



## Stellafane

### President's Message

I know I was tempting the weather gods when I said "last year Stellafane ended up sandwiched between the remnants of two hurricanes, so I suppose it can't get very much worse than that." Fortunately, I was right for a change! If you couldn't make to Stellafane you missed a good night on Friday, a fantastic day on Saturday, and an even better night Saturday evening. Of course our own Joe Derek took two awards in the telescope competition, and it didn't even require any illicit activities on my part, this being my ninth year as a telescope judge.



Photo by Chase McNiss

For this month's meeting at CMP I have a bit of a mixed bag in store. First, I want to give us all a little extra break time, since I'm sure there are many post-Stellafane stories to relate. Second, Joel Harris says he's bringing the book of the month. This is a bit of an understatement since he won this year's gigantic pile of Willman-Bell books at the Stellafane raffle. Third, I want to have a little discussion on the next set of features to be added to the web site. And finally, I will be demonstrating a laser interferometer that I built for my former store. Since it has just been collecting dust since, I think we might find be able to find a place for it in the club. All together, I

think that will add up to a full evening. Don't forget, Bob Sletton has scheduled the Astro 101 Collimation Class for next month's meeting at St. Anselm. See you there!

\* Matthew Marulla  
NHAS President 2005

### Stellafane

**News flash...**there was no measurable rain at the 2005 Stellafane Convention! NHAS astronomers wonder what happened to the summer skies and how did Jupiter get so far west?!?! Finally a thoroughly enjoyable Stellafane! As usual the NHAS canopy was erected on the slope just below the Shupman telescope and main observing field, thanks for the help from Joe Derek and Mike Townsend.



Photo by Chase McNiss

The convention did not seem as heavily attended as in years past, but it was still well represented by NHAS members. This year the NHAS contingency was well represented by the children of our members. I must say they were all well behaved and enjoyable to have around. They also looked like they enjoyed the experience, especially the opportunity to look through the many telescopes. Those are future NHAS members in the making; nice to see them start so young. Friday afternoon was

highlighted by a 1-2-3 sweep in the adult horseshoe competition by NHAS members Dan Smith, Chase McNiss and Joe Derek. Don't ask how many people were in the competition though. Congrats to Dan for winning 2 free registrations and camping passes for next year. Unfortunately as nice as Friday afternoon was looking weather wise, the clouds rolled in Friday evening and there wasn't too much serious observing done until after 2:00 AM when Mars made its appearance. I wimped out this year and opted for a hotel room, so I never did see Mars that morning.



Photo by Chase McNiss

Saturday brought more good weather and Joe Derek headed for Breezy Hill and the Pink Clubhouse to make the other ATM competitors nervous. Joe told me that he thought the competition was quite stiff this year and he had his doubts whether he would even place in the telescope making competition. I tried to assure Joe that he was a shoe in for Mechanical and Craftmanship awards but Joe had his doubts.

### Noteworthy News

Stellafane Continued... Page 2  
Kitt Peak Observing ... Page 2

## Stellafane Con't

Needless to say, Joe came home again with two well-deserved awards, 2<sup>nd</sup>. and 3<sup>rd</sup>. place in Mechanical and Craftsmanship just as I said. I am still amazed at the attention to detail and ingenuity that Joe put into designing his 17.5-inch flex mirror DOB. Way to go Joe!! Admittedly there were a lot of nice scopes on the hill, several I would have liked to bring home for sure. Unfortunately for Joe but fortunate for the other competitors, they did not let Joe enter the optical judging Saturday night. Joe was told he did not qualify because he did not grind his own mirror. I think grinding out the under corrected optics would have been the easy way out. As usual Joe was a good sport about the whole thing. Leave it to Joe to set the standards! The swap tables were dry (weather wise) for once but despite the good weather, attendance seemed lower than usual. Several of us noted that we did not see as much of the esoteric ATM items we have seen in the past. Maybe the tide is shifting when it comes to making your own telescope. I certainly hope this is not the case; maybe we need another Mr. Porter to step up and lead the way. I know I'm not the one to step up. Joel Harris, the chief bottle washer and head cook did another great job of preparing the food for the cookout on Saturday.



