Observer Staff
Editor & Publisher:
Richard DeMidio

The NHAS Observer and Astronomy in Cyberspace

Newsletter of the New Hampshire Astronomical Society

Vol. 2006 No. 9 | "All the news that fits in print" | September 2006

YFOS Work Event

President's Message

At the time of this writing, our president is still spending time educating the public at Bryce Canyon. We are all looking forward to his return and the pictures and stories that will be shared.

✷ Rich DeMidio for
Matthew Marulla
NHAS President 2006

Highlights for this Month

Former NHAS President **Barbara O'Connell** provides insight into bringing Astronomy more into our daily lives on Page 2. NHAS board member and the current Director of Grainger Observatory **John Blackwell** did a talk last month about his work with the Spitzer Space Telescope on Page 7

✷ Rich DeMidio
NHAS Secretary 2006

Public Observing

We have had a busy summer with a number of very successful sky watches. This fall is shaping up to be the same, with schools beginning to call in. Beginning times are dusk, unless noted otherwise. The requests so far are:

Weare Science Club Center Woods School This is still in the works, but they would like to schedule a sky watch with in the next few weeks (Late September). I'll send an email around as soon as I have a firm date. They are interested in having someone come and give a presentation. Is anyone interested? Email me and we will coordinate things.

New Searles Elementary Friday October 13th 2006 at 7:30. Contact Person: Brenda Wygant Contact Email: wnils@comcast.net Contact Phone: 603 882-0511 Expected Turnout: 100+ Grades 1st through 5th grads Address: 39 Shady Lane, Nashua NH 03062 How did you hear about us? My husband is a NHAS member (who is this masked man?)

Reeds Ferry School astronomy night October 25 with a cloud date of Thursday, October 26 Contact Person: Barbara.DeVore@merrimack.k12.nh.us Number of people: Since last year worked well with Mastricola Elementary kids joining us due to the hurricane, they will likely join us this year. Ed Ting asked to do this presentation as his "Swan Song". He has agreed to let us (me?) video tape the presentation as a training aid for the rest of us.

Nottingham West School, Hudson, NH A Star-Studded Event Thursday, November 2. 10 Pelham Rd, Hudson, NH. Contact Person: Janice Spry, 4th Grade Team representative: 595-1570. Expected Turnout: 75-100 people over about 3 hours time. Janice said, "It was a big hit in the past and I think the word will get around even more this time and turn out could increase. Grade 4 hosts the evening and space is directly taught during the year, however, we open the invitation to the whole school, grades 1 – 5. Could you bring step stools for smaller children? We're choosing to host this event in the fall so that we might be able to view star clusters and other galaxies as well as planets and individual stars. We're always on the lookout for satellites which the kids find thrilling to watch crossing the sky."

Also, during the last meeting I asked the assembled members if it would be OK to solicit handout material from Sky & Telescope and Astronomy. The consensus was positive, so I did. Both are sending stuff. S&T sent 38 pounds of Night Sky and reprints! Astronomy is sending posters and reprints. I think it will be a good idea to keep a bunch of this stuff in the Southern part of the state to make sure it gets to all the events. I would like to keep track of where we hand this stuff out so I can report to our benefactors that their material was put to good use. Anyone interested in holding on to a representative pile?

✷ Marc Stowbridge

YFOS Work Event

A long overdue work session took place at YFOS last Saturday, 9/9. NHAS members participating were **Larry Lopez, Chase McNiss, Gardner Gerry, Matt Amar, Allan Shirey, Herb Bubert, Jean Buckley, and Rich DeMidio**. Everyone arrived early with several maintenance activities taking place. **Larry Lopez** brought his world famous John Deere tractor for lawn cutting since rumors persisted of "rent-a- sheep" being notified.

