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Editor & Publisher:
Michael Frascinella

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THE NHAS OBSERVER AND COMET/CUPID CHRONICLE

Newsletter of the New Hampshire Astronomical Society

Volume 2003 No. 12 **"All the news that fits in print"** **Dec. 2003**

2004 Elections: Time to Vote

President's Message

Hello NHAS Members

The year is winding down and we have made one more trip around the sun since I took office as president. I am happy to see so many new candidates for officers.

I want to thank all those who made it a great year with Astronomy 101, work done on the observatory, upkeep of the property in the way of snow removal and mowing the grass and much more. It's great to be part of a club with so many interesting and talented people.

If anyone has a book of the month they would like to bring or any other points of interest that are astronomy related that you would like to share, please bring it along.

Election Time for 2004

Don't forget that the December meeting at the planetarium will be voting time for the new officers.

The following list is the current slate of nominees.

President: **Joel Harris** (hey, we need more candidates!)

V.P.: **Don Ware**, **Alan Shirey**, **Nils Wygant**

Treasurer: **Barbara O'Connell**, **Roger Goun**

Secretary: **Michael Frascinella**

Board: **Joel Harris**, **Joe Derek**, **John Blackwell**

The League of Astronomical Chad Mongers is submitting the following questions to the nominees in the hopes of making your decision a more informed one (if not a jolly one).

- Do you plan to raise dues for the coming year and spend it on pet projects?
- Do you promise that no telescope or eyepiece will be left behind (at skywatches)?
- Do you pledge that Astronomy Day will actually promote Astronomy?

Astronomy Social

At the Dec. 12th meeting, we will be finishing out the year with an Astronomy Social. Please bring some finger foods or snacks to share with members and guests. Something homemade would be great but not required.

After the business meeting, stay and mingle with us, take time to catch up on what everyone else has been doing, chat about observing (or lack of it), the latest gadget, or whatever interests you. This is a good time to strike up a conversation with new members and make them feel welcome. Don't be shy – try it once.

Until we meet again,

Happy observing!

★ Joe Derek
NHAS President 2003

Public Observing Highlights

Monday Nov. 10 was the date for our annual skywatch at Rundlett Middle School in Concord, and the turnout was the most impressive ever at this event – nearly 225 people showed up. In just a few short years, this skywatch has turned into our second largest school event.

Thanks to event coordinator (and new NHAS member) Jill Whitmore for keeping things organized, and for providing sandwiches for the NHAS volunteers.

Our annual skywatch on Nov. 19 at Loudon Elementary was cancelled due to poor weather.

A skywatch for the Goffstown Library on Dec. 6th was snowed out.

Public Observing will recognize one NHAS member at the meeting on Dec. 12 for outstanding contributions over the past year. Who will it be this year?? Find out at the club meeting!

★ Ed Ting

Membership Notes

On Friday, November 21st, we had our last session of the ASTRO-101 class series. The topic was "Using the Dark Sky Site" and **Chase McNiss** and **Larry Lopez** taught the class. It involved a full-featured walk-through of the site, a training session on the portable telescopes available, and culminated with a demonstration of the pier-mounted 14-inch Schmidt-Cassegrain telescope on the Losmandy mount.

We will soon be kicking off the ASTRO-201 series. The topics in this series are still introductory level topics in Astronomy; however, they have a narrower concentration. We hope to have our first class on "Observing Techniques" in December. The ASTRO-201 series is expected to run through the end of the spring semester.

★ Bob Sletten

Noteworthy News

Hex on: an Observatory……..Page 2

Web Uploads

The web site now features member photos of auroral activity and links for space weather and solar activity.

Web development has been struggling due to job-related pressures.

★ Barbara O'Connell

AstroPhotons

No news this month.

ATM True Grit

The ATMs will be on hold through December. The next meeting will be next year, that is, on January 18. More details will come forth either at the next club meeting or by e-mail.

★ Larry Lopez

Hex[ag]on: an Observatory

A Roll-Off Roof Observatory

I wanted to make an enclosure where I could set up my telescope even when there was three feet of snow on the ground. It needed to be easy to build and inexpensive. I also wanted to be able to build it at home and possibly erect it at some distance away. Making it sectional seemed a good approach. A hexagonal shape allowed for easy access to the scope on all sides and lent itself to a light but strong construction.

