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President's Message



We're beginning to see some signs of Spring, but Mother Nature seems to be toying with us a bit. Eventually though, we'll see some warmer

weather (and the arrival of the mosquito population, of course).

Coming up, we have a cluster of skywatches as the school year winds up. I was really pleased with the response to the request for assistance at the *Daniel Webster College* skywatch recently. Thank you for continuing to support this major component of our club's outreach activities. Your help is still greatly needed - come to as many as you can, and touch a child's life in a positive and exciting way.

We have reached a true milestone in the **Library Telescope Program**. Under the initial direction and inspiration of **Marc Stowbridge** and the continuing dedicated leadership of **Pete Smith**, we will shortly reach the deployment of our 100th Library Telescope here in New Hampshire [read the report on page 3. - Ed]. The program has also spread to multiple states, and **Paul Winalski** informs us from Australia of interest "down under" as well. Thanks to everyone who helps support this

program, whether it is through participation in Scope Modification Parties, by delivering scopes or by later foster-parenting scopes. The team could not do it without you. Get ready for a big celebration.

Rich Schueller informs me that he has received a permit for our next members-only skywatch at Benedictine Park in Bedford NH, to be held sometime in May. At these events we offer in-depth support for new members, or members with new and unfamiliar equipment, without the distractions associated with a public event. Someone in the club surely has the answer to all your questions about your gear, so once the date for this event is announced, put it on your calendar and prepare to get some really helpful advice from the more experienced members.

I will close by mentioning that the *Kepler* mission has identified the first planet (**Kepler 186f**) orbiting an M-class dwarf star in the "habitable zone" (one where liquid water could exist). I expect to begin receiving membership applications from the inhabitants there shortly. Please give a warm welcome to any extra-terrestrial new members if they happen to show up at a meeting.

Clear skies,

Ted Blank
NHAS President

The 2014 Spring Messier Marathon, March 28-29, New Boston NH

The weather did not cooperate.

Usually if the weather is poor on Friday, I put it off until Saturday hoping for better weather. People told me not to do that since the weather of Saturday was going to be really poor. So we had it on the Friday. But it never got very far.

I didn't plow the observing field and this worked out well – no mud. The path to the observatory I made became a bog. Oh well. We saw perhaps 3 Messier objects. It cleared a bit by about 3:30am but no one actually set up any equipment. Everyone was gone by 10pm, but all enjoyed socializing at the pot luck. Herb came prepared and acted as master of ceremonies for "Name that Messier Object" (no scores were kept).



A very relaxed Stu May tackled Herb Bubert's name-that-Messier game.



Feasting on Bob Gaimari's Thai Chili Chicken with noodles and Rich DeMidio's beef jerky left Gardner Gerry in high spirits. (All Photos: Larry Lopez)

We had Thai Chili Chicken with noodles, Oreos, Pizza, beef jerky, beef stew, beans and franks and more! I took pictures of everyone and got them to sign a log book so I could keep track of everyone. It lists **Herb Bubert, Tom Cocchiaro, Rich DeMidio, Bob Gaimari, Gardner Gerry, Stu May, John Rose, Ed Ting and Mike Townsend**. No one stayed till the morning except **Linda, Larry and Boo Tres**.

- *Larry Lopez*

John Rose adds:

Shortly before leaving a rather large sucker hole appeared – enough for Gemini through Ursa Major. On the way home Mike spotted Mars; it was still visible when we got to his place. I went home and set up my XT6. It sits in the garage and was close to outside temperature, but it was very rough seeing at 96X. Even with no observing it was a nice evening and probably a lot less mud for Larry and Linda to clean-up.

LTP Modification Party

March 30th at MSDC marked the first LTP modification party of 2014. A good time was had by all as we built 8 scopes for New Hampshire and 2 scopes for Massachusetts.

Mod Party Masters attending were **Melinde Byrne, Jeff Eitreim, Gardner Gerry, Elaine Grantham-Buckley, Scott and Liam McCartney, Steve Rand, Curtiss Rude, Rich Schueller, Gerry Smith, Marc Stowbridge and Dave McDonald.** Dave is the STEM instructor at the Belmont High School, and the EOC donated a special scope that will allow his students to both learn astronomy and be able to fiddle (yes, Marc... fiddle!) with the unit to learn about telescope maintenance and construction.

Bruce Berger from the *Amateur Telescope Makers of Boston (ATMoB)* and **Kelly Beatty** of *Sky & Telescope* also joined us and helped make this one of the most productive mod parties to date.

We built scopes for the following in NH:

Gilman Library, Alton,
Fuller Public Library, Hillsborough,
Webster Memorial Library, Wentworth,
Aaron Cutler Memorial Library, Litchfield,
Randolph Public Library, Randolph,
Oscar Foss Memorial Library,
Center Barnstead,
Kilton Library, West Lebanon and
Belmont High School, Belmont.

The 2 scopes in Massachusetts were for:

Adams Library, Chelmsford and
MacKay Memorial Library, N. Chelmsford.

ATMoB will assist in supporting these two scopes in Chelmsford, MA.

This party brings our recorded scopes to an even 100, of which 97 are located in NH. And thanks to the generosity of members and private donors, this party marks the first time in several years that we have been able to catch up on our backlog of requests.

