



## Public Outreach

### President's Message

After reading the December, 2009 Sky and Telescope Spectrum article by the editor in chief Robert Naeye, I was struck by how NHAS has passionately and persistently pursued our efforts in public outreach. In the article, Mr. Naeye talks about the future of Astronomy and inspiring the next generation of scientists. His point is that inspiration should not be left just in the hands of formal educators, but also other organizations such as Astronomy clubs like our own. In reading his words, I relived many examples of interacting with the public at skywatches or Astronomy days to name a few. The kids that ask the questions that stump us, the questions one never thinks of, and watching their reaction to looking through a telescope. All of this puts us on our toes and challenges us to be at the top of our game. Most of all, it reminded me of just how important our EOC program is and I am truly convinced that we will leave footprints in the sand. I bet that we already do our share of inspiring and it can only get better through ventures like the library program. It makes me proud to be a member and privileged to lead this great organization.

★ Rich DeMidio  
NHAS President 2009

### Highlights for This Month

This was a very busy month for sky watches and other NHAS public events.

Our "Astro 101" series of workshops for club members has

started, with "Navigating the Night Sky" taking place on 21 November and "Lunar Observing" scheduled for 11 December. Look for more Astro 101 and 201 workshops in the 2010.

Finally, a reminder that election of 2010 club officers and junior director will take place at the December business meeting.

★ Paul Winalski  
NHAS Secretary 2009

### Election of 2010 Officers

Voting for 2010 officers, and a member of the Board of Directors, will take place at the 18 December 2009 NHAS business meeting at 7:30 PM at the McAuliffe-Shepard Discovery Center.

Final nominations will be taken at that meeting and then the vote will take place. Only those who have paid 2010 dues are eligible to vote in the election.

If you cannot attend in person, you may vote via proxy. Either give your signed voting instructions to someone who will be at the meeting, or e-mail your voting instructions to the NHAS Secretary ([secretary.2009@nhastro.com](mailto:secretary.2009@nhastro.com)). If you e-mail your proxy, be sure that your real name (not just your email moniker) appears on it somewhere.

The current nominees are:

President: **Rich DeMidio**  
Vice President: **Mike Townsend**  
Secretary: **Paul Winalski**  
Treasurer: **Ken Charles**  
Director: **Gardner Gerry**

The Director's position is a three-year term. During the third year, the elected person will be Chairman

of the Board of Directors. Be sure to consider the three-year commitment before placing your name in nomination.

★ Paul Winalski

### IBEX Lecture at UNH

On Saturday, November 7, **Tom Cocchiaro**, his wife Annabelle, and I attended the lecture on the IBEX project initial results at University of New Hampshire in Durham. The lecture was given by Dr. Eberhard Möbius, chair of the UNH Physics Dept. and a co-investigator on the IBEX project. We learned about the lecture through a note sent to **Rich DeMidio** by the organizers of the lecture series, so thanks to Rich for forwarding it to the NHAS membership.

Dr. Möbius gave an excellent talk, filled with examples using animation and video. IBEX is a spacecraft launched last October to map the boundary between the giant bubble of charged particles that the Sun blasts out in all directions, and the clouds of gas and magnetic fields that fill interstellar space. The two Voyager probes have traveled for over 30 years and have now reached this boundary, but IBEX proposed to map the boundary area from Earth orbit.

Since the boundary puts out no visible light, how did they plan to accomplish this feat? Since the Sun is moving relative to these clouds of gas and dust, the boundary (heliopause) is a turbulent place, with an axis of orientation along the Sun's relative direction of movement. At the spherical boundary, atoms sometimes have

electrons stripped from them, becoming charged, and then are accelerated in all directions at high rates of speed by the local magnetic fields. Some of these atoms recover their lost electrons along the way and become neutral again, and hence immune to further perturbations in their speed and direction. A small proportion, of course, head our way and it is by measuring the directional flux and spread of energy of these energetic neutral atoms that project IBEX hoped to learn something about conditions along the boundary. I asked Dr. Möbius how long these atoms had taken to travel to us, and he answered that the faster ones got here in about six months while the slowest ones seen took about two years.

