

The Bulletin – The monthly publication of the Indiana Astronomical Society

August, 2008
Volume 75, Issue 8
www.iasindy.org

The Bulletin



The August General Meeting, August 23, 2008 7:00 PM Goethe Link Observatory

"Lazy Man's Digital Astrophotography" Dr. Fritz Kleinmans

Last fall with the arrival of Comet Holmes, I was faced with the problem of photographing the comet on many nights as it rapidly changed its appearance. I quickly realized there was no way I was going to drag myself and equipment out to the countryside night after night. Herein is my report of how I got excellent photographs of Holmes from my front yard at 56th Street and Georgetown in Indianapolis with a digital camera on a FIXED tripod. No tracking, no guiding. I consider the acid test of my procedure to be the ability to get up at 4 AM, pull pants and a jacket over my PJ's, run outside for 20 minutes to get my shots, and then back to bed for more sleep. If you are lazy, this talk is definitely for you!

IAS Calendar of Events for August

August 9 – NAG at McCloud

August 23 - General meeting and observing at the Link

August 28 Board Meeting

New Astronomers Group Meeting

The next meeting of the Indiana Astronomical Society's **New Astronomers Group** for 2008 will be held on **Saturday, August 12 at McCloud Nature Park starting at 7:30 pm**. Weather permitting there will be an observing session using IAS member's telescopes and binoculars following the meeting.

THE NAG MEETING WILL BE HELD - RAIN OR SHINE.

Topics for this month:

- Observing the Late August/Early September evening sky
 - Reading a Star Chart

The Bulletin – The monthly publication of the Indiana Astronomical Society

- The Summer Pointer Stars
- The Summer Triangle
- The Great Square of Pegasus
- Our Solar System
- The Deep Sky
 - Our Own Milky Way
 - CR399 – Asterism (The Coathanger)
 - M2 – Globular Cluster in Aquarius
 - M39 – Open Cluster in Cygnus
 - NGC7662 – The Blue Snowball Nebula
- Autumn's Finest Double Stars
- A Beginners Introduction to the Telescope
- Question and answer session

The purpose and intent of the NAG is to introduce new astronomers to observing the night sky. All types of observing will be discussed including naked eye, binocular and telescope.

If the weather cooperates, following the meeting, IAS members will have telescopes set up and attendees will have an opportunity to view some of the night sky objects discussed during the meeting.

New Proposed Parking Policy for McCloud Events

This Policy has not been approved by the Parks Board but our plan is to abide by it for our public events there.

The purpose of this document is to provide a parking policy for IAS members during Society sponsored events that are held at the McCloud Nature Park. Above all, the safety and security for all individuals, IAS and public are paramount in the formulation of this policy.

1. All IAS members who do not bring telescopes to a McCloud event or members who are planning on setting up and using one of the McCloud telescopes are to park in the public parking areas.
2. "Telescope Row" is defined as the gravel drive that goes south from the main drive to just east of the Maintenance Building, the grassy area where the permanent cement pads are located, and the gravel drive that goes across the north side of the Maintenance Building.
 - a. "Telescope Row" will be the main public viewing area for all IAS members' telescopes.
 - b. Vehicles allowed along "Telescope Row" are limited to those who bring telescopes for the event.
 - c. "Telescope Row" will be blocked off and made inaccessible to all vehicles that are not eligible to park there.
3. Parking along "Telescope Row" must meet the following criteria:

The Bulletin – The monthly publication of the Indiana Astronomical Society

- a. All vehicles are to be parked parallel to and immediately adjacent to the gravel drive.
 - i. Park as close to the gravel drive as possible.
 - b. The gravel drive is to be kept clear of parked vehicles at all times
 - c. No vehicles are to be parked south of the Maintenance Building, near the concrete telescope pads or on the raised earthen areas to the east and south of the viewing area.
 - d. Anyone who parks along “Telescope Row” must be in their final parking position prior to sunset.
 - e. All vehicular traffic along “Telescope Row” will cease at sunset.
 - f. Once parked, no vehicle may be started or moved until all public attendees have left the premises.
4. Members who bring a telescope and must leave while the public is in attendance, must park in the public parking areas.
- a. The telescope may be transported to a viewing location along “Telescope Row” prior to sunset, but the owner’s vehicle must be removed to the public parking area.
 - b. If set up along “Telescope Row”, the owner has the responsibility to manually transport the telescope back to his/her vehicle.

