



## and Summer Vacation in Arizona

Newsletter of the New Hampshire Astronomical Society

Vol. 2006 No. 10

"All the news that fits in print"

October 2006

## CMP Solar Sky watch

### President's Message

\* Matthew Marulla  
NHAS President 2006

### Highlights for this Month

NHAS Vice President and ongoing contributor **John Bishop** provides a report on their family vacation out west on Page 2. There is also a lot of buzz regarding the upcoming Mercury Transit with CMP planning an event. Read about it on Page 4

\* Rich DeMidio  
NHAS Secretary 2006

### Officer Nominations

Nominations are starting for officers to serve in 2007. Our current president and vice president retire due to term limits. One board member also retires by rotation. In addition, after two years of being secretary for NHAS, I have decided not to seek re-election. I have enjoyed the opportunity to serve and hopefully brought some new ideas while preserving the consistency from my predecessor. I am very appreciative of the membership contributions and support over my term. I will plan on helping the new secretary as needed during the transition. Thank you everyone for the opportunity to serve.

\* Rich DeMidio  
NHAS Secretary 2006

### Public Observing

As I get settled into this role, one observation regards the confirmation that a sky watch will be covered by an appropriate number of members. I'd like to propose as a process that people send an email to the list stating that they are going, as soon as they can decide. This way, it might help others decide about going. The ASNNE folks

have teams assigned for events. This might not be a bad idea for us, particularly if they were constructed geographically. Some folks have to drive 90 miles to make some sky watches, and that's a lot! If people could divide the events up, focusing on those near to home and making special trips for BIG events, that might make better use of our enthusiasm. I don't want to burn anyone out. Furthermore, if I am not at an event, would someone elect themselves to email me about how it went and who was there? Copying the secretary would also be good for tracking events for publication in the newsletter. I have also produced with help of many a flyer and star party etiquette documents, which get handed out, at our public events. They are both one page and providing information about NHAS and how to find more information. Finally, several events are planned for October and reports on those will follow.

\* Marc Stowbridge

### CMP Solar Sky watch

On September 30<sup>th</sup>, CMP was celebrated some recent additions to the facility and NHAS was asked to help by providing some solar observing.



Paul Winalski and Gardner Gerry –  
photo by Chase McNiss

Several NHAS members setup scopes for solar observing. **Paul Winalski** reported that September 30<sup>th</sup> was my pleasure! The weather cooperated; we got a couple of spectacular prominences to show off in H-Alpha, as well as a decent sunspot group (for rock-bottom sunspot minimum) in visual. I personally enjoyed the wild animal exhibit, while taking a break during cloudy patches.



Photo by Dave McDonald

NHAS was well represented in public education with many scopes setup for observing. Above, **Chase McNiss** interacts with one of the many folks who attended the event. (continued on Page 5)

## Summer Vacation in Arizona

My summer vacation this year was a family trip to Arizona in August. Some of the trip was astronomically interesting and worth reporting here:

- Sedona
- Lowell Observatory
- Meteor Crater

### Sedona

Sedona is a small town (seventeen thousand residents, extended by thousands more tourists in the summer, <http://www.visitsedona.com> in the "Red Rock" area of Arizona. It's at 4300 feet in semi-desert, with beautiful cliffs of eroded red sandstone visible from everywhere in town. It's more "New Age" than "Wild West" with shops selling crystals, crowds of spiritual advisors and communes run by people who've renamed themselves to things like "CiPriAnckA" (yes, the embedded capital letters were in the brochure). In and around Sedona are several "vortexes", supposedly locations where positive earth energies are available. I visited one, and I did feel happy. But then I was in a beautiful place on a nice day during a vacation, so my mood is easily explained by other factors!

Sedona enforces a building code which is meant to make buildings fit in with the landscape and the history of the area. Even the local McDonald's looks like an adobe building and its arches are a subdued turquoise rather than bright yellow. Part of the code is a well-enforced light-control policy. At night, Sedona is dark except where light is needed: you can see the sidewalks but not distant buildings! This means that you only need to avoid local lights to get a dark sky.

