Indiana Astronomical Society
General Meeting
Saturday, August 12, 7:00 PM
Link Observatory

“The Art of Astronomy: Images of the Universe”
Dr. Catharine Pilachowski

A new course in astronomy for non-science majors at Indiana University explores the universe through astronomical images. Iconic images of stars, nebulae, and galaxies come to life as students learn not only about the astrophysics of the objects themselves, but about the technology that makes the images possible. Along the way, we investigate a wide range of topics, including the electromagnetic spectrum, color and temperature, the origin and use of emission lines, human vision, and aesthetics through active-learning and inquiry-based assignments. Students create their own color images with Photoshop from astronomical observations from the WIYN 0.9-m telescope at Kitt Peak. Learning goals include an ability to interpret astronomical images to learn about the universe, an awareness of the electromagnetic spectrum and how observations at different wavelengths inform us about different environments in the universe, and an understanding of the basics of imaging science as applied in astronomy. The course is based on the book Coloring the Universe by Travis Rector, Kimberly Arcand, and Megan Watzke.

Caty Pilachowski has held the Daniel Kirkwood Chair in Astronomy at Indiana University, Bloomington, since 2001. In her research, she studies the chemical compositions of stars and the chemical evolution of star systems, concentrating mostly on star clusters. She has also been active in the areas of light pollution, astronomical instrumentation, large telescope design and construction, electronic publications, women in science, and diversity. Before coming to IU, she served on the scientific staff of the Kitt Peak National Observatory in Arizona and as Project Scientist for the WIYN 3.5-meter telescope, which she now uses for her research.
New Astronomer’s Group
“Totality 1998”

For August, we will take a break from our usual NAG presentations and instead watch a video from the Astronomical League solar eclipse cruise of 1998. The video was taken by staff photographers for the Carnival cruise line while the Fascination was at Aruba. Although far from professional quality, it does capture the spirit of the event for those who have never witnessed totality.

As we have in the past, we will take a short break after the main meeting/presentation...those who are interested in the above subject matter will then reconvene for NAG.

Thanks to Bruce Bowman for sharing this with us.

From the President’s Desk

It’s almost here — the Total Solar Eclipse! For most of us something we’ve never experienced before — me included. The Society continues to have requests for speakers and presenters for and about the event. If you’d like to or willing to help please contact me at president@iasindy.org. The Society also has numerous other observing and outreach events this month — Eagles’ Crest, McCloud, Deep Sky Observing and Camping at Link Observatory. Please see the calendar for dates.

Perhaps see you under the eclipsed sun!

— John Molt

IAS NEWS

Upcoming Events for August

The following events will occur rain or shine.

IAS Program Planning/Board Meeting

Saturday, August 12 at 5 PM, Link Observatory. The IAS board meeting will occur approximately two hours before the general meeting. IAS members are welcome to attend and provide input.

IAS General Meeting

Saturday, August 12 at 7 PM, Link Observatory. The public is welcome. See the front page of this newsletter for details and speaker information. After a short break, New Astronomer’s Group will follow the main speaker.

LinkLive

Saturday, August 26 at 7 PM and 9 PM, Mooresville Public Library. LOSSI directors Kurt Williams and Mike Newberg will provide multimedia presentations on space-related current events and “what’s up in the sky.” Weather permitting, an observing session will follow the second session using the 36” at Link.
Observing Activities for August

The following events are weather-dependent and subject to last-minute cancellation. Please monitor the IAS Yahoo group for updates and do not drive out until you receive confirmation that it’s a “go.”

McCloud Activities (Public event) —

The third McCloud public stargaze of 2017 is scheduled for August 5. If you plan to attend, please be on-site and set up by 8:30 PM. McCloud Coordinator Mike Newberg will provide more details via the Yahoo group as the date approaches.

Eagle Crest Activities (Public event) —

Eagle Creek Park on Indy’s west side is sponsoring a public Perseid Meteor Viewing event on Saturday, August 12. Meteor viewing will start in earnest at 10 PM but feel free to arrive early. Eagle Creek liaison Jon Thomas will provide more details via the Yahoo group.

Note that this event is the same evening as the August general meeting.

Link Observatory Activities (Members and Invited Guests) —

The IAS has a deep-sky observing session scheduled to occur at Link Observatory on the weekend of August 18-19. Come observe with the telescope operators using the Tanager Hill or Link 36” scopes, or bring your own and set up on the north observing field.

Overnight camping will be permitted if the grounds aren’t too soggy.

Dark Sky Observing Site Information

IAS members may observe at Link Observatory, Prairie Grass Observatories, McCloud Nature Park, West Park in Carmel, Eagle Creek Park, and/or Burkhart Creek Park during non-scheduled times if they do not conflict with reserved activities.

The Link Observatory is open for observing during IAS functions at that location. For scheduled events, see the IAS calendar under the “Events Schedule” tab on the website www.iasindy.org (a monthly calendar is at the end of this newsletter). Impromptu observing opportunities are also occasionally announced on the IAS-Indy Yahoo group by our telescope operators. All observing depends on weather conditions, so please join the Yahoo group to receive the latest information.

For those interested in observing at McCloud Nature Park, call the park office 765-676-5437 before 4 PM on the day you want to go. The administrators will give you permission to be there at night and make arrangements to turn off the lights.

To view at Burkhart Creek County Park, first acquire a copy of the IAS approval letter to show you have permission to be there after dark. Then send an email to both dverley@morgancounty.in.gov and tutterrow8327@att.net, mention that you are with the IAS, and let them know your plans. You may or may not get a reply…don’t worry…just take your approval letter and go.

West Park in Carmel is also available for use by IAS members. Download the MOU from our Yahoo group and print it as proof of membership. You must obtain approval from one of the listed park liaisons at least 24 hours in advance. The Carmel Police Department must also be notified. For liability reasons, non-member guests will have to leave before nightfall. See the MOU for details.

To observe at Eagle Creek Park Eagle's Crest, first acquire a copy of the IAS approval letter and send an email request to all the addressees provided in the letter to check availability. Upon approval the gate key may be picked up before 5 PM from the administrative office (north side of 56th Street just east of the reservoir). Return the key to the office on the following business day.

For those interested in observing at Prairie Grass Observatory, call Hoppe at 765-296-2753.
IU Kirkwood Observatory Bloomington

In 2017, the Kirkwood Observatory on the IU campus will again be conducting "open house" events starting March 22 through mid-November. The Solar Telescope will be open on the first Saturday of each month from 1-3 pm; viewers may even be able to see a solar prominence or two! For nighttime viewing, the 12" refractor will be in use each Wednesday evening.

Please visit the IU Astronomy Department website for dates and times. No reservations are required. Events may be cancelled if weather conditions are unfavorable; call the Kirkwood Observatory Hotline at (812)855-7736 for updates and closings.

