Observer

EVANSVILLE ASTRONOMICAL SOCIETY, INC.

December 2011

Season's Greetings from the EAS Board Members

Inside this Issue...

Stunning false-color image of Cassiopeia A (Cas-A) is comprised of infra-red from the Spitzer Space Telescope (red), visible from the Hubble Space Telescope (yellow), and x-ray data from the Chandra X-ray Observatory (green and blue). Note how little of the image contains visible light.

The different observatories collect information about the temperatures of the remnant dust and gas. The infra-red light records relatively warm dust temps of about 80 F; the visible (yellow) portion relates to gases at 18,000 F, while the x-ray data includes temps up to 18,000,000 F.

At a distance of about 10,000 light-years in the constellation Cassiopeia, Cas-A is the remnant of a massive star that exploded as a supernova and now exists as a neutron star (the turquoise dot at the center of the shell). Cas-A is the brightest astronomical radio source in the sky.

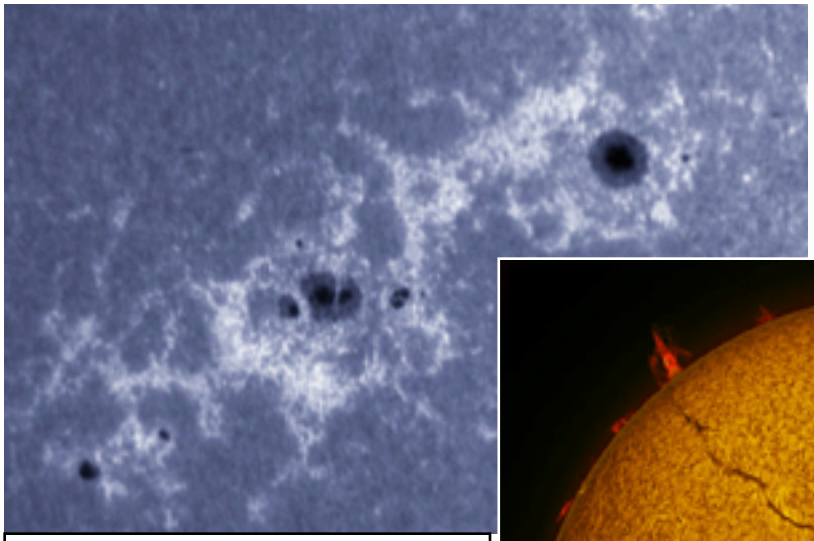
By measuring the expanding outer shell, which is moving at ~5000 km/s, astronomers have calculated that the explosive event occurred about 1667, and might have been recorded in 1680 by John Flamsteed in England. Another suggestion is that the supernova was the mythical "noon day star" observed in 1630 that heralded the birth of Charles II, the future monarch of Great Britain.

For additional reading about the detection and distribution of heavy elements in Cas-A, check out this interesting article in The Daily Galaxy.

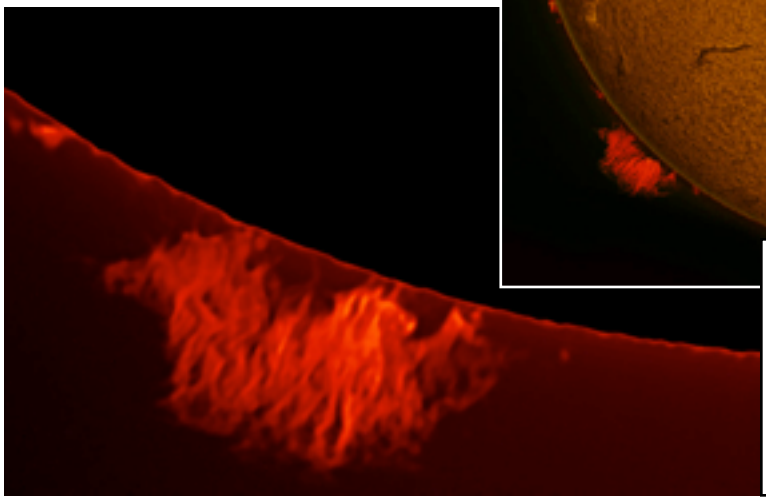
Credits: http://www.spitzer.caltech.edu/images/1445-ssc2005-14c-Cassiopeia-A-Death-Becomes-Her
http://en.wikipedia.org/wiki/Cassiopeia_A

