



and Observatory Plate Project

Newsletter of the New Hampshire Astronomical Society

Vol. 2006 No. 2

"All the news that fits in print"

February 2006

"Freeze your Buns"

President's Message

For some reason, most of your club officers are finding themselves incredibly busy with work (yes, actual paying jobs) this time of year, so despite the best efforts of Rich and myself to get the newsletter and this column out on time, we are, once again, a bit tardy! So, rather than tell you what we *will be* discussing at the meeting, I'll tell you, in brief, what we *did* discuss. First, I think we have a new public observing chair – **Mr. Marc Stowbridge**. He lives in North Conway, so his main responsibility will be communicating and coordinating with the various schools and other organizations, scheduling events, and updating the event calendar. The rest of the "regulars" will have to take up any slack in running the actual events (Joe, Paul, Gardner, Mike, etc. – I know you are up to the task!). Next, we had an open discussion on the upcoming Messier Marathon. We are scheduled for the night of March 24/25th, with a rain date of March 31st/April 1st. As usual, the location will be Larry's house; directions will be posted in the member's only section of the web site in the near future. Finally, we have been running a proxy vote for a change to the club constitution. This change will allow us to conduct votes like this online in the future. Of course, the goal is to make voting quicker and easier, and this exercise has **really** pointed out the need! After two months, we have collected a total of 25 votes out of the club's current membership of 102. We need 51 votes for a quorum, or roughly twice what we have collected so far! The proxy form can be found on the web site – it's page six of the December 2005 Newsletter. So PLEASE, print it

out, fill it out, and mail it in to the address on the last page. That's it 'til next month!

* Matthew Marulla
NHAS President 2006

Highlights for this Month

NHAS member **Ed Los** is featured this month. Read about it on [Page 2](#). **Lew Gramer** provides another great report on double star observations on [Page 3](#). NHAS Member **Dan ST. Hilaire** was also recognized recently. Read about it on [Page 5](#)

* Rich DeMidio
NHAS Secretary 2006

Freeze your Buns Event

We finally got descent weather for our annual event at YFOS. I got a hold of **Gardner Gerry** and we drove up together. Obby had to share the minivan with Gardner's equipment so there was concern about package space.



Photo by Rich DeMidio

So, just to play it safe I took a picture just in case I needed guidance in repacking the car later that morning ☺ Much to our surprise, Gardner and I even beat Nils to the site. In fact, Chase pulled in about 2 minutes just after us leaving Nils in the dust ☺ I was happy finding the Horsehead Nebula with Obby under not so great conditions. Can't wait for better skies

to try again. We all had a fabulous time observing, eating, and sharing stories.

* Rich DeMidio

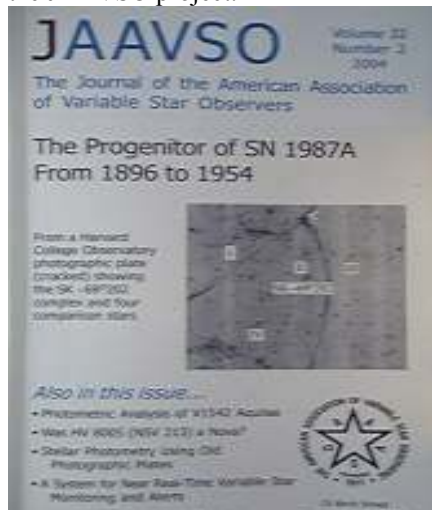
My "winter" car is no more, and the replacement hadn't shown up yet, so I was lucky to get a ride from **Paul Winalski** to YFOS for the "Freeze Your Buns" event on Friday the 27th of January. I got there about 5:30pm, and was early enough to use the club's 16-inch dob. It was good I was early because there was a huge turnout: both sides of the parking lot were full of cars and there were lots of telescopes. Skies were dark -- mag 5 to my middle-aged eyes -- but transparency was only fair and seeing was poor. It was a bad night for Saturn or Mars but it was a very good night for faint fuzzies! I used my Messier Marathon notebooks and practiced finding some of the less-famous M-objects, like M77 and M74. Even on a dark night with a 16-inch those two were hard to find and dim when I found them. I had brought along my eyepiece case and was mostly using my GSO 42-mm. It's an Erfle with a 60-plus degree apparent field, and has a bit of smearing at the edges of the field: but it was less than fifty dollars and it's great for finding things, as it gives you a huge 1.5-degree true field of view. It's even better in my f/10.4 scope, as there's no edge distortion there. There's a whole world of "dim" beyond M77 and M74. Nils showed me the Horsehead Nebula (B33) in his 12-inch, and I later looked at it in the 16. The horse's head itself is a dark nebula silhouetted against a light nebula (IC 434). However, that light nebula is not very bright, and you need an H-beta filter to even see it against the sky. (Continued on [Page 5](#))