Disposition of Unused Items from IAS Inventory

The Indiana Astronomical Society is on a mission to clear out items we’re not planning to use again. At this point we’re starting off with mostly media items such as video tapes and related equipment, a file cabinet, overhead projector with spare bulbs, TV, some slides and carousels, etc. Please see the following list:

1. NASA Greatest Show in Space (10 VHS tapes)
2. Planet Earth Tape Set (7 VHS tapes)
3. Carl Sagan Cosmos (7 VHS tapes + book)
4. Alexei Filippenko Tape Set (5 parts/15 tapes)
5. Alexei Filippenko Tape Set update (2 parts/6 tapes)
6. Magnavox D-A converter with remote
7. Toshiba 30" TV including external rabbit ears antenna
8. Panasonic VCR
9. TV RF Converter
10. Astronomical slide set
11. Seven (7) Kodak 80 carousel slide trays
12. Black plastic magazine holders
13. 4-drawer lateral file cabinet
14. Kodak Carousel slide projector w/carrying case, tray with 3 spare bulbs
15. Overhead projector (with 3 spare bulbs)

If you’d like to put your name on something please email me at president@iasindy.org. Your item(s) will be available at the General Meeting on August 12th. In the event of numerous folks desiring the same item a name will be pulled “from the hat.” Items not spoken for will probably be put out on a table for the taking during the Hog Roast.

The IAS does not expect to be compensated for items on this list but donations will be accepted.

— John Molt
Observing and Outreach Reports

*All IAS members are encouraged to submit their observing reports, whether at IAS events or not!*

**June 10-11 (Conner Prairie Curiosity Fair)** — The Indiana Astronomical Society again participated in the Science Curiosity Fair at Conner Prairie. As in 2016 it was again a sunny and hot weekend.

At the IAS tent was also some members of LOSSI who provided three hydrogen-alpha solar telescopes. With sunny skies both Saturday and Sunday these proved to be a big hit. There was an absence of sunspots but with the specialized solar telescopes several prominences could be observed. Several other telescopes were also demonstrated including one with a regular solar filter, Celestron Evolution and one of the loaner Dobs. A path of the August 21 eclipse from coast to coast was also displayed. It was interesting the number of visitors who think they have the “original” idea of just driving to totality to view it.

The attendance at the fair was 1,700 on Saturday and 1,200 on Sunday. While not everyone visited our tent we were one of the busiest stand-alone tents including the two-ton remote control disaster response vehicle across from us.

— *Steve Haines*

**June 24 (West Boggs Park)** — On Saturday the Indiana Astronomical Society hosted a presentation and star party at West Boggs Park just north of Loogeetee. Members attending were John Molt, LeRay Hinchman, Chuck and Linda Devine and Steve Haines.

The event started out with a presentation about the August eclipse and telescope basics. The star viewing was on a hill overlooking the lake. This allowed viewing down to about the horizon except for one direction. Loogeetee was the closest town but didn’t cause much light pollution. This was a welcome sight for those who normally observe from light-polluted areas. Jupiter, Saturn and numerous other star formations were visible. About 12 campers in the park enjoyed the views of the objects.

— *Steve Haines*

**June 30 (Eagle Crest stargaze)** — All forecasts are still solid on the rain and storms through Saturday morning, so I went ahead and cancelled.

— *Dawn VanDeman*

**July 1 (McCloud public stargaze)** — We finally had an outreach event pan out for the IAS at McCloud for the stargaze! After Mike Newberg’s presentation 70 visitors descended onto the observing field in back of the barn where IAS Members were set up. Skies weren’t quite dark enough yet but folks caught good views of brighter objects.

We had quite a bit of activity at everyone’s eyepiece! Most of the earlier visitors had views of Jupiter, Saturn and the Moon. As the night went on I along with some others continued focusing on Jupiter and Saturn but then moved onto globular clusters: Messiers 3, 5, 12, 13, 22, 92. Other hot targets folks caught in my eyepiece were the Wild Duck Cluster, the Owl Cluster and the Ring Nebula. I tried the Double Cluster but it was behind the trees while the visitors were there. I’d say the visitors and outreach time was two straight hours between 9:30 and 11:30 PM.

Those in attendance from IAS were: Mike Newberg, John Molt, Ashik Pasham, Joey and Terry Bales, Chuck and Linda Devine, Anne Conkin, Sherry Smith, Jon Thomas, Joel Sawaski and family, Jeff Peabody and family, Jim Smith, Ken Magar, and Rick Morgan. Quite a few IAS members stayed later and we hit some other targets such as M17 Swan Nebula, Double Cluster, M51 Whirlpool, M81 Bode’s Galaxy, and the Lagoon and Trifid Nebulae. Many of the aforementioned were observed through Joel’s 11” SCT with camera as well.
We had a great night tonight. I along with Ken Magar packed up around 1 AM. Joel and Ashik stuck around even later to perform some more imaging. Clear Skies!

— Jon Thomas

Attached are a few photos of the Saturday night visitors and IAS members at McCloud. Nice turn out, dark site, good but not great sky. Some intermittent clouds and was very humid. Easy observing of the moon, Jupiter and Saturn, and some deep-sky objects. Around 11 PM the dew was taking over and those without heaters (like me) were fogging up. I stuck it out until midnight.

A few dew-heater owners and imagers like Joel and Ashik stayed longer. Joel’s photos are awesome — it was interesting to see his images building up on the computer screen. Ashik showed me his capture of the Ring Nebula.

Good time overall. The visitors I talked with were very impressed and from reports enjoyed the lecture before the field observing. One hint for the next trip, (this was my first), bring a picnic basket. There is no place nearby to eat!

— Jim Smith

July 1 (LOSSI observing) — Last evening the Link Observatory Space Science Institute held their monthly public observation night at the Link. Greg McCauley and John Shepherd manned the 36” for a couple hours providing the guests with views of the Moon, Jupiter and Saturn at the request of one very young future astronomer. We were all briefed on some of the aspects of Saturn as related by the future astronomer from her class project. I was grinning from ear to ear as she related the facts because they were all correct. Watch out world for this next generation of sky-watchers.

The public observation ended at 11 PM under protest from the young astronomer.

— John Shepherd
July 15 (LinkLive) — Last week was a busy week for the observatory...a record, or at least to my recollection, was broken. From Tuesday, 11-Jul, to Saturday, 15-Jul, there were 523 visitors at the Link. The period from 11 – 13 July was the Eli Lilly Summer Science Campers for their annual field trip. Camper’s ages ranged from 5 – 12 years. The younger groups had activities while at the Link even though it rained heavily. The 7-8 year-olds had tons of questions we tried to answer. The 9-12 group was the most numerous and they were a blast to talk with as they had questions about black holes, planet nine, and the various properties of some of the planets.

