



EPHEMERIS

The official newsletter of the Prescott Astronomy Club (PAC)
e-phem-er-is: a time-based listing of future positions of solar system objects

MARCH 2021

UPCOMING EVENTS

Wednesday, March 3 - Regular PAC meeting @ 6:30 PM. The meeting will be conducted virtually on Zoom hosted by Jeff Stillman. Invitations will be sent to all members. Guests can register on our webpage. To participate in the meeting, one must register by e-mail.



Jeff Stillman will present “*Viewing and Photographing satellites, including the ISS*”, describing how to use SkyTrack, an expensive software tool, to find view and photograph the ISS, Iridium flares and other satellites as well as search for events such as ISS transits of the Moon or the Sun.

Wednesday, March 10 - METASIG @ 5:00 PM at local restaurant. At this time, no Zoom events will be conducted for METASIG. Anyone wishing to organize a meeting should coordinate with Russell Chappell.

VOLUNTEERS NEEDED FOR PAC BOARD

Volunteers are needed to fill two positions on the PAC board: Secretary and Vice President. The Secretary position is the most critical. Please consider helping the club with its mission.

TAKING THE DOG STARS FOR A SPRINGTIME WALK: SIRIUS AND PROCYON

David Prosper

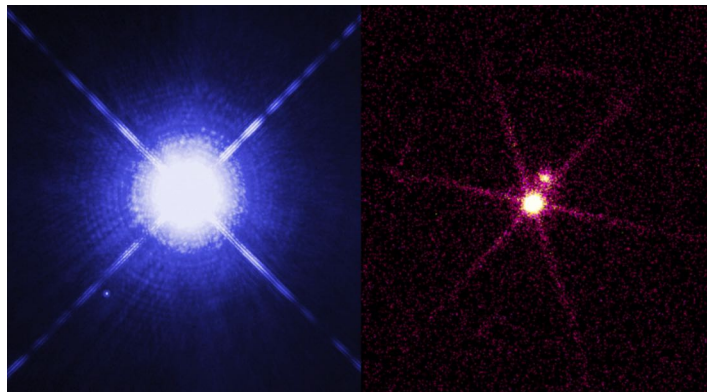
March skies feature many dazzling stars and constellations, glimmering high in the night, but two of the brightest stars are the focus of our attention this month: Sirius and Procyon, the dog stars!



Sirius is the brightest star in the nighttime sky, in large part because it is one of the closest stars to our solar system at 8.6 light years away. Compared to our Sun, Sirius possesses twice the mass and is much younger. Sirius is estimated to be several hundred *million* years old, just a fraction of the Sun's 4.6 *billion* years. Near Sirius - around the width of a hand with fingers splayed out, held away at arm's length - you'll find Procyon, the 8th brightest star in the night sky. Procyon is another one of our Sun's closest neighbors, though a little farther away than Sirius, 11.5 light years away. While less massive than Sirius, it is much older and unusually luminous for a star of its type, leading astronomers to suspect that it may "soon" – at some point millions of years from now – swell into a giant star as it nears the end of its stellar life.

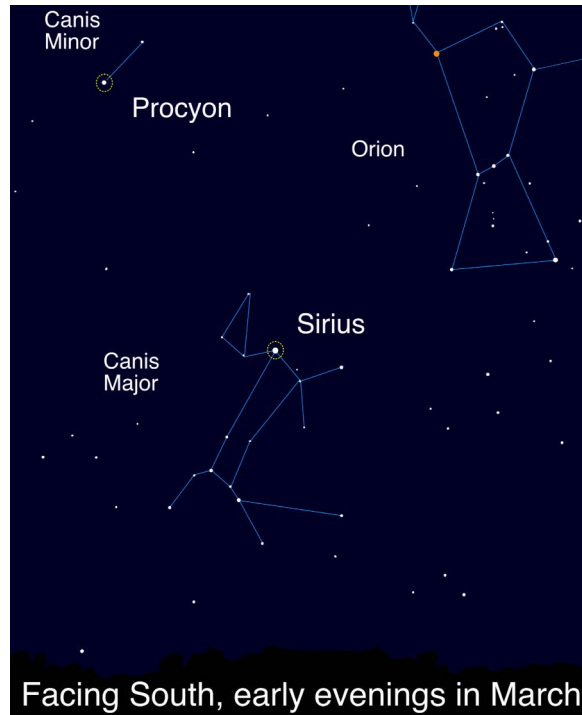
Sirius and Procyon are nicknamed the "Dog Stars," an apt name as they are the brightest stars in their respective constellations – Canis Major and Canis Minor – whose names translate to "Big Dog" and "Little Dog." Not everyone sees them as canine companions. As two of the brightest stars in the sky, they feature prominently in the sky stories of cultures around the world. Sirius also captures the imaginations of people today: when rising or setting near the horizon, its brilliance mixes with our atmosphere's turbulence, causing the star's light to shimmer with wildly flickering color. This vivid, eerie sight was an indication to ancient peoples of changes in the seasons, and even triggers UFO reports in the modern era!

