Rings and Things

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# August 2013

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<td>1959 - Explorer 6 launched—transmitted 1st TV photo of Earth from space</td>
<td>1990 - US Venus probe Magellan orbital insertion maneuver begins</td>
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<td>1983 - Guion Bluford becomes 1st African-American astronaut in space</td>
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**Key Dates**:
- **1972**: US Orbiting Astronomy Observatory (OAO-3) Copernicus launched.
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CELESTIAL EVENTS THIS MONTH

- August 03 - 04h, Moon at apogee
- August 03 - 17h, Jupiter 4° N. of Moon
- August 03 - 20h, Juno at opposition
- August 04 - 06h, Mars 5° N. of Moon
- August 05 - 22h, Mercury 7° S. of Pollux
- August 05 - 04h, Mercury 4° N. of Moon
- August 05 - 23h, Vesta in conjunction with Sun
- August 06 - 17h, New Moon
- August 09 - 21h, Venus 5° N. of Moon
- August 12 - 04h, Spica 0.6° S. of Moon, Occn.
- August 13 - 03h, Saturn 3° N. of Moon
- August 14 - 06h, First Quarter Moon
- August 17 - 20h, Ceres in conjunction with the Sun
- August 18 - 20h, Moon at perigee
- August 19 - 07h, Mars 6° S. of Pollux
- August 20 - 21h, Full Moon
- August 21 - 10h, Neptune 6° S. of Moon
- August 24 - 02h, Uranus 3° S. of Moon
- August 24 - 16h, Mercury in superior conjunction
- August 26 - 21h, Neptune at opposition
- August 28 - 05h, Last Quarter Moon
- August 30 - 19h, Moon at apogee
- August 31 - 12h, Jupiter 4° N. of Moon

INTERESTING OBJECTS

Deep Sky* - (C4) Iris Nebula, (C20) North American Nebula, (C76) Northern Jewel Box, M3, M5, M8, M13, M20, M27, M57

Double Stars - Albireo (Cygnus), Cor Coroli (Canes Venatici), Nu Draconis (Draco), Epsilon Lyrae "double-double" (Lyra)

Constellations - Aquila, Boötes, Draco, Capricorn, Libra, Lyra, Sagittarius, Scorpius, Ursa Major, Ursa Minor


Key to Geocentric Ephemeris of the Moon: http://astropixels.com/ephemeris/moon/moonkey.html

Data Sources: HistoryOrb.com (Today in History), Distant Suns (max), Lunar 100 Sky & Telescope Magazine & The Astronomical Almanac (US Navy)
Introducing your new FWAS Executive Officers and Board Members 2013-2014

Introducing your new FWAS Executive Officers and Board Members 2013-2014

August’s YA! Meeting is all about observing. We are going to take advantage of the warm weather and spend the entire meeting letting you look through telescopes! So bring a list of objects you’d like to see (that will actually be out this time of the year please—hint: use your planisphere) on the night of the 17th at 8pm and we will help you find and add those objects to your observing log. Be prepared to write in your logbook. We will meet in Arcadia Park in the Park Glenn Addition off Arcadia Trail and Basswood Blvd in Keller/North Ft Worth. (Map)
W

e know that it’s a vast Universe out there, with our Milky Way representing just one drop in a cosmic ocean filled with hundreds of billions of galaxies. Yet if you’ve ever looked through a telescope with your own eyes, unless that telescope was many feet in diameter, you’ve probably never seen a galaxy’s spiral structure for yourself. In fact, the very closest large galaxy to us—Andromeda, M31—wasn’t discovered to be a spiral until 1888, despite being clearly visible to the naked eye! This crucial discovery wasn’t made at one of the world’s great observatories, with a world-class telescope, or even by a professional astronomer; it was made by a humble amateur to whom we all owe a great scientific debt.

Beginning in 1845, with the unveiling of Lord Rosse’s 6-foot (1.8 m) aperture telescope, several of the nebulae catalogued by Messier, Herschel and others were discovered to contain an internal spiral structure. The extreme light-gathering power afforded by this new telescope allowed us, for the first time, to see these hitherto undiscovered cosmic constructions. But there was another possible path to such a discovery: rather than collecting vast amounts of light through a giant aperture, you could collect it over time, through the newly developed technology of photography. During the latter half of the 19th Century, the application of photography to astronomy allowed us to better understand the Sun’s corona, the spectra of stars, and to discover stellar and nebulous features too faint to be seen with the human eye.