On Saturday, 15-Jul, the Institute held its monthly LinkLive event at the Mooresville Public Library. Afterward the attendees were shuttled down to the Link for some night viewing. The 36” pulled in Jupiter and Saturn for the guests. There were about a dozen IAS members who set their scopes up out in back and shared a few photons with the guests as they also answered their questions.

— John Shepherd

My wife and I were out at Link Saturday. We had never been to one of the LOSSI lectures so went there first to hear Greg’s talk about eclipses and the other program items. The library community room was filled to capacity, over 100 people. They had two shuttle buses running back and forth to Link, but we decided to venture up the mountain by car.

We didn’t bring our 6” refractor since taking the lecture option didn’t leave any setup time and we had a busy and early morning coming up. There were six setups in the north yard. On the far north, Phil Thompson brought his new 11” Celestron SCT. Next was Ken Magar with his 16” Dob. Joel Sawaski was there with his 11” and full electronic imaging system. Charles and Linda Devine were there with their two SCTs and furthest south was an IAS member (yet another name I can’t remember...sorry!) with a GEM-mounted 4” refractor. Frank Hunter was also in attendance. It was too dark by the time we got to the Link so I didn’t take any photos of the group setups.

The visibility was good however the air was very moist, dew was forming early and the transparency was not great. Jupiter was still up but dropping quickly behind the trees. Saturn was in a good position and both were viewed. I looked at Jupiter thru the 11”, Ken’s 16” (really bright!) Charles and Linda’s 8” and 6” SCT’s and the 4”. All showed five moons and some banding but none were really sharp because of the moisture. Not a seasoned observer but I thought it was decent viewing.

The 36” had long lines up the stairs, several shuttle busses full of observers but only a few ventured into the north yard. We left the scene around 10:30 so don’t know if that picked up a bit later on.

— Jim Smith

I was there Saturday anchoring the north end of the field with my SCT. I was trying out my new Crayford focuser on the SCT and have to say it worked well. Viewers used the fine focus, which I encouraged, and seemed to enjoy good views. One gentleman especially enjoyed the view of M13 that was directly overhead. I was gratified when he said it was the best view he had ever had of that object.

— Phil Thompson

We had 82 visitors at Link. IAS members in attendance were Phil Thompson, me, Chuck and Linda Devine, Ashik Pasham, Joel Sawaski, Rick Betuker, Frank Hunter, Jim and Sherry Smith. Other than Shep, I do not know who was running the 36”. Does someone know this?

It was very wet for sure. I had my dew heaters running all night until finally my primary succumbed to the dew.

We had some nice viewing of Jupiter, Saturn and a variety of DSOs. The seeing degraded around midnight, but did get better after about 45 minutes. Joel was doing some very nice imaging of the Eagle Nebula. I never did make it inside until I locked up at around 2:15 AM.

— Ken Magar
July 18 — Haven’t had my scope out for a while…guess I’m picky about my skies! Last night was nice and clear and the moon wasn’t around, so I got out the 10" Newtonian for a bit. M13 and M57 both looked very nice, viewed visually and with the Mallincam. The bugs weren’t too bad, but I did spray on some repellent after I heard a few mosquitoes close by.

Looking forward to the eclipse. I’m going to Arrowhead Lake Campground in Johnston City, IL.

— Dan Cade

July 21-22 — The Link Campout scheduled for this weekend did not occur due to rainy/cloudy weather. We’ll try again in August.

My Experience Doing the Astronomical League Binocular Messier Program
Fred Keller

The Binocular Messier program is the first AL observing program I have completed. Unlike many IAS members (including my wife), I did NOT become interested in astronomy while I was a kid. Although, I admit that I used to spend many hours drooling over the thousands of optical and electronic gadgets illustrated on the pages of the Edmund Scientific catalog. However, at the time, my primary interests were electronics and ham radio.

After my wife and I retired in 2008 we had more free time for our hobbies. Laura and I started attending some of the IAS summer meetings at the Link Observatory, which is less than a mile down the road from our house. Listening to the many great presentations inspired my interest in Astronomy and re-kindled Laura’s interest in astronomy. After attending a couple of the IAS meetings we joined the IAS and soon volunteered to be trained to operate the Link 36" telescope.

Laura also heard about the Astronomical League observing programs from IAS members. This inspired her to start both the Lunar 1 and Binocular Messier programs. I was new to astronomy, so I was content watching Laura struggling to find the various objects required for each program. At the time, I knew very little about locating objects in the night sky. However, thanks to the magic of GoTo telescopes and digital setting circles, I was still able to do observing and see many fascinating objects. However, I felt that I was missing out on something.

After spending a year watching Laura work on the AL Binocular Messier program, I was impressed by how her ability to navigate the night skies improved as she progressed through the program. Her success inspired me to work on the Binocular Messier program to improve my own ability to navigate the night skies.

I did the majority of the objects in the binocular Messier program using a pair of 10x50 Nikon binoculars. I mounted my binoculars on a Manfrotto tripod with an Alt/Az head. I also installed a Farpoint binocular bracket, which allowed the attachment of a red dot finder. The red dot finder was very helpful for pointing the binoculars to a desired location. Without the red dot, I found that I would consistently point too low. Maybe this was because
my neck has an aversion to tipping too far back! The red dot finder made it possible to learn star-hopping to find the various Messier objects. In order to find a few of the dimmer objects I borrowed Laura’s 15×70 Celestron binoculars. The Celestrons are very nice binoculars, but they were more difficult for me to use because of their higher magnification and narrower field of view. I also found it nearly impossible to steadily hand-hold the 15×70 binoculars.

I logged my observations in the free Ultimate Messier Object Log developed by David Green. I found it to be an invaluable resource for finding and recording my observations. It can be downloaded from his web site: http://www.davidpaulgreen.com/download.html.

Each Messier Object is listed on its own page, which includes a simple star chart, a brief description of the object and an area to enter the details of your observation which must include: date, time, observation location, the seeing and transparency and any verbal description you want to include.

A couple more things that I found very useful were the free monthly star chart downloadable from Orion’s website and the SkySafari App on my iPhone. I used the Orion monthly star chart to locate specific constellations, which contained the Messier objects I planned to observe on a given night. I used SkySafari to give me a close up view of the star field around the object, so that I confirm that I was observing the correct object in my binoculars.

The two biggest problems I had while working on this program were the curse of old eyes and heavy dew. There was nothing I could do about my old eyes! However, after I experienced several frustrating nights dealing with dew, I added dew heaters to the objectives on my Nikon binoculars. I was able to use two dew straps made for two-inch eyepieces. I already owned a DewBuster controller, so I used it to control the dew heaters. You can find lower cost dew heater controllers on Amazon.com, which should work equally well. I found I could run the dew heaters for an entire evening using a TalentCell 6000 mAh battery pack ($29 on Amazon).

