

Bays Mountain Astronomy Club

👉 *Annual Dinner Jan. 12* 👈

REFLECTIONS

Happy New Year!

Wow, what a wonderful end to 2012. The December meeting featured Dr. Gary Henson from ETSU's Astronomy & Physics Department as our keynote speaker and Terry Alford as Constellation Quest leader. Dr. Henson spoke about the depth of new information available on Mars and how it has changed what we knew about our Solar System neighbor. He also addressed the big question "Is there, or was there life on Mars?" new information is being discovered daily to help us determine. He talked about the importance of future robotic missions and the lack of any plans to take humans there. Dr. Henson shared several web sites that will be helpful for more information.

The next section of the meeting was focused on this month's best constellation for December's viewing. BMAC'er Terry Alford featured Gemini. Terry shared some of the brighter stars within the constellation that can be seen without the use of advanced equipment. Terry also shared the

BY WILLIAM TROXEL

best days to view and showed the location of the constellation in the sky. Terry introduced members to the Stellarium software, a very useful, free software for your laptop or desktop computer of any operating system. He gave some tips for using Stellarium. If you would like to check it out, go to

www.stellarium.com or ask your fellow club members who use the software program for their experience with this wonderful resource.

Both Dr. Henson & Terry engaged, informed, and enlightened the members and guests. Thanks again gentlemen for a great way to end the year.

Our business meeting focused on the location of the annual dinner meeting in January. During the meeting, the membership voted to have "The Meadows", located inside the Marriott MeadowView Resort near Bays Mountain Park as the location for our annual dinner. Each person will order from the select menu. Prices range from \$15 to \$33 and include drink, salad, and cheesecake dessert.

(Continued on page 5)



Calendar

Special Events

Jan. 12 Annual dinner. 6 p.m. Meadows Restaurant at MeadowView Resort. "Dr. Richard Ignace, ETSU Physics Dept., will speak on "Hot Stars." Jan. 19 is the snow date.

BMAC Meetings

7 p.m., Discovery Theater

Feb. 1 Dr. Mark Giroux from ETSU will speak on "Unraveling the Mysteries of the Leo Ring." Const. Quest: Greg Love - Orion the Hunter.

Mar. 1 Observatory cleanup and observing. Const. Quest: Bob Smith - Leo the Lion.

Apr. 5 TBA

May 3 Dr. Joseph Pollock from the Appalachian State University Astronomy Department will speak on "Specifically Paired & Binary Asteroids." Const. Quest: Sally Hale - Ursa Minor the Small Bear

Editor's note:

I would like to thank Bob Smith for his endless support of the Bays Mountain Astronomy Club and its monthly newsletter. Bob has been writing the "Eye to the Sky" article every month since November 1993! Bob is not calling it quits, but is relaxing his faithful duties by not writing the monthly what's up in the sky article. Thank you, Bob, for your highly informative articles and gentle nudging to all of us to get out there and look up.



This brings an addendum to this message. If a BMAC'er would like to provide a monthly, or occasional, article for the newsletter, please do so. It does not have to be a full page of text, nor even a what's up type of article. Photos are also quite welcome. Just contact me and please share.

AJT

STAR STUFF

BY TERRY ALFORD

For two years now, I have really enjoyed using my little Lunt Ha solar scope. It is easily carried outside attached to my old Leitz Tilt-all tripod...with one hand. Very

hole in the rear of the dovetail to accept a 5/16-in metal threaded insert. A decent dose of two-part epoxy would make sure the insert would stay put. I had a long handle from another tripod, but it had 8 mm metric threads. It was not difficult to tap 8 mm threads into the insert. The result was a

Another small project that is even cheaper, easier and quicker: If you have a Dollar Tree store in your area you need to go by and check out their hardware aisle. There are several inexpensively made LED lights there for sale. All are \$1.00. One of the lights is a small plastic goose neck type light that has a built in clamp. The light even comes with three small LR44 round button cell batteries. The LED light is pretty bright. The light is easily taken apart. Paint a couple of coats of red nail polish on the LED itself and re-assemble. Presto! You have a red LED light that easily clips to star charts or pretty much anything else. When you are in the store buy a couple of these. It is worth it for the batteries alone. You may find other lights for other uses but I like the little goose neck light a lot.

