



CINCINNATI ASTRONOMICAL SOCIETY

101 Years!

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Sidereal Messenger

A Monthly Publication of the Cincinnati Astronomical Society

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Image of the Month

Fall skies are when there are less bright stars and less Milky Way objects. That means though, that you can get to see something more, like the Andromeda galaxy, M31. More on this on page 4. © [Eric Africa](#)

Calendar of Events for the Tri-state area

November

- 11 [Telescope Training](#), (for members only). Members telescope training on any of our 4 main telescopes. 4 p.m.
- 11 [Historical Tours of the Cincinnati Observatory Center \(CoC\)](#). Drop in anytime between 1 and 4 p.m. and explore the fascinating story of the people who made Cincinnati the "Birthplace of American Astronomy". \$5 per person suggested donation.
- 16 [Young Astronomers' Class](#). Our young astronomer's class is geared towards Elementary school-aged children (and their parents.) 5 - 7 p.m. *
- 16 [Board Meeting, 7 - 8:30 p.m. Monthly Members' Meeting](#). Featured topic: "[The Future of Human Exploration!](#)" 8:30 - 10 p.m. *
- 17 [Meet a Meteorite!](#) Meet a Meteorite!

The Cincinnati Observatory Center (CoC) will be the gathering place of the finest meteorite collections in the region. See and hold rocks from outer space, including rocks from the Moon and Mars. Learn how meteorites are formed and collected. Discover how to distinguish meteorites from meteor-wrongs. Adopt a meteorite! Meteorites will be available in the Observatory gift shop for sale. We will also view the Moon and Jupiter through our historic telescopes (weather permitting). No reservations required. Cost: \$7/adult; \$5/child. 7 - 9 p.m.

- 24 [Jupiter Night!](#) Jupiter, the second largest object in our solar system, is an impressive sight even through a small backyard telescope. The view through the Cincinnati Astronomical Society's large telescopes is startling! See a presentation about our solar system's largest planet - get to know its moons and weather. If the skies are clear we will view this magnificent planet through our telescopes! 8 - 11 p.m. *
- 24 [Jupiter Night](#). The king of the solar system is back! Jupiter has returned to the evening skies with its fabled red spot, fickle stripes, and 63 moons.

And it is BRIGHT. The CoC celebrates Jupiter with optional classes at 8 or 9 p.m. about our largest planet, new discoveries like the new red spots, the disappearing stripe, the newly found moons, and asteroids slamming into it. Then, see the cloud tops of Jupiter and the four largest moons through our historic 1843 and 1904 telescopes (weather permitting). We will also take a closer look at the craters of the Moon. Self-guided tours, kids Jupiter craft, and much more. You'll get to use the oldest telescope in the U.S. plus several portable telescopes outside. Drop in anytime between 8-10 p.m. - Report to the smaller of the two buildings. Admission is \$7 per person. 7 - 9 p.m.

December

7 Late Night @ the Observatory (CoC). Can't sleep? Come see what the Observatory is like after hours - long after the "early crowd" has gone home. You'll get to use the oldest big telescope in the U.S. to view astronomical objects that are not visible until late at night (weather permitting).

Get a sneak preview of the next season's planets and stars a month or two ahead of everyone else. Plus, zoom in on a late-rising moon, or watch the whole sky for a meteor shower or satellite passes. Each night is different and special! These programs are recommended for adults only. If the weather does not permit viewing, we'll have fun with some of the crazy science experiments and "adult" constellation mythology stories that we can't share with family audiences. Admission is \$10 per person. 10:30 p.m. - 12 midnight.

9 [Telescope Training \(for members only\). Members telescope training on any of our 4 main telescopes.](#)

[Additionally, if you would like assistance with your own telescope, bring it along! 4 - 6:30 p.m.](#)

9 [Luminaria Festival at the CoC.](#) Join us for the 37th year of this Mount Lookout tradition. As the neighborhood lights up the streets, the Cincinnati Observatory will open its buildings and telescopes for the general public.