Working initially with a 7-inch refractor that was later upgraded to a 20-inch reflector, amateur astronomer Isaac Roberts pioneered a number of astrophotography techniques in the early 1880s, including “piggybacking,” where his camera/lens system was attached to a larger, equatorially-mounted guide scope, allowing for longer exposure times than ever before. By mounting photographic plates directly at the reflector’s prime focus, he was able to completely avoid the light-loss


(Inventing Astrophotography—Continue on page 10)
Let’s face it: given a choice between spending half an hour setting up a heavy telescope and aligning it every time you want to go stargazing, or simply opening a dome or rolling off the roof over a telescope that’s permanently mounted and always ready for instant enjoyment, which would you rather use? Which do you think will be used more often? Your own private astronomical observatory is nothing but a dream for most of us. But Charles Laird Calia actually built his own and wrote about his adventures in using it. *The Stargazing Year* describes not only the design and building of a private observatory, but also objects in the sky seen with it over the course of 12 months.

By his own admission, author Calia knew very little about building much of anything, much less something as big and elaborate as an observatory. Even so, “Men like projects. We enjoy the thought of tearing something out and replacing it, even if we don’t always know what we’re doing. But the truth is, I know a dozen other educated men who can paint a house, do carpentry, fix transmissions, build banjos. All I can do is read. On TV I would be the first guy voted off the island.” He learned a great deal about construction the hard way; perhaps it makes one enjoy the results that much more.

Calia is a good writer. He describes a good deal of the history of observatory domes: “In 1740, the Swedish astronomer Anders Celsius, while remodeling his house for use as a home observatory, came up with an innovative idea. On the roof he designed a rotunda, or dome, to shelter his instruments. Soon, domes were part of the observatory planning process, and by 1785, with the building of the Dunsink Observatory in Ireland, the visual vocabulary was instantly recognizable. Rotating domes would now grace observatory roofs everywhere.” He goes on to relate observatories in this country: “Not surprisingly, the first private, amateur observatory in America was built in New England, just outside of Boston. In 1823, William Cranch Bond of Dorchester constructed a small, wooden observatory to house his telescope and meteorological equipment... The next few years would see the construction of the first permanent facility, in Williamstown, Massachusetts, in 1838, at Williams College, which owned the largest telescope in America at the time – a 10” reflector. The observatory still stands, the oldest facility in the country.”

To me, the biggest surprise of *The Stargazing Year* had little to do with observatories. I had not seen this mentioned elsewhere, but Robert Todd Lincoln, the eldest son of President Abraham Lincoln, was an avid amateur astronomer! After a successful career in law and public service, Robert Lincoln built a 12-foot-wide rotating-dome observatory near his house in Vermont and enjoyed many nights viewing through a 6-inch refractor until his death in 1926.

Calia discusses the reasons for building a backyard observatory (the telescope’s optics will always be at the same temperature as the

(Continued on page 10)
Lyra is currently well placed for observation. Overhead during and after dusk, it passes through the zenith around midnight.

Vega is the northern hemisphere's second brightest star; only Sirius, at a magnitude of -1.5, is brighter. Because the Earth's spin is slightly imperfect, its axis carves a circle on the sky every 26,000 years. The phenomenon, called precession, means that as time progresses each pole, north and south, points to different stars. 13,000 years ago, Lyra was directly above our north pole and therefore acted as our Pole Star. And in another 13,000 years or so, it will once again act in that capacity.

One of the best known planetary nebulae is M57, lying roughly half way between Sheliak (β) and Sulafat (γ). Its cosmic bagel (or smoke ring) structure is apparent even in a 3" scope and, with larger apertures, only becomes clearer and more detailed. Try several levels of magnification.

M56 is a fairly dispersed globular cluster.

Finally, Epsilon (ε) Lyrae is one of the most beloved double star systems. It's fairly easy to split the first double, but higher magnification reveals that each component is itself a binary system.

Sean O'Dwyer
Starry Night® Times Editor

http://www.starrynighteducation.com/resources_newsletter.html
THE LEGEND OF LYRA

The legend of Lyra tells the story of Orpheus, who was given a harp by the god Apollo. Orpheus' music was sweeter than that of any other mortal man. It could soothe any savage, bring joy to the heart of the weary. It was even said that rivers changed course to stay near its beauty.

