

Committed to Supporting Amateur Astronomy since 1933



The IAS News & Views

Volume 91 Issue 11



Indiana Astronomical Society Members-Only Holiday Party Saturday, December 7, 7:00 PM Mooresville Public Library

Our annual Holiday Party will be held at the [Mooresville Public Library](#) beginning at 7:00 pm. As a reminder, this event is for IAS members and their immediate families only (single members may bring one adult guest). We will be ordering our entrée from City Barbeque. We want to be certain that we have sufficient provisions available. So please use Signup Genius at this link below to let us know who is coming and what pitch-in item you will be bringing:

[IAS 2024 Holiday Party Signup](#)

Unlike the Fall event at the Link Observatory, we don't anticipate issues with insufficient seating/parking at this venue and do not plan to limit the total number of RSVPs.



Public vs. Members-Only Events

Please find below some guidelines on inviting guests to IAS functions. Please keep these in mind while discussing upcoming events in Facebook or other social media.

- The Fall Pitch-in and the Holiday Party are restricted to IAS members and their immediate families. For this purpose, “immediate family” means the member, spouse, and *minor* children. Single members may bring *one* adult guest. These events require substantial planning to ensure adequate seating, food, and beverages. Such details are difficult to manage if the public is invited.
- Deep-sky observing at Link is for IAS members and “invited guests.” These sessions are often cancelled due to inclement weather or lack of an available key holder. We have no reliable way to contact non-members when this happens.

If you invite a guest, it is your responsibility to both serve as host and inform them of any last-minute changes. Also consider bringing your own scope, as the Link and Tanager Hill instruments are likely to be occupied with member projects.

- West Park stargazes are restricted to IAS members to address liability concerns of the park board. Non-members are asked to leave the park grounds before nightfall.
- School events are carried out for the benefit of the school and inviting guests is inappropriate.
- Public events include our general meetings (with the exceptions mentioned above), the McCloud stargazes, and various presentations/observing events held at public venues (e.g.: libraries). These are listed in our calendar and last-minute changes are unlikely. When changes do occur, you will be notified on our groups.io collaboration site and/or Facebook

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From the President's Desk



As the end of the year approaches, I wanted to draw attention to our annual election process--please see the candidate bios in this newsletter and please plan to vote electronically when the time comes. Most of the membership does not see the inner workings of the club, but the folks who fill the positions and keep the programs running deserve your vote of confidence.

Another year-end tradition is the IAS Holiday Pitch-In, which we hold early in December so that it does not compete with or complicate your other holiday plans. This year our Treasurer and Membership Coordinator Victoria Musick has developed a sign-up process whereby you can select the type of food you want to bring, rather than your choice being dictated by the first initial of your surname. Please be sure to RSVP and choose your pitch-in article early, so the club can plan the proper quantity of entree meats and drinks to purchase. We intend to have holiday music, guitar playing and singing led by our Secretary Larry Cates, a short video filmed at Link, and a trivia quiz--this year's event should rival last year's success!

We've enjoyed a good year of observing and are looking forward to another banner year in 2025. Our ranks grow month after month, so please be sure to extend a welcome to all the new members you encounter on the listserv, at observing sessions, and at the holiday pitch-in. Happy Thanksgiving, Holidays, and New Year's!

— Robert Aull

IAS Election 2024

As in the previous three years, the IAS annual elections will take place virtually. Positions will be filled by majority vote. All members in good standing and their spouses are eligible to vote.

The election will be conducted using Google Forms. To cast your ballot, simply browse to:

[IAS 2024 Election](#)

enter your name and email address, and make your selections for each position. Be sure to submit the form when done.

The email address you provide will be cross-checked against our membership list to ensure that any votes received from non-members are discarded. Do not vote more than once. Proxy votes, duplicate ballots, and late-arriving submissions will not be accepted.

Voting ends on December 7th at 12pm EST. If you need more help with online voting, contact Wes Tobin webmaster@iasindy.org. Please note that again this year, we will not be providing a mail-in ballot.

Results will be tallied during the afternoon of December 7th and the results will be announced at the Holiday Party. Again, please vote early to ensure your votes are counted.

The Nominating Committee report is appended on the following page. Additional nominations may be made by write-in, but all nominees must agree to serve before the votes are tallied.

The Report of the Nominating Committee

The following slate of candidates has been received and the candidates have agreed to run.

President — Robert Aull

VP/Program Chairman — Sara Farkas

Treasurer — Victoria Musick

Secretary — Larry Cates

Board of Directors (two to be elected):

Ken Magar

David Howard

David West

— *Robert Aull, Nominating Committee Chairman*

Candidate Bios

Robert Aull — I have been an IAS member since 2002 and served terms as Secretary and Treasurer prior to volunteering to assume the role of President in January 2023. Prior to my retirement in June 2017, I held financial and compliance oversight over the research grants awarded to the Indiana University School of Medicine. I busy myself with stellar and solar observing, telescope training and operation, astronomy outreach, and preservation and improvement projects as Link Observatory Manager. Having served two years as President, I am proud of the board's accomplishments under my tenure, including bring wi-fi to the observatory, events celebrating the 90th anniversary of the IAS and the 85th anniversary of the 36-inch reflector, increasing the number of dark sky observing site agreements with Indiana parks, and many projects to preserve and beautify the Goethe Link Observatory itself. If elected, I pledge to do my best to support the mission of the IAS and to uphold our tradition of service to the amateur astronomy community.

Sara Farkas — I have been an active member of the IAS since 2019 and have served on the Board of Directors since 2020. By day, I work for a STEM education program. In my free time, I enjoy observing and learning about the night sky, crocheting, and baking. I love connecting with our members and the community, sharing new experiences together.

As one of the Tanager Hill C-14 Operators, I facilitate DSO viewing sessions using the C-14 telescope. Additionally, as the Board Liaison for the Indiana Family Star Party (IFSP), I coordinate between the Board and the event organizers to assist with planning for a successful event.

