

In This Issue...

2 [Sky Watch Review](#)

*Alton Central School
Chester Public Library
Star Island
New Durham Public Library*

3 [Society Activities](#)

*AAS Star Party
Sidewalk Astronomy
Aerospacefest at MSDC
Market Square Day
Rey Center Stargazing
The Solitary LTP Build*

6 [Image of the Month](#)

Alpine Valley with the rille

7 [Object of the Month](#)

July: Rasalgethi [α HER]

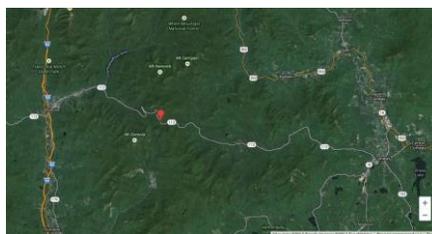
8 [The Regular Items](#)

*Business Meeting Report
Treasurer's Report
Contact Information
Club Loaner Scopes
Astronomy Resource Guide
Upcoming Events
Credits*

The Milky Way above Kancamagus Highway



NHAS member Pat Bourque took a trip up to Kancamagus highway to take advantage of the New Moon of Friday, June 27. The views were spectacular, the skies dark and clear, and the gazebo provided that earthy touch. Using his Nikon D600 with a Nikkor 20mm lens at $f/2.8$, he stitched together 5 exposures of 20 seconds each at ISO 2500 to generate the image above. All post-processing was done in Adobe Lightroom, and the result might even pass for a boomerang. Kanca might not be Coona, but is arresting in its own way.



*The lookout site (marked in red) is about a third of the way east of Interstate 93, at Kancamagus Pass. The next one down the road appeared to have similar potential. The detailed map (at right) makes the road appear almost ghostly.
(Courtesy: Google Maps)*

Alton Central School QUEST FEST, Alton NH, June 4

The observing got clouded out, but I did give an extended indoor presentation showing images and highlight reel videos from the SOHO and SDO solar observing spacecraft.

- *Paul Winalski*

Chester Public Library, Chester NH, June 23

This event took place as scheduled, although clouds rolled in during the afternoon, and it was touch-and-go early on. We began observing through sucker holes, but it cleared out very nicely as the evening progressed and we ended with the sky clear. Attendance was very good (about 25-30 people), especially considering the early sky conditions. NHAS members attending were **Ted Blank, Gardner Gerry, Daniel LaShomb, Steve Pearsall and Paul Winalski**, with scopes 4 to 10 inches in aperture.

The Wason Pond site in Chester is exceptional. It is a big open field with unobstructed views in all directions to 10° above the horizon. There is no artificial lighting. Manchester, of course, provides a light dome to the southwest, but conditions are as good as one can get for this part of the State.

I used the Takahashi FSQ 106 to show: Jupiter (caught at twilight about ten degrees above the horizon in a cloud gap; no moons visible, but banding on the planet), Mars, Saturn, and double stars Mizar, Alberio and Cor Caroli.

I'd love to be back at this site under better observing conditions.

- *Paul Winalski*

Star Island (one of the Isles of Shoals), June 22

Star Island is one of the Isles of Shoals that straddle the border between New Hampshire and Maine, seven miles from the mainland in the Atlantic Ocean. Star Island is the largest of the four islands in the group that are located in New Hampshire. We had great weather the weekend of 6/21-6/22, dry and warm with cobalt blue skies all day and clear and transparent nights. The skies over Star Island were just as good, except for a cloudy hour and a half around sunset.

NHAS members **Bob Veilleux, "Rags"** and **Gardner Gerry** and their wives made the trip out from Portsmouth on the *Thomas Laighton*, run by The Isles of Shoals Steamship Company, a spacious 90 foot boat with three decks and room for 300 or more passengers. But luggage was limited by the steamship company, so telescopes were delivered the day before to Star Island's own luggage boat, a converted lobster boat. It takes about an hour to get out to the islands, and the captain gives the tour guide talk most of the way, so there's something interesting going on most of the way. We left Portsmouth at 1:55pm and arrived at Star Island just after 3pm.



Land ahoy! (Photos: Gardner Gerry)

Once we disembarked, we were shown to our hotel rooms and also the room for the presentation. After settling in, we wandered about for the few hours before dinner.

Rags and Bob found the Marine Lab where our gear had been transported the day before. The Star Island folks and several volunteers loaded our gear on an old Ford pickup truck and brought it around to the location we chose for observing, a circle of 4 stone cottages open to the south.