Observatory Plate Project

Editor's Note: Unless otherwise noted, Edward J. Los provided all pictures in this article. NHAS Member **Edward J. Los** recently took a sabbatical to participate in the "The Harvard College Observatory Plate Scanner Project". The project is funded by the National Science Foundation and consists of an ambitious effort to digitize and preserve many of the glass plates taken over the last 100 years. The key driver is really preservation since some of the plates have deteriorated over time with some actually damaged. The project endeavors digitization to support the scientific analysis of several Astronomy related topics. Harvard maintains a vault containing the original plates from several telescopes around the world. The following picture shows the



Metcalf 10" Triplet at Boyden Observatory in South Africa. This telescope began operation in 1915 from Cambridge and was moved to Bloemfontain in 1927. From 1927 to 1955 it produced 30,794 exposures for a "lifetime" total of 40,897 exposures. Ed became interested in this related to the JAAVSO project.



Their desire is to compare recent objects to the way they appeared many decades ago. As a recent example, the supernova in the great Magellanic cloud was compared to the plates taken back in the late 1800 and early 1900 to determine if the supernova was actually looking different. Thus, the real scientific value in digitizing is so scientists can compare the past sky to the present. That is where this effort focuses; to get all the plates online for the Astronomy community to share. Harvard has over 600,000 plates to scan in. Ed described the challenge is how to get all this scanned in our lifetime as the average plate takes over ten minutes to scan with existing equipment. Thus, a major focus for this iteration of the project is to upgrade hardware to reduce that timeframe. One of the early tasks was to obtain a CCD camera capable of taking very fast pictures of a plate.



The camera has 4096 x 4096 pixels, 11 microns square with 12-bit accuracy at 2300 dpi. Donated by Photon Dynamics. Readout is via the CameraLink interface at close 1.8 Gbit/sec. The 32MB image is read out in 140 milliseconds. The lens is a double telecentric lens, which preserves 1:1 scaling even when out of focus. The camera is mounted on a screw drive stage, which can set focus accurately to 5 microns. The camera and lens assembly is approximately 18 inches long. The next challenge was to

come up with a machine that could hold the plates, put them in precise position, start the camera, and move on to the next set of plates. Of course, without damaging any of them in the process. The team looked at several machines and came up with a final configuration. Here is a picture of the machine with the CCD camera in action with plate MF20571 of Pavo taken on June 11, 1935



Returning to the science, the goal is photometry in that scientists want the magnitude of stars on the plate versus their positioning. Most of the plates are 8 x 10 and require 30 exposures per plate. They also have the original log books and have an army of people typing entries into their system. The website contains much more about this. Ed's involvement is in the control software for the scanner. The output of the scanner is in Fits File Format (FFF).



He wrote a mosaic program that puts all the pictures together from the thirty 8x10 pictures. Here is one such example of a3690.



This is a very exciting project and scientists from many different areas of Astronomy are interested as it can provide them with a lot of new data. This project is ongoing and will take several years but progress has been excellent and the NSF is anticipated to provide additional funding for full-scale development. There is much more that can be learned about this topic at the following web sites:

<http://www.lizardhollow.net/PDPP.htm>

<http://tdc-www.harvard.edu/plates>

NHAS wishes to thank **Ed Los** for this intriguing presentation and q/a session.



Photo by Chase McNiss

We hope that he will provide ongoing updates to us as the project proceeds.

* Article written by Rich DeMidio from materials provided by Edward J. Los.

