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The NHAS Observer and Countdown to MM

Newsletter of the New Hampshire Astronomical Society

Vol. 2005 No. 2 **"All the news that fits in print"** **February 2005**

Pictures and Notes

President's Message

I stopped by Home Depot the other day and they had put away all the snow blowers -- in their place were lawnmowers. I know we just had our "Freeze Your Buns" night, but this is an unmistakable sign that spring will eventually get here!

With the warmer weather comes star party season. This year we have put just about every star party in the northeast on the club calendar, found on our web site. They start in April with the DelMarVa Star Party in Maryland, and run through October with Astro-Assembly down in Rhode Island. All-in-all, **fifteen** star parties and other astronomy events to keep us busy all through spring and summer!

But first we have to brave extreme, mind-numbing cold at least one more time for the annual Messier Marathon! It's scheduled for March 11th, with a rain/snow/cloudy date of the 12th. As always, it will be held at Larry's house in New Boston. Assuming we accept NGC5866 as M102, (and we can get M30 in the morning twilight!) that gives 110 objects in about 10½ hours of darkness. Remember, once M74 and M77 have set, they're gone until the next night!

✷ Mathew Marulla
NHAS President 2005

Public Observing Highlights

There were no public observing events since last publication.

✷ Ed Ting

Pictures Galore

The first picture this month is Saturn taken by **Herb Bubert**.

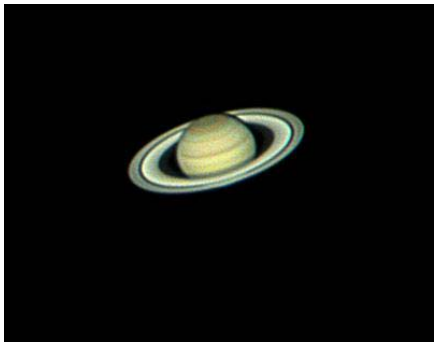

Photo by Herb Bubert

Not to be outdone, **Nils Wygant** took this wonderful shot of comet **Macholz** in which a lot of detail can be seen. Great job guys!

Photo by Nils Wygant

The details of these pictures may be found on our NHAS photo committee Yahoo group along with many other fine photos. Keep them coming folks!

Field Notes

Editor's Note: Several members logged field reports from their observing session. Here are a few them for your enjoyment.

I had the 14" TScope out for 3 hours from 7-10 PM. I hit the carbon star Winter Double (R Leporis and S Cephei, missing only Y Canum Venaticorum for the carbon star Winter Triple). Red stars at night--astronomer's delight? The Orion Nebula was glorious. All six of the Trapezium visible, even with the Merrimack light pollution. I bagged Rigel's companion for the first time. No such luck with the Sirius companion, though--Sirius was bright enough in the scope to have an ice crystal diffraction ring around it, such as one often sees with the Moon.

✷ Paul Winalski

Rigel's companion and other doubles were so easy that I also tried for Sirius B. But even with my 16-inch at 360x, I didn't see it. Saturn was great: the C-ring was visible, the Enke minimum was visible in the A-ring, there were two bands and a whitish polar cap on the planet itself. I saw five moons (and no shadow!). From in-town Nashua M42 didn't show up well, but the E and F stars in the Trapezium were clearly visible with the 16. When the skies are stable, aperture wins.

✷ John Bishop

Finally bagged an image of Saturn with the Obsession using my video camera and newly acquired adapters. Managed to get about 15 seconds of video while successfully keeping the image in the field of view. I think Registax is love processing this video!