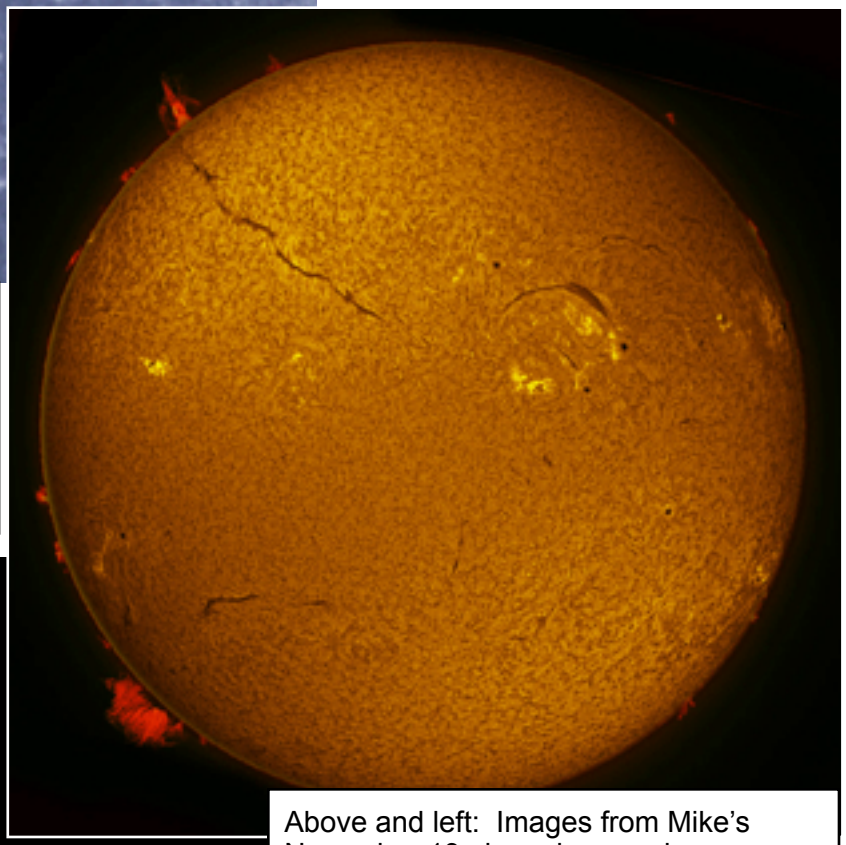
Local Events and Information

At the November meeting, Dave Stephens announced that Mike Borman was recognized recently by the National Geographic Daily News for his astrophotography of the Sun. Editor Chris Combs had noticed his image of a solar prominence that was posted on spaceweather.com. He asked Mike about posting one or two of his images on National Geographic news, as well as on sites of their international editions (on Nov. 17). Subsequently, on Nov. 19, Mike saw that his image was selected as an Editor's Choice in the photo gallery on Sky and Telescope's web page (select Editor's Choice Archive). Congratulations to Mike ! To see more of Mike's images, click here.



Above: Image from Mike's November 25 observing session. Solar telescope: Orion 100 mm ED refractor with Lunt BF1200 CaK filter and Celestron CGE Pro mount. Camera: DMK41AU02.AS with 2x barlow.





Above and left: Images from Mike's November 13 observing session. Equipment included TV-102iis refractor, Coronado H-alpha filter, DMK41AU02.AS camera with 0.5x focal reducer, and Celestron CGE Pro mount. The close-up used a 2X barlow.

January 2012

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1 First 	2	3	4	5	6	7
8	9 Full 	10	11	12	13	14
15	16 Third 	17	18	19	20 Regular Mtg.	21
22	23 New 	24	25	26	27	28
29	30 First 	31				

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December Events (reminder)....
Regular Meeting Dec. 10 (Saturday) 6:45 pm Evansville Museum

Note: This is a different day, time, and location for the meeting. Also, please bring a small side dish or dessert for sharing.