- *Pete Smith*



Marc Stowbridge, Dave McDonald, Curtiss Rude, Pete Smith, Elaine Grantham-Buckley, Liam and Scott McCartney, Gerry Smith, Melinde Byrne, Steve Rand and Gardner Gerry. Not pictured: Jeff Eitreim, Rich Schueller. (Photo: Gardner Gerry)



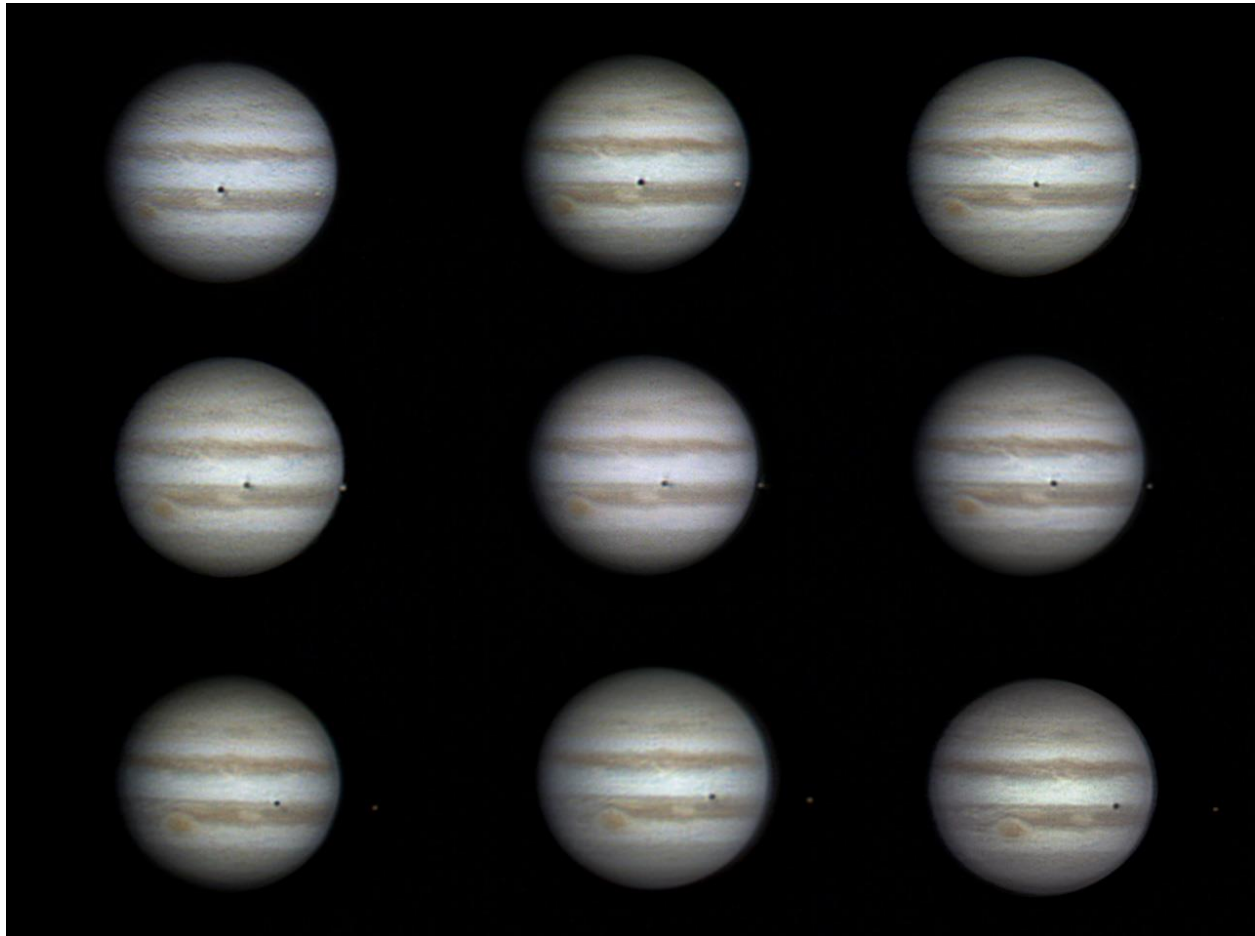
Gardner ponders, Marc contemplates, Pete explains, and Rich takes it all in... Another Sunday's work at the MSDC (Photo: Steve Rand)

Goffstown High School, Goffstown NH, March 24

The sky was clear but the temperature was low for this skywatch, one of the regularly scheduled events for Mike Veilleux's astronomy class. I think the cold was the chief factor keeping Mike's honors kids away, for only one student (and her mom) showed up. Nevertheless, except for a little light pollution from Manchester, the viewing wasn't bad and we had a good time. **Rich DeMidio, "Rags"** and I set up in time to watch Io pop out from behind Jupiter's shadow. We also took in M42, M81 and M82, M1, some open clusters, and Mars rising as we finished.

- *Steve Rand*

[Skywatches at *Salem High School in Salem NH, Raymond Schools in Raymond NH, Rindge Recreation Dept. in Rindge NH*, and an earlier skywatch at *Goffstown High School* were cancelled due to weather conditions. –Ed.]

Images of the Month

At about 8pm EST on February 28, Herb Bubert trained his Celestron C9.25 on Jupiter to capture the end of a transit of Io across the Jovian disk. With his ZWO ASI120MC color camera and a 1.8x barlow, he imaged the second half of a Shadow transfer. Note how the white dot of Io makes P3 contact in the top-right frame and then exits right, while the GRS slowly comes into view below as well. Had he continued a bit longer, Herb might have caught the P3 contact of the shadow as well! (Images: Herb Bubert)

“Jupiter’s Ghost” (NGC 3242) – a Planetary Nebula in Hydra
 by Glenn Chaple

From Puppis and the planetary-within-a-cluster combination of NGC 2438 and M46, we move eastward and further south to the solitary planetary nebula NGC 3242. It gets its nickname “Jupiter’s Ghost” because its angular size and slightly oval shape (40” by 35”) approximate those of its namesake planet. Make Jupiter 10 magnitudes fainter and change its color from lively yellow to pale blue-green, and you have NGC 3242 – Jupiter’s Ghost!