Sunset was cloudy, but the skies cleared.

After dinner I gave our standard "what's up in tonight's sky?" talk to about 25-30 folks at 8:15pm. Then we went out to the observing area and waited for clouds to dissipate, which they did by about 9:30pm. By then it was still quite light out, but we were showing Saturn and Mars and the good seeing was allowing 200+ magnification. Once it was good and dark, I was showing M13, M92, Alberio and M57. Meanwhile M6 and M7 were naked eye near the horizon. We had at least 60-70 people come by over the time we were observing, many of them staying the entire evening.

We packed up around 11:30pm and stowed our scopes in a nearby cottage to dry out overnight.

Everything was dripping with dew and we were thankful not to have to pack wet gear up for the ride home in the morning. The morning dawned early and Bob was up at 4:30am for the sunrise. After a wonderful breakfast at 8am in the same dining hall, it was time to sail back to the mainland.

This was a really special event. I hope we get invited back again.

- *Gardner Gerry*

New Durham Public Library, New Durham NH, June 27

NHAS members **Bob Veilleux**, **Elaine Grantham-Buckley** and **Gardner Gerry** showed off Mars, Saturn and M13. The ball field was quite dark, and the mosquitoes were ferocious! We had about 30 Library patrons there.

- *Gardner Gerry*

Society Activities

American Astronomical Society (AAS) Star Party, Boston Common, June 3



The Dynamic Duo with their wares (the 9-part shadow transit of Io is prominent in the middle, with a collage of nebulae to the right). The Obsession is in use at right, with an intrepid non-astrophotographer going for a very different angle. (Photos: Gardner Gerry)



NHAS members **Gardner Gerry** and **Herb Bubert** (above) were 2 of 20 astro-photographers invited to show their images at the AAS meeting in Boston, MA. A Star Party was scheduled that evening, but weather did not really cooperate. The event organizer didn't make the GO call until around 3pm, much too late for Herb and Gardner, who didn't bring any scopes in anticipation of a cancellation. Instead they helped a fellow attendee setup his 15" Obsession UC, which saw good service that evening finding Jupiter, Mars and Saturn in the twilight.

Sidewalk Astronomy, Portsmouth NH, June 7



Waiting one's turn, possibly for Saturn. (Photo: Ted Blank)

Herb Bubert, **Gardner Gerry**, **Tom Cocchiaro**, **Ted Blank** and new NHAS member **Cameron Markovsky** spent an enjoyable and warm evening in Market Square showing Luna, Saturn, Mars and even a glimpse of Jupiter to several hundred visitors. At least 50 club brochures were picked up. Cameron operated the 6" club Loaner Scope for most of the evening and ended up taking it home (he lives in Portsmouth), very excited at being able to spend the summer learning Astronomy.

The views in the XT6 were spectacular and many people were amazed at its price (from Orion) of \$299. I think we may have headed off quite a few "WalMart" scope purchases.

- *Ted Blank*

Aerospacefest, MSDC, Concord NH, June 14

Aerospacefest 2014 was a low-key affair, with lower attendance than the last few years. The Sun played hide and seek with the clouds, so the outside attendance for solar observing was thin as well.

NHAS members working the solar observing program were **Andy Jaffe**, “**Rags**,” **Mike Townsend** and **Dave Weaver**. When it was visible, the Sun provided excellent views to a good range of observers. And when it was not, to quote Andy, a few bees cooperated by staying in the field of view when collecting pollen.

The NHAS booth inside was manned almost continually by **Ted Blank**, with the help of **Bob Veilleux** who also showed visitors pieces from his meteorite collection.

And then there was the return of **R. P. Hale**.

In the days when Aerospacefest was known as Astronomy Day (much as MSDC was known as CMP), NHAS members used to figure out the duration of their membership by the number of Astronomy Day T-shirts they owned. All those T-shirts were the product of the imagination and artistry of R. P. Hale, musical instrument maker and a lapsed NHAS member of some years, but (according to Larry Lopez) a member again as of this month. Welcome back, Mr. Hale!



R.P. Hale next to Dave's dual solar setup, with H-alpha and white light. (Photo: Dave Weaver)

Market Square Day, Portsmouth NH, June 14

Manning the NHAS booth at Market Square Day were **Tom Cocchiaro**, **Gardner Gerry**, **Dave Speltz** and **Paul Winalski**. We had two refractors for white light solar observing, plus a double-stacked Lunt and a PST for H-alpha. It was overcast and drizzly at first, so the white light scopes were focused on the clock face and weather vane of the church across the street from us. The crowd, as usual, was very large and there was a lot of interest in NHAS. Many folks remembered us from Sidewalk Astronomy nights. There were also several "I'm interested in buying a telescope, which one should I get?" questions.