Two of the nights I was in Sedona, the skies were very clear, with good transparency but poor seeing. I walked a couple of hundred feet down a local road away from the resort I was staying at, so that some scrubby pines blocked my view of passing cars and set up my Orion "Short-Tube 80" refractor. From this location inside the town, I could

see the Milky Way from one horizon to another, as bright and sharp as I've ever seen it. The dark lanes and star clouds were distinct all the way to the horizon. In the telescope I could see the little dark nebulae between Sagittarius and Scorpius against the background of the Milky Way. In these skies, the little 80mm refractor was pulling in objects, which in New Hampshire would have required a much bigger telescope.

Sedona is much further south than Nashua; it was nice to see all of Scorpius' tail as well as M6.

I think the biggest difference between dark skies in New Hampshire and dark skies in Arizona is the greater transparency resulting from greater altitude and lower humidity. Unluckily, the rest of the time I was in Arizona the nights were cloudy (August is the "monsoon" season, when they get all the year's rain). I want to go back during a dryer time of year!

### Lowell Observatory

Lowell Observatory is just up the hill from downtown Flagstaff <http://www.lowell.edu>. It's easy to find and they have a museum, a shop and a tour. There's a small fee (\$5 for adults). The tour takes you to two domes and a "rotunda". One dome is for the astrophotography, which took the photographs that revealed Pluto, and the other is for the 24-inch Alvin Clark refractor, which Lowell used to see the canals of Mars. In the rotunda you can see a beautiful six-inch Clark and view the actual plates used to find Pluto through the actual blink comparator! They have sky-watches there in the evenings, but I didn't go (due to a massive rainstorm which flooded downtown Flagstaff and its associated clouds).

I was looking forward to seeing the Clark. It's an f/16 (32 feet long!) and is one of the grand old achromat refractors. It's still in use as for education but not for research. It has several finders, as you might expect given the small true field of view (remember my talk on "Optimal Finder Theory"?). There's a Telrad to point with, a 9x50 finder (I didn't see the brand) and a six-inch Clark refractor for

fine-tuning. An ugly big metal cone is another co-mounted refractor, but the guide didn't know what it was.

Like most of the old serious refractors, there's a lot more than just finders for the operator to work with. There were no GOTO-s in those days. The telescope has a clock drive and giant setting circles. There is a small telescope at the eyepiece end which is focused on what I think is the Right Ascension circle. There are wheels, which turn rods running up the scope: some do fine motions. I suspect (but do not know) that the others manipulate a diaphragm at the objective end (used to stop down the lens) or adjust the collimation of the objective lens.

The story behind stopping down the lens is that it increases the f-number and thus reduces chromatic aberration. But if you stop it down too much, the light "cone" from the telescope is a narrow parallel bundle. The blood vessels above your retina will cast shadows on the retina itself and you'll see lines. One of the hypotheses for why Lowell saw canals on Mars (and on Venus, too, apparently!) is that he used to stop down the 24-inch to as small an aperture as five inches!

The great disappointment was that our guide wasn't actually interested in astronomy or all that well prepared. She had the initial patter memorized, and so I learned a good deal about the history and construction of the observatory. But she had no knowledge behind the patter and couldn't answer any of my questions (such as "what is the f-number of the Clark telescope?" or "Ok, if you don't know the f-number, what's the length?"), so I didn't get to find out all the technical stuff about the big refractor.

Lowell himself is buried next to the Clark dome, in a tiny domed mausoleum. I did wonder whether he had a viewing window, as the dome is dark glass. That would be creepy but appropriate. I suspect not, as his widow built the tomb (spending \$40,000 – an immense sum at the time: for comparison, the 24-inch cost only \$20,000!)

