OBSERVER

Vol. 2014, No. 5 Newsletter of the New Hampshire Astronomical Society May 2014

In This Issue…

President's Message

Saturn season is arriving! As Earth approaches the line joining the Sun and Saturn, we see the ringed planet rise earlier and earlier each night. It is now well above the south-eastern horizon at sunset, and well-placed for evening viewing, with rings tilted nicely toward us at about 21º; this is close to the maximum we'll see (26º in 2017). I hope you get a chance to see it. A good opportunity would be at any of our "First Friday" skywatches at MSDC in Concord, NH. There will be plenty of scopes there, but feel free to bring your own, especially if you think you might need some help getting it set up or "tuned up." Our members are always happy to help you.

We've started to get a few clear nights but they've still been chilly. Of course summer will probably arrive all at once with bugs, humidity and shorter nights. Still, those hazy humid nights can bring some of the most stable atmosphere that leads to good observing conditions for objects with lots of small detail, like planets. Saturn's largest moon, Titan, will be visible in most scopes; I've seen it easily in an 80mm refractor from highly light-polluted Hampton Beach.

Aerospacefest at MSDC, Concord and **Market Square Day** in Portsmouth are both occurring on June 14th this year. If you can help out at either location, please do. In addition to our indoor table and outdoor observing at the Fest, members will staff the MSDC observatory, where the public can see the Sun through a large H-α scope as well as in white light. If you haven't had a chance to run the observatory, it is a lot of fun, so do consider signing up for a shift.

Stellafane is coming up on July 24-27 this year up in Springfield, VT. NHAS will have a contingent attending as usual. Join in the fun. Bring a tent, camp out, come to the Saturday afternoon NHAS BBQ, look through some truly gigantic telescopes, hit the swap tables, attend a lecture - it's a great opportunity to learn something new. No experience required!

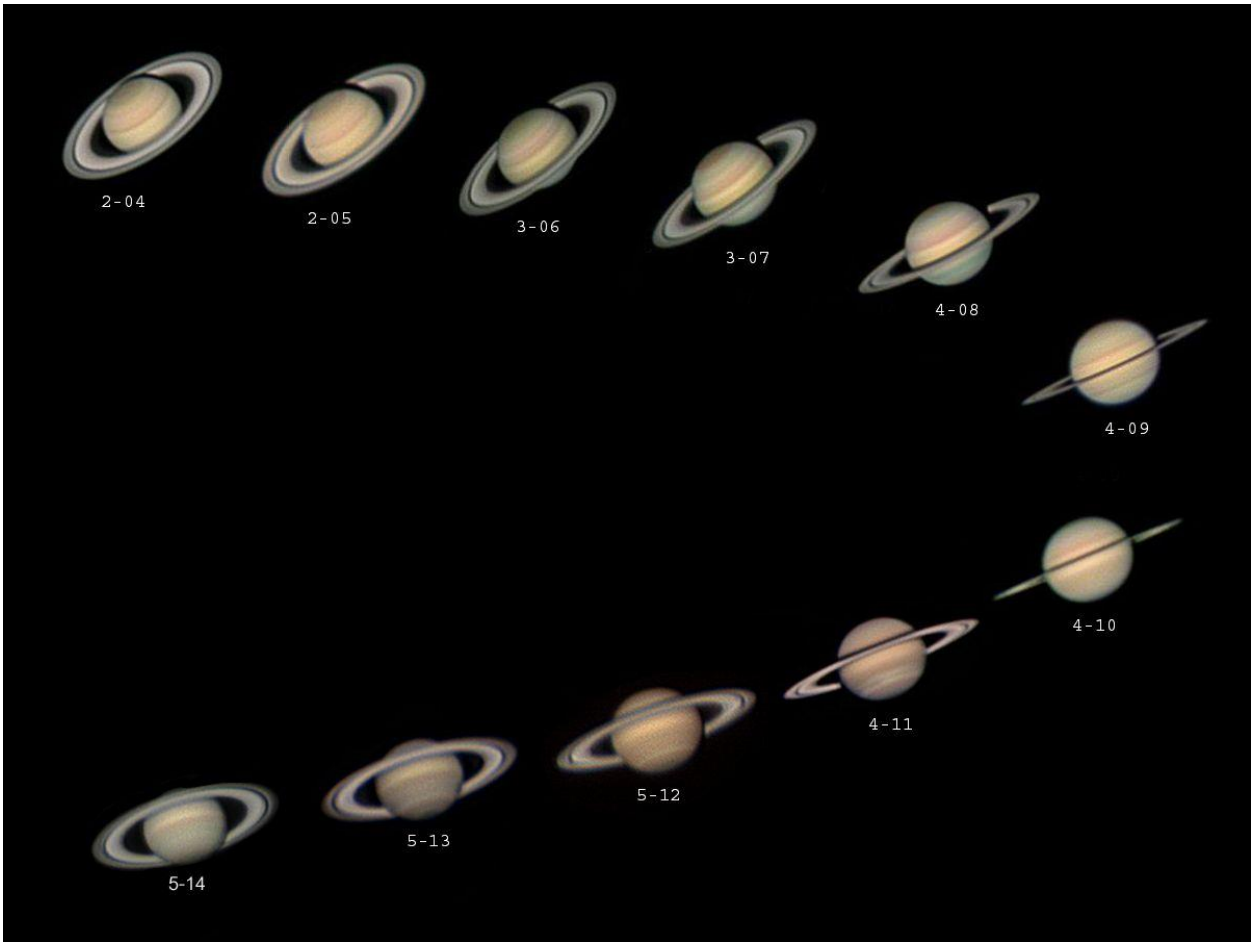
Speaking of Saturn again, the **New England Fall Astronomy Festival (NEFAF),** which we co-sponsor with the University of New Hampshire, will be held on the weekend of Oct. 17-18. The keynote speaker on Friday evening will be **Dr. Carolyn Porco,** the Imaging Team leader for the Cassini mission, now orbiting Saturn and returning incredible scientific data and stunning images (since 2004). Carolyn is a most inspiring and enthusiastic speaker (look up her TED talks on the web) and her talk promises to be amazing. Bring the family; the entire weekend is free. NHAS will provide scopes on both evenings, and conduct a "Scope Clinic" during the day to help the public learn to use (or fix) their telescopes. Volunteers are needed!

Clear skies,

Ted Blank
NHAS President

It was almost an 11th hour operation. On the 23rd hour of the 31st day of the 5th month of the year, all prime numbers mind, **Herb Bubert** completed this year's addition to his collage.

