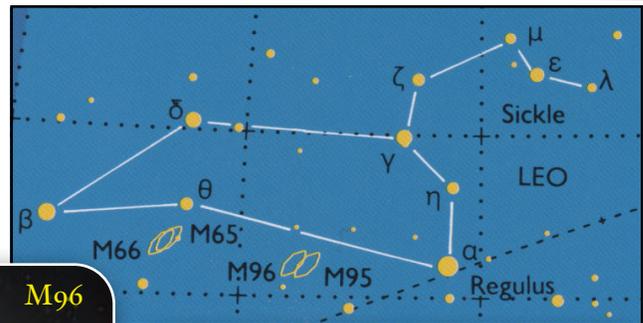


March is a great time to observe the constellation **Leo** with its 1st magnitude star Regulus, assuming you can find a clear night. Leo is also noted for two pair of Messier objects: M65 - M66 and M95 - M96. The latter pair of objects are shown in the images here and are the subject of this entry.

M95 is an example of a barred spiral galaxy and at 75,000 light years (l-y) across, is similar in size to our Milky Way galaxy. Surrounding the prominent yellowish bar are tightly wound spiral arms traced by dust lanes. Located about 38 million l-y away, M95 was actually discovered by Frenchman Pierre Mechain in 1781, and confirmed four days later by Charles Messier.

Of more recent interest, was the observation of a [supernova in M95](#) a year ago. It was a type II supernova and designated SN 2012aw. Bright light from the exploding star is seen in this image in the lower right spiral arm. This [M95 image](#) was acquired with a 32" Schulman telescope (RCOS) at the Mt. Lemmon SkyCenter operated by the University of Arizona using four exposures of 80:30:30:30 minutes (LRGB).

M96 is an example of an intermediate (double-barred) spiral galaxy and is about 100,000 l-y in diameter. It is located about 31



million l-y distant. It too was discovered by Pierre Mechain in 1781 and catalogued a few days later by Messier. Though it is the brightest of the M96 group of galaxies (including M95 and M105), it is very difficult to see with binoculars. A minimum of a medium sized (10" aperture) telescope is better suited for observation.

M96 has a compact, glowing core, but it is displaced from the center. Gas and dust lanes are distributed asymmetrically, and its spiral arms are ill-defined. The distortion of shape may be the result of gravitational pull from nearby galaxies, or perhaps from a previous galactic encounter. But, that imperfection of shape still allows for a striking image.

This [M96 image](#) here was acquired in 2010 with the ESO's Very Large Telescope using both visible and infrared light. It was processed as part of the ESO's Hidden Treasures 2010 astrophotography competition using observational data found by Oleg Maily.

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- 5 - Decadal Survey: Ideas for NASA Missions
- 7 - Minutes of February meeting

The EAS newsletter, **Observer**, is published monthly. Anyone wishing to contribute articles or photos may mail them to the club's PO box: EAS, PO box 3474, Evansville, IN 47733, or e-mail them to the editor at: gneireiter@wowway.com

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/>



Local Events and Information

Portable Observatory... David Walker is donating a portable observatory to encourage member donations to the telescope fund. If you are interested in this wind-resistant enclosure (and who wouldn't be when observing on a breezy, cool night), please contact Scott Conner or Mitch Luman. Note, the cost of materials for building such a portable observatory is estimated at \$200.



Reminder... The **TELESCOPE MOUNT** project is underway and we would like to purchase the [Paramount ME II](#). We are in need of additional funds and would like the funds **pledged by March 15** with payment by June 21.

Make a note... The **DOMES REPAIR** date has been set for Saturday, April 27 at 9:30 am. It will be necessary to tar the roof, finish interior painting in the dome, and do regular maintenance of the Observatory. We need all who can to help.

Stay Current... The Evansville Astronomical Society has a [Facebook](#) page for answering questions and making announcements about upcoming scheduled (or unscheduled) events. These include Public Sky Watches at the Wahnsiedler Observatory or visits to public sites for promoting the science of Astronomy through lectures and observations of the sky with telescopes provided by EAS members. For outdoor events, this is an especially good place to stay up to date for any recent posts related to weather conditions.

The Evansville Museum
in cooperation with
The Evansville Astronomical Society
Presents

Astronomy Day 2013

ASTRONOMY DAY CELEBRATES STARS, MOON AND PLANETS

Celebrate Astronomy Day on **Saturday, April 20** when a trip to the Evansville Museum will allow for encounters with cool telescopes and plenty of astronomical activities for all ages. Knowledgeable volunteers will be on hand to help you observe, learn, discover, and explore the wonders of astronomy. Astronomy Day is made possible by **Phillip and Michelle Eykamp** with the assistance the Evansville Astronomical Society.