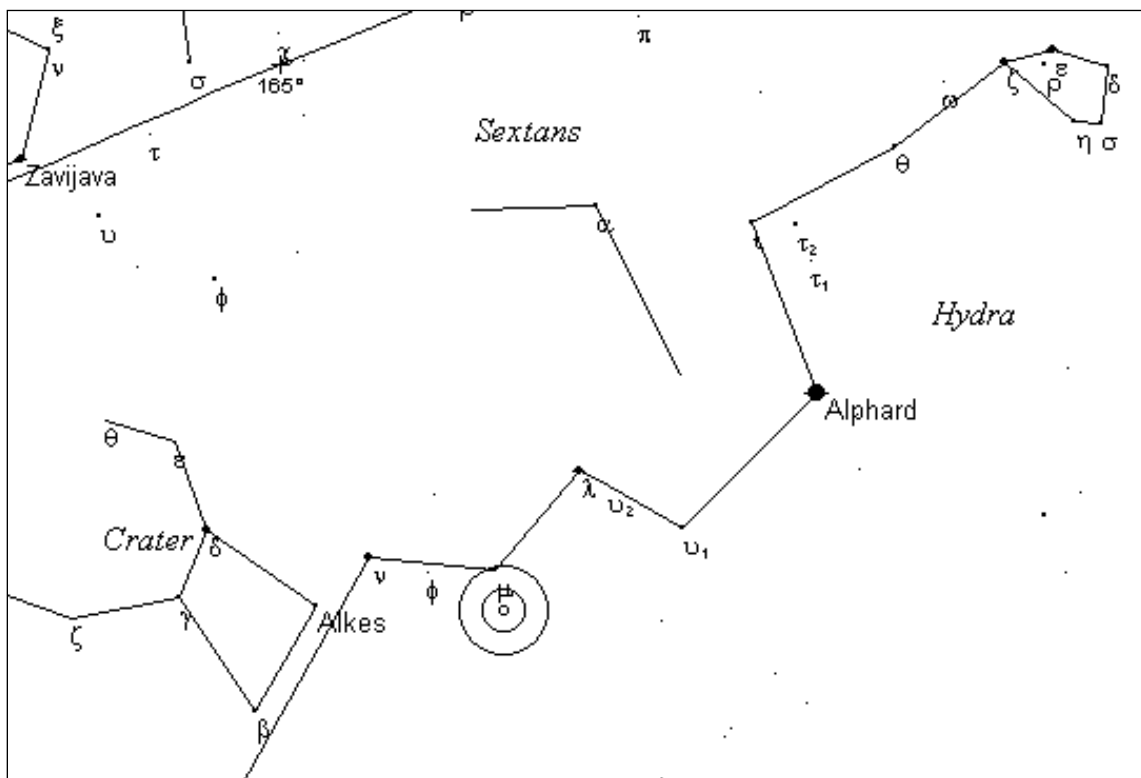
Begin your search for NGC 3242 (also designated C59 in the Caldwell List) by centering your finderscope on the 4th magnitude star mu (μ) Hydrae, then dropping 1.8 degrees south and slightly west. A low-power search should turn up an out-of-focus 8th magnitude “star.”

What next? If you’re using a small-aperture telescope (4 inches or less), boost the magnification to 120-150X and look for the nebula’s oval shape and bluish color. Scopes in the 6 to 10-inch aperture range will tease out more detail and capture the 12th magnitude central star. If you prowl the skies with a large-aperture Dob, look for the dark area between the central star and the surrounding bright oval-shaped ring that gives NGC 3242 the overall appearance (as Arizona amateur Steve Coe notes) of the “CBS Eye.”



(Image: Adam Block, courtesy of NOAO/AURA/NSF)

“Jupiter’s Ghost” was discovered by William Herschel in 1785. Various estimates place its distance and size at around 1500 light years and one-half light-year, respectively.



(Chart courtesy of avila.star-shine.ch)

My Journey from There to Here

As a kid, my dream was to become an astronaut. Unfortunately, that dream ended when I discovered I had a tendency to get motion sickness. Growing up in Idaho, my dad would have preferred to see me pursue a career in shoeing horses, or grow up to be a hunting and fishing guide. Instead, I ended up enlisting in the US Navy to be a Fire Controlman. The title may be misleading. We didn't fight fires; we worked on Fire Control Radar systems with cool acronyms such as BPDSMS, CIWS, and MK92.

While stationed on the *USS Blue Ridge* off Japan one night, and "haze grey and underway," I was the BPDSMS Radar director operator. I found myself looking up at the stars. It was so dark that you couldn't see your hand in front of your face, and then it hit me... I have a 50 megawatt transmitter focused into a half-degree beam. I'm thinking that if I shoot this beam towards a star, eventually "they" should receive the signal at some point. I focused on a random star and transmitted about five minutes' worth of RF towards it. So I apologize in advance if "they" are on their way to take care of this pesky race. And if you are curious, that segment of beam is now 26 light years away from us, about 55 million miles long and probably just part of the background noise now, so you can stop worrying!

Three years ago, my wife tells me that there is an astronomy lecture at the Amherst library. I call the library to sign up, only to find out that the event is full. I ask to be put on the waiting list. Luckily, the night before the presentation the library calls and tells me that they have had a cancellation and I can attend. I'm enthralled with **Ed Ting's** presentation. We head out to the front of the library and what do I see but a cornucopia of telescopes. There is a Takahashi refractor, Celestron refractor, and a Dob or two. Man, I'm happy! This is the first time that I had ever had the chance to look through a telescope. A day or two later, I find an Orion XT8 on Craigslist. I'm hooked.