January Events...
Regular Meeting Jan. 20 (Friday) 7:30 pm Wahnsiedler Observatory

Moon phase times (CST)

first quarter	12:14 a	Jan 1
full	1:30 a	Jan 9
third quarter	3:08 a	Jan 16
new	1:39 a	Jan 23
first quarter	10:10 p	Jan 30

courtesy of Time and Date

Re-thinking an Alien World: The Strange Case of 55 Cancri e

Forty light years from Earth, a rocky world named “55 Cancri e” circles perilously close to a stellar inferno. Completing one orbit in only 18 hours, the alien planet is 26 times closer to its parent star than Mercury is to the Sun. If Earth were in the same position, the soil beneath our feet would heat up to about 3200 F. Researchers have long thought that 55 Cancri e must be a wasteland of parched rock.

Now they’re thinking again. New observations by NASA's Spitzer Space Telescope suggest that 55 Cancri e may be wetter and weirder than anyone imagined.

Spitzer recently measured the extraordinarily small amount of light 55 Cancri e blocks when it crosses in front of its star. These transits occur every 18 hours, giving researchers repeated opportunities to gather the data they need to estimate the width, volume and density of the planet.

According to the new observations, 55 Cancri e has a mass 7.8 times and a radius just over twice that of Earth. Those properties place 55 Cancri e in the “super-Earth” class of exoplanets, a few dozen of which have been found. Only a handful of known super-Earths, however, cross the face of their stars as viewed from our vantage point in the cosmos, so 55 Cancri e is better understood than most.

When 55 Cancri e was discovered in 2004, initial estimates of its size and mass were consistent with a dense planet of solid rock. Spitzer data suggest otherwise: About a fifth of the planet’s mass must be made of light elements and compounds —i ncluding water. Given the intense heat and high pressure these materials likely experience, researchers think the compounds likely exist in a “supercritical” fluid state.

A supercritical fluid is a high-pressure, high-temperature state of matter best described as a liquid-like gas, and a marvelous solvent. Water becomes supercritical in some steam turbines — and it tends to dissolve the tips of the turbine blades. Supercritical carbon dioxide is used to remove caffeine from coffee beans, and sometimes to dry-clean clothes. Liquid-fueled rocket propellant is also supercritical when it emerges from the tail of a spaceship.

On 55 Cancri e, this stuff may be literally oozing — or is it steaming? — out of the rocks.

With supercritical solvents rising from the planet’s surface, a star of terrifying proportions filling much of the daytime sky, and whole years rushing past in a matter of hours, 55 Cancri e teaches a valuable lesson: Just because a planet is similar in