Astro Photons

The NHAS Photo Committee will be meeting on February 18th, with the meeting to start at 3:00 PM. The location of the meeting will depend on the weather. If the weather is favorable, the group will meet at YFOS where we will work with the C-14 and attempt to do some group imaging. If the SkyClock shows unfavorable conditions for imaging then we will meet at the Nashua Library in the Northeast room in the basement. All NHAS members are invited. Also of note, **Gardner Gerry** will be taking my place as one of the Co-chairs for the Photo Committee. Join me in welcoming Gardner into the position as well as thanking him for his continued support of the club.



Herb Bubert refined an earlier shot of M42 after a Photo Committee Meeting where Chase suggested he combine two differently processed images of Orion to show more red in the nebula. Here is the result.

* Chase McNiss

Radio Astronomy



Antenna by Bob Sletton

At the last meeting, **Bob Sletton** provided a report and slide picture show of their VBLA Tour field trip. There are ten VBLAs across the country all linked up together to collect data. The idea is that the scope is virtually 5,000 miles wide. The site in NH is one of the points. All of the scopes are engineering exactly to extract the data in the same way. Thus, there is a vast amount of collection points. This also means that they must have a precise clock so each site is synchronized with the Naval atomic clock. They went out to the dish and climbed inside to the outside of the dish. The tour guides were very good about looking, touching, and asking tons of questions. The scope can collect data in a very large spectrum from 320mhz to 86ghz. The antennas can be moved independently so the dish does not have moved each time. Can we go back? Yes, we can just need to make arrangements. They like 8am – 5pm. There is a list of what they are going to image for about one year out. Matt will put the pictures on the website.

Deep Sky Object of the Month

Editor's Note: I picked these for our double star enthusiasts.

TWO observations...

Object(s): Castor (alpha Gem)

Class: A1V, A2V

Constellation: Gem

Data: mag 1.9, 2.9 size 3.9" PA 72o (catalog)

Position: RA 07:35 DEC +31:53

Description:

This famous visual binary is an easy split at almost any power in the SCT: The separation tonight was estimated at 3" (not bad), at PA 50o (pretty bad!) At a higher magnification (340x), the comes was estimated at just under one magnitude fainter than the primary (very good), and had a distinct lavender-blue color in contrast with the white primary, as independently confirmed by a fellow observer.

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Object(s): Regulus (alpha Leo)

Class: B8, G

Constellation: Leo

Data: mag 1.4, 7.7, 13.2 size 177" PA 307o (catalog)

Position: RA 10:08 DEC +11:58

Description:

The Regulus multiple system is very pretty at any telescopic magnification. Although it appears as a single star with no companions in the finder, it is easily split at the lowest powers available in the SCT. The nearest of the "companion" stars is about mag. 8, separated by just under 3' (quite a good estimate for a beginner like me), at what appeared to me to be PA 250o (not

quite as good). At higher power (340x), a "C" companion, mag 11 or 12, was apparent to direct vision, separated from comes "B" by about 30" and from primary Regulus by perhaps 4' at PA 200o (not bad). Finally, a possible mag. 10-11 "D" companion was noted at over 5' separation, PA 270o.

Interestingly, all stars in the group were colorless except Regulus itself - which appeared distinctly more yellowish the higher the power! A strange contrast effect!

* Lew Gramer

The Bottom Line

Starting Balance: \$3872.08
December Deposits: \$305.95
 (Excess petty cash, Membership dues, interest)
December A/P: \$120.00
 (Plowing)
Net Balance: \$4058.03 Cash
Balance: \$4058.03
Membership: 102
New members:
Siobahn Evans – Meade ETX90EC-
 desire to learn how to use scope
Gregory Gough – working at
 planetarium
Theron Miller – Orion ED80, 10”
 LX200 GPS + CCD
Stanley Herman – C 9.25
Donations: None
Comments: None

* Chase McNiss

Looking Back at Last Month

Opening Matthew Marulla Matt described a new section to the monthly meeting called “**In the Sky**”. It will consist of a summary of happenings and events, which he will provide a briefing on. Past examples include recent photos from Hubble and updates on other projects. Much like he has provided the club in the past. The scope and book of the month will continue to have time slots if members have examples, but is no longer mandatory.



