New Braunfels Astronomy Club

Because It's Out There

Larry's Celestial Calendar & Newsletter

by Eric Erickson

307th Edition
Volume 26, Number 2

February 16h to March 16th, 2023

In This Issue ---

Cover Story> Searching for Life Under the Ice

NASA

New
Braunfels
Astronomy
Club Because It's Out There

February 16th, 2023
Meeting 281
Agenda

- Open meeting and introduce new members (get names, email)
- Interesting observations, experiences
- Show and tell
- Current news and what's in our sky this month: *Member input, Newsletter*
- Events, Outreach, Planning
  - Astronomy Night at TPML – February 18th
  - Messier Party at Dot's – March 18th
  - Land and Sky event at Dot's – May 20th
- Business
  - Acquisition of solar scope/filters/glasses by TPML
- Main Event

Coming up: OUR 282nd ASTRONOMY CLUB MEETING

March 16th, 2023, from 6 - 8 pm **TJ's on Loop 337**

astronomynbtx.org Email: info@astronomynbtx.org

Astronomy Friends New Braunfels..... facebook.com/groups/354953995432792/

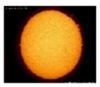
Comal County Friends of the Night Sky..... facebook.com/groups/166098014710276/

comaldarksky.org/ Email: info@comaldarksky.org

Astronomy Night at Tye Preston Memorial Library

Canyon Lake, TX

Date	Doors Open	Note
1/21/2023	7:00 PM	
2/18/2023	7:30 PM	
3/25/2023	8:30 PM	
4/22/2023	8:30 PM	
5/20/2023	2:00 PM	*Sun Party - wear sunscreen and sunglasses!*
9/16/2023	8:00 PM	
10/14/2023	8:00 PM	
10/21/2023	7:30 PM	International Observe the Moon Night
11/18/2023	6:30 PM	Crescent Moon
12/9/2023	6:30 PM	



Tye Preston Memorial Library *tpml.org*

New Braunfels Astronomy Club *astronomynbtx.org* *Astronomy Friends New Braunfels*

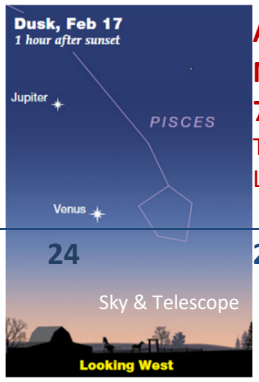
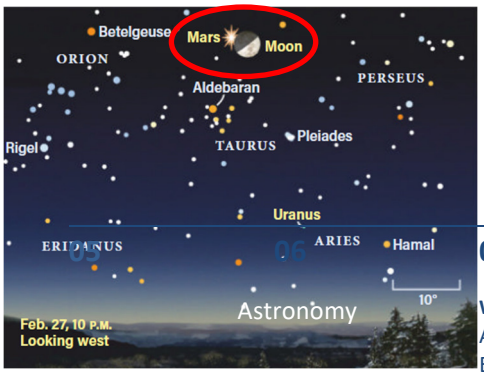
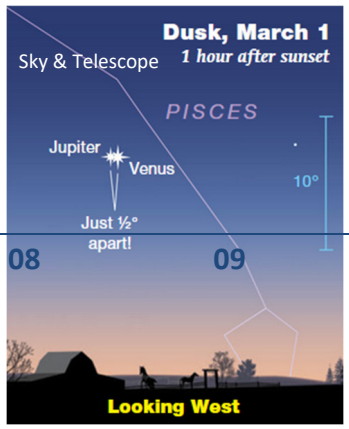
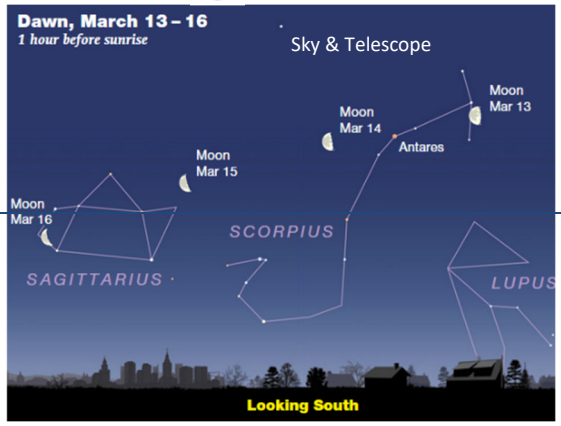
There will be surprise giveaways at some evnts so join us!!

