

*Image of the Month*



*The US east coast, as seen from the International Space Station, is awash in light at night. The arc stretches from Long Island and New York City at right to Philadelphia and Baltimore/Washington DC towards the middle. And to think that somewhere center-right in this view is the Cherry Springs State Park site! (Credit: NASA, crew of the ISS-30 mission)*

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***Daniel Webster College,  
Nashua NH, April 4***

I did the presentation to 5 students. Jupiter was the star attraction in the western sky, with Ted Blank showing (and teaching names of) the Galilean moons. Ganymede and Callisto were readily visible. Io and Europa were in a rare double eclipse, Io emerging just before we started. My nephew Alex, who was along for the ride, had a blast and wants a proper scope of his own!

- ***Steve Rand***

***East Kingston Public Library,  
East Kingston NH, April 8***

Unfortunately sky conditions were not very good, and haze started rolling in from the west at sunset. We did get good views of Jupiter and a few other objects, such as the Pleiades, Castor, and M35. Steve Rand gave the indoor presentation. Other NHAS members present were Ted Blank, Herb Bubert, Rich DeMidio and Gardner Gerry.

- ***Paul Winalski***

***Dover Public Library, Dover  
NH, April 22***

A large crowd of about 35 attended the presentation before the skywatch, of whom a dozen kids were in the 6-9 year range. It definitely is tougher at this time of the year to fill time until it gets dark but I had a lot of fun with the kids doing demos using Stellarium, and also spent quite a bit of time on the animated GIF slide that shows the planets going around – it never hurts to reinforce the basics. An 8 year old loves hearing that on Mercury they would be over 30 years old! I had 4 kids come up and be Jupiter's moons around me for a while; the fun was in trying to keep them all at different

distances, as they all kept spiralling into the "planet." At one point, we managed to arrange all of them behind me so there were no moons visible to the audience [*a variation of this scenario of no visible moons happened in the heavens the night of September 2-3, 2009. –Ed.*]

- ***Ted Blank***

Others NHAS members on hand were Gardner Gerry, Herb Bubert and Tom Cocchiaro who treated attendees to views of the Moon, Jupiter and several star clusters. While clouds threatened, by the time the group came out of Ted's presentation the sky cleared for nearly unobstructed views of the night sky. Gardner set up his Takahashi 60mm for views of the moon, Herb hauled out his 14-inch Starmaster and Tom had both a Vixen ED80sf with binoviewer aimed at the moon and a Celestron C-5 tracking on Jupiter. An added treat came at around 9 p.m. as the ISS soared overhead for a long view at a magnitude -2.4.

- ***Tom Cocchiaro***

***Sandown Public Library,  
Sandown NH, April 25***

Turnout was lighter than expected, only about 20 people. Between the full Moon and a lot of ambient light, it was difficult to find deep-sky objects. We did get good views of Jupiter and of double stars (seeing was steady). I managed to find M35 and the M81/M82 pair.

- ***Paul Winalski***

I showed Jupiter and Saturn, and later on M3. The moon was really bright though, and I really don't know how Paul managed to find M81 and M82!

- ***Gardner Gerry***

[*Skywatches for Londonderry Middle School, Londonderry NH, New Searles Elementary School, Nashua NH, Gilmanton School, Gilmanton NH and for Goffstown High School, Goffstown NH were cancelled due to bad weather, and will be re-scheduled at a later date. –Ed.*]

***A postscript to the Parkside  
Middle School Skywatch,  
Manchester NH, March 26***

At about 7pm, two women, both apparently parents of students, showed up with a brand new Celestron 114mm reflector on a small EQ-1 mount looking for help setting it up. I had just finished setting up my scope, so I helped them get it polar aligned, got the integrated finder "scope" fairly well collimated to the optics, temporarily replaced the Erecting eyepiece they had brought with a 20mm Plössl and got them looking at the newly-risen Full Moon. Suddenly we were all surrounded by the students coming out of Gardner's presentation, and these two ladies found themselves with a line of eager kids behind their telescope! They gamely pitched in and showed all the kids the lunar disk and crater rays (which were quite prominent). It was a real trial by fire, but it looked like they were able to keep the scope on target. They probably learned more about operating it in that 30 minute period than they would have in a month of driveway time! I gave them business cards and they are going to come to MSDC on a First Friday for more instruction. Patty and Judy were their names, I think – please do congratulate them if you see them at MSDC!