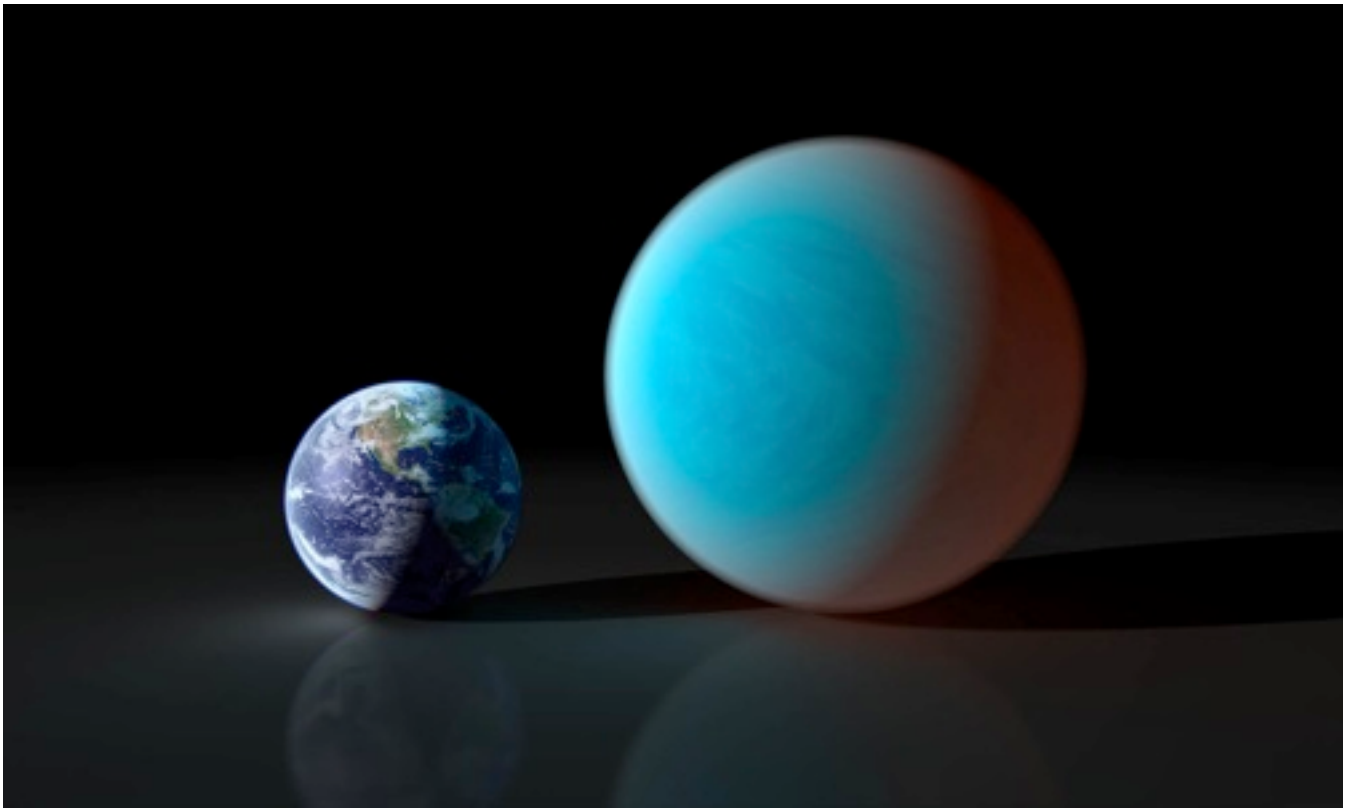
size to Earth does not mean the planet is like Earth.

It's something to *re*-think about.

Get a kid thinking about extrasolar planets by pointing him or her to "Lucy's Planet Hunt," a story in rhyme about a girl who wanted nothing more than to look for Earth-like planets when she grew up. Go to http://spaceplace.nasa.gov/story-lucy.

