



THE OBSERVER

East Valley Astronomy Club



The Owl and The Galaxy
APOD April 2, 2015 Christopher Kaltseis

EVAC This Month

by Don Wrigley

"April is the cruelest month" wrote T.S. Elliot; and it may be true if you are a poet living in England; but if you are an amateur astronomer living in Arizona, April is far from cruel. It's really the perfect month for star gazing. The weather is mild; not too hot during the day and not too cold at night. The winter storms are pretty much over and the monsoons are still a couple of months away. It still gets dark early enough (by 8:00 PM, or so), due to our lack of Daylight Savings Time. Jupiter is high enough to view right after sunset, and when you get tired of looking at Jupiter (if you can get tired of looking at

Jupiter), the Orion Nebula is still high enough to observe. After that, Ursa Major has risen to the right spot for observing all those "big" galaxies: M81 and 82, M108 (and the Owl Nebula, while you're at it), and later on M51 and the "monster" M101. By the time you have finished with them, the Virgo cluster is in a perfect spot for viewing. Life is good.

The first two weekends in April are deep sky nights, so gather up your gear and join me out at the Picketpost site. It's party time!

Our speaker at this month's

UPCOMING EVENTS:

- Public Star Party - April 8*
 - Deep Sky Party - April 9*
 - EVAC Monthly Meeting - April 15*
 - Local Star Party - April 30*
- Check out all of the upcoming club events in the Calendars on page 10*

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EVAC This Month

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meeting is astrophotographer Adam Block, whose topic will be "The Beauty of the Night Sky". What could be more fitting!

Don Wrigley

If It's Clear...

by Fulton Wright, Jr. Prescott Astronomy Club

April 2016

Celestial events (from Sky & Telescope magazine, Astronomy magazine, and anywhere else I can find information) customized for Prescott, Arizona. Remember, the Moon is 1/2 degree or 30 arc-minutes in diameter. All times are Mountain Standard Time.

On Tuesday, April 5, from 2:35 AM to 3:17 AM, the shadows of Io and Europa are on Jupiter.

On Wednesday, April 6, you can observe some events with Jupiter's moons. Here is the schedule:

06:52 PM Io moves in front of the planet.

06:55 PM Sunset

07:32 PM Io's shadow falls on the planet.

07:48 PM Europa moves behind the planet.

09:06 PM Io moves from in front of the planet.

09:46 PM Io's shadow leaves the planet.

09:59 PM Ganymede moves in front of the planet.

11:54 PM Europa appears from Jupiter's shadow.

12:43 AM (Thursday) Ganymede's shadow falls on the planet.

01:14 AM Ganymede moves from in front of the planet.

03:57 AM Ganymede's shadow leaves the planet.

04:54 AM Jupiter sets.

On Sunday, April 10, at 2:33 PM, you can see the Moon occult Aldebaran (magnitude 1). This is a daytime event so you will probably want a telescope at high power to watch it. Look for the crescent Moon, 60 degrees above the Southeast horizon. The star should be located on the dark side of the Moon, opposite the "horns". The star reappears at 3:55 PM on the bright side of the Moon.

On Sunday, April 17, between sunset (7:05 PM) and Mercury-set (8:44 PM), you have your best chance of seeing Mercury this year. Look low in the west for the magnitude 0 planet. It will also be good for a few days around this date.

On Sunday, April 24, after about 10:30 PM, you can see the gibbous Moon, Mars, Aldebaran, and Saturn all rising together in the south-east.

The Backyard Astronomer

by Bill Dellinges (April 2016)

Astro-Potpourri

Potpourri? Literally French for "rotten pot"? Well, let's hope not. I keep a record of miscellaneous factoids relating to astronomy. Don't ask me why, I can't help myself. I would like to share a few of these revelations with you. Gemini is high overhead these evenings. Did you know two planets were discovered amongst the Twins? In 1781 William Herschel discovered Uranus not far from Eta Gemini, just below the open star cluster M-35. As a sidebar, there are reports that Uranus had been seen earlier by Hipparchus in 128 B.C., John Flamsteed in 1725, James Bradley in 1729 and Pierre Lemonnier in 1750.