By mid-afternoon there were breaks in the clouds and we were able to do solar observing. The H-alpha view was showing a solar flare in progress. There was a bright spot right at the Sun's limb, and for a while there was what looked like a detached prominence moving away from it. That was the coronal mass ejection associated with the flare. In the double-stacked Lunt, one could see a jet of hydrogen plasma being emitted by the flare. It was a real treat to show this off to the public – it is not often that one can catch a flare in progress.

Clouds closed in again for the last hour. Judging by the amount of literature we handed out, I'd say it was a success.

- *Paul Winalski*

Rey Center Stargazing, Waterville Valley NH, June 28



Joe Derek and Al Larsson discuss the Center's Meade SCT, while the big Dob and the binos await action in the parking lot behind the cottage. (Photos: Bonnie Derek)

The program was held from 9pm to 11pm and was hosted by NHAS members **Al and Dottie Larsson**, who are affiliated with the Margaret and H.A. Rey Center and live in the area. While Al Larsson set up the Center's Meade SCT, Joe used his 17.5" Newtonian, possibly the largest aperture seen at these events. It didn't get dark until well after 9:30pm, so we started with the planets and then moved on to deep space objects when a darker sky was available. There was a group of about twenty individuals of differing ages and from a few different states.

The sky cleared up nicely after a cloudy afternoon/early evening. I would say a good time was had by all. The complimentary accommodations at the Snowy Owl meant that we did not have to make the two hour trek back home the same night.

- **Bonnie and Joe Derek**

The Solitary LTP Build

This June was markedly quieter for the Library Telescope Program than last year.

Last year we were gathering materials, scheduling a modification party and arranging the delivery of 10 Orion Starblast LTP scopes to NH libraries. This year, due in part to a very small back log and due to a backorder at Orion, we only managed to build one scope.

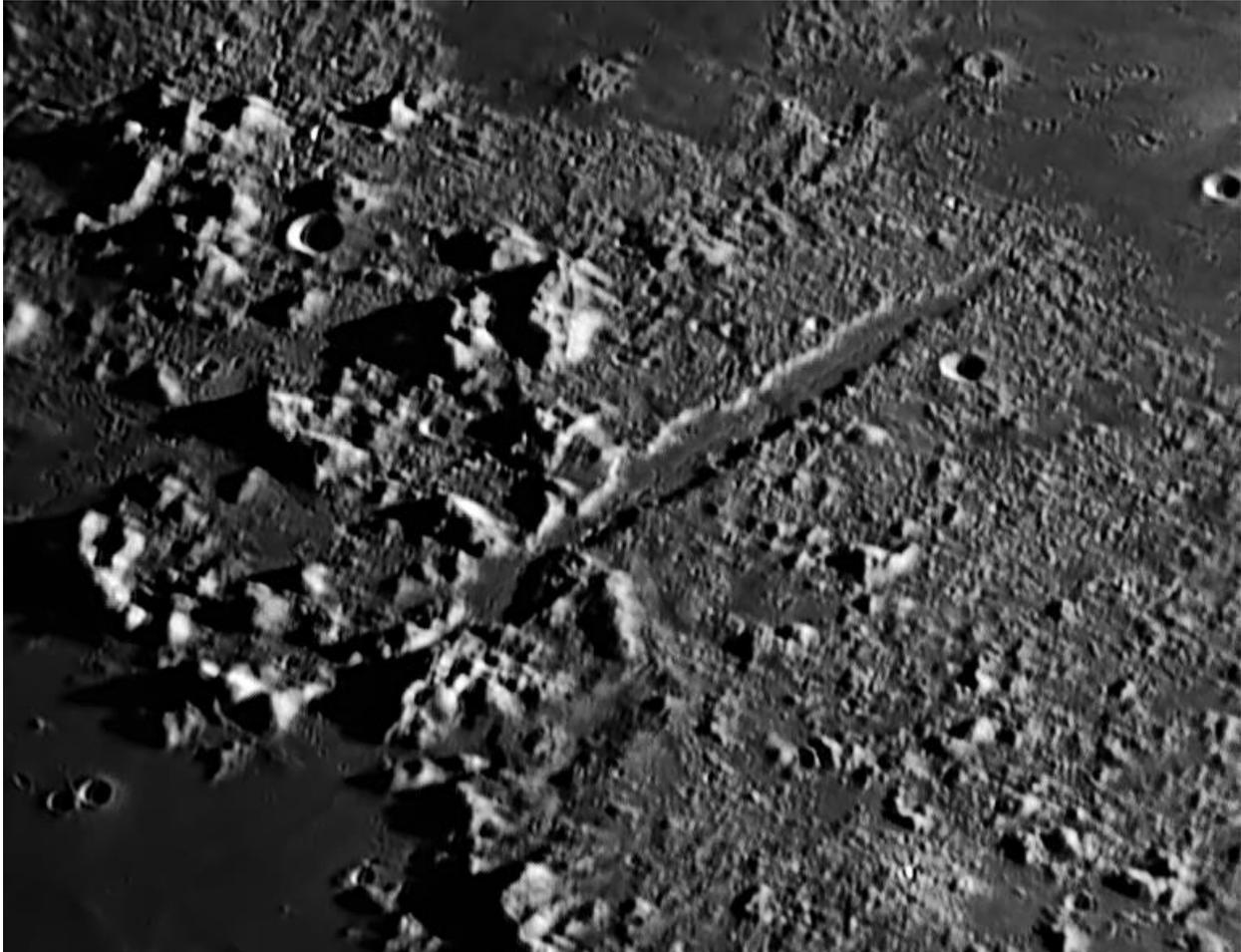
Pete and Gerry Smith completed the task for the Gordon Nash Library in New Hampton NH on Sunday June 29 (that one LTP tradition had to be observed – always the last Sunday on the month). Then there was the mad rush to Staples to get the instruction book laminated. The completed scope was delivered to the Gordon Nash Library on the following Tuesday.