Photo by Chase McNiss

This article is continued on page 5

Astronomy in Cyberspace – Podcasts

There are many ways to enjoy astronomy on cloudy nights and days when you aren't able to get out there and observe directly. In fact, it's helpful to read up on astronomy topics of interest to make your valuable observing hours more productive. One example that I have been taking advantage of lately is Podcasts. For the internet savvy, this word is probably familiar. For others, let me give you a quick definition. Podcasting is a combination of two words, iPod and broadcasting. In my own words, it's like subscribing to your favorite talk radio or news shows, so you can listen to them anytime and anywhere. If you've ever had to constantly channel surf on the TV or change the radio stations in search of decent news or entertainment, you know how time consuming this is. Wouldn't it be nice to subscribe once and get it all delivered to your computer or portable MP3 player?

What kind of podcasts are specific to astronomy? Well, I have a few that I will recommend from a wide spectrum (pun intended) of seriousness and topics. Then I will suggest how you can find the podcasts that might interest you the most. Currently, I subscribe to seven different podcast shows. All of them are free and most are produced by very reputable sources. Here's an example. One of my favorite and most listed to podcasts is "StarDate" produced by the McDonald Observatory. This is how they describe their podcast:

> StarDate, the longest-running national radio science feature in the United States, tells listeners what to look for in the night sky, and explains the science, history, and skylore behind these objects. It also keeps listeners up to date on the latest research findings and space missions. And it offers tidbits on astronomy in the arts and popular culture, providing ways for people with many diverse interests to keep up with the universe.

Each podcast is about three minutes in length. Short, sweet and to the point yet informative. I find that if I don't have time to check the star almanac for which planets are up or what events are coming, they provide this information for me in a timely fashion. Another favorite of mine is a little more heady but with a good humored twist. Two young professional astronomers produce the podcast, "Slacker Astronomy". They describe their podcast as:

> A weekly news event in the world of astronomy as told by professional astronomer slackers. Bad humor, sci-fi jokes and clips are the norm.

In a very non-threatening way, they provide information on hot topics in astronomy research. I think they are a little nutty with their presentation, but it always makes me laugh on a long commute. Keep in mind that some of your favorite radio programs are now delivered as podcasts, so if you are like me and always forget to listen to "Science Fridays" on NPR, you can subscribe to its podcast version and get the whole thing, unedited to listen to at your convenience.

So, as promised, here are my seven favorite astronomy audio podcasts:

Title of Audio Podcast	Short description, frequency, and average length
StarDate	Basically an audio star almanac (Daily, 3 minute average)
Slacker Astronomy	Covers current topics in astronomy; humorous and factual (Weekly, 12 minute average)
Universe Today	
Planetary Radio	A radio broadcast by The Planetary Society
Spitzer Space Telescope Podcast	Covers current topics in astronomy relating to the Spitzer Space Telescope projects (Monthly, 6 minute average)
NASA's JPL Podcast	Highlights topics from JPL missions
	(Weekly, 5 minute average) – note also has video podcasts under same title
Science @ NASA Feature Stories Podcast	Factoids about astronomy (5 minute average)

Some other podcasts that I like that aren't audio or astronomy are:

Title of Podcast	Short description
The Hidden Universe	Another Spitzer production but in **video** focusing on discoveries of Spitzer
NPR Science Friday	A weekly radio broadcast by NPR
Weather at Pod Weather	A compilation of many weather-related podcast sources (nice one-stop-shop)

There are literally thousands of podcasts and likely, hundreds of astronomy podcasts. You can find podcasts you are interested in by browsing indexes like PodcastAlley.com, iTunes, Podcast Pickle, Odeo, PodNova, Podcast Directory, etc. I would also recommend going to your favorite web sites and keeping an eye open to see if they produce a supplementary podcast. In fact, Sky & Telescope doesn't have a podcast that I could find, but they do have a list of podcasts. New ones are being added all the time, so no list is comprehensive. If you aren't already a listener, I hope this has inspired you to check them out. Enjoy your cloudy nights and long commutes a little more with astronomy podcasts. Heck, maybe even start your own!