Meteor Crater

I had wanted to go to Meteor Crater (sometimes called "Barringer Meteor Crater", <http://www.meteorcrater.com>) for many years. There are lots of meteor impact scars on this planet, but few recent ones, few large ones and few that are easy to visit. This is the biggest recent accessible crater. I was there for three hours; it's definitely worth a visit. If you go, plan to spend some time in their good little museum and definitely sign up for the (free) hour-long walking tour. The crater is about fifty thousand years old and about a mile across. The meteor itself was about thirty meters in diameter and was mostly vaporized in the impact. Enough pieces have been found to know that it was a lump of dense nickel-iron. A 60-kilo lump is available for inspection. Because the crater is in the desert, it hasn't eroded very much and it isn't covered in what rock-loving geologists call "that yucky green stuff". You can easily see the overturned strata, the soft rocks shocked to fine powder and the ejecta blanket. From the crater rim you can see 40 miles back to the San Francisco Peaks near Flagstaff and 60 miles north to the Hopi mesas. The crater is privately owned and thus expensive to visit (\$23 per adult!), but the facilities are good. They include a shop a Subway sandwich shop. Despite the fact that they have a captive customer base and they're miles from any competitors, the Subway prices are the same as in the Subway in Flagstaff. The rest of our Arizona trip was interesting as well, but less astronomical. I'll just mention that we saw two natural bridges, volcanic cinder cones, Native American ruins, the Grand Canyon and a wild animal park. It's a neat place.

\* John Bishop



John Bishop: NHAS VP and frequent contributor of technical articles.

Astro Photons



Gardner Gerry – Photo by Chase McNiss

The Astrophotography committee met at YFOS on Saturday the 14th, we had many different approaches to imaging set up from the basic 35mm camera on a hand driven barn door tracker to dual chip self guiding CCD setups. Thanks to members **Herb, Chase, Nils, John B., Todd, Mike O.**, and new member **Rich** for attending. The evening, though cool and windy, cleared out for us to catch some photons and talk shop about imaging. We all had a great time!



Photo by Gardner Gerry

My first attempt at M33, shot with the 66mm f/6 and Nikon D50 and manually guided with the 102 on my GM-8. Six 5-minute subs stacked with AIP4WIN. About a 60% crop of the full frame with a slight curves adjustment. I wish I had gotten more light frames! When I get my autoguider going more subs will be much easier.

\* Gardner Gerry

Here are my targets from last night, as Nils mention despite the chill and the wind it was quite a nice night, I was using my WO 80mm SAC10 1shot color and guided with the other W080 and my stellacam atop the new CGE I have been processing the frames of my M31 mosaic but this will take a while to learn how to stitch these together in Photoshop 😊 since I have never done that Here is the Belt of Orion and M33 the Pinwheel They are both 30 minutes M33 is 3x10 min and Orion is 6x5 min,

I should of taken a few shorter of the trap but it was late 😊 CS and Great evening seeing the field full of gear!

\* John Buonomo



Photo by John Buonomo

That was a fun Photo Committee meeting. Thanks Gardner for getting us all together. Thanks Mike for the pizza. We could have used a few more newbies but they know where to find us. The best part of the evening was getting to sing "I'm Free" - thanks to Nils for that opportunity, I love the Cercis. It sure is nice to use the Starmaster or sit in the warming hut while my camera is doing it's own thing. Here's my one target for the night. The Helix shot with the unmodified Rebel and ED80.

\* Herb Bubert



Photo by Herb Bubert

## Radio Astronomy



*Antenna by Bob Sletten*  
Hi Radio Astronomers,

Big picture wise, the radio astronomy stuff still is finding its footing while leveraging opportunities as they present themselves. One such opportunity involves a relatively easy project next month in conjunction with the Leonid's Meteor shower. In a nutshell, the idea is to try and hear low frequency radiation from meteors, as there is some evidence that meteors make very low frequency (VLF) electromagnetic radiation (See references below). The current issue of S&T magazine proposed an opportunity given the timing of the Leonids to test that theory. The date of the shower is November 18 –19. The predicted peak is 11:45 PM that Saturday night.

What if we did the following?

- Meet at YFOS for the meteor shower.
- Set up a VLF receiver and loop antenna set to about 12 kHz.
- Record the audio output, listening for static bursts.
- Set up an acoustic dish that can be pointed in a few seconds to the direction of a large meteor.
- Record this audio.
- Set up a wide angle video recorder to catch the brightest events (is this possible).
- Set up a WWV receiver (10 MHz) so that atomic time can be inserted onto each recording, including the video.

