

The Prairie Astronomer

January 2018 Volume 59, Issue #1

Jupiter's Swirling South Pole



Night Sky Network



The Newsletter of the Prairie Astronomy Club

The Prairie Astronomer

NEXT PAC MEETING: January 30, 7:30pm at Hyde Observatory

PROGRAM

The Prairie Astronomy Club will offer its annual free session: "How to Use Your Telescope" at Hyde Observatory, Tuesday evening January 30t at 7:30 p.m. Do you own a telescope and need help getting started using it? The Prairie Astronomy Club would like to help. Every year at our January meeting, we offer a session to give hands-on assistance. There is no charge for this session. It is open to the public and if you have a telescope you want to use you are encouraged to bring it. Meetings are at Hyde Observatory and are open to the public.

FUTURE PROGRAMS

To be announced


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Cover Photo: This image of Jupiter's swirling south polar region was captured by NASA's Juno spacecraft as it neared completion of its tenth close flyby of the gas giant planet.

The spacecraft captured this image on Dec. 16, 2017, at 11:07 PST (2:07 p.m. EST) when the spacecraft was about 64,899 miles (104,446 kilometers) from the tops of the clouds of the planet at a latitude of 83.9 degrees south -- almost directly over Jupiter's south pole.

The Prairie Astronomy Club:
Fifty Years of Amateur Astronomy



Buy the book! The Prairie Astronomy Club: Fifty Years of Amateur Astronomy.
Order online from [Amazon](https://www.amazon.com) or [lulu.com](https://www.lulu.com).

COMPILED AND EDITED BY MARK DAHMKE

EVENTS



PAC Meeting
 Tuesday January 30, 2018, 7:30pm
 How to Use Your Telescope

PAC Meeting
 Tuesday February 27, 2018, 7:30pm
 To be announced

PAC meeting
 Tuesday March 27, 2018, 7:30pm
 To be announced

PAC meeting
 Tuesday April 24, 2018, 7:30pm
 To be announced

2018 STAR PARTY DATES



Photo by Brian Sivill

	Star Party Date	Star Party Date
January	Jan 12th	Jan 19th
February	Feb 9th	Feb 16th
March	Mar 9th	Mar 16th
April	Apr 6th	Apr 13th
May	May 4th	May 11th
June	Jun 8th	Jun 15th
July	Jul 6th	Jul 13th
August	Aug 3rd	Aug 10th
NSP	Aug 5th -10th	
September	Sep 7th	Sep 14th
October	Oct 5th	Oct 12th
November	Nov 2nd	Nov 9th
December	Nov 30th	Dec 7th

Dates in **BOLD** are closest to the New Moon.



PAC E-MAIL:

info@prairieastronomyclub.org

PAC-LIST:

Subscribe through [GoogleGroups](#).
 To post messages to the list, send to the address:

pac-list@googlegroups.com

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WEBSITES

- www.prairieastronomyclub.org
- <https://nightsky.jpl.nasa.gov>
- www.hydeobservatory.info
- www.nebraskastarparty.org
- www.OmahaAstro.com
- Panhandleastronomyclub.com
- www.universetoday.com/
- www.planetary.org/home/
- <http://www.darksky.org/>



Night Sky Network

Hyde Volunteer of the Year Awards

Ron Veys presented Volunteer of the Year awards to Rick Brown, Dan Kincheloe and Lee Thomas at the Hyde Observatory 40th Anniversary Recognition Dinner.

Thirty volunteers attended the dinner at Mueller Planetarium. The evening concluded with a special planetarium show preview. Thank you Zach Thompson for hosting our

anniversary dinner and awards celebration!



Observatory Update: Hubble's Variable Nebula

Rick Johnson

Hubble's Variable Nebula aka NGC 2261, is a highly variable nebula in Monoceros. Famous for being the first light image of the 200" Palomar Telescope in 1949 taken by Edwin Hubble himself. Movies of the nebula show it varies quite a bit over only a couple days time.

Unfortunately, all my attempts to catch this have failed due to horrid weather and my failing to keep trying as my to-do list beckons strongly. So I've settled for once a year. Even then variable seeing and transparency makes for a difficult comparison. It was

discovered not by Edwin Hubble but by William Herschel on December 26, 1783. It is in the second Herschel 400 observing program. Hubble did discover the nebula itself varied in 1916 though the variability of the illuminating star, R Mon had been known since 1861.