Cruise from Mount Lookout Square to the Observatory for carolers, stargazing, a gift shop, and hot drinks. Enjoy free rides between the Observatory and Square along luminaria lit streets. No reservations required. 6:30 - 8:30 p.m.

21 [Young Astronomers' Class.](#) Our young astronomer's class is geared towards Elementary school-aged children (and their parents.) 5 - 7 p.m. *

21 [Monthly Board Meeting, 7 - 8:30 p.m.; Members' Holiday Party - End of the World Potluck.](#) Come celebrate the season with CAS! Please bring a dish to pass and hope for clear skies. *

22 [The World Didn't End Stargaze.](#) Come out for some views of the winter skies! If it is clear enough we will be able to view the Ursid meteor shower. 8 - 11 p.m. *

* CAS HQ

CAS NEWS

CAS HQ Now Has Ohio Historical Marker

Dennis Smith said the late 1950s were a pretty scary time in America. Tensions between the U.S. and the Soviet Union were high, and new political, military, technological and scientific developments were added to the mix when the Soviet Union launched Sputnik 1 - the world's first artificial satellite - in October 1957.

"It was a big deal, and America was behind," Smith said. He vividly remembers those days.

The Green Township resident was only a teenager attending St. Xavier High School, yet he found himself right in the thick of the space race.

Smith was a member of the Cincinnati Moonwatch Team at the Cincinnati Astronomical Society in Cleves. Serving as the deputy team leader, he worked alongside Alex Presnell, who was the society's president, and Tom Van Flandern, who was an astronomy student at Xavier University.

Van Flandern would eventually go on to become a respected astronomer, earning his doctorate in astronomy from Yale University, and working professionally as the chief of research at the U.S. Naval Observatory and later as the chief of the celestial mechanics branch at the Nautical Almanac Office.



Cincinnati Astronomical Society members, from left, Terry Endres, Dennis Smith and Jim Mills stand beside the Ohio Historical Marker that was recently dedicated at the society. The marker recognizes the historical significance of the society and its Cincinnati Moonwatch Team.

Smith was the deputy team leader of the Moonwatch Team when he was a high school student in the late 1950s. Image courtesy of Kurt Backscheider/The Community Press

The Cincinnati Moonwatch Team was part of Project Moonwatch, an initiative of the National Academy of Sciences.

The team used the Cincinnati Astronomical Society's three large telescopes to optically track satellites and verify their positions as they traveled through space (cont'd on page 3).

"It was exciting," Smith said. "Tom had a superior mind for mathematics. He was always excited and he was out to make us the best in the world."

From 1957 to 1964, the Cincinnati Moonwatch Team was recognized by the Smithsonian Astrophysical Observatory as one of the leading worldwide teams in making scientific contributions to the tracking of artificial satellites.

Led by Van Flandern and Smith, members of the Cincinnati Astronomical Society spent thousands of volunteer hours supporting the Moonwatch Team's efforts by contributing time, energy and money to track satellites at the beginnings of the space age. *This article appeared in:*
<http://news.cincinnati.com/article/C2/20121030/NEWS05/310300005>
 / © Cincinnati.com

Upcoming

Young Astronomer's Class

ATTENTION YOUNG ASTRONOMERS!! Our Young Astronomer's Class is geared towards Elementary school-aged children (and their parents.)

This is a series of 4 programs starting at 5 p.m. on the third Friday, from November through February. We will start off with some pizza, then have a brief presentation to introduce some basic themes in astronomy.

Once the sun sets, we will head outside to see what stars and planets we can see with the naked eye. Of course everyone will also have the opportunity to look through one of our huge telescopes! You can attend one or all four classes - topics will differ between them.

- * If the skies are cloudy we will attempt remote viewing (via the web) or use planetarium-type software.
- * Please dress to be outside for 30 minutes.

If planets, stars, telescopes, and lasers (yes, lasers!) sound fun to you, then be sure to join us for this new program! It's FREE!