Comal County Friends of the Night Sky supports and encourages Astronomy Night

Website: comaldarksky.org Email: info@comaldarksky.org

Comal County Friends of the Night Sky Group

FEBRUARY/MARCH 2023

SUN	MON	TUE	WED	THU	FRI	SAT
Cover Story – We're going to Europa! The Europa Clipper is scheduled to launch in October 2024. Will it find suitable conditions for life?				16 **NBAC Meeting 6:00** TJ's on Loop 337	17 	18 **Astronomy Night 7:30 pm** TPML, Canyon Lake,
19	20	21	22 	23	24	25
26 	27	28	MAR 01 	02	03	04
05	06	07 **Worm Moon** Also… Eagle, Goose, Crow, Sugar, Wind Strong, Sore Eyes Moon	08	09	10	11
12 **Daylight Saving Time starts 2:00 am**	13	14 	15	16 **NBAC Meeting 6:00** TJ's on Loop 337		

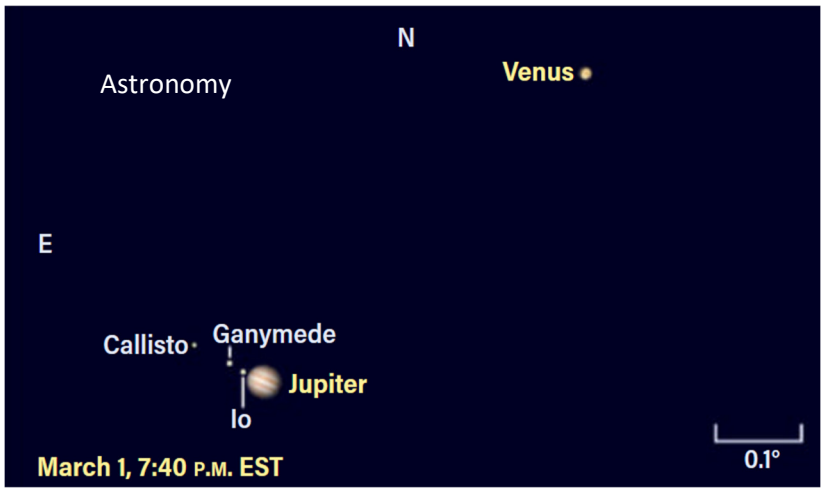
Solar System Happenings

- Mercury is a morning planet. Check it out on February 18th about 30 minutes before dawn. It shares the sky with a crescent, nearly New Moon.
- Venus is an evening planet. Bright in the southwestern sky, it mates up with Jupiter and the Moon – see the calendar above.
- Earth still spins, and we are still here to marvel at it all.

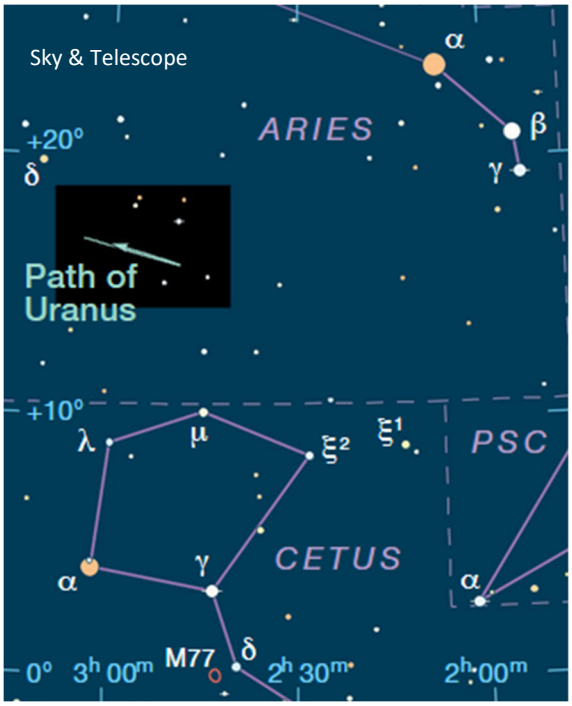
Best ISS viewing for Canyon Lake/New Braunfels - From Heavens Above