This observatory is made of six 4-foot by 4-foot sections that bolt together. The roof is made of plywood that is primed and finished with marine grade paint. The roof also has aluminum struts that provide a flange for bolting the sections to each other and to a small hexagon at the top.

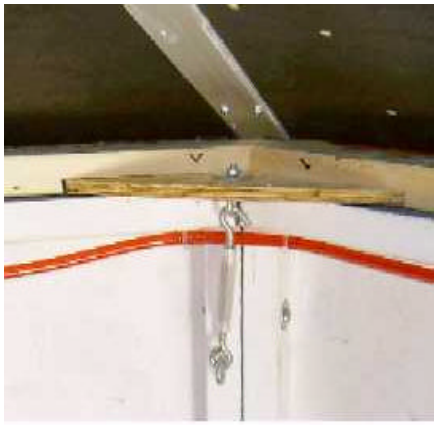
The framework extending from the back is currently made of pressure-treated (PT) 2x4s and holds the roof when open. (It can also be made from 1 1/2-foot galvanized pipe that can be retracted into the hexagon, making it a bit more tidy in appearance and easier to move around the building.)

The wall sections consist of T1-11 siding with a 2x4 PT bottom plate and fir 2x4s making the studs and top plate. The studs are only at the corners of the frame and were ripped to conform to the angle of the wall. Each section, except the door, is the same.

The roof has a wooden interior support made of an angled and mitered 2x4 with plywood gussets. When closed, this support rests upon the top plate of the hexagon.

The doors are made of 3/4-inch plywood, trimmed with aluminum, and hinge on each side. By opening in two parts, the doors do not hit the snow that will pile up, and they fold almost flat against the walls.

After opening the doors, you remove two turnbuckles that hold down the roof. By grabbing and lifting a 3/4-inch conduit that crosses the roof support above the door, you can lift the edge of the roof up and over the telescope pier, and onto the support frame. It is remarkably light and very strong.



The roof is lightweight and supported to the rear by rollers made of sections of 3/4-inch conduit over a 1/2-inch conduit that acts like an axle. Cables loop around the supports, keeping the roof from falling to the side or blowing off in a gust of wind. A strap and hook arrangement holds down the lip when it rests on the back wall.

In the center of the hexagon is a pier described in the October NHAS newsletter. The red line seen around the interior is a Christmas rope light that

is controlled by a dimmer, It provides illumination for setup.

I have made trays that slip over the top of the wall, very much like those used at A&W drive-ins, all those many years ago. Instead of burgers, the trays hold accessory boxes and things needing a tabletop. By hanging them over the top, there is no restriction within the observatory. I may build one with a box instead of a tray to keep out dew.

The structure is made primarily of 3 sheets of T1-11siding; three 3 sheets of 3/8-inch plywood for the roof; 10 fir 2x4s; 8 PT 2x4s; 6 (3/16xX2 inch) aluminum flat stock (bent to 25°); and one-half sheet of 3/4-inch plywood.

Other miscellaneous bits of hardware and rather expensive paint finish it off.

(See Observatory p. 3)

Observatory, from p. 2)

Tools needed include a skill saw, table saw, drill, and access to a metal bending "break." Total cost seems to be less than $300.

The only things missing from the current set up are 4x6-inch vents in each wall and a sand or pea-stone floor.

I have patterns for all the significant pieces, making duplication relatively easy. Anyone wishing to build one or look at this one should feel free to get in touch with me.

★ Marc Stowbridge

The Bottom Line

Club balance on Nov. 30 was $4,050. Membership is up to 111 (a number that some might misconstrue as a binary number).

Donations

NHAS offers its thanks those who joined or renewed this month and for the following donations.

Jim McCarthy $5.00
Dave Weaver $10.00

★ Jim Warenda

Welcome to Our Newest Members

Deane Alexander Pelham, NH
Frank Alvarado Salem, NH
Harold Bacon Londonderry, NH
Audrey Cairns Randolph, NH
Mark Duckworth Merrimack, NH
Thomas Gaiser Amherst, NH
Sandra Hernandez Nashua, NH
Steven Meuse Londonderry, NH
Frank Smith Jaffrey, NH
Steven Wayne Newburyport, MA

★ Jim Warenda

Looking Back at Last Month

Opening. At the Nov. 14 meeting at St. Anselm's College, President **Joe Derek** welcomed the newest members. **Michael Frascinella** handed out a few calendars from the NASA Space Place. The Cosmic Perspective Foundation donated a book called The New Cosmology by Harold Allen. In the mail was a catalog of Hubble Photos for sale. Several 2004 calendars were still available for purchase as Christmas gifts (Hint! Hint!)