NAG Dates for 2008

Please mark your calendars for the NAG dates this year

Saturday August 9,2008

Saturday September 6,2008

Star Party Reports

The 2nd Annual JEPC Event May 29 – Jun 1, 2008

The number of attendees was down this year. I imagine that several chose not to come because of the cost of fuel. Then there were the pitiful excuses like “I’m having surgery”, or “my daughter’s graduation is that weekend”, or “it might rain”! Sheesh, what some people will come up with for excuses to not have to go! (I am happy to report that the surgery went ok, congrats on finally graduating (weren’t you just 12 a week or two ago??), and --- you don’t have enough hair left to have it messed up in the rain!) (John, John, and Ray)

There was a threat of severe weather in the forecast for the weekend, but heck, this is the Midwest and you will never get to go anywhere if the threat of possible thunderstorms bothers you. So, we forged ahead with our little gathering. I arrived at what I thought was early, but Debbie and Danny, Kathy and Jerry, and three others were already there and set up! As I was setting up, somebody had me declared the collimation guru. I have no clue where this thought even came from, but I agreed to “take a look” at Larry’s 12” Meade Lightbridge. After going through

The Bulletin – The monthly publication of the Indiana Astronomical Society

collimation procedures the performance of his scope was “way better than it ever was before”.
Thanks Larry!



John Williams, Dan Rutherford, and Larry Kruzan

The weather was interesting! Once again there was a severe weather front moving through, dragging wind, rain, hail, and tornadoes through the area. I had the television on and the local TV station had stopped normal programming and went to continuous weather broadcast. The radar was several shades of purple, and there was half dollar size hail in the area. As bad as the weather got on the field, thankfully the more severe weather stayed to the south of us.

Survival --- did we? Yes, I would say that we did survive the storm. There was no noticeable wind or rain damage to anything on the field. A few of us had some water get into the rocker boxes of our scopes (my rocker box was turned into a shallow wading pool), but it was nothing that the next day's sun couldn't handle.

Thad's new 17.5" Telekit performed flawlessly and gave VERY impressive views! Not only does it perform well, it's also a beauty to look at. Not to mention that he really KNOWS how to use it too! If you see Thad and his scope out somewhere, make sure to take a minute and have a look.



From both Danny and I --- thank you all for coming! Perhaps we'll see you at JEPC next year!!

The No-view Nova

By Kurtis Williams, [Professor Astronomy](#)