Saturn had been in opposition since the tenth of the month, but the weather had been uncooperative. The fog at YFOS was a challenge, but the seeing was good. And that's enough words for this page.



Winnacunnet High School, North Hampton NH, May 5

Ted Blank gave a presentation and then joined NHAS members **Herb Bubert, Gardner Gerry, Dave Getman** and **Elaine Grantham-Buckley** to show the Moon, Jupiter, Mars and Saturn to a small group of students. It was a bit windy and the wind chill might have kept some of the crowd away. There were a few softball players that were curious and came by, and more students showed up after the initial group had left, so we were busy until 9:30pm. Evy Bernier would like us to come back in the Fall when she anticipates a larger turnout.

- ***Gardner Gerry***

Parkside Middle School, Manchester NH, May 6

The skywatch, postponed from February, took place as scheduled with NHAS members **Ted Blank, Herb Bubert, Gardner Gerry, Steve Pearsall** and **Steve Rand** showing the first quarter Moon in the twilight, then Jupiter and Mars and finally Saturn, even though it was very low and only visible after about 9pm (a bonus for those that stayed on late). I estimated at least 50 students plus parents and some small children. It was a successful skywatch despite the bright lights of nearby buildings.

- ***Gardner Gerry***

Thornton's Ferry School, Merrimack NH, May 12

This is one of our "traditional" events, although it's been a while since we've been there, due to cloudy skies and bears! **Steve Rand** gave the indoor presentation and the other NHAS members **John Bishop, Herb Bubert, Gardner Gerry, Elaine Grantham-Buckley** and **Paul Winalski** setup scopes. This evening there were significant cloud banks drifting through that limited us to just a few bright objects. We had a good crowd of 50+ people.

I set up my Takahashi 106mm refractor to view Jupiter, Mars, the Moon, and Mizar. I had to switch between objects as the clouds allowed. We did get some excellent views of the planets, the Moon, and the double star. We also had an excellent view of a magnitude -7 Iridium satellite flare, one of the best I've ever seen.

- ***Paul Winalski***

I setup my 8" Dob and showed the Moon to many students, parents and teachers. I had several kids return for another look at the Moon. The teachers, parents and students were all very appreciative and all of us enjoyed the warm evening.

- ***Elaine Grantham-Buckley***

Cub Scout Pack 358, Milton NH, May 17

NHAS Members **Herb Bubert, Tom Cocchiaro, Gardner Gerry** and **Elaine Grantham-Buckley** showed up on short notice to show off Jupiter, Mars and Saturn to about 75 scouts and family members.

We had a very dark and clear sky of at least mag 6, with allowed us to show some DSOs like M3, M13, M51 and maybe a few others. While we were packing up, an unknown satellite flared near northern Hercules. I estimate it got as bright as mag -4!

- ***Gardner Gerry***

Fuller Public Library, Hillsborough NH, May 13 and May 20

Steve Rand gave the presentation at the Library on the primary date (May13), and the skywatch itself was postponed by bad weather to the backup date (May 20). The event took place at the Hawthorne-Feather Airpark in Deering NH, 3 miles south of Hillsborough, off US-202.

NHAS Members **John Bishop, Gardner Gerry** and **Curtiss Rude** were joined by **Herb Bubert** and **Andy Jaffe.** We began with Jupiter in the twilight and then Andy found Mercury very low near the treeline. Then we moved on to Mars and Saturn, so we had 4 planets in our scopes this evening. About 15-20 patrons of the library were there and were very appreciative of our efforts. Later when it finally got dark enough, we showed off some fine deep sky objects, such as M3, M13, M51, M53, M57 and a few others.

- ***Gardner Gerry***

A Fuller appreciation of the Skywatch:

Thanks to you all for a fabulous skywatch! People were very impressed with what they were able to see and are now interested in borrowing the telescope you gave us. We have a waiting list for it! Steve's program on the 13th was also great and very informative. I wish more people had attended both programs because they were so interesting. We will try to hold another skywatch later in the year.

Thanks again to all of you dedicated astronomers! Clear skies!!

Robin Sweetser
Fuller Public Library
Hillsborough, NH

Brown Memorial Library, Bradford NH, May 31

NHAS members **Joe Derek, Gardner Gerry, Steve Rand** and **Paul Winalski** were on hand for this event. Joe had his magnificent 17-1/2" reflector, Gardner his 9" Schmidt-Cassegrain, Steve his 10" dob, and Paul his Takahashi 106mm refractor, so we had a wide variety of scope types and apertures represented. The sky conditions were as predicted by the weather authorities on the web, and we had clear skies from the end of twilight. The only problem was persistent ground fog, probably because of the earlier very damp weather.

The venue itself – a hay field right on the Bradford town line – was nearly perfect. The only artificial light was from the living room window of the house across the street. The skies were as dark as at YFOS, and I rate this site as better because it had an almost 360-degree horizon view. Seeing was very good to excellent and the skies were about mag 7 (all of the stars in Ursa Minor were obvious).

About 15 people showed up, which is a pretty good turnout for Bradford. Early on, we were showing an exquisite crescent Moon, Jupiter (with three moons visible), Saturn, and Mars. I left the deep-sky objects to those with the light buckets. In the FSQ 106mm I showed double stars (Mizar, Gamma Leonis, Alberio, 61 Cygni), and the planets.

I was also able to find by star-hopping an object I had been very keen on observing since its special nature was announced a couple of weeks ago. This is HD 162826, a main sequence star whose spectrum indicates the same chemical composition as our Sun, and whose proper motion, when wound back through revolution about the Milky Way's galactic center, positions it very close to where the Sun was. So although it is now about 100 light years distant, this is the first star we've found that appears to have originated from the same molecular gas cloud and star cluster as our Sun. Visually it lies in Hercules, near the border with Lyra, not that far from M92.

It is visually 6th magnitude, and at 1.15 solar masses it is hotter and whiter than the Sun (spectral class F5 as opposed to the Sun's G2). It is part of a group of three 5th-6th magnitude stars, the brightest of which is 90 Herculis, and visible to the naked eye about midway between Lyra and the keystone of Hercules. It's an undistinguished star except in the context of its possible connection as a sister star to our Sun, but fortunately it is very easy to find.

This is a treasure of an observing site, and I hope the Brown Library in Bradford will have us back again.

- ***Paul Winalski***

Society Activities

Children's Day at Portsmouth

The Annual event went off well; the occasional showers did not dampen the enthusiasm of the kids. The NHAS presence was in the parking lot of the "Isles of Shoals Steamship" dock for the noon to 4pm event.