The Amherst Public Library

Fast forward a bit. Ed is now helping me horse-trade and spend my money (he's really very good at this, by the way). I end up picking up a Celestron C8; I trade the XT8 for a TeleVue Pronto for a trip out to Idaho. I make my first pilgrimage to **NEAF**. As a side note here, if you haven't ever been to NEAF, **go!** Last year I learned that if you stay on till Sunday afternoon, you can get some pretty sweet deals from vendors that really don't like to load the leftovers back onto their trucks.



Scene at NEAF 2013

(Photo: Rex Gallagher)

At NEAF, I'm wandering around in an overwhelmed daze at the amount of stuff available. So I ask a group of NHAS members: "If you were able to buy one eyepiece, which one would you get?" Almost in unison they say "TeleVue 27mm Panoptic." 3 minutes later I am the proud owner of a TeleVue 27mm Panoptic. I buy an OK-quality diagonal, several Explore Scientific 82 degree eyepieces, and a DFK-21 camera (which turns out to be a semi-mistake).

More telescope horse trading occurs as I am introduced to [Astromart](#). The TeleVue Pronto goes to Florida (plus some cash), and I now own a William Optics 120mm refractor.

It's a wonderful scope for the price. I also buy a Celestron C8 around this time. One night, Mike Townsend and I are out doing some observing. We both have refractors and Mike is doing a star test on my WO Megrez 120. It looks pretty good, but not great. He swaps out my AstroTech diagonal for his Astro Physics MaxBright. What a difference! A diagonal is just a mirror set at 45 degrees, right? Apparently not.

As for the DFK-21 camera, my error was in attempting astrophotography before I had got comfortable using my mount and telescope. I was still struggling with doing polar alignment and focusing, and now I had gone and added a new level of complexity.

I ended up with information overflow.

I just did too much too fast. I put the camera away for almost a year and focused on the fundamentals of using my equipment. After I got proficient with my mount, I gradually started doing astrophotography again, this time with much better results. I now enjoy sharing my images with friends on Facebook.

In summary, I would like to thank everybody for all they have done for me over the past few years. If it had not been for NHAS, my XT8 would either be in the basement gathering dust or sold off long ago. My hats off to all of you!

- *Pat Adams*

Editor's Note

My first reading of the above led to a moment of utter disbelief. My thoughts were along the lines of the central character in Frederick Forsyth's *The Odessa File* – of Peter Miller's as he read Salomon Tauber's manuscript.

I joined NHAS per a New Year's resolution in 2012, and first met Pat when he presented the Milford Library's LTP scope in July of that year. I ran into him again a few months later at Hooksett Library's skywatch, the one that was interrupted by an "earthquake" (that I personally did not feel). I remember it more for his report about the evening in the [October 2012 Observer](#) (page 5; it is a very good read). But why, you may ask, am I talking about all this?

Early in 2011, I read about an astronomy lecture at the Amherst Public Library in the *Nashua Telegraph* and called the Library to register for the February 11 event. I went on (and later cleared) the waiting list. Then Tahrir Square happened in Cairo. I was diligently following events as they came to a head at the end of *that* week; I was busily recording the round-the-clock TV coverage across different channels. I had to choose which mattered more at that time, and called the Library the day before, in the afternoon, to cancel. They were most appreciative.

It became another in my long list of regrets, and there is no telling if I was the only one in southern New Hampshire to call the Amherst Library that day to cancel, but I'd like to believe so. I have no regrets on that score any more!

- *Ramaswamy*



*Twins on an Explorer II: Megrez and C8.
(Photo: Pat Adams)*

The 20th of March

It was the worst of times, it was the best of times. Charles Dickens would doubtless object to liberties taken with his words, but chronologically speaking, the twist captures perfectly the nature of the day that was the 20th of March. It was a Thursday that promised so much, a day that would begin early in the morning with the sight of a bright star winking out for up to 14 seconds and end late in the evening with Dava Sobel talking about the Copernican revolution at the Harvard-Smithsonian Center for Astrophysics.

Act One

The occultation of **Regulus** by the asteroid (**163**) **Erigone** was to have been observed and recorded by hundreds of amateur and professional astronomers, and by many more ‘lay’ individuals. But Mother Nature had other ideas; the entire track, from New York City to Ontario and beyond, was completely overcast. From his base in Poughkeepsie, NY, **Ted Blank** tried to find a sucker hole up and down the track, to no avail. But at least he did not have to travel far after the disappointment (only a fairly modest distance to Cambridge, Mass.); **Eberhardt Bredner** and **Konrad Guhl**, his *IOTA/Europe* colleagues from Hamburg, Germany, had a much longer journey home. An *IOTA/Japan* member jetted into JFK from Tokyo, suffered the overcast and flew home. It is not known if he composed a haiku on his return, but Ted certainly broke out into free verse:

The shadow-chaser
 ever optimistic
 sets up his scope on a rain-soaked parking lot
 fearing only another deluge.
 Even the full moon is not visible through the thick clouds.
 And yet he waits and hopes.
 Alas, the occultation will come and go
 unseen by human eyes.
 Only the high-flying birds may wonder
 why their star-steered path deviates from straight and true
 for just a moment as one of their guideposts flickers
 and then returns.