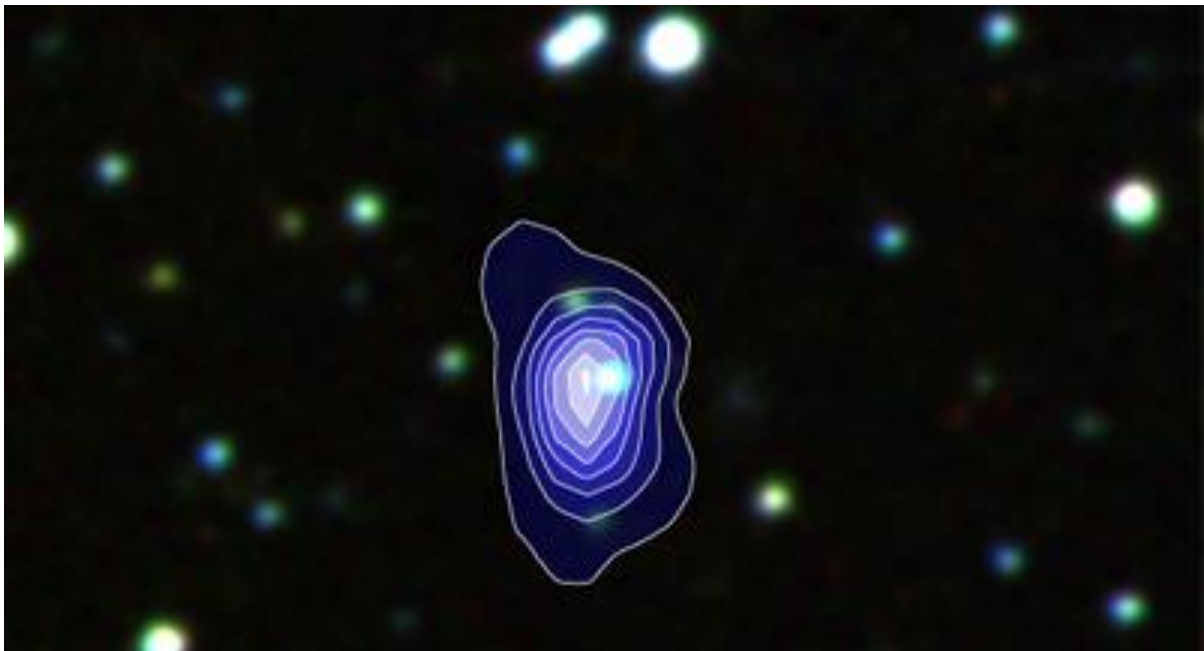


Image Credit: Contours: ESA/ XMM-Newton/ EPIC (adapted from A. Read et al.), Background: SSS

The Bulletin – The monthly publication of the Indiana Astronomical Society

Most of the time, the stars and galaxies that we astronomers look do not change much, if at all, over a human lifetime. So, our only hurry in looking at a star is to do it before somebody else does. If the weather is bad or the telescope breaks, we can come back another night, or even another year, and there is little lost.

For some astronomical objects, though, time is critical. Supernova explosions, for example, are only visible for a few months or so before fading away from sight. Another, more common explosion, called a nova, only lasts a few nights. Glows from gamma-ray bursts last just a few hours. If one of these events occurs, we need to hop on it fast, or lose it forever.

The problem is, you've got to be looking in the right place at the right time to see one of these. At present, there are only a few small telescopes that take pictures of the entire sky on a regular basis. Such a search produces tremendous amounts of data, and on big telescopes, the biggest cameras can only image about one quarter of one ten thousandth of the entire sky in a single picture. So, much of the sky is not searched by professional astronomers for these time-critical events. Those who do search for these events tend to focus on tiny patches of the sky. Though they'll miss most explosions, they'll still see enough for their science. (The one exception are gamma ray bursts, because the gamma ray detectors in space actually *can* look at most of the sky in a single picture.)

Typically, this is where amateur astronomers step in. These men and women are often out conducting searches of their own, often using their own eyes and star charts to try and spot something out of place. It may be a comet, or it may be an explosion, or it could be some other event. Amateurs are pretty good at this, and are discovering comets, supernovae and novae all the time. They get a little bit of glory, and a lot of personal pride, out of beating us professionals. And they deserve it.

One of the big prizes is discovering something that will become bright enough to see with the naked eye (i.e., without a telescope or binoculars). Then people around the world will be able to go out and see your discovery, sometimes with your name attached (like Comet Hale-Bopp).

Still, even a small army of amateurs can't catch everything. This was proven in a [press release](#) last Friday from the European Space Agency's [XMM-Newton X-ray telescope](#).

The X-ray telescope, like an optical telescope, points at interesting targets and takes pictures. When it moves from one target to another (which takes a long time in space), the cameras are usually turned off. But a group of scientists including Andy Read of the University of Leicester and Richard Saxton of the European Space Agency are running a project where, sometimes, the cameras are kept running as the telescope moves, allowing random objects to drift into the field of view.

Last October, a bright X-ray source popped into the XMM-Newton camera during one of these moves, but, according to catalogs, nothing should have been there. After some quick legwork and a few phone calls to big telescopes, it was determined that the X-rays were coming from a previously unknown nova.

A nova is a distant cousin of a supernova. In a supernova, an entire star explodes during a runaway nuclear explosion. In a nova, the outer layers of a white dwarf star explode like a hydrogen bomb, but the explosion is too weak to blow the entire star apart. As you might guess from the names, a supernova is many times brighter than a nova. But novae are actually more

The Bulletin – The monthly publication of the Indiana Astronomical Society

common, because there are a *lot* of white dwarfs in our galaxy. Several novae are found every year, and every few years, one is bright enough to see with the naked eye. As with bright comets, most novae are found by amateur astronomers, and not by professionals.