Date	Start Time	Start Loc	Max Alt °	End Loc	Note
03/09	19:05	SSW	36	E	Enters Earth's shadow
03/10	19:53	WSW	16	NW	Passes east of Venus. Enters Earth's shadow.
03/11	19:03	SW	38	NNE	Passes east of Venus & Jupiter, northwest of Capella
3/14	05:00	N	18	ESE	Passes close to Deneb, then west of Saturn
3/16	04:50	NW	89	SE	Exits Earth's shadow NW of Bootes.

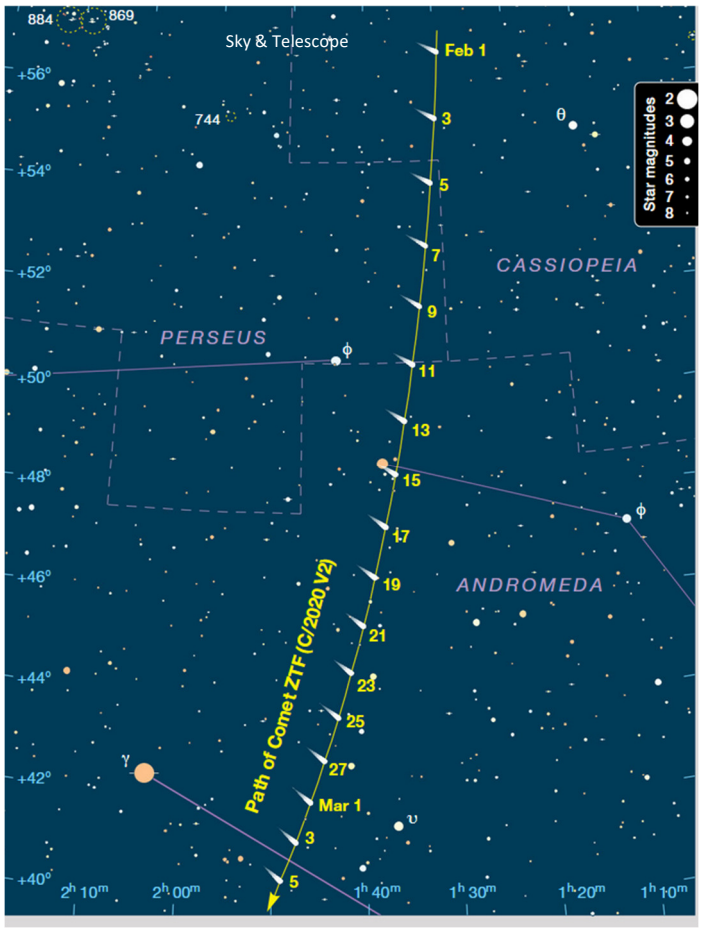
- The Moon dances with planets and stars.
- Mars is brilliant and big but past opposition and shrinking as we part ways in our orbits. It pairs up with a first quarter Moon on February 27 – see the calendar above.
- Jupiter is in the southwest by sunset and still a nice target but getting closer to sunset glare. On March 1st it gets close to Venus (1/2°), the pair a nice target for wide field eyepiece views.