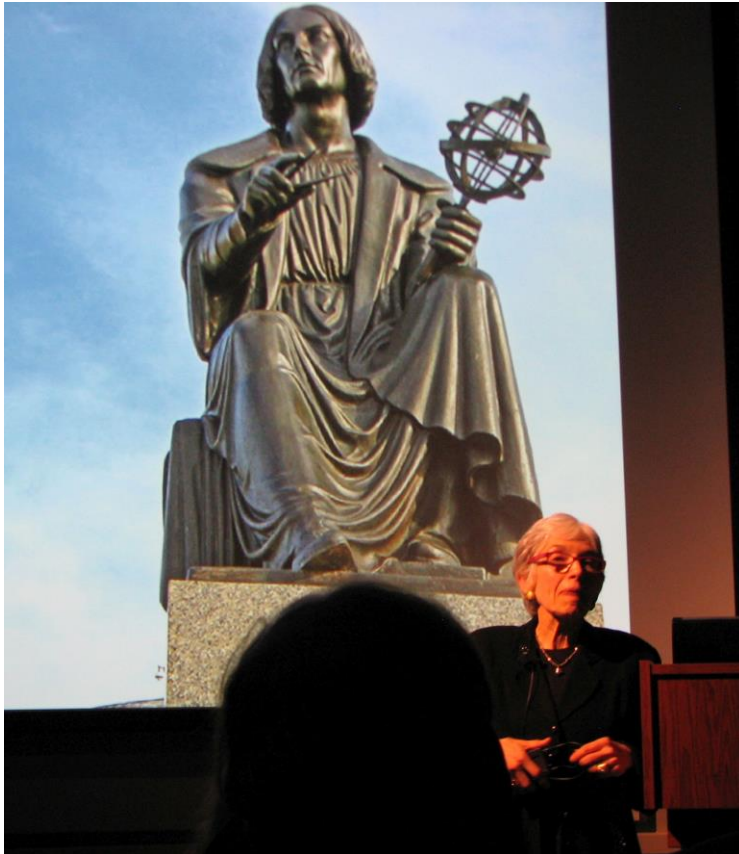


Hoping against hope. (Photo: Ted Blank)

On a lighter note, there *was* one reported observation of the event – a “miss.” The lady in question kept her sense of humor when informed that she had had an uninterrupted view of Regulus only because she had got up on the (clear) morning of the 19th to take a look.

Act Two

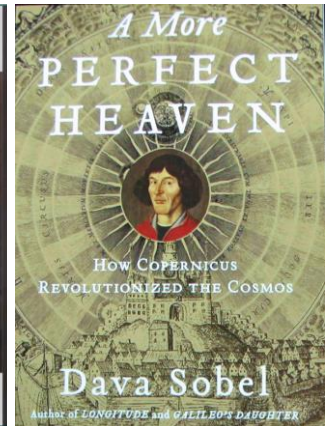
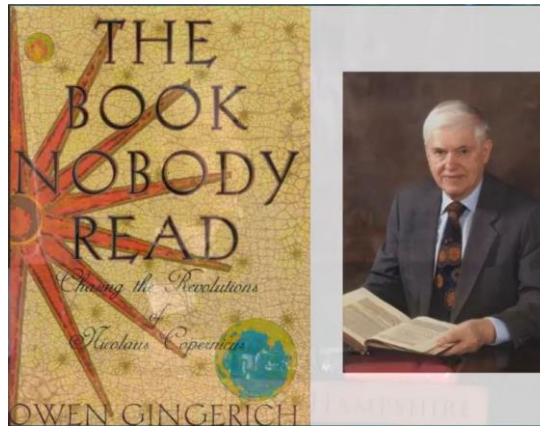
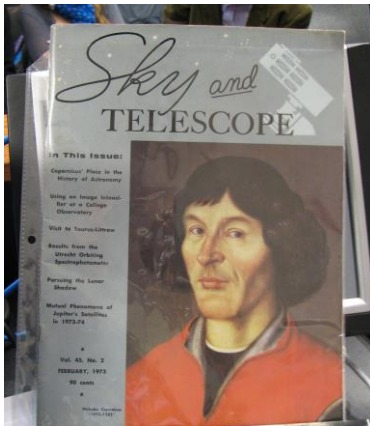
Steve Rand and I drove to Cambridge early in the afternoon, in plenty time for the **Dava Sobel** talk at 7:30pm; in fact, we had time to attend a lecture given by a visiting professor from Arizona. We also met **Alison Doane**, the curator of astronomical photographs at the Harvard College Observatory – the keeper of “The Stacks.” **Ted Blank** and **Rex Gallagher** showed up soon thereafter and **Gary Duranko** joined us later in the evening to round out the NHAS contingent.



Dava Sobel with admirers (above) and one of her favorite Poles (left). Copernicus lived before the age of the telescope, and he made extensive and meticulous observations of the Moon (below).



NHAS members may have had the pleasure (at NEFAF last Fall) of meeting and hearing Dava Sobel talk about her latest book and the Copernican revolution [read a brief account in the [September 2013 NHAS Observer](#)], but this hour-long talk was different in a way. Whereas NEFAF featured a reading of the play within the book (“*And the Sun Stood Still*”) by students of the UNH Drama Department, on this day Owen Gingerich (in costume as Copernicus) and Dava Sobel acted out a scene from the play.