The detector was built using carefully aligned masks so that only atoms coming from a particular direction would make it through the multiple layers of aligned microscopic holes. Then the atoms are re-charged and sent through a mass spectrograph. Parts of it were built right here at UNH. The spacecraft maps a one "pixel"-wide strip of sky each orbit, and as the Earth orbits the Sun, IBEX sees a slightly different direction each orbit, building up the map of the sky one strip at a time.

The initial results were not at all as expected, which the project considers a wonderful surprise. They expected the flux of energetic neutral atoms to have a single peak (the "nose") in the direction of the Sun's movement. Instead, they found a ribbon of higher flux wrapping around a large part of the heliosphere, including the "nose" but extending far beyond it in a complex curve. Theorists are now trying to catch up to the data (hurray for data!) and think the twisted magnetic field lines that wrap around the heliopause may accelerate ions from areas around the "edges" rather than only at the "nose", giving the ribbon its shape. Voyagers 1 and 2 were sent to different areas of the heliopause (one above and one below the galactic plane) to search for

evidence of activity but by coincidence both missed the area of higher flux. "Storm Chasers" take heart—you don't hit the tornado every trip either.

★ Ted Blank

## Spring Star Party, May 14-16 2010

NHAS Member **Lon Henderson** and his wife Nancy, owners of the Sunset Hill House in Sugar Hill, NH, have offered their B&B for a May 14-16 Spring 2010 star party at significantly discounted rates. The bed and breakfast lies just over the Franconia Notch pass off Route 16 and features Mag 6-7 skies, not to mention Lon's 20-inch Obsession which he plans to drag out for the occasion. The Sunset Hill House has been recognized as one of the top establishments in New England and was recently featured on WMUR's New Hampshire Chronicles.

The star party will feature fellowship, education and exploration nestled in the White Mountains of New Hampshire. Lon and Nancy have a fun stay planned including a welcoming reception with a buffet of inn specialties, day tours and use of the inn's many amenities which include a swimming pool, horse shoes, walking paths and suggestions for unique day tripping. Cost includes a two night stay for two, the welcoming reception, full breakfast each morning, dinner nightly and all taxes and gratuities. Lunch and beverages are not included.

Those interested in signing up may contact Lon and Nancy directly to make a reservation—contact information is below as is a link URL to the registration form (pricing and room options are listed on the registration form). The rates are good through 12/30/09, but those with a room preference should book early to secure their choices. Those who sign up for the star party should also let club member **Tom Cocchiario** so he can keep a guest list of participating members. (email [tomcocchiario@comcast.net](mailto:tomcocchiario@comcast.net)).

Some optional day trip activities include Franconia Notch State Park, including the Basin and bike trail, the Cannon Mountain Aerial Tram, the NH Ski Museum, a multiplicity of hikes at varying levels, the world's longest candy counter, antiquing, and the Sunset Hill Golf Course. Officers and committee heads are also discussing the possibility of offering some of the Astro 101 and 201 courses, or other astronomy-related presentations during the day in the inn's conference room for the hard core star gazers in the group.

To download the registration form in MicroSoft Word format go to [www.tacticaldesigns.com/starpartyregistration.doc](http://www.tacticaldesigns.com/starpartyregistration.doc). Those planning to attend may also contact Lon and Nancy at: Sunset Hill House, 231 Sunset Hill Road, Sugar Hill, NH 03586; 603-823-5522 (phone), 603-823-5523 (fax); email [stay@sunsethillhouse.com](mailto:stay@sunsethillhouse.com) or find out more about the inn at [www.sunsethillhouse.com](http://www.sunsethillhouse.com).