Committees. Photo Comm. - **Gardner Gerry** displayed some fantastic, beautiful, large format color photos of the Oct. 30 aurora taken by a friend with a digital camera.

ATMs – **Larry Lopez** discussed a 12.5-inch mirror donated by **Cindy Dougherty**. This is available for a scope project to any NHAS member. The ATMs will be inactive until the next meeting on Jan. 18, 2004.

Web. – **Barbara O'Connell** said the group met before the meeting to get ramped up on web design and operation. **Roger Goun** was working on a calendar to schedule observing time at YFOS. Larry agreed that it would help people make better use of the observatory.

YFOS. Larry Lopez noted that the cabinets that **Chase McNiss** installed looked great and allow for more floor space. A current problem is moisture seeping in, possibly through the floor. Scrap under the flooring has been removed. A snowplow contractor has been obtained and bigger propane tank was discussed.

Public Observing. Ed Ting said the Fall skywatches are in full swing. Mt. View School sent a big "Thank You" and a souvenir pen! Reed's Ferry Skywatch in Merrimack garnered about 375 people for 13 club scopes. Rundlett School Skywatch in Concord drew about 250 people, making it our #2 skywatch. As a special touch, the teacher in charge served snacks to NHAS members. Ed then review upcoming events.

Treasury. Jim Warenda announced that we had 101 members and a $3700 balance. Large bills for insurance are due the end of the year. Jim was looking into property insurance for the buildings and gear.

Book of the Month. Deep Sky Companion - the Caldwell Objects by Stephen James O'Meara. **Joe Derek** reminded us about the club lending library and its 100 or so books (most listed on the NHAS web site).

Scope Gadget of the Month. Joel Harris dazzled us with a focuser he made for a CCD camera for the Observatory C14 scope. It features an off-axis guider with illuminated reticle using parts from **Ed Dougherty's** estate and other sources. It was very impressive.

2004 Elections. Joe opened the nominations. Current nominees were: President: **Joel Harris**; V.P.: **Don Ware**, **Alan Shirey**, **Nils Wygant**; Treasurer: **Barbara O'Connell**, **Roger Goun**; Secretary: **Michael Frascinella**; Board: **Joel Harris**, **Joe Derek**, **John Blackwell**. Nominations were closed until the Dec. election.

Evening Talk. "CCD Imaging Software" by **Steve Brady**

His primary interest has been astrophotometry. When he started dabbling in CCD imaging, the biggest problem was focusing the image. He and **Larry Weber** developed FocusMax software, which focuses the camera in about 20 seconds.

He then reviewed the various requirements, including "absolute focusers" that track temperature changes and automatically compensate. FocusMax offers a wizard that tests and characterizes your CCD camera and finds best focus. He ran a simulator to demonstrate this feature.

"Acquire a Star" is a feature that lets you write a script that positions and focuses target stars in a sequence, capturing a series of images unattended. FocusMax is free software available from http://www.focusmax.org.

Steve and Larry recently introduced a new software package, PoleAlignMax (after much thought about a brand name), that helps with polar alignment

(See Looking Back, p. 4)

Looking Back (from p. 3)

of a scope. This requires a GoTo scope, CCD camera, and CCD software. Currently Steve is engaged in near-Earth asteroid and supernova searches (no, not near-Earth supernovas!). He found his first supernova after four days of searching! The supernova was in a galaxy about 290,000 light years out. He has also discovered two asteroids.

★ Michael Frascinella

Geminids – Debris from an Asteroid

The Geminids (GEM) are the highlight of December and our winter season! They can be seen from about December 7th to 17th and reach a maximum on December 14th at about 11:40 UT, plus or minus about 2.5 hours according to the International Meteor Organization (IMO). For observers in eastern North America, this makes the night of December 13th and the pre-dawn hours of December 14th prime time.

The radiant at maximum is near the bright star Castor in the constellation of Gemini, the twins. These meteors are of medium velocity, at about 35 km per second.

The Zenithal Hourly Rate (ZHR) for the Geminids is about 120 meteors per hour (your mileage may vary). Geminid meteors tend to be fairly bright, with many about the magnitude of the stars in the Big Dipper. For experienced and novice observers alike, it is an impressive shower. Dress warmly though – the nights are long and can be rather cold!