Other events were affected by the weather, including the In-reach skywatch of May 3 and Sidewalk Astronomy on May 10. First Friday went ahead as scheduled; the scope clinic segment can always proceed indoors even if observing is not possible outside.

The Sun was on display at the NHAS booth, when not in scopes nearby (above); Tom Cocchiaro and others explained Solar flares to young and old alike. (Photos: Ted Blank)

The Earthosphere Project in Nashua, NH

Three students from the **Academy of Science and Design** (ADS) in Nashua NH got in touch with NHAS to see if they could interview an astronomer concerning Aurora Borealis and Supernovae. After some discussion, a three-part outreach event was put together by **Paul Winalski:**

1) A lecture for 2 classes at **ADS** on the Sun, Aurora Borealis and Stellar Evolution (with emphasis on supernovae),
2) A hands-on session of Solar observing in H-alpha and white light and
3) A pair of one-on-one talks with the students concerning their projects on Aurora Borealis and Supernovae.

On May 16, Paul talked about stellar Physics and stellar evolution to an enthusiastic and sharp group of students that asked very perceptive questions, but unfortunately the weather didn't permit any Solar observing. Paul managed to talk only to the pair of students doing the Aurora project. The instructor at ADS, Captain David Plantier, did a survey of his students as to their impressions and found many asking him to recommend books covering some of the topics discussed, as well as the SDO; he also caught more than one student looking at the SDO site later that day. Captain Plantier will try to schedule a daytime and/or night-time skywatch soon. He also invited Paul to participate in their Earthosphere Science Fair as a judge on the evening of June 2, but Paul could not attend.

The Library's announcement flyer (All Photos: Susan Schueller)

LTP Scopes Presentation at Chelmsford Library, Chelmsford MA

On April 14, the Chelmsford Library, Chelmsford MA, kicked off its telescope lending program with an LTP scope donated to the Main library by **Rich and Susan Schueller**. Rich was joined by **Bruce Berger** and **Kelly Beatty** of ATMoB in the hand-over ceremony.

Bruce and Donna Berger donated a similar LTP scope to the (branch) MacKay Library at the same time, so that more people could enjoy the night sky in the coming months. Rich, Bruce and Kelly had worked to put the 2 scopes together at the March LTP Modification Party at MSDC (see the March 2014 Observer, page 3), and will help maintain the 2 units for the Chelmsford Library.

The library staff did due diligence in arranging the event in time for the Total Lunar Eclipse the next morning, but as has often been the case of late, the weather Gods failed to take any notice.

Rich Schueller (above) was joined by Kelly Beatty and Bruce Berger (left/right) of ATMoB in the inauguration of the LTP pair.

On the night of May 7-8, just after midnight, **John Buonomo** started imaging the ***Comet C/2012/K1 (PanSTARRS)*** just after it crossed the meridian on the west, and as it moved against the background of stars of Canes Venatici in the vicinity of the tail of the Big Dipper.

Over a 3-hour period he captured 65 frames of 180 seconds, but with a difference. He did not track the stars to show the comet's progress; he tracked the comet instead, and that shows the moving background of stars. Conditions were a bit hazy, as can be seen in this sequence

of images about an hour apart (top left, and the trio of frames above, from the left), but **an animated GIF of the entire set of frames** is more compelling. The three hours of imaging has been compressed into about 3 seconds of viewing.

The single frame (to the left) appears to show a satellite streak, about 50 minutes into the shooting session. It is a nice bolt-from-the-blue surprise during the animation.

(Click on any image to play animation)

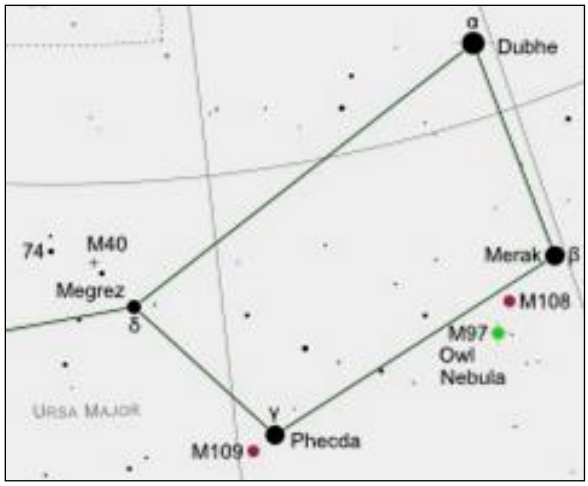
John used a modified Canon 450D on his C8 with an f/6.3 reducer, and an Astronomik EOS clip-in CLS filter was used for his light pollution problem. The mount was a Celestron CGE, and the auto-guider was a William Optics 80mm refractor, with DSI Pro II attached. Instead of guiding on a star, he used PHD to guide on the comet nucleus, and that kept the comet centered in the frames.

Processing included the traditional calibration steps using Stark Labs Nebulosity, applying Flats, Dark and Bias frames, and exporting the frames as 16-bit TIFF files. The post processing was performed in Photoshop CS5 using automation scripts and actions, so that all the frames could be processed identically.

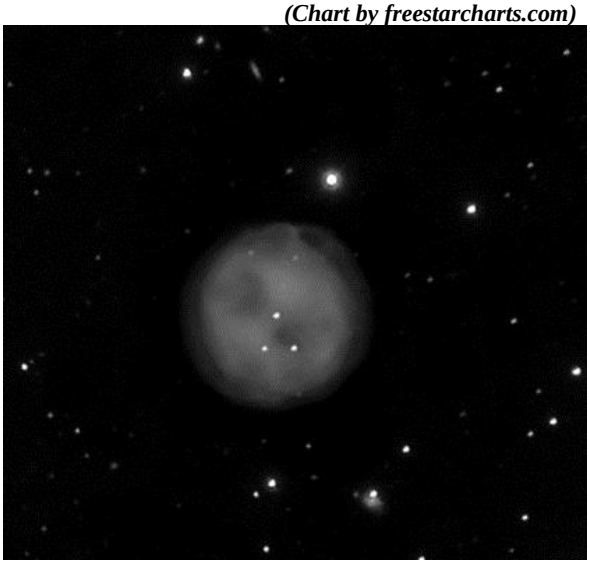
To create the animation, John exported the hi-res TIFFs to GIF using IrfanView, and used Microsoft's GIF Animation package to create the final animated GIF.