Anticipated questions to this article and some answers:

Need more info on what is a podcast?
Google it, or go here for starters: http://en.wikipedia.org/wiki/Podcasting

How does one listen to a podcast?
Typically, you have to use your computer to download the podcast file, then you can listen to it in a variety of

ways (e.g. computer media player of choice, external device like an iPod or MP3 player, burn to CD for use in the car, etc.). You will need to pick some software (most are free) to facilitate the download. More info here: http://www.intellectualicebergs.org/howtolisten.html or write in the NHAS chat email list or forum. The easy and fast way to learn is to have your kids show you.

How much does it cost? Most podcasts are free. It will be very obvious if they are not because you will be prompted for payment. I get all my audio and video podcast content for free. Entertainment video and music content, I have paid for (usually TV shows I've missed like "Lost" and songs that I don't want the whole album but like one song). But just to be clear, *those are not podcasts*, they are just delivered in similar venues.

✶ Barbara O'Connell, PMP

About the Author: Barbara is a long-standing member of NHAS serving in many positions including President and Treasurer. She is currently taking a break from public service, focusing more on the actual hobby..

Astro Photons

Gardner Gerry – Photo by Chase McNiss

The weather has thwarted most of us from any meaningful imaging sessions. I would like to issue a call to all members who are interested in astrophotography to please get in touch with the Astrophotography Chair via e-mail, the committee would like to hold a Beginning Imaging session soon for any members who are interested. This would most likely take place at YFOS on a Saturday afternoon with equipment set up and imagers present to answer questions and offer advice, with imaging demonstrations and instruction after dark. So come and join us in capturing images of the many wonders in the night sky! We are targeting September 23rd, 30th as well as the 14th or 21st or 28th of October. Some events will also provide an opportunity to image the moon.

✶ Gardner Gerry

Editor's Picks of the Month: Please visit the forums for all recent images.

Here are what cloudy skies and boredom can lead to. I was trying out the MAP technique on some old Jupiter frames when I decided to put this sequence of frames together, which show a double shadow transit with the Great Red Spot

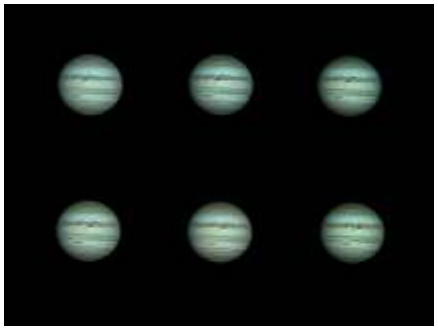

Photo by Herb Bubert

This is a 20 minute single integration of NGC 7000 (North American Neb) through a red filter using an SBIG STL 6303 non-ABG. The images are 12Mb! This one has been shrunk accordingly. Scope: Tak FSQ-106n at f/5. Self guided. Full image is available online at: http://www.regulusastro.com/regulus/photos/text/ngc7000_stl6303.html Just click the appropriate link at the bottom in the description. It is over a Mb. I wish it had not clouded up! Dark frames used. Nothing else.

Photo by John Blackwell

Radio Astronomy

Antenna by Bob Sletten

After our site tours it will be time to discuss what projects we might do as a group. There are many possibilities for projects with a wide range of technical and resource requirements. Many of the entry-level projects involve the Sun as the signal source. Again, there are many different aspects of the sun that can be observed from noise power level to event spectral variations. The sun observing frequencies can vary form 25 KHz to high microwave (and higher obviously) as it has a very wide spectrum. An inexpensive way to get microwave capability is by using the older technology TVRO equipment at 4 or 12 GHz. This type equipment is relatively broadband and can have good sensitivity. It also can be used for deep space work. Deep space objects are more difficult to detect (weaker signal) and therefore represent a higher technical challenge. Items possible include the galactic center, supernova, quasars, etc. Other "astronomy" items closer to earth that can be observed with radio techniques include, the ionosphere layers, meteor trails, and magnetic fields. There are so many

exiting things to try it may be difficult to build a consensus.

✷ Bob Sletten

Membership

Since last meeting we have accepted eight new members.