Orpheus married the lovely maiden Eurydice. But after their wedding, as she walked with her bridesmaids, she was bitten by a snake and died.

Orpheus was so stricken with grief that he journeyed to the underworld to win her return. His music not only gained him entry to Hades, it caused Pluto, the god of the underworld, to soften his heart and grant Orpheus' wish. But there was one condition: Eurydice would follow Orpheus, who could not look back until both had gained the upper world.

Despite his anxiety, Orpheus followed his instructions -- until he reached the surface. Before Eurydice could take the final steps into the light, he turned to gaze upon her. She vanished, with only one word to her love: Farewell.

Crazed with grief, Orpheus wandered the hills of Greece until he was murdered. The Muses buried him, and Apollo placed his magical harp in the sky -- as Lyra.
outdoors; the telescope will always be properly aligned and ready for use), or *not* building one (too close to the city, constant bad “seeing”). Most importantly, though, is what kind of telescope will be in it? The bigger the aperture, the bigger the need for an observatory. “The thirst for size has a name. Amateurs call it aperture fever. Spouses call it grounds for divorce.”

As with any building, the foundation is key. Without a solid base, the images in the eyepiece will be practically worthless. Tripods barely work with smaller telescopes, and for big ‘scopes, “Most smaller observatories opt for a layer of concrete for their pier, in the form of either a submerged sonotube or a large slab separated from the observatory floor, to further minimize vibrations. From there a metal pier can be introduced, bolted atop the concrete and set below a deep frost line. The concrete shouldn’t shift. It will also be heavy, lowering the telescope’s center of gravity... The pier should also be separated from the observatory floor, isolating vibrations. In the eyepiece, every vibration is magnified. It is the job of a good observatory designer to focus on pier management.”

Ideally, practice would help in designing and building an observatory. However, unlike making a telescope, one cannot easily give up or correct mistakes or use bits and pieces in future projects; once construction begins on a small building, you’re pretty much stuck with it. But how often does one try something like this? “Building, like writing and cooking, seems to invite criticism. People who have never picked up a hammer before, and even some who have, suddenly begin offering me their advice. I shouldn’t be surprised. We all build.” I’m sure many astronomy clubs have built their own domes as group projects over the years; I wonder how many were successful?

Much of *The Stargazing Year* covers the various stellar objects that Calia examines from his new observatory over the course of 12 months. While enjoyable to read, there’s nothing much different here from what can be read in almost any other field guide to the sky.

This is not a “How to Build Your Own Observatory” manual, so if you’re looking for a set of blueprints and bill of materials, you’re out of luck. But it does provide good food for thought. I would have enjoyed more detailed information about the nuts and bolts of building a backyard observatory, but I guess that’s for another book.

3-1/2 out of 5 stars. Recommended. 😊

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If you have an idea for an article, have astronomical related photos or an astronomy project you’ve done, and you’d like to share or want to contribute to the newsletter in any other way, please contact Shawn Kirchdorfer through the club’s Yahoo! eGroup.

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**FULL MOON NAME**

*August*

“Full Sturgeon Moon”

Some Native American tribes knew that the sturgeon of the Great Lakes and Lake Champlain were most readily caught during this full Moon. Others called it the Green Corn Moon or the Grain Moon.

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(Book review—Continued from page 7)
Newsletter:
The FWAS newsletter, Prime Focus, is published monthly. Letters to the editor, articles for publication, photos you’ve taken, personal equipment reviews, or just about anything you would like to have included in the newsletter that is astronomy related should be sent to: primefocus@fortworthastro.com

Meetings:
FWAS meets at 7:00 PM on the third Tuesday of the month at the UNT Health Science Center – Research & Education Building, Room 100; 3500 Camp Bowie Blvd; Ft. Worth. Guests and visitors are always welcome.

