



PAStimes

Phoenix Astronomical Society

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PHOENIX ASTRONOMICAL SOCIETY — ESTABLISHED 1948

Rogier Windhorst to Speak at January 14th Meeting: JWST: Black Hole Beauties

collected from various online sources provided by Dr. Windhorst

Rogier Windhorst is a Regents Professor at ASU's School of Earth and Space Exploration. Rogier Windhorst's research is in astronomy, cosmology, galaxy formation and evolution, the cosmic dark ages and the epoch of First Light, and astronomical instrumentation. Since the early 1990's, his group at ASU has contributed significantly to unraveling the formation and evolution of distant galaxies with the Hubble Space Telescope, and the role that supermassive black holes and Active Galactic Nuclei

have played in the process of galaxy assembly. He is one of the world's six Interdisciplinary Scientists for NASA's 6.5 meter James Webb Space Telescope (JWST) to be launched in 2021. His group at ASU plans to use JWST to map the epoch of First Light in detail.

This is an article about the James Webb Telescope:

<https://asunow.asu.edu/20180425-discoveries-see-first-born-stars-universe>

You can follow the JWST news here:

<https://www.jwst.nasa.gov/>



Join PAS on Jan 14, 2021, for Rogier Windhorst's presentation at 7:30pm via Zoom.

Thursday, January 14th PAS Meeting via Zoom

By Terri, Event Manager

Come join us at this fantastic meeting which will be held through Zoom at this link:

<https://us02web.zoom.us/j/87575425103?pwd=bnFmRUx4ZlFIY2VzdEtKNG5halkzUT09>

[wd=bnFmRUx4ZlFIY2VzdEtKNG5halkzUT09](https://www.jwst.nasa.gov/) as we welcome Rogier Windhorst as our Super Guest Speaker sharing his research from the James Webb Space Telescope. The meeting room virtually opens at

7pm, and the guest speaker will take the floor after a few brief announcements by President Mike. We hope to see you there. Invite the whole family! This meeting is open to everyone, so invite a friend!

End of the Year Dec 3 Meeting

By Terri Finch, Event Manager

Twenty nine people signed in to Zoom and joined the December 3rd PAS Meeting with the wonderful, very intriguing Guest Speaker - Dr. David Williams. It was a great turnout and a fantastic presentation by Dr. Williams. Dr. Williams shared information about Saturn's Largest Moon - Titan.

Many thanks to the PAS Host: Stu Brackney for hosting the meeting as well as managing the meeting. Many thanks also to Dr. Williams for a super informative presentation with lots of great data shared with the attendees.

PAS is looking forward to the January 14th PAS Meeting to start out the new year!

PAS invites everyone to attend and learn from the Guest Speakers PAS provides at these fun meetings. Looking forward to seeing you there. Happy New Year to all!

Sci-Fi Movie Trivia

The Martian (2015) -

NASA was consulted in order to get aspects of space and space travel, specifically in relation to Mars, with the most accuracy. NASA is federally funded, yet charges no one, including private for-profit organizations, any fees for use of and access to its archives and consultancy.



"Titan: Largest Moon of Saturn" was the awesome presentation given by Dr. David Williams at the Dec 3, 2020 PAS meeting. Photos borrowed from the internet.

President	Mike Marron	480-488-3031	President@pasaz.org
Vice President	Paul Facuna	602-246-1554	VicePresident@pasaz.org
Secretary and Webmaster	Pete Turner		Webmaster@pasaz.org
Treasurer	Eric Steinberg		Treasurer@pasaz.org
Event Manager	Terri Finch	602-561-5398	Events@pasaz.org
Newsletter Editor	Don K. Boyd		Editor@pasaz.org
PAS Host	Stu Brackney	480-221-5711	stubrackney@gmail.com
Librarian	Rod Sutter		Librarian@pasaz.org
Member at Large	Jenny Neujoy	602-787-6818	
Member at Large/Equipment Manager	Bruce Wurst	602 909 8024	Brulipps@yahoo.com