Photo by Chase McNiss

One humorous note was when Herb rattled off the password to the NHAS member only website without hesitation in response to a member's question ☺ Finally, Matt also provided copies of the proxies published at the last meeting for handing out to get signatures.

Scope of the Month None.

Public Observing. Joe Derek talked about the Night Sky Network. Anyone interested in public observing can use this as a reference for ideas and such.

We are looking at someone who can represent us as would be a good thing for the new public observing chairperson to take on. Joe used one of their ideas at a recent public observing session call the passport.



Photo by Chase McNiss

The folks who publish want feedback so we need someone who is willing to take this on. Matt commented that there is a box of materials for the public observing coordinator and that this package should go into. Rich commented on an request received to perform a public sky watch and Matt described one as well related to the boy scouts. Matt is coordinating these until a new coordinator is announced.

Book of the Month. Larry Leforge reported on the book “*The Night Sky Observers Guide*”. It is actually four books in total by season ordered by constellation. They provide a large map to identify the bright stars in the constellation but also have little maps that break down the large constellation into zoomed points of interest.



Photo by Gardner Gerry

The sketches are very accurate as well so you can match up as you observe. One question involved whether the book withstands the outdoors and specifically dew. Although it can, several members recommend copying the page for an outdoor session. Some folks commented they would laminate them as well. The Descriptions are also based on size of the scope telling you what you can expect to see. It also has some double star charts. Price is about \$34.00 each.

Committees. **Photo Club Chase McNiss** reiterated what was in the newsletter and commented that we was looking to give up the position to focus on the important job as Treasurer.. NHAS website. **Web: Matthew Marulla** reported that all officer contacts on the website now. He just needs a few pictures for some officers and board members. Working on forum for public observing (read only) for directions to all sites we have done. Chase has a CD of NHAS events going back into the 90's, and Matt wants to upload them gradually. Online calendar has all events but not all the public skywatch events yet. Need to reconcile with entries in Ed's black book. **ATMs: Larry Lopez** reported no activity in the last month and reiterated that ATM exists to help folks with questions and projects related to scopes. **YFOS.** **Larry Lopez** reported that we have the part for the heater and will be installed during the work party.



Photo by Chase McNiss

YFOS could go into mud season early due to the mild weather. Freeze your buns is the next session. **Membership: Bob Sletten** (acting) no new report. . . **Other Topics.** **Matthew Marulla** showed the video of the Spica occultation of the moon on Christmas day that he and **Mike Townsend** did. Also mentioned the Great Cassiopeia Nebula that has been captured by telescopes. The only issue is that it will 100K years from now we would be able to see it ☺ At that time, we will see it

as we enjoy the great Orion Nebula today. Read more about this at the Harvard Smithsonian website http://www.researchmatters.harvard.edu/story.php?article_id=1018§ion=space

Evening Program. Please refer to the feature article.

* Rich DeMidio

News Shorts

Congrats to Dan St. Hilaire, charter member and former President of NHAS for being selected as one of New Hampshire's 40 Under 40. Well Done Dan!

* Bert J. Bingel

Dan apparently was recognized by The Union Leader as one New Hampshire's "40 Under 40" (recognizing Dan as one of New Hampshire's 40 most influential people under the age of 40).

This is the meaning of the phrase that Bert mentioned.

* Larry Lopez

Dan did a nice remembrance of Christa McAuliffe Saturday evening on the NBC nightly (national!) news on the twentieth anniversary of the Challenger accident. More Congrats, Dan.