The odd thing about the XMM-Newton's discovery, though, is that novae don't make a lot of X-rays early on. So, the nova that XMM-Newton found was actually a few months old, but it had never been reported. So, the XMM-Newton team called up the operators of a robotic all-sky survey called [ASAS](#). They combed through old data, and found that the nova had indeed been picked up by their optical telescopes on June 5, 2007. Not only that, but the nova had gotten bright enough that it would have been easily visible to the naked eye, the brightest nova in over a decade. And yet, not one human knowingly saw it!

How did everyone miss it? Well, the nova was in the constellation Puppis, which is not visible in most of the northern hemisphere (where most amateur astronomers live). And Puppis lies near the Milky Way, so it is full of stars -- only a trained eye would have been able to pick out the new one. But novae are found in Puppis by professional and amateur astronomers quite a bit. We just got unlucky with this one.

Discoveries like this make us wonder how many interesting things happen in the sky on time scales so short that nobody has a chance to see them. For that reason, astronomers are starting to build telescopes that will image the entire sky to very faint limits every few days. The ultimate data will come from the [Large Synoptic Survey Telescope](#) or LSST, which will soon be built in Chile. The mirror for this telescope is huge -- 8 meters across, making it one of the largest telescopes in the world. The telescope, in a single picture, can image an area of sky about 50 times the area of the full moon. A single 30 second exposure will be able to see objects about 2 million times fainter than what your eye can see.

Amazingly, the hard part of this project is not the telescope (though it will be one of the most complex mirrors and cameras ever built). The hard part will be the data volume: 30 terabytes of data *every night*. That's 30,000 gigabytes, or, if you were to put it on a normal DVD, about 6000 DVDs worth of information *every single night*. For five years. And we want to be able to analyze that data on the fly, so that interesting objects (like novae) can be observed with other instruments at other telescopes as soon as possible. To help with this, money and assistance from Google and the Bill and Melinda Gates Foundation (along with other technologically-oriented companies) are pouring into the project.

The LSST mirror is under construction in Tucson, Arizona, and the construction will soon start in Chile, with hopes of opening this new eye on the Universe in 2014. Hopefully no more novae will slip through the cracks!

Article from AAVSO Blog

Observer's Corner

Next Two Weeks. Avg. sunrise: 6:45 a.m.; avg. sunset: 8:23 p.m. (exact for Waco, TX)
* Sunday (July 27) morning the Moon is above the Pleiades star cluster, and the Delta Aquarid meteor shower peaks.

The Bulletin – The monthly publication of the Indiana Astronomical Society

- * Friday (Aug. 1) is Lammas, a traditional cross-quarter day celebrating the middle of summer; and Friday's new Moon produces a total eclipse of the Sun that won't be visible from our part of the world.
- * Aug. 2 a half hour after sunset, a thin crescent Moon is to the left of Venus near the western horizon.
- * The evening of Aug. 3 the crescent Moon is below Mars and to the left of Saturn low in the west.
- * The evening of Aug. 6 the Moon is to the lower left of the star Spica.
- * The Moon is at 1st quarter Aug. 8.

Naked-eye Planets. Evening: *Venus* is low in the west northwest at dusk, beginning its stint as the "evening star" for the rest of 2008; *Mars* and *Saturn* are a little higher in the west, and *Jupiter* is the brightest object in the southeast. Morning: *Jupiter* sets an hour and a half before sunrise.

Stargazing Class. Paul's free 4-session Learning the Night Sky course is Aug. 18-21, 7:30 - 9:30 p.m. Call or email for more information or to register.

=====

Stargazer appears every other week in the *Waco Tribune-Herald* and other Texas newspapers. Paul Derrick is an amateur astronomer who lives in Waco. Write him at 918 N. 30th St., Waco, TX 76707, call or fax at (254) 753-6920, or e-mail at paulderrickwaco@aol.com.

Copyright 2008 by Paul Derrick. Permission is granted for free electronic distribution as long as these paragraphs are included. Please obtain permission from the author for publication in any other form. To be added to (or removed from) the free e-mail distribution list, send your e-mail address (and name) to paulderrickwaco@aol.com.

IAS LIBRARY:

The IAS library is available at the Link Observatory. Tom Borlik has graciously donated bookcases and we have converted the bunkroom into a library. Our complete list can be found (<http://www.iasindy.org/memonly/iasfiles.php>, which is password protected).