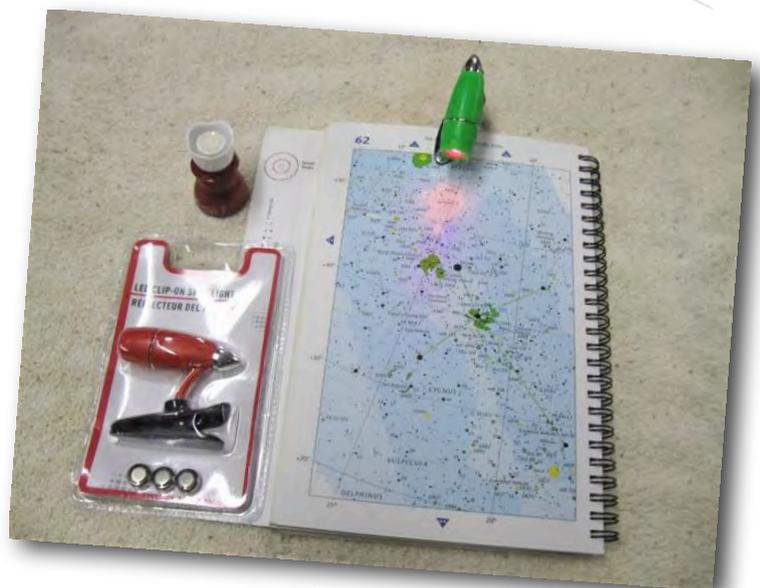


grab 'n go! Until recently, I only used one short handle on the tripod head to roughly find the Sun in altitude. Small adjustments were made by loosening the altitude handle and pushing the back end of the scope by the diagonal. A couple of months ago, I began to wonder what potential damage I might be doing to the scope by doing this. It seemed obvious that a longer handle on the opposite side of the scope would allow more leverage and stop the potential stress on the OTA.

very practical piece to attach the scope to either the Leitz tripod or to the SLT mount. It is easily removed when using the SLT mount. When using the Leitz tripod, it makes "steering" the scope

So, I cut a nice little piece of red oak that the scope would attach to. I cut it with a dovetail that would allow the scope to also be used with my Celestron SLT Go-To mount. A T-nut was installed in the center of the piece to allow easy attachment to the Leitz tripod. Next, I drilled a

around much easier and I am no longer concerned about any excess wear and tear on the scope. As an added bonus, the scope still fits in it's travel case with the steering handle attached.



*HAPPY BIRTHDAY IRAS**BY ROBIN BYRNE*

This month we celebrate the 30th anniversary of the first orbiting infrared telescope to map the entire sky. On January 25, 1983 at the Vandenberg Air Force Base atop a Delta 3910 rocket, the 3.6 x 3.24 x 2.15 meter Infrared Astronomical Satellite (IRAS) was launched into space 900 km above Earth. Following a polar orbit around Earth, it completed one circuit every 100 minutes.

Built as a joint venture between the United States (NASA), the Netherlands (NIVR) and the United Kingdom (SERC), IRAS was designed to observe in the infrared part of the spectrum. The telescope design was a Ritchey-Chrétien with a 0.6 meter aperture and a 5.5 meter focal length. The main collecting area was comprised of 62 infrared detectors. These were able to resolve down to 0.5 minutes of arc when observing at 12 microns, and 2 minutes of arc at 100 microns. The other two main instruments were the Low Resolution Spectrometer (LRS) and the Chopped Photometric Channel (CPC). The LRS observed light with wavelengths in the 8 - 22 micron range. It took spectra of roughly 5000 sources brighter than 10 Janskys. The CPC was used for low-resolution mapping of the sky. Although it didn't function as well as expected, it did provide maps at 50

and 100 microns. To know for sure the intensity of the sources observed, 10 thermal calibration sources were mounted behind the secondary mirror. These provided stable pulses of infrared to use as references. They were composed of a 1 mm square substrate of diamond that could be heated to 200 Kelvin in less than a second. A small hole in the secondary mirror allowed the source to shine through to the detectors.

