

Last month, the potential for two bright comets in 2013 was presented. The first is **Comet Pan-STARRS**, which was discovered by astronomers in Hawaii in June 2011. Predicted to reach naked-eye visibility in early March when it passes within a 100 million miles of Earth, the new comet is proving to be an uncertain object. Even as recent as Feb. 6 on a [NASA Science News web site](#), Karl Battams of the Naval Research Lab stated "Almost anything could happen. On one hand, the comet could fall apart -- a fizzling disappointment. On the other hand, fresh veins of frozen material could open up to spew garish jets of gas and dust into the night sky."

Matthew Knight, of the Lowell Observatory, predicts that "Because of its small distance from the Sun, Pan-STARRS should be very active, producing a lot of dust and therefore a nice dust tail. However, it could still be difficult to see. From our point of view on Earth, the comet will be very close to the Sun. This means it will only be observable in twilight when the sky is not fully dark."

The best dates to look may be March 12th and 13th when Pan-STARRS emerges not far from the crescent Moon. Framed by twilight blue, this would be a rare sight. However, binoculars may be needed to see the tail.

"Two other key dates are March 5th when the comet comes closest to the Earth and March 10th when the comet comes closest to the Sun. The dose of solar heating it receives just inside the orbit of Mercury could be just what the comet needs to push it into the realm of naked-eye visibility," states Tony Phillips of NASA Science News.

Per Michael Bakich of [Astronomy.com](#), on Feb. 1, the comet lies in the obscure constellation Telescopium. By now, it should have reached a brightness that would let observers in southern latitudes see it from a dark site without optical aid. But at magnitude 7, it is five orders short of that level. A comet with its tail is an extended object and needs to be much brighter than magnitude 6, a level that most people can see a star on a dark night.

Veteran comet-watcher and Astronomy Contributing Editor Raymond Shubinski states "Although the comet may be disappointing to the eye, point a camera -- or better yet, a camera attached to a telescope -- at it, and the detail you capture may surprise you." If nothing else, it can be a practice run for comet ISON in the fall.

Alan MacRobert of [Sky and Telescope](#) on Jan. 22, summarized that comet Pan-STARRS will "probably be fainter than we originally predicted." He reported that Seichi Yoshida, editor of *Weekly Information about Bright Comets*, has changed his magnitude formula for the comet and the new predicted light curve has the comet peaking at just magnitude +3 in early March.

Check out the nice graphic at [S&T's web site](#) of the comet's orientation plotted from March 7 to 20.

Inside this Issue...

- 2 - Local Events and Information
- 3 - EAS Schedule of Events for 2013
- 4 - Proposal for Telescope Mount
- 5 - March Calendar/ Events
- 6 - Art of Space Imagery
- 7 - Upcoming Programs
- 8 - Minutes of January meeting

Local Events and Information

The **Evansville Astronomical Society** (EAS) is a non-profit organization fully incorporated in the state of Indiana. It has, as its primary goal, the advancement of amateur astronomy. Founded in 1952, the society seeks to:

- 1... maintain adequate facilities for its members and for the public in order to extensively study the skies, and
- 2... promote an educational program for those who wish to learn more about the science of Astronomy.

Meetings are held the third Friday of each month, except June, when the annual EAS picnic is held. The society also sponsors monthly Open House events during the warmer seasons that afford the public an opportunity to tour the observatory.

EAS 2012 Officers and Contacts

President - Scott Conner 812.604.7164
ssconner24@gmail.com

Vice President - Tony Bryan

Secretary - Charleen Kaelin 812.303.1711

Treasurer - Scott Bishop

Counselors - Michael Borman, Kent Brenton,
and Ed Erickson

Webmaster - Michael Borman

Program Director - open

Newsletter Editor - George Neireiter
812.629.7822 gneireiter@wowway.com

For more information about EAS or directions to the Observatory, visit the club's web page:
<http://www.evansvilleastro.org/>



The 2013 EAS Board Meeting was held at Tony Bryan's home in Jasper. In attendance were: Scott Conner, Tony Bryan, Scott Bishop, Ken Harris, and George Neireiter. The meeting began at 2 pm and concluded about two and a half hours later.