I look forward to continuing to serve the IAS and the Board as your new Vice President.

Victoria Musick— I've been part of the Indiana Astronomical Society for six exciting years, and for the last two, I've taken on the role of Treasurer. In 2020, I also stepped up as the Membership Coordinator. These two jobs really go hand in hand! By managing memberships, I get to oversee the money aspects too, which fits perfectly with the treasurer's job of keeping track of our finances. Besides my roles at the IAS, I teach financial and managerial accounting at college and have experience in public accounting. I love joining in on outreach programs at museums and schools, and I'm always ready to observe the stars at West Park, Link, and Koteewi. I'm thrilled about the chance to continue as your Treasurer, helping our society reach for the stars!

Larry Cates — I retired as a Process/Electrical Engineer in 2018 from Praxair, an industrial gas company. My work involved developing and implementing process equipment and control systems for steel refining and oxy-fuel combustion. Earlier in my career I worked with industrial instrumentation, process control, and automation systems. I decided to take up amateur astronomy as a hobby after I retired. I have been a member of the IAS since September 2018 and served on the board of directors from 2019-2022. I have served as Secretary from 2022-2024.

Ken Magar — I have been a member of the IAS since 2006. I decided to build my own telescope back in 2005 and that really got me started on my astronomy journey. I'm a visual observer and enjoy public outreach events. I have been serving as a member of the board of directors for the past two years. I previously served as your Vice President and Program Director. As our membership continues to grow, I would like to continue to be of service to our society as a member of the board. Thank you for your support.

David Howard — I joined the IAS in 2018 and became the Equipment Loan Coordinator in 2021. Since then, I have attended most BOD meetings and have become familiar with the governance of the IAS. I enjoy being the loan coordinator because it gives me a chance to help new amateur astronomers get started in our hobby. I have been doing mostly visual astronomy since the mid-90s and began analyzing exoplanet transits this year. I live with my wife in Avon and have three children at university. If elected to the board, I would like to institute a mentorship program for new members.

Dave West — Astronomy has been a lifelong hobby of mine. I still have the children's book, "Find the Constellations," by H.A. Rey, that sparked this interest in me in the late '60's, when I was in the 1st Grade! Three years ago, I purchased a 9-1/4" Celestron CPC Deluxe HD telescope, and whenever there's a clear night and I'm able, I'll have it out in my back yard for hours on end!

I have been a member of the Cincinnati Observatory since 2021. I am fairly new to IAS but have already enjoyed participating in two IAS events, with my telescope -- the Milky Way Festival in Crawford County on October 5th, and an observing night at West Park in Carmel on Friday, November 8th. As with many astronomers, one of the things I enjoy most is sharing the experience of viewing the moon, stars, planets, and deep space objects with others.

I have a degree in Nuclear Engineering from the University of Cincinnati. Currently, I serve as the Examinations Director for the Board of Certified Safety Professionals (BCSP). From 2008-2013, I served on BCSP's Board of Directors. I am also currently serving as President of the International System Safety Society. In January of this year, I finished a 6-year term serving on NASA's Aerospace Safety Advisory Panel (<https://oior.hq.nasa.gov/asap/>) and was awarded NASA's Exceptional Service Medal.

I would be honored to have the opportunity to combine my passion for astronomy and my leadership experience in service to the IAS Board of Directors.

IAS NEWS

Upcoming Events for December

The following events will occur rain or shine.

IAS Holiday Party

Saturday, December 7 at 7:00 PM, Mooresville Public Library. Tonight, the IAS will hold their annual holiday party and announce the result of the 2024 board elections. This is a *members-only* function.

There is no board meeting or guest speaker scheduled for December.

Observing Activities for December

The following events are weather-dependent and subject to last-minute cancellation. Please monitor [our collaboration site](#) for updates and do not drive out until you receive confirmation that it's a "go."

Link Activities (Members and Invited Guests) —

The IAS has deep-sky observing sessions scheduled to occur at Link Observatory on the weekend of December 6-7 (the 7th is immediately after our holiday party) again on the weekend of December 20-21, and once more on December 27-28

Come observe with the telescope operators using the Link 36" and/or Tanager Hill 14" scopes or bring your own and set up on the north observing field.

Koteewi Park Activities (Members Only) — December 20, I will set up at 5:00PM. This event is weather-dependent. Please watch [group.io](#) as the date approaches

Location: [Koteewi Map Strawtown](#)

Observing and Outreach Reports

November 1 Link — With a very clear sky and steady seeing, Friday night proved an excellent one for stargazing at the Goethe Link Observatory. The following IAS members attended and/or brought scopes: Robert Aull, Joel Sawaski, Henry Hodgman (borrowed an 8" dob via the IAS Equipment Loan Program), Josh Francis, Charles Lerner, Grant Hiestand, Lloyd Criscillies and his nephews, plus Phil Thompson and Maribel Gaspang. Joel and Grant were imaging M33 the Triangulum /Pinwheel Galaxy (see Joel's picture posted on groups.io) and Joel also targeted Caldwell 5 / IC 342 "The Hidden Galaxy", an intermediate spiral galaxy in the faint constellation Camelopardalis (the giraffe).

The Caldwell catalogue is an astronomical catalogue of 109 star clusters, nebulae, and galaxies for observation by amateur astronomers. The list was compiled by the famous UK astronomer Sir Patrick Alfred Caldwell-Moore as a complement to the Messier catalogue. Moore used his other surname – Caldwell – to name the list since the initial of "Moore" is already used for the Messier catalogue. Entries in the catalogue are designated with a "C" and the catalogue number 1 to 109.