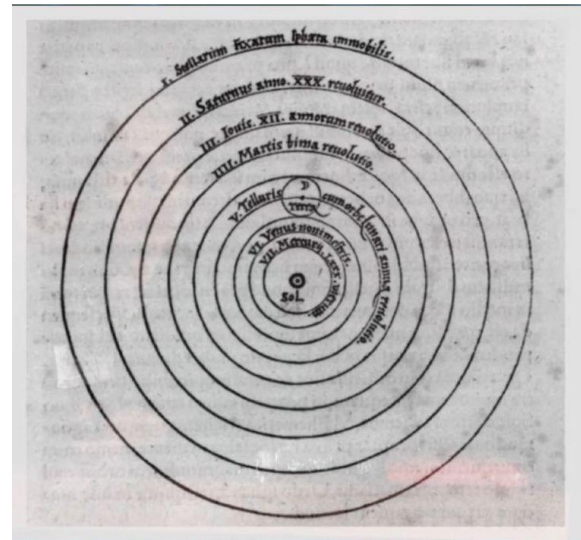
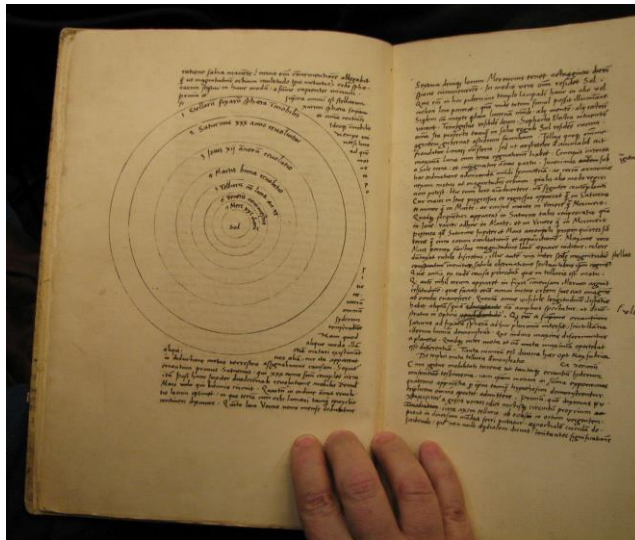
It would be fanciful to call this sequence the anatomy of a book, but the February 1973 issue of Sky & Telescope magazine that commemorated the 500th anniversary of the birth of Nicolaus Copernicus started the ball rolling, and the publication in 2004 of Owen Gingerich’s tome on Copernicus’s De revolutionibus was a catalyst to Dava Sobel’s own search for Copernicus.

Dava played the part of Rheticus. The text was from **Scene V. Tower Room: “World Machine”** on pages 105-112 of Dava’s book – no prop was used, and so one had to imagine the presence of the machine and the Church bells ringing the call to Mass at the end.

And quite fittingly, the re-enactment of the scene was done in the middle of Dava’s talk – another play within a play. In the Q&A session at the end, it was made plain that the World Machine in question was a fictional artifact. When asked about the one big “wow moment” of her journey of discovery in Poland, she was quite specific: the five minutes or so spent in Krakow with the original manuscript of Copernicus’s *De revolutionibus orbium coelestium*, and the sight of a hole in the diagram of the solar system – the result of his drawing with a compass eight concentric circles with the Sun at the center all those years ago.



Dava Sobel as Rheticus and Owen Gingerich as Copernicus – actors of the play within a play.



A look at a facsimile of the bound manuscript of “De revolutionibus” and the diagram of the solar system with a hole in it.

The evening ended with attendees queuing up to have their copy of her book autographed, and a couple of surprises awaited me yet. All evening I had been unknowingly sitting next to and chatting with **Jim Hendrickson** and **Francine Jackson** of the *Amateur Astronomical Society of Rhode Island*. Read her takes on constellation lore at their web-site ([Skyscrapers](#)) for some good skywatch fodder. And whereas many people may claim to have shaken Owen Gingerich’s hand, I managed to shake just his forefinger!

- **Ramaswamy**



Rex Gallagher, Steve Rand and Ted Blank as themselves.

NHAS March 2014 Business Meeting Report

The monthly business meeting was held at St. Anselm College, Manchester NH on March 14th, with our President **Ted Blank** presiding. The Treasurer’s report by “**Rags**” follows on the next page.

President’s Report

The First Friday skywatch at MSDC and the ISAN7 coincident Sidewalk Astronomy event in Portsmouth came off, but not much else of late.

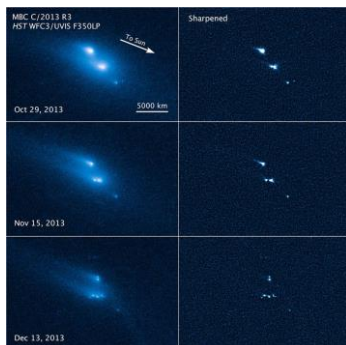


First Friday (above) and the Sidewalk event (below) drew enthusiastic crowds. (Photos: Ted Blank)



The Top 3 News items of the past month, in reverse order:

* The Hubble Space Telescope witnesses an asteroid’s mysterious disintegration in late 2013:



* The *Kepler* team announced on February 26 the discovery of 715 new exoplanets.

* A high-resolution picture of the November 3, 2013 Total eclipse of the Sun (taken from Gabon) has been released:



[This event was seen as the tail-end of a partial eclipse at sunrise across New England on that day. –Ed]

Astronomy Shorts

- Rich DeMidio:* showed off M82 and the supernova at First Friday
- Larry Lopez:* took a snowblower and made a path to the YFOS observatory
- Marc Stowbridge:* taught a course in astronomy in Tamworth NH
- Steve Rand:* was on cruise between Haiti and Cuba, and he saw the Southern Cross

The Evening Presentation

Ed Ting, past President of NHAS, dedicated observer, [equipment reviewer](#), speaker, astrophotographer, musician and teacher, talked about how to find, observe and enjoy Messier objects. Enjoyment being the key, he discussed his abbreviated lists of mini- and micro-marathons of 25 and 10 objects, to avoid undue stress during the night of the event.

Membership Committee



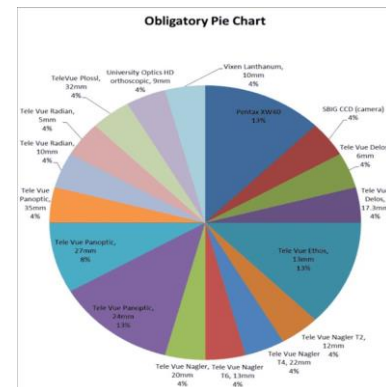
Rich DeMidio, the Membership Committee chair, reported on the progress made toward improving the NHAS membership experience.