Photo by Chase McNiss

If we didn't say it several times that day, let me say it again. Thanks Joel for dragging the grill all the way to Stellafane and working so hard in the heat of the mid afternoon sun. Those burgers were great! It's always nice to see everybody under the canopy to exchange talk and eat all the good food. There were several new members in attendance as well as many of the old timers. Beside eating and getting fat, we played musical chairs as we shuffled into the shade of the canopy to

avoid the hot sun. But Joel did not stop there. Joel went on to be one of the winners of the Willman-Bell astronomy book collections at the Saturday night raffle and give away. How many times is that Joel and what's your secret? I think next year I will pay Joel to buy my tickets. Maybe Joel could make some money and not even worry about buying tickets for himself. This would give us other poor suckers a chance. Take the hint Joel! Well this article has gotten long enough, hope this might encourage others to see what Stellafane is all about next year. Clear skies,

\* Chase McNiss

## Kitt Peak Observing

*Editor's Note: John Blackwell has provided all photographs in this article*

"Arizona", the likely response to the question any astronomer would have for where they would like to observe. Recently, our very own **John Blackwell** spent time at Kitt Peak National Observatory doing research.



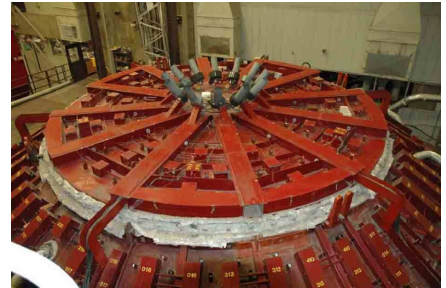
BTW, nice T-Shirt John! NHAS was fortunate enough to hear about John's visit during last month's meeting where we were treated to a collage of great photographs he took while there. It was interesting to hear John describe that at Kitt Peak, they use white light, not red light. Why, because all observing is done from control rooms far away from the scopes. John was participating in a sponsored program where he and others attending would act as mentors for teachers back home. The idea is to get more educators trained in science thus promoting it. He also had a chance to enjoy the area as well, but warned us about being careful in the desert. For example, at night you need to watch where you sit otherwise you might run into a very common night predator who would not appreciate you sitting on him! Yes, that is a scorpion.



Speaking of the desert, we also learned that Tuscon reaches 114 degrees and that it is common to drink a gallon of water per hour when outside! John got to see the mirror production center at ASU where the room resides under the football stadium. While touring the area, John was able to get a picture of one of the "eyes" of the LBT: Two 8.4m Primaries. It will live on Mt. Graham when it is done. In the back is the primary for the LSST.



The glass is melted in a 60-ton oven where after spreading takes months to cool.



After cooling, a crane takes the glass out of the oven using a device called a jig.



Unfortunately, John described one incident where a mirror was lost due to the manufacturer of the silicone adhesive failing to mention that the

formula was changed. Turns out that they were very dependent on the original formula as it worked extremely well. The result was a cracked mirror when it suddenly dropped from the crane resulting in months of wasted time and material. Moving on, has anyone ever wondered how high a Radio Telescope is? Well this one is 20 stories high and keep that in mind



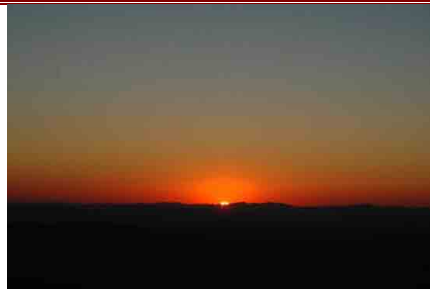
As you look at the next photo of John on top of that dish! He described that they had to be careful and walk on the joints or bad things could happen! I wonder if anyone dared to look over the top? I would most likely get Vertigo.



While there, John also had a chance to visit Mike Felong, a long time NHAS member who moved to Arizona some years ago. Here, Mike says hello to all of us!



Finally, in the spirit of riding off into the sunset, here is what John and his team got to enjoy before a night of observing.



And on that note, this is a good time to conclude the article. What a treat that was, thank you John!