Josh Francis took up the challenge of testing eyepieces in the ten-inch wooden dob donated many years ago to the IAS and rebuilt by member Mike Kirsch, and his tests were successful with both 2" and 1.25" eyepieces of varying magnification, including the use of a 2x barlow. Mike recently returned the scope to the IAS so we could get it in the hands of someone who will appreciate and use it, if you are interested in purchasing it from the club please contact me directly at president@iasindy.org. No reasonable offer will be refused.

On the field and in the Tanager Hill Observatory, targets included: Altair and Deneb as calibration stars for the C14, Saturn, Neptune, M52 the Scorpion Galaxy in Cassiopeia, M71 the Angelfish Cluster in Sagitta (the arrow), M27 the Dumbbell Nebula in Vulpecula (the fox), M57 the Ring Nebula and globular cluster M56 in Lyra (the lyre or harp), double star Albireo and M39 an open cluster in Cygnus (the swan), M31 and 32 galaxies in Andromeda in the same field of view using a 56mm eyepiece on loan from Robert, globular cluster M72 in Aquarius, M15 the Great Pegasus Cluster, M45 the Pleiades open cluster "which rides the back of bull" (Taurus) and is known as Subaru in Japanese, and lastly a great view of Jupiter once it cleared the eastern tree line just before midnight. We truly shared great camaraderie in the cold evening air on the first night of November.

— Robert Aull, Link Observatory Manager

November 2 Link — After our General meeting Dave Collier opened the Link 14 inch for observing. With a new moon, temps in the 40s, and clear skies it was a good time to observe.

— Dave Collier

November 8 West Park — On Friday evening a hardy group of astronomers went to West Park in Carmel. Grant Hiestand, Robert King, Dave West, Kabel and Ken Rainbolt, and John Musick were present. The skies were not perfect as the sun went down. However, conditions did improve as the skies darkened. We had two SeeStars, two 9.25 SCTs and a 102mm F7 refractor. We had views of the Moon, Venus, Saturn, M-15, The Pleiades, Pegasus Cluster, Jupiter, Bode's Galaxy, Albireo, and M39. We took turns looking in each other's telescopes and enjoyed a pleasant November evening (cool but warm for November). The time change was in our favor so it was getting dark by 6:00 pm and we stayed till 9:00 pm. A good time was had by all participants.

— *John Musick*

November 15 Link — On Friday evening, Robert Aull, assisted by IAS members John Hirt and Bob Weaver, provided a tour of Link Observatory to a group of four Girl Scouts, including a demonstration of the movements of the dome shutters, the dome, and the 36-inch reflector itself. Unfortunately, the skies were cloudy and so no celestial targets could be acquired; nevertheless, the young ladies enjoyed poking their noses into just about every corner of the observatory and left delighted with their visit.



— *Robert Aull*

Star Gazing in the Southern Hemisphere

Hakos Astro Guest Farm, Namibia, Africa

Fritz Kleinhans, Kerry and Larry Cates travelled to Namibia in Southern Africa to stay at the Hakos Astro Guest Farm. Hakos was established as a cattle ranch by Walter Straube in 1966 but has been operated primarily as a facility for amateur astronomers since 1998. This was a trip that Fritz had been looking forward to for several years, since he had visited Namibia for a solar eclipse two decades earlier.

We left Indianapolis on Sunday, September 22 at 2:00 pm and arrived at the farm at around 4:00 pm on Tuesday, September 24, after an overnight stay in Johannesburg, South Africa. We departed on October 5, which gave us 11 days and nights to explore the area and admire the sky.

Namibia has some of the darkest skies in the world and due to its location in the southern hemisphere offers views of the sky that cannot be seen from our part of the world. We were able to photograph objects such as the Tarantula, Eta Carina, and Running Chicken nebulas, as well as the Magellanic Clouds.

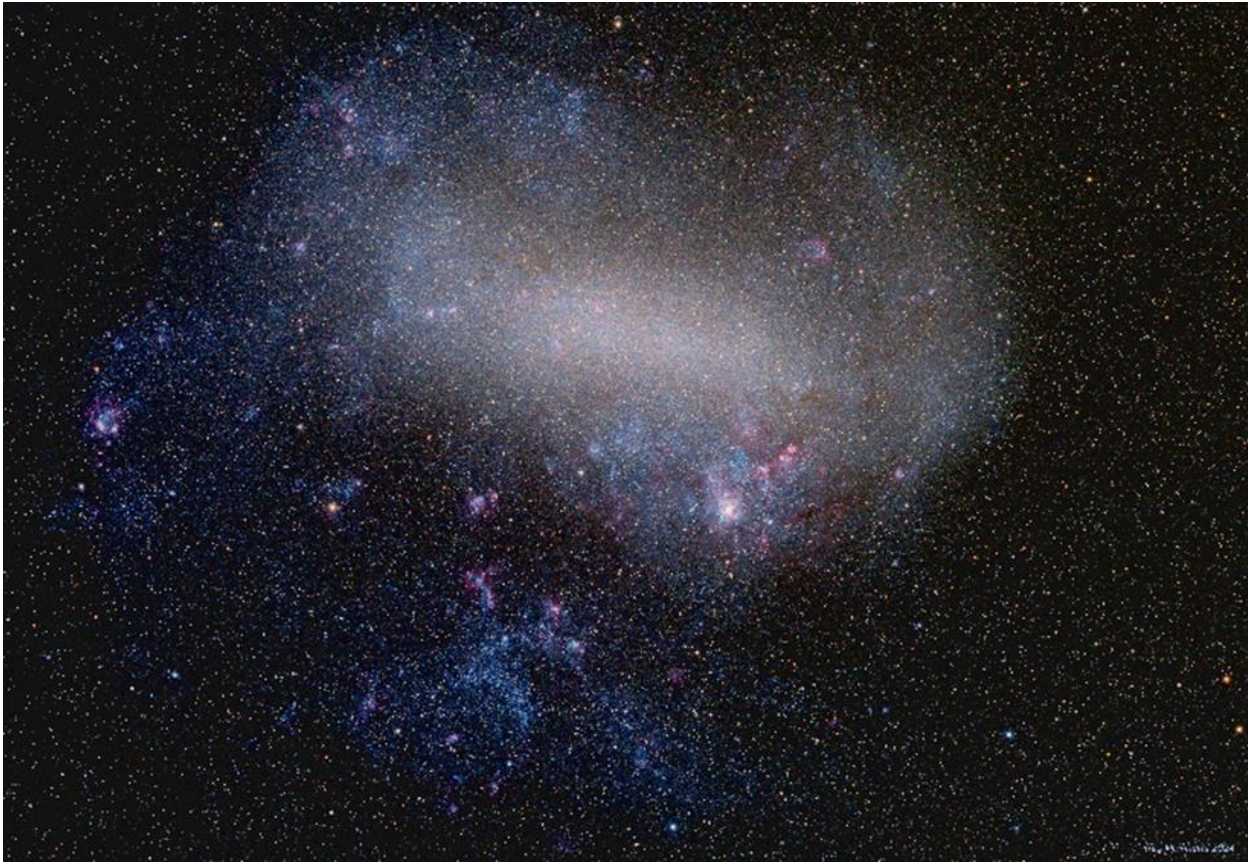
Hakos turned out to be a wonderful place to visit, with comfortable accommodation and excellent food. Turns out zebras make great steaks (who knew). We also got to see some interesting wildlife, including zebra, rhinoceros, baboons, springbok, ostrich, kudu, and oryx. We also met some very interesting and friendly people, mostly from Germany and Austria. We were the only guests from the USA.