The observations I made to complete this program spanned slightly more than one year. I did my observing from four different locations: Link Observatory observing field, Burkhart Creek County Park, McCormick’s Creek State Park and my own yard. Burkhart Creek County Park was the darkest of the four locations. Burkhart Creek County Park also has a very low southern horizon, which was an advantage for a couple of the objects.

Of the 110 Messier objects, the Astronomical League considers about 45 as “easy” to view in their write up of the Binocular Messier Program. I suspect the level of difficulty was assessed under much darker skies than we have in Indiana. However, I found the first 30 – 35 objects were fairly easy to find under our skies. Some of the easiest were the bright globular clusters M13, M92 and many of the open clusters such as M35-39, M44 and M45. The most difficult object for me was M51 (only the cores), which I was able to see with my 10×50 binoculars on a very clear night. M31 was also very easy to see since it is nearly a naked eye object from all of the locations where I observed. I tried several times to see M57 (Ring Nebula) but was never able to see it.

Before I started the program, I knew the names and locations of a few bright stars and four or five constellations. Now that I have completed the program, I have a much better understanding of the night sky. I still rely on a monthly star chart to supplement my memory, but I no longer feel completely lost when I peer into the night sky.

I highly recommend the Astronomical League Binocular Messier program to anyone who wants to improve their ability to navigate the night skies. This is also a great program for those that do not yet have a telescope. You will be amazed by the range of objects you will be able to see with set of binoculars.

[Congratulations to IAS members Fred Keller and Mike Birch for recently completing the Astronomical League Binocular Messier program!]

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**Twenty Years Ago on Mars…**

On July 4, 1997, NASA’s Mars Pathfinder landed on the surface of Mars. It landed in an ancient flood plain that is now dry and covered with rocks. Pathfinder’s mission was to study the Martian climate, atmosphere and geology. At the same time, the mission was also testing lots of new technologies.

For example, the Pathfinder mission tried a brand-new way of landing on Mars. After speeding into the Martian atmosphere, Pathfinder used a parachute to slow down and drift toward the surface of the Red Planet. Before landing, Pathfinder inflated huge airbags around itself. The spacecraft released its parachute and dropped to the ground, bouncing on its airbags about 15 times. After Pathfinder came to a stop, the airbags deflated.

Before Pathfinder, spacecraft had to use lots of fuel to slow down for a safe landing on another planet. Pathfinder’s airbags allowed engineers to use and store less fuel for the landing. This made the mission less expensive. After seeing the successful Pathfinder landing, future missions used this airbag technique, too!

Pathfinder had two parts: a lander that stayed in one place, and a wheeled rover that could move around. The Pathfinder lander had special instruments to study Martian weather. These instruments measured air temperature, pressure and winds. The measurements helped us better understand the climate of Mars.

The lander also had a camera for taking images of the Martian landscape. The lander sent back more than 16,000 pictures of Mars. Its last signal was sent to Earth on Sept. 27, 1997. The Pathfinder lander was renamed the Carl Sagan Memorial Station. Carl Sagan was a well-known astronomer and science educator.

Pathfinder also carried the very first rover to Mars. This remotely-controlled rover was about the size of a microwave oven and was called Sojourner. It was named to honor Sojourner Truth, who fought for African-American and women’s rights. Two days after Pathfinder landed, Sojourner rolled onto the surface of Mars. Sojourner gathered data on Martian rocks and soil. The rover also carried cameras. In the three months that Sojourner operated on Mars, the rover took more than 550 photos!

Pathfinder helped us learn how to better design missions to Mars. It gave us valuable new information on the Martian climate and surface. Together, these things helped lay the groundwork for future missions to Mars.

— Linda Hermans-Killiam, NASA’s Space Place
Novice/Urban Observing List – August 2017
Phil Dimpelfeld

The objects in this month’s observing list lie between the celestial coordinates of Right Ascension = 18h and RA = 20h. This section of the sky includes the zodiac constellation Sagittarius. The Milky Way runs through the August evening sky and is loaded with plenty of deep-sky objects, including 20 Messier objects.

This month’s list is divided into three levels. The brighter objects, which are relatively easy to find, are in Level 1. The fainter, and more challenging objects, are in Levels 2 and 3. Even if you do not have a telescope, being able to identify a double star counts as an observation.

Level 1

M22, Globular Cluster in Sagittarius, 18h 36.4m, -23° 54’, mag = 5.1, size = 24.0’
Epsilon Lyrae, the “Double Double”, Quadruple Star in Lyra, 18h 44.3m, +39° 40’, mag = 5.0, 6.1, 5.2, 5.5, sep = 208, 2.6, 2.3”. (Easy to see as a double star in binoculars.)
Beta Lyrae, “Sheliak”, Optical Double/Variable Star in Lyra, 18h 50.1m, +33° 22’, mag = 3.4(var), 8.6, sep = 46”
M11, the “Wild Duck Cluster”, Open Cluster in Scutum, 18h 51.1m, -06° 16’, mag = 5.8, size = 13.0’
M57, the “Ring Nebula”, Planetary Nebula in Lyra, 18h 53.6m, +33° 02’, mag = 8.8, size = 86 × 62”. (If you center Beta Lyrae in your low-power eyepiece, M57 will drift into your field of view.)
Cr 399, the “Coat Hanger” or “Brocchi’s Cluster”, Asterism in Vulpecula, 19h 25.4m, +20° 11’, mag = 3.6, size = 60.0’
Beta Cygni, “Albireo”, Double Star in Cygnus, 19h 30.7m, +27° 58’, mag = 3.1, 5.1, sep = 34.4”. (One of the more popular double stars – nice color contrast.)

Level 2

40/41 Draconis, Double Star in Draco, 18h 00.2m, +80° 00’, mag = 5.7, 6.1, sep = 19.3”
57 Aquilae, Double Star in Aquila, 19h 54.6m, -08° 14’, mag = 5.8, 6.5, sep = 36”
M27, the “Dumbbell Nebula”, Planetary Nebula in Vulpecula, 19h 59.6m, +20° 11’, mag = 7.3, size = 8 × 5.7’

Level 3

M8, the “Lagoon Nebula”, Emission Nebula in Sagittarius, 18h 03.8m, -24° 23’, mag = 5.0, size = 90 × 40’
M17, the “Omega Nebula” or the “Swan Nebula”, Emission Nebula in Sagittarius, 18h 20.5m, -16° 10’, mag = 6.0, size = 11’
M56, Globular Cluster in Lyra, 19h 16m, +30° 11’, mag = 8.3, size = 7’
NGC 6826, the “Blinking Planetary”, Planetary Nebula in Cygnus, 19h 44.8m, +50° 31’, mag = 8.8, size = 27 × 24” (So called because it disappears with direct vision, but re-appears with averted vision)