M97 (NGC 3587) – a Planetary Nebula in Ursa Major

by Glenn Chaple



(Chart by freestarcharts.com)



M97 in Ursa Major ***(Image: Mario Motta, MD)***

Last month, we paid a visit to the spiral galaxy M108. I promised to feature its neighbor, the planetary nebula M97, this month. Did you take a sneak peek? I don't blame you. Just ¾ degree southeast of M108, M97 can be glimpsed in the same low-power field. Their seeming nearness is an illusion. M108 lies some 45 million light years distant, while M97 is ensconced within the bounds of our Milky Way Galaxy at a distance of around 2000 light years.

Like M108, M97 was discovered by Charles Messier's contemporary Pierre Méchain in 1781. Described as one of the fainter of the Messier objects, M97 can nonetheless be glimpsed with small aperture scopes. I first saw its ghostly 10th magnitude, 3.3 arcminute-wide form with a 3-inch reflecting telescope and magnifying power of just 30X.

In 1848, Irish astronomer William Parsons, the 3rd Earl of Rosse, studied M97 with his colossal 72-inch reflecting telescope (the "Leviathan of Parsonstown"). He noted and sketched a pair of dark circular areas within the nebulosity that gave M97 the appearance of an owl's head, hence its modern-day nick-name the **"Owl Nebula."**

Fortunately, you won't need Parsons' Leviathan to see the Owl eyes. With patience and a magnification of 138X, I once captured fleeting glimpses with a 10-inch reflector. The limiting magnitude that night was about 5. From a dark-sky site, a smaller scope should be able to do the trick.

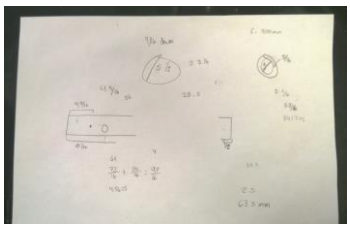
Editor's note

In the last days of May 2013, we witnessed a heavenly conjunction of planets in the western skies. This year, at least on terra firma, there have been some odd conjunctions. At about the time that **Herb Bubert** was posting his latest collage of Saturn to the NHAS Pictures Forum, **Ted Blank** was writing the lead sentence of the Message of this month. And we have a pair of articles in this issue that deal with dobs, very large and quite small, with a side-story that I personally find quirky (YMMV): At the pot-luck Swap Table, **Paul Winalski** had picked up a User's Guide for a Tasco scope (his first scope was a clone of that), commented on the red OTA that was laid out on the table, and wondered who owned it. It went unclaimed that evening and had to be cleared away at the end of the pot-luck by Ted Blank, its owner still a mystery but deserving of thanks! The 'organs' of that scope have now been transplanted into a dob constructed this month by a trio of **Brewster Academy juniors**. Read about their adventure next ...

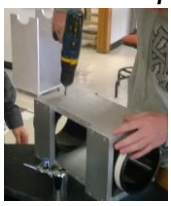
A Dobsonian is Born

Three students from Brewster Academy in Wolfeboro, NH contacted me in early May for assistance with their junior class project. **Tomas Larsen, Greg Luber** and **Gabriel Rodriguez-Polanco** wanted to make their own reflecting telescope from scratch, starting with grinding their own mirror. However they only had two weeks in which to complete the project. I explained to them that such a task could not possibly be completed in the available time, and we worked together to try to find something they could do with the time and materials available. In the end, I disassembled an old Tasco 4.5" reflector that had been dropped off at last year's swap table. The optical components were in good shape, so I gave them those parts and some measurements off the old tube. I also showed them how a simple dobsonian mount is constructed, and they looked over my 7" Starmaster Oak Classic to see how a Newtonian reflector works. From this point, the trio took over and ran with it. They obtained a piece of 6" PVC pipe, worked with one of the boys' father to construct a base, and re-assembled the optical components into the PVC tube.

The base is ready at the back and the tube and all the components to mate to it are laid out in front, ready for assembly.



Essential calculations to correct for the differing diameters of the original Tasco tube and the new PVC tube used for this reflector.



(Right and far right): Gabe and Tomas get the rocker box assembly ready, and then they slide the OTA into place and secure it.

Since the PVC pipe was of a larger diameter than the original Tasco tube, they had to use creativity to figure out how to mount the primary and secondary mirrors, and also the focuser. They also had to figure out by how much to reduce the distance between the primary and the secondary, so that the focal point would still end up in the range of focuser travel.

They completed the scope in record time, and collimated it with the laser collimator I had lent them. It worked perfectly. They were very excited, and their final presentation to the Science Faculty was well received. It was a lot of fun working with them.

- ***Ted Blank***

Greg Luber, Tomas Larsen and Gabe Rodriguez-Polanco went from figuring how to extend the (shorter) spider vanes of the Tasco's secondary mirror assembly to fit the new (and unpainted) PVC tube on Day 1, to doing a laser collimation check on their new Dobsonian Reflector on Day 3.

The finished Dobsonian Telescope, out standing in its own field.The grass looks greener on this side of its life! (All photos: Greg Luber et. al.)

OzSky 2014: An Observing Report

Just about every Northern Hemisphere amateur astronomer eventually gets curious about the Southern sky – the Magellanic clouds, Alpha Centauri, the Southern Cross, the Coal Sack, and the other objects that we're too far North to observe. For many of us, southern sky observing becomes a bucket list objective – something we wish to do and experience before we kick the bucket and depart this mortal coil. So it had been for me.

In 2009, courtesy of my employer, I had an 8-week block of paid sabbatical leave from work, to use as I saw fit. I decided that I would use all or part of this to travel to the Southern Hemisphere to observe the parts of the sky we never get to see. I settled on Australia as the destination, it being both well-situated in the Southern Hemisphere, and a first-world English-speaking country. And it has remarkably dark skies. The problem was then reduced to two factors: (1) where to do the observing, and (2) how to get access to a suitably large telescope there. For the venue I settled on the region of Alice Springs, which is suitably in the middle of nowhere regarding dark skies; very dry and therefore unlikely to be clouded out the whole time I'd be there; and populated enough to accommodate a tourist.

Even though I'd bought enough Pelican cases to transport Mr. T., my trusty 14" telescope, to the Antipodes in safety, I rapidly came to the conclusion that this was infeasible. It would cost two or three times my air-fare to ship the scope to Australia, even by ship. And I'd be without use of the scope for several months either side of the journey. And this doesn't even factor in the hassle of trying to get it through customs. I had resigned myself to having to purchase a 12" or bigger dob in Australia itself, and then selling it off again on eBay.