Phoenix Astronomical Society 3241 E Shea Blvd #249 Phoenix AZ 85028-3365

Phoenix Astronomical Society Awards \$500.00 Scholarship to PVCC Astronomy Student

By Sam Insana, PAS member and a Past President of PAS

For the second year in a row, PAS has awarded a \$500.00 scholarship to a PVCC student. This year's recipient is 20-year-old Kyle Marentes. He is a second year honor student with a 3.708 GPA. Once Kyle graduates with his Associate Degree in Science he plans to go to ASU and major in Astrophysics and minor in Physics. He would like to eventually work at an observatory or laboratory. Kyle enjoys his PVCC astronomy course and has stated "Astronomy, to me, is an unending source of knowledge...". He believes that we will eventually send humans to live in space. Kyle has attended PAS star parties at Black Mountain campus of PVCC and appreciates PAS members' telescopes and explanations

of constellations and objects in the night sky. He also has gone to Lowell Observatory and stargazed with telescopes in the Flagstaff area. Kyle has also been lucky enough to witness lunar and solar eclipses. Attached is a photo of this fine young man. All of us at PAS wish him the very best in his future career in astronomy.

PAS members Vera Stiesmeyer, Sam Insana, and Astronomy Professor and PAS Board member Jenny Neujoy, reviewed 8 scholarship applications and enjoyed working with Jessi Wright PVCC Director of Development, Alumni and Community Relations.



This year's recipient of the PAS \$500 Scholarship is 20-year-old Kyle Marentes. Photo provided by Sam Insana.

What's Up For January?

By Don K. Boyd, PAStimes Editor

Name	Date	Rise	Set
Mercury	01-15-21	08:33	18:55
Venus	01-15-212	06:29	16:23
Mars	1/15/2021	12:12	01:35
Jupiter	01-15-21	08:12	18:30
Saturn	01-15-21	08:02	18:17
Uranus	01-15-21	12:26	01:45
Neptune	01-15-21	10:19	19:54
Pluto	01-15-21	07:35	17:34

All Times Arizona Time

Bold means the object is "visible" in the evening

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January 15, 2020

Sunrise: 7:32

Sunset: 17:44

Q3: January 6

New: January 12

Q1: January 20

Full: January 28





Visitors to Both Jupiter and Saturn

By David Prosper

Have you observed Jupiter and Saturn moving closer to each other over the past few months? On December 21, the two worlds will be at their closest, around 1/5 of a full Moon apart! While the two gas giants may appear close, in reality they are hundreds of millions of miles apart. Despite this vast distance, a select few missions have visited both worlds by using a gravity assist from giant Jupiter to slingshot them towards Saturn, saving time and fuel.

Pioneer 11 was the first mission to visit both worlds! Launched in 1973, the probe flew past Jupiter in late 1974, passing just 26,400 miles above its stormy clouds. In 1979, it became the first spacecraft to encounter Saturn. Pioneer 11 took the first up-close photos of Saturn and its satellites, and made many exciting discoveries, including the detections of its magnetic field and a faint “F” ring, before departing Saturn and eventually, the solar system.