First order of business was preparing the **2013 EAS Schedule of Events** -- see page 3 below. Using the 2012 version as a guide, Regular meetings and Public Sky Watches (PSWs) were defined. Member observing was included as part of two PSWs and the June picnic. Two Comet watches were identified in March and November. These two dates are considered "tentative", pending determination of the brightness of each comet. Both a spring Dome Repair day and a Fall/ winter Cleanup were slotted on the calendar. Additionally, dates for Astronomy Day, Patoka Beach, Ferdinand Folk Festival, and an Astronomy Night at Delaware school were included. Note: the Schedule is updated periodically. Please refer to the Night Sky Calendar on the [EAS web site](#).

Scott Conner provided an update regarding the project to replace the **telescope mount** in the observatory dome. He focussed on the merits of the Paramount ME II mount, in particular the high load capacity and user friendly interface. Scott then added that he has secured heavy gauge steel tubing and plate for constructing a mount support. The group discussed various strategies for soliciting donations to purchase the mount. Scott Bishop agreed to write a project proposal -- see page 4.

In **Other Business**, Scott Conner discussed using [Star Talk Radio](#) to promote awareness of EAS. Star Talk is a popular commercial radio program devoted to all things space and is hosted by Neil deGrasse Tyson. In return, EAS would promote Star Talk on the EAS web page. Given that this cross promotion is cost neutral, the Board supported the idea and Scott Conner will followup with Mike Borman about adding the Star Talk link. ... < see Board p. 3 >

EAS OBSERVER NEWSLETTER

EAS Schedule 2013

Regular Meeting	Friday , Jan 18	7:30 pm
Regular Meeting	Friday, Feb 15	7:30 pm
Astronomy Night	Friday, Mar 1	@ Delaware School -- dusk
PSW	Saturday Mar 9	TBD comet C/2011 L4 (PANSTARRS)
Regular Meeting	Friday, Mar 15	7:30 pm
Mid South Star Gaze	April 10-13	French Camp, MS
Regular Meeting	Friday, Apr 19	7:30 pm
Astronomy Day	Saturday, Apr 20	@ Museum 11 am – 3 pm (tentative) @ Wahnsiedler for observing in evening 9:30 am (painting, cleaning in lounge)
Dome Repair Day	Saturday, April 27	
Texas Star Party	May 5-12	Ft. Davis, TX
Regular Meeting	Friday, May 17	7:30 pm
PSW	Saturday, May 18	8:15 pm
EAS Picnic	Saturday, Jun 8	eat at 6:00 pm, member observing to follow
PSW	Saturday, Jun 8	8:30 pm
Patoka Lake (22nd)	Saturday, Jul 13	6:00 pm Patoka Lake
Regular Meeting	Friday, Jul 19	7:30 pm
Nebraska Star Party (20th)	Aug 4-9	Merritt Reservoir's Snake Campground (near Valentine, NE)
PSW	Saturday, Aug 10	8:00 pm
Regular Meeting	Friday, Aug 16	7:30 pm
PSW	Saturday, Sep 7	7:30 pm
Ferdinand Folk Festival	Saturday, Sep 21	11 am - 6 pm (local time)
Regular Meeting	Friday, Sep 20	7:30 pm
Okie-TEX (30th)	Sep 28 - Oct 6	Camp Billy Joe (near Kenton, OK)
Twin Lakes (24th)	Sep 28 - Oct 6	Pennyrile State Forest (near Dawson Springs, KY)
Fall/winter Cleanup	Saturday, Oct 12	3:00 pm with member observing to follow
PSW	Saturday, Oct 12	7:30 pm
Regular Meeting	Friday, Oct 18	7:30 pm (nominations for Officers)
Regular Meeting	Friday, Nov 15	7:30 pm (election of Officers)
Comet watch	Saturday, Nov 30 (tentative)	5 pm ?? comet C/2012 S1 (ISON)
Regular Meeting	Friday, Dec 20	7:30 pm (Scott Conner - Quiz Master)
Daylight savings Time Begins	Sunday, Mar 10	2:00 am
Daylight Savings Time Ends	Sunday, Nov 3	2:00 am

Events in Red are at the Observatory.