I've included my annual (and twice annual from the winter of 2013-14) images since 2011. The color of the 2011 image is highly suspect. Exposure times vary as does my processing so these aren't usable for scientific comparison. This year conditions were good but cold.

When I turned on the camera it was nearly -40. I had to set it for -45C and the fan off to get 3% to 5% cooling power and hope that was enough to keep the temperature regulated -- it was.

Note that not only does the nebula change above the illuminating star but the faint hook-shaped piece of nebulosity south of the star also changes. Being faint some of this is likely



conditions. In 2011 it was rather obvious but then it faded. Last few years the part of the hook coming back north is getting stronger but the down-stroke is virtually gone. North of the star the main changes are on the east side though the dark band crossing the lower part of the nebula that was strong a few years ago has vanished in 2015 but seemed to be returning in 2016 only to vanish the last two winters. The current image makes it look a bit fatter than the January 2017 image. I expect there were lots of other changes I missed due to the very long time between images. The color in the 2011 image is somewhat suspect as my attempts at color balance were primitive back then. Likely it is redder than it would have been if processed today. I suppose I should go back and redo it.

R Mon, the variable star at its base, illuminates the nebula. It is a brand new star just exiting its birth cocoon. It is thought dust clouds from this cocoon are still orbiting the star casting various shadows on the nebula causing the variations in its details and color. In animations taken only days apart, it appears illumination of the nebula flows upward from the star hitting more distant parts of the nebula over time. This gives an illusion of material moving but I am quite certain this is more like shining a flashlight beam around on a mostly stationary object. The first animation link is from a University observatory, the second is by amateur Tom Polakis in Tempe, Arizona where clear skies are much more common than here.

<http://umanitoba.ca/faculties/science/astronomy/cbrown/imaging/hvn/hvnanimation.html>

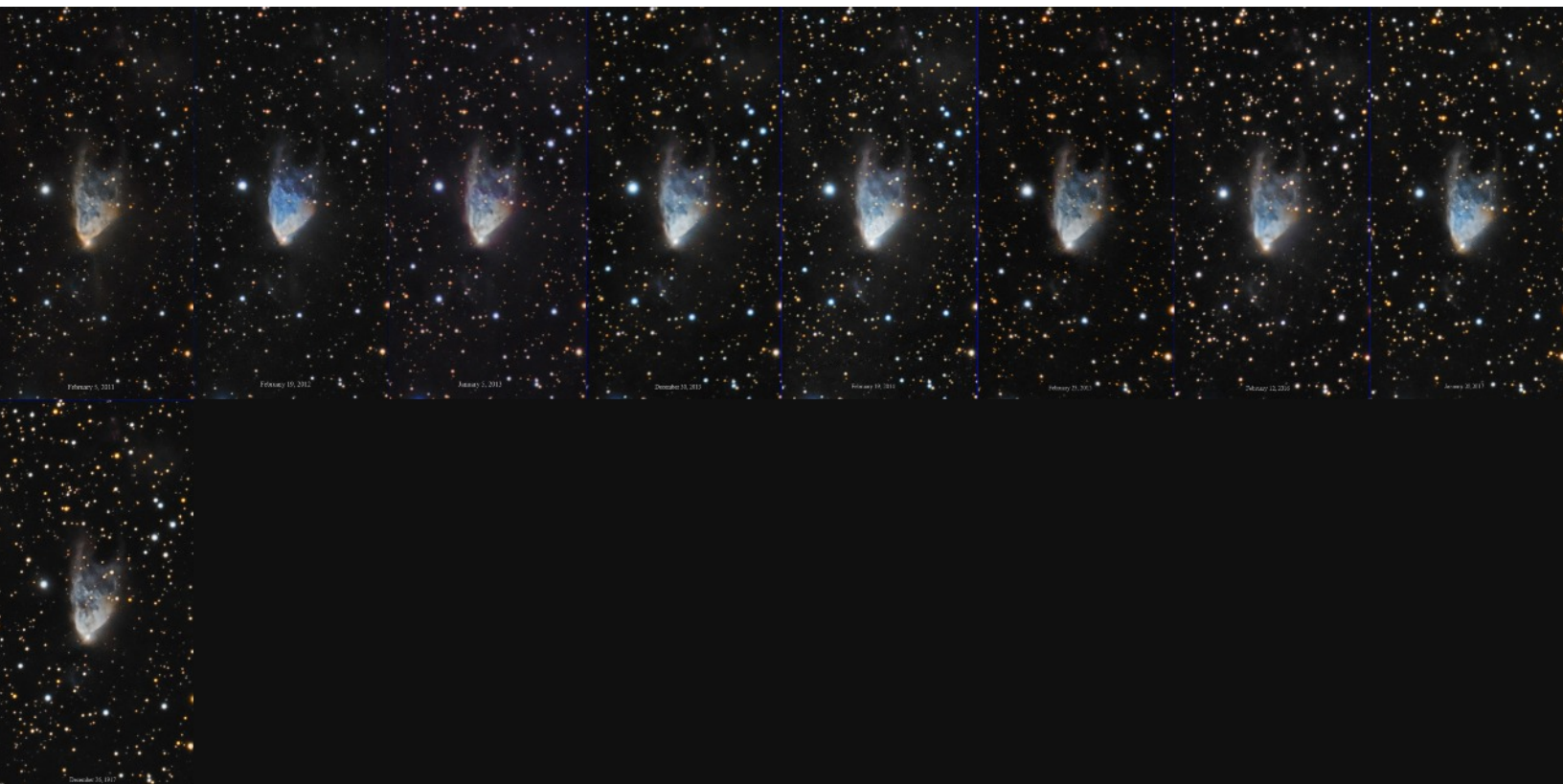
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The small faint reddish nebulae above Hubble's Variable Nebula is HH 39. It has 6 parts A through F. Sharp-eyed viewers may spot a small galaxy a bit less than half way between Hubble's Variable Nebula and the left edge. It has a vertical oval envelop around a star-like core. It is 2MASX J06393966+0846004.