✷ Rich DeMidio

Noteworthy News

Messier Marathon .....Page 2

Messier Marathon

The time can certainly go by fast when not paying attention. It seems like it was just yesterday when I was dusting the snow off my telescope at Larry and Linda's place after a snow squall dumped about 3 inches of snow at the site. Of course, we were all bummed missing the first several hours observing but reflecting back I remember how much fun I had that night and specifically during that time we were waiting. I remember sharing stories, trying to keep up with Larry on technology while trying hard not to be a mental midget, warming up with great food and drink, and most of all, enjoying the companionship. Somehow, the weather made no difference for this was something bigger than trying to find 110 fuzzy objects. I remember being anxious the night before so much that I could hardly sleep. The car was packed the previous evening and I was ready to go. Sleep seemed like something of a hindrance, but still had to try and get some. It was like the Christmas Eve again growing up as a child. To me, the MM is the super bowl and World Series combined. The one time of the year where so many of us participate in enjoying the common theme that we all adore and drives us to brave the cold, elements, and sleep. No matter the conditions, being around everyone talking, joking, and yes observing is what the event is all about. So everyone pack up the night before and quest your way to New Boston for our annual super bowl. Only four weeks to go but I shall resist the temptation on packing my minivan just yet. ☺

✷ Rich DeMidio

Moon Measurements

A paper by John Bishop

Editor's Note: This is really more of a white paper and brings to attention the question on what is the best forum for technical articles such as this one. Perhaps a place on the website that members can write and contribute these papers.

On Sunday the 30th of January, I happened to glance up at the sky and see that the Moon was close to Jupiter to the West of the planet. Since the Moon was several days past full, I could see the shadow edge and estimate the North/South axis of the Moon relative to the Sun. That let me estimate the direction of motion of the Moon (at right angles to the shadow axis, and to the East). It looked like the Moon was going to go just underneath Jupiter in a couple of hours. At the moment, it was about three Moon diameters away. But I didn't stay up to watch a near conjunction, as Monday was a school day for my children and I was getting up early. The next morning I got up at 6:00 am and was outside at 6:45 am collecting the daily newspaper. I looked up and saw the Moon on the other side of Jupiter. It was a bit to the South and East It seemed to be about two Moon diameters away. I realized I now had the data to calculate the distance to the Moon, just as Ptolemy had done many years ago. I drew a diagram where Jupiter was a fixed dot, and plotted the two positions of the Moon. The distance between then was about four Moon diameters and thus the Moon had moved five of its own diameters (leading edge to leading edge). So in 7 hours and 15 minutes, the Moon had apparently moved 2.5 degrees as seen from Nashua (42.54 degrees North). At this point you may care to try your hand at the calculations, as you have all the data you need! I'm going to carry through the calculation with two or three significant digits, but that probably far overstates the precision of my casual, by-eye estimation of angles. To make things simpler, I'll use units of Earth radii until the end. First, what is the length of my baseline? The time difference is 7.25 hours. Since the Earth rotates relative to the fixed stars in 23:56 hours (23.93 hours, or four minutes a day less it does than relative to the Sun, due to Earth's motion in its orbit), that 7.2 hours is

(360*7.25/23.93) about 109 degrees.

If you draw a diagram, you can see that the chord between the endpoints of that arc on the Earth's surface is

2 * sin(109/2), = 2 * sin(54.5) = 2*.814 = 1.63 radii.

But I'm not on the equator, and thus my position doesn't trace out a circle of radius 1: at 42.45 degrees North, my radius is only

cos(42.45) = .737

of the Earth's radius, So my actual baseline in Earth radii is
1.63 * .737 = 1.2 radii.

I'll note here that the line from the Moon to me to the Earth's axis isn't going to be parallel to the plane of my latitude. There's another correction to make--but the Moon is far away and the angles involved are small, so I'll ignore that complication. This will tend to make my final Moon distance too low. Further, my baseline isn't perpendicular to the direction to the moon, as the Moon wasn't exactly on the meridian halfway through the 7.25 hours (at 23.5 + 3.625 = 27.125 = 3.125 the next day = 3:08 am). Because the Moon was about half-way from full to last quarter, it was almost on the meridian at that time, and I'll ignore this complication as well. It also means that my final estimate is likely to be a bit too far. During the 7.25 hours, the Moon moved relative to the fixed stars, for which Jupiter is my stand-in, as Jupiter doesn't move significantly in this time span and is much further away. Since the Moon goes around relative to the Earth in 27.32 days (a "sidereal month", as opposed to the 29.5 days of the Sun-relative "synodic month"), in 7.25 hours the Moon moves

(360*7.25)/(27.32*24) = 3.98 degrees to the East.