Larry A. Marcus

IU Kirkwood Observatory

Kirkwood Observatory on the IU campus is now open! The Observatory will be open every Wednesday night, weather permitting, until November, 2008. Please visit our schedule at http://www.astro.indiana.edu/kirk_sch.shtml, for a list of dates and times. For updated weather conditions and closings, please call the Kirkwood Observatory Hotline at (812) 855-7736.

The IU Astronomy Department has an electronic bulletin to let people know about local astronomy activities and events. If you would like to subscribe, send an email to

The Bulletin – The monthly publication of the Indiana Astronomical Society

astdept@indiana.edu and we'll put you on the distribution list. Information about activities and events to be included in the e-bulletin should be sent to catyp@astro.indiana.edu.

Easy Listening:

Weekly podcasts are available at <http://www.astronomycast.com/> for those who love astronomy and want to learn, yet have no time (or desire) to do extra reading. They cover a variety of topics, and feature a different topic each week, so you can choose your flavor. The cast includes Fraser Cain, the publisher of Universe Today (<http://www.universetoday.com/>), and Dr. Pamela Gay, an assistant professor of physics at Southern Illinois University Edwardsville. You do not need an iPod or portable device to enjoy these.

Mentor Program

We are reinstating the mentor program which will provide the new member with lots of information and help them assimilate into the Society. Thad Hatchett has volunteered to lead this program. We need your help. If you are interested in becoming a mentor please contact me at Jeff Patterson KB9SRB@hotmail.com or Thad Hatchett at astronomynut@sbcglobal.net. We will put your name on the list and assign a new person to you. Our goal is to retain people and make this hobby a lot more fun.

Upcoming Star Parties and Registrations

Black Forest Star Party PA September 5-7
<http://www.bfsp.org/starparty/>

Astrofest Kankakee, IL September 5-7th, 2008
<http://www.chicagoastro.org/>

Prairie Skies Star Party – Kankakee IL – September 25-28, 2008
<http://www.prairieskies.org/>

Illinois Dark Skies Jim Edgar Panther Creek State Fish and Wildlife Area II.
September 25-28 <http://www.sas-sky.org/>

Twin Lakes Star Party Pennyville State Park, Western KY Sep 27 - Oct 5
<http://www.wkaa.net/>

Okie-Tex Star Party Camp Billy Joe, OK Sep 27 - Oct 5
<http://www.okie-tex.com/>

If you know of events coming up let me know and I will get them in the Bulletin

Public Outreach Programs

Gerald Venne is our Public Events Coordinator. He will be responsible for coordinating Public Events for the IAS. He needs your help. Let Gerald know if you would like to show the public our sky.

We need people to help at Link and elsewhere. It is actually a lot of fun.

To schedule a public event contact Gerald Venne 1 317 826-2680 or Jeff Patterson at 1-317 882-8055.

Astro Ads

Are you changing or upgrading your equipment? Do you have or are you looking for astronomical materials and equipment? The Indiana Astronomical Society as a service to its members, will publish non-commercial ads at no charge. The ad will stay in the Bulletin for 4 months and may be renewed at the owner's request.

To place an ad contact:

Bulletin Editor

Jeff Patterson
1780 S. Morgantown Rd.

Greenwood, IN 46143
(317) 300-0449

E-Mail: KB9SRB@Hotmail.com

For Sale - Astronomy photographic prints for sale. The prints are displayed at <http://www.dougsastro.net>. 12" X 18" prints are \$25.00 and 8" X 12" are \$15.00. All of the images were taken by Doug Sanquetti. Most were taken locally near Cicero, IN but a few were taken at Star Parties. Any print on the web site may be ordered by contacting Doug at drsanqun@gmail.com

Onions and Orchids

The Pres

The Loaner Program

The Loaner Program has been helpful to those new to the hobby and others in need of observing equipment. We consider offers of equipment you may not have need for any longer.

Did you know you can borrow a scope or piece of astronomy equipment from the Society and take it for a test drive? The Society has a program where members who are trying to determine what kind of equipment to buy can borrow one of the Society's scopes for a month or two and see how they like it. John Molt is the chairman of the program and can arrange for your pickup and

The Bulletin – The monthly publication of the Indiana Astronomical Society

training on the use of the particular instrument. This is a great way to see what telescope you want to purchase. We have several scopes, eyepieces and binoculars to loan.