Knowledge Base rollout using Google Docs is proceeding, with more assets uploaded. Member feedback is being received as well.

A new Member Brochure has been put together and **Ken Charles** will be including it in his welcome mail.

A free conference-calling site has been identified for us to use, but is being looked at carefully to avoid surprises later. Test calls will be scheduled in the coming weeks, and scheduled events may happen in Q2.

Pi Day (3.14) was celebrated at the **Break** with pies supplied by **Marc Stowbridge**. An *EP Survey Chart* was also served up by **April South**:



NHAS Treasurer's Report*(as of March 11, 2014)*

Starting Balance:		\$12,947.23	Membership	130	
Deposits:			Cash Renewals:	1x30.00	30.00
Membership	178.83		Cash New Members:	4x30.00	120.00
Donations	0.00		PayPal Renewals:	1x28.83	28.83
Interest	0.00		PayPal New Members:	0x28.83	0.00
Total:		\$178.83	Total:	6	\$178.83
Expenses Paid:			Current Members:	136	
Cynric Company, LLC (Plowing)	468.60		New Members		
Connerstones of Science	1,490.00		Lauri Chehayl		Bristol NH
Cabela's, Inc.	191.00		Andrew Chehayl		Bristol NH
OPT (Lens pen x 11, Zoom EP x 12)	781.67		Rob Lembree		Nashua NH
Total:		\$2,931.27	Daniel Slater		Hollis NH
Current Checking Balance:		\$10,194.79	Donations		
Petty Cash:		\$100.00	Total:		\$0.00
Current Cash Balance:		\$10,294.79			
EOC Share:		\$6,802.85			

Contact Information**How to join NHAS**

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

Send Email to: 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

NHAS Officers:

President: [Ted Blank](#)
Vice-President: [Tom Cocchiaro](#)
Secretary: [Paul Winalski](#)
Treasurer: [David "Rags" Gilmore](#)

Board of Directors:

[Ken Charles](#)
[Pete Smith](#)
[Steve Rand](#)



Orion XT6 – 6” Newtonian on a Dobson mount
 (custodian: Ted Blank contact: tedblank@gmail.com)

Equipped with:

- Telrad finder with a dew shield
- 32mm, 25mm and 10mm Plössl EPs in a case
- A Planisphere, a Moon map, and a red light
- Richard Berry’s “Discover the Stars”
- Orion XT6 user manual



Meade 8” Newtonian on a Dobson mount
 (custodian: Ken Charles contact: starnek2550@gmail.com)

Equipped with:

- Telrad finder with a dew shield
- 25mm and 10mm EPs
- Custom-built base (a Joe Derek/Chase McNiss original)



Coulter Odyssey 10” Newtonian on a Dobson mount
 (custodian: “Rags” Gilmore contact: nhas@ragnorok.net)

Equipped with:

- Telrad finder with a dew shield
- 26mm TeleVue Plössl and 15mm Celestron Plössl in a case
- A Planisphere and a Moon map
- Richard Berry’s “Discover the Stars”

Also available on loan, independent of the telescope, and in a separate slip-case:

- Sky Atlas 2000.0 by Wil Tirion and Roger Sinnott
- Sky Atlas 2000.0 Companion by Robert Strong and Roger Sinnott



Orion XT10 on a Dobson mount
 (custodian: Pete Smith contact: psastro60@gmail.com)

Equipped with:

- Telrad finder (replacing the original finderscope)
- Assorted EPs: 35mm, 25mm wide-angle, 17mm and 10mm.
- An EP case will be available in the near future.

Regional Astronomy Clubs

New Hampshire Astronomical Society
[NHAS] *Skywatches around the State*
Sidewalk Astronomy in Portsmouth
www.nhastro.com

Amateur Astronomical Society of Rhode Island (North Scituate, RI)
www.theskyscrapers.org

Amateur Telescope Makers of Boston
(Westford, Mass.)
www.atmob.org

Astronomy Society of Northern New England (Kennebunk, Maine)
www.asnne.org

McAuliffe-Shepard Discovery Center
[MSDC] (Concord, NH)
First Friday Observing Event
www.starhop.com

Northeast Kingdom Astronomy Foundation (Peacham, VT)
www.nkaf.org

North Shore Astronomy Club
(Groveland, Mass.)
www.nsaac.org

Penobscot Valley Star Gazers
(Bangor, Maine)
www.gazers.org

Online Live Observatories

Astronomy Live (broadcasts)
www.astronomylive.com

SLOOH (Tenerife, Canary Is.)
www.slooh.com/about.php

Worldwide Telescope
www.worldwidetelescope.org

Magazines

Astronomy
www.astronomy.com

Sky & Telescope
www.skyandtelescope.com

Sky at Night
www.skyatnightmagazine.com

Astronomy Gear

Agena AstroProducts
www.agenaaastro.com

Astromart
(Used equipment and advice)
www.astromart.com

Astronomy-Shoppe
(in Plaistow, NH 03865)
www.astronomy-shoppe.com

Celestron
www.celestron.com

Cloudynights
(Used equipment, Articles, Forums and Reviews)
www.cloudynights.com

Explore Scientific
www.explorescientific.com

High Point Scientific
www.highpointscientific.com

Kendrick Astro Instruments
www.kendrickastro.com

Lunt Solar Systems
www.luntsolarsystems.com

Meade Instruments
www.meade.com

Oceanside Photo & Telescope
www.optcorp.com

Orion Telescopes
www.telescope.com

ScopeStuff
www.scopestuff.com

TeleVue
www.televue.com

Vixen Optics
www.vixenoptics.com

William Optics
www.williamoptics.com

Astronomy Web Sites

CalSky
(Sky Calendar to plan Observing)
www.calsky.com

Free Star Charts
(Star Charts for MM, Planets etc.)
www.freestarcharts.com

Heavens Above
(on Satellites, Spacecraft, Planets)
www.heavens-above.com

NASA
www.nasa.gov

Dark skies Observing Sites
(Horizons and Clear Sky information)
www.observingsites.com