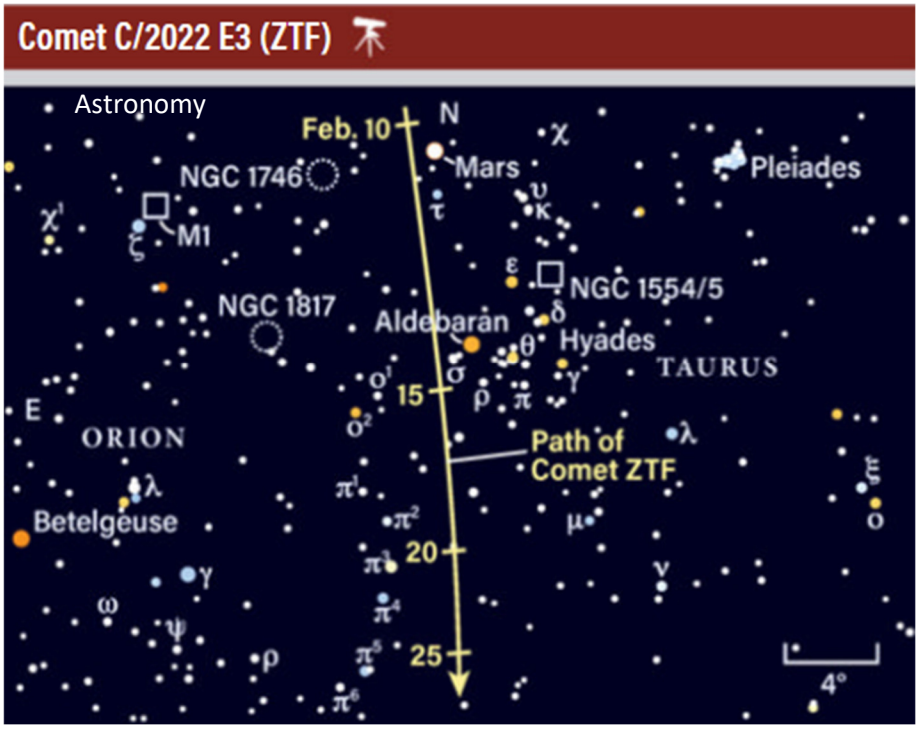
- Saturn is in conjunction with the Sun and will be a morning planet later in March.
- Uranus is in Aries, up most of the night – use binoculars or telescope and catch this gray-green dot.

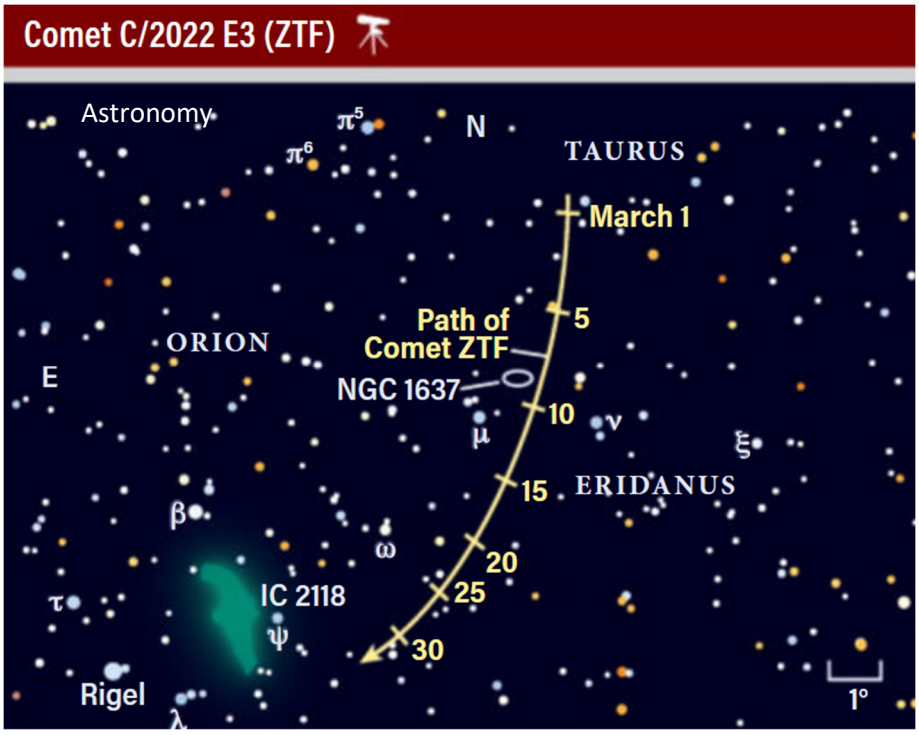


- Neptune is in eastern Aquarius and in the Sun's glare.
- Comets:
  - Comet C/2020 V2 (ZTF) discovered in November 2020 by the Zwicky Transient Facility. Magnitude 10 – 9.5, so it's dim.