This is not surprising as Uranus' mean magnitude is 5.6, within naked eye visibility. The former planet Pluto was discovered near Delta Gemini (Wasat) in 1930 by Clyde Tombaugh at Lowell Observatory. NGC 2392 is nearby. What about Neptune, where was this ice giant found? Way over in Capricornus near Mu Capricorni in 1846 by German astronomer J. G. Galle. He used mathematical predictions of Frenchman Urbain Leverrier and Englishman John Couch Adams (derived independently) to locate a planet disturbing the orbit of Uranus. Neptune had also been seen earlier and recorded by Galileo in 1612 and 1613 and Joseph-Jerome de Lalande in 1795. The latter created the now defunct constellation Felis

The Backyard Astronomer

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the Cat because, he said, "I am very fond of cats."

Plugging numbers into the Schwarzschild Radius of black holes (BH), Earth would qualify as a BH when reduced to a diameter of about one inch. Jupiter becomes a BH at a diameter of twenty feet. Though the Sun is not a massive enough star to collapse down to a BH under normal circumstances, in theory if somehow you could squeeze it down to a diameter of 3.7 miles, bingo, you'd have a BH. Stars more massive than the Sun can produce a single BH. Or when many stars merge, a super massive BH can form. Astronomers believe most galaxies harbor these monsters at their center. Astronomers tell us our own Milky Way has a 4 million solar mass BH at its center (one solar mass = one sun's worth of material). The giant elliptical galaxy M-87 in Virgo is home to a 6.4 billion solar mass BH. Top prize so far for the most massive super massive BH goes to NGC 4889 in Coma Berenices – 21 billion solar masses.

Barycenters: Where is the center of mass between the Earth and Moon? About 1,061 miles below the surface of the Earth. For the Earth - Sun system, their barycenter is located about 280 miles from the center of the Sun. The barycenter for the Sun and Jupiter resides some 30,000 miles above the Sun's surface.

The Sun will end its life as a white dwarf in about 5 billion years. The Earth-sized object will be the highly compressed spent carbon-oxygen core of the Sun shining white hot by compression alone, no longer utilizing nuclear reactions. A teaspoon of its material would weigh one ton on Earth. The dead star will eventually cool off to a black dwarf. It's thought that will take 50 billion years. Since the universe

is only about 13 billion years old, no white dwarf has had enough time to become a black dwarf. Stars more massive than the Sun end their lives as either a neutron star or black hole. Their larger progenitor crushes the star's core down to about a 10 mile diameter object converting whatever elements remained into neutrons. A teaspoon of neutron material would weight 100 million tons on earth. These stars spin rapidly due to the conservation of angular momentum. If the release of intense energy from their magnetic pole sweeps past Earth, they are called pulsars. The Crab Nebula's pulsar star spins 30 times a second. The fastest known pulsar discovered so far is PSR J174-2246ad which rotates 700 times a second. Its equator is moving at 24% the speed of light.

The fastest speed most people experience on Earth is 600 miles an hour on a jet airliner. At that speed you can circle Earth in 42 hours (bring snacks). Traveling at airliner speed, it would take you 18 years to reach the Sun (best to go at night). This same speed gets you to the next nearest star, Alpha Centauri, in 4.8 million years - not too practical. Let's bump that speed up to 30,000 miles an hour, typical of current spacecraft velocities. You've now reduced your travel time to 96,122 years. By the way, you're only allowed two pieces of luggage.

It's been fun sharing these tidbits with you. There are more where these came as I'm a hoarder for astronomical trivia, but we must stop somewhere. Until I move some dusty storage boxes around for a future astro-potpouri, I wish you dark skies. Now where did I put my glasses?