Frank Alvardo	Salem NH	
Tim Lauzon	Littleton MA	
Jim Fowler	Bow NH	Interest in Radio Astronomy and Astro Photography.
Barbara and Allen Kessler	Hookset NH	Interest in learning the night sky own a NextStar 5.
Ron Dragomir	Manchester NH	General Interest in Astronomy
Alain Breault	Hookset NH	
Wade Walker	New London NH	

Please welcome them to NHAS when you see them at meetings or coffeehouses. I have also started work on a membership package. It will contain vital information that all members typically ask for. It will also serve as a brochure that can be handed out at various public events.

✷ Alan Shirey

Deep Sky Object of the Month

Editor's Note: Fall excites everyone with the return of longer nights and better observing conditions. With that in mind, here is an article that Lew provided in the past to get everyone thinking.

What Am I Looking At? (A Brief Guide to Observing Deep-Sky Objects)

One of the things I enjoy most about astronomy, is actually being able to look through an eyepiece (or up from my lawn chair), to see the physical universe 'in action' for my very own self! Nothing is a keener or more satisfying thrill, than to have read about some amazing bit of physics or chemistry out in the vastness of space - and then to actually be able to glimpse its effects directly, under the gorgeous night sky.

Unfortunately, nebulae and galaxies are shy creatures - only sharing a faint glimmer of their true beauty with the naked-eye observer. Still, a trained eye and a patient mind can glean a great deal of the amazing nature of these denizens of deep space: "You can see a lot just by looking," as the saying goes...

To inspire (or irritate) others into trying to see some of these fascinating features for themselves, here is a summary list of the things that I try to look for (and to log) in different objects, when I'm at the eyepiece:

Multiple star - How many stars appear to be together? Is it just the primary (brightest or "A" star) and the comes ("B" or secondary star, pronounced "koh-meez")? Or is there a third-brightest companion ("C"), and even a fourth ("D")? What is the separation of each companion from the primary star? (How far apart are they in arcseconds, arcmins, or "fractions of your eyepiece field"?) What Position Angle does each make with the primary - PA tells a companion star's orientation in the field, with PA 0o meaning a companion lies due North of its primary, PA 90o meaning due East, etc. (Remember, you can always tell due north by "nudging" your telescope in the direction of Polaris: where ever you see new stars entering the field, that's north!) Lastly, do you see any colors or contrast effects between the primary and its brightest companions?

Variable star and "carbon star" - these are individual stars that are mostly interesting because of either their color, and/or the fact that their brightness can change. Estimating the star's magnitude (using one of the AAVSO's approved methods, or just by "kentucky winding") is always interesting. Estimating color or spectral type can be tougher - but appreciating the beauty of a bright red "blood drop" carbon star is easy! And always remember - understanding the physics of what you see, and therefore also of what you might be able to see, is a big part of the fun!

Planetary nebula - Can you see a central star or "core nebula" (central star is fuzzy)? Is the PN annular (darker or "empty" toward the center), and/or bipolar (two or more lobes or brighter areas are visible on opposing sides)? How many rings or outer shells can be glimpsed? (Remember, some PNe have an extremely faint outer halo which may extend to 2, 3 or even 4 times the published extent of the object!) Can you glimpse any internal structure within the inner or outer nebula - any brighter parts, irregularities, "striations", unusual darkenings, etc.? What Position Angle (see Multiple stars above) does each of these features make with the center of the nebula? Finally, how does the nebula as a whole, and each feature you have noted (above), respond to different nebular filters? (Every PN is different - a few kinds respond best to no filter, or a broad-band or "DeepSky" filter. Many more respond better to a narrower-band or "Ultra-High Contrast/UHC" filter. And probably most will respond best to an Oxygen-III ("OIII" or "O3") filter - try them all, including a "Hydrogen-Beta line" or "Hbeta" filter, or color filters if you have them! And remember, different filter responses mean different physics within that particular object... Amazing! :)