Then I happened across a mention in a Yahoo astronomy group of something called the ***Deepest South Texas Star Safari,*** or **OzSky. I visited their website.** This was exactly what I was looking for!

The 2014 edition's Logo (Credit: Lachlan MacDonald)

OzSky Safari

OzSky is a week-long Southern sky observing trip, hosted by very knowledgeable Australian amateur astronomers from the **Three Rivers Foundation (3RF),** for the express purpose of offering the Southern sky to experienced observers from the Northern hemisphere. The event takes place in a motel outside **Coonabarabran**, New South Wales, Australia, which has completely dark **(Bortle 1)** skies, and is the town nearest to **Siding Spring Observatory,** the premier professional observatory in Australia. OzSky books the entire motel, so that there is no problem with control of lighting at night. The motel has a big soccer field in the back where the OzSky volunteers set up a variety of light bucket dob telescopes, all equipped with Argo Navis push-to digital setting circles, so that one need merely enter the NGC designation of an object to find it.

This was just what I was looking for! I went to OzSky 2009 and I had such a good time that I returned in 2010 and 2011. I couldn't make it down in 2012 and 2013, but I was back again for my fourth OzSky in 2014. Three other NHAS members have been to OzSky in years past, and they have all had as good a time as I.

So let me take you through my trip to OzSky 2014.

Getting There

What's involved by way of travel arrangements? OzSky is intentionally NOT an organized tour. What they offered in 2014 was a week's observing at the **Warrumbungles Mountain Motel** in Coonabarabran (located about 10km from Siding Spring Observatory) for one week around New Moon, arriving the afternoon of March 29 and departing the morning of April 5.

How one gets there is up to the individual – 3RF do have a suggested itinerary, but they recognize that one might want to connect OzSky with other tourism in Australia, and deliberately leave the travel to and from Coonabarabran up to the individual. My itinerary, which I'd suggest to anyone from New England who participates in OzSky, was:

On March 23, I departed from Logan Airport in Boston for San Francisco. I spent the night at a motel right next to the BART station in Millbrae – extremely convenient to reach from the airport. On March 24 I flew on to Sydney, Australia. I can't emphasize enough the importance of breaking up the intercontinental flight. On my first return trip, I flew from Sydney to Boston in one go. Fourteen hours on the plane from Sydney to San Francisco, a quick 90 minute transfer, and then six hours more on a plane to Boston. I was totally wiped out when I got back to New England, and I had bad jet-lag for a week afterwards. No – you want to stay overnight in SF on both legs of the journey. If you do, you won't be jet lagged either way. Trust me on that.

March 25 was lost to crossing the International Date Line going west. The flight landed in Sydney the morning of March 26. I stayed 3 days in Sydney, checking out of my hotel the morning of March 29. Sydney is a delightful city with lots to see. It was rainy most of this time I was there, but I did walk my legs off (getting a badly blistered left foot in the process) on March 28, while wandering about the Botanical Gardens.





Tourists flock to Sydney Harbour cruises, climb the Coat Hanger (as the locals call the Harbour Bridge) and attend performances at the Sydney Tribal Chanting House (above), but the nearby Domain and the Royal Botanical Gardens can put one in a calmer state of mind for the week to come in Coonabarabran. Flying foxes roosting in the trees (near left), a novelty item to tourists, have been chased away; the trees must be rejoicing. (Credit: Wikimedia Commons)

On March 29 I left Sydney by a CountryLink train for Dubbo, a five-hour trip inland (about 300 miles). At Dubbo I picked up my rental car and drove another 2-1/2 hours to Coonabarabran. That is how far inland 'Coona' is.

The Week at Coona

Attendance at OzSky has varied considerably year by year. This year was the most heavily attended ever, with 27 observers, including an amateur astronomer celebrity – **David Kriege** of Obsession Telescopes, being taken care of by 11 volunteers. The Warrumbungles Mountain Motel caters mainly to the clientele of the local National Park. The rooms are comfortable but cabin-style, and set up with bunk beds to accommodate family groups of 4 or 5. I shared my room with two other solo attendees. Each room has a kitchenette with a stove, so that if you wish to cook your own meals, you can. Our 3RF hosts sponsored a "Welcome to OzSky" barbecue one day, but otherwise we were left on our own as to meal arrangements. The motel offered evening meals, and there are hotels and restaurants in Coona, but I opted to cook for myself, except for the night I joined my colleagues for dinner at the local Chinese restaurant.

So on to the important thing – the observing. Coonabarabran is in a semi-arid area. It's not Australian outback, but rather rolling hillsides with occasional patches of trees, devoted mostly to pastureland for sheep, cattle, and goats. It reminds me of South Dakota. We had excellent luck regarding sky conditions. We were clouded out one day (with some rain), but we had at least four hours of clear skies on all the other nights, including three nights of completely clear observing, from dusk to dawn. In terms of darkness, those with the proper instruments recorded sky darkness of mag. 21-23. By contrast, mag. 7 is considered very dark in New Hampshire. Sky steadiness was also exceptional, even by Australia standards.

The Arsenal

The SDMs and Obsessions waiting in array.
(Credit: Lachlan MacDonald, 3RF)

The Binocular Chair saw daytime action as well.
(Photo: Paul Winalski)

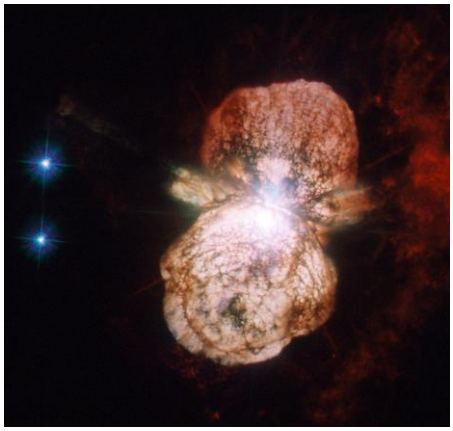
So what scopes do the **3RF volunteers** offer to the OzSky participants? For this big attendance there were: a 14" SDM dob; four 18" Obsession dobs; two 25" Obsession dobs; one 30" SDM dob; and a 6" binocular motorized chair. Eyepieces were mostly Ethos, the rest were Naglers. You are invited to bring your own favorite eyepieces or filters if you wish. I brought a 31mm Nagler for use with some of the Obsessions that didn't have one. The five Australian 3RF observers offered observing programmes, but each observer was free to look for whatever objects one wished. There are always some who come with a particular observing agenda (Southern globulars, Abell galaxy clusters, or as in my case in 2009, Southern carbon stars). You can follow that programme if you wish, or ask one of the OzSky volunteers to show you the sights. I apprenticed myself one night to **Andrew Murrell,** who has arguably the most acute night vision of any amateur astronomer in the world, and is the discoverer of a faint planetary nebula known as **"Murrell 1."** He showed me many of his challenging objects – about a quarter of which I could see. Some people have been left wondering if observing Murrell objects requires averted imagination!