Our astronomical photographic equipment was selected to take wide field photographs with Fritz's 200 mm focal length scope and more narrow field images with Larry's 600 mm focal length scope.

We are looking forward to doing a presentation for the IAS in a few months after we have had a chance to do some processing on our astro-photos. In the meantime, I am attaching photos of the Hakos Farm building, the Tarantula Nebula NGC 2070, and the Large Magellanic Cloud (LMC).

NGC 2070 was taken with Larry's Askar FRA 600 f/5.6 scope with 108 mm aperture and 600 mm focal length, a ZWO ASI2600 MC DUO camera that includes a guiding sensor, ZWO electronic focuser, a ZWO AM5 mount, and an ASIAIR Plus controller. It consists of twelve, 5-minute subs, 60 minutes total exposure, with calibration frames.

The LMC was taken with Fritz's Askar 200 mm f/4 on a Nikon D850. Downscaled slightly to 6.4"/pix. 3 min subs, 117 min total exposure, unguided. You may be able to spot the Tarantula Nebula located in the lower right part of the LMC.



— *Larry Cates*

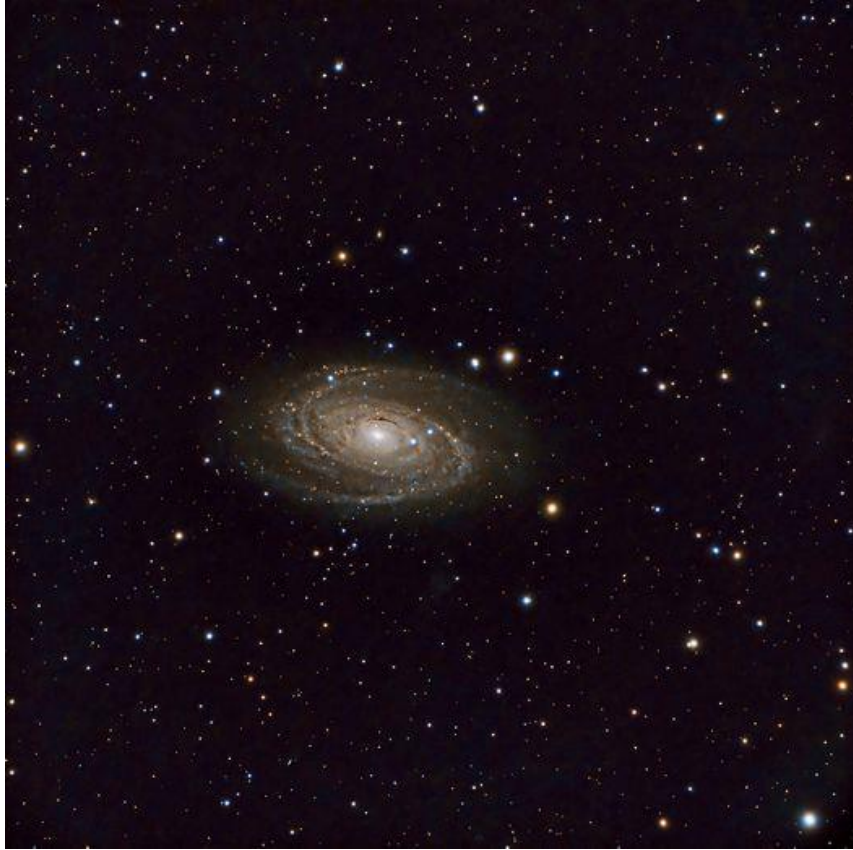


Photo by Jim Fox, Messier 81 Bode's Galaxy

November General Meeting

The main speaker for the IAS's General Meeting teleconference was Kevin Schindler, Historian, at Lowell Observatory. He was introduced by our own IAS Historian Tom Borlik. His presentation was "To Mars & Back via Bloomington & Flagstaff - the Story of the Slipher Brothers - Vesto & Earl" about the amazing Slipher brothers, astronomers from Mulberry, IN.