"Diffuse" or "Galactic" (non-planetary) nebula - Like Baskin-Robbins, these nebulae come in many flavors: emission, reflection, dark nebula, supernova remnant, "Wolf-Rayet" object, "proto-planetary" nebula, etc. Thanks to their radically different origins, and their differing mechanisms and wavelengths of illumination or excitation, each of these types responds differently to nebular filters (see Planetary nebula above), and will also show its own characteristic

features or structure. And of course, many of the most interesting GNe are a mix of two, three, or even four of these different "flavors"! For instance, it is not uncommon for one "object" to include an emission component, a reflection component, and also dark nebulae involved or in front of it. For these fascinating "smoosh-in" nebulae, you may be able to spend hours just exploring the way different regions and features of the GN respond to different kinds of filters and magnifications... Now THAT is good fun. :)

Galaxy - Can you see hints of the morphology (shape and gross features) of this galaxy: spiral, barred-spiral, Seyfert, spindle, elliptical, irregular? How many different gradations or "brightness steps" can you see in the galaxy? Is there a broader "outer halo"? A core - and maybe even a smaller "inner core"? A tiny or even "stellar" nucleus? If it has arms, how many can you untangle with your eye? Are they loose, or tightly wound around the core? Do they even form a complete outer or inner ring? Can you see dark features or mottling along the arms or in the core? Brighter spots or stellarings - or even tiny nebulae - in or near the visible extent of the galaxy? Remember, nebular filters - and even color filters - can sometimes be used to bring out unique features even in the brighter galaxies! What orientation (Position Angle) do each of the features you see make? Finally, does the galaxy have any companion galaxies, or does it seem to be interacting with any other nearby galaxy (interacters sometimes have a number in the "Arp" catalog of galaxies)? Is it part of a galaxy group - an informal "NGC group", or a compact "Hickson" or "Shakhbazian" group? And/or is it part of a larger galaxy cluster, like an "Abell cluster" (AGC)? What other tiny, faint nearby members of that group or cluster can you glimpse? Don't forget to try averted vision, field "jiggling", concentrated vision, and even deep breathing if it helps! :)

Globular star cluster - These are some of the brightest and prettiest - and also some of the faintest and most elusive deep-sky objects. The basics of logging a GC include: Is it tight (mostly core and little halo), or loose (a smaller core, and then many stragglers on the periphery)? Can you resolve its stars? Just at the edges, or right down to the center? (Some globulars, even a few brighter ones, will not resolve at any power, because their constituent stars are too faint to be individually visible!) How many stars would you estimate are resolvable total? (A trick for counting stars is to choose just one wedge or "quadrant" of the GC in the field, to count the stars in that quadrant, and then multiply by four!) Finally, does the GC show any unusual features - in particular, can you see any blank areas, "cuts", or indentations in the core of the cluster? (These may or may not be actual physical phenomena... Whether they are due to some trick of the eye in a crowded field, or to some obscure orbital dynamics, or possibly even to dark material in the GC core, I have never heard a convincing explanation - but a surprising number of GCs will show "dark features" like this, at one power or another, and at different contrasts. For example, sometimes these features are most visible when observing a GC in some twilight or moonlight... Who knew! :))

Open star cluster - I don't often turn my attention to open clusters - but they are by far the most numerous of the objects that appear bright in a small telescope... When logging an OC, how many stars do you estimate are definitely visible? How many are just on the edge of visibility? Are there any clumps of fainter, unresolved stars in or near the OC - and what Position Angle do they make with the cluster central area? Is this OC more or less rich (many bright stars), and more or less concentrated (stars close together)? Also, remember that OCs are sometimes associated or involved with a galactic nebula of one kind or another - can you see any hints of this nebula or nebulae? Finally, do you note any particularly pretty double stars, or strikingly colored stars in the cluster? (Many OCs of all types, for some reason I have never understood, seem to have a nice orange or red star near their center! And some clusters are populated mostly by very young, "blue-white" members, while others are clearly older clusters - because many of their stars are on the yellow or orange end of the range of spectral types.)