John Molt (1stargazer@indy.rr.com) or (317) 989-1875

List Server Online - Don't be left in the cold - Sign up!

This service is our main communication tool. The list server is in the “Members Only” section of the site and is accessible only by IAS members. Make sure we have your correct e-mail and you will have access for late updates to events and functions.

Being a member does **not** mean you are automatically entered into the “Members Only” section and the have the List Serve available. If you are a new member please go to the “Members Only” section and fill out an application. Also within the Members only section you will find an application for the List serve. The webmaster will set you up and notify you that you can get into the system.

Note: The list server is for use of Society business. It can only be used according to the rules as outlined previously. Basically it is used to communicate astronomical information to the general Society that would be unique. Please do not send out information from websites that we all generally subscribe to. Also please note: Do not add the list server address to your general address lists. Our problems have generally come from this when a member sends out mail to all their addressees. Members abusing the service will be eliminated from the service.

Board Meeting – Board Meeting August 28, 2008

The IAS Board Meeting is being held at 430 Massachusetts Avenue in downtown Indianapolis. The building is at the point of convergence of Mass. Ave., Vermont and Alabama Streets. There is a Starbucks located in the frontage of the building. The coffee shop stays open late into the evening. Try to park as close to Starbucks as possible, preferably in a metered space. On-street parking is free after 5pm. Handicapped parking is directly in front of Starbucks entrance. The main entrance to the building is to the right of Starbucks. We meet in the basement. Ride the elevator (around the corner to your left) to the basement. Turn right as you exit the elevator and go through the first door on your right. This is the conference/meeting room. If you need further assistance, please contact Brian P. Murphy, IAS Vice-President on his cell phone 716-8124.

General Meeting Dates 2008

The Board has made a major decision for the Society. In years past there have been major conflicts with star parties and other events and the General meeting which is held the second Saturday of the month. The Board has decided to “float” the date of the general meeting each year based on the phase of the moon. Basically the general meeting will be held close to third quarter moon. The dates of the general meetings will be published at the beginning of each year. We think this change will provide the following benefits:

1. Allow us to schedule NAG (New Astronomer's Group) meetings at McCloud on Saturday nights good for observing with the public.
2. Prevent conflicts with star parties that generally occur around the new moon which is early in the month in 2008.
3. Still provide observing opportunities at the Link during the Summer months.
4. We will continue to float the Observer's meeting at the Link to provide the best observing possible.

January through March - will stay on the 2nd Saturday at Butler

The Bulletin – The monthly publication of the Indiana Astronomical Society

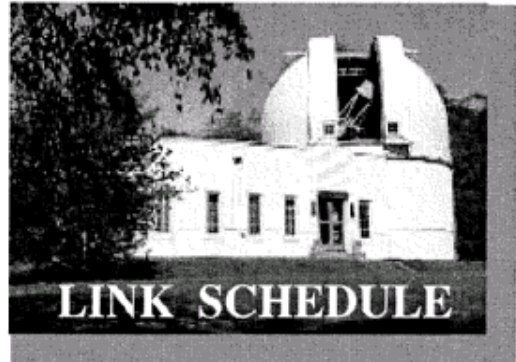
June 28 at Link
July 26 at Link
August 23 at Link
September 20 at Link
October 18 at Link (Hog Roast)
November 15 at Butler
December floats for the Christmas Party at Butler

Goethe Link Observatory

Observatory Address

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

Observatory 's Phone:
(317) 831-0668



This schedule is being published to assure proper access to the Link Observatory for programs that are designed as observational, general education, astronomy conferences or amateur research projects. Training programs are tentatively scheduled for Saturday evenings only. Although other requests can over-ride these sessions. It is the purpose of this listing to prevent activity conflicts.

If you need to acquire use of the 36-inch telescope: remember two important IAS guidelines: 1) *There has to be two or more IAS members present.....* 2) *contact the Observatory Manager: Gary Schoppenhorst (317)297-1405. DON'T WAIT UNTIL THE LAST MINUTE TO MAKE YOUR REQUEST OR YOU MAY NOT GET ACCESS.*

Link Activities for August:

General Meeting August 23

McCloud activities for August –

NAG August 9

Observing Activities

We are able to go to the Link, Prairie Grass Observatories and McCloud Nature Park at non scheduled times if they do not conflict with reserved activities:

For those interested in going to The Link Observatories for observing call Gary Schoppenhorst 1 317 297-1405.