Because detecting infrared requires cold temperatures (just as observing faint objects require dark

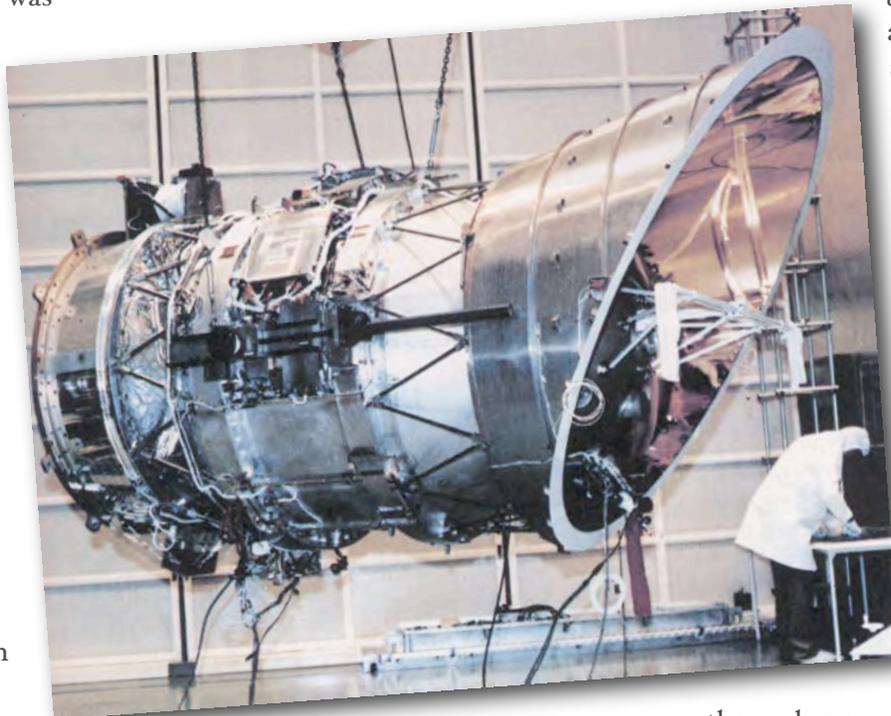
first week in orbit, which was also cooled with helium. This was ejected, but a sunshade remained to block direct sunlight or light reflected off of Earth from entering the telescope.

IRAS was an unqualified success. It completed an all-sky survey at wavelengths from 8 to 120 microns through four filters, centered on 12, 25, 60 and 100 microns. Approximately 96% of the sky was mapped four times (once through each filter). Over 350,000 infrared sources

were discovered. Of those, about 75,000 are thought to be starburst galaxies. Other sources are thought to be stars with dusty disks around them, including Vega. IRAS also provided the first direct image of our galaxy's center. When mapping the entire sky, it was important to have as little noise as possible. Because our Solar System is

a thermal source, the same part of the sky was observed from different points in our orbit, so that it was looking through different parts of the Solar System. There were also non-astronomical sources to be sorted out.

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conditions), the telescope needed to be cooled. This was done by mounting the telescope in a tank of superfluid helium. This kept the telescope at a temperature of 2 Kelvin (-456 °F). The 73 kg of helium was enough to provide cooling for about 300 days. An aperture cover protected the telescope during launch and for the

NASA SPACE PLACE

Partnering to Solve Saturn's Mysteries**By Diane K. Fisher**

From December 2010 through mid-summer 2011, a giant storm raged in Saturn's northern hemisphere. It was clearly visible not only to NASA's Cassini spacecraft orbiting Saturn, but also astronomers here on Earth—even those watching from their back yards. The storm came as a surprise, since it was about 10 years earlier in Saturn's seasonal cycle than expected from observations of similar storms in the past. Saturn's year is about 30 Earth years. Saturn is tilted on its axis (about 27° to Earth's 23°), causing it to have seasons as Earth does.

But even more surprising than the unseasonal storm was the related event that followed.

First, a giant bubble of very warm material broke through the clouds in the region of the now-abated storm, suddenly raising the temperature of Saturn's stratosphere over 150 °F. Accompanying this enormous "burp" was a sudden increase in ethylene

gas. It took Cassini's Composite Infrared Spectrometer instrument to detect it.