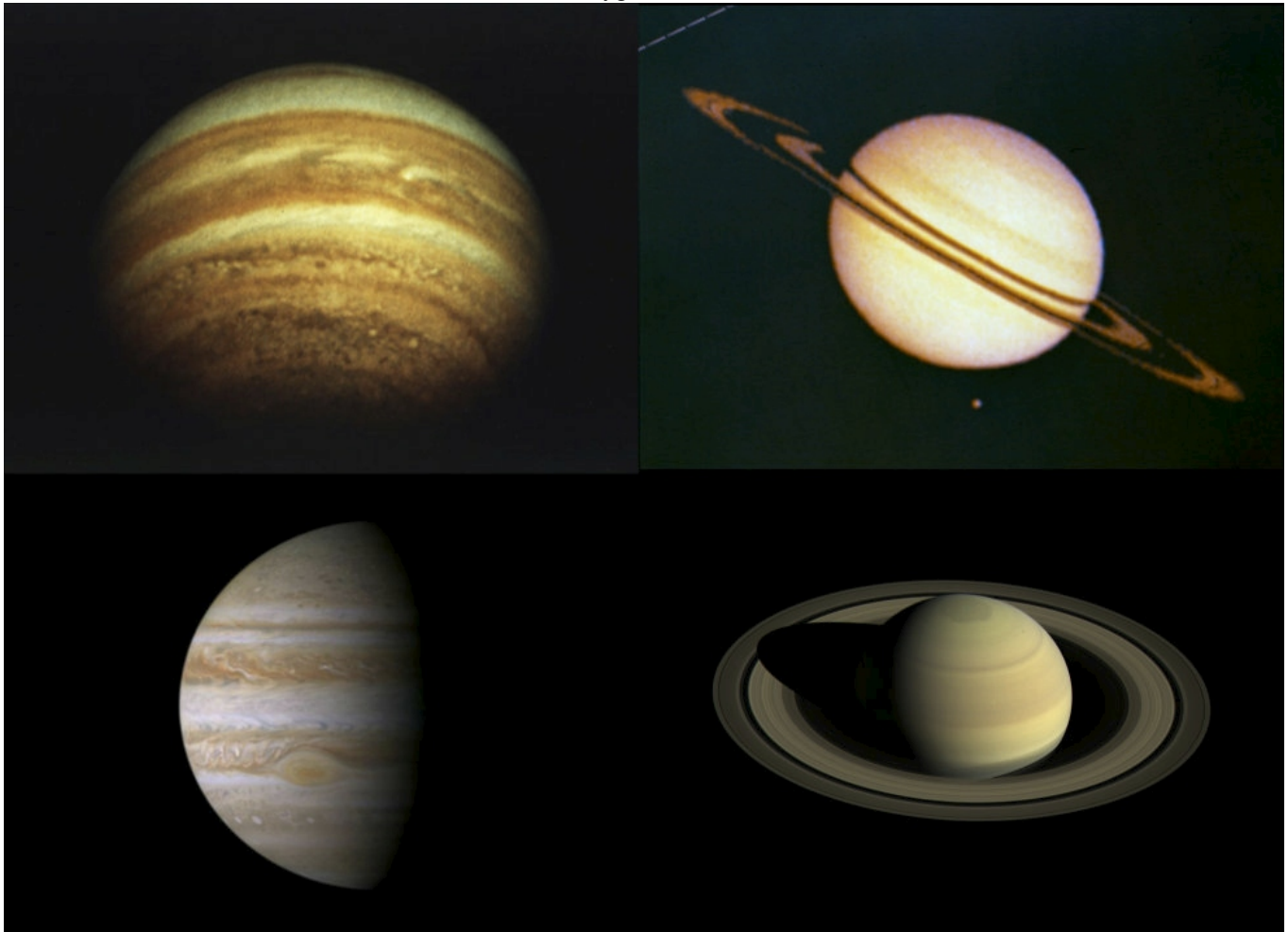
The Voyager missions quickly fol-

lowed up, taking a “Grand Tour” of the four largest and most distant planets in our solar system. Both probes were launched within two weeks of each other in 1977. Voyager 1 flew past Jupiter in March 1979, discovering Jupiter’s faint ring and two new moons, along with active volcanoes on Io’s surface! The probe then flew past Saturn in November 1980, discovering five new moons, a new “G” ring, mysterious ring “spokes,” and “shepherd moons” shaping the rings. After a brief encounter with Titan revealed evidence of complex organic chemistry and liquid on the moon’s frigid surface, Voyager 1 was flung out of the plane of the solar system. Following close behind, Voyager 2 took detailed photos of Jupiter’s moons and cloud tops in July 1979. Flying past Saturn in August 1981, Voyager 2 measured the thickness of Saturn’s rings and took detailed photos of many of its moons. This second explorer then captured images of Uranus and Neptune before leaving our solar system.