Here is a Link to Disney's "Mars and Beyond" featuring EC Slipher at 30 minutes into the video:

[Mars and Beyond](#)

Link to an academic paper:

[Reasons in Favor of a Hubble-Lemaître-Slipher's \(HLS\) Law](#)

The presentation was well-received by all in attendance and the IAS appreciates Kevin's willingness to tell the story of the Slipher's. For those unable to participate in real-time, or if you just want to it watch again, a video of his presentation remains available at: [November 2024 General Meeting](#)

Links to Past General Meetings

[October 2024 General Meeting](#)

[July 2024 General Meeting](#)

[June 2024 General Meeting](#)

[May 2024 General Meeting](#)

[April 2024 General Meeting](#)

[March 2024 General Meeting](#)

[February 2024 General Meeting](#)

[January 2024 General Meeting](#)

Celestial Reflections

"This Observatory"

Very bright, a beacon if you will look now at east, do you see? This is to be a very clear day.
A wonderfully clear early dawn twilight I see and with such bright starlight gleaming too.
Astronomical twilight is brightening and soon we have the sun, about an hour from now.
Morning dawn glowing at east and south now here with us this day, on time and with much ado.

I am glad to see the Sun's on time today, calculations according to this ephemeris date are true.
"We see this as "as this should be," yes, this sunrise is so, we concur!"
Civil twilight ends at 7:47 a.m. Eastern Standard Time at 110 ° ESE_ (86° 14' W, 39° 52' N)!
The Sun enters our longitude 86° W, and our daytime begins and lasts until the Sun's setting, at WSW of azimuth.

"This elevation today is 48° at the south meridian, and yes, this is good!" "It's noontime,
February 6th!"

Big blue skies and bright chrome sunlight " is here everywhere now. "How blue!" Azure blue,
a darker blue to be sure, "this night will be full of starlight " is this observatory' s observation.
Let's look over the equipment now. We have only a few hours to pass 5 hrs. 11 minutes_

But . . . the weather forecast is for rain sometime. We are within a high pressure system. . .NWS!
Is this moving some or stationary? "Good question, how long before cloudiness?"
I feel so radiant now! . . . we are ready for the equinox soon, a few weeks now to the warm
atmosphere, and some additional altitude readings, not long ,.... Comes now. " the Spring, " and
Vernal Equinox!

Time passes, daylight is diminishing, and "Sun is passing to west azimuth."
We see a 250° WSW azimuth as the sun sinks away and the skies are becoming dark with night.
"That's a recorded azimuth." "Almost 11 hour's daylight." "We have a long nighttime ahead"
The Sun's distance has changed: Perihelion of 32.53 arc-minutes; "Feb. 6: 32.2625 arc-minutes!"

"We are ready here, the skies are darkening, the twilight of dusk, golden oh so!" and stars are showing
once again as this daylight becomes more of a nighttime, our civil twilight is dwindling to nautical
twilight, 24 minutes of right ascension has transpired and soon by adding 27 minutes more we pass
into the darkest twilight for another 27 minutes.

Then, after this amount of time, 78 minutes, that is 1 hour and 18 minutes, our twilight is gone and it's nighttime!

Here! Look to zenith, See there, a comet! "Yes, you're right, yes, I think so!"

Do we have a comet in this area now? I will check! Planets are all south of the celestial equator, "except for one, at 9° N, I think it's Mars!" Mars really wanders quickly through, 270° a year.

"That reading is right!" "We are right on schedule today." "What are those coordinates?"

The comet? Was that at the zenith, above Leo or closer to Virgo? "Let's make that measure!"

I have to configure the computer tracking. . . we were adding a new camera and. . .

"Did you say 12h 35 min 12.67 secs?" "Is that right?" "No . . ., that's 5 minutes of r.a." We are close to zenith with our 39.52° N latitude. I have some notes now!

That's interesting, we should send this observation to the Naval Station. . . out on to the coast, east!

"This looks undiscovered." A few more notes to write and then some evaluations too. . .this is. . .

"A successful nighttime observation." We are right on the money now!

How are you doing? This is something! "A comet above the plane!" "A new observed comet!"

You know, I think the sky is getting light . . . "this can only be a sunrise after 18° R.A., a little more than an hour from now!"

Wow, look at that star. "Is that a planet?" What a beacon! "What is that west elongation there?"

This is before dichotomy. . .gaining distance from inferior conjunction... adding the altitude along the ecliptic at this time, An increase of declination . . . The Northern Celestial Hemisphere. "To the vernal colure??"

"Yes." "This Observatory."

— *John McShanog, IAS Member Since 1986*



This article is distributed by NASA's Night Sky Network (NSN)

The NSN program supports astronomy clubs across the USA dedicated to astronomy outreach. Visit nightsky.jpl.nasa.gov to find local clubs, events, and more!

December's Night Sky Notes: Spot the King of Planets

By Dave Prosper
Updated by Kat Troche

Jupiter is our solar system's undisputed king of the planets! Jupiter is bright and easy to spot from our vantage point on Earth, helped by its massive size and banded, reflective cloud tops. Jupiter even possesses moons the size of planets: Ganymede, its largest, is bigger than the planet Mercury. What's more, you can easily observe Jupiter and its moons with a modest instrument, just like Galileo did over 400 years ago.



NASA's Juno mission captured this look at the southern hemisphere of Jupiter on Feb. 17, 2020, during one of the spacecraft's close approaches to the giant planet. This high-resolution view is a composite of four images captured by the JunoCam imager and assembled by citizen scientist Kevin M. Gill. Credit: NASA, JPL-Caltech, SwRI, MSSS | Image processing by Kevin M. Gill, © CC BY

Jupiter's position as our solar system's largest planet is truly earned; you could fit 11 Earths along Jupiter's diameter, and in case you were looking to fill up Jupiter with some Earth-size marbles, you would need over 1300 Earths to fill it up – and that would still not be quite enough! However, despite its formidable size, Jupiter's true rule over the outer solar system comes from its enormous mass. If you took all of the planets in our solar system and put them together, they would still only be half as massive as Jupiter all by itself. Jupiter's mighty mass has shaped the orbits of countless comets and

asteroids. Its gravity can fling these tiny objects towards our inner solar system and also draw them into itself, as famously observed in 1994 when Comet Shoemaker-Levy 9, drawn towards Jupiter in previous orbits, smashed into the gas giant's atmosphere. Its multiple fragments slammed into Jupiter's cloud tops with such violence that the fireballs and dark impact spots were not only seen by NASA's orbiting Galileo probe but also by observers back on Earth!