Daytime activities at the museum will take place from **11 am - 4 pm**. There will be extra planetarium shows in Koch Planetarium, digital planetarium programs provided by Jim and Carol Havens from the Havens Foundation, views of the Sun and the Moon, make-it take-it activities, a telescope display, and meteorite display. Food will be available for purchase the day of the event.

During the evening of April 20, the Moon and Saturn will be targets for telescopes and public viewing in the museum parking lot.

Astronomy Day Activities:	
10 am – 4 pm	Meteorite, Telescope Display, Egg Drop Activity, Astronomy Demonstrations
11 - Noon, 1 - 4 pm	Demonstrations in Inflatable Planetarium
1 pm	<i>Hubble Vision</i> in the Koch Planetarium
3 pm	<i>The Sky Tonight</i> in the Koch Planetarium
4 pm	<i>Hubble Vision in</i> the Koch Planetarium
Noon - 2 pm	Solar Observing
11 am & 2 pm	Make a Comet Demonstration
8 pm	Sky Watch from Museum Parking Lot

Some portions of this event are subject to the prevailing weather conditions and may be canceled in the event of poor weather.

Submitted by: Mitch Luman, Science Director of the Evansville Museum

EAS OBSERVER NEWSLETTER

April 2013

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

Generated by FreeHTMLCalendar.com Copyright © 2011 John Dalbey.

March Events (reminder)....

PSW Mar. 9 (Saturday) 7:30 pm Wahnsiedler Observatory
 ... also, possible observation of comet PanSTARRS at about 5:30 pm
 Regular Meeting Mar. 15 (Friday) 7:30 pm Wahnsiedler Observatory

April Events...

Regular Meeting Apr. 19 (Friday) 7:30 pm Wahnsiedler Observatory
Mid South Star Gaze April 10 - 13 French Camp, MS
 Astronomy Day Apr. 20 (Saturday) 11 am to 4 pm at Evv Museum
 ... with evening observing in the Museum parking lot near the levee.
 Dome Repair Day Apr. 27 (Saturday) 9:30 am Wahnsiedler Observatory

Moon phase times (Evansville local time)

third quarter	11:37 p	Apr 2	new	4:36 a	Apr 10
first quarter	7:32 a	Apr 18	full	2:58 p	Apr 25

courtesy of Time and Date

Tackling the Really BIG Questions

By Diane K. Fisher

How does NASA get its ideas for new astronomy and astrophysics missions? It starts with a **Decadal Survey** by the National Research Council, sponsored by NASA, the National Science Foundation, and the Department of Energy. The last one, *New Worlds, New Horizons in Astronomy and Astrophysics* was completed in 2010. It defines the highest-priority research activities in the next decade for astronomy and astrophysics that will “set the nation firmly on the path to answering profound questions about the cosmos.” It defines space- and ground-based research activities in the large, midsize, and small budget categories.

The recommended activities are meant to advance three science objectives:

1. Deepening understanding of how the first stars, galaxies, and black holes formed,
2. Locating the closest habitable Earth-like planets beyond the solar system for detailed study, and
3. Using astronomical measurements to unravel the mysteries of gravity and probe fundamental physics.

For the 2012-2021 period, the highest-priority large mission recommended is the **Wide-field Infrared Survey Telescope (WFIRST)**. It would orbit the second Lagrange point and perform wide-field imaging and slit-less spectroscopic surveys of the near-infrared sky for the community. It would settle essential questions in both



exoplanet and dark energy research and would advance topics ranging from galaxy evolution to the study of objects within the galaxy and within the solar system.

Naturally, NASA’s strategic response to the recommendations in the decadal survey must take budget constraints and uncertainties into account.

The goal is to begin building this mission in 2017, after the launch of the **James Webb Space Telescope**. But this timeframe is not assured. Alternatively, a different, less ambitious mission that also address the Decadal Survey science objectives for WFIRST would remain a high priority.

The Astrophysics Division is also doing studies of moderate-sized missions, including: gravitational wave mission concepts that would advance some or all of the science objectives of the **Laser Interferometer Space Antenna (LISA)**, but at lower cost; X-ray mission concepts to advance the science objectives of the International X-ray Observatory (IXO), but at lower cost; and mission concept studies of probe-class missions to advance the science of a planet characterization and imaging mission.