Getting Down to Business

So what did I see on this trip? Three objects stand out, any one of which would have made the whole trip worthwhile:

I split Sirius in an 18" Obsession. I've been trying to see the Pup for over ten years, including on all of my previous OzSky trips. I spent about ten minutes staring at Sirius though the 30" SDM reflector at a previous OzSky, to no avail. I don't ever recommend looking at Sirius through a scope of that aperture – it's like shining a penlight directly into your eye. But this time in the 18" Obsession at 200+ magnification I could see the usual scintillating diffraction pattern around Sirius, and there was a tiny dot of light on one of the diffraction spikes that was holding steady. I called over observers who've seen Sirius B before, and they confirmed the sighting.

The best view of Mars that I've ever seen in my life. This was in a 25" Obsession at about 400-500X. I have never seen a view so steady, and with so much surface detail. Both ice caps were prominently visible; not just a fuzzy comma of Syrtis Major, but lots of other, more minute surface detail. I'm not very familiar with Martian geography, so I can't tell you just what I saw. I'm told that equally spectacular views of Saturn were in the offing that night and the next one, but I didn't see them. Views of the Crepe ring (C ring) and Encke gap were noted by other observers.



The Homunculus nebula in Eta Carinae.
(Credit: NASA/ESA/HST)

A view of the Homunculus Nebula surrounding Eta Carinae that rivalled in detail what you see in Hubble Space Telescope images. Our Australian hosts said that this was a better view of Eta Carinae than they had ever seen before.

What else is there to see in OzSky, which always takes place in the March to May timeframe?

The Milky Way glows above Coonabarabran. The Large and Small Magellanic Clouds are to the right, while the Pointer Stars are pointing straight up near center-left. The Coal Sack and the Crux are half-way to the Eta Carinae complex near the top. (Credit: Lachlan MacDonald, 3RF)

The Globular Cluster NGC 6752 in Pavo (below), imaged in wide-angle by the MPG/ESO 2.2-metre telescope. (Credit: Wikimedia Commons)

On this trip I saw:

The three brightest visible stars – Sirius, Canopus and Alpha Centauri – all in the sky at the same time.

The four best globular clusters in the sky, in order of magnificence: 47 Tucanae, Omega Centauri, NGC 6752 and M22. We in the North always see M22 low in the murk, so we never get to view it in all its magnificence. It is a very different object near zenith at Coona. (M13 I rank as #5).

The Small and Large Magellanic Clouds, our nearest significant galactic neighbors. The LMC contains the **Tarantula Nebula,** which is the most spectacular star-forming emission nebula that we know of in the universe. It is a more spectacular object than the similar M42 in Orion, even though it is 100,000 light years more distant.

The Eta Carinae nebular complex, which is both brighter than and more extensive than either M42 or M8.

A tremendous number of open clusters, globular clusters, and bright and dark nebulae that we can't see from the Northern Hemisphere. Unfortunately, our Aussie colleagues are right when they boast that they can see the best part of the Milky Way, and we cannot.

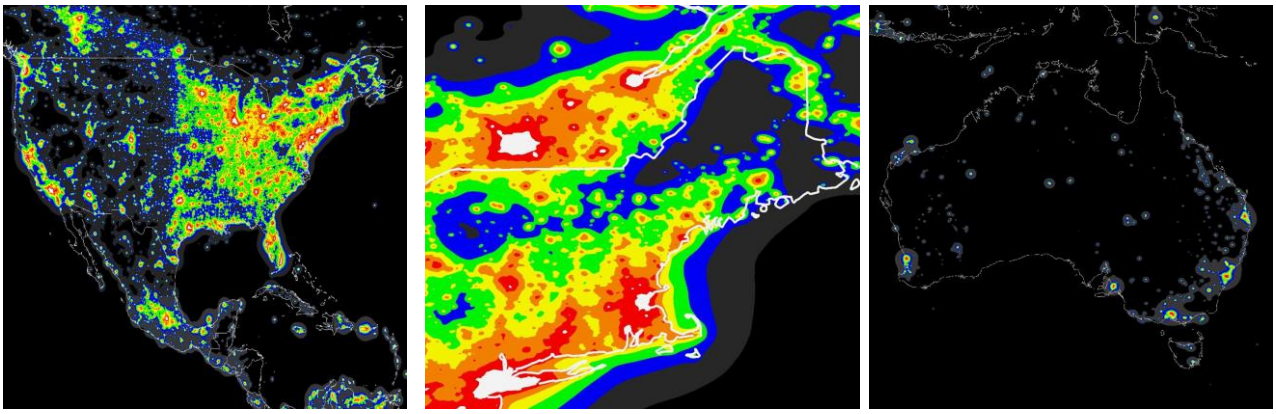
Scorpius, and its part of the Milky Way, at zenith. We only get to see the boring parts of Scorpius, and even that really low in the Southern murk. The best part is the Zeta Scorpii region, which includes a magnificent string of open clusters called the "false comet," because that's exactly what they look like to the naked eye.

The galactic core region at zenith. I made it a point this time to observe M22, M8, the Swan Nebula, and the Eagle Nebula when they were so high in the sky, and under such dark sky conditions. These were the best views I've ever had of these familiar objects.

Been there, done that, got the T-shirt – yet many in this 2014 group (on the final morning) will be back. But where's Waldo? (Credit: Lachlan MacDonald, 3RF)

About the dark skies Down Under

The contrasting Northern versus Southern view of the Milky Way is due to the axial precession of the Earth. But the considerably darker skies of Australia are due to the absence of light pollution. Consider the following color-coded light pollution maps (on the Bortle scale) of North and Central America (left), of Northeastern US (center) and of Australia (comparable in size to continental US, right), based on data from satellites in orbit. There is no contest!



(Credit: astro-observer.com and www.asnsw.com)

And to sum up

I had a blast this time around, and I'll definitely be back at OzSky again someday. And for anyone considering observing in the Southern Hemisphere, this is the trip you want to go on.