Look for Jupiter near the Eye of the Bull, Aldebaran, in the Taurus constellation on the evening of December 15, 2024. Binoculars may help you spot Jupiter's moons as small bright star-like objects on either side of the planet. A small telescope will show them easily, along with Jupiter's famed cloud bands. How many can you count? Credit: Stellarium Web

Jupiter is easy to observe at night with our unaided eyes, as well-documented by the ancient astronomers who carefully recorded its slow movements from night to night. It can be one of the brightest objects in our nighttime skies, bested only by the Moon, Venus, and occasionally Mars, when the red planet is at opposition. That's impressive for a planet that, at its closest to Earth, is still over 365 million miles (587 million km) away. It's even more impressive that the giant world remains very bright to Earthbound observers at its furthest distance: 600 million miles (968 million km)! While the King of Planets has a coterie of 95 known moons, only the four large moons that Galileo originally observed in 1610 – Io, Europa, Ganymede, and Calisto – can be easily observed by Earth-based

observers with very modest equipment. These are called, appropriately enough, the Galilean moons. Most telescopes will show the moons as faint star-like objects neatly lined up close to bright Jupiter. Most binoculars will show at least one or two moons orbiting the planet. Small telescopes will show all four of the Galilean moons if they are all visible, but sometimes they can pass behind or in front of Jupiter or even each other. Telescopes will also show details like Jupiter's cloud bands and, if powerful enough, large storms like its famous Great Red Spot, and the shadows of the Galilean moons passing between the Sun and Jupiter. Sketching the positions of Jupiter's moons during the course of an evening – and night to night – can be a rewarding project!

Now in its eighth year, NASA's Juno mission is one of just nine spacecraft to have visited this impressive world. Juno entered Jupiter's orbit in 2016 to begin its initial mission to study this giant world's mysterious interior. The years have proven Juno's mission a success, with data from the probe revolutionizing our understanding of this gassy world's guts. Juno's mission has since been extended to include the study of its large moons, and since 2021 the plucky probe, increasingly battered by Jupiter's powerful radiation belts, has made close flybys of the icy moons Ganymede and Europa, along with volcanic Io. What else will we potentially learn in 2030 with the Europa Clipper mission?

Find the latest discoveries from Juno and NASA's missions to Jupiter at:

<https://science.nasa.gov/mission/juno/>

Originally posted by Dave Prosper: February 2023

Last Updated by Kat Troche: November 2024

— Kat Troche, [NASA's Night Sky Network](#)



Photo by Tyler Pieper, Jupiter

Celestial Events for December

- 01– The Moon will occult Uranus for viewers in Greenland and Nordic countries. A close approach will be visible elsewhere, including Indiana.
- 03– The Moon will occult Mars for observers in southern Africa. Indiana viewers can witness a close approach.
- 03-04– The Quadrantid meteor shower peaks, with an expected rate of about 25 meteors per hour under dark skies.
- 04– Earth reaches perihelion, its closest point to the Sun (approximately 91.4 million miles away), despite it being winter in the northern hemisphere.
- 15– Asteroid 2 Pallas reaches opposition in Canis Major, shining at magnitude 7.6—visible with binoculars or a small telescope.
- 15– Asteroid 6 Hebe also reaches opposition in Cancer, with a brightness of magnitude 8.7.
- 22– Venus and Saturn will be in conjunction, appearing only 20 arcminutes apart in the southwestern sky after sunset—a striking view in binoculars or a wide-field telescope.
- 30– Mercury reaches its greatest western elongation, 25° west of the Sun, making it visible in the predawn sky.
- 31– The Moon will occult Mars for viewers in the southern U.S. and Mexico. In Indiana, expect a close approach.

Astro Ads

Do you have or are you looking for astronomy-related materials and equipment? The IAS, as a service to its members, will publish non-commercial ads at no charge. For sale, exchange, or want ads are all accepted. Each ad runs in the newsletter for four months and may be renewed at the owner's request.

To place an ad, send an email to editor@iasindy.org. Be sure to notify us when the item sells.

For Sale:

Orion 6" f/9 Ritchey-Chretien Astrograph

I have for sale an Orion 6" f/9 Ritchey-Chretien imaging astrograph telescope OTA.

Features:

Rotatable 2" dual-speed Crayford focused with a 1.25" compression adapter.

Two Synta-style dovetail finder bases.

Vixen-style dovetail mounting bar.

OTA weight is around 12.3 pounds.

This OTA has been upgraded with a Buckeyestargazer baffle tube extension. The primary baffle tube as it was designed was too short and let in stray light.

The OTA comes with two 25mm long extension rings for the focuser. One of the rings is already installed on the scope and the other is brand new and never used. It originally came with a 50mm long extension also, but I don't have that. They are available from several different vendors if you should need one.

The optics are clean and the coatings are in great shape.

There are a few nicks in the paint, but it is in overall very good condition.

I can provide you with more technical specifications and pictures upon request.

Asking **\$350.00**. Local pick up or meet up.

Contact Ken Magar for more information.

Email: indymagoos@gmail.com



For Sale:

I have a few things I would like to sell:

Losmandy style plate for a larger scope. 17" long

Asking for **\$40** local pickup or **\$50** shipped

A large black Nylon Gator bag I carried an 8" Mak in. Unpadded but very sturdy. Great for transporting a large scope to and from your car. Approx. 24" wide by 15" deep and 14" tall. Takes up only the min. space in your car verse using a hard case. **\$40** local pick up or **\$50** shipped.