CAS Members and the public of all ages are encouraged to attend and/or volunteer. Volunteers are needed for help serving food/clean up, pizza pick up, assist kids with hands-on crafts, run telescopes, and give telescope tours. If you would like to help out, please contact Catherine Gallo at catherinegallo@yahoo.com. Every little bit helps! - Catherine Gallo

Jupiter Night

Jupiter, the second largest object in our solar system, is an impressive sight even through a small backyard telescope. The view through the Cincinnati Astronomical Society's large telescopes is startling.

When Galileo turned his telescope toward the heavens four hundred years ago, what he saw changed the universe and our place in it. Not only did he find our Moon pockmarked with craters and imperfect, he saw Jupiter was circled by four moons of its own. If Jupiter could be the center of its own planetary system, why couldn't our Sun be encircled by the planets? Galileo was picturing a new model of our own solar system.

Jupiter's average distance of 484 million miles from the Sun puts it over five times further away from the Sun than our own Earth. The king of the planets is over ten times larger than our home planet. Impressive numbers, indeed but the distances between the Sun and planets, as well as the relative sizes of our solar system objects, are hard to imagine. To appreciate how big the solar system is, you can make your own scale model at home or at school. For our Sun place a 12" diameter yellow ball at one end of a long field or sidewalk. Pace off 107 feet and place a tiny blue bead - one tenth of an inch across - on the ground.



The planets of the solar system as depicted by a NASA computer illustration. Orbits are not shown to scale. © NASA

That's our home world. Count off another 450 feet and place a 1.25" ball. Something about the size of a golf ball. That's Jupiter! To get to the first of the dwarf planets hike another 3,700 feet and you're at Pluto, which in this model is smaller than the period at the end of this sentence. The solar system is not at all like those crowded illustrations in text books (such as shown above!)

Visit CAS on Saturday, November 24th, from 8 until 10 p.m. to continue your personal exploration of the solar system. We'll begin with a short presentation by CAS member Valerie Niemi. (Presentation held clear or cloudy.) Valerie's talk will be followed by telescope viewing of Jupiter (weather permitting) though the society's 4 large telescopes. There will be astronomical activities & displays for all ages.

- Saturday November 24th
- Program begins at 8:00 p.m.
- Viewing follows (weather permitting)
- Admission: Donation Requested
- Open to all ages!
- No reservations required.

- Craig Niemi

Meet a Meteorite

The Cincinnati Observatory Center will present a "Meet a Meteorite" event for the general public at the Cincinnati Observatory on Saturday, November 17, 7:00-9:00 p.m.

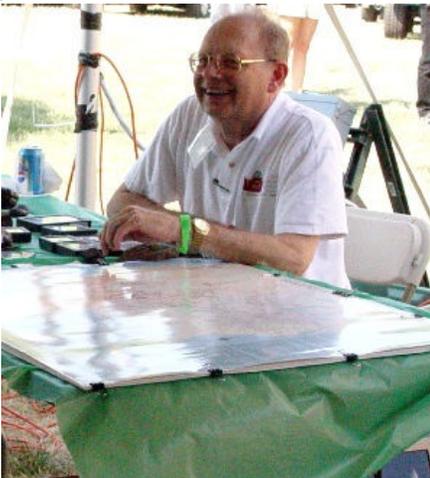
Meteorite collections from the tri-state area will be displayed, including the Cincinnati Observatory's collection and CAS members Mike Smith and John Ventre's collection (cont'd on page 4).

Collections from the Miami University Geology Museum, Indianapolis, Dayton, plus a few other collections will also be displayed. This might be Ohio's largest collection of meteorites displayed at one place.

Come and hold a rock from space, including rocks from the Moon and Mars. Learn how meteorites are formed and collected. Discover how to distinguish meteorites from meteor-wrongs. Adopt a meteorite! Everyone should own a rock from space.

View the Moon and Jupiter through our historic telescopes (weather permitting). Take a mini-tour of the Observatory. No reservation required. Cost: \$7/adult; \$5/child.