The end of September 2014 will be our next scheduled build and it promises to be a much busier event. We expect to have a backlog of 5+ scopes by that time.

- **Pete Smith**



Pete Smith handing over the scope to Cathy Vincevic of the Gordon Nash library. (Photo: Gerry Smith)



The Alpine Valley with the rille

(Image: Gardner Gerry)

I have it down in **Ed Ting's** own hand in my notebook:

Challenge: Observe the crack in the floor of the Alpine Valley.

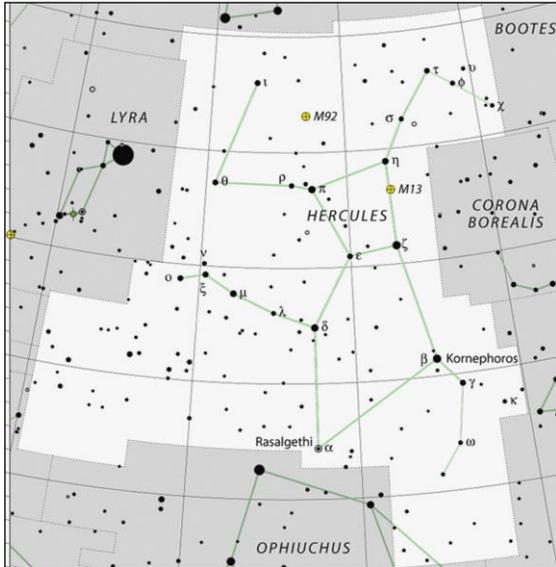
On May 7th, Ed pinged **Gardner Gerry** with some news – lighting conditions on the Moon would be just right that night to capture the Alpine Valley and the elusive rille down the middle. Gardner set about imaging it after midnight and *voila!* It looks like an Interstate highway running along the valley.

[0056 UT on May 8 (2056 EDT on May 7): C9.25 with Tele Vue 2x barlow used with the ZWO ASI120MC camera, using the best 3500 of 5000 frames captured with FireCapture v2.3, aligned and stacked in Autostakkert! 2.1.0.5, converted to monochrome from the color data and post-processed in PixInsight 1.8. A nice feature of FireCapture is the ability to save a text file with all the camera data of a captured video.]

- **Ramaswamy**

Rasalgethi (alpha Herculis) – Double Star in Hercules

by Glenn Chaple



(Chart by www.constellation-guide.com)



Rasalgethi shines in Hercules (Image: Jeremy Perez)

A number of years ago, I conducted a “Top Ten Doubles” survey for *Deep Sky Magazine*. One of the top vote-getters was Rasalgethi, the alpha (α) star in Hercules. Few would dispute its inclusion on the list.