★ Tom Cocchiario

## New Hampshire TechFest

Four NHAS members traveled to Derry, N.H. on a monsoonal Saturday morning Nov. 14 to take part in Pinkerton Academy's first-ever student TechFest. The event, which drew hundreds despite the weather, was designed to interest students in STEM (Science, Technology, Engineering & Math) careers.



**The NHAS TechFest Crew, left to right, Ken Charles, Gardner Gerry, Ted Blank, Tom Cocchiario (who supplied the photos)**

Throughout the day, students experienced "enlightening science and technology demonstrations," hands-on activities, and many cool

experiences including the opportunity to learn about astronomy. Thanks to volunteers **Ted Blank, Gardner Gerry, Ken Charles and Tom Cocchiaro**, dozens of high and middle-school students got the chance to look through several telescopes and pick up astronomy-related materials



### Gardner demonstrates astrophotography

including posters, bookmarks and pubs aimed at helping shoppers buy their first scopes. Short-fuse planning for the event was organized by **Marc Stowbridge** and **Matt Amar**. NHAS was one of 36 exhibitors.



### Checking out a dob

"I was surprised at the level of interest not only from students but from moms and dads who were there to inspire their children," said Cocchiaro. "I talked to one woman who home schools her children and was so interested in NHAS and our programs she will probably join and start traveling from Dracut, Mass. to attend our bi-monthly meetings at the McAuliffe-Shepard Discovery Center. I was also entertained by the creativity of our group. While we weren't able to take scopes outside as originally planned, we were able to show passersby some celestial objects thanks to a suggestion by Ken and the quick work of Ted. He cut out some pics of Saturn, the Andromeda Galaxy, the Sun, and a couple of other targets and placed them high on the

wall above the top row of the bleachers about 90 yards opposite our booth. It was fun to ask students if they wanted to see Saturn through the telescope, and then see their expressions as they said, 'you can see it from inside the gym.'"



### A planisphere lesson

"I had a wonderful time, talked to lots of kids and parents," said Blank. "One little girl said to her dad, 'Daddy! Go stand over there so I can see you in the telescope!' Everyone thought an 8" dob would cost them in the neighborhood of \$5,000. They were amazed when I told them that they could get one tomorrow six-inch version. I hope we can spread the word about these bargains to people who might otherwise be looking to Walmart for their scopes."

★ Tom Cocchiaro and Ted Blank

I had a busy day talking to people about NHAS and our mission to bring astronomy to the public. There were lots of questions about telescopes and the imaging rig I had set up, and all enjoyed the slide show of members images running on the big 24" monitor. The scopes pointed at the posters of Saturn and M31 were a big hit too. Thanks to the awesome event staff (who were mostly high school kids) that helped haul heavy gear in and out and were cheerful and helpful all day.

★ Gardner Gerry

I was asking most of the kids and parents I talked to if they had ever looked through a telescope. Most said they hadn't. I was pushing our sky watches at McAuliffe-Shepard Discovery Center, and telling them to go to our calendar on our website to check for sky watches they could make in the future. The kids did enjoy seeing M31 in my scope

(picture taped on wall at other end of gym, thanks Ted!). Lots of people were there, especially considering they had to come out in miserable weather. The kids that were helping the TechFest were a big help for setup and breakdown. Really enjoyed it.

★ Ken Charles

## Recent Public Sky Watches

### Auburn Village School, Auburn NH, 26 October

This is our second visit in three years (last year's event was clouded out, if I recall correctly) to Preston Field in Auburn, which has a very fine view and quite dark skies, despite Manchester being so close. The event was mainly for the benefit of 120 7<sup>th</sup> and 8<sup>th</sup> graders, who had been assigned as homework objects to observe (extra credit for the 8<sup>th</sup> graders, as they missed last year).