Adam Block

The Beauty of the Night Sky

April 15 - Gilbert Library

EVAC Meeting starts at 07:30 PM

Find Out What's Happening – Join EVAC-Announce List

If you would like to receive email announcements about EVAC meetings and activities please join the EVAC–Announce mailing list. Click on the link below to subscribe. Enter your full email address in the box titled User Options and press OK. You will receive a confirmation email. Your privacy is respected by EVAC and we will never sell your email address, or use it for non-club relevant solicitations. This mailing list is designed for communication from EVAC, and does not enable users to respond to the message. If you wish to contact club officers, please use the list on the Contact-Us tab.

To subscribe to the EVAC – Announce mail group click:

<http://www.freelists.org/list/evac-announce>

To unsubscribe use the same link, enter your email address and select Unsubscribe from the “Choose An Action” list.

NEW MOON ON APRIL 7 AT 07:24

FIRST QUARTER MOON ON APRIL 13 AT 23:59

***FULL MOON ON APRIL 22 AT 01:24**

LAST QUARTER MOON ON APRIL 29 AT 23:29



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Upcoming Meetings

April 15

May 20

June 17

July 15

August 19

September 16

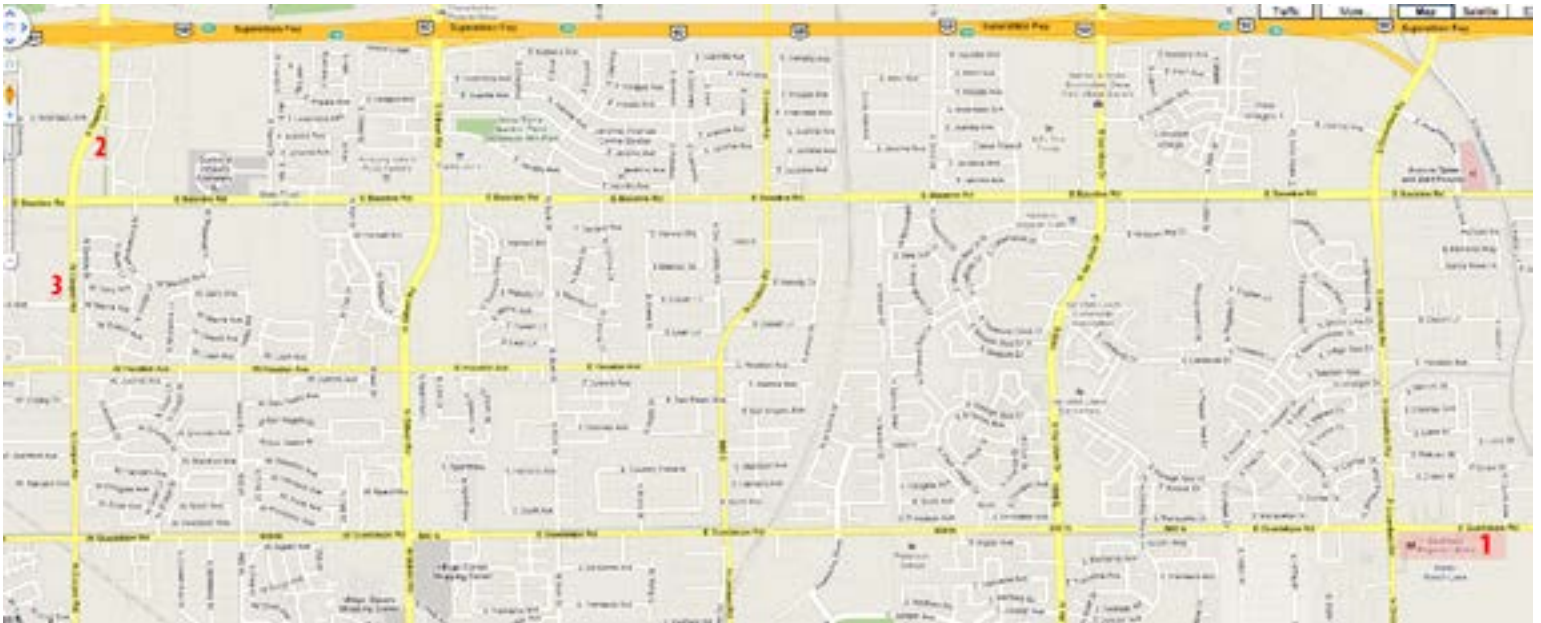
October 21

November 18

The monthly general meeting is your chance to find out what other club members are up to, learn about upcoming club events and listen to presentations by professional and well-known amateur astronomers.

Our meetings are held on the third Friday of each month at the Southeast Regional Library in Gilbert. The library is located at 775 N. Greenfield Road; on the southeast corner of Greenfield and Guadalupe Roads. Meetings begin at 7:30 pm.

Visitors are always welcome!



1 Southeast Regional Library
775 N. Greenfield Road
Gilbert, Az. 85234



APRIL 2016

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

Apr 7 - Settler's Point Elementary

Apr 15 - EVAC Monthly Meeting

Apr 8 - Public Star Party

Apr 30 - Local Star Party

Apr 9 - Deep Sky Party

MAY 2016

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

May 7 - Deep Sky Party

May 14 - Astronomy Day

May 9 - Transit of Mercury

May 20 - EVAC Monthly Meeting

May 13 - Public Star Party

May 28 - Local Star Party

East Valley Astronomy Club -- 2016 Membership Form