- The listen aspect means that we would need absolute silence at YFOS during this period

### Resources required:

VLF receiver, wide AM channel  
Custom antenna  
Audio recorder (multi channel?)  
Highly direction microphone system  
WWV receiver  
Video recorder, wide angle, low light  
Luck

### References:

Sky and telescope Magazine, November 2006, Page 65. Eye on the Sky by Stephen Jones O'Meara  
See also Celestial Calendar on page 58 of the same issue.

From S&T

<http://fizika.org/ilwcro/results/index.html>

<http://www.vlf.it/leonids/leonids.htm>

<http://www.cloudbait.com/science/meteor.html>

Bottom of the page.

[http://science.nasa.gov/headlines/y2001/ast26nov\\_1.htm](http://science.nasa.gov/headlines/y2001/ast26nov_1.htm)

### Reports to:

[www.gefsproject.org](http://www.gefsproject.org)

\* Bob Sletten

## Membership

The weather did not cooperate with our first attempt at the roundtable chat at YFOS. We will try again at the next coffeehouse on October 27<sup>th</sup>. We had six new members join since our last meeting.

Mark & Jordan Silversmith, Bedford, NH

Steven Edwards, Raymond, NH

Gary Lambert, Peterborough, NH

Eric Cusson, Bedford, NH

Tom Jacobs, West Lebanon, NH

\* Alan Shirey

## A NHAS Thank You

*During the summer, NHAS member Joe Derek organized and implemented a very successful sky watch at Camp Berea. I wanted to share with everyone the letter that Joe received in*

*appreciation. Everyone works hard at educating the public about Astronomy so it is special when we receive public acknowledgement and appreciation. Way to go Joe!*

Dear Joe,

We know this is quite belated, but didn't want to completely fail to let you know how much we appreciated you coming to Camp Berea in August to provide a wonderful star gazing night for our family campers for the second year in a row. Our campers loved having you and your friends "open the heavens" to them through your fabulous telescopes and incredible knowledge. Thank you for serving the youngest to the oldest who were interested. It was truly a highlight for our family campers. We were so thankful to have such a clear, beautiful night for the event. The God of the heavens was looking out for us! Many thanks, Joe. We deeply appreciate your kindness and service to us.

Warmly,

Paul and Virginia Friesen

(Delinquent) Directors of Family Camp

\* Rich DeMidio

## Mercury Transit at CMP

First of all, thanks to all who came on September 30<sup>th</sup> to make our opening show day a success. Second, thanks to all who came to make our first Friday sky watch a success. Finally, an open invitation. I am sure most of you will have special places with good western views in mind for the transit on **November 8th**. However, if any of you would like to bring scopes to the Planetarium for free public viewing that would be great. We will promote this event in hopes that some public people will take advantage of viewing this semi-rare event. Let me know if you can and want to come. Thanks,

\* David McDonald, M.Ed.

Director of Education

Christa McAuliffe Planetarium

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## Pleiades Occultation

Midnight to 3 AM, local time, Northern New England was treated to an occultation of the Pleiades Cluster by a gibbous Moon 2 days from full. I observed the event from my home in Merrimack, using Mr. T. the 14" TScope.

The sky was clear of clouds, and at ground level it was tolerably damp (no drenching dew, thank goodness), but there was a lot of background haze that the nearly full Moon was lighting up like a lamp. There was a tell-tale ring of light around the Moon, and the Pleiades could not be seen naked eye because of the glare. In the telescope, seeing anything in the Pleiades much below 6th magnitude was impossible. Fortunately, there are several bright stars in this cluster.

I had gone to the CalSKY site and printed out a list of the times/position angles of the bright (<9) mag occultations due to take place in the evening, along with sky charts of 2 degrees around the Moon at 5 minute intervals from midnight to 2:15 AM. These charts were very helpful in determining where and when to look, especially for the emersion (reappearance) events.