To learn more about deep-sky observing techniques, or about a particular deep-sky object, or to archive your own observing log of any object for posterity, visit the Internet Amateur Astronomers Catalog of Visual Deep Sky Observations (IAAC or 'netastrocatalog'), online at:
http://www.visualdeepsky.org

✶ Lew Gramer

YFOS Work Party (Continued)

Rich and Chase helped with trimming with the push mower while Herb had fun with the weed eater. .

Photo by Chase McNiss

Being our resident domain expert on painting, **Matt Amar** took charge of painting with assistance from Chase and Allan. Armed with hot water,

cleaning supplies, mops and brushes, **Jean Buckley** took charge of the warming hut operations and cleaned the floors, shelves, windows, and such.

Photo by Chase McNiss

There were whispers of the room needing a "woman's touch" and I must say that it looks beautiful after her efforts. She also took charge of cleaning and vacuuming the observatory. There were some trees obstructing parts of the warming hut bringing risk of premature wood rot, so Larry and Herb cut down a few trees in order to allow the Sun to dry the area better. Here, Herb is moving some the branches for Larry to drag and dispose of on a remote part of the property. During this job, I was also mentored on topics such as knot tying (for dragging branches on the tractor) and Hydrostatic drive. Larry offered for me to take the helm, but I respectfully declined.

Photo by Chase McNiss

Now, for those members who have participated in past work party sessions, you know that the event would not be complete without some rock harvesting. Once again this year, we were not denied and with come creativity and engineering on the fly (thanks Larry) we moved two large cement slabs outside the observatory.

Photo by Chase McNiss

We unhitched the trailer for Larry's tractor and hooked it up to Gardner's truck. Then, in the spirit of the Egyptians constructing the pyramids, we employed some simple physics to move the slabs and disposed them in the back part of the property. Also, being the long-term planner that Larry is, he graciously informed us all of potential rocks that will need to be moved next year. The property continues to settle along with some erosion resulting in this periodic need. The morning crew spent nearly four hours onsite, which was very productive. Before leaving, we had a nice break and chatted for a bit while relaxing.

Photo by Chase McNiss

Here, I believe that Gardner and Herb were discussing countermeasures for rock harvesting next year. ☺ I know that Chase stayed for several hours in the afternoon finishing the 2nd mowing with the push mower to make the site more aesthetically pleasing. The John Deere was used while the grass was wet so this step resulted in a much cleaner look. Thanks to everyone who participated. We got a lot of necessary work completed.

✷ Rich DeMidio

The Bottom Line

Starting Balance	$2599.28 (checking acct)
Deposits/Credits	$78.24 (acct int, moose lodge)
A/P	$46.67 (Insurance)
Net Acct Balance	$2630.85
Cash Balance	+ Petty cash drawer (195.25) $2826.10
Membership	140
Donations	None

✷ Chase McNiss

Looking Back at Last Month

Opening Last month's meeting agenda was deviated in order to allow NHAS members to attend John Blackwell's public presentation at CMP regarding his research with the Spitzer Space Telescope. The presentation started at 7PM and NHAS conducted a short business meeting afterwards. Thanks to **Paul Winalski** for coordinating last month's meeting while Matt and John were unable to attend.

Scope of the Month Scope of the month was the SV66 by Stellarview.

Public Observing. There were many successful summer events. Several fall events are being planned.

Book of the Month, **None**

Committees. Photo Club **Gardner Gerry** little activity due to weather at YFOS. Fall events being planned. Web: No report.. ATMs: **Larry Lopez** Nothing new to report. He reminded everyone that we have some active members in telescope making, but no projects going on. If anyone needs help, throw out the issue and folks will help. YFOS **Larry Lopez** reported about the plans for an upcoming work party. The mosquito magnet performed poorly this year but since it is now fall, it has been placed in storage. Membership: **Alan Shirey** No report

Miscellaneous. **Paul Winalski** reported on sun spot cycle and some variable stars (Chi Cygni was at max early august). **Dave McDonald** from CMP briefed the audience about an upcoming event at CMP on September 30th. He requested help for solar viewing from 1 to 5PM on that day. **Evening Program**. NHAS member and board member **John Blackwell** did a public presentation on his work with the Spitzer Space Telescope.