- ***Ted Blank***

### *Lunar Occultation – a (D) Event*

At about 10:22pm on Sunday, April 14, the leading (dark) edge of the Moon occulted a close double star (designated ZC 760 and its partner X 72361, of magnitudes 6.6 and 7.5) in the constellation of Taurus. The Moon was low in the West (12 degrees above the horizon) at that time, so a clear western horizon was required to record the (D) event – a disappearance event. And Ted Blank and 3 other NHAS volunteers were just waiting for the chance.

Lunar occultation is currently the best way to get information about close double stars, all the way down to a 0.05 arcsecond separation. No other technique is capable of separating stars this close, the binary pair in question being about 0.1 arcsecond apart. They are also known as HD 32642, HIP 23695 A/B and SAO 94306.

A small telescope is sufficient to record the occultation of a "bright" star like this. More aperture is not suitable as the low-light video camera is sensitive enough that mag. 7.0 stars come close to saturating the detector. The setup includes a GPS video time inserter, low-light video camera, video recorder and an 80mm scope on a small mount.

One simply needs to locate the star and keep it in the viewfinder of the video camera while the leading edge of the Moon closes in on the star. The field of view of the camera with a focal reducer is very wide, so little adjustment is needed. There is no need to track the stars; it usually takes them more than 4 minutes to drift across the FOV.

Each recording kit is made up of:

Scotty's new Sears mount with EQ1 attached  
Orion ST80  
PC164CEX-2  
Time inserter (2 Kiwi, 1 IOTA VTI)  
Two battery packs (1 for PC164, one for VTI)  
Canon ZR85 with battery and charger  
Cables  
Instructions and wiring diagram  
Star maps for the event  
Plastic container with lid to hold all the bits

Since the moon is easy to find in the sky, it is easy to tell if the setup is pointing at the right star. Recording will have to begin a couple of minutes before, and end a couple of minutes after the star disappears behind the dark limb of the Moon. There is no need to wait for the star to reappear since the reappearance will be on the trailing (bright) edge of the Moon and the star will be lost in the glare. A reappearance at the Lunar dark limb is called an (R) event.

Observations of the occultation of a double star from different locations are highly desirable because information gained about the Position Angle and the separation of the binary pair improves considerably when observers are at different locations.

### *Windows to the Wild – Exploring The Night Sky*

On April 25, NHPTV telecast an episode of Willem Lang's *Windows to the Wild*, entitled [\*Exploring the Night Sky\*](#). The half-hour program (#812) was with John Gianforte of UNH (and NHAS) talking about astronomy in general. A segment was devoted to **Comet PanSTARRS (C/2011 L4)**, the new novelty in the evening sky.

For their shoot on March 13, Willem, John and the NHPTV crew went to the General Sullivan pedestrian bridge that spans Great Bay between Newington and Dover NH. There they were joined by NHAS members Ted Blank, Tom Cocchiaro and Rex Gallagher. Ted and Rex were also featured on camera with Willem talking about amateur astronomy and the comet, and Rex was either fortunate or unfortunate (depending on your point of view) to be mis-identified as Tom Cocchiaro! A very good time was had by all, with an element of surprise as well – the comet was quite a bit higher in the sky (at 10°) than expected by the party. Ted spotted it first with his binoculars at about 7:30pm, Tom tracked it with his C5 for a while and the comet was almost naked-eye visible just before it disappeared from view at 8pm.