- Comet C/2022 E3 (ZTF) was discovered in March 2022 by the Zwicky Transient Facility. It's up there, around Mag 5-ish so get binoculars, telescope, spotter. It's getting farther and dimmer so catch it. I saw it on Feb 9, southwest of iota (ι) Aurigae. In my 10 x 42 IS binoculars it was bright enough to see its broad, stumpy tail but no color.



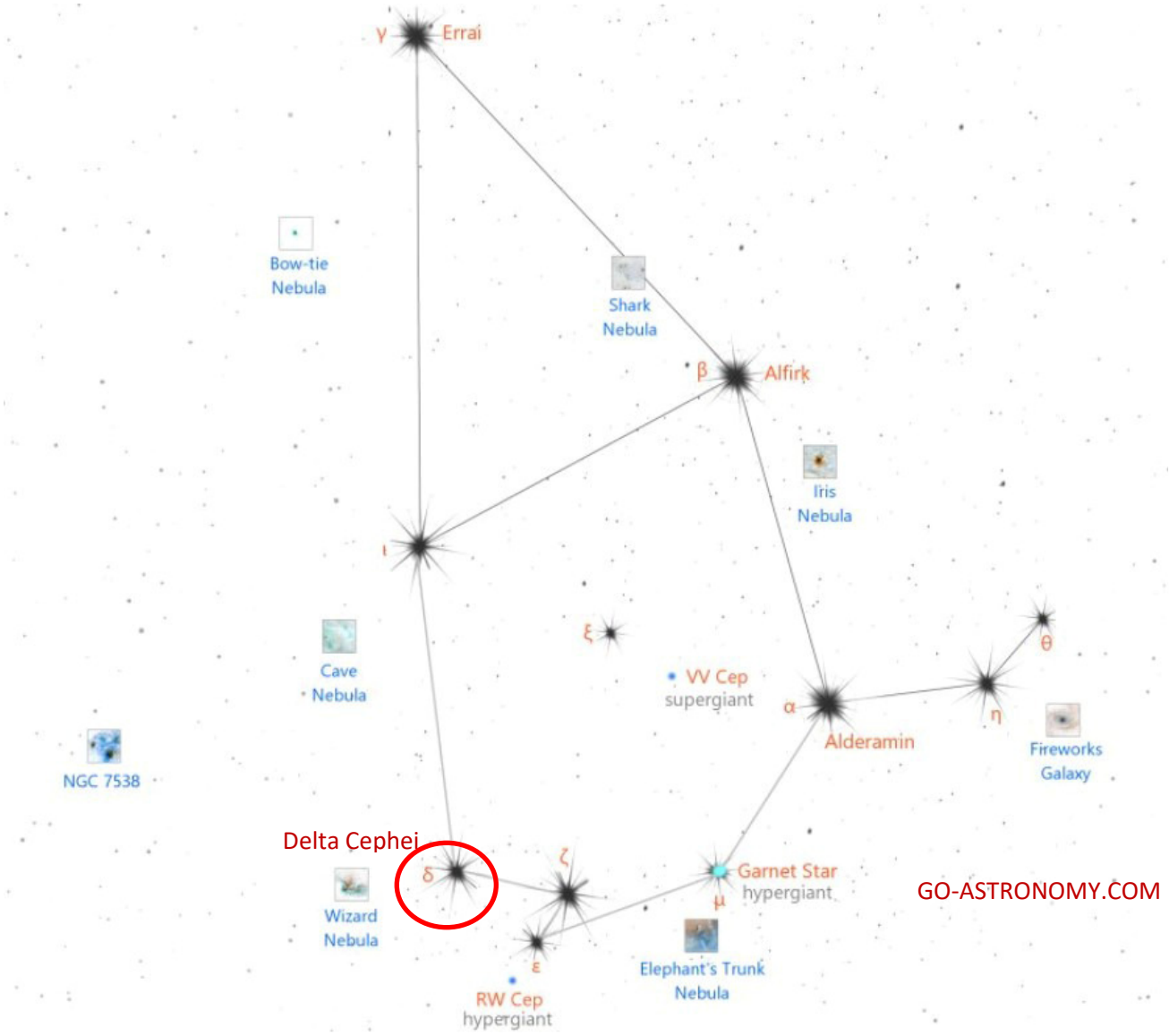


My Celestial Pick: Cepheus

Long live the king. King of Aethiopia in Greek mythology, and married to Cassiopeia, the vain-narcissist queen. Andromeda came from their loins and hers is another tale of intrigue.

Cepheus is a circumpolar constellation, meaning it never sets – just keep going round and round Polaris, as viewed from most locations in the northern hemisphere. There are five northern circumpolar constellations: Cassiopeia, Cepheus, Draco, Ursa Major, and Ursa Minor.

Cepheus isn't the most popular target for deep sky objects, but it has good objects to look at or image. Interesting features include nebulae, the Garnet Star, and the Fireworks galaxy. Delta Cephei (δ) is the prototypical Cepheid Variable star (used to determine cosmological distances). A cadre of red supergiant stars (the Garnet Star (μ), Mu, MY, SW, VV, and V354) can be found in Cepheus. They are among the largest stars known.



Cover Story> We're Going to Europa!

It's far-out man! I mean, way out there in the cold, desolate reaches of our solar system. OK, anywhere beyond 14,000 feet altitude is pretty desolate. Taking a trip to Jupiter's satellite Europa is a daunting exercise in engineering and of course, planning.