Notes: To qualify for the Novice/Urban Observing List, you must observe at least six of the objects. Members are encouraged to find at least some of these objects without the use of “GoTo” so that they become more familiar with the night sky. If you successfully observe at least six of the objects, please contact Phil Dimpelfeld (philip.dimpelfeld@yahoo.com). Let Phil know how many of the objects you were able to observe. You will be e-mailed a certificate recognizing your accomplishment.
Planning Your Eclipse Party

[Your best source for comprehensive, no-nonsense information on the August 21 solar eclipse can be found by visiting the NASA Eclipse 2017 web site at https://eclipse2017.nasa.gov/ — beb]

1. Choose a Location

- Many eclipse enthusiasts host parties in local community centers, museums, observatories, parks or open fields. Even your own backyard is a good place to throw a party.
- It is always a good idea to choose place that has access to shade and facilities.
- You may also want to check weather-related Web sites for forecasts of your area. If the clouds move in, don’t worry! You can always connect to NASA’s live streaming event.
- Keep checking the Eclipse Event Map for other eclipse events in your area.

2. NASA EDGE Megacast

On August 21, 2017, NASA EDGE will join forces with the NASA Heliophysics Education Consortium, the University of Southern Illinois Carbondale, and Lunt Solar Systems to air a 4-hour 30-minute live webcast of the total solar eclipse from outside Saluki Stadium at Southern Illinois University Carbondale in Illinois. The webcast will begin airing at 11:45 AM EDT (3:45 PM UTC). During course of the Megacast, NASA EDGE will be tracking the eclipse as it starts in Oregon and makes its way across the country ending in South Carolina. You will be introduced to some of the leading experts in the field of Heliosphysics and learn all about the Sun-Earth Connection. Lunt Solar Systems will be providing high resolution and stunning imagery of the eclipse in three different wavelengths of light: Hydrogen-Alpha, Calcium-K, and white light. Oh by the way, you will experience a scientific balloon launch from inside Saluki Stadium, observe several science demonstrations, learn how you can become a citizen scientist, and engage with subject matter experts through social media. So if you’re unable to view the eclipse in person, don’t worry. Sit back, relax and let NASA EDGE turn your location into the best seat in the house!

- UStream Main Program Feed
- YouTube
- Facebook

3. Join an Online Discussion #Eclipse2017

Stay up-to-date with the latest information from our eclipse community through a variety of social media channels. Social media icons can be located on every page of this website.

ECLIPSE 2017

- Facebook
- Twitter
- YouTube
- Instagram
- Twitter
- Flickr

In addition, the following social media venues will remain very active before, during and after the event!

NASA EDGE

- Facebook
- Twitter
- YouTube

THE SUN TODAY

- Facebook
- Twitter
- YouTube
- Pinterest
- Blog posts
4. Provide Hands-On Activities

Prepare a variety of activities for your attendees. You can often find great activities and materials at local clubs, schools, and museums. Eclipse activities often include storytelling and/or arts and crafts. You can also find a wide selection of recommended activities online. Below are just a few to get you started:

**Measuring Angular Size and Distance**

This is an activity about measuring angular size and understanding the solar and lunar proportions that result in solar eclipses. Learners will use triangles and proportions to create a shoebox eclipse simulator. They will then apply what they learn about angular size to predict the diameter and distance of one object that can be eclipsed by another. They will also complete three journal assignments to record observations and conceptual understanding. This activity derives from those demonstrated in the NASA CONNECT television series episode, titled Path of Totality.

**Big sun, Small moon**

If you’ve ever seen a picture of a solar eclipse, you may have noticed that the moon comes very close to covering the entire sun. Use a coin and a plate to investigate why the sun and moon look like they’re the same size, though the sun is much bigger.

**How Can the Little moon Hide the Giant sun? Exploring Size and Distance**

This is an activity exploring the concept that distance affects how we perceive an object’s size, specifically pertaining to the size of the sun and the moon as seen from Earth. Learners will complete a hands on activity where two balls of differing sizes stand in for the sun and the moon. By moving the balls away from each other, students will determine how far the larger ball needs to be in order to make the two seem similar in size. They will also use the balls to demonstrate a solar eclipse. Lastly, learners will complete a worksheet explaining their findings.

**Eclipse: Using a Classroom Model to Explore the Moon’s Shadow**

This lesson provides students with a concrete model of the sun, Earth and moon and their interaction during a solar eclipse. Students observe and manipulate the 3-D model and simulate the movement of these bodies during an eclipse.

**Eclipsing the sun**

Knowing that apparent positions of objects differ with different points of observation will help in estimating distances to the moon and sun. Finding distances by triangulation and scale drawings will help students to understand how the distances to the moon and sun were estimated and why the stars must be very much farther away.

**Pinhole Camera: All the sun Through the Eye of a Pinhole**

This is an activity about observing the sun. Learners will construct a pinhole projector to project an image of the sun, observe and record the size of the projected image, and calculate the diameter of the sun using the measurements and a known distance to the sun. This activity is from the Touch the sun educator guide.

**Eclipse 3D Printable ‘USA and STATE’ Pinhole Projectors**

ECLIPSE 3D Printable ‘USA and STATE’ PINHOLE PROJECTORS While those in the path of totality will see a TOTAL solar eclipse, everyone will be treated to a PARTIAL eclipse! Where will you be? Why not celebrate the eclipse by making your own 3D Printed Pinhole Projector in the shape of the USA and/or a US State?
5. Explore Mobile Apps
Visit our Eclipse Mobile Apps page for a growing list of apps.

6. Provide Hand-Outs
Visit our ‘Downloadables’ page for a growing list of eclipse materials (bookmarks, posters, etc.) that you can download and print!

7. Watch Eclipse Videos, Visualizations and Animations
NASA has produced several video clips that explain eclipses and how NASA is planning to study this eclipse. They can be downloaded in various sizes and formats.

NASA Previews 2017 Total Solar Eclipse: The Path of Totality across the USA is represented. On August 21, 2017, the moon will pass between the sun and Earth in alignment that will cast the moon’s shadow, 170 miles wide, onto Earth.

2017 Eclipse Shadow Cones: The umbral and penumbral shadow cones travel across the surface of the Earth during the August 21, 2017 total solar eclipse.

2017 Eclipse and the Moon’s Orbit: Solar eclipses can only occur at New Moon, when the Moon is between the Earth and the sun. But not every New Moon produces an eclipse. The Moon’s orbit is slightly tilted, and as seen in this animation, the tilt causes the Moon’s shadow to miss the Earth during most New Moons—about five out of six, in fact.