*Comet PanSTARRS C/2011 L4  
(Image: Dave Weaver)*



### *The Annual Pilgrimage to Suffern, New York*

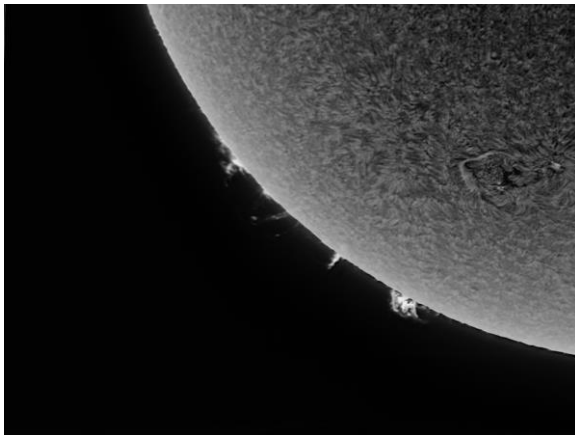
This year's edition of the North-East Astronomy Forum (NEAF) was held in Suffern, NY, on the weekend of April 21-22. A number of the usual suspects from NHAS attended. Most went for just the opening Saturday, but some stayed on for the whole deal. Carpools were arranged via a Forum topic. For some, like Pat Adams and Ramaswamy, it was the first time and a novel experience. Seeing so much 'gear' under one roof was jaw-dropping, and a number of wallets were lighter by the end of the day.

The solar observing in the outer courtyard was similar to our own event at Aerospace Fest (at MSDC) but on a larger scale. The exhibit showing the Fraunhofer Lines was interesting and unusual in a setting that concentrated on observing solar prominences and sunspots! A number of interesting lectures were given in the Celestron auditorium, including one by Bob Naeye, editor of *Sky & Telescope*, about the Transit of Venus. There was also a gathering of New England folk at the Crowne Plaza Hotel's restaurant Saturday evening, with Dwight Lanpher, a member of many Maine societies (and NHAS as well), playing host.



(from the left): Terri-Ann Anderson (PVSG/DEAA), Rex Gallagher, Tom Cocchiaro, Larry Lopez, John Gianforte, Marc Stowbridge and Ted Blank (he too of very many hats). (Photo: Dwight Lanpher PVSG/ASNNE/DEAA/NHAS/and 6 more)

### *The Sun and The Moon (and why not?)*



*Day and Night, Hot and Cold, Solar Prominences and the Lunar X, all in a full day's work. (Images by Herb Bubert)*

### NHAS April 2013 Business Meeting Report

The monthly business meeting was held at McAuliffe-Shepard Discovery Center, Concord NH on April 12<sup>th</sup>, with our President **Rich DeMidio** presiding. The Treasurer's report by "Rags" follows (next page).

#### President's Report

The Q2 Officers' meeting is set for Saturday, April 13<sup>th</sup> (tomorrow). It is also Coffee Night at YFOS. [The weather did not co-operate. –Ed.]

Looking at 2013 goals – investing in our Members first, and balancing our Public Outreach commitment against that investment – we made progress in Q1. We had a successful Messier Marathon, we have started in-reach efforts, implemented a new meeting format and have seen an uptick in membership contribution.

Areas to focus in Q2 are ways to improve social networking, hold more members-only events, and implement a webcast solution.

The major risk at this stage is the still open Membership Chair, which is critical for any new member acclimation. Prompt processing of requests to join NHAS, distribution of the new membership package, and the proactive scheduling and advertising of courses on a regular basis are essential to make new members feel welcome.

The 2013 edition of **NEAF** is being held in Suffern, NY on April 20 and 21. Carpools are being worked out on the Forum topic; it is a good topic to discuss during the break.

Looking ahead, **AeroSpace Fest** at MSDC is scheduled for June 14-15<sup>th</sup>. We need many volunteers, so please do sign-up. Setup is Friday evening, followed by a skywatch. There will be 3 shifts the next day, with solar observing in the Dome and outside.

#### The EOC Meeting Report

Membership in the Astronomical League is being viewed as way to formal observing programs, which would be a significant membership benefit. It also aligns with the proposed in-reach efforts. The costs for NHAS to join AL will also be looked into.

*Astronomy* magazine's grant of \$2500 (that came with the Out-of-this-world program award) will facilitate the placement of 8 more LTP scopes in the coming year.

#### Astronomy Shorts

*Rich DeMidio:* observed all four of the Leo Galaxy Cluster with Obby at YFOS last Saturday. He also observed M81 and M82.