Data for my December 26, 2017 image (UT)

14" LX200R @ f/10, L=4x10' RGB=2x10', STL-11000XM, Paramount ME

2011 through 2017



February Observing: What to View

Jim Kvasnicka

This is a partial list of objects visible for the upcoming month.

Planets

Venus: Starts February just 4° above the horizon in the west.

Mercury: Too low in the west to be seen in the Sun's afterglow.

Uranus: Visible just a few hours after evening twilight.

Jupiter: Rises about 2 am to start the month and by midnight at the end of the month.

Mars: Begins the month about 12° to the lower left of Jupiter.

Saturn: Rises just before 5 am to start the month and by 3 am to end the month.

Neptune: Not visible.

Messier List

M1: The Crab Nebula in Taurus.

M35: Open cluster in Gemini.

M36/M37/M38: Open clusters in Auriga.

M42: The Orion Nebula.

M43: Emission nebula just north of M42.

M45: The Pleiades.

M78: Emission nebula in Orion.

M79: Class V globular cluster in Lepus.

Last Month: M33, M34, M52, M74, M76, M77, M103

Next Month: M41, M44, M46, M47, M48, M50, M67, M81, M82, M93

NGC and other Deep Sky Objects

NGC 2266: Open cluster in Gemini.

NGC 2362: Tau Canis Majoris Cluster.

NGC 2392: The Eskimo Nebula in Gemini.

NGC 2403: Galaxy in Camelopardalis

Double Star Program List

32 Eridani: Yellow and white stars.

55 Eridani: Yellow and pale yellow pair.

Gamma Leporis: Pair of yellow stars.

Epsilon Monocerotis: White primary with a pale yellow secondary.

Beta Monocerotis: Three blue-white stars.

Kappa Puppis: Equal pair of white stars.

Alpha Ursa Minoris: Polaris, pale yellow primary with a white secondary.

N Hydrae: Equal yellow stars.

Challenge Object

NGC 2389 Group: Trio of galaxies in Gemini with NGC 2389 the brightest along with NGC 2385 and NGC 2388.



Focus on Constellations: Lepus

Jim Kvasnicka

Lepus, the Hare is located due south of Orion. Its brightest stars form an easily recognized parallelogram. Because of its southern declination, observers must wait for Lepus to culminate for the best views of its objects. The astronomical wonders of Orion overshadow the modest offering in Lepus. Nevertheless Lepus should not be overlooked for it contains several interesting objects. Lepus has one Messier object in the globular cluster, M79. It also contains the poppy red colored variable star, R Leporis, Hind's Crimson Star.