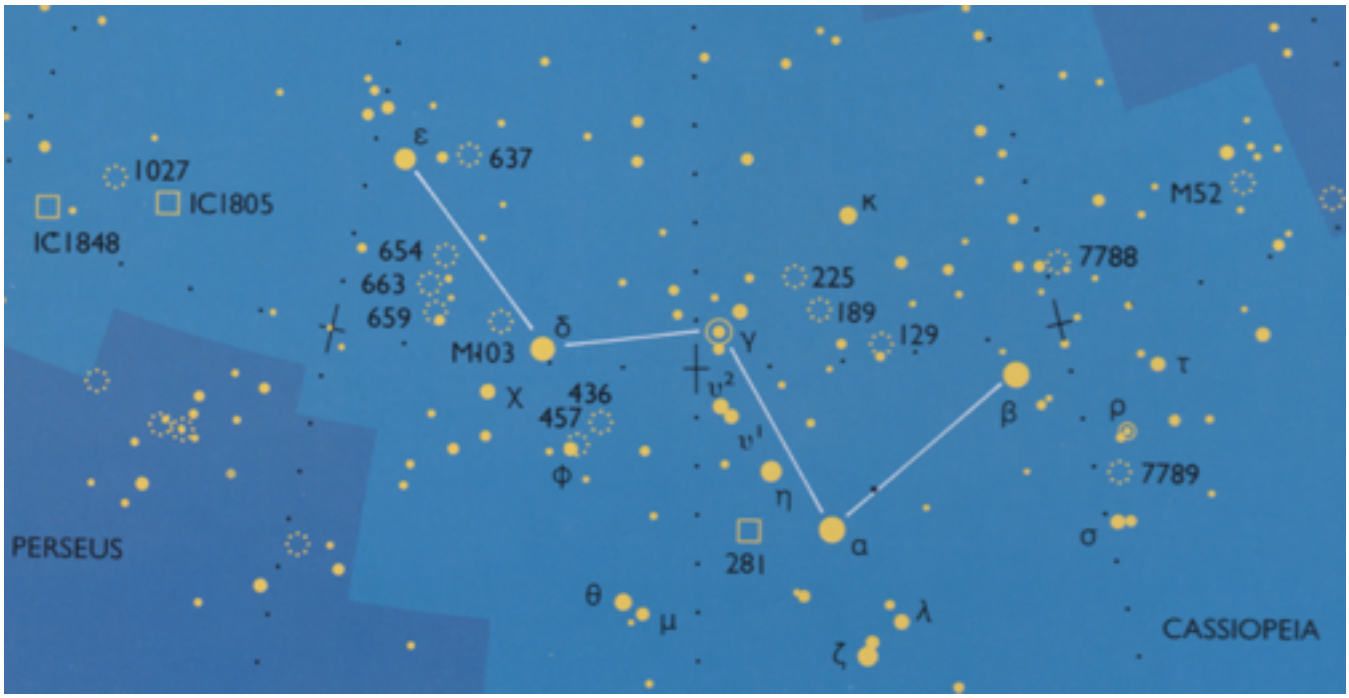
The original research reported in this story has been accepted for publication in *Astronomy and Astrophysics*. The lead author is Brice-Olivier Demory, a post-doctoral associate in Professor Sara Seager's group at MIT.

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



Caption:
Artist's rendering compares the size Earth with the rocky "super-Earth" 55 Cancri e. Its year is only about 18 hours long!

Constellation feature: *Cassiopeia*



The distinctive W-shape of the brightest stars, makes this north polar constellation easy to find. Plus, it is opposite to the Big Dipper as they spin about the Pole Star. Sitting in the Milky Way, Cassiopeia is rich in clusters and dense star fields with great viewing for binoculars as well as telescopes.

Alpha, Beta, and Gamma stars are almost identical in magnitude at ~2.2. Alpha has a distinctly orange hue as compared to the pure white of Beta. Telescopes can resolve Alpha into a double star, the primary being an orange while the fainter companion being bluish-white.

Nearby Eta is also a double, composed of golden yellow and purplish components.

Gamma, the hot blue giant central star, varies unpredictably, throwing off shells of luminous gas. In 1930, it rose to magnitude 1.6 to be the brightest star in the constellation but later dipped to magnitude 3.

Rich star fields lie around Epsilon, Delta, and Gamma, including NGC663 and -654, and M103, the brightest of these three open clusters. Another open cluster NGC457, south of Delta, is a compact group of more than 100 stars. Small telescopes are required to resolve its stars.

Nearby, M52 can be found by extending a line from Alpha through Beta. This is an open cluster of about 100 hot young stars and an excellent subject for small telescopes.

RZ Cassiopeiae (not shown above), an eclipsing binary variable star, is located near the end of an extended line from Delta through Epsilon. Usually of about 6th magnitude, it falls nearly to 8th when it is in eclipse every 29 hours. The dimming can be easily followed because it takes place over just two hours. It is within binocular range.

For more on the night sky objects of December, play the Movie of Tonight's Sky at Amazing Space

Credits: Text and constellation diagram from *The Star Guide*, by Robin Kerrod, 1993 MacMillan, pages 80-81.

EAS Meeting Minutes -- November 18, 2011

The meeting was CALLED TO ORDER by President Scott Conner at 7:37 PM with 17 members in attendance. It was moved and seconded to approve the MINUTES as will be printed in the newsletter.