Cassini-Huygens was the last mission

to visit both worlds. Launched in 1997, the mission flew past Jupiter in late 2000 and took incredibly detailed photos of its stormy atmosphere and faint rings. Cassini entered into Saturn’s orbit on July 1, 2004. The Huygens probe separated from Cassini, landing on Titan to become the first probe in the outer solar system. Cassini discovered geysers on Enceladus, fine details in Saturn’s rings, many more moons and “moonlets,” the changing oceans of Titan, and seasonal changes on Saturn itself. After revolutionizing our understanding of the Saturnian system, Cassini’s mission ended with a fiery plunge into its atmosphere on September 15, 2017.

What’s next for the exploration of the outer worlds of our solar system? While Juno is currently in orbit around Jupiter, there are more missions in development to study the moons of Jupiter and Saturn. Discover more about future NASA missions to the outer worlds of our solar system at nasa.gov.



The difference in technology between generations of space probes can be stunning! The top two photos of Jupiter and Saturn were taken by Pioneer 11 in 1974 (Jupiter) and 1979 (Saturn); the bottom two were taken by Cassini in 2000 (Jupiter) and 2016 (Saturn). What kinds of photos await us from future generations of deep space explorers?

Agua Fria Observing Nov 14

By Mark Johnston, PAS Member

Saturday night Nov 14, Sam Insana, Diane Hakala and I went up to the Agua Fria site which was Bortle 3 last weekend. I took my short 100ED refractor to go after some wider field objects. Got some improved results. Sam left just before midnight and Diane and I hung around another 90 minutes to capture some winter targets. I'm finding on the reflection nebula in par-

ticular (e.g Witches Head, Iris) that a really dark site is vital to a decent image. A few examples of my better results shown here. Enjoy!