★Lew Gramer

NASA Space Place

Stardust

by Patrick L. Barry and Dr. Tony Phillips

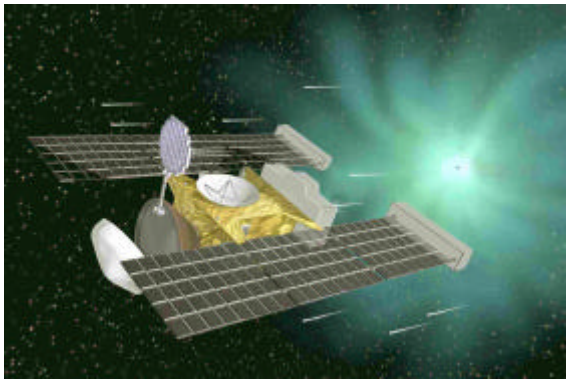
Philosophers have long sought to "see a world in a grain of sand," as William Blake famously put it. Now scientists are attempting to see the solar system in a grain of dust - comet dust, that is.

If successful, NASA's Stardust probe will be the first ever to carry matter from a comet back to Earth for examination by scientists. It would also be the first time that any material has been deliberately returned to Earth from beyond the orbit of the Moon.

And one wouldn't merely wax poetic to say that in those tiny grains of comet dust, one could find clues to the origin of our world and perhaps to the beginning of life itself.

Comets are like frozen time capsules from the time when our solar system formed. Drifting in the cold outer solar system for billions of years, these asteroid-sized "dirty snowballs" have undergone little change relative to the more dynamic planets. Looking at comets is a bit like studying the bowl of leftover batter to understand how a wedding cake came to be.

Indeed, evidence suggests that comets may have played a role in the emergence of life on our planet. The steady bombardment of the young Earth by icy comets over millions of years could have brought the water that made our brown planet blue. And comets contain complex carbon compounds that might be the building blocks for life.



Launched in 1999, Stardust will rendezvous with comet Wild 2 (pronounced "Vilt" after its Swiss discoverer) on January 2, 2004. As it passes through the cloud of gas and dust escaping from the comet, Stardust will use a material called aerogel to capture grains from the comet as they zip by at 13,000 mph. Aerogel is a foam-like solid so tenuous that it's hardly even there: 99 percent of its volume is just air. The ethereal lightness of aerogel minimizes damage to the grains as they're caught.

Wild 2 orbited the sun beyond Jupiter until 1974, when it was nudged by Jupiter's gravity into a Sun-approaching orbit - within reach of probes from Earth. Since then the comet has passed by the Sun only five times, so its ice and dust ought to be relatively unaltered by solar radiation. Some of this pristine "stuff" will be onboard Stardust when it returns to Earth in 2006, little dusty clues to life's big mysteries.

To learn more about Stardust, see the mission website at http://stardust.jpl.nasa.gov. Kids can play a fun trivia game about comets at http://spaceplace.nasa.gov/stardust.

This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.

Merry Christmas, Happy New Year, Glad Tidings, and Peace on Earth from the staff at the NHAS Observer.

DEADLINE Jan. 2004 Issue: 5 PM Jan. 3

E-mail your articles to the Editor. Phone if you have a late submission.

CHANGE OF ADDRESS

Notify the Treasurer. Include your full name and new street address. If changing an e-mail address, specify whether you want to add, modify, or delete an e-mail address.

This months' contributors:

Joe Derek, Ed Ting, Larry Lopez, Bob Sletten, Barbara O'Connell, Jim Warenda, Marc Stowbridge

How to Join N.H.A.S.

Write to us:
NHAS
P.O. Box 5823
Manchester, NH 03108-5823
Attn: Treasurer

Send E-mail to:
info@nhastro.com

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

2003 Officers

President: Joe Derek

Vice President: Todd Miller

Treasurer: Jim Warenda

Secretary: Michael Frascinella

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

Astronomy Social, Dec. 12, Planetarium

NHAS Upcoming Events

Event	Date	Time	Location
Dec. meeting	Dec. 12	7:30 p.m.	Planetarium, Concord, NH
Coffee House	Dec. 19	5:00 p.m.	YFOS
CMP Skywatch	Jan. 2	7:30 p.m.	Planetarium, Concord, NH
Jan. 2004 meeting	Jan. 16	7:30 p.m.	St. Anselm's College, Goffstown, NH