The Europa Clipper (EC)is slated to start its voyage of discovery in October 2024, with a planned orbit insertion at Europa in 2030. While not a life detection mission per se, EC will look at conditions on and under its ice sheet, hopefully giving astrobiologists an idea if they are suitable for life. It will also look for possible landing sites for future missions. EC might be able to settle the current debate of a thick (10-30 kilometers) vs thin (200 meters to 1 kilometer) ice crust. Then again, new data might just add to the controversy.

The science aboard EC is impressive.

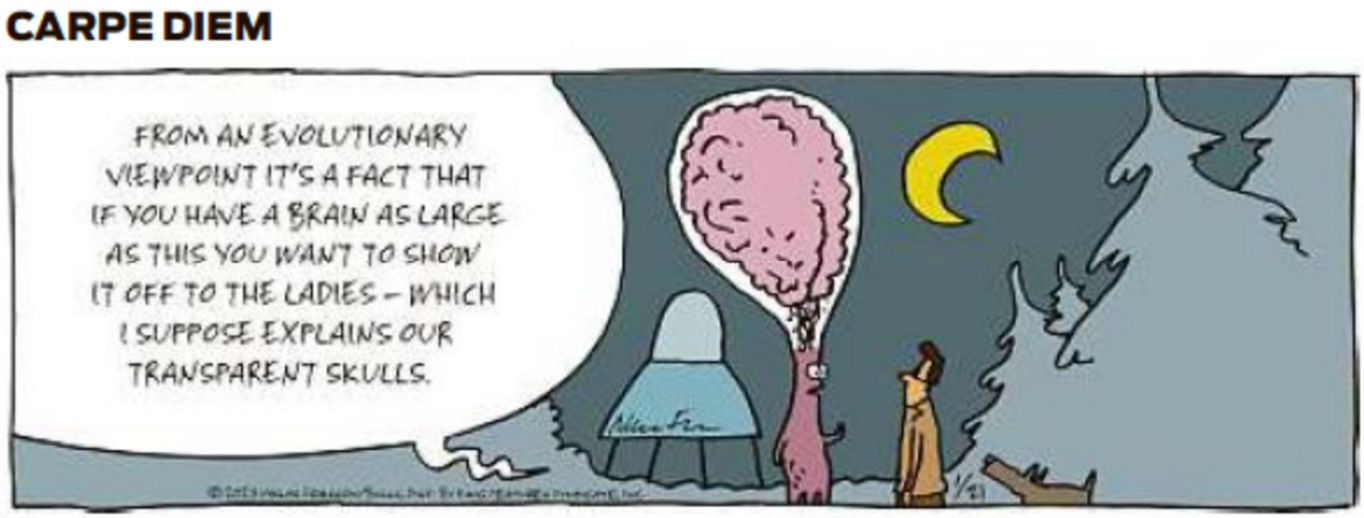
- Ice-penetrating radar will map the sub-ice environment, determine ice thickness, and consistency of any liquid water below. It will also be able to map sub-surface structures and help image crust surface structures and topography.
- Gravity measurements will help picture Europa's large sub-surface structure and how it flexes as it orbits Jupiter.
- A magnetometer (ECM) will be used to confirm the presence of a liquid water sub-surface ocean, measure its salinity and depth.
- The Plasma Instrument for Magnetic Sounding (PIMS) will identify Europa's inherent magnetic vs induced magnetic fields. This also provides information about any sub-surface ocean.
- The Ultraviolet Spectrograph (UVS) will examine Europa's thin atmospheric gases and surface composition, also looking for plumes.
- The Mapping Imaging Spectrometer (MIS) will also examine surface and sub-surface water for organics, salts, minerals, and other life-friendly chemistry.
- High resolution imaging systems, including a thermal imaging camera will provide extensive close up visuals of Europa's surface and warmer areas.
- A mass-spectrometer (MASPEX) will study surface gases, any plume gases, and sub-surface chemistry. MASPEX was developed in San Antonio by the Southwest Research Institute.