According to Dr. Scott Edgington, Deputy Project Scientist for Cassini, "Ethylene [C₂H₄] is normally present in only very low concentrations in Saturn's atmosphere and has been very difficult to detect.

Although it is a transitional product of the thermochemical processes that normally occur in Saturn's atmosphere, the

Chemical reaction rates vary greatly with the energy available for the process. Saturn's seasonal changes are exaggerated due to the effect of the rings acting as venetian blinds, throwing the northern hemisphere into shade during winter. So when the Sun again reaches the northern hemisphere, the photochemical reactions that take place in the atmosphere can speed up quickly. If not for its rings, Saturn's seasons would vary as

predictably as Earth's.

But there may be another cycle going on besides the seasonal one.

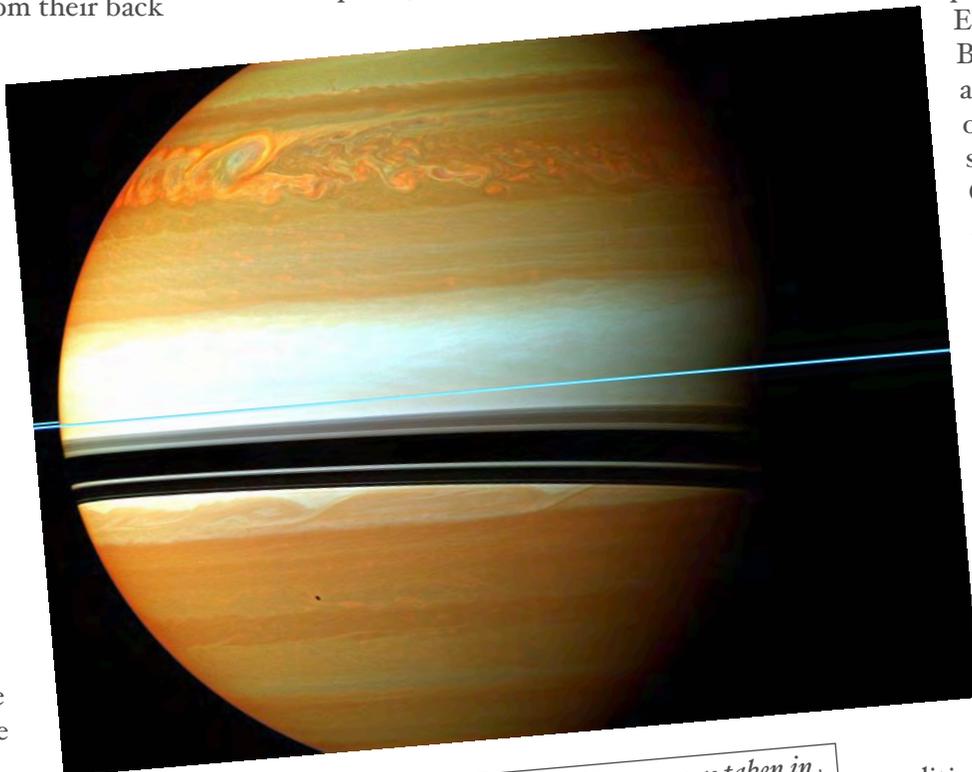
Computer models are based on expected reaction rates for the temperatures and pressures in Saturn's atmosphere, explains Edgington.

However, it is very difficult to validate those models here on Earth. Setting up a lab to replicate

conditions on Saturn is not easy!

Also contributing to the apparent mystery is the fact that haze on Saturn often obscures the view of storms below.

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This false-colored Cassini image of Saturn was taken in near-infrared light on January 12, 2011. Red and orange show clouds deep in the atmosphere. Yellow and green are intermediate clouds. White and blue are high clouds and haze. The rings appear as a thin, blue horizontal line.

concentrations detected concurrent with the big 'burp' were 100 times what we would expect."

So what was going on?

MISCELLANEOUS

Reflections**by William Troxel***(continued from page 1)*

There will also be vegetarian and gluten-free items available, but the gluten-free items must be pre-ordered. I have sent the menu to be posted on the web site and also on bmaastro. It is also on page 7 of this newsletter. The date of the dinner will be January 12, 2013 @ 6 p.m. The snow date will be January 19, 2013. I hope you will be able to come out for this annual event.