For starters, it is comprised of bright stars - the magnitude 3.5 primary being attended by a magnitude 5.4 partner. Secondly, a reasonably close separation of 5.0 arc-seconds puts it within range of small-aperture telescopes while making for an eye-pleasing sight in larger instruments. Most notable are the colors.

Through my 127mm f/12 Maksutov/Cassegrain reflector and a magnifying power of 171X, they seemed to be orange-yellow and light blue – typical of the hues reported by other observers. The ruddy color of the primary is in keeping with its M5 spectral class; the bluish tint of the secondary is not. With a spectral class of G5, it should be yellow like the sun. The color discrepancy seems to be a result of the magnitude difference between the two stars. Quite often the secondary of a close unequal double star takes on a bluish tinge, regardless of spectral class.

Not only is Rasalgethi a noteworthy telescopic target, it’s a noteworthy system – period! The main star is a red supergiant with a diameter of 340 million miles. Were it put in place of our Sun, it would engulf the entire inner solar system to beyond the orbit of Mars. Like many stars of its class, Rasalgethi varies in brightness. Its 2.7 to 4.0 magnitude fluctuations occur in a 4-month cycle superimposed over one of 6 years. The companion is no slouch, either. It’s a tight binary pair comprised of a four-solar-mass G5 giant circled every 52 days by a 2.5-solar-mass F2 dwarf.

Hipparchus data place the Rasalgethi system at a distance of 360 light years. The actual separation between the two main components is roughly 46.5 billion miles and their orbital period likely exceeds 3500 years.

NHAS June 2014 Business Meeting Report

The monthly business meeting was held at MSDC, Concord NH on June 13th, with our President **Ted Blank** presiding. The Treasurer's report by "**Rags**" follows on the next page.

President's Report

Herb Bubert and **Gardner Gerry** presented their astro-images at the AAS meeting in Boston. Gardner also managed to attend every skywatch in May/June, and there were plenty of them. He also went to Star Island with **Bob Veilleux** and "**Rags**" to do a skywatch.

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

- * Jupiter's *Great Red Spot* is shrinking and is now the smallest size ever recorded.
- * Flying saucers are real! NASA is currently developing a saucer-shaped vehicle to land heavy loads on Mars.
- * *Rosetta* is approaching comet 67P/Churyumov-Gerasimenko in Nov. 2014; it will study the comet as it loops around the Sun.

Astronomy Shorts

Rags: Nori has a picture of a solar flare from SDO, with magnetic field interactions.

Marc Stowbridge: has put together an Excel spreadsheet that lets you plug in apparent FOV and focal length of eyepieces and scopes and it will show magnification, true FOV, magnification and FOV with Barlow, etc. Also, he has been in contact with an Ann Arbor, Michigan librarian, who has 30 LTP scopes in 5 branches. He has also made an oculus that if glued onto the eyepiece will give you a cover to the eyepiece that cannot be lost.

Paul Winalski: Saw HD 162826 for the first time (in Hercules); it is now thought to be our Sun's sibling, a star born out of the same molecular gas cloud ([see May 2014, page 4](#)).

The Evening Presentation

Multimedia artist and author **Michael Benson** took the audience on a beautiful journey through the heavens as he interpreted images by *Hubble*, *Voyagers*, *Galileo* and other sources in amazing and intriguing ways.

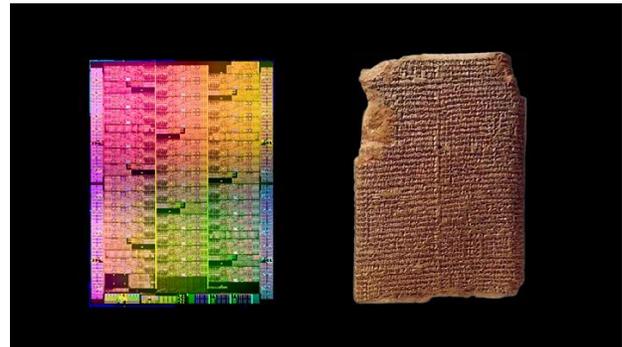
His upcoming book "Cosmigraphics" (Oct. 2014) details a 4000 year long journey in graphical representation of the Universe, from the Bronze Age to the contemporary supercomputer models of galaxy clusters.

We learned about **Thomas Wright** of Durham, England, who in the mid-18th century postulated both the flattened disc shape of a galaxy, specifically for the Milky Way, and a spherical shape (which elliptical galaxies tend to be).

It was an engrossing hour and a great birthday present for one in the hall!



Mike Benson talks and the Birthday Boy (below) listens.