I would like to thank Lachlan MacDonald, Tony Buckley, Andrew Murrell, John Bambury and the other **3RF** volunteers for all their help – you made both the week-long observing trip and this report possible.

- ***Paul Winalski***

Additional Observing Notes

The 2nd night was clear all night, but dew was a problem. Memorable observations of the evening: Omega Centauri; the Tarantula Nebula (NGC 2070) in the LMC; the Eta Carinae Nebula (and Eta Carinae itself); Hamburger Galaxy (NGC 5128, Centaurus A); carbon stars W Orionis, R Leporis, and Ruby Crucis; the Spiral Planetary nebula and the Blue Planetary; the Football Cluster; the Southern Pleaides; the Zeta Scorpii region; M83; the Southern Crescent nebula.

The 3rd night had clear skies and a spell of excellent seeing at 8pm. The seeing deteriorated as the night progressed, but some of us were still observing until 5am. **I split Sirius** with an 8mm Radian eyepiece in an 18" Obsession. Sirius B was impaled on one of the very sharp diffraction spikes of Sirius several arc seconds away from the primary. Later on, others were unable to split Sirius – the seeing had degraded.

NGC 6752 in Pavo is a spectacular globular, but one of those Rodney Dangerfield "don't get no respect" objects in the Southern sky because everyone pays attention to Omega Centauri and 47 Tucanae – a bit like M92 in Hercules being overlooked because of M13. In a 16" dob it is rather loose, with the stars seeming to be in strings, and is resolvable to the core. There is a wide outer glow around the periphery that I suspect is unresolved dimmer members.

I stayed up late to observe M16, M17, M20, M8. At 4am, with the Sagittarius Milky Way very high in the sky, all four objects were dimly visible naked eye. In a 16" dob with a 26mm Nagler eyepiece and an O-III filter in place, they showed much detail, and faint but obvious nebulosity connecting the M-objects; it is very clear that they are just localized concentrations of a huge background gas cloud.

On the 4th night, the skies cleared as the evening progressed. Seeing was exceptionally steady. With no set observing programme, I spent time just looking at the magnificent Southern Milky Way, and then wandered from scope to scope taking a look. Two observations stood out:
Mars With the exceptional seeing, and magnification really cranked up, both polar caps were prominently visible and there was sharp surface detail.
NGC 6752 Another look at the beautiful globular cluster in Pavo, very well resolved in an 18" Obsession.

Carbon star R Leporis is showing very well right now. Our Aussie hosts prefer a carbon star right near Beta Crucis called Ruby Crucis (DY Cru). My own opinion is that it only seems exceptional because it is so close to a first magnitude blue-white star.
On its own it is inferior to R Leporis, S Cephei and T Lyrae.

On the 5th night, clouds dissipated at about 11pm. From midnight to 3:30am, we had a combination of excellent seeing and excellent transparency. Dew was less of an issue, although I heard a hair dryer or two being used. Again I had no observing agenda, but walked from scope to scope looking at whatever was being observed.

NGC 5189 This is the Spiral Planetary Nebula in Musca. It is small and fairly bright, and indeed it can be mistaken for a face-on barred spiral galaxy.

Eta Carinae At about 3am I observed this through a 25" Obsession with a 9mm Nagler eyepiece. The view of the Homunculus Nebula was breath-taking. Tony Buckley said that it was the best view of the Homunculus he'd seen in his 30+ years of observing. Everything in the view was tack-sharp. In addition to the polar lobes of the Homunculus, the equatorial ring of ejected matter was visible. The polar lobes themselves had a tremendous amount of detail. The shells from some of the previous eruptions of Eta Carinae were also visible. Magnificent!

The 6th night was spent walking about in the early hours; later, in the early morning hours I observed our familiar summer Messier objects in Scorpius, Sagittarius, Ophiuchus and Serpens – M6, M7, M8, M20, M16, M22, M4, M80 etc. One gets a much better view of them at Coona, close to zenith.

The last night was overcast until about midnight. There were 3+ hours of clear skies after that, but as I had to get up early and drive to Dubbo, I didn't do any observing. I should add that on ***the first night,*** the conditions were similar. The skies cleared after midnight for observing that lasted until almost 5am.

I did not use the binocular chair on this trip, but I have used it before for a slow scan of the LMC. A spectacular sight!

P. W.

Observing with the SDM 30 dob. Size Does Matter, but so does the view. (Credit: Lachlan MacDonald, 3RF)

NHAS May 2014 Business Meeting Report

The monthly business meeting was held at St. Anselm College, Manchester NH on May 9th, with our President **Ted Blank** presiding. The Treasurer's report by **"Rags"** follows on the next page.

President's Report

"Rags" and a few other members visited **Steve Forbes** at the hospital (where he's recovering from surgery) to present a Galaxy tablet to replace the laptop that went south on him. Reports of Steve's reaction were not being exaggerated.

Gardner Gerry reported that Star Island Conference Center saw us at Market Square and requested that we put on a skywatch for them on June 21. It involves travel to the Island.

Paul Winalski will be giving a talk to students at the Academy of Science and Design, a charter high school in Nashua, on the Sun, and do some daytime solar observing.

Steve Rand is doing instructional videos for LTP. 4 of the 6 are done.

A Family Membership discount option has been implemented for families where more than one person wants to become an NHAS member.

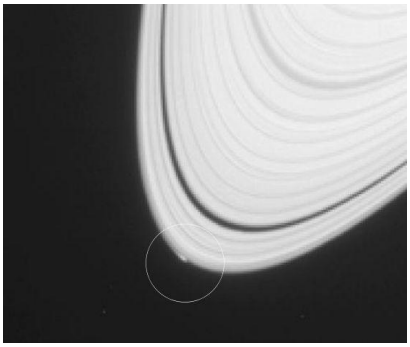
It has been proposed that one meeting a year be devoted to "Introduction to Astronomy" night. It will probably be held at MSDC just before Christmas, and open to the Public. Members will bring equipment for a show and tell.

Tiffany Nardino of MSDC has requested assistance for covering their Observatory on Fridays and Saturdays 1:00-4:00pm, and the Wednesday-Saturday stretch on vacation weeks (last 2 weeks of April) 1:00-4:00pm on those days. We will consider the request and poll the membership, since this will require some serious commitment.

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

* Comet 209P/LINEAR got deflected into our path, so we will get a new meteor shower the morning of May 24. The radiant is in Camelopardalis.