This month's speaker will be Dr. Richard Ignace from ETSU's Astronomy and Physics Department. His topic will be "Hot Stars."

In January, I will also be announcing the goals for the coming year. I would like to share with you a few of the ideas I will be working on the next 6 months. I have been working on a short U-tube movie to be added to the web site that will showcase our club meetings and StarWatches. My hope is to entice the casual internet browser interested in stars to check out our events in person. I hope to present a sample of the movie at our February meeting. I am still looking for club members who will do the Constellation Quest and be a keynote speaker.

I also want to start working on resources for outreach programs like Astronomy Day programs. I see groups setting up booths or tables to showcase their clubs or activities and feel we should be doing this as well. I want to share more details in the March meeting.

Another idea in the works is sending thank-you notes to visitors

who come to our club meeting for the first time. We are needing to work out the details of this as it involves getting each visitor's e-mail and then having a current member or club chair send them a thank-you note. This idea is still in the development stage, but hopefully it is something we can move forward on as the year progresses. Any suggestions you have on this idea or any new ideas you have to help us increase our membership are always welcome!

I have asked for your ideas and input, but realize it isn't possible for each of you to talk to me at club meetings. Please feel free to contact me either through e-mail at wtroxel@icloud.com or via text message at 423-341-8898 or bmaastro:wtroxel.

Finally, I would like to share an experience I had in December. I was sitting in the Johnson City Mall waiting for a family member. I was working on some club stuff when I overheard a part of a conversation taking place at another table. The couple was talking about seeing the Big Dipper a few nights ago and thought that it would be fun to go to a StarWatch now that they were in the area. I looked up to see who was talking. The gentlemen came over and asked me if I knew where they could find out any information about local astronomy clubs. I smiled and introduced myself and told them a little about our club and gave them the web site. They seemed very interested and thanked me for sharing. After they left, I thought about how important it was to get our club out to the public. The staff here at the park is sharing the club

Regular Contributors**WILLIAM TROXEL**

William is the current chair of the club. He serves as activities coordinator for a local retirement living community.

TERRY ALFORD

Terry is also a founding member since 1980 and has been chair many times, as well. He has worked as an astronomy lab instructor at ETSU since 2001.

ROBIN BYRNE

Robin has been writing the science history column since 1992 and was chair in 1997. She is an Associate Professor of Astronomy & Physics at Northeast State Community College (NSCC).

ADAM THANZ

Adam has been the Editor for almost all of the years since 1992. He is the Planetarium Director at Bays Mountain Park as well as an astronomy adjunct for NSCC.

each time they can to the visitors, but what about the people who may not get to the park? Let's open a conversation about additional ways we can promote our club in the area. Let's think about it together!

Lastly, I want to welcome two new members: Thomas & Nicholas Karig from Bulls Gap, TN. On behalf of all the membership we welcome you both. We hope to see you often at our meetings and events. I look forward to getting to know you both.

Until next time.... Clear skies!

Happy Birthday by Robin Byrne

(continued from page 3)

IRAS itself was one source, plus dust orbiting Earth, as well as satellites and other debris from the space program. As an example, a dust particle 100 microns across, within 18 km of the telescope, at a temperature of 200 Kelvins would be detected as a strong source through 3 of the 4 filters. Cosmic rays and radiation trapped in Earth's magnetic field were also a nuisance.

To discover new objects, IRAS would observe the same part of the sky multiple times. First it would look a few seconds later to remove signals from random radiation. Then it would look back a few hours later to discount any slower-moving objects in our Solar System. Finally, the same location would be observed a few weeks to months later to eliminate more distant, even slower-moving Solar System objects, such as asteroids. In the process of eliminating moving objects in our Solar System, IRAS discovered three

asteroids, six comets, and a dust trail connected to comet Tempel-2. One of the asteroids discovered was Phaethon, which is the source for the Geminid meteor shower.

After 10 months of mapping the sky, the superfluid helium supply ran out. This marked the end of IRAS' useful lifetime. On November 22, 1983, the mission came to an end. The telescope, however, is still in Earth orbit. While IRAS was the first, many infrared telescopes have followed in its footsteps, including: the Infrared Space Observatory (1995), the Spitzer Space Telescope (2003), the AKARI Space Telescope (2006), and WISE (2009), not to mention the upcoming James Webb Space Telescope, set to launch in 2018. As technology continues to improve, our views of the infrared universe will continue to amaze us, but it is worth remembering how it all began with IRAS.