The immersion (disappearance) events were the most tedious, fatiguing, and frankly painful observing I've ever done. In the 14" scope, the Moon shone like a flashlight held point-blank in the eye, but the nearly 100,000-fold contrast with the Pleiades stars meant that any attempt at filtration cut view of the stars out completely. I just grit my teeth and stared into the blinding light, and watched the sharp pinpoints disappear. Viewing was at 208X, which attenuated the moonlight somewhat and let me keep most of the blinding disk out of view when watching the final moments before immersion. Until the star is within a few minutes of arc of the Moon, it seems like no progress is being made, but then you can see that the lunar disk is visibly lumbering toward the star, and then suddenly it's not there anymore.

Emersion was a lot more fun. The dark limb of the Moon was completely

invisible against the background sky glare--no earthshine to serve as a guide. From the immersions I had a good gauge as to position angles, and between that and the charts I was able to tell pretty well where and when the reappearances would be taking place. I observed them at 82X (20mm Plossl). You sit and stare at a patch of blank sky flanked on the right (in the inverted view through the scope) by a patch of all-too-shiny Moon, and then bang! Suddenly there's a bright star that hadn't been there a nanosecond before!

"Wow!" I thought, "I'd love to see that again!" And so I did. And again. And again. The joys of a star cluster occultation. It may be more dramatic when a 1st magnitude star is occulted, but once that event's over, there's no replay. So it was good to get "6 for the price of one", as it were.

The events I observed were, in chronological order:

0:05: Immersion of Electra  
 0:15: Immersion of Celaeno  
 0:44: Immersion of Maia  
 0:47: Immersion of Taygeta  
 1:08: Immersion of Sterope II  
 1:12: Emersion of Electra  
 1:13: Immersion of Asterope  
 1:18: Emersion of Celaeno  
 1:26: Emersion of Taygeta  
 1:47: Emersion of Asterope  
 1:52: Emersion of Maia  
 1:57: Emersion of Sterope II

After that, I'd had enough of the cold, damp, and Moon-glare, and packed it in.

There were sufficient 10, 15, or even 20 minute interludes to let me go in search of other objects. The moonlit sky interfered severely with other observing. M31 was at zenith, but hopeless given the glare. NGC 457 (Owl/ET/Lobster Cluster) was well positioned in the high west, well away from the Moon glare, and showed very well. Double stars Gamma Arietis and Polaris both showed well. Iota CAS I already

mentioned.

Of course I looked for carbon stars. I couldn't find S Cephei, but WZ CAS and its azure companion were both easily visible.

I also found M36, M37, and M38 in Auriga. But only just. At the end of the session I could have done some observing in Gemini and Orion, but my eyes were just too tired. And I had work tomorrow (excuse me--later that day). The April Pleiades occultation wasn't as hard on the eyes, but both were equally satisfying observations. I'm glad I put up with the glare.

\* Paul Winalski

## CMP Skywatch Continued

NHAS member Phil Shute was also gracious enough to borrow a Radio Telescope display for the event. Here, Phil is shown setting up the display.



Photo by Chase McIliss

\* Article by Rich DeMidio with materials provided by club members

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Net Acct Balance	\$2939.22
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Membership	140 (2006) 27 (2007)
Donations	\$100.00 from Dr. Seth Bilazarian

Please note that NHAS membership is due October 1st. The cost is \$15.00 payable by cash or check. Our mail address is:

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The magazine renewals are not on a particular date, instead they are specific to your magazine accounts. You will receive a discount renewal slip from Sky and Telescope or Kalmbach several months before it comes due.

Please send the renewal slip and your check to the address above, but make sure to have the payee on the check be Sky Publishing or Kalmbach Publishing, not NHAS. If you have a regular account but would like to take advantage of the NHAS discount for the first time, please follow the same instructions.

The prices are:

Sky and Telescope \$32.95

Astronomy \$34.00

\* Chase McNiss

## Looking Back at Last Month

**Opening** John Bishop filled in for Matthew Marulla who was still on travel

**Scope of the Month** Mike Townsend reported on the Orion short tube

120mm refractor, F/5 and 600mm focal length. Multi-coated lenses. After about 100 power, the chromatic aberration is noticed. Primarily designed for large, rich field objects such as the Pleiades. The field of view (FOV) would range about 4 degrees. Mike commented that it is not really made for planetary observing because of the aberration at high magnification. In addition, there is coma noticed at high power. The f8.3 would be a better choice for overall observing for various types.