*first time

**best so far for me

California Nebula**

M31/32/110**

Comet Atlas in Orion (and Bellatrix)*

Flaming Star Nebula*

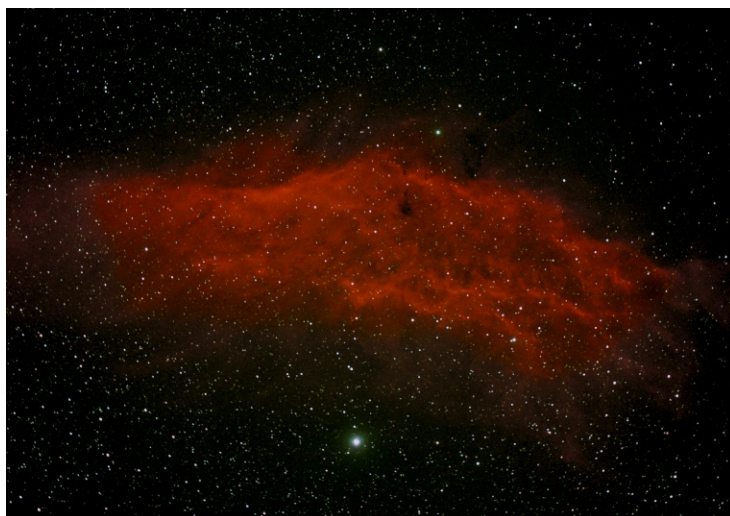
Horsehead**

Jellyfish Nebula*

Seagull Nebula*

Pelican Nebula**

Iris Nebula**



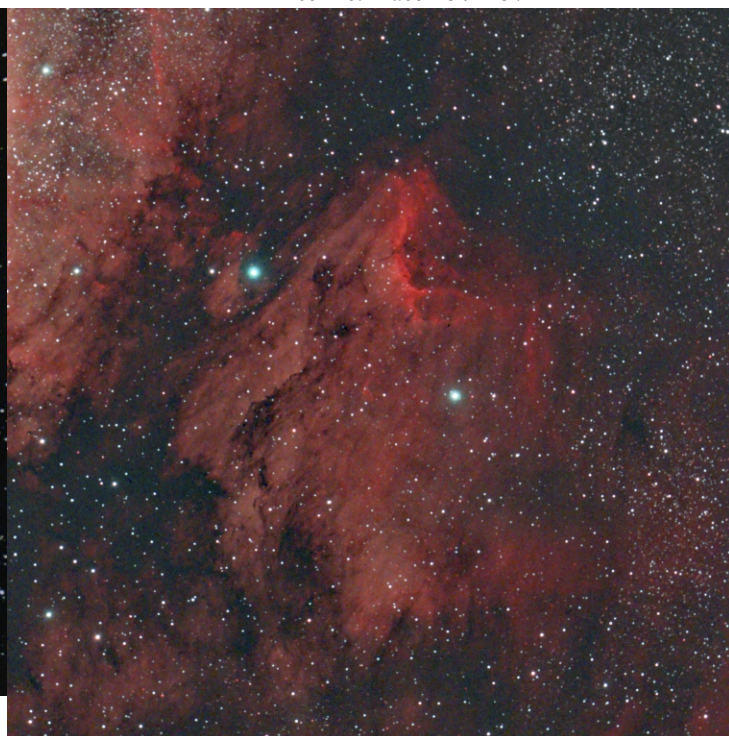
The California Nebula is an emission nebula located in the constellation Perseus. It is so named because it appears to resemble the outline of the US State of California on long exposure photographs.



Flaming Star Nebula IC 405 is an emission and reflection nebula in the constellation Auriga, surrounding the bluish star AE Aurigae. It shines at magnitude +6.0. Its celestial coordinates are RA 05^h 16.2^m dec +34° 28'.



Comet Atlas 2020 C/2019 Y4 (ATLAS) is a comet with a near-parabolic orbit discovered by the ATLAS survey on December 28, 2019. It is currently in the constellation Monoceros. Early predictions based on the brightening rate suggested that the comet could become as bright as magnitude 0, matching the brightness of Vega.



The Pelican Nebula is an H II region associated with the North America Nebula in the constellation Cygnus. The gaseous contortions of this emission nebula bear a resemblance to a pelican, giving rise to its name.



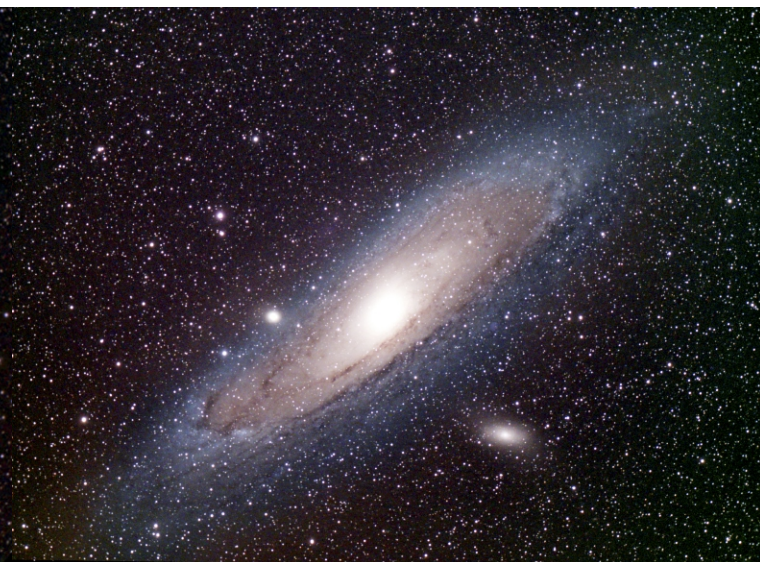
The Horsehead Nebula is a small dark nebula in the constellation Orion. The nebula is located just to the south of Alnitak, the easternmost star of Orion's Belt, and is part of the much larger Orion Molecular Cloud Complex.



The Jellyfish nebula IC 443 is a galactic supernova remnant in the constellation Gemini. In the plane of the sky, it is located near the star Eta Geminorum. Its distance is roughly 5,000 light years from Earth. IC 443 may be the remains of a supernova that occurred 3,000 - 30,000 years ago.