We'll call it 4.0 degrees. If the Moon were stationary in the sky, our own motion to the East should result in an apparent motion (a "parallax") of the Moon to the West. The Moon's apparent motion was 2.5 degrees to the East, and its actual motion was 4.0 degrees to the East. Therefore there's been an apparently motion to the West of (4.0 - 2.5) = 1.5 degrees. In other words, if we "un-do" the Moon's motion along its orbit, we see that a stationary Moon would have moved 1.5 degrees to the West.

(See Moon on page 3)

Moon (from page 2)

Because the lines to Jupiter from the ends of the baseline are parallel, we can say that the 1.5 degrees of parallax motion forms the same angle as the length of the baseline does when viewed from the Moon.
Since the angle is small we can ignore chord-vs-arc differences, or where exactly we put the center from which we measure the angle (e.g., it'd be slightly different if we used the center of the baseline rather than one of the ends, but the difference is small enough that we can ignore it). At what distance R would the base of 1.2 radii subtend 1.5 degrees? Since we're ignoring the chord-vs-arc difference, we note that the total circumference of a circle with radius R is (2 * pi * R); each degree is thus (2 * pi * R)/360 = 0.017 R , and so 1.5 degrees is an arc of 1.5 * (2 * pi * R)/360 = 0.026 R. That's the baseline length, in terms of R. If the base is 1.2 radii, then 1.2 = 0.0262 R, and thus R = (1.2/0.026) = 46 radii. The actual value is 62. Given an Earth radius of 4,000 miles, I've calculated an Earth-Moon distance of 184,000 miles, which is 74 percent of the real 250,000 miles. That's an amazingly close answer for such a casual pair of observations! This is essentially the method used by the ancient Greeks for this calculation. They did a better job of measuring the angles and got the correct answer to within a tiny error. The next time you see the Moon near a bright star or planet, take some measurements and run the calculation yourself!

✷ John Bishop

NASA Mission Updates

The Huygens probe successfully descended and landed on Titan with scientists analyzing the wealth of data that has come back. Visit http://saturn.jpl.nasa.gov/home/index.cfm for details on the entire mission.

Spirit and opportunity are also continuing to perform well beyond their expectancy. Visit http://marsrovers.jpl.nasa.gov/home/index.html for mission details

Web Uploads

Star parties and conventions across the U.S. have been added to the NHAS online calendar. See April for the first one in Maryland.

✷ Barbara O'Connell

AstroPhotons

Chase McNiss reported that at the January meeting held at the Nashua public library, several members provided tutorials of use cases for processing photographs. Many of these notes have been and will be published in the yahoo photo group. There were also strategies for using Photoshop discussed that appear on the website http://www.robgendlerastropics.com/ The author of this website is world famous for the quality of images that he has produced from his driveway in CT! At the **February 12th Meeting**, There were 8 attendees at the NHAS Photo Comm meeting. Numerous members brought digital images and there was an open discussion regarding everything from cameras, focusing procedures and images editing and enhancements. The agenda next meeting at the next meeting will be specific to different manual and automated focusing methods for film, digital and CCD imaging. Please stay tuned to an email documenting the next meeting date and location.

YFOS Log Book

FYB at YFOS 2/11/2005.