Both of these bright stars have unseen companions: tiny, dense white dwarf stars, the remnants of supermassive companion stars. Interestingly, both of these dim companions were inferred from careful studies of their parent stars' movements in the 1800s, before they were ever directly observed! They are a challenging observation, even with a large telescope, since their parent stars are so very bright that their light overwhelms the much dimmer light of their tiny companions. The white dwarf stars, just like their parent stars, have differences: Sirius B is younger, brighter, and more energetic than Procyon B. Careful observations of these nearby systems over hundreds of years have helped advance the fields of: astrometry, the precise measurement of stars; stellar evolution; and astroseismology, the study of the internal structure of stars via their oscillations. Discover more about our stellar neighborhood at [nasa.gov](https://www.nasa.gov)!



Sirius A and B imaged by two different space telescopes, revealing dramatically different views! Hubble's image (left) shows Sirius A shining brightly in visible light, with diminutive Sirius B a tiny dot. However,

in Chandra's image (right) tiny Sirius B is dramatically brighter in X-rays! NASA, ESA, H. Bond (STScI), and M. Barstow (University of Leicester) (left); NASA/SAO/CXC (right)



Sirius and Procyon, the loyal hunting dogs of nearby Orion the Hunter! What other stories can you imagine for these stars? Image created with assistance from Stellarium.

44 YEARS OF THE PLEIADES

by David B. Viscio

Arguably the most observed deep sky object is the open star cluster The Pleiades, aka. Messier 45, Subaru, the Seven Sisters. It is large (2 degrees in diameter) and bright (containing 10 stars brighter than 6th magnitude), easily visible with the naked eye. It is a magnificent winter object. Although a beautiful sight to the naked eye, it is best observed with binoculars or small telescope at 15 to 20 magnification, revealing many more stars.

The Pleiades' large size, brightness and ease of locating make it a perfect first object for budding astro-imagers to photograph. It was one of the first objects I photographed on June 6, 1977 as I began astro-imaging. As image capture media, optics and techniques improved, I would return to The Pleiades and photograph it again.

The following 4 images show a 44-year progression of imaging. The first 2 images were captured on film, which was eventually scanned and digitized with a Nikon 35mm film/slide scanner at 3600dpi. The second 2 images were captured with digital single lens reflex cameras.



*June 6, 1977: Canon FTbN SLR, Canon FD 135mm f/2.5
Kodak Tri-X Black & White Negative Film, ASA400, 1-Minute*



*December 8, 1993: Canon FTbN SLR, Canon FD 135mm f/2.5
3M Scotch Chrome Color Slide Film, ASA400, 5-Minutes*



*November 16, 2009: Canon EOS 20D DSLR, Canon EF 180mm f/3.5
ISO1600, Stack of 30 1-Minute Sub-exposures*



*January 5, 2021: Canon EOS 60Da DSLR, Mini Borg 60ED f/3.8 Astrograph
ISO3200, Stack of 30 1-Minute Sub-exposures*

WHAT'S HAPPENING IN MARCH 2021

This calendar from In-The-Sky.org shows the objects and events visible during March 2021.