*John Bishop:* mentioned that the Howie Glatter Parallizer 2"-1.25" adapter holds things perfectly square to a telescope's optical axis.

*Paul Winalski:* reported on recent solar flares seen by SDO/SOHO.

*Larry Lopez:* posed and answered a riddle – where is the nearest place with an Astronomy course? The answer: **NHTI!**

#### What's on Your Mind?

John Bishop will find out what software Tom Field used in his webcast with us at the July 2012 business meeting, when he gave his fascinating talk: "*Introduction to Spectroscopy for the amateur astronomer.*"

#### The Evening Presentation

The topic was Galaxy formation due to collisions, and the talk was given by **Lauranne Lanz**, a Ph.D. candidate at Harvard University, where she studies nearby interacting galaxies, using multi-wavelength observations and simulations.



*Arp 271: Spiral galaxies NGC 5426 and NGC 5427 colliding, and now there's also a bridge. (Credit: ESO/WikiMedia Commons)*

Galaxies evolve and grow by interacting and merging with each other. However, since this process takes hundreds of millions to billions of years, a single collision cannot be 'watched' from start to finish. A variety of colliding galaxies at different stages must instead be looked at. Galaxy interactions spark the formation of new stars, whose emissions in the ultraviolet and infrared can be studied. This gives us insight into the formation of the Milky Way through such collisions and the future collision of the Milky Way and the Andromeda Galaxy. A number of interesting examples are under investigation, including the [Antennae galaxies](#) (NGC 4038 + NGC 4039, aka Arp 244), the [Mice galaxies](#) (Arp 242), NGC 470 + NGC 474 (aka Arp 227), [Arp 148](#), [Arp 276](#), [Arp 299](#) and [Mrk 848](#).

### *NHAS Treasurer's Report* (as of April 9, 2013)

<b>Starting Checking Balance:</b>	<b>\$10,286.79</b>	<b>Membership:</b>	<b>127</b>
<b>Deposits:</b>		Renewals:	0x30.00 0.00
Membership	90.00	New Members:	3x30.00 90.00
Donations	358.00	<b>Total:</b>	<b>3 \$90.00</b>
Interest	0.00	<b>Current Members:</b>	<b>130</b>
<b>Total:</b>	<b>\$448.00</b>	<b>New Members:</b>	
<b>Expenses Paid:</b>		Peter J. Wolczko	Amherst NH
Rymes Propane	98.57	Robert Tucker	Durham NH
Cynric Company LLC	468.60	Ally LaForge	Milford NH
Steve Rand (laptop battery)	80.99		
Ted Blank (books)	67.00	<b>Donations:</b>	
<b>Total:</b>	<b>\$715.16</b>	Ted Blank (Dover Library)	LTP 303.00
<b>Current Checking Balance:</b>	<b>\$10,019.63</b>	Manchester City Library	GEN 25.00
<b>Petty Cash:</b>	<b>\$100.00</b>	Peter J. Wolczko	GEN 30.00
<b>Current Cash Balance:</b>	<b>\$10,119.63</b>	<b>Total:</b>	<b>\$358.00</b>
<b>EOC Share:</b>	<b>\$5,728.63</b>		

### *Contact Information*

#### How to join NHAS

Write to us: **NHAS**  
**P. O. Box 5823**  
**Manchester, NH 03108-5823**

Send Email to: [info@nhastro.com](mailto:info@nhastro.com)

Visit our web site: <http://www.nhastro.com>

#### How to contribute to the Observer

Email articles and snapshots to the Editor:

[ramax.astro@yahoo.com](mailto:ramax.astro@yahoo.com)



*The Mice galaxies (NGC 4676)*, a pair of Spiral galaxies in Coma Berenices. 4676B is to the left and 4676A to the right.  
(Credit: NASA/HST/WikiMedia Commons)