\* Article written by Rich DeMidio using John Blackwell's Presentation

### Deep Sky Object of the Month

Observer: Lew Gramer  
 Your skills: Intermediate (some years)  
 Date/time of observation: 04/05 June 1999 0300 UT  
 Location of site: Myles Standish State Forest, MA, USA (Lat 42N, Elev 5m)  
 Site classification: Rural  
 Sky darkness: 6.4 &lt; Limiting magnitude &gt;  
 Seeing: 6 &lt; 1-10 Seeing Scale (10 best) &gt;  
 Moon presence: None - moon not in sky  
 Instrument: 17.5" f/4.5 Dobsonian  
 Magnification: 125x, 220x, 285x  
 Filter(s): None  
 Object(s): M88, SN1999cl  
 Object category: Galaxy. Supernova.  
 Object class: SA(rs)bc I, SN type Ia  
 Constellation: Com  
 Object data: mag 9.63, 14.2 size 6.92x3.72  
 Position: 123159.6+142512  
 Description:  
 Dave Mitsky wrote:  
 &gt;I observed SN 1999cl... and it was considerably brighter than I  
 &gt;expected it to be. Does anyone have a current magnitude estimate?  
 --  
 Dave, we saw the SN Friday night (4Jun) from Myles Standish State Forest in S MA. The site is pretty dark, but it was a hazy night, best estimate of telescope LM in that area of the was about 14.5 at 180x in my friend Steve Clougherty's 17.5" f/4.5 dob. Using fine directions I'd remembered from the list here I found the mag 12 star near M88's core, noted a pair

of mag 13.5(?) stars just off the core, and used all three as guides to the location of the SN - and there it was, twinkling just on the edge of averted vision. :) My mag estimate (with few stars nearby for comparison) was 14.2. As it turns out, there were several other observations on the VSNET and the ISN chat from 0603 and 0604 that are in that same range... As for M88, it had the usual lovely bright core, with a nicely elongated 6'x2' halo. However, no real detail was logged... I guess I was too busy gawking at that averted-vision sparkle of a stellar explosion! :)

\* Lew Gramer

### Astro Photo of the Month

I bet you all thought that I forgot about this section when you did not see it on page one! Well, no worries as I just moved it to make the layout look nicer. At any rate, Nils Wygant just could not wait to try out his new toy on M51. The picture is very good considering the crummy conditions that Nils describes in the city with light pollution. I thought it was a great shot! Here is the picture and his description.



Photo by Nils Wygant  
 Meade DSI 29-1min. exp with darks subtracted . Taken under Nashua light pollution with poor seeing.

## The Bottom Line

**Starting Balance:** \$3,712.92

**July Deposits:** \$886.56

**July A/P:** \$46.47 (Insurance)

**Net Balance:** \$3,712.92

**Cash Balance:** \$3,712.92

**Membership:** 129

**New members:**

Frank Conway

Sharon Marie May Nashua, NH

Joan Wentworth Lyndeborough, NH

Susan Wickett Lyndeborough, NH

Scott Wickett Lyndeborough, NH

\* Barbara O'Connell

## Looking Back at Last Month

**Opening.** **Matt Marulla** walked us through the various department reports and set the stage for the evening program on Kitt Peak Observing..

**Scope of the Month.** No actual scope but **John Bishop** showed a device called a Historical Planisphere.



Picture by Chase McNiss

It has an outer dial to set and move the North Pole. It shows a 26,000-year progression so you can see what the sky looked at in the past or future. It's helps you understand why some constellations were as such. So, they could see things in past that we could not see now. **Mark Stockbridge** showed his homemade Pier out of street lamp parts, nuts and bolts. He also made some from oversized birdseed buckets. These are bigger than the

typical sheetrock buckets.



Picture taken by Chase McNiss

**Public Observing.** **Ed Ting** Ed was at home recuperating from a bike injury. There are several skywatches upcoming and members were asked to view the website and monitor email for details.

**Book of the Month, Bob Sletton and Larry Lopez.** Presented a copy of a book donated by Erwin Kahn. The title is "Lightning Protection" and it tells you about how to protect observatories against lightning strikes. Tips are also offered on how to survive during a storm if you happen to get caught by surprise during setup or tear down. Larry also presented a book from the O'Reilly series called "Astronomy Hacks" Several members chimed in with mixed reviews.