References:

IRAS - Wikipedia
<http://en.wikipedia.org/wiki/IRAS>

LAMBDA - Infrared
Astronomical Satellite
<http://lambda.gsfc.nasa.gov/product/iras/>

IRAS Explanatory Supplement
<http://irsa.ipac.caltech.edu/IRASdocs/exp.sup/>

NASA Space Place

(continued from page 4)

Only once in a while do storms punch through the hazes. Astronomers may have previously missed large storms, thus failing to notice any non-seasonal patterns.

As for atmospheric events that are visible to Earth-bound telescopes, Edgington is particularly grateful for non-professional astronomers. While these astronomers are free to watch a planet continuously over long periods and record their finding in photographs, Cassini and its several science instruments must be shared with other scientists. Observation time on Cassini is planned more than six months in advance, making it difficult to immediately train it on the unexpected. That's where the volunteer astronomers come in, keeping a continuous watch on the changes taking place on Saturn.

Edgington says, "Astronomy is one of those fields of study where amateurs can contribute as much as professionals."

Go to <http://saturn.jpl.nasa.gov/> to read about the latest Cassini discoveries. For kids, The Space Place has lots of ways to explore Saturn at <http://spaceplace.nasa.gov/search/cassini/>.

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

**2013 Annual BMAC Dinner
Select Menu:**

**GRILLED NEW YORK
STRIP STEAK**

Baked Potato & Sautéed
Seasonal Vegetables
\$33

PAN SEARED SALMON
Savory Rice Pilaf & Sautéed

Seasonal Vegetables
\$29

GRILLED BASIL CHICKEN
Pesto Cream Sauce, Mashed

Potatoes & Sautéed Seasonal
Vegetables
\$27

**RIGATONI with
CARMELIZED PORTOBELLO**
Spinach, blistered tomatoes, &
parmesan [vegetarian]
\$20

MARRIOTT BURGER

The classic on a butter toasted
sesame bun, fresh ground Angus
beef, cheddar cheese, crisp bacon,
lettuce, tomato, onion and French
fries
\$16

**GRILLED CHICKEN
CAESAR SALAD**

Chilled romaine tossed in
traditional Caesar dressing with
parmesan cheese and crunchy
croutons with warm dinner rolls
\$15

First 4 entrees are served with a
fresh tossed garden salad with choice
of ranch or red wine vinaigrette
dressing

Dessert: New York Style
Cheesecake

Iced tea, coffee and dinner rolls
are included in each price

**NO SUBSTITUTIONS
PLEASE**

Our Chef is happy to honor any
dietary requests.

18% gratuity will be added

Club Dues Have Changed

After more than 20 years, the
club dues rates have now increased.
The new rates are \$16 for a full
member and \$6 for additional family
members. If you are a member of
the Park Association (an additional
fee), then your club dues are reduced
50%.



Ned Jilton II — njilton@timesnews.net

Reaching for the stars

People line up to look at Jupiter and the craters on the moon through a telescope during a star gazing event Thursday night at Roosevelt Elementary School. The event was for fourth-graders and their families and friends. Crystal Holland, fourth-grade teacher at Roosevelt, coordinated the event with Jason Dorfman, astronomy and space science administrator at Bays Mountain Park and Planetarium. At right, Launa Williams checks out the view through a telescope as lights from Kingsport glow in the background.



Bob Smith and Jason Dorfman revealing the night sky to local school group, Roosevelt Elementary on November 29. I hope you saw this in the Kingsport Times News.

The Bays Mountain Astronomy Club



Edited by Adam Thanz:
thanz@kingsporttn.gov

Dues:

The Bays Mountain Astronomy Club requires annual dues for membership. It covers 12 months and is renewable at any time.

Rates:

\$16 /person/year

\$6 /additional family member

If you are a Park Association member, a 50% reduction in fees is applied.

Find out more at our website:

<http://www.baysmountain.com/astronomy/astronomy-club/>

🍏 Made on a Mac!

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