Events in Black are not at the observatory

Events In Green are not EAS Events

... Board < from p. 2 >

Triggered by an idea from Mike Borman for donations, increased use of Facebook for EAS public outreach was discussed at length. Scott Bishop will investigate modifying the current Facebook account to allow for multiple administrators, which provides capability for daily monitoring of the account for answering questions and posting scheduled and unscheduled events.

Two additional items were covered before the meeting concluded. For member awareness of when the newsletter is available online, Scott Conner will issue an e-mail notice once he uploads the PDF file. Lastly, George Neireiter will followup with Mike Borman about posting Officer photos and short biographies on the EAS web site under the *Our Membership* tab. This content is no longer available in monthly newsletter issues.

New Telescope Mount for Observatory

The Problem: The current mount and set up is out-of-date and not user friendly.

The Goal: To purchase a new user-friendly mount with enough capacity to support growth.

The board is currently looking at raising enough money to purchase the [Paramount ME II](#) through the use of a Telescope Mount Fund. The ME II features a 240 pound capacity, is very good for imaging, extends tracking and imaging to 3 hours past meridian. The mount offers brushless servo motors that are monitored 3333 times per second to give great accuracy plus prevent the scope from damaging itself during slewing by hitting something. This mount has very user-friendly controllers as well as great [software](#). All the cabling is inside to prevent tangles or getting damaged. These features provide room for growth and a degree of safety from tipping over in a public session from someone leaning on the mount and from new users learning how to use the mount.

The current cost for the Paramount ME II Robotic Telescope Mount is \$13,500. The board is looking to raise that amount or more by first asking members to pledge money towards a mount fund. Pledges must be made by the March 15th meeting and will be collected by June 21st. The money pledged by the membership will be used to solicit larger donations from local foundations and businesses.

If the goal cannot be reached, we will look at the purchase of the Paramount MX Robotic Telescope Mount at \$7,995. The main differences between this model and the ME II are the capacity and the tracking. The MX has a 90 pound capacity and only tracks to 2 hours past the meridian.

To thank and recognize those that contribute to the Telescope Mount Fund, a plaque will be placed in the hallway leading up to the observatory. It will say, "In recognition of those who donated toward the purchase of the Paramount ME II Robotic Telescope Mount". There will be five categories based on donation level and will be designated by the size of the plate placed on the plaque. The order in which the plaques appear will be based off of aesthetics rather than any division by category. Category names will not be listed on plaque.

\$25 - \$99	Member *
\$100 - \$499	Planetary Observer (one plate)
\$500 - \$999	Solar System (two plates)
\$1,000 - \$4,999	Galactic (four plates)
\$5,000 +	Cosmic (six plates)

*All Members will be listed on one plate at the bottom of the plaque.

... Prepared by Scott Bishop, Treasurer

Postscript note: Scott Conner added that the Havens Foundation has pledged a substantial dollar amount towards this project.

EAS OBSERVER NEWSLETTER

March 2013

Sun	Mon	Tue	Wed	Thu	Fri	Sat
					1 Astronomy Night	2
3	4 Last 	5	6	7	8	9 PSW -- Comet Panstarrs
10	11 New 	12	13	14	15 Regular Mtg.	16
17	18	19 First 	20	21	22	23
24	25	26	27 Full 	28	29	30
31						

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February Events (reminder)...

Regular Meeting Feb. 15 (Friday) 7:30 pm Wahnsiedler Observatory

March Events...

Astronomy Night Mar. 1 (Friday) at dusk Delaware School

PSW Mar. 9 (Saturday) 7:30 pm Wahnsiedler Observatory

Regular Meeting Mar. 15 (Friday) 7:30 pm Wahnsiedler Observatory

Moon phase times (Evansville local time)

third quarter	3:53 p	Mar 4	new	2:51 p	Mar 11
first quarter	12:27 p	Mar 19	full	4:28 a	Mar 27

courtesy of Time and Date

The Art of Space Imagery

By Diane K. Fisher



When you see spectacular space images taken in infrared light by the Spitzer Space Telescope and other non-visible-light telescopes, you may wonder where those beautiful colors came from? After all, if the telescopes were recording infrared or ultraviolet light, we wouldn't see anything at all. So are the images "colorized" or "false colored"?