1979 Aliner Classic (Astronomy Camper) in good shape. 3 way refrig, gas stove top and gas water heater. Sleeps two very comfortably and four if two are small (kids?) Folds down flat for travel and light weight. I pulled it with a 4-cylinder Kia. Will fit in a standard sized garage. -a big plus for a couple of reasons.

\$3,000

Contact Jay Simmons for more details or to arrange in person inspection. Enddst@gmail.com or text 317.590.6271



And thanks for looking,

Contact:

Jay Simmons

enndst@gmail.com or

Text me at 317-590-6271

Public Outreach Programs

To schedule a program at the Link Observatory or at your site, please contact the following people:

Public Outreach Programs: To schedule a public event, contact the IAS Events Coordinator Steve Haines by sending an email to events-coordinator@iasindy.org.

Goethe Link Observatory tour: To schedule a tour of the Link Observatory, contact Link Observatory Manager Robert Aull by email at link-observatory@iasindy.org.

Equipment Loan Program

Did you know you could borrow a scope or piece of astronomy equipment from the Society and take it for a test drive? Members trying to determine what kind of equipment to buy are welcome to borrow one of the Society's scopes for a month or two and see how they like it. Dave Howard is the program coordinator and can arrange for pickup and training.

We will also consider donations of equipment appropriate for this program. The IAS is a public charity under section 501(c)(3) of the internal revenue code. We would be happy to provide acknowledgement suitable for documentation as a tax deduction.

The Equipment Loan Coordinator may be contacted at equipment@iasindy.org

IAS Membership Report for October 2024

On 10/31/2024 the IAS had a total of 332 members.
 During October there were 19 renewals and 15 new members.
 The IAS welcomes the following new member:

Mirian Alvarez-Dubon	Andrzej Cichon	Rebecca Gregg	Jason Guffey
Henry Hodgman	Gabriele Hysong	Robert King	Andrew Lecklitner
Charles Lerner	Paul Luther	Denise Lyon	Amy Smith
Shane Thatch	Richard VanRheenen	Joel Welch	

We thank the following members on their renewal:

Charles Andrew	Laurence Behney	Scotty Bishop	Dan Cade
John Cole	Dan Dinkel	Leah Hallett	Patricia Jager
Fritz Kleinhans	Michael A. Kurtz	Kenneth Magar	Malcolm C Mallette
Dan O'Brien	Brion Pellarin	Michael Schultz	Suzanne Vachet
Gerald Venne	Mark Wolanski	Robert Wright	

— Victoria Musick, IAS Membership Coordinator

2024 / 2025 Meetings and Events Calendar

Month	BOD Meeting	General Meeting	Pitch In/ Holiday Party	DSO @ Link	McCloud	West Park	Koteewi Park
Dec			7 MPL	6,20,21,27,28		-	20
Jan	22	25 MPL		3,4,17,18,24,25,31		TBD	-
Feb	19	22 MPL		1,14,15,21,22,28		-	TBD
Mar	19	22 MPL		1,21,22,28,29		TBD	-
Apr	16	19 Link		18,19,25,26		-	TBD
May	14	17 Link		2,3,16,17,23,24,30,31	TBD	TBD	-
June	18	21 Link		13,14,20,21,27,28	TBD	-	TBD
July	16	19 Link		18,19,25,26	TBD	TBD	-
Aug	13	16 Link		1,2,15,16,22,23,29,30	TBD	-	TBD
Sep			20 Link	12,13,19,20,26,27	TBD	TBD	-
Oct	15	18 Link		10,11,17,18,24,25	TBD	-	TBD
Nov	12	15 MPL		7,8,14,15,21,22		- TBD	-
Dec			6 MPL	12,13,19,20,26,27			TBD

Bold entries are DSO nights with greater than optimal moon phase.

Miscellanea

Goethe Link Observatory

Observatory Address:

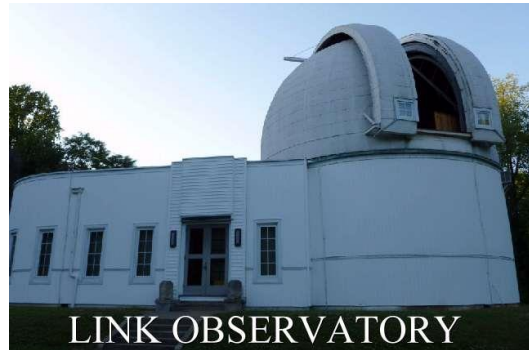
**Goethe Link Observatory
8403 N. Observatory Lane
Martinsville, IN 46151**

Latitude:

39 degrees, 33 minutes north

Longitude: 86 degrees, 24 minutes west

Phone: (317) 831-0668



Training programs are scheduled by the Observatory Manager as instructors are available and time permits, although other requests can override these sessions.

To schedule the use of the 36" telescope, two criteria must be met:

- There must be a trained telescope operator and at least one assistant present.
- Send an email to the Observatory Manager (link-observatory@iasindy.org) to confirm availability.

Please plan ahead! Last-minute scheduling requests may not get access.

IAS News & Views — The monthly newsletter can be found on our web site at www.iasindy.org. The *News and Views* welcomes articles of local astronomical interest, follow-up on IAS events, and want/for sale ads. Please submit articles to the editor in an email to editor@iasindy.org.

Membership information — Please send an email to membership@iasindy.org; our membership coordinator will respond promptly. Full instructions are also available under the “[Join the Society](#)” tab on our web site, where you can submit a [paperless membership form](#), e-pay your dues and/or make a donation.

Requests for Information — You may contact our officers, Board members, and Coordinators via our website at www.iasindy.org. Place your cursor on the “Home” tab and then select “Contact us.” Page down to the person you desire to contact and send an email message requesting information or a return telephone call. We will be happy to respond within a reasonable time frame.

