

Sunday night, March 15, 7:43 pm. The Space Shuttle Discovery leaves Cape Canaveral, Florida and quickly moves up the east coast. Usually it can only be seen from the southern Rhode Island beach areas a few degrees above the southern horizon. But sometimes it gets a little higher. And tonight it did.

To get a better view of the southern horizon I need to drive to an observing area at Buck Hill in Burrillville. The trees have gotten a little taller through the years, but leave-less trees can still be seen through.

It takes me at least seven minutes to get there from my house. So as soon as Discovery cleared the tower Tina and I quickly left the house and raced up to our viewing location. We got there with about a minute to spare.

All of a sudden we both caught a glimpse of fast moving object with a pulsating flame behind it clear the trees. The flame pulsed every second or two. We would lose sight of it in binoculars when the pulsation stopped and had to acquire it with the naked-eye before centering it in binoculars once again. It was really cruising along. We soon lost it in the treeline to the northeast.

We drove home at a much more leisurely pace. However, I knew the ISS was soon going to make a favorable pass overhead, so I got ready for the second act. Sure enough, right on schedule, the exceptionally bright (-2.3 mag)

space station appeared in the southwest and attained a height of 81 degrees. Almost zenith. It was beautiful. And right from our back porch. Time was now approximately 8:24 pm. Within 30 seconds the ISS passed into the earth's shadow to the northeast and disappeared.

Perhaps we will be able to view the shuttle and the ISS together over the next couple of nights. The info has not yet been posted. If the timing is right you may even see them close to one another before they dock.

A nice double-header from the folks at NASA.



C/2007 N3 Lulin
on March 4, 2009.
AT66 & DSI Pro
II guided with 8"
LX200GPS, approx 25
subs at 30 seconds
each for each LRGB
channel. LRGB pro-
cessed in Photoshop
CS4. Image taken by
Bob Forgiel.

This is a picture
of Venus over
the Prudential
building in Boston
as viewed out of
Dan Lorraine's
office window on
March 3.

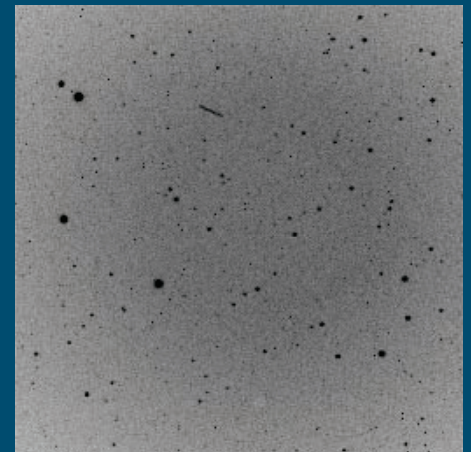
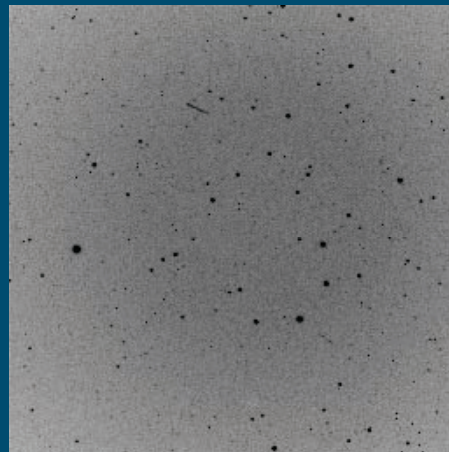
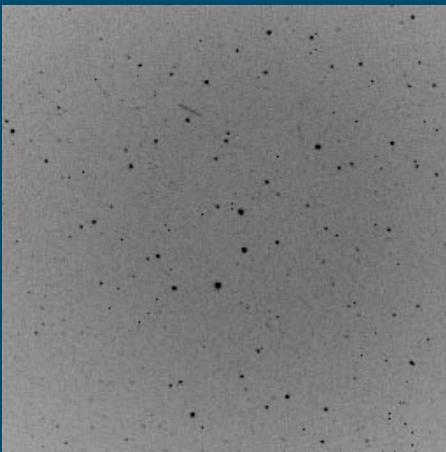




M42, the Great Orion Nebula on March 15, 2009. AT66 & DSI Pro II guided with 8" LX200GPS, standard Meade LRGB filters and capture software. LRGB processed in Photoshop CS4. Image by Bob Forgiel.