* Marion Hochuli

Member Blogs

Editor's Note: This section contains some blogs from the member's area on the website. Wow, clear skies! They have been few and far between as of late so even with a waxing gibbous moon bleaching out the night sky it was still nice to be able to get a fix in. I started my observing Wednesday night with the moon, figured it's there so why not? Anyway, used a 25mm (40X) utilizing an adjustable polarizing filter turned down about halfway which would be about 20% transmission. Though I'm not well versed with the Moon's terrain nomenclature I just love staring at that orbiting rock. I'm not sure if this makes sense but I always get lost in its stark deafening silence. From there it was to Orion, Betelgeuse was fiery orange and M42/43 was viewing nicely but not spectacular with the moon being so close; open cluster NGC 1981 was as pleasing as always. From Orion I bounced over to Saturn. As Paul W. noted it's currently visiting

with the Beehive cluster. I was able to get both in the same FOV quite a stunning sight but I really wished I had a wider field eyepiece. From there, I focused on Saturn. Highest mag for this night was with a 12.5mm (80X) anything higher was worthless since I was viewing over my roof and there was a bit of heat disturbance but I was able to make out the Cassini Division and 3 to 4 moons along with 3 additional "guest moons" one of these stars in particular appeared closer to Saturn than Titan but off to Saturn's north. From there I decided to cover my scope and pick it up for an early morning session. 4:45 AM and hello M13! It's been awhile welcome back to my eyes! M57 is this summer? no it's 15'F and you're racing the sun you idiot! Anyway, on to Jupiter. Despite fighting with my neighbors chimney (for awhile I knew every time his heat kicked on) I was finally rewarded with some of the best views to date I've had of this giant. Moons lined up 3 & 1 with good detail of Jupiter's bands. I was able to view with my 5.1mm (195X) as sky conditions had improved. From there I focused on Venus which is shining as a beautiful thin crescent. I left my scope tracking while I got my youngest ready for school and myself ready for work and periodically went out for a peek. I took my last look with my son at about 7:45 AM, Sun fully up and Venus still showing nice. All in all a great way to start the day.

* Matt Amar

Freeze your Bun's Continued

So the bottom line is that you're looking for a black "hook" against a black background. Averted vision and tapping the tube did the trick, and I got several flashes of the little horse's head. IC 434 was a vertical streak and the head was a downward-turning hook on the right side of the streak, two degrees across in the eyepiece view. I'm amazed I saw it at all! Another highlight was seeing the planetary NGC 2438 in M46 in Obby. It's a "red" planetary -- photographs show it as red rather than blue- green -- but visually it's the usual greenish-grey. It was a tiny version of the "Ring" in Obby. That's an example of what I really appreciate about YFOS events: you get

to see neat things because other people are generous with their time and their telescopes. Sky haze got worse and by 11:00 it was clear that observing was pointless, so we packed up. But until then it was a great night, with good viewing and good company.

* John Bishop

When I arrived at YFOS at about 5:30 PM, the field was already crowded with telescopes. I set up Mr. T. the 14" TScope and went to the warming hut to have supper and wait for the mirror to cool down. Sky conditions were good (especially compared to what we've had lately) but not ideal. Some high haze and turbulence in the upper atmosphere was interfering with seeing all night, although there were some good steady patches. It was, however, very dark, and very clear in the lower atmosphere--so clear that green laser pointers weren't working (not enough haze to see the beam). Good conditions for faint fuzzies, not so good for double stars and planets. The temperature was high enough for this to be more "frost your buns over" rather than "freeze your buns off", and thankfully there was almost no wind, except for a couple of bone-chilling gusts that reminded you it was time to go to the warming hut and get more coffee. The whole field of cabin fever-crazed astronomers paused at 6:00 to watch a predicted mag -2 Iridium flare cross the void between Eridanus and Cetus. It didn't disappoint. Saturn was wobbling too much (atmospheric turbulence) to get good high-power views, except for the occasional second or two at a time where the atmosphere settled down. But I was able to get glimpses of banding on the planet and detail in the rings. I got four of the six moons--Enceladus and Mimas were too close to the planet to be seen under these conditions. Saturn is currently sitting just west of Praesepe (M44) in Cancer, and they can be seen together in a wide-field, low-power eyepiece. M42 and the rest of the nebulous regions of Orion's belt were spectacular. I was only able to see four of the Trapezium, however, due to background haze fuzzing out the star images. The Flame Nebula near Zeta Orionis was showing very well, which encouraged Rich and Nils to try for the Horsehead Nebula. Nils bagged it in his