Vice President Tony Bryan announced the following UPCOMING EVENTS:

PSW	Saturday, November 19	6:30 PM
Regular Meeting	Saturday, December 10	6:45 PM

Mitch Luman is Quiz Master @ MUSEUM

There was one visitor: Raymond Blair

Treasurer Scott Bishop announced that the club's FINANCES are in the BLACK. Also, he had beautiful wall calendars available for sale @ $7.00 each. The desk calendars, *Year in Space*, are available, and they are $12.00 each.

SPECIAL PROJECTS -- President, Scott Conner, stated that there are no Special Projects at this time.

OLD BUSINESS -- The PSW held on October 22, 2011, had a super turnout with 100 in attendance. There were good skies for viewing. Many thanks for the following members who helped out: Dave Kube, Ken Harris, Duane and Kim, Ted Ubelhor, Missy and Wayne Donohue, Bernie Skerl.

The GIRL SCOUT event scheduled to be held at the Museum was cancelled.

NEW BUSINESS -- Tomorrow, November 19, 2011, there will be a PSW @ 6:30 PM. It will be the last one this year.

Scott invited nominations to be made for the slate of officers, however, the current slate was approved.

Scott reminded the attendees that there will be no meeting on the 3rd Friday of December. Instead, our annual Christmas party will take place on Saturday, December 10, 2011, at the Evansville Museum @ 6:45. Mitch Luman will be our Quiz Master. Please bring a small side dish or dessert.

Charleen Kaelin presented her "What's up this month" report. The meeting adjourned at 7:57 PM.

Mitch Luman presented the program entitled, "The 2012 Transit of Venus"

Respectfully submitted,
Charleen Kaelin, Executive Board Secretary

Upcoming programs at the Regular Meeting of EAS ... by Mitch Luman

December Program

The December program is the annual Astronomy Quiz and will be orchestrated by Mitch Luman, Science Director of the Evansville Museum. Note: The normal location, date, and time are different than for usual meetings. The December meeting is the second **Saturday** (**December 10**) and will begin at **6:45 pm**. We will meet at the **Evansville Museum**.

January Program

Currently, there is no program scheduled, but there are speakers who have expressed an interest in making a presentation. Stay tuned by watching the EAS website for updated information. If you have a topic to present or would like to see it presented, please contact Scott Conner at **ssconner24@gmail.com**

Thank You Mitch !

As you might know, Mitch Luman volunteered to be program chairman for 2011. He did an outstanding job finding topics of interest and speakers who can deliver their content with entertaining style as well as engage the audience through interactive discussion. Here is a list of the presentations in 2011:

February - Observing the Skies of South America by Mitch Luman
March - Exploring Ursa Major by Ken Harris
April - Meteorites by Ron Keller
May - Geologic History of the Earth's Moon by Joe Caruso
July - Remote Observing form New Mexico by Dr. Daniel Johnson
September - Building Planets: A Step-by-Step Guide by Jason Harris
October - History of the First Permanent Observatory in the New World by Victor Lopez
November - The 2012 Transit of Venus by Mitch Luman

Scott Conner - President

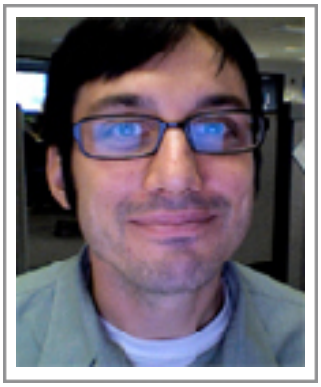
An Evansville West-sider and a Mater Dei High School graduate, Scott continued his education at USI and IVY Tech. He is currently employed in the Metal Fabrication Industry as a Manager. Scott actually has a zest for the "trilogy of sister sciences": Astronomy, Geology and Meteorology. A very valuable asset to the EAS, Scott has served in previous years as the Society's Secretary, Vice President and Treasurer. 812.449.2721 (cell) **ssconner24@gmail.com**

Tony Bryan - Vice President

Tony calls Louisville, Ky. His home town but now resides in Jasper, In. with wife Donna. Tony is a senior technician employed by the U.S. Government. Interest in Astronomy began very early but reached a peak when Tony became an active member of the Louisville club. He has an excellent 8" Meade scope but shows no bias when viewing the skies, "He likes them all." Other interests include woodworking and collecting classic cars. For relaxation, he enjoys hiking.