2017 Total Solar Eclipse in the U.S.: A view of the United States during the total solar eclipse of August 21, 2017, showing the umbra (black oval), penumbra (concentric shaded ovals), and path of totality (red) through or very near several major cities.

2017 Eclipse: Earth, Moon, Sun: A solar eclipse occurs when the Moon passes between the sun and the Earth, casting its shadow on the Earth. The shadow comprises two concentric cones called the umbra and the penumbra. Observers on the Earth who are within the smaller, central umbra see the sun completely blocked. Within the larger penumbra, the sun is only partially blocked.

Path of Totality - Angular Distance: Learn about the natural phenomenon that creates a total solar eclipse and the relative movement of objects in our solar system. Explore the history, mythology, and science surrounding these amazing events.

8. Fielding Eclipse Questions
People will have all sorts of questions about the eclipse and, most likely, about a wide range of astronomy topics, so be prepared to spend some of your time just answering questions. The following resources will help you with that task:

- Eclipse 101
- Frequently Asked Questions

9. Invite Local Speakers
- Space Scientists – Contact your local university space science departments.
- Amateur Astronomers – Locate an astronomy club in your area at Go Astronomy or at The Astronomical League.
- Educators/Teachers – Contact science teachers at your local school.
- NASA Night Sky Network – Astronomy clubs bringing the wonders of the universe to the public
10. Safe Solar Viewing

An eclipse is a rare and striking phenomenon you won’t want to miss, but you must carefully follow safety procedures. Don’t let the requisite warnings scare you away from witnessing this singular spectacle! You can experience the eclipse safely, but it is vital that you protect your eyes at all times with the proper solar filters. No matter what recommended technique you use, do not stare continuously at the sun. Take breaks and give your eyes a rest! Do not use sunglasses: they don’t offer your eyes sufficient protection. Visit our SAFETY page for more information.

11. Timing is Everything

Observers should be made aware of the times of ingress and egress and prompted with time updates every 10-15 minutes. For solar eclipses, announcements of the totality times (1st, 2nd, 3rd, and 4th contact) should be made. Here it is especially important to sound an alarm maybe 15 seconds before totality ends so that people are not caught looking at or photographing the eclipse without solar filters when the sun reemerges from behind the moon.

12. Work with Local Schools and Classrooms

Share the resources on this website with your local school districts or after school groups. Work with teachers to prepare students who you invite to your eclipse party.

Pre-Eclipse Party — If hosting an event on the day of the eclipse isn’t possible, consider hosting your party before the eclipse to prepare your audience for the live webcast.

Post-Eclipse Party — An edited copy of the live webcast will be available within hours after the eclipse. It’s the perfect addition to those of you who might want to host a party after the event.

13. Hold a Contest

Hosting a contest can be a great way to get people excited about your launch party. You can announce the winners at your party, and offer a small prize to incentive people if you so choose. Here are a few potential ideas for contests:

- Best poster about eclipse themes
- Best essay about eclipse themes
- Best edible model design
- Most creative diorama

14. Set Up an Eclipse (Party) Photo Gallery

Set up your own photo gallery to encourage people and showcase the beauty of the eclipse and your event! You can use your own photos, ask people for submissions, or use some of ours. Start by taking a look at our growing Flickr Group gallery.

— From the NASA Eclipse 2017 web site
Total Solar Eclipse of 2017 Aug 21

Ecliptic Conjunction = 18:31:19.6 TD (= 18:30:11.2 UT)
Greatest Eclipse = 18:26:40.3 TD (= 18:25:31.8 UT)
Eclipse Magnitude = 1.0306  Gamma = 0.4367
Saros Series = 145  Member = 22 of 77

Sun at Greatest Eclipse
(Geocentric Coordinates)
R.A. = 10h04m03.9s
Dec. = +11°51'43.0"
S.D. = 00°15'48.7"
H.P. = 00°00'08.7"

Moon at Greatest Eclipse
(Geocentric Coordinates)
R.A. = 10h04m30.6s
Dec. = +12°16'32.8"
S.D. = 00°16'03.4"
H.P. = 00°58'55.7"

External/Internal Contacts of Umbra
P1 = 15:46:51.5 UT
P2 = 18:11:57.2 UT
P3 = 18:39:24.9 UT
P4 = 21:04:23.5 UT

Circumstances at Greatest Eclipse: 18:25:31.8 UT
Lat. = 36°58.0'N  Sun Alt. = 63.9°
Long. = 087°40.3'W  Sun Azm. = 197.9°
Path Width = 114.7 km  Duration = 02m40.1s

Circumstances at Greatest Duration: 18:21:49.2 UT
Lat. = 37°35.0'N  Sun Alt. = 63.8°
Long. = 089°07.0'W  Duration = 02m40.2s

Constants & Ephemeris
ΔT = 68.4 s
k1 = 0.2725076
k2 = 0.2722810
Δb = 0.0°  Δl = 0.0°
Eph. = JPL DE405

Page 16 August 2017
August Public Outreach Events

The IAS has received multiple requests to host local observing events on the day of the eclipse. The eclipse is a prime opportunity to promote the IAS; but with many of our members travelling to the centerline in an attempt to view totality, this has proven to be very problematical.

If you’re staying home and are available to help, please let our Public Events Coordinator know.

August 3 — Hamilton East Public Library, Fishers, 7:00 PM. Classroom presentation on the Great American Solar Eclipse. The library is also planning a viewing party on the day of the eclipse. More information is available on their web site.

This event is in addition to those events mentioned elsewhere in this newsletter. Please contact IAS Public Events Coordinator Steve Haines if you are available to help with this or other outreach events.

Celestial Events for August 2017

07 – A partial lunar eclipse occurs, with the Moon 25% immersed in the Earth’s inner shadow at 18:21 UT. The eclipse occurs at moonrise for western Africa and Europe, and moonset for eastern Australia and the Far East. This eclipse is not visible from the US.

12 – The Perseid meteors peak, expected to produce a maximum ideal ZHR of 150 meteors per hour. However, conditions are far from ideal. The Moon is 81% illuminated waning gibbous on this date, making 2017 an unfavorable year for this shower.

16 – The 36% illuminated waning gibbous Moon occults the 0.9-magnitude star Aldebaran at 7:04 UT for northeastern South America and the eastern Caribbean.

21 – A total solar eclipse spans the US from coast to coast. This eclipse is the first time that totality has touched the continental US since 1979.

21 – The 0.01% illuminated waxing crescent Moon occults the 1.4-magnitude star Regulus for west-central South America and Hawaii. The central time of conjunction is 20:29 UT. [NOTE: Eclipse viewers should easily detect Regulus one degree east of the Sun during totality.]

29 – Asteroid 59 Elpis occults the 8th-magnitude star SAO 94344. The 213-kilometer wide occultation path crosses Japan and China around 18:29 UT, including the island of Kyushu.