For a summary of NASA’s plans for seeking answers to the big astrophysics questions and to read the complete Astrophysics Implementation Plan (dated December 2012), see <http://science.nasa.gov/astrophysics/>.

... Continued on page 6

EAS OBSERVER NEWSLETTER

For kids, find lots of astrophysics fun facts and games on The Space Place, <http://spaceplace.nasa.gov/menu/space/>.

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



Clusters of galaxies collide in this composite image of "[Pandora's Cluster](#)." Data (in red) from NASA's Chandra X-ray Observatory show gas with temperatures of millions of degrees. Blue maps the total mass concentration (mostly dark matter) based on data from the Hubble Space Telescope (HST), the European Southern Observatory's Very Large Telescope (VLT), and the Japanese Subaru telescope. Optical data from HST and VLT also show the constituent galaxies of the clusters. Such images begin to reveal the relationship between concentration of dark matter and the overall structure of the universe.

For more on the night sky objects, play the Movie of Tonight's Sky for March at [Amazing Space](#).

EAS OBSERVER NEWSLETTER

EAS Meeting Minutes -- February 15, 2013

The meeting was CALLED TO ORDER by President Scott Conner at 7:33 pm with fifteen people in attendance.

It was moved and seconded to approve the MINUTES of the previous month as seen on the EAS Internet page. <http://www.evansvilleastro.org>

Tony Bryan announced the **UPCOMING EVENTS**:

Family Astronomy Night	Friday, March 1	Dusk
PSW	Saturday, March 9	7:30 PM
Regular Meeting	Friday, March 15	7:30 PM
Regular Meeting	Friday, April 19	7:30 PM
*ASTRONOMY DAY	Saturday, April 20	at Museum
Dome Repair Day	Saturday, April 27	9:30 AM

There were five VISITORS: Rose Mary Murphy, Mike Murphy, Joe Duggan, Bill Schmitt, and Chris Norrick.

Treasurer Scott Bishop reported on the assets of this club. He also mentioned to the attendees that Astronomy wall and desk CALENDARS are still available for a reduced rate. The water bill was a little high this month. Since there had been some water found inside the observatory building, it was thought that there might be a leak in the pipes. However, it was determined that there was a leak in the roof.

SPECIAL PROJECTS

The president said that the DOME REPAIR date has been set for Saturday, April 27 at 9:30 am. It will be necessary to tar the roof, finish interior painting in the dome, and do regular maintenance of the Observatory. We need all who can to help.

OLD BUSINESS

The 1st BOARD MEETING of this year was held on Sunday, January 27th at 2:00 PM at Tony and Donna Bryan's house. The schedule for the year was set. Also, there was discussion of the new mount project and other ideas for this year.

A request for MEMBER OBSERVING was made. and it was determined to do that at one of the PSW and at the picnic in June.

NEW BUSINESS

EAS OBSERVER NEWSLETTER

The TELESCOPE MOUNT project is underway and we would like to purchase the Paramount ME II which would track for 4 hours and last a lifetime. We are in need of additional funds and would like the funds pledged by March 15 with payment by June 21.

At this point, four people have pledged close to \$800. Any amount donated would be great. Here is a chance to have your name become immortal and written in stone, sort of. As an extra incentive, there will be a PLAQUE placed at the bottom of the stairs commemorating those who donate the following amounts:

Member	\$25 - \$99	One plate with all names
Planetary Observer	\$100 - 499	One plate
Solar System	\$500 - \$999	Two plates
Galactic	\$1,000 - \$4,999	Four plates
Cosmic	\$5000 +	Six plates

There will be an Astronomy Night on Friday, March 1 at DELAWARE SCHOOL which will start about 6:30 pm. Around 70 – 130 people may attend. If you can help, call Scott Conner.

Our 1st PSW will be on Saturday, March 9 at 7:30 pm. We can always use members to help out. Comet PanSTARRS is developing a tail and you may want to come about 5:30 pm to catch a glimpse. The best time to see it will be on March 10.

Scott reminded us of the big news of today that a 7,000 ton meteor hit Russia.

The President has revived EAS by placing it on Facebook.

Mitch Luman of the Evansville Museum stated that David Walker has donated a portable observatory. For a small donation, it would be yours. Contact Mitch.

Mitch also mentioned that the Museum would be sponsoring a Star Watch.

The meeting adjourned at 8:05 pm.

Mitch Luman presented the **Program** for the night “**Why is the Sky Dark?**”

Respectfully submitted,

Charleen Kaelin
Secretary