Thirteen NHAS members participated: **John Bishop, Ted Blank, Ken Charles, Tom Cocchiaro, Steve Forbes, Stephen Forbes, Gardner Gerry, Don McDaniels, Al Navarro, John Rose, Bill Steele, Marc Stowbridge, Mike Townsend.**

★ Bill Steele

Wendy from the Auburn Village School wrote:

*"I wanted to start by thanking you for a wonderfully successful 4th Annual Astronomy Night here in Auburn last month. Despite locked gates, it was a perfect evening! Your members are always fantastic with the kids and allow them to make the most of the learning experience. I am so appreciative!"*

★ Marc Stowbridge

### Gilford Public Library, Gilford NH, 17 November

**Marc Stowbridge** and **Paul Winalski** were the NHAS members at this event, which about fifty members of the public attended. The site, a soccer field behind the nearby school, has good horizon visibility and impressively dark skies. The air was rather damp, but

that is only to be expected in lake country.

Sky conditions were quite good, and I was able to show off Neptune, M32/32 in Andromeda, the Perseus Double Cluster, several double stars (most notably 61 Cygni), carbon star T Lyrae, and sundry other objects.

Jessie Tanner, the Children's Librarian at the Guilford Public Library, wrote this note to us:

*"Thank you, thank you for presenting the Sky watch to our community. It was very well received. People have asked if we would have this program every month.*

*"We would love to join the other libraries in NH that provide a telescope for patron checkout. Please let me know the procedure for adopting one. Yeah! We are so excited to be a part of the Library Telescope Project.*

*"Thanks again for your enthusiasm in bringing telescopes to the library and in taking the time to visit us."*

★ Paul Winalski

## Head-to-head at 90mm

I had an hour to do a head-to-head last night with these two telescopes:

(1) DGM Optics OA-3.6 ATS design in the DGM Optics Dob mount on a Osypowski equatorial platform. 92mm mirror, focal length 1020mm, f/11. Total cost about \$1K, \$2K if you include the platform.

(2) Stellarvue "Raptor" 90 mm APO (carbon-fiber tube) on an IOptron tracking mount and tripod. Lens aperture 90mm, focal length 630mm, f/7. OTA alone \$2K, total cost (tube, diagonal and mount) about \$3K.

I put the OA on the platform so that tracking would not be a big differentiator. I used different instances of the same eyepiece (a TeleVue 8-to-24 mm zoom) so that I could match magnifications if I wanted or go for maximum field of view or maximum magnification.

Both telescopes had about half an hour to cool down. The Raptor didn't show any issue with cooling, but the OA did. Even at the end of

the head-to-head, a defocused image of a star showed the wriggles of warm air coming off the mirror. That's not surprising because the night was steadily getting colder as time went on.

It was medium dark for the in-town location; there were a few streaks of haze but the sky was mostly clear. Seeing was good (stars could focus to tiny dots but there was no sign of the Airy rings in focus).

I started with a star test using Altair. The defocused images were white on both sides of focus in the Raptor. That's really good color correction! Raptor rings even and identical on both sides. OA rings really nice on 'in' side but blurry and very wiggly on 'out' side. Based on past experience with the OA, I suspect tube currents from a mirror warmer than the air, as I know that the 'out'-side focus eventually clears up. OA seemed to give a sharper focused image even so.

On clusters (NGC 457, M34, Double Cluster), the Raptor did better at giving sharp images of dim stars. So if I picked a faint chain of three stars in the Raptor and then went to the OA at the same magnification, the three might not be visible all the time or they might be blurrier. The difference was small but always visible; it was just plain easier to see dim stars in the Raptor.

Doubles (Almach, ι CAS) the same: slight advantage to the Raptor. The OA could go to higher magnifications due to its longer focal length and so could split the tight pair in ι CAS. The max magnification for the Raptor was 79x. I couldn't split the tight pair in either telescope at that magnification. Star color was visible to same level in both telescopes.

Galaxy (M31): The Raptor did a better job showing the 'streak' of the outer coma.

Planet (Jupiter): the OA gave a much better view of the planet (this was a bit of a surprise given what had gone before; one contributing factor might be that this was the last object I viewed and the mirror had

therefore had much more time to cool down than it had with the earlier objects). There was more detail and the contrast was more definite. The Moons also seems to focus more sharply in the OA.