Logo Clothing — The IAS has a supply of logo ware using [Mid-Central Trophy](#) in Kokomo, IN. Typically, T-shirts, sweatshirts, polo shirts, and caps are available. Call Linda (765-453-5494), tell her this is an order for the IAS logo ware, discuss what you want and give her the size. She can determine the cost and shipping and mail the order directly to your home. All major credit cards are accepted.

Long Cloudy Winter Night Word Find

Y H S E H L M A Z A E I N S U K N B D L
T L Q W C O R I O N U N T T R J R R N X
T U X C K I Z U L V U L C A F L H U D N
E Q Y J B D T Q M K N F Q R W P U Q C Z
G S F A C W U S Q M Y G U K Q S L O I C
E U W Z R Z M A L F N W I X X F S D E G
M P K U Q O C X I O N K A A O M C I I C
O E Y X C X R T G Z S W S Y O P K R H K
T R T Z J F E U Q E U M C S H F W E Q P
S N C E B M T I A P G Q E X S V D Z Z R
N O G L O T A L G O R L F B X F T A I R
A V H C E R Q A D C N E Z P A L U B E N
P A U N E C L I P S E T X N L I K H K B
X O A J M A Q L O E W F F M L N C L O R
X L A H X S M A O L G G U G H I F C T S
P R R Y J U P G J E Q X Q Y O M D I A U
H O T E B U Q K P T A E T B K E M L W S
E O P C M S R F B G Y C U O P G P M V L
T X U P L V Z E V F H I R R E V I J E U
T D J R N Z R K V X L V Y D K F Z U E W

Aurora
Eclipse
Meteor
Orion
Star

Comet
Galaxy
MilkyWay
Planet
Supernova

Cosmos
Gemini
Nebula
Solstice
Telescope

Answer Key on Final Page

Dark Sky Observing Site Information

The following sites remain accessible to *IAS members only* for the purpose of *solitary observing*.
Please make contact well in advance to confirm availability.

Thanks to the hard work of Steve Haines, Robert Aull, and Victoria Musick, the IAS now has an open permit to observe in Koteewi park (Hamilton County) at night.

- McCloud Nature Park (Hendricks County)
Latitude: 39 degrees, 50 minutes north
Longitude: 86 degrees, 41 minutes west

- Burkhart Creek County Park (Morgan County)
Latitude: 39 degrees, 26 minutes north
Longitude: 86 degrees, 33 minutes west

- West Park (Hamilton County)
Latitude: 39 degrees, 57 minutes north
Longitude: 86 degrees, 12 minutes west

- Camp Collum (Clinton County)
Latitude: 40 degrees, 19 minutes north
Longitude: 86 degrees, 38 minutes west

- Strawtown Koteewi Park (Hamilton County)
Latitude: 40 degrees, 7 minutes north
Longitude: 85 degrees, 57 minutes west

For details on how to get permission, please see our [members-only wiki page](#) at groups.io.

December Calendar, 2024

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1 New Moon 	2	3	4	5	6 Deep Sky Observing at Link Observatory	7 Holiday Party / Deep Sky Observing at Link Obs.
8 First Quarter 	9	10	11	12	13	14
15 Full Moon 	16	17	18	19	20 Deep Sky Observing at Link Observatory & Koteewi Park	21 Deep Sky Observing at Link Observatory
22	23 Last Quarter 	24	25 	26	27 Deep Sky Observing at Link Observatory	28 Deep Sky Observing at Link Observatory
29	30	31 New Moon 	1	2	3 Deep Sky Observing at Link Observatory	4 Deep Sky Observing at Link Observatory



Photo by Arijeet Nath, The Pleiades

Which Website Do I Use?

Website

Indiana Astronomical Society

<https://www.iasindy.org/>

ias-indy.groups.io

For members only

[IAS Facebook](#)

Use website to

FAQ

New member application

Dues payment

Planetarium Virtual Sky

Observing Information

AstroNews

Members' directory

Files on:

Astronomical subjects

Astrophotography





Collimation










Library holdings








Newsletter Archives

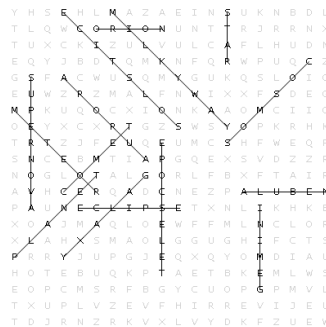
Public events

Sharing stories and photos

	IAS Officers	
President	Robert Aull president@iasindy.org	
Vice President	Jim Smith vicepresident@iasindy.org	
Treasurer	Victoria Musick treasurer@iasindy.org	
Secretary	Larry Cates secretary@iasindy.org	

	Members of the Board	
	Zolt Levay zolt.levay@iasindy.org	
	Laura Keller laura.keller@iasindy.org	
	Dave Collier dave.collier@iasindy.org	
	Jon Thomas jon.thomas@iasindy.org	
	Fred Keller fred.keller@iasindy.org	
	Sara Farkas sara.farkas@iasindy.org	
	Ken Magar ken.magar@iasindy.org	
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Goethe Link Observatory Manager	Robert Aull link-observatory@iasindy.org	
Public Events Coordinator	Steve Haines events-coordinator@iasindy.org	

Equipment Loan Coordinator	Dave Howard equipment@iasindy.org	
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McCloud Star Gaze Coordinator	Jon Thomas mccloud-stargaze@iasindy.org	
West Park Liaison	John Musick west-park@iasindy.org	
Web Supervisor	Wes Tobin webmaster@iasindy.org	
Social Media Coordinator	Mike Newberg socialmedia@iasindy.org	
Librarian	Laura Hintz-Keller librarian@iasindy.org	
Historian	Tom Borlik historian@iasindy.org	



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