**Public Observing.** Marc Stowbridge was unable to attend the meeting so John Bishop provided an overview to new members about upcoming events and what we do for public observing.

**Book of the Month.** John Bishop reported on a book named "Unusual Telescopes". He got it at the Lowell observatory in Flagstaff, AZ. One looked like a rocket that is ready to take off. The purpose was to solve a specific Astronomy problem that was discussed during the evening program.

**Committees.** Photo Club Gardner Gerry reported Gardner reported about plans for a beginning-imaging course (Astro 101). Looking at getting this going within the last few weeks. Calls put out to email with a lot of interest. Possible dates are Oct 14, 21, or 28. Meetings would be at YFOS Web: No report. ATMs: Larry Lopez was unable to attend the meeting. Rich DeMidio reported the group taking inventory and willing to help others who have interest in starting a project. YFOS Chase McNiss reported that the site is in great shape after our recent work party. Normally done in the Spring but we postponed until Fall due to the weather. Painting, mowing, tree trimming, and rock moving. Site is winter ready. Chase explained about the orientation process for new members for YFOS setup and closure. Membership: Alan Shirey reported that eight new members joined since last meeting. He talked about a new brochure motivated by Marc Strawbridge for handouts. Mike Frascinella had an old copy stored away and it was used as a basis for a new handout at sky watches and other

events. Chase suggested that that we potentially include some links to common areas and perhaps putting that on our web site. Allan also described his desire to have roundtable chats at YFOS to promote general education

**Miscellaneous.** Paul Winalski reminded folks about the upcoming September 30<sup>th</sup> at CMP. We have been requested to help from 1PM to 5PM. He also reported on a sky event on October 9<sup>th</sup>, the occultation of Pleiades around 11PM. This is not a common event and will make a good opportunity for imaging. What you see will be dependent on where you are. S&T has a nice write-up on the website.

Elections: John Bishop explained the process. Need two sessions for nominations and then election. October meeting will be 1<sup>st</sup> nominations. He explained the process and roles of each of the officers. There will also be one nomination for the board this year.

Finances and Inventory: Chase McNiss as asked to talk about any potential large expenses that might be coming up. He also mentioned about club attire and the process. Specifically, we need large quantities to place another order. Chase brought what we have in the inventory for people to look at. Folks were invited to look and determine if you wish to buy anything. We are working towards having photos placed on the website with an inventory. Officers have been talking about inventory of all equipment. We have a lot of things that can be donated or sold. This includes a 20-inch blank. No major expenditures are planned for.

Evening Program. John Bishop, unusual telescopes. I had to leave early due a personal commitment.

\* Rich DeMidio

**DEADLINE Nov2006 Issue: 5 PM 13Nov**

E-mail articles to the Editor.

**CHANGE OF ADDRESS** – Notify the Treasurer of changes to postal or e-mail address.

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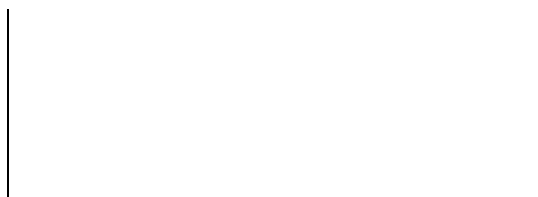
**2006 Officers**

**President: Mathew Marulla**  
**Vice President: John Bishop**  
**Treasurer: Chase McNiss**  
**Secretary: Richard DeMidio**

**This month's contributors:**

Chase McNiss, Bob Sletten, Gardner Gerry, Allan Shirey, Rich DeMidio, Paul Winalski, Herb Bubert, John Buonomo, Phil Shute

**New Hampshire Astronomical Society**  
**P.O. Box 5823**  
**Manchester, NH 03108-5823**



**October 20th - TBA**

<b>Event</b>	<b>Date</b>	<b>Time</b>	<b>Location</b>
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
CMP Skywatch	Dec 1	Dusk	CMP
Business Meeting	Dec15	7:30 pm	CMP
Coffee House	Dec22	Dusk	YFOS