Outreach:
Items regarding FWAS Outreach activities, or requests for FWAS to attend an event, should be sent to: outreach@fortworthastro.com

Young Astronomers:
FWAS’ youth activities (known as YA!) meet on the 3rd Saturday of every month between 7pm and 9pm (check our calendar for time changes throughout the year - determined by seasonal sunset times). This group meets for one hour at the Parkwood Hill HOA Club House - 5573 Eastwedge Dr., Fort Worth, TX 76137. YA! Coordinators: ya@fortworthastro.com

FWAS Annual Dues:
$40 for adults / families & households
$20.00 for students (half-price Dec 1 thru May 31); Membership runs June 1st through May 31st. Please make checks payable to: Fort Worth Astronomical Society

See our Secretary/Treasurer for more info: sec-treas@fortworthastro.com

Cash and checks should be paid in-person at the next indoor meeting, or checks can be mailed in the traditional way. Members should check the eGroup for the latest postal mailing address listed by the Secretary/Treasurer.

Credit card payments (for existing membership renewals only) can be made through our PayPal link (private link is on the club’s Yahoo eGroup – no PayPal account required).

Discount Magazine Subscriptions:
Sky & Telescope, Astronomy, and StarDate (McDonald Observatory) magazines are available for discounted subscription rates through our association with the NASA Night Sky Network and the Astronomical Society of the Pacific. The link can be found on the club’s Yahoo eGroup. (Members Only)

Astronomical League Membership:
Your FWAS membership gives you associate membership in the Astronomical League. This gives you access to earn various observing certificates through the AL observing clubs. You also receive their quarterly magazine, Reflector. AL Observing clubs: http://tinyurl.com/7pyr8qg

Fort Worth Museum of Science & History Monthly Star Parties:
FWAS, as part of our historical relationship with the Noble Planetarium, participates in the monthly museum star parties by supplying the telescopes and manning to expose the public to amateur astronomy as a hobby, and to possibly spark interest in joining our club. This is an excellent opportunity to socialize with and to get advice or help with your own equipment from other FWAS members. FWMSH star party schedule: http://tinyurl.com/bosbwqa

That’s a Fact!
The Earth is moving around the Sun at the rate of 30km (18 miles) a second or (107,826 km / 67,000 miles) per hour. Our Galaxy – the Milky Way - is spinning at a rate of 225 kilometers (140 miles) per second carrying our Solar System around with it. The Milky Way is travelling through space at the rate of 305 kilometers (190 miles) per second. This means that we are traveling at a total speed of roughly 530 kilometers (330 miles) per second. Being that this is the case, you are about 32 thousand kilometers (~20,000 miles) away from where you were a minute ago - in space. 😊

[inventing astrophotography—continued from page 6]

inherent with secondary mirrors. His first photographs were displayed in 1886, showing vast extensions to the known reaches of nebulosity in the Pleiades star cluster and the Orion Nebula.

But his greatest achievement was this 1888 photograph of the Great Nebula in Andromeda, which we now know to be the first-ever photograph of another galaxy, and the first spiral ever discovered that was oriented closer to edge-on (as opposed to face-on) with respect to us. Over a century later, Andromeda looks practically identical, a testament to the tremendous scales involved when considering galaxies. If you can photograph it, you’ll see for yourself!

Astrophotography has come a long way, as apparent in the Space Place collection of NASA stars and galaxies posters at http://spaceplace.nasa.gov/posters/#stars. 😊
BI-MONTHLY BOARD MEETING MINUTES

All Board meetings are open to the general membership. You do not need to be on the board or an officer to attend these meetings.

Members present: Bruce Cowles, Laura Cowles, Jim Craft, Shawn Kirchdorfer, Jim Murray, Bill Nichols, Matt Reed, Phil Stage, Lewis Westerfield

NEW BUSINESS

President Jim Murray called the meeting to order and welcomed everybody. During his term as president he plans to delegate, empower, and support members of the club as much as possible.

Lewis gave a membership update. As of this date only 76 members have renewed. He sent out an email to the membership stating this and requesting that everyone make sure their correct mailing address is on the Night Sky Network or, if not on the NSN, to send their mailing address to him so that proper information can be sent to the Astronomical League. This is due 7/15/2013. Anyone not meeting this deadline will have to wait until April for their information to be sent to the AL.

The Christmas Party was discussed. Possible dates will be 12/7/2013 or 12/14/2013. Matt will look into possible venues for this year’s party. More information will follow.

Lewis asked if he can get help with the Secretary/Treasurer position. Jim stated he might know a member who will be willing to help and will send her an email.

Matt talked about a future presentation by Bill Weir from the McDonald Observatory. He can give a talk on dark skies but would need some assistance for travel and lodging. The board agreed to offer him $250.00 and to provide lodging at someone’s house. Matt will gather further information and let us know.