Computer chips and Babylonian clay tablets that store data (above);



Jobs in 2010 and an earlier vision of 2001: A Space Odyssey (below).

NHAS Treasurer's Report
(as of June 12, 2014)

Starting Checking Balance:	\$9,759.07	Membership:	138
Deposits:		Single + Family	
Membership	0.00	Cash Renewals:	00x30.00+0x10.00 0.00
Donations	487.00	Cash New Members	00x30.00+0x10.00 0.00
Interest	0.87	PayPal Renewals:	00x28.83+0x 9.61 0.00
Total:	\$487.87	PayPal New Members:	00x28.83+0x 9.61 0.00
		Total:	0 \$0.00
Expenses Paid:		Current Members:	138
B&H Photo (Eyepiece x3)	155.85	New Members:	
ProVantage (Headlamp x3)	38.88	[none]	
Barnes & Noble (Book x3)	30.15		
RackSpace Cloud (2 months)	44.47	Donations:	
Checks for move to People's	46.27	Portsmouth Sidewalk Astronomy	GEN 162.00
Total:	\$315.62	Gordon Nash Library,	LTP 325.00
		New Hampton NH	
Current Checking Balance:	\$9,931.32	Total:	\$487.00
Petty Cash:	\$100.00		
Current Cash Balance:	\$10,031.32		
EOC Share:	\$6,521.02		

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.nhaastro.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

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

Sky at Night
www.skyatnightmagazine.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
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	Merrimack Middle School, Merrimack NH
Merrimack Public Library Skywatch (backup date)	Thursday, July 24	8:45pm	Merrimack Middle School, Merrimack NH
Coffee House Night at YFOS	Saturday, July 26	5:00pm	YFOS
Rey Center Skywatch	Saturday, July 26	9:00pm	Waterville Valley NH
Gafney Library Skywatch	Tuesday, July 29	7:30pm	Turntable Park, Rt. 109, Sanbornville, NH
Bedford Public Library Skywatch	Wednesday, July 30	8:30pm	3 Meetinghouse Road, Bedford, NH
Gafney Library Skywatch (backup date)	Thursday, July 31	7:30pm	Turntable Park, Rt. 109, Sanbornville, NH
First Friday Skywatch for MSDC	Friday, August 1	7:00pm	MSDC, Concord NH
Sidewalk Astronomy Skywatch	Saturday, August 2	6:00pm	Market Square, Portsmouth NH
Bedford Public Library Skywatch (backup date)	Tuesday, August 5	8:30pm	3 Meetinghouse Road, Bedford, NH
Nesmith Library Teen Skywatch	Thursday, August 7	7:30pm	8 Fellows Rd, Windham NH
NHAS Business Meeting	Friday, August 8	7:30pm	MSDC, Concord NH
Nesmith Library Teen Skywatch (backup date)	Monday, August 11	7:30pm	8 Fellows Rd, Windham NH
Whipple Free Library Skywatch	Tuesday, August 12	7:30pm	67 Mont Vernon Rd, New Boston NH
Whipple Free Library Skywatch (backup date)	Thursday, August 14	7:30pm	67 Mont Vernon Rd, New Boston NH
Hill Library Skywatch	Saturday, August 16	9:00pm	National Guard site, Parker Mtn Rd, Center Strafford NH
Goffstown Public Library Skywatch	Monday, August 18	8:00pm	Waterworks Property, North Mast Rd, Goffstown NH
Pease Public Library Skywatch	Tuesday, August 19	7:30pm	1 Russell Street, Plymouth NH
Skywatch for Goffstown Public Library (backup date)	Wednesday, August 20	8:00pm	Waterworks Property, North Mast Rd, Goffstown NH
Pease Public Library Skywatch (backup date)	Friday, August 22	7:30pm	1 Russell Street, Plymouth NH

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

Date	Lunar Phase
Saturday, July 5	 First quarter 11:59am
Saturday, July 12	 Full moon 11:25am
Saturday, July 19	 Last quarter 2:08am
Saturday, July 26	 New moon 10:42pm
Monday, August 4	 First quarter 12:50am
Sunday, August 10	 Full moon 6:09pm
Sunday, August 17	 Last quarter 12:26pm
Monday, August 25	 New moon 2:13pm

Credits

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

Ted Blank, Pat Bourque, Herb Bubert, *Glenn Chaple*, Bonnie and Joe Derek, Gardner Gerry, "Rags" Gilmore, Andy Jaffe, Larry Lopez, Gerry and Pete Smith, Mike Townsend, Dave Weaver and Paul Winalski.