IAS Membership Report for June 2017

On 6/30/2017 the IAS had a total of 199 members.

During June there were 17 renewals and eight new memberships.

The IAS welcomes the following new members:

Barry Geipel Carmel
Joseph Geipel Carmel
Scott Ritter Indianapolis
Cavya Chandra Carmel
Barry Rubin Bloomington
Robert Oliphant Clayton
Arbin Thapaliya Franklin
John Bush Bargersville

Submitted by Jeff O’Dair, IAS Membership Coordinator
August Deep-Sky Challenge
Bruce Bowman

Below please find a list of ten (10) objects to view this month. Those who complete the primary objects will receive a certificate via email and be recognized in the *News and Views*. We’re also providing a challenge object to help push the limits of your observing skills. It’s not necessary to successfully view the challenge object to receive the certificate; we only ask that you try.

Please complete the following list to receive the August certificate:

- Messier 21  Open cluster in Sagittarius
- NGC 6537  Planetary nebula in Sagittarius
- NGC 6546  Open cluster in Sagittarius
- NGC 6558  Globular cluster in Sagittarius
- NGC 6563  Planetary nebula in Sagittarius
- NGC 6565  Planetary nebula in Sagittarius
- NGC 6567  Planetary nebula in Sagittarius
- NGC 6568  Open cluster in Sagittarius
- NGC 6569  Globular cluster in Sagittarius
- NGC 6578  Planetary nebula in Sagittarius

Challenge object for August 2017: NGC6559 in Sagittarius

The above objects are located between 18 and 19 hours of right ascension and are well-placed for evening viewing this month.

Sagittarius is a composite centaur-being, usually represented as having the body of a horse and the head/torso of a human. The Greeks are said to have inherited the figure from the Assyrians of Mesopotamia, who viewed this region of the sky as representing their god of war. I have no doubt that having a horse-man at the head of the warring column, leading soldiers into battle, would have been an intimidating sight. Exactly how such a beast may have come into being is left for your imagination.

While poking fun at some major players of Greek mythology, it’s easy to lose sight of the fact that these notions were once taken quite seriously. This belief system was shared by millions. Those in power took full advantage of it to manipulate people, mostly through fear — of natural disasters, disease/famine, a bolt from the blue, or failing that, a punitive necro-underworld. I often wonder how many of today’s most cherished beliefs will appear nonsensical after a few more centuries of progress in science, technology and ethics.

All that aside… the center of the galaxy is found in Sagittarius, near a strong radio source known as Sagittarius A. As we look in this direction, we are viewing within the galactic plane from our vantage point more than halfway out on an outer spiral arm. It thus stands to reason that Sagittarius is rich in galactic objects such as clusters and nebulae. My personal logs contain observations of 68 different deep-sky objects from this constellation alone. Nineteen of those have appeared in previous editions of the Deep-Sky Challenge, but I didn’t have to work very hard to find 11 more for you. All of these objects are located in the western region of the constellation, within about 12º of the famous Lagoon.
and Trifid Nebulae; so you won’t need to slew around very much. One caveat: four of the planetary nebulae are very tiny indeed. You might want to keep your OIII filter handy.

The open cluster Messier 21 is easily found half a degree northeast of the famous Trifid Nebula. It contains about 50 stars 7th magnitude and fainter in a region about 15’ across. The brightest star is a B0 giant and several other members are quite bluish in color, suggesting that this cluster must be pretty young. My first record of having seen this object was in June of 1987, using an 8” SCT. My notes say it is “pretty large, pretty rich, little condensed, and about 10’ across.” Twenty-three years later, my notes contain my first record of NGC6537, which can be found a little over two degrees to the north if you look hard enough. Known as the “Red Spider Nebula” based on Hubble images, only the small core region is visible to the eye. I’ve placed tic marks around the planetary in the provided image from the DSS; the 7th-magnitude star HD165202 located 7’ to its northeast should also help you locate it. Once you’re sure that you have the correct field, blink it with an OIII filter to determine which “star” is actually the planetary. I first described how to do this in a Deep-Sky Challenge four years ago, but this process is reprised at right for your convenience. Return to M21 and slew a degree to the southeast to find NGC6546. This cluster would stand out from the background and be much more interesting to the eye if it didn’t lie in such a rich star field. The cluster itself is quite rich, containing about 150 stars 11th magnitude and fainter in a region about 12’ across. Something to keep in mind in situations such as this — the brightest member stars of open clusters are usually young stars of types O and B; and therefore will tend to be bluer in color than any adjacent field stars.

While we’re in the region, let’s go ahead and examine this month’s challenge object. NGC6559 is located about 90’ due east of the famous Lagoon Nebula and associated cluster. My notes from July of 2011 suggest a “faint, pretty large haze elongated north-south and about 4×2’ in extent.” A double star of magnitudes 9/10 was involved and detecting it required use of a UHC filter on my 12” SCT. Even then, it was faint and difficult. My two primary deep-sky observing references make no mention of NGC6559 at all. Nonetheless, this nebula, also known as Sharpless 2-29, can be seen. Good luck!

Moving on…the planetary nebula NGC6565 is located about three degrees to the south. Look for a near-stellar, bluish disk only about 5” across in a rich star-field. As before I’ve provided a DSS image with tic marks, but you’ll probably have to blink the field with your OIII filter again. At magnitude 11.6, it does have a high surface brightness. Unfair? Consider that the planet Uranus never gets bigger.
than 4” across, although it’s 100× brighter. If conditions are good enough that you can see Uranus as a disk, you should be able to do the same with NGC6565. Failing that, you should at least be able to detect it using the filter-blink. Now pan another four degrees south to land on NGC6569. This globular cluster is roughly 9th magnitude and displays an unresolved halo about 3-4’ in diameter. A 7th-magnitude star lies about 8’ to its south. You should have no trouble with this one. A little over 30’ to the WNW lies the other globular on our list, NGC6558. This one is about a magnitude fainter and is not much more than an arc-minute across, so it will be a little more difficult. By using a wide-field eyepiece on a short-focus instrument you might just barely be able to get both of these globular clusters in the same field of view. Now slew your scope another two degrees south (yes, south) and see if you can get NGC6568. This 11th-magnitude planetary is roughly 45” across — huge compared to the other ones that we’ve been looking at. Viewed from my backyard observatory in a 13” Dobsonian in August of 2005, it appeared small and round with an even brightness throughout. More reputable observers, using higher powers from better locations, suggest some elongation in this nebula along with a few hints of annularity. You shouldn’t have too much difficulty with NGC6563, with the possible exception that it may be too far south to see using the 36” at Link. Try it and report back!