OLD BUSINESS

Lewis reported that there has been no new news on the 501(c)3 application. He reminded the group that we should be keeping logs of the club’s outreach activities so that they can be reported when we do obtain the 501(c)3 status.

The State Park Committee reported that efforts will be made to have a star party at Meridian State Park. Matt will have a meeting soon and will let us know what happens. Bill is working with the International Dark-sky Association (IDA) and will be evaluating the park’s darkness; he wonders if any club members would be interested in getting training to help with the evaluation and suggested he pole the membership.

A decision was made to encourage the membership to keep a log on the Night Sky Network of their voluntary activities and to routinely recognize those who do at the monthly meetings. We have done this in the past and everyone agreed we should start again.

Continued efforts to change the club’s internet service provider are being made. We need to get authorization code from our current provider to make the switch. No one has been able to get this. A suggestion was made to contact Harry Bearman and see if he can get us this information. We will continue our efforts.

ADJOURN

The meeting was adjourned.
CALL TO ORDER

MONTHLY MEETING MINUTES

Vice-President Matt Reed called the meeting to order and welcomed members and guests. He then gave some brief information about the club which included dark site information, outreach activities, and museum star party information.

Matt reminded the club that it’s July 16, the anniversary of the Apollo 11 blastoff from the Kennedy Space Center in Florida in 1969. He then played a game of trivia with the group to see who knew the most. Matt Mcullar knew it all.

PRESENTATION

Jerry Keith gave a brief talk on the constellation Scorpius. This area of the sky is rich for viewing and Jerry pointed out several interesting objects that can be seen with binoculars.

Thank you, Jerry.

“Binoculars” was presented by Russ Boatwright, Doug Brown, and Tom Monahan. They talked about binocular viewing as a hobby and how much fun one could have doing this. Different types of binoculars were discussed including size differences and different types of coatings for binoculars. Different types of viewing with binoculars were discussed including simple monopods, tripods, and major mounts for especially large binoculars. Steadiness is the key to good viewing. Finally they talked about various binocular viewing clubs available thru the Astronomical League. Websites to check out are: skymaps.com, chartmaker.com, and 3rf.org.

Thank you, Russ, Doug, and Tom.

NEW BUSINESS

The next club picnic will be 8/3/2013 at the Thomsen Darksite. Look for a RSVP on the eGroup and respond if you want food. Feel free to bring any food that you might want to share. Also some trash bags will be needed. Volunteers to help are: Shawn will be getting the meat, James will bring water, Bruce and Laura will bring meal condiments, Janet will bring paper products, and Michele will bring chips. Everyone was reminded to keep their receipts so the club can pay them back.

Shawn told the club that he would like to see if the club can gather historical information about the club and it’s activities in the past. Anyone with any historical information is encouraged to share it with the club. Shawn will be happy to talk to anyone with information.

It was suggested that there be a swap meet soon, maybe next month. Watch the eGroup for information.

OLD BUSINESS

Lewis was unable to give a treasurer report because he lost access to the bank’s online website and hasn’t been able to get time to go by the bank to get things working again.

Patrick reminded the group that there will be an outreach event this coming Friday at the Fort Worth Nature Center. Watch the eGroup and Night Sky Network site for information.

ADJOURN

The meeting was adjourned.

FWAS’ SUMMER PICNIC
SAT. AUGUST 3rd
@DARK SITE
6pm-12am
NEVER BEEN TO DARK SITE?
CONTACT OTHER EXPERIENCED MEMBERS IN THE EGROUP TO MEET UP IN DECATUR TOWN SQUARE THAT DAY TO FOLLOW.
Have an interesting photo you’ve taken of the sky? Discovered a technique and want to show the results to fellow FWAS members? Submit your photos to primefocus@fortworthastro.com or send them in the Yahoo! eGroup to the attention of the newsletter editor. Your participation in showing off your personal astrophotography is greatly appreciated by all FWAS members.
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Here is a 'rough' image taken several weeks ago of Markarian’s Chain of galaxies which include M84 and M86. Canon XSi 138sec ISO 1600, TV100 f/5 refractor unguided.

Still needs more processing to even up the background and reduce noise.

Ben Hudgens,
Stephenville, TX