For those interested in going to Prairie Grass Observatories for observing call Hoppe at 1-765-296-2753.

The Bulletin – The monthly publication of the Indiana Astronomical Society

For those interested in going to McCloud to observe, please call the park caretaker, Jim Holtsclaw, at the park office 765 676 5490 before 4PM on the day you want to go out. He will give you permission to be there at night and cut off the lights.

Bulletin Stats

Accessing the Bulletin

The current bulletin can be found on the website www.iasindy.org

Bulletin - Bulletin deadline on the 20th of every month

The monthly newsletter welcomes articles of local astronomical interest information and want ads:

Please submit to
The Indiana Astronomical Society, Inc
Jeff Patterson, editor
1780 S. Morgantown Rd
Greenwood, IN 46143
Phone: (317) 300-0449
KB9SRB@hotmail.com

Membership information

Contact any IAS officer or the Treasurer
John Shepherd (317) 862-3442

Link Observatory

Latitude: 39 degrees, 33 minutes North
Longitude: 86 degrees, 24 minutes West
Phone: (317) 831-0668
IAS Internet address
<http://www.iasindy.org>

Executive Officers

President: Jeff Patterson (317) 300-0449
Vice-President and Program Director: Doug Brown (317) 872-4050
Secretary: Betsy Brown 1-317-872-4050
Treasurer: John Shepherd (317) 862-3442

Board of Directors

Gary Schoppenhorst (2009)
Gerald Venne (2009)
Tom Borlik (2010)
John Switzer (2010)

Ron Burgess (2010)
Marion Hakes (2008)
John Molt (2008)

Public Event Coordinator

Gerald Venne gvenne@iquest.net 1 317 826-2680

The Bulletin – The monthly publication of the Indiana Astronomical Society






Library Committee Coordinator

Larry Marcus marcus@mwmacoustics.com 317 842-6658

Astronomical League Coordinator

Bill Conner wmtconner@sbcglobal.net 1-812 828-0449

August Calendar, 2008

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					1 	2
3	4	5	6	7	8 	9 NAG at McCloud
10	11	12	13	14	15	16 
17	18	19	20	21	22	23 General Meeting at Link General Observing 
24	25	26	27	28	29	30 
31						

Membership Application to the IAS

Benefits:

- Use of the Goethe Link Observatory
- Formal monthly programs with guest speakers
- Local and regional astronomical functions
- Discounted Astronomy publications
- New Moon observing activities
- Access to IAS member experts and problem solving
- The Bulletin monthly newsletter
- Membership in the Astronomical League
- Free admission to the Holcomb planetarium
- Star party events and observing sessions

Please mark whether this is a new or renewal application

New

Renewal

Note: Magazine subscription renewals forms and payment must be submitted to the Treasurer in order to maintain publisher's club discount.

Name: _____

Address: _____

City: _____ State: _____ ZIP: _____

Telephone: () _____

E-Mail Address: _____

How do you want to receive the IAS monthly newsletter?

Downloadable from Website Hard Copy*

* Please note that hard copy costs the Society about \$1.50 per issue. Please consider this when selecting mode of receiving the newsletter.

The Bulletin – The monthly publication of the Indiana Astronomical Society

Annual Regular Membership (\$30.00)	
Annual Student Membership (\$10.00)	
Astronomy Magazine Renewal (\$34.00)	
Sky and Telescope Magazine (\$33.00) (New Subscription)	
Total Enclosed	

Make checks payable to: The Indiana Astronomical Society, Inc

Please complete Member Profile and include with the application

Mail Application to: John Shepherd, Treasurer

4609 Callahan St.

Indianapolis, IN 46239

Member Profile

Spouses Name: _____

Children's names and ages: _____

Education: _____

Occupation: _____

How many years associated with Astronomy? _____

Special astronomical interests or projects: _____

-

Equipment: _____

What can the Society do for you? _____

What can you do for the Society? _____

Note: Profile information is not a requirement for membership to the Society. This information is entered into the IAS database and is not given nor sold for solicitation purposes. It does provide for a brief welcoming article for new members and may be used by the society to match people with similar interests.