Thankfully, our last three targets are much further north, near the variable star mu (μ) Sagittarii. Starting at 4th-magnitude mu, slew 30” to the south-southwest to find the open cluster NGC6568. You should see a grouping of ~40 stars of magnitude 11 and fainter, loosely scattered over a region about 15×10’ (the elongation being north-south). I first observed this cluster in late July of 1990 from my home-built, roll-off observatory. My notes in this case are in very good agreement with my book references so it must be fairly easy to see. As before, the brightest stars tend to be the bluer ones, which should help you to isolate the cluster from the surrounding Milky Way star-field. You’ll find NGC6578 just northeast of the equilateral triangle formed by the Flamsteed stars 15, 16, and 17 Sagittarii. Again, this is a very tiny planetary nebula, with a diameter of only 8”. It is also faint, only 12th magnitude. As before, I have provided tic marks on the DSS image. There are several stars of similar brightness here, including an 11th-magnitude star only 18” to its west. You’ll probably have to blink the field with a filter to identify the nebula with any certainty. NGC6567 lies another degree and a half to the north-northwest. At only 10” across and 11th magnitude, it is very similar. You’re gonna get lots of blinking practice this month!
If you manage to complete this list prior to the end of August, contact Bruce Bowman to ensure that you receive recognition. Only IAS members are eligible. Except for Bill Conner’s imaging, none of our members completed the June challenge. You’ll continue to get a steady diet of Libra in June until someone displays more “gumption.”

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**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](mailto:editor@iasindy.org). Be sure to notify us when the item sells.

**For Sale:**

Celestron 8” SCT. This is the orange-colored scope. Comes with eyepieces and a solar filter that goes on the top end of the telescope. This will be great to have for this summer’s solar eclipse. The mount is a one-year-old Advanced VX. Does not have a power pack.

Asking $900. Contact Dan Westfall at 317-882-8555.

**For Sale:**

Mint condition 10” Meade Light Bridge. Only used a few times and has been in my library at home for two years. Perfect in all aspects, includes all accessories. Retail price is $695, asking $525.

Local pick-up in Westfield, IN. Will not ship.

[Click for larger view](#). Additional pics available upon request, or set up an appointment to stop by to look at it.

Contact Greg McCauley by phone at 317-709-1710 or by email at [gmccauley@linkobservatory.org](mailto:gmccauley@linkobservatory.org)

**For Sale:**

Intes Micro 7” f/15 Maksutov-Cassegrain. Quartz mirror, 50 mm finderscope, 2” star diagonal with 96% reflective coating, 1.25” adapter, piggyback camera mount, 12v cooling fan with speed controller, padded case, inside baffling, vixen-style mount rail and dovetail holder, dew shield, Celestron corrector/reducer f/6.3, Meade eyepiece holder 1.25”. Interferometrical Test Report: 0.121 wavefront PTV, 0.024 RMS. Like new condition, stunning planetary, lunar, double star and deep space views.

List Price $4500, asking $2095. Contact Bill Wilhite at 317-408-5407 or [bwilhite@tds.net](mailto:bwilhite@tds.net)

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**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](mailto:events-coordinator@iasindy.org).

Goethe Link Observatory tour: To schedule a tour of the Link Observatory, contact Link Observatory Manager John Shepherd by email at [link-observatory@iasindy.org](mailto: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. Jon Thomas is the program coordinator and can arrange for pickup and training. We have several scopes, eyepieces and binoculars to loan.

We will also consider donations of equipment appropriate for this program. The IAS is a public charity under section 509(a)(2) 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

2017 Meetings and Events Schedule

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<th></th>
<th>General</th>
<th>LinkLive</th>
<th>Deep-Sky</th>
<th>McCloud</th>
<th>West Park</th>
<th>Eagle Crest</th>
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<tr>
<td><strong>August</strong></td>
<td>12</td>
<td>26</td>
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<td><strong>September</strong></td>
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<td>9</td>
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<td><strong>October</strong></td>
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<td><strong>November</strong></td>
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<tr>
<td><strong>December</strong></td>
<td>9 (party)</td>
<td>—</td>
<td>15, 16</td>
<td>—</td>
<td>30</td>
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NOTES:
The April-October general meetings will be at Link. The remainder will be at Holcomb.
IAS board meetings will be held two hours prior to the general meeting at the same location.
Deep-sky observing sessions are at Link. Overnight camping will be allowed from April-September.
LinkLive events are at the Mooresville Public Library, with observing at Link Observatory afterward.

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, order magazines, join the Astronomical League, 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.

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**Astro-Quotes**

Look again at that dot. That’s here. That’s home. That’s us. On it everyone you love, everyone you know, everyone you ever heard of, every human being who ever was, lived out their lives. The aggregate of our joy and suffering, thousands of confident religions, ideologies, and economic doctrines, every hunter and forager, every hero and coward, every creator and destroyer of civilization, every king and peasant, every young couple in love, every mother and father, hopeful child, inventor and explorer, every teacher of morals, every corrupt politician, every “superstar,” every “supreme leader,” every saint and sinner in the history of our species lived there — on a mote of dust suspended in a sunbeam.

The Earth is a very small stage in a vast cosmic arena. Think of the rivers of blood spilled by all those generals and emperors so that, in glory and triumph, they could become the momentary masters of a fraction of a dot. Think of the endless cruelties visited by the inhabitants of one corner of this pixel on the scarcely distinguishable inhabitants of some other corner, how frequent their misunderstandings, how eager they are to kill one another, how fervent their hatreds.

Our posturings, our imagined self-importance, the delusion that we have some privileged position in the Universe, are challenged by this point of pale light. Our planet is a lonely speck in the great enveloping cosmic dark. In our obscurity, in all this vastness, there is no hint that help will come from elsewhere to save us from ourselves.

The Earth is the only world known so far to harbor life. There is nowhere else, at least in the near future, to which our species could migrate. Visit, yes. Settle, not yet. Like it or not, for the moment the Earth is where we make our stand.

It has been said that astronomy is a humbling and character-building experience. There is perhaps no better demonstration of the folly of human conceits than this distant image of our tiny world. To me, it underscores our responsibility to deal more kindly with one another, and to preserve and cherish the pale blue dot, the only home we’ve ever known.

# August Calendar, 2017

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<th>Sunday</th>
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<tr>
<td>30 First Quarter</td>
<td>31</td>
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<td>2</td>
<td>3</td>
<td>4</td>
<td>5 McCloud Public Stargaze, 8:30</td>
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<td>12 IAS Board 5:00 General Meetg at Link 7 PM Perseids 🌟</td>
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<td>26 LinkLive at Morgan Co. Library 7/9PM</td>
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<td>27</td>
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<td>29 First Quarter</td>
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<td>31</td>
<td>1</td>
<td>2 Eagle Crest Stargaze, 8:30 PM</td>
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</tbody>
</table>

Messier 16, the Eagle Nebula and Cluster. Photo courtesy Joel Sawaski.

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