Showpiece Objects

Galaxies: NGC 1964

Globular Clusters: M79

Variable Stars: R Leporis (Hind's Crimson Star)

Mythology

According to myths, Lepus had been a bird that was changed into a hare by Ostara, the goddess of spring. Ostara permitted the hare the power to run as fast as it was able to fly as a bird. Moreover, once a year the hare was allowed to again lay eggs. This was the pagan origin of the custom of Easter eggs. The word Easter is derived from Ostara, the Christian commemoration of Christ's Crucifixion and Resurrection in early Medieval times fused with the old pagan celebration of the vernal equinox dedicated to the goddess of spring. Easter is the first Sunday after the first full moon after the vernal equinox.

*Till Credner - Own
work: AlltheSky.com
3.0*

Number of Objects Magnitude 12.0 and Brighter

Galaxies: 11

Globular Clusters: 1

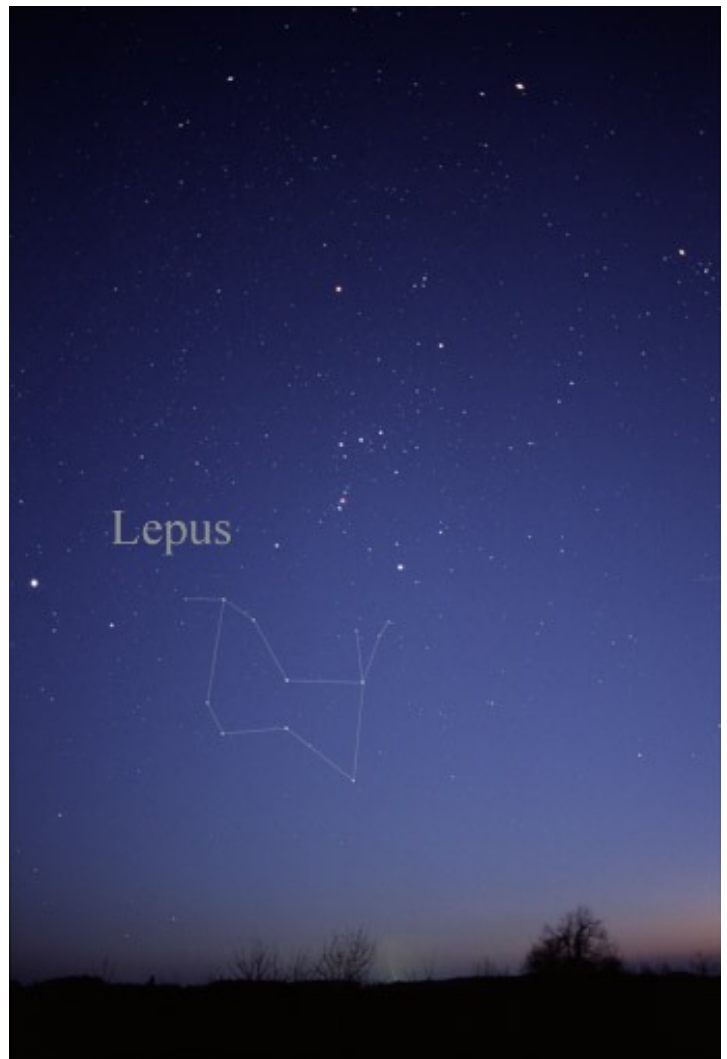
Open Clusters: 0

Planetary Nebulae: 1

Dark Nebulae: 0

Bright Nebulae: 0

SNREM: 0



Sixty Years of Observing Our Earth

This article is provided by NASA Space Place.

With articles, activities, crafts, games, and lesson plans, NASA Space Place encourages everyone to get excited about science and technology.

Visit spaceplace.nasa.gov to explore space and Earth science!

Teagan Wall



Satellites are a part of our everyday life. We use global positioning system (GPS) satellites to help us find directions. Satellite television and telephones bring us entertainment, and they connect people all over the world. Weather satellites help us create forecasts, and if there's a disaster—such as a hurricane or a large fire—they can help track what's happening. Then, communication satellites can help us warn people in harm's way.

There are many different types of satellites. Some are smaller than a shoebox, while others are bigger than a school bus. In all, there are more than 1,000 satellites orbiting Earth. With that many always around, it can be easy to take them for granted. However, we haven't always had these helpful eyes in the sky.

The United States launched its first satellite on Jan. 31, 1958. It was called Explorer 1, and it weighed in at only about 30 pounds. This little satellite carried America's first scientific instruments into space: temperature sensors, a microphone, radiation detectors and more.

Explorer 1 sent back data for four months, but remained in orbit for more than 10 years. This small, relatively simple

satellite kicked off the American space age. Now, just 60 years later, we depend on satellites every day. Through these satellites, scientists have learned all sorts of things about our planet.