Other notes:

The OA often showed a "mottled" sky background. I don't know what this is from. Up until I did this head-to-head I had thought the mottling I saw in the OA was the telescope showing me real mottling in the sky due to very faint stars and so on in the background, ones too dim to resolve but still contributing light. The Raptor didn't show that at all. Could it be light leakage in the OA? The OA has a mirror-end baffle and a tube extension baffle, so there's not much extra light to leak. Could it be mild break-down of the mirror coating? I have no idea, but the views in the Raptor were nicer for not having the mottling.

The OA was much easier to focus (Yay big f-number!). The OA vibrated more when touched and took longer to stop vibrating (Boo big f-number!). While I wanted to say "But wait until the OA has cooled down", I have to point out that temperatures change and observers can't wait forever. Not having to wait is a positive for the Raptor.

There's not much doubt about the result: in general the APO gave a better image. But adjust for price and the OA wins, I think.

★ John Bishop

## NHAS October 2009 Business Meeting

The meeting took place on 16 October at the McAuliffe-Shepard Discovery Center.

President **Rich DeMidio** presented a report on several topics:

- Membership dues are in effect at the new rate of \$30/year.
- The fourth quarter officer's and director's meeting was held. Topics discussed included: The inventory of club assets, and how to maintain the list online. Possible automation (PayPal?)

of dues payments. An online order site for NHAS merchandise.

- We have guest speakers lined up for the rest of the year.
- NHAS awards: send nominations to Rich directly. The presentation ceremony will be at the December meeting.
- Nominations are open for 2010 officer elections, with the vote to take place at the December meeting. Remember that only paid-up members can vote.

### Directors' Report

**Mike O'Shaughnessy** reported that the directors will be focusing on the inventory of club property. Send a message to Mike if you have are currently holding any club items.

### Educational Outreach

**Matt Amar** reported that the Library Telescope Program has seven scopes available, with three members tending them. We are looking for more volunteers as scope stewards. We encourage libraries to fund their own scopes, but we have donated some of them. If your library is interested in the program, have them contact **Marc Stowbridge**. **Chase McNiss** suggested holding a sky watch before we deploy a library scope so that the public becomes interested and perhaps willing to contribute to the cost.

**Bill Steele** gave Matt the name of the president of the NH PTA. We will follow up; they are doing a convention on 14 November that we may wish to attend to get the word out on NHAS. That is also the date of the TechFest.

The McAuliffe-Shepard Discovery Center is interested in NHAS members who may wish to volunteer at the Center.

### Membership

**Bill Steele** reports that new member activity picked up in late August/early September. We have new members from many different towns. The Library Telescope Program has attracted a lot of members.

### Amateur Telescope Making

**Larry Lopez** reports that a member has a 17.5" dob that he wishes to turn into a compact, truss-tube design.

### YFOS

**Larry Lopez** is looking for a plowing contractor for the site.

### Astrophotography

**Gardner Gerry** reports that there have been no meetings lately. New images are being posted on the website—check them out.

### Scope of the Month

**Ed Ting** presented the Galileoscope, a replica of Galileo's telescope. It costs \$20. The initial intent was to produce a \$10 telescope; the first batch was \$15. It is a 50mm f/10 achromat with two spaced doublets (not a Galilean telescope; one can get a Galilean eyepiece for it but it gives very bad views). It comes with a 25X eyepiece and a 2X Barlow lens. It comes with a display stand as well. Assembly directions are not very good. It has no finder, but there are two nibs on the tube for lining up objects. The observing experience depends very much on the quality of the tripod, which is left up to the consumer. The optics are good, with very little false color. The tube is not baffled. The lenses are worth \$20 easily. There is not enough play in the focuser to support a diagonal.