Please complete this form and return it to the club Treasurer at the next meeting or mail it to EVAC, PO Box 2202, Mesa, Az, 85214-2202. Please include a check or money order made payable to EVAC for the appropriate amount.

IMPORTANT: All memberships expire on December 31 of each year.

Select one of the following:

- New Member
 Renewal
 Change of Address

New Member Dues (dues are prorated, select according to the month you are joining the club):

- | | |
|---|---|
| <input type="checkbox"/> \$30.00 Individual January through March | <input type="checkbox"/> \$22.50 Individual April through June |
| <input type="checkbox"/> \$35.00 Family January through March | <input type="checkbox"/> \$26.25 Family April through June |
| <input type="checkbox"/> \$15.00 Individual July through September | <input type="checkbox"/> \$37.50 Individual October through December |
| <input type="checkbox"/> \$17.50 Family July through September | <input type="checkbox"/> \$43.75 Family October through December |
- Includes dues for the following year*

Renewal (current members only):

- \$30.00 Individual**
 \$35.00 Family

Name Badges:

- \$10.00** Each (including postage) Quantity: _____

Name to imprint: _____

Total amount enclosed:

Please make check or money order payable to EVAC

- Payment was remitted separately using PayPal
 Payment was remitted separately using my financial institution's online bill payment feature

Name:

Phone:

Address:

Email:

City, State, Zip:

- Publish email address on website

URL:

The Observer is the official publication of the East Valley Astronomy Club. It is published monthly and made available electronically as an Adobe PDF document the first week of the month.

- | | |
|--|---|
| <input type="checkbox"/> General Observing | <input type="checkbox"/> Cosmology |
| <input type="checkbox"/> Lunar Observing | <input type="checkbox"/> Telescope Making |
| <input type="checkbox"/> Planetary Observing | <input type="checkbox"/> Astrophotography |
| <input type="checkbox"/> Deep Sky Observing | <input type="checkbox"/> Other |

Would you be interested in attending a beginner's workshop? Yes No

How did you discover East Valley Astronomy Club?

PO Box 2202
Mesa, AZ 85214-2202
www.evaonline.org

All members are required to have a liability release form (waiver) on file. Please complete one and forward to the Treasurer with your membership application or renewal.

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www.evaonline.org

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