Spiral Galaxy M81 on March 17, 2009. AT66 & DSI Pro II guided with 8" LX200GPS, standard Meade LRGB filters and capture software. LRGB processed in Photoshop CS4. Image by Bob Forgiel.



Near Earth Object 2009 FH

Bob Napier

I have posted 3 images I took of NEO 2009 FH in the Photos Section under Scituate Observatory.

Roger Forsythe sent out an email a couple of days ago about an asteroid passing quite close to the earth on 3-17-09, a NEO (Near Earth Object).

The NEO asteroid **passed within about 50,000 miles of earth** on the morning of 3-18-09, which is about twice the distance of geosynchronous earth orbiting satellites. The NEO was only about 50 feet in size and was moving quite rapidly across the sky as it was so near the earth. It's magnitude was only about 14, even at its nearest distance from earth.

I set up my scope to track the NEO's rapid sky motion as that was the only hope I had of taking several images of it to verify its positions. NEOs are newly discovered and therefore orbital elements, if they exist at all, are unreliable. Only ephemeris data (positional data at specific time intervals) is available for such objects until more astrometry data is available to determine rough orbital elements.

Using the early and very limited ephemeris data from the Minor Planet Center's web postings and from the MPML (Minor Planet Mailing List Yahoo discussion group), I set up my ACP automation observing software to

interpolate the asteroid's ephemeris positions for its rapid motion and the camera automatically took a series of exposures as the asteroid moved. The telescope was automatically moved under software control to keep the asteroid in the field of view of the CCD camera for each exposure.

I was quite surprised to find that the 14th magnitude NEO was clearly visible, although trailed during the 20 seconds exposures in the images taken with an ST9E CCD through my 14" Meade LX200 SCT.

Skyscrapers 2009-10 Elections Ballot

Please fill out this ballot and bring it to the Skyscrapers' Annual Meeting on Friday, April 3, 2009, or mail it to the address below:

Skyscrapers, Inc. - Ballot
47 Peepoad Road
North Scituate, RI 02857

Mailed ballots must arrive at Skyscrapers by the April 3rd Annual Meeting. **Mailed ballots and ballots brought to the meeting must have the member's name on the outside of the envelope for membership verification.** All entries must be marked "Ballot" on the envelope. Verified ballots will be accepted and counted without identity.

PRESIDENT

- Bob Horton
- Dolores Rinaldi
- (write-in)

1ST VICE PRESIDENT

- Bob Napier
- (write-in)

2ND VICE PRESIDENT

- Steve Hubbard
- (write-in)

SECRETARY

- Jim Crawford
- (write-in)

TREASURER

- Lloyd Merrill
- (write-in)

MEMBERS AT LARGE (CHOOSE 2)

- Roger Forsythe
- Tom Thibault
- (write-in)
- (write-in)

TRUSTEE

- Tom Barbish
- (write-in)

SKYSCRAPERS, INC. MEMBERSHIP RENEWAL

NAME _____
 ADDRESS _____

 CITY _____
 STATE _____ ZIP _____
 PHONE _____
 EMAIL _____

Membership Dues

	Annual Dues (choose one category)
JUNIOR (13-17) <input type="checkbox"/>	\$10
REGULAR <input type="checkbox"/>	\$40
FAMILY <input type="checkbox"/>	\$50
SENIOR (65+) <input type="checkbox"/>	\$10
CONTRIBUTING <input type="checkbox"/>	
(any amount in excess of annual dues is gratefully accepted as a donation) \$ _____	

Magazine Subscriptions*

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

*Magazine subscription rates subject to change at any time.

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

TOTAL \$ _____

(Make check payable to Skyscrapers, Inc.)

Mail to:
 Membership Secretary
 Skyscrapers, Inc.
 47 Peepload Road
 North Scituate, RI 02857



47 Peepload Road
 North Scituate, RI 02857