ScopeReviews
(Reviews by Ed Ting, NHAS)
www.scopereviews.com

Sloan Digital Sky Survey DR10
<http://skyserver.sdss3.org/>

SpaceWeather
(Solar activity, Asteroid passes)
www.spaceweather.com

Computer Software

Cartes du Ciel (*aka Skychart*) (Free)
www.ap-i.net/skychart/

Celestia
www.shatters.net/celestia

Computer Aided Astronomy (Free)
www.astrosurf.com/c2a/english/

Earth Sky Tonight
www.earthsky.org/tonight

SkyMap Online
www.skymaponline.net









Starry Night
(many versions, Novice to Expert)
www.starrynight.com

Stellarium (Free)
www.stellarium.org

WinStars (Free)
www.winstars.net/english/

Event	Date	Time	Location
Great Brook School Sky Watch (backup date)	Tuesday, April 1	7:00pm	Great Brook School, Antrim NH
The Beech Hill School Skywatch (backup date)	Thursday, April 3	7:30pm	20 Beech Hill Rd., Hopkinton, NH
First Friday Skywatch for MSDC	Friday, April 4	7:00pm	MSDC, Concord NH
Sidewalk Astronomy Skywatch	Saturday, April 5	6:00pm	Market Square, Portsmouth NH
Henry Wilson Memorial School Skywatch	Monday, April 7	7:30pm	43°23'33.1"N 71°04'09.6"W in Farmington NH
Goffstown High School Skywatch	Tuesday, April 8	8:00pm	Goffstown HS, Goffstown NH
Henry Wilson Memorial School Skywatch (backup date)	Wednesday, April 9	7:30pm	43°23'33.1"N 71°04'09.6"W in Farmington NH
Daniel Webster College Skywatch (backup date)	Thursday, April 10	7:00pm	20 University Drive, Nashua NH
NHAS Business Meeting	Friday, April 11	7:30pm	MSDC, Concord NH
Souhegan High School Astronomy Club Skywatch	Tuesday, April 15	9:00pm	Cemetery Park, Amherst NH
Salem High School Skywatch	Wednesday, April 16	8:00pm	Salem High School, Salem NH
Gilmanton School Skywatch	Friday, April 18	7:30pm	Gilmanton School, Gilmanton NH
Salem High School Skywatch (backup date)	Wednesday, April 23	8:00pm	Salem High School, Salem NH
Goffstown High School Skywatch	Tuesday, April 22	8:00pm	Goffstown HS, Goffstown NH
Goffstown High School Skywatch (backup date)	Thursday, April 24	8:00pm	Goffstown HS, Goffstown NH
Coffee House Night at YFOS	Saturday, April 26	5:00pm	YFOS
Rey Center Skywatch	Saturday, April 26	8:00pm	Waterville Valley NH
Gilmanton School Skywatch (backup date)	Thursday, May 1	7:30pm	Gilmanton School, Gilmanton NH
First Friday Skywatch for MSDC	Friday, May 2	7:00pm	MSDC, Concord NH
Winnacunnet High School Skywatch	Monday, May 5	7:00pm	1 Alumni Drive, Hampton, NH
Parkside Middle School Skywatch	Tuesday, May 6	7:30pm	Parkside Ave, Manchester NH
Goffstown High School Skywatch	Tuesday, May 6	8:30pm	Goffstown HS, Goffstown NH
Winnacunnet High School Skywatch (backup date)	Wednesday, May 7	7:00pm	1 Alumni Drive, Hampton, NH
EOC Meeting	Thursday, May 8	6:30pm	City Library, Manchester NH
NHAS Business Meeting	Friday, May 9	7:30pm	St. Anselm, Manchester NH
Sidewalk Astronomy Skywatch	Saturday, May 10	6:00pm	Market Square, Portsmouth NH
Thorntons Ferry School Skywatch	Monday, May 12	7:30pm	134 Camp Sargent Road, Merrimack NH
Fuller Public Library Skywatch	Tuesday, May 13	7:30pm	School Street, Hillsborough NH
Massabesic Audubon Center Skywatch	Friday, May 16	7:00pm	26 Audubon Way, Auburn NH
Fuller Public Library Skywatch (backup date)	Tuesday, May 20	7:30pm	School Street, Hillsborough NH
Massabesic Audubon Center Skywatch (backup date)	Friday, May 23	7:00pm	26 Audubon Way, Auburn NH

Note: Please check [\[Calendar\]](#) at www.nhastro.com for up-to-date information on upcoming events.

Date	Lunar Phase
Monday, April 7	 First quarter 8:31am
Tuesday, April 15	 Full moon 7:42am
Tuesday, April 22	 Last quarter 7:52am
Tuesday, April 29	 New moon 6:14am
Wednesday, May 7	 First quarter 3:15am
Wednesday, May 14	 Full moon 7:16pm
Wednesday, May 21	 Last quarter 12:59pm
Wednesday, May 28	 New moon 6:40pm

Credits

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

Pat Adams, Ted Blank, Herb Bubert, Glenn Chaple, Rex Gallagher, Gardner Gerry, "Rags" Gilmore, Larry Lopez, Steve Rand, John Rose, Pete Smith, April South and Paul Winalski.