Picture by Chase McNiss

I found a URL for it as follows:  
<http://www.oreilly.com/catalog/astro/myhks/desc.html>

**Committees.** **Photo Club** No report.  
**Web:** **Matthew Marulla** reported that the new has site officially switched over with all the email forwards working. Next task is to get the member's only area operational. Right now, YFOS directions are the only

thing there. Matt will keep us updated via email when changes are made.

**ATMs: Larry Lopez** – Had two ATM meetings at Joe Derek's house in preparation for Stellafane. Their work focused on getting RA motors operational. A final decision has not been made yet on whether Joe's scope will officially be entered. **Membership: Bob Sletten** reported that a new topic has been chosen for the next round of AstroLabs. **John Bishop** has volunteered to teach the fine art of collimation and will delivered as a working session. This session is currently being planned for delivery as the evening program for the September meeting. Great timing as a good portion of us picks up our observing from the summer months.

**YFOS.** **Larry Lopez** reported that it is time to mow the lawn again. Lack of good weather is still preventing us to get an optimal mosquito net position but the last few positioning have yielded much better results. The feeling is that we are narrowing down the best location. **Other Topics.** **Matt Marulla.** Showed an image of the Deep Impact probe from [www.slooh.com](http://www.slooh.com) A significant increase in light was noticed in a 24 hour period. There was some concern that the probe's impact would displace the orbit but Matt explained that the impact was like a mosquito hitting a 747! Matt also reported that several members viewed the supernova in M51 at YFOS. Hubble identified the precursor star for this Supernova and that it has brightened by 100K times according to calculations.

**Stellafane Discussion** – The attendees discussed logistics and planning for the event. Matt offered a brief history of how the event got started. The event is an annual convention that first started in 1922. With the exception of a few years during WW2, the convention has been an annual occurrence. **Russell Porter** who was an original founder was on an expedition to the North Pole with Admiral Perry. He got involved in Astronomy in the 1920's and started a club named "Springfield Telescopes Makers" Some land was donated on breezy hill, and a clubhouse. Funds were very tight and a local hardware store donated some pink paint. Russell wrote articles for Scientific American which became the genesis for the

convention. His book became the bible for telescope making. Mr. Porter also helped to design the 200" telescope on Palomar. Ironically, he died in his basement while grinding a mirror. In the 1970's, the group purchased more land and it is now an annual event. There is ATM competition each year with incredible creativity. There is a keynote on Saturday night with awards. There are no vendors, commercial exhibits, or advertising. One of the highlights is the swap tables which is treasure or junk – you pick. **Evening Program Kitt Peak Observing** (feature article above)

\* Rich DeMidio

**NASA Space Place**

# Improbable Bulls-Eye

by Dr. Tony Phillips

Picture this: Eighty-eight million miles from Earth, a robot spacecraft plunges into a billowing cloud almost as wide as the planet Jupiter. It looks around. Somewhere in there, among jets of gas and dust, is an icy nugget invisible to telescopes on Earth—a 23,000 mph moving target.

The ship glides deeper into the cloud and jettisons its cargo, the "impactor." Bulls-eye! A blinding flash, a perfect strike.

As incredible as it sounds, this really happened on the 4<sup>th</sup> of July, 2005. Gliding through the vast atmosphere of Comet Tempel 1, NASA's Deep Impact spacecraft pinpointed the comet's 3x7-mile wide nucleus and hit it with an 820-lb copper impactor. The resulting explosion gave scientists their first look beneath the crust of a comet.

*That's navigation.*

Credit the JPL navigation team. By sending commands from Earth, they guided Deep Impact within sight of the comet's core. But even greater precision would be needed to strike the comet's spinning, oddly-shaped nucleus.

On July 3<sup>rd</sup>, a day before the strike, Deep Impact released the impactor. No dumb hunk of metal, the impactor was a spaceship in its own right, with its own camera, thrusters and computer brain. Most important of all, it had "AutoNav."

AutoNav, short for *Autonomous Navigation*, is a computer program full of artificial intelligence. It uses a camera to see and thrusters to steer—no humans required. Keeping its "eye" on the target, AutoNav guided the impactor directly into the nucleus.

The system was developed and tested on another "Deep" spacecraft: Deep Space 1, which flew to asteroid Braille in 1999 and Comet Borrelly in 2001. The mission of Deep Space 1 was to try out a dozen new technologies, among them an ion propulsion drive, advanced solar panels and AutoNav. AutoNav worked so well it was eventually installed on Deep Impact.