***NHAS Treasurer's Report***  
*(for the month of January, 2013)*

<b>Starting Checking Balance:</b>	<b>\$13,347.11</b>	<b>Membership:</b>	<b>109</b>
<b>Deposits:</b>		Renewals:	6x30.00 180.00
Membership	270.00	New Members:	3x30.00 90.00
Donations	20.00	<b>Total:</b>	<b>9 \$270.00</b>
Interest	1.10	<b>Current Members:</b>	<b>118</b>
Calendar Sales	7.00		
<b>Total:</b>	<b>\$298.10</b>	<b>New Members:</b>	
<b>Expenses Paid:</b>		Kenneth Riendeau	Hillsboro NH
Rackspace Cloud (Web site)	44.64	Amy Lowe	Weare NH
Cynric Company, LLC (Plowing)	176.55	Rahul Sivaprasad	Portsmouth NH
UNH Physics Dept. - NEFAF	500.00		
<b>Total:</b>	<b>\$721.19</b>	<b>Donations:</b>	
		Kenneth Riendeau	GEN 20.00
<b>Current Checking Balance:</b>	<b>\$12,924.02</b>	<b>Total:</b>	<b>\$20.00</b>
<b>Petty Cash:</b>	<b>\$100.00</b>		
<b>Current Cash Balance:</b>	<b>\$13,024.02</b>		
<b>EOC Share:</b>	<b>\$5,833.13</b>		

***NHAS Treasurer's Report***  
*(for the month of February, 2013)*

<b>Starting Checking Balance:</b>	<b>\$12,924.02</b>	<b>Membership:</b>	<b>118</b>
<b>Deposits:</b>		Renewals:	1x30.00 30.00
Membership	90.00	New Members:	2x30.00 60.00
Donations	0.00	<b>Total:</b>	<b>3 \$90.00</b>
Interest	0.00	<b>Current Members:</b>	<b>121</b>
Equipment Sales	50.00		
<b>Total:</b>	<b>\$140.00</b>	<b>New Members:</b>	
<b>Expenses Paid:</b>		Michael & Denise	Warner NH
U.S. Postal Service	188.00	Rosander	
Cynric Company, LLC (Plowing)	117.70	Stephen Pearsall	Hampstead NH
Pete Smith	105.60		
Peerless Insurance Co.	1,546.00	<b>Donations:</b>	
<b>Total:</b>	<b>\$1,957.30</b>	[None]	
		<b>Total:</b>	<b>\$0.00</b>
<b>Current Checking Balance:</b>	<b>\$11,106.72</b>		
<b>Petty Cash:</b>	<b>\$100.00</b>		
<b>Current Cash Balance:</b>	<b>\$11,206.72</b>		
<b>EOC Share:</b>	<b>\$5,739.53</b>		

### NHAS Treasurer's Report (as of March 18, 2013)

<b>Starting Checking Balance:</b>	<b>\$11,106.72</b>	<b>Membership:</b>	<b>121</b>
<b>Deposits:</b>		Renewals:	1x30.00 30.00
Membership	180.00	New Members:	5x30.00 150.00
Donations	995.00	<b>Total:</b>	<b>6 \$180.00</b>
Interest	0.97	<b>Current Members:</b>	<b>127</b>
<b>Total:</b>	<b>\$1,175.97</b>	<b>New Members:</b>	
<b>Expenses Paid:</b>		Sumner Dole	Canterbury NH
Cornerstones of Science	970.00	Patrick Amoroso	Winthrop MA
Cynric Company LLC (Plowing)	588.50	Rex Gallagher	Hampton NH
Optics Planet	31.56	Brian Mack	Bow NH
Barnes & Noble	62.28	Rob Mack	Bow NH
OPT	233.00	<b>Donations:</b>	
Provantage LLC (Propane)	46.06	Gay-Kimball Library,	LTP 325.00
Rackspace Cloud (Web-site)	22.78	Troy NH	
GoDaddy	11.72	Hollis Social Library,	LTP 325.00
Patrick Bourque	30.00	Hollis NH	
<b>Total:</b>	<b>\$1,995.90</b>	Friends of Fisk Free	LTP 325.00
<b>Current Checking Balance:</b>	<b>\$10,286.79</b>	Library, Claremont NH	
<b>Petty Cash:</b>	<b>\$100.00</b>	Rex Gallagher	GEN 20.00
<b>Current Cash Balance:</b>	<b>\$10,386.79</b>	<b>Total:</b>	<b>\$995.00</b>
<b>EOC Share:</b>	<b>\$5,407.63</b>		