Directions to the Observatory: <http://www.cincinnatiobservatory.org/directions.html>



Call (513) 321-5186 for additional information. - *John Ventre*

Member Reports

The Andromeda Galaxy

I haven't been active on the Deep Sky Object (DSO) imaging groups lately. I still have a bit of a backlog to work through, and was also distracted by the solar events of May and June. During my trip out west for the solar events, I swapped out the TOA-130 in our remote observatory with an FSQ-106.

On the cover is my first finished image taken with the FSQ-106 taking advantage of its field of view: M31, the Andromeda Galaxy. This is not my first attempt at M31; I have two finished images of it from 2004 and 2006. This is my first attempt of it from a dark sky site, however. I am particularly pleased with the relative ease of processing this image.

M31, or the Andromeda Galaxy, is one of the showpiece objects of the night sky. Inspiring images of this majestic galaxy have graced many books on astronomy, including my own foundational book on the subject, "The Universe" from the Time-Life Nature series.

In the course of my readings on astronomy, I noticed some contradictions: at times in some books this object was referred to as "The Andromeda Galaxy", at other times "The Andromeda Nebula". Further readings of books and viewings of TV documentaries on the universe helped clarify the term.

Telescopic views of non-stellar deep-space objects tend to have a similar "fuzzy gray object" appearance to them. Thus for the longest time all such objects were described as "Nebulae". "Nebula" (pl: "nebulae") is simply Latin for "cloud". The entire Milky Way looks like a glowing cloud to the naked eye, and was resolved into stars by Galileo when he first turned his telescope to that region. Astronomers that followed him pretty much assumed that any similar "nebula" was simply another cloud of stars much farther away. Up through the early 20th century, our view of the universe was that it was the Milky Way. Period.

It was only during the 1920's, when astronomer Edwin Hubble discovered specific types of stars in M31 that helped peg its distance from us, that our view of the universe expanded by a factor of several billion.

M31's distance from us suggested that the Milky Way is only one of at least 100 billion galaxies in the entire universe. So now we know - M31 is a galaxy, but can still be described as "nebulous".

M31 is visible to the naked eye, though it is best seen at a dark site. This makes it the farthest object (almost 3 million light-years!) visible with unaided vision. I need a pair of binoculars to see its bright core from my back yard. With a large telescope at a dark sky, views of it are breathtaking.

Since I last shot this target, measurements taken by professional astronomers have indicated that M31 is approaching our Milky Way galaxy. Assuming measurements are accurate, in about 4 billion years the two galaxies will interact in a titanic collision. No need to panic - recent observations show that galaxy collisions are commonplace and apparently a natural part of galactic formation. In fact, the Milky Way is itself in the process of consuming a small galaxy. Galaxies, despite their impressive size and mass, are actually quite rarefied; the stars that populate them are so far apart that there will be few if any collisions resulting from the galaxies colliding. What will happen is that the stars will be tossed around by the massive combined gravity of the galaxies. After several hundred million years, the stars of the two galaxies will eventually settle down and create a new super galaxy, possibly a new super-spiral, but more likely an elliptical galaxy, that today's astronomers are already dubbing "Milkomeda".

It's almost like watching a speeding freight train rushing towards us, with us unable to step out of the way or do anything about the pending collision. But we are having a grand view, aren't we? - *Eric Africa*

Scope for Sale

I am selling my Apertura 10" Dobsonian telescope. It comes with a 30 mm 2" wide view eyepiece, a 9mm Plössl eyepiece, laser collimator, mirror cooling fan, moon filter, Velcro strap handles and Telrad. I've also kept the Styrofoam for the optical tube assembly, so transportation is easier.



I've had it since July and have decided that it is just a tad too big for me. So, I have decided to sell it. I'm asking for \$400 for everything for CAS members. I've been told that the best scope for you is the one you'll use the most and because of its size, I'm just not using it as much as I'd like.



I'd rather sell it to someone in the club if I could.

If anyone has questions please let me know at chris@beiting.org – thanks! – [Chris Beiting](#)

The Observer

Cat's Eye Nebula

The Cat's Eye Nebula is one of the most complex planetaries ever observed, although only one stellar remnant can be discerned at its center.