"Without AutoNav, the impactor would have completely missed the nucleus," says JPL's Ed Riedel, who led the development of AutoNav on Deep Space 1 and helped colleague Dan Kubitschek implement it on Deep Impact.

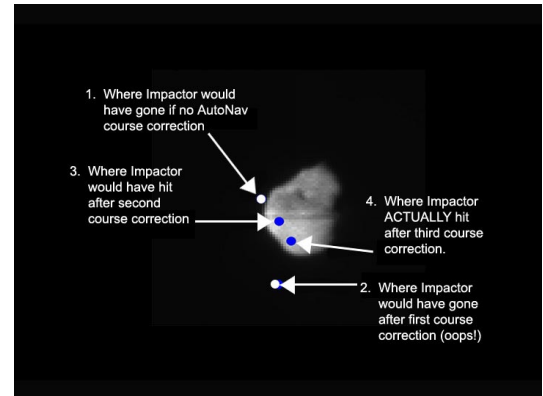
En route to the nucleus, AutoNav "executed three maneuvers to keep the impactor on course: 90, 35, and 12.5 minutes before impact," says Riedel. The nearest human navigators were 14 light-minutes away (round trip) on Earth, too far and too slow to make those critical last-minute changes.

Having proved itself with comets, AutoNav is ready for new challenges: moons, planets, asteroids ... wherever NASA needs an improbable bulls-eye.

Dr. Marc Rayman, project manager for Deep Space 1, describes the validation performance of AutoNav in his mission log at <http://nmp.nasa.gov/ds1/arch/mrlog13.html> (also check mrlog24.html and the

two following). Also, for junior astronomers, the Deep Impact mission is described at [http://spaceplace.nasa.gov/en/kids/deep\\_impact/deepimpact.shtml](http://spaceplace.nasa.gov/en/kids/deep_impact/deepimpact.shtml)

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



*Editor's Note: This article was directly included rather than publishing the URL so our people receiving the newsletter via US mail would be able to see it.*

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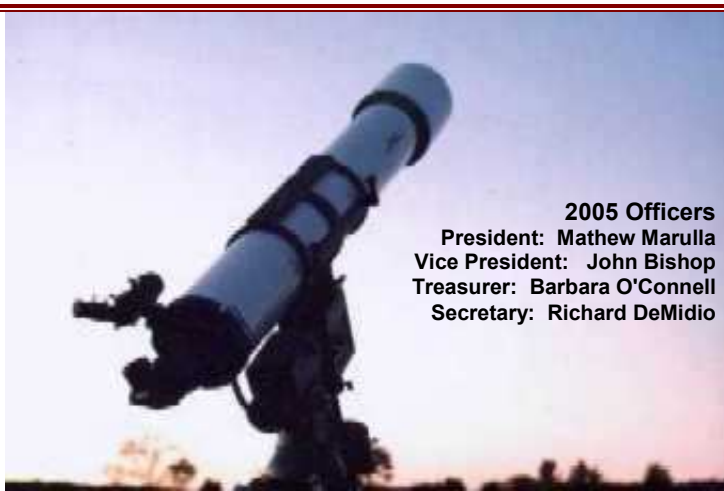
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**This month's contributors:**

Mathew Marulla, John Blackwell, Ed Ting , Larry Lopez,  
Barbara O'Connell, Chase McNiss, Bob Sletton, John Bishop,  
Mark Stockbridge

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**P.O. Box 5823**  
**Manchester, NH 03108-5823**



**Mixed Bag, 8/19 Planetarium**

**NHAS Upcoming Events**

<b>Event</b>	<b>Date</b>	<b>Time</b>	<b>Location</b>
August Business Meeting	Aug 19	7:30 pm	Planetarium Concord, NH
CMP Skywatch	Sep 2	7:30 pm	Planetarium Concord, NH
Coffeehouse	Sep 2		YFOS
Sept Business Meeting	Sep 16	7:30 pm	St. Anslems
Coffeehouse	Sep 30		YFOS
CMP Skywatch	Oct 7	7:30 pm	Planetarium Concord, NH
October Business Meeting	Oct 21	7:30 pm	Planetarium Concord, NH