For example, we can now use satellites to measure the height of the land and sea with instruments called altimeters. Altimeters bounce a microwave or laser pulse off Earth and measure how long it takes to come back. Since the speed of light is known very accurately, scientists can use that measurement to calculate the height of a mountain, for example, or the changing levels of Earth's seas.

Satellites also help us to study Earth's atmosphere. The atmosphere is made up of layers of gases that surround Earth. Before satellites, we had very little information about these layers. However, with satellites' view from space, NASA scientists can study how the atmosphere's layers interact with light. This tells us which gases are in the air and how much of each gas can be found in the atmosphere. Satellites also help us learn about the clouds and small particles in the atmosphere, too.

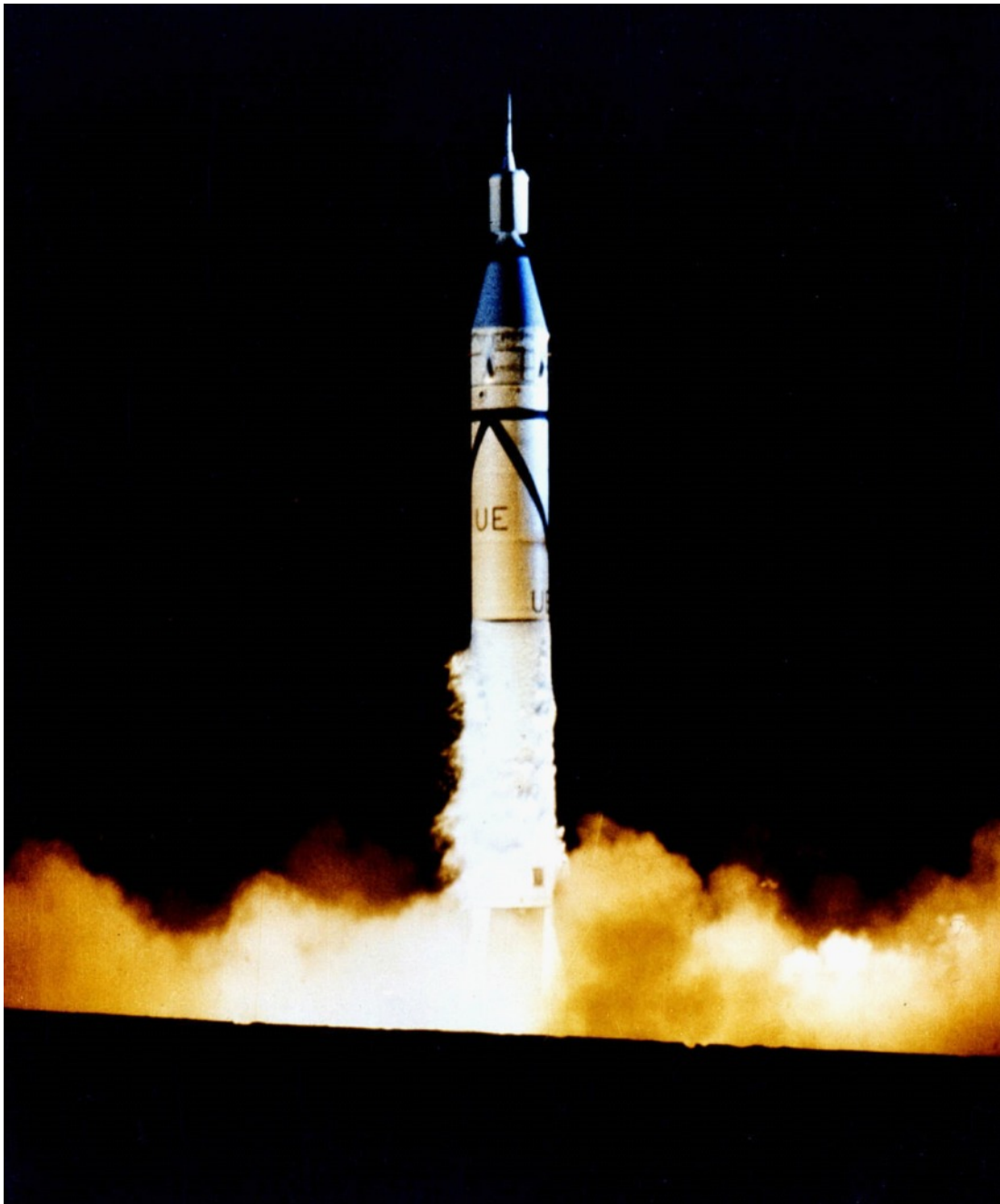
When there's an earthquake, we can use radar in satellites to figure out how much Earth has

moved during a quake. In fact, satellites allow NASA scientists to observe all kinds of changes in Earth over months, years or even decades.