Charleen Kaelin - Secretary

A current resident of Evansville, IN, Charleen was born in Baton Rouge, LA where she received her Bachelor of Science degree in Business. She moved to this area in 1993. She works for a judge and lawyer in the Tribunal Office of the Diocese of Evansville. Charleen's hobbies include community service, decorating for all holidays and events, and sharing information on astronomy. 812.303.1711 (home)



Scott Bishop - Treasurer

A Native of Evansville, Scott lives on the city's west side with wife Crystal and Daughters Flannery and Piper.
Professionally, Scott is a graphic artist. Although his interest in astronomy developed only recently, he has made remarkable progress. He now owns a 6" Dobsonian scope but shows no preference as to which sky objects he views. "The sky's the limit." Other hobbies Scott enjoys include bowling, reading and short story writing.

About the E.A.S. organization...

The Evansville Astronomical Society (E.A.S.) 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, both for its members and the public, 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 E.A.S. picnic is held. The Society also sponsors Open House events monthly through the warmer seasons) that afford the public an opportunity to tour the observatory.

The accounting year covered by the dues runs from July 1 to June 30 of the next year. Anyone joining the E.A.S. from January to June. Dues are 1/2 of the amount listed in the box, then full dues beginning in July. Optional, but recommended, is the subscription to Sky and Telescope and/or Astronomy Magazines. Special subscription rates are available through the club.

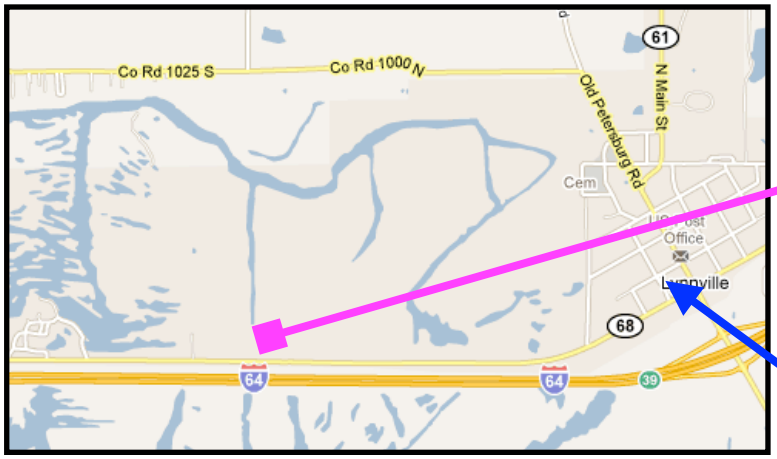
The Dues schedule for membership in the E.A.S. is:
Family ... $40.00

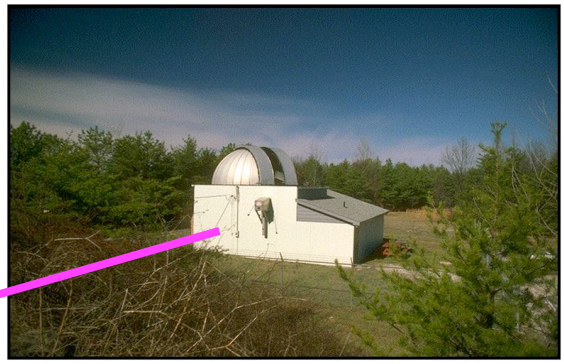
Single ... $35.00

The E.A.S. newsletter, OBSERVER, is published monthly. Anyone wishing to contribute articles, should mail them to the Club's PO Box. EAS, at PO Box 3474, Evansville, IN 47733, or email them to the editor at:
gneireiter@wowway.com