The Iris Nebula is a bright reflection nebula in the constellation Cepheus. The designation NGC 7023 refers to the open cluster within the larger reflection nebula designated LBN 487. The nebula, which shines at magnitude +6.8, is illuminated by a magnitude +7.4 star designated SAO 19158.



The Andromeda Galaxy, also known as Messier 31, M31, or NGC 224 and originally the Andromeda Nebula, is a barred spiral galaxy approximately 2.5 million light-years from Earth and the nearest major galaxy to the Milky Way.

2021 PAS GUEST SPEAKERS

By Terri Finch, Event Manager Events@pasaz.org

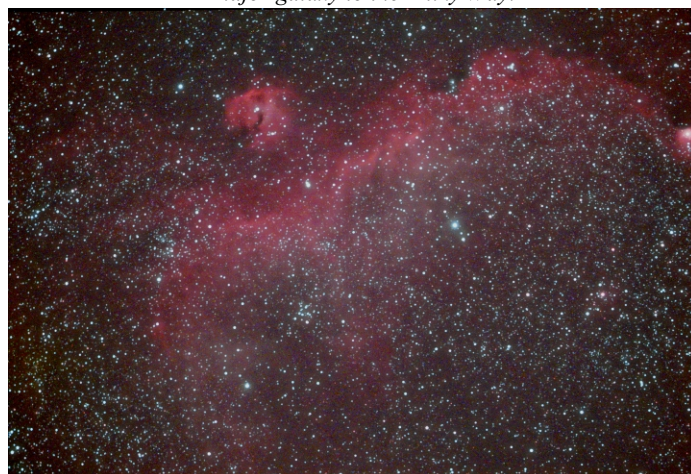
Due to the Covid-19 pandemic, PAS Meetings are being held via Zoom over the internet. It is planned that a few days before the meeting, the Zoom link will be added to the calendar listing for that night's meeting. Please visit the PAS calendar to find out more about these upcoming Virtual Meetings and Guest Speakers.

Do you have an idea for a guest speaker? Email Terri Finch, Paul Facuna, or Mike Marron the details (their email addresses are at the top of page 2 of this newsletter). Here are the next scheduled guest speakers at PAS:

Feb 4: Tom Field, "You Could Almost Touch the Stars"

Mar 4: TBA

Apr 1: David Jacobs: Cubestats



Seagull Nebula IC 2177 is a region of nebulosity that lies along the border between the constellations Monoceros and Canis Major. It is a roughly circular H II region centered on the Be star HD 53367.

PAS In-Person Events

By Terri Finch, Event Manager

PAS gets quite a few inquiries as to IF the club is holding in-person events. Due to the Pandemic, PAS will NOT be holding any in-person events until at least after May 2021. In the interim, PAS is hosting virtual

PAS General Meetings with Guest Speakers. By holding meetings remotely via Zoom, PAS may offer more than one Guest Speaker Meeting in a month. Watch the PAS

Calendar

<https://www.pasaz.org/public-members->

[only-calendars](#) for more events to become available for your astronomical enjoyment! Together, staying safe, socially distanced and healthy, we can beat this virus and hopefully return to the in-person events that everyone is seeking to attend.

Astronomy Equipment for Sale

By Terri, Event Manager & Assistant Newsletter Editor

Do you have some astronomy related items you'd like to sell before the holiday season? Prepare an ad and send it my way so that Don and I can help you sell it through the club newsletter. PAS Members get this service for free. Items you may wish to sell: Books, Star Charts, Telescopes, Eyepieces, Finder Scopes, and more. As long as it is astronomy related, I will happily add it to the newsletter. Please include all items you wish to sell, and what is included with those items. Price them, and provide the contact info for the way you wish to be notified, such as email or phone number. I await your submissions to Events@pasaz.org. Start Today. Your deadline for the next issue is Jan 10th.