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1	2 C/2020 R4 (ATLAS) at perihelion Mercury at dichotomy	3 IC2602 is well placed	4 Asteroid 4 Vesta at opposition Close approach of Jupiter and Mercury Conjunction of Jupiter and Mercury	5 Moon at Last Quarter	6 Mercury at greatest elongation west
7	8 NGC 3532 is well placed	9 Conjunction of the Moon and Saturn Close approach of the Moon and Saturn	10 Conjunction of the Moon and Jupiter Neptune at solar conjunction Conjunction of the Moon and Mercury	11	12 C/2020 R4 (ATLAS) reaches its brightest	13 New Moon
14 γ-Normid meteor shower 2021	15	16	17	18	19 Conjunction of the Moon and Mars Close approach of the Moon and Mars	20 March equinox
21 Moon at First Quarter	22	23	24 10P/Tempel at perihelion	25	26 Venus at superior solar conjunction	27 136472 Makemake at opposition
28 Full Moon Venus at greatest brightness	29 Conjunction of Mercury and Neptune	30	31			

For additional information and details, see: <https://in-the-sky.org/newscal.php> and www.telescopius.com . Observing lists of monthly ‘Binocular’ and ‘Telescope’ Showpieces can be found on the club website.

NEED TO KNOW - ASK A MEMBER

A new 15-minute segment is being added to the regular general meetings where members can have their ‘burning’ questions answered by other knowledgeable members. If you have an astronomy related question you would like explained, submit the question to John Carter (jrcpvaz@icloud.com). You can also bring up the question at the meeting.

FOR SALE

Please visit the Classified Ads section of the club website to view the items posted there for sale:

<http://prescottastronomyclub.org/classified-ads/>

New items are added now and then, so don’t miss out on something that you would like to get for yourself...or a friend.



PAC MENTORS

If you need advice on the purchase of astronomy equipment, setting up equipment, astrophotography, etc., contact a PAC mentor.

Jeff Stillman - Astrophotography - (928) 379-7088

David Viscio - General - (928) 775-2918

Greg Lutes - Visual Observing - (928) 445-4430

Joel Cohen - Beginner’s Astronomy: Selecting & Using a Telescope - (856) 889-6496

John Carter - Video Observing - (928) 458-0570



OBSERVING LISTS

Observing lists are available in PDF format on the PAC website to provide guidance and goals for visual and astrophotography programs.



Astroleague Lunar 100	Binocular Showpieces
Bright Nebulae	Caldwell
Dunlop 100	Face-On Spiral Galaxies
Globular Clusters	Herschel 400
Herschel II	Hidden Treasures
Messier	Open Clusters
Planet Maps	Planetary Nebulae
Royal Astronomical Society of Canada Finest NGC	
Saguaro Astronomy Club Best NGC	S&T Lunar 100
Telescope Showpieces	The Secret Deep

PAC WEBSITE & YAHOO GROUPS

Website: <http://www.prescottastronomyclub.org>

E-mail: pacinfo@prescottastronomyclub.org

Astrophotography special interest group:

<https://groups.yahoo.com/neo/groups/pacastrophotography/info>



BOARD OF DIRECTORS

President: Jeff Stillman

Vice President: Open

Secretary: Open

Treasurer: Art Arnold-Roksandich

At Large: Jason Hoover

At Large: Dave Covey

At Large: Doug Tilley

At Large: Pat Bledsoe



PAC COORDINATORS



Astronomical League Coordinator: John Carter

Facebook: Adam England

Highland Center Coordinator: David Viscio

Membership: Art Arnold-Roksandich

METASIG: Russell Chappell

Newsletter: David Viscio

Night Sky Network: John Carter

PAC Affiliate Partner w/ NAU Space Grant Program – Cory Shaw

PAC Store Sales - John Verderame

Property Records: Open

Public Relations: Adam England

Refreshments: Open

Schools & Camps Outreach: Don Beaman & Joel Cohen

Starry Nights Coordinator: Don Beaman & Joel Cohen

Third Thursday Coordinator: Dave Covey, Marilyn Unruh

Webmaster: Russell Chappell

THE HORSEHEAD AND FLAME NEBULAE

Image Credit: John Verderame



Tele Vue NP101, Nikon D5300 DSLR, Optolong L-eNhance filter

Stack of 10 5-minute sub-exposures at ISO1600

Processed with DeepSkyStacker, LightRoom and Photoshop