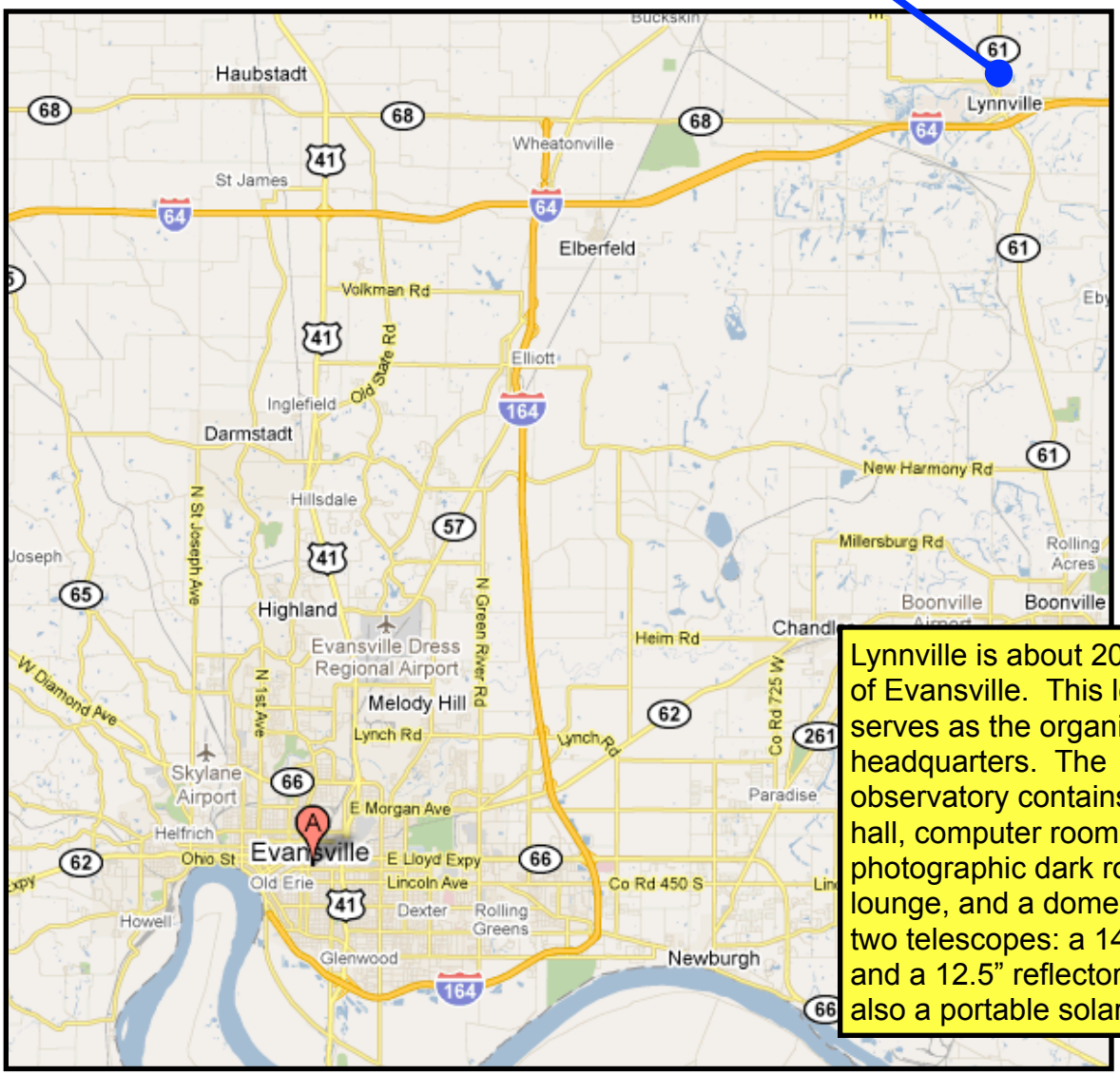
For more information, view the E.A.S. website at:
http://evansvilleastro.org

How to find E.A.S. and the observatory...





The E.A.S. facility is located in Wahnsiedler Observatory at Lynnville Park near the town of Lynnville, IN.



Lynnville is about 20 miles NE of Evansville. This location serves as the organization's headquarters. The observatory contains a lecture hall, computer room, photographic dark room, lounge, and a dome housing two telescopes: a 14" reflector and a 12.5" reflector. There is also a portable solar scope.