1. **Meade Instruments' LX600-ACF 10" f/8 Cassegrain GoTo Telescope** Brand new (assembled but never used) LX600 ACF 10" F/8 Meade Reflector Telescope

with heavy duty tripod and dolly base for sale \$3500.00 cash. Telescope mount and Tube lists for \$4,669.00, includes heavy duty Meade field tripod lists for \$649, JMI Universal wheeley bar lists for \$578.00 with (6)10" wheels. Complete with weather cover. Priced to go, I need to move back to the East coast. Buyer must pick up scope, located in North Scottsdale, Az. Contact Michael Morgan, Telephone: 1-914-433-9363 Package Includes: Meade LX600-ACF 10" f/8 Cassegrain GoTo Telescope with Tripod and Star-Lock Meade #828 8x50 Rear-Focus Viewfinder (Blue), Meade Giant Field Tripod, Meade Series 4000 26mm Super Plossl Eyepiece (1.25"), 90° Star Diagonal, AutoStar II Hand Controller, Hand Controller Holder, #507 Connection Cable, USB to RS232

Adapter, 3x Anti-Vibration Foot Pads, AutoStar Suite Software.

2. **Obsession 20 inch f/5 telescope** with OMI primary, with enhanced primary. 98% Brilliant Diamond enhanced secondary, including ServoCAT GoTo drive with Argo Navis DSC. 20K upgraded res encoders, Upgrade to Feather-touch focuser. Asking \$6,000. Bruce, bmende888@gmail.com
3. **Celestron CG-5/AVX/CGEM POLAR FINDERSCOPE** - \$40, Orion SkyLine Deluxe Green Laser Pointer & Telescope Bracket - \$50. Contact Richard Richard@sauerbrun.com
4. **SkyShed POD** for sale, Desert Tan, 3 Bays (XL3), in excellent and pristine condition, pickup only unless delivery can be worked out. Asking \$2,300. Tim (info@starlitridge.com)

Binocular Objects to View

Compiled by Sam Insana

Even though most night sky objects look best in telescopes, binoculars can show galaxies, nebulae, globular clusters, open clusters, stars, double stars, the moon, some comets and Jupiter with its 4 Galilean Moons.

7 x 35 or 7 x 50 are the smallest recommended, and the standard 10 x 42 or 10 x 50 are even better. The astronomy binoculars like 20 x 80, or 25 x 100 can be very heavy and require a tripod to hold steady. (The first number is the power or magnification, and the second number is the diameter of the 2 big lenses in millimeters). The following are some of the favorite deep sky objects PAS members enjoy with binocu-

lars. We have listed the season of the year and the constellations to help locate them.

Fall: Andromeda Galaxy M31; Milky Way Galaxy; M15, Globular Cluster in Pegasus; Perseus, Double Open Star Clusters

Winter: Pleiades Open Star Cluster M45 in Taurus; Orion Nebula M42; Open Star Cluster M35 in Gemini; M36 Open Star Cluster in Auriga; M37 Open Star Cluster in Auriga; M38 Open Star Cluster in Auriga; Betelgeuse in Orion red-orange star; Rigel in Orion blue-white star; Aldebaran in Taurus red giant star

Spring: Beehive Open Star Cluster M44 in Cancer; M50 Open Star Cluster in Monoceros; M41 Open Star Cluster in

Canis Major; Mizar Double star in Ursa Major

Summer: Lagoon Nebula M8 in Sagittarius; Trifid Nebula M 20 in Sagittarius; Hercules Globular Cluster M13; M25 Open Cluster in Sagittarius; M22 Globular Cluster in Sagittarius; Delta Lyra, red/blue double star; Epsilon Lyra, wider components of the double double star; "False Albireo" Alpha and 8 Velpeculae double star; Omicron 1 and 2 blue/orange double star; 31 Cygni, wide triple star; Deneb in Cygnus blue-white star; Summer Triangle of 3 stars Deneb in Cygnus, Vega in Lyra, Altair in Aquila; Coll399 in Vulpecula "Coat Hanger" Asterism group of stars