Astronomers suspect that its twin-lobed appearance and highly intricate structure are the result of interactions between two components of a double-star system. According to this interpretive model, a companion has in effect pinched the gases expelled by the one component star into an elongated shell. The jets of gas that can be seen corkscrewing up to create the two-pole structure of the nebula could also be the result of a companion star, which might still be receiving gas from its exploded neighbor and funneling it up along the poles of its rotational axis (Why the corkscrew effect? Due to a wobble in the star's axis of rotation, known as precession). Most planetaries are thought to be the result of the death of smaller stars, but in the case of the Cat's Eye Nebula, the central remnant is actually a massive O-type star that for some reason, didn't go supernova, but rather, is ending its days in planetary style. It is 10,000 times brighter than the Sun, but only about 65% the size, and is thought to possess about one solar mass. The concentric rings visible outside of the Cat's Eye's central areas give evidence of well-spaced pulsations and the intensity of illumination from the remnant here also illuminates an irregular outer ring of material – the first stuff sloughed off by the star about 1600 years ago. – [Bill Schultz](#), [Education Director](#)

Possible Meteor Storm

In May 2014, there appears to be a reasonably good chance that a new, and very significant meteor shower, will take place. At the moment, conservative forecasts suggest anywhere from 100 to 400 meteors per hour may be seen, but the actual rate could peak much higher and potentially reach "meteor storm" levels (1,000 per hour!).

The progenitor of this possible display is comet 209P/LINEAR, a periodic comet discovered on Feb. 3, 2004, by the Lincoln Near-Earth Asteroid Research project (LINEAR) using a 1-meter (39 inches) reflector telescope. The comet was given the permanent number 209P on Dec. 12, 2008.

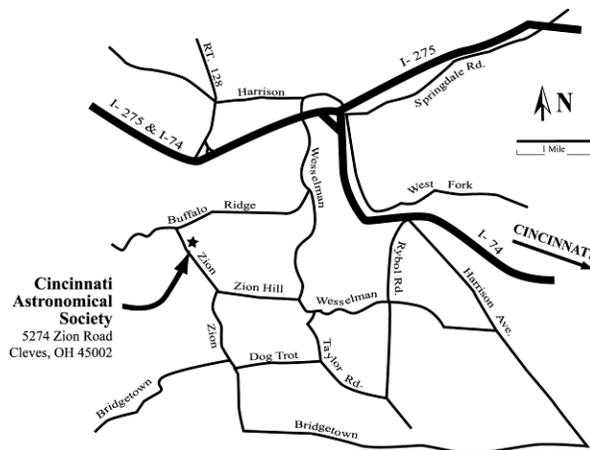
Meteor experts Esko Lyytinen of Finland and Peter Jenniskens at NASA Ames Research Center were the first to announce that the Earth was on a collision course with a number of dusty debris trails shed by comet LINEAR which would cause an outburst of meteor activity. Their findings have since been independently confirmed by two meteor experts.

The radiant for this impending meteor shower is in the northern circumpolar constellation of Camelopardalis and the predicted date is May 24, 2014, at around 3:30 a.m. EDT (0730 GMT/UT). That means that the United States and Southern Canada will be in the best position to see whatever activity occurs, since it will be taking place in a dark sky between midnight and dawn.

The moon will be a waning crescent, just four days from its dark "new" phase, and will be of little or no hindrance for prospective observers. As we get closer to May 2014, [SPACE.com](#) will provide more detailed information about this exciting and potentially spectacular event, so stay tuned! – [Joe Rao](#), [Space.com](#)

CAS Officers, Trustees, & Chairs

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Directions to CAS Headquarters above

CAS meets on the third Friday of each month at 8:30 p.m. at the CAS Headquarters. The Board meeting is held at 7:00 p.m. prior to the regular meeting.

Headquarters/Scopes phone 941-1981

Web address: <http://www.cinastro.org>

The Sidereal Messenger is all about YOU – we would like to feature your activities, observations, instruments, and proposals. DO drop us a line – e-mail the editor, Jun Lao, appulse2000@yahoo.com.

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