Satellites have also allowed us—for the first time in civilization—to have pictures of our home planet from space. Earth is big, so to take a picture of the whole thing, you need to be far away. Apollo 17 astronauts took the first photo of the whole Earth in 1972. Today, we're able to capture new pictures of our planet many times every day.

Today, many satellites are buzzing around Earth, and each one plays an important part in how we understand our planet and live life here. These satellite explorers are possible because of what we learned from our first voyage into space with Explorer 1—and the decades of hard work and scientific advances since then.

To learn more about satellites, including where they go when they die, check out NASA Space Place: <https://spaceplace.nasa.gov/pacecraft-graveyard>

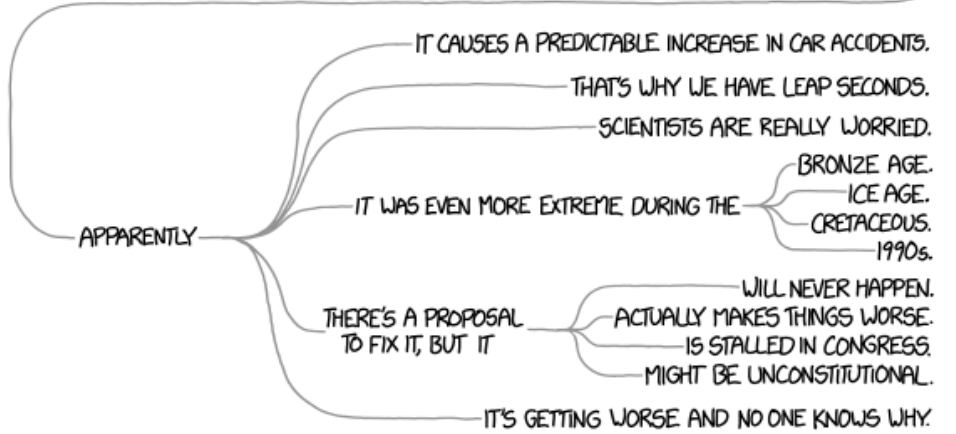
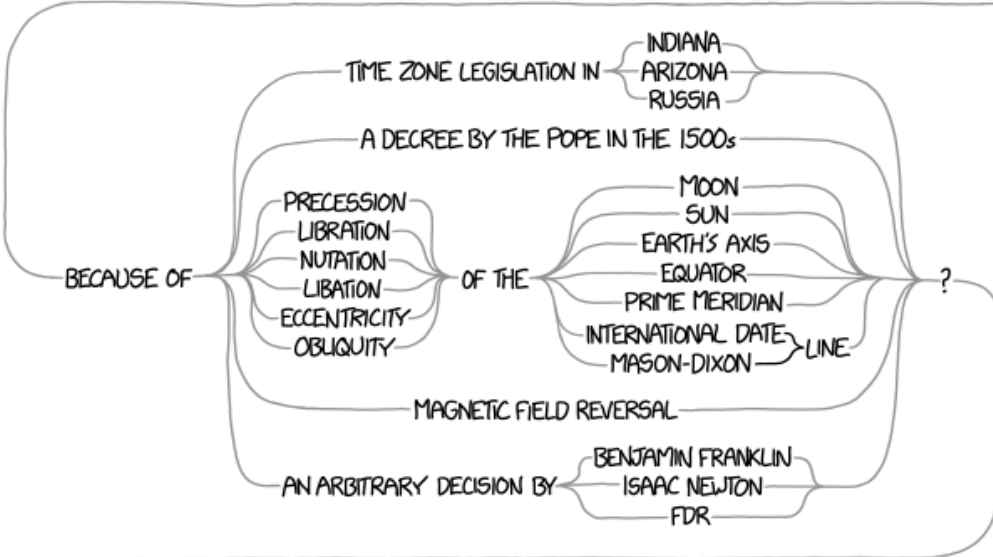
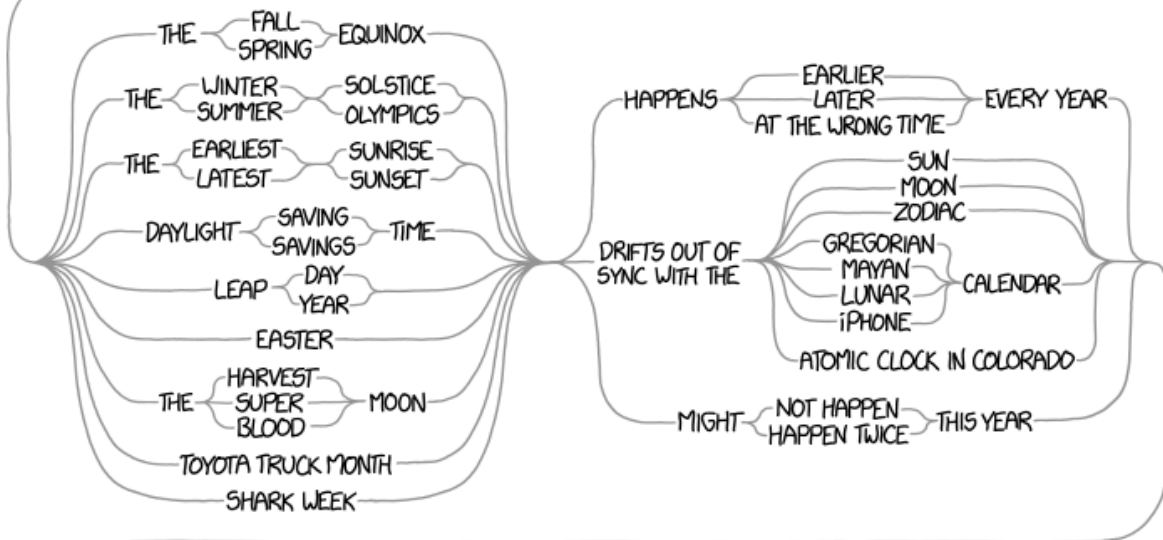