12-1/2", Rich followed suit with Obby, and I was able to locate it in Mr. T. However, I personally can't call the Horsehead itself a sure observation in any of the three scopes. With H-beta filter in place, the line of light/dark nebulosity was clearly visible, and I could just glimpse a protruberance that must be the Horsehead. I think I might have done better if I'd let my eyes dark-adapt better. Zeta Orionis's dim companion star was there and fairly obvious, now that I know enough to look for it. I was able to bag all five components of Sigma Orionis, once Mike told me that the primary was itself a close double. Along with the nearby (3 arc minutes) Struve 761 triple star, it forms a fine multiple-star system in low- to mid-power views. M31 showed good dust lanes in the spiral arms. There was enough contrast on M1 (Crab Nebula) to make out its peculiar oblong shape. M35 was showing very well, and its dim companion cluster NGC 2158 benefited from the dark skies. I was able to get my best view of it yet, including partial resolution. Before it's never been more than just a hazy patch. I observed the Clown-Face Nebula for the first time and was rewarded by a fine, circular disk of nebulosity around the central star. I hadn't realized this object showed so well visually, or I'd have tried for it before. Another new planetary nebula find for me was the tiny planetary in M46. This one looks like a dim miniature of the Ring Nebula M57. On to the Christmas Tree cluster NGC 2264 in Monoceros, always a delight. Hubble's Variable Nebula (NGC 2261) next door seemed both dimmer and more uniformly lit than it did last spring when I last observed it. Back then, it was a definite two-pronged "Nike swoosh". Tonight it was a comet-shaped uniformly glowing patch of dim light. I located the open cluster NGC 2244 without difficulty--it is an obvious object in the 9x50 spotting scope. The surrounding Rosette Nebula was barely visible naked-eye, and clearly visible (though still dim and subtle) with a O-III filter in place. Seeing the Rosette nebulosity was another observing first for me. In the very dark skies, and with Lepus culminating, R Leporis was a pretty easy find. It's much dimmer than it was last spring but just as

blatantly red as ever. I also went after UU Geminorum, which at mag 7 is one of the brighter carbon stars. It's a pretty easy find, located midway on a line between Castor and Capella. It's more of a peculiar dark orange tint than red, sort of the color of a blood orange. My other carbon star for the evening was WZ Cassiopeiae, a mag 7-1/2-10 variable located a couple of degrees to the north of Beta CAS. It is also the double star Otto Struve Supplement #254. The companion, which at mag 8, becomes the "primary" when WZ is at minimum. is spectral class A. The two form a delightful color contrast pair, putting Albireo to shame. Tonight WZ was the brighter of the two. WZ appears as deepest blood-red, while in contrast the companion is a fine azure blue. Definitely a "wow" object. I revisited NGC 404, the "Ghost of Mirach", located 6' northeast of Beta Andromedae. It was just barely visible with Mirach still in the field, and very obvious with Mirach positioned just outside the field. It's definitely the easiest galaxy to find in the whole Northern sky. M81/M82 and that annoying NGC that I keep finding by mistake were all fairly high in the northern sky. M82 was showing excellent detail at higher powers. Around 11 PM background haze started moving in, and at 11:30 PM I decided to pack it in. But it was a delightful evening, both socially and observationally.

* Paul Winalski

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This month's contributors:

Mathew Marulla, Chase McNiss, Bob Sletten, Lew Gramer, John Bishop, Paul Winalski,, Larry Lopez, Matt Amar, Bert Bingel, Marion Hochuli , Rich DeMidio

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NHAS Upcoming Events

Event	Date	Time	Location
Coffee House	Feb 24	Dusk	YFOS
CMP Skywatch	Mar 3	7:00 pm	Planetarium Concord, NH
Mar Business Meeting	Mar 17	7:30 pm	St Anslem's (Mini-Messier Marathon by Ed Ting)
Messier Marathon	Mar 24	Dusk	Lopez Residence, YFOS Alternate Location
Messier Marathon (Backup)	Mar 25	Dusk	Lopez Residence (if needed), YFOS Alternate Location
Coffee House	Mar 31	Dusk	YFOS
CMP Skywatch	Apr 7	7:00 pm	Planetarium Concord, NH
Apr Business Meeting	Apr 21	7:30 pm	Planetarium Concord, NH