* A possible new moon is forming around Saturn, at a ring's edge:



* Kepler has detected the first Earth-sized exoplanet orbiting its star in the Habitable Zone.

The 100th Library Telescope was placed last month; there are 97 in NH and the other 3 are in Mass.

Herb Bubert and **Gardner Gerry** were invited to display their astro-photos at AAS in Boston on June 3.

Astronomy Shorts

John Bishop: had a broken piece of Astronomy equipment that needed soldering; he was overwhelmed by offers to help. Thank you all!

Rich Schueller: and two others (Bruce Berger and Kelly Beatty) donated a pair of LTP scopes to the Chelmsford Library. There was an article in *Chelmsford Independent.*

Rags: reported on a Supernova with four images due to (galaxy) gravitational lensing. The truly fascinating bit of picture was all of the other galaxies in the shot.

Marc Stowbridge: has the fittings for an observatory and would love to find a home for the pressure-treated lumber panels. He also suggested holding an Astronomical "yard sale" for the club.

The Evening Presentations

Paul Winalski led off with a talk about his **OzSky 2014** safari in NSW, Australia. It included practical information for members wanting to get to a future edition of the southern sky observing trip. *[See his article on Page 9. -Ed.]*

Ted Blank followed with a talk on the extraordinary contributions of

Henrietta Leavitt, entitled ***"She Unlocked the Universe."***

Henrietta Swan Leavitt, while working at the Harvard College Observatory, was assigned the task of identifying and measuring variable stars in the Large Magellanic Cloud. She made the discovery that was a key to the measurement of stellar distances; she noticed a correlation between the periodicity and luminosity of Cepheid variables. Ted Blank's slides are available in the Forum.

NHAS Treasurer's Report

(as of May 8, 2014)

Starting Checking Balance:		**$10,025.14**
Deposits:		
Membership	10.00	
Donations	140.00	
Interest	0.00	
Total:		**$150.00**
Expenses Paid:		
Pete Smith (Laminate)	231.07	
Pro Portsmouth, Inc. (Market Square Day Security Deposit of $75 will be returned later)	185.00	
Total:		**$416.07**
Current Checking Balance:		**$9,759.07**
Petty Cash:		**$100.00**
Current Cash Balance:		**$9,859.07**
EOC Share:		**$6,420.90**

Membership: **138**

	Single + Family	
Cash Renewals:	00x30.00+0x10.00	0.00
Cash New Members	00x30.00+1x10.00	10.00
PayPal Renewals:	00x28.83+0x 9.61	0.00
PayPal New Members:	00x28.83+0x 9.61	0.00
Total:	**0**	**$10.00**
Current Members:	**138**	

New Members:
[none]

Donations:

Portsmouth Sidewalk Astronomy	GEN	140.00
Total:		**$140.00**

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

Gloucester Area Astronomy Club (Gloucester, Mass.)
www.gaac.us

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.agenaastro.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/

Upcoming Events 19

Event	Date	Time	Location
Alton Schools QUEST FEST Skywatch	Wednesday, June 4	5:00pm	Alton Central School, Alton NH
First Friday Skywatch for MSDC	Friday, June 6	7:00pm	MSDC, Concord NH
Sidewalk Astronomy Skywatch	Saturday, June 7	6:00pm	Market Square, Portsmouth NH
NHAS Business Meeting	Friday, June 13	7:30pm	MSDC, Concord NH
AeroSpaceFest Skywatch	Saturday, June 14	10:00am	MSDC, Concord NH
Star Island Skywatch	Sunday, June 22	8:00pm	Star Island (an Isles of Shoals)
Aaron Cutler Memorial Library Skywatch	Thursday, June 26	8:30pm	269 Charles Bancroft Hwy, Litchfield NH
Durham Public Library Skywatch	Friday, June 27	8:00pm	2 Old Bay Road, New Durham NH
Coffee House Night at YFOS	Saturday, June 28	5:00pm	YFOS
Rey Center Skywatch	Saturday, June 28	8:30pm	Waterville Valley NH
Sidewalk Astronomy Skywatch	Saturday, July 5	6:00pm	Market Square, Portsmouth NH
Skywatch for North Hampton Library	Tuesday, July 8	7:30pm	237a Atlantic Ave, North Hampton NH
Oscar Foss Memorial Library Skywatch	Thursday, July 10	8:30pm	111 S. Barnstead Rd, Ctr. Barnstead, NH
NHAS Business Meeting	Friday, July 11	7:30pm	St. Anselm, Manchester NH
Skywatch for North Hampton Library (backup date)	Monday, July 14	7:30pm	237a Atlantic Ave, North Hampton NH
Bethlehem Public Library Solar Observing	Tuesday, July 15	11:00am	Bethlehem Public Library, Bethlehem NH
Nesmith Library Teen Skywatch	Tuesday, July 15	7:30pm	8 Fellows Rd. Windham, NH
Nesmith Library Teen Skywatch (backup date)	Wednesday, July 16	7:30pm	8 Fellows Rd. Windham, NH
Oscar Foss Memorial Library Skywatch (backup date)	Thursday, July 17	8:30pm	111 S. Barnstead Rd, Ctr. Barnstead, NH
Derry Public Library Presentation	Monday, July 21	6:30pm	Derry Public Library, Derry NH
Derry Public Library Skywatch	Tuesday, July 22	8:30pm	Broadview Farm, Young Rd, Derry NH
Merrimack Public Library Skywatch	Wednesday, July 23	8:45pm	TBD, Merrimack NH
Merrimack Public Library Skywatch (backup date)	Thursday, July 24	8:45pm	TBD, Merrimack NH
Coffee House Night at YFOS	Saturday, July 26	5:00pm	YFOS
Rey Center Skywatch	Saturday, July 26	9:00pm	Waterville Valley NH

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

Date	Lunar Phase
Thursday, June 5	First quarter 8:39pm
Friday, June 13	Full moon 4:11am
Thursday, June 19	Last quarter 6:39pm
Friday, June 27	New moon 8:09am
Saturday, 5 July	First quarter 11:59am
Saturday, 12 July	Full moon 11:25am
Saturday, 19 July	Last quarter 2:08am
Saturday, 26 July	New moon 10:42pm

Credits

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

Ted Blank, Herb Bubert, *Tony Buckley*, John Buonomo, Glenn Chaple, Michael Deneen, Gardner Gerry, "Rags" Gilmore, Elaine Grantham-Buckley, *Lachlan MacDonald*, Steve Rand, Susan and Rich Schueller, *Robin Sweetser* and Paul Winalski.