Freeze your buns was much better Attended than I expected. The Weather was a bit poor recently but the plowing service plowed out YFOS and Nils cleaned up a lot when he got there. I viewed M42 and a red star in Paul's Dob, and Comet M. in Mike T's refractor. I had a great time but had to leave early to go to an Aikido workshop from which I'm still recovering. The temperature was not very cold and the heater worked great. Herb brought some deviled eggs and Nils brought some Kentucky Fried Chicken. John brought some coffee.
As near as I can tell the following attended:
Gardner Gerry
Matt & Melissa
Nils who shoveled us out.
Herb.
Paul Winalski,
Chase McNiss
Joe Derek
Mike Townsend
John Bishop (I think)
Ed Los - used the c14
Larry Lopez
I had a great time and completely missed Matt & Melissa.

✷ Larry Lopez

Deep Sky Object of the Month

Observer: **Lew Gramer, Steve Clougherty; Dan Winchell, Mike Aramini**
Your skills: Advanced (many years); Intermediate (some years)
Date/time of observation: 28/29 Mar 2001, 03:15 UT
Location of site: ATMoB Clubhouse, Westford MA USA (42oN, 86m elev)
Site classification: Exurban.
Sky darkness: 5.6 <Limiting magnitude>, 6 <Bortle Scale>
Seeing: 9 <1-10 Seeing Scale (10 best)>
Moon presence: None - moon not in sky; Cirrus bands nearby
Instrument: 17.5" f/4.5 dob
Magnification: 57x, 220x, 285x
Filter(s): None.
Object(s): **NGC 3226, NGC 3227 (Arp 94), NGC 3222**
Category: Group of galaxies.
Class: E2, SAB(s)abP, SB0
Constellation: Leo
Data: mag 12, 11, 14; size 3.2x2.8 15o, 5.4x3.6 155o, 1x1
Position: 1023 +1954
Description: As a gauge of our conditions in between the cirrus bands tonight, we decided to try viewing this lovely trio (actually a quadruple) of galaxies, which lie tantalizingly close (40'-50' E) of gamma Leonis (Algieba). Despite searching at high power, I just didn't find the third member (n3222) at all tonight. It has shown up to averted vision very well in this scope on earlier

(See Deep Sky on page 4)

Deep Sky (from page 3)

occasions, so I think this entire observation was hampered by moisture tonight. We did not even bother to look for the fourth eg, n3213, tonight.
On the other hand, the bright interacting Arp pair, NGC 3226 and n3227, showed up passingly well tonight. Northerly member n3226 had a bright, well-defined core which was striking at all powers.
At highest power, this bright inner nugget occasionally seemed to show a much smaller, sparkling nucleus, not quite at center. But it displayed no other detail, in the core or in the diffuse halo.
NGC 3227, the Southerly member of the pair, was just a bit of a disappointment tonight, showing only a modicum of detail: it had a nicely (N-S) elongated, but mostly diffuse core, set inside a similarly elongated (NW-SE) halo, which nearly touched the outer halo of n3226. However, none of the fine spiral structure we'd seen on a prior night (especially with Dan's fine new 14" dob!) was even hinted at tonight. Nor was the spiral arc that reaches out right up to the hub of n3226 visible, at any power.
Coincidentally, this group appears to belong to a larger cluster of galaxies, which also includes the NGC 3190 group (Hickson 44).
Does anyone know if these 4 egs are also catalogued as a group, or which if any catalogued cluster these groups both belong to?

✷ Lew Gramer

The Bottom Line

Starting Balance:	$4,510.53
January Deposits:	$0
January A/P:	$164.55
(Insurance, Plowing YFOS, Propane YFOS)	
Net Balance:	$4,347.74
Cash Balance:	$4347.74

Membership: 104
New members:
Barnett Helzberg MA
David Rounds Chichester, NH 8" Newtonian
Richard Zore Brookline, NH
Celestron Ultima 8x56 Binocs Kowa 254x77mm splitting scope

NASA Space Place

Editor's Note: The article was too large to include in this publication so the URL is provided.