### Views of Neptune and Saturn



A crescent Neptune and its moon Triton imaged by Voyager 2 in 1989, and a storm on Saturn in 2010 seen by Cassini; the storm circled the planet for 6 months, tried to swallow its own tail, and then faded away. (Credits: NASA/JPL and NASA/ESA /JPL/Cassini Imaging Team)



<b>Event</b>	<b>Date</b>	<b>Time</b>	<b>Location</b>
Bedford High School Skywatch	Thursday, May 2	8:30pm	Benedictine Park, Bedford NH
First Friday Skywatch for MSDC	Friday, May 3	7:00pm	MSDC, Concord NH
Portsmouth Children's Day Skywatch	Sunday, May 5	12:00pm	Isle of Shoals SC, Portsmouth NH
Thorntons Ferry School Skywatch	Wednesday, May 8	7:45pm	Thorntons Ferry School, Merrimack NH
Timberlane Middle School Skywatch	Thursday, May 9	7:30pm	44 Greenough Road, Plaistow NH
Timberlane Middle School Skywatch (backup date)	Friday, May 10	7:30pm	44 Greenough Road, Plaistow NH
Brown Memorial Library Skywatch	Friday, May 10	8:30pm	78 West Main St, Bradford NH
Coffee House Night at YFOS	Saturday, May 11	5:00pm	YFOS
Rey Center Skywatch	Saturday, May 11	8:30pm	Waterville Valley NH
Goffstown High School Skywatch	Monday, May 13	8:00pm	Goffstown HS, Goffstown NH
NHAS EOC Meeting	Thursday, May 16	6:30pm	City Library, Manchester NH
Brown Memorial Library Skywatch (backup date)	Thursday, May 16	8:30pm	78 West Main St, Bradford NH
Sidewalk Astronomy Skywatch	Saturday, May 18	6:00pm	Market Square, Portsmouth NH
4H Solar Observing Skywatch	Sunday, May 19	1:00pm	Centerwoods Elementary, Weare NH
Fitzwilliam Town Library Skywatch	Monday, May 20	7:30pm	11 Templeton Tpk, Fitzwilliam NH
Bedford High School Skywatch	Thursday, May 23	8:30pm	Benedictine Park, Bedford NH
NHAS Business Meeting	Friday, May 24	7:30pm	St. Anselm, Manchester NH
Salem High School Skywatch	Wednesday, May 29	7:30pm	Salem HS, Salem NH
Salem High School Skywatch (backup date)	Thursday, May 30	7:30pm	Salem HS, Salem NH
Daland Memorial Library Skywatch	Friday, May 31	7:00pm	Lamson Farm, Mont Vernon NH
Coffee House Night at YFOS	Saturday, June 1	5:00pm	YFOS
Alton Central School Skywatch	Tuesday, June 4	5:00pm	Alton Central School, Alton NH
NEFAF Fundraiser at Margaritas	Thursday, June 6	4:00pm	775 Lafayette Rd, Portsmouth NH
First Friday Skywatch for MSDC	Friday, June 7	7:00pm	MSDC, Concord NH
Market Square Day Skywatch	Saturday, June 8	9:00am	Market Square, Portsmouth NH
Rey Center Skywatch	Saturday, June 8	9:30pm	Waterville Valley NH
Goffstown High School Skywatch	Monday, June 10	8:30pm	Goffstown HS, Goffstown NH
NHAS Business Meeting	Saturday, June 15	9:00am	MSDC, Concord NH
AeroSpaceFest at MSDC	Saturday, June 15	10:00am	MSDC, Concord NH
Sidewalk Astronomy Skywatch	Saturday, June 15	6:00pm	Market Square, Portsmouth NH

**Credits**

Contributors to this month's **Observer**:

- Ted Blank, Herb Bubert, Tom Cocchiaro, Rich DeMidio, Gardner Gerry, "Rags" Gilmore, Dwight Lanpher, Larry Lopez, Steve Rand, Dave Weaver and Paul Winalski.