This photo shows the launch of Explorer 1 from Cape Canaveral, Fla., on Jan. 31, 1958. Explorer 1 is the small section on top of the large Jupiter-C rocket that blasted it into orbit. With the launch of Explorer 1, the United States officially entered the space age.

Image credit: NASA

- CALENDAR FACTS -

DID YOU KNOW THAT



xkcd.com

From the Archives: February, 1976

If I recall correctly, the February, 1976 meeting was the first PAC meeting I ever attended. It was my first semester at UNL and my friend Galen Smith wanted to go.

I remember absolutely nothing about the meeting other than that we were asked to introduce ourselves. And I knew Jack Dunn and remember seeing him

there. Jack was the Program Chair that year.

—Mark Dahmke

THE PRAIRIE ASTRONOMER

Volume 16, Number 4

February 24, 1976

JANUARY MEETING PACKS OLIN: CONSTITUTION, TELESCOPE PROJECT DISCUSSED

The January meeting resulted in a nearly-packed Olin Hall of Science auditorium.

Before the program, a NASA Apollo-Soyuz film, there was a period of discussion on a number of business items.

The club Constitution and Bylaws were referred to a committee consisting of President Earl Moser, Vice President Larry Stepp, Secretary Jess Williams, Treasurer Lee Thomas, and Recording Secretary Merton Sprengel for study and revision.

Larry Stepp gave a report on the status of the club's Bicentennial Community Observatory telescope project. The eight-inch mirror was in the first stages of grinding. Walt Baumann and Jeff Mallott brought the mirror to the meeting so members could see the progress first hand.

Larry explained the two options of tubes available for the telescope. He had ordered a Parks fiberglass tube, the cost of which would be approximately \$45 including shipping. Norm Frerichs suggested the alternative of an aluminum eight-inch tube such as the one he had used in his reflector. For comparison purposes, Norm brought his telescope to the meeting, along with an unfinished tube. It was estimated that the cost of the aluminum tube, including finishing, would be about \$25. Discussion probed the relative advantages and disadvantages of the two tube

materials. In a vote, it was decided to proceed with the fiberglass tube.

In addition to Norm's beautifully finished eight-inch telescope, Brad Binder had on display the 6-inch reflector which he completed recently. Members have had the opportunity to follow construction of Brad's scope, because he has reported on

(Continued to page 2)

NEXT MEETING FEBRUARY 24TH

The next meeting of the Prairie Astronomy Club will be Tuesday, February 24, at 7:30 p.m., Olin Hall of Science, Nebraska Wesleyan University.