This month's article is entitled "A Different Angle on Climate Change". Read the entire article at http://spaceplace.nasa.gov/astro_clubs/

Looking Back at Last Month

Opening. **Matt Marulla** opened the meeting and discussed his goals and vision for the upcoming year. Matt also provided a trip report to the new Oyster River high school in Durham, NH. NHAS was asked to assist the science teacher there in Astronomy. They do not have an observatory, telescope or such but some students have projects and matt was interviewed. It was also suggested by **Paul Winalski** that we consider a sky watch there for future reference. Will need to ask Ed about fitting it into a schedule. About 15 people are taking the Astronomy class this semester.

Book of the Month. History of Star chart making. 1896 1st edition of Upton star Atlas. **Matt Marulla** provided a copy of the first printing. The book was first published before the IAU made official constellation boundaries.

Scope of the Month. None

Public Observing. No updates

Committees. Web: **No report** ATMs: **Larry Lopez** No report . Membership: **Bob Sletten** said that classes are being planned for a Spring semester. Please contact him if you have any suggestions or wish to teach a class.

YFOS. Larry Lopez said that the coffee house occurred in December. Place is plowed and usable but make sure that you spread sand but not in clubhouse. Make sure snow is moved off the deck and do not make piles. Might want to bring a shovel. In fact, it is a good idea to have one anyways.

Treasury. **Barbara O'Connell** was unable to make the meeting so refer to the newsletter for updates.

Evening Program. Comet Machholz by **Matt Marulla**. Matt provided a wonderful slide show depicting the history and many pictures from this comet. We learned that the discover, Don Machholz found nine comets from 1978 – 1994. His recent find was discovered on 8/27/04 with a 6-inch Criterion Dynascope. At the time, the comet was mag. 11.2. From now to March, is the best time to photo since the tail will be more visible. For details on the discovery and about the author, please visit this web site: http://ephemeris.sjaa.net/0410/b.html

✷ Rich DeMidio

DEADLINE for Mar. 2005 Issue: 5 PM Mar 13
E-mail articles to the Editor.
CHANGE OF ADDRESS – Notify the Treasurer of changes
to postal or e-mail address.

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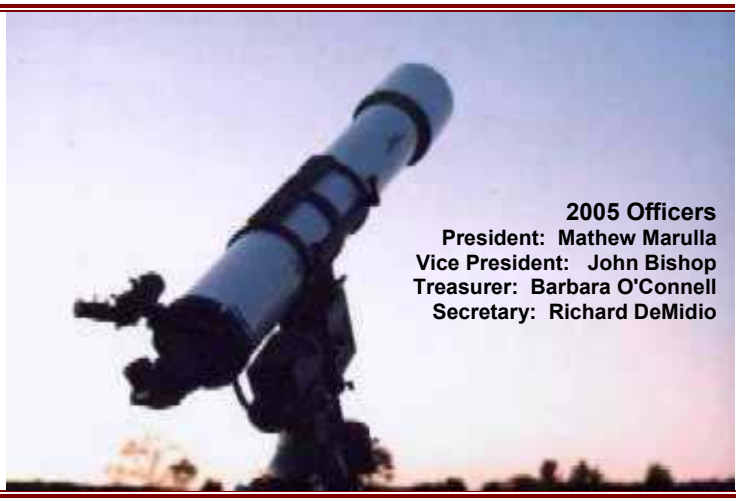
http://www.nhastro.com/

This month's contributors:
Mathew Marulla, John Bishop, Rich DeMidio, Larry Lopez, Bob Sletten



2005 Officers
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Vice President: John Bishop
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New Hampshire Astronomical Society
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Messier Marathon Promo, 2/18, Planetarium

NHAS Upcoming Events

Event	Date	Time	Location
Feb. Business Meeting	Feb. 18	7:30 p.m.	Planetarium, Concord, NH
CMP Skywatch	Mar. 4	7:30 p.m.	Planetarium, Concord, NH
Coffee House	Mar. 11	7:00 p.m.	YFOS
Messier Marathon	Mar. 11	All night	Lopez Residence – New Boston, NH
Mar. Business Meeting	Mar. 18	7:30 p.m.	St. Anselm's College, Goffstown, NH