Photo by Chase McNiss

John is working with scientists and other teachers on a project using the Spitzer Space Telescope (IR astronomy). The scope itself is in orbit and is cooled to be very cold to obtain better images.

Photo provided by John Blackwell

The goal is to measure the star formation rates in three different galaxy clusters each at different red shifts, thus distances away and thus also age. They are looking to see if there was a time of maximum star formation in the universe's history, and if nature vs. nurture is the cause for what we see in galaxy shapes and types. Another aspect of the project relates to the public outreach. Much of this work will be available to educational institutions for teaching and for the promotion of Astronomy.

Photo provided by John Blackwell

Students can get involved with the project while teachers can use it for developing thinking and questioning skills. It also provides a great forum for educating students on IR Astronomy and how science in general performs research. Additional public outreach includes events at planetariums (i.e. this presentation), teaching workshops both at home and at conventions, presentations to amateur astronomers, and articles in teaching journals. Further information about this project can be obtained at the following. The Main Spitzer Space Telescope Site: http://www.spitzer.caltech.edu/
Cool Cosmos: a Site for Educators: http://coolcosmos.ipac.caltech.edu/
Software to Grab Data: http://ssc.spitzer.caltech.edu/propkit/spot/
Software to See Data, ImageJ: http://rsb.info.nih.gov/ij/

✷ Article written by Rich DeMidio with material provided by John Blackwell

DEADLINE Oct2006 Issue: 5 PM 16Oct
E-mail articles to the Editor.
CHANGE OF ADDRESS – Notify the Treasurer of changes to postal or e-mail address.

How to Join N.H.A.S.

Write to us:
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Manchester, NH 03108-5823
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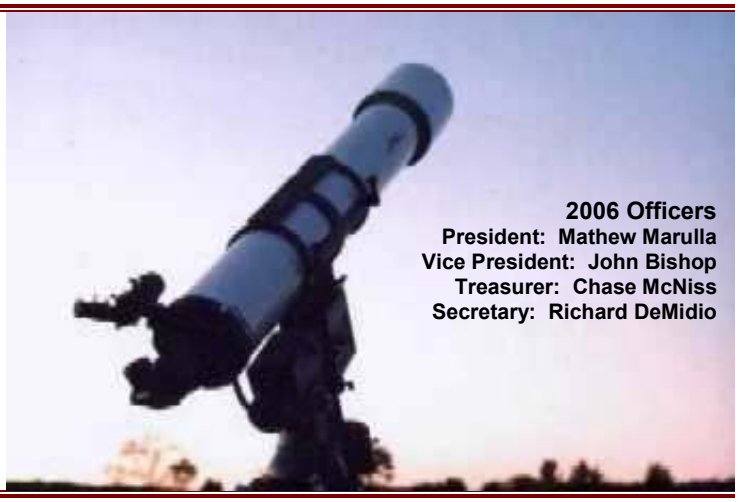
Send E-mail to:
info@nhastro.com

Use our web site:
http://www.nhastro.com/

This month's contributors:
Chase McNiss, Bob Sletten, Lew Gramer, Gardner Gerry, Rich DeMidio, Paul Winalski, Matt Amar, Herb Bubert, John Blackwell, Barbara O'Connell



2006 Officers
President: Mathew Marulla
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Manchester, NH 03108-5823

Sept 15th - TBA

Event	Date	Time	Location
Business Meeting	Sep 15	7:30 pm	St. Anselms College
Coffee House	Sep 22	Dusk	YFOS
CMP Skywatch	Oct 6	Dusk	CMP
Business Meeting	Oct 20	7:30 pm	CMP
Coffee House	Oct 27	Dusk	YFOS
CMP Skywatch	Nov 3	Dusk	CMP
Business Meeting	Nov 17	7:30 pm	St. Anselms College
Coffee House	Nov 24	Dusk	YFOS