The program will be "The Martian Visitor", a planetarium show which Jack Dunn says he "borrowed" from a colleague at another planetarium.

The 1976 Observer's Handbooks have arrived from Canada, and will be on sale at the February meeting for \$2.50 each. We ordered only fifteen copies, so the supply is limited. It is doubtful that we will have any left over for subsequent meetings, so if you want one, be sure to attend.

Bound into the center of this issue of the newsletter is a proposed revision of the club Constitution, which will be formally submitted to the membership at the

(Continued to page 2)

JANUARY MEETING PACKS OLIN: NOW 68 MEMBERS IN CLUB (From Page 1)

his progress at past meetings.

Members and potential members are reminded of the excellent facilities and expertise we have to draw upon in the club. The club now owns a complete mirror grinding set, and Larry Stepp has access to virtually any kind of machining equipment that might be required to fashion telescope hardware. If you've ever had the hankering to try your hand at telescope building these last few winter months would be a good time... and your scope would be ready for summer viewing!

At the last meeting, the club

gained two new members:

Brian Cooper, 5930 LaSalle Drive, Lincoln 68516.

Allan Logan, 7920 Cherrywood Drive, Lincoln 68510.

Active membership is now at 68, which explains why Olin Hall looks a little crowded when we meet.

THE MISSING "REFLECTORS"

Secretary Jess Williams reports that he has received an inquiry from the new editor of the Astronomy League publication, "The Reflector", concerning an up-to-date club roster. Last meeting, a number of members reported that they had not been receiving The Reflector.

Jess has mailed in an updated list of members, current as of February 15. With luck, all club members should begin receiving the Reflector with its next issue.

NEXT MEETING (From Page 1)

February meeting. Please read it carefully. A discussion will precede voting, which will take place if at least 50 percent of the current membership list attends the meeting, as provided in Article IX. The committee decided to submit a totally new Constitution, since revisions in the original document would require a considerable complex of amendments. For those wishing to compare the proposed revised Constitution with the original, a copy of the latter will be available for inspection prior to the February meeting.

WANT AD:

Would like to buy a 6-inch Criterion Telescope.

Have for sale a 3-inch Edmunds Reflector. See Jess Williams.

THE PRAIRIE ASTRONOMER is published monthly by the Prairie Astronomy Club, and is free to club members. Yearly subscription to the newsletter only is \$3. Regular membership (including one-year subscription to Sky & Telescope, club newsletter, and four quarterly issues of the Astronomical League publication, The Reflector) is \$9, family membership is \$11. Editor: Lee Thomas (489-3855), Assistant Editor, Merton Sprengel (489-3177).

CLUB MEMBERSHIP INFO

REGULAR MEMBER - \$30.00 per year. Includes club newsletter, and 1 vote at club meetings, plus all other standard club privileges.

FAMILY MEMBER - \$35.00 per year. Same as regular member except gets 2 votes at club meetings.

STUDENT MEMBER - \$10.00 per year with volunteer requirement.

If you renew your membership prior to your annual renewal date, you will receive a 10% discount.

Club members are also eligible for special subscription discounts on Sky & Telescope Magazine.

CLUB TELESCOPES

To check out one of the club telescopes, please contact a club officer. Scopes can be checked out at a regular club meeting and kept for one month. Checkout can be extended for another month if there are no other requests for the telescope, but you must notify a club officer in advance.

100mm Orion refractor: David Pennington
10 inch Meade Dobsonian: Lee Taylor
13 inch Truss Dobsonian: Available

CLUB APPAREL



Order club apparel from cafepress.com:



Shop through Amazon Smile to automatically donate to PAC:



CLUB OFFICERS

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The Prairie Astronomer is published monthly by the Prairie Astronomy Club, Inc. Membership expiration date is listed on the mailing label. Membership dues are: **Regular \$30/yr, Family \$35/yr.** Address all new memberships and renewals to: **The Prairie Astronomy Club, Inc., PO Box 5585, Lincoln, NE 68505-0585.** For other club information, please contact one of the club officers listed to the right. Newsletter comments and articles should be submitted to: **Mark Dahmke, P. O. Box 5585, Lincoln, NE 68505** or mark@dahmke.com, no less than ten days prior to the club meeting. The Prairie Astronomy Club meets the last Tuesday of each month at Hyde Memorial Observatory in Lincoln, NE.