No, not really. The colors are translated. Just as a foreign language can be translated into our native language, an image made with light that falls outside the range of our seeing can be "translated" into colors we can see. Scientists process these images so they can not only see them, but they can also tease out all sorts of information the light can reveal. For example, wisely done color translation can reveal relative temperatures of stars, dust, and gas in the images, and show fine structural details of galaxies and nebulae.

Spitzer's Infrared Array Camera (IRAC), for example, is a four-channel camera, meaning that it has four different detector arrays, each measuring light at one particular wavelength. Each image from each detector array resembles a grayscale image, because the entire detector array is responding to only one wavelength of light. However, the relative brightness will vary across the array.

So, starting with one detector array, the first step is to determine what is the brightest thing and the darkest thing in the image. Software is used to pick out this dynamic range and to re-compute the value of each pixel. This process produces a grey-scale

image. At the end of this process, for Spitzer, we will have four grayscale images, one for each for the four IRAC detectors.

Matter of different temperatures emit different wavelengths of light. A cool object emits longer wavelengths (lower energies) of light than a warmer object. So, for each scene, we will see four grayscale images, each of them different.

Normally, the three primary colors are assigned to these gray-scale images based on the order they appear in the spectrum, with blue assigned to the shortest wavelength, and red to the longest. In the case of Spitzer, with four wavelengths to represent, a secondary color is chosen, such as yellow. So images that combine all four of the IRAC's infrared detectors are remapped into red, yellow, green, and blue wavelengths in the visible part of the spectrum.

Download a new Spitzer poster of the center of the Milky Way. On the back is a more complete and colorfully-illustrated explanation of the "art of space imagery." Go to spaceplace.nasa.gov/posters/#milky-way.

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



This image of M101 combines images from four different telescopes, each detecting a different part of the spectrum. Red indicates infrared information from Spitzer's 24-micron detector, and shows the cool dust in the galaxy. Yellow shows the visible starlight from the Hubble telescope. Cyan is ultraviolet light from the Galaxy Evolution Explorer space telescope, which shows the hottest and youngest stars. And magenta is X-ray energy detected by the Chandra X-ray Observatory, indicating incredibly hot activity, like accretion around black holes.

Upcoming Programs...

February

by Mitch Luman

The daytime sky looks blue because of how our atmosphere scatters the blue wavelengths of light from the Sun. Fair enough. But that leads directly to a second question — why doesn't the light from all the stars in the Universe scatter in our atmosphere, producing a blue sky, all the time? There are certainly enough stars for this to be true, but it isn't. We'll consider causes such as the absorption by interstellar dust, the Doppler Effect, time and the age of the Universe and answer to a question that has caused scientists and philosophers to ponder for nearly 200 years.



EAS OBSERVER NEWSLETTER

EAS Meeting Minutes -- January 18, 2012

The meeting was CALLED TO ORDER by President Scott Conner at 7:36 PM with 11 members in attendance.

It was moved and seconded to approve the MINUTES seen on the [EAS Internet page](#).

Scott announced the following UPCOMING EVENTS:

Regular Meeting	Friday, February 15	7:30 PM
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There were no visitors.

The president reported for the Treasurer the balances for the checking and savings accounts as well as the CD and bond. Essentially, EAS IS IN THE BLACK.

OLD BUSINESS

Scott stated that work on the DOME can resume this Spring.

The TELESCOPE MOUNT Project is in the process of raising \$2500 to purchase a higher grade mount for the club that will give us maximum capabilities: Paramount ME II. Donations are needed in any amount and are tax deductible.

We had our ANNUAL CHRISTMAS PARTY and ASTRONOMY QUIZ last month. Mike Borman was the Quiz Master. The winner was Scott Conner and 2nd place winner was Mitch Luman. Scott will be the Quiz Master this year.

NEW BUSINESS

The 1st BOARD MEETING of this year is scheduled for Sunday, January 27 at Tony Bryan's home in Jasper, Indiana. At this meeting, we will be discussing the schedule for this year and set events, as well as any information on the Mount Project. Everyone is invited to attend.

Tony Bryan announced that he has the 28-inch mount safely in his office.

Scott Conner presented the program for tonight entitled "A TALE OF TWO COMETS: The Preview".

The meeting adjourned at 7:42.

Respectfully submitted, Charleen Kaelin - Secretary