- A surface dust analyzer (SUDA) will examine dust/ices kicked up meteorites and material in plumes

Whew! I hope it all works as designed.

Eric Erickson

Lagniappe



"Siri, explain microdosing LSD again ..."

MOTHER GOOSE & GRIMM

CARPE DIEM

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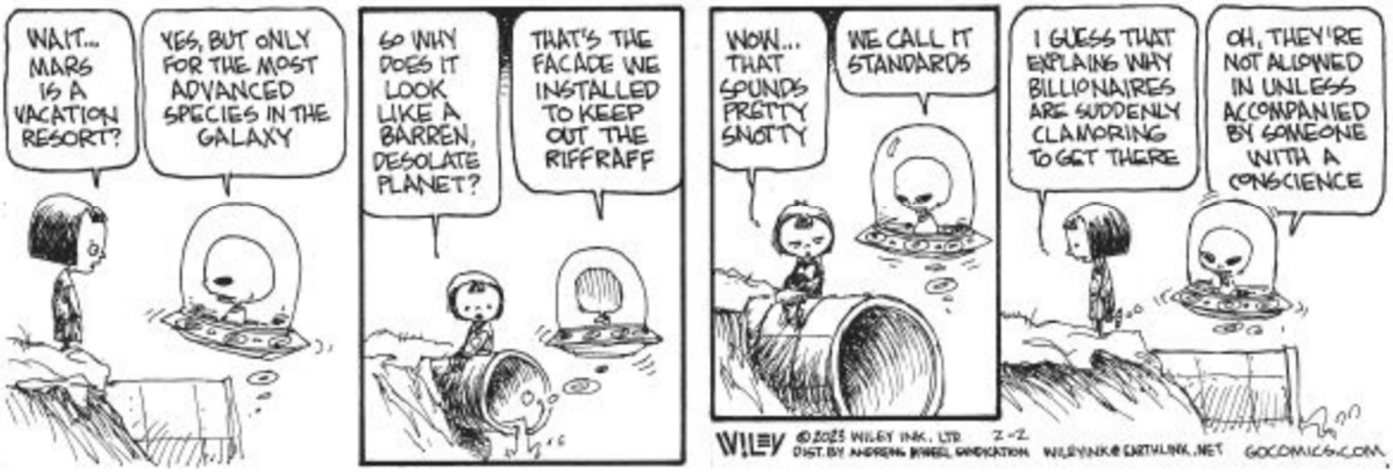

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