### Miscellaneous Business

**Tom Cocchiario** mentioned that **Lon Henderson** has put together a package inviting club members to the Sugar Hill B&B in April/May next year [see the article elsewhere in this newsletter].

The McAuliffe-Shepard Discovery Center asks that we sign in when we meet there.

The floor was opened for nominations for 2010 officers.

**Rich DeMidio** was nominated for President.

### In the Sky

LCROSS crashed a Centaur rocket body into Cabeus crater on the Moon. No visible plume was

detected, but they did get infrared detection. Visually the event was disappointing, but it had exciting scientific aspects.

Venus, Saturn, and Mercury are morning planets.

The Orionid meteors are active in early mornings this week.

Winter constellations are starting to rise in the early evening.

Epsilon Aurigae is entering eclipse for the first time in twenty-seven years.

### Evening Presentation

**Gardner Gerry**, **Herb Bubert**, and **Rich Schueller** gave a presentation on their astrophotography activities. Not only did we get to see some astounding images, we got to hear how they were produced.

★ Paul Winalski

### The Bottom Line

<b>Starting Balance:</b>	<b>\$5848.67</b>
<b>Deposits/Credits:</b>	
Membership:	1946.00
Donations (EOC)	204.00
Bank interest	1.29
Calendars sold (29)	203.00
Total :	2354.29
<b>Accounts/Paid:</b>	
Insurance:	192.34
Marc Stowbridge	267.35
United Site Services	54.30
Kalmbach Publishing	233.10
Total:	747.09
<b>Net Account Balance:</b>	<b>\$7455.87</b>
<b>Petty cash drawer:</b>	\$100.00
<b>Cash Balance:</b>	<b>\$7555.87</b>

### EOC Donations:

Dunstable Library	100.00
Rich DeMidio	70.00
Mike O'Shaughnessy	5.00
Miscellaneous donations	29.00

**Membership:** 81

### New Members:

**Michael Andrews**, Gilford, NH  
**Anders Sund**, Nashua, NH  
**Horst Gigerenzer**,  
 Moultonborough, NH

★ Ken Charles  
 NHAS Treasurer 2009



**2009 Officers**  
President: Rich DeMidio  
Vice President: Mike Townsend  
Treasurer: Ken Charles  
Secretary: Paul Winalski

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**DEADLINE December 2009 Issue: 5 PM December 13**

E-mail articles to the Editor.

**CHANGE OF ADDRESS** – Notify the Treasurer of changes to postal or e-mail address.

**How to Join N.H.A.S.**

**Write to us:**

NHAS  
P.O. Box 5823  
Manchester, NH 03108-5823  
Attn: Treasurer

**Send E-mail to:**

[info@nhastro.com](mailto:info@nhastro.com)

**Use our web site:**

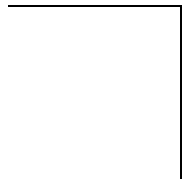
<http://www.nhastro.com/>

**This month's contributors:**

Rich DeMidio, Ted Blank, Tom Cocchiaro, Gardner Gerry, Ken Charles, Bill Steele, Marc Stowbridge, John Bishop

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New Hampshire Astronomical Society  
P.O. Box 5823  
Manchester, NH 03108-5823



## NHAS Upcoming Events

Event	Date	Time	Location
Broken Ground School Sky Watch	December 1	6:00 PM	Concord NH
Discovery Center Public Sky Watch	December 4	7:00 PM	McAuliffe-Shepard Discovery Center, Concord NH
Coffee House Night	December 11	5:00 PM	YFOS
Astro 101: Lunar Observing	December 11	7:00 PM	YFOS
Boy Scout Troop 159 Sky Watch	December 14	7:00 PM	8 Pleasant Street, Salem NH
NHAS Business Meeting	December 18	7:30 PM	McAuliffe-Shepard Discovery Center, Concord NH
Discovery Center Public Sky Watch	January 1 2010	7:00 PM	McAuliffe-Shepard Discovery Center, Concord NH