



ASTROFILES

Auburn Astronomical Society Newsletter

October 2020

Newsletter Editor — John Wingard — jwin1048@gmail.com

Moon Phases

October 23 — First Quarter

October 31 — Full Moon

November 8 — Last Quarter

November 15 — New Moon

November 21 — First Quarter

November 30 — Full Moon

December 7 — Last Quarter

December 14 — New Moon

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<https://www.facebook.com/groups/79864233515/>

Latest News and Events

As we transition into fall (although it still feels more like summer) we hope that everyone is still doing well during these trying times. The year 2020 has certainly been one to remember, although most of us would just as soon forget it! There's not much to report on the club activities again this month. I know that some of us are going out individually and doing some observing or photography and there are a couple of such examples later in this issue.

The AAS would like to welcome back home as "new" members Bob McGwier and his wife Sharon. They are originally from Alabama and Bob recently retired and re-located to East Alabama just outside of Opelika. He has had a very impressive career in Academia, engineering, astronomy and business and we look forward to meeting Bob and Sharon in person. They both happen to be amateur radio operators as well. Bob's call is N4HY and Sharon's call is N1SMM. They are looking forward to participating in our activities. Bob was a member of the AAS way back when the club had a roll-top observatory outside of Auburn. Bob and fellow AAS member Russell Whigham were the first in the U.S. to spot the return of Halley's Comet in October of 1985. Pictured below is a photo from the Lee County Bulletin of Bob and Russell at the club observatory. Unfortunately, the observatory had to be dismantled and removed at a later date.



McGwier, left, and Whigham sighted comet

Featured photos from AAS members

The impressive image below is of the magnificent Andromeda galaxy, M31, captured this time by AAS member Chris Young with a 102 ED APO refractor. The image processing was done by AAS member Jay Hall using PixInsight. It has been rendered in HaLRGB format. Chris and Jay have worked together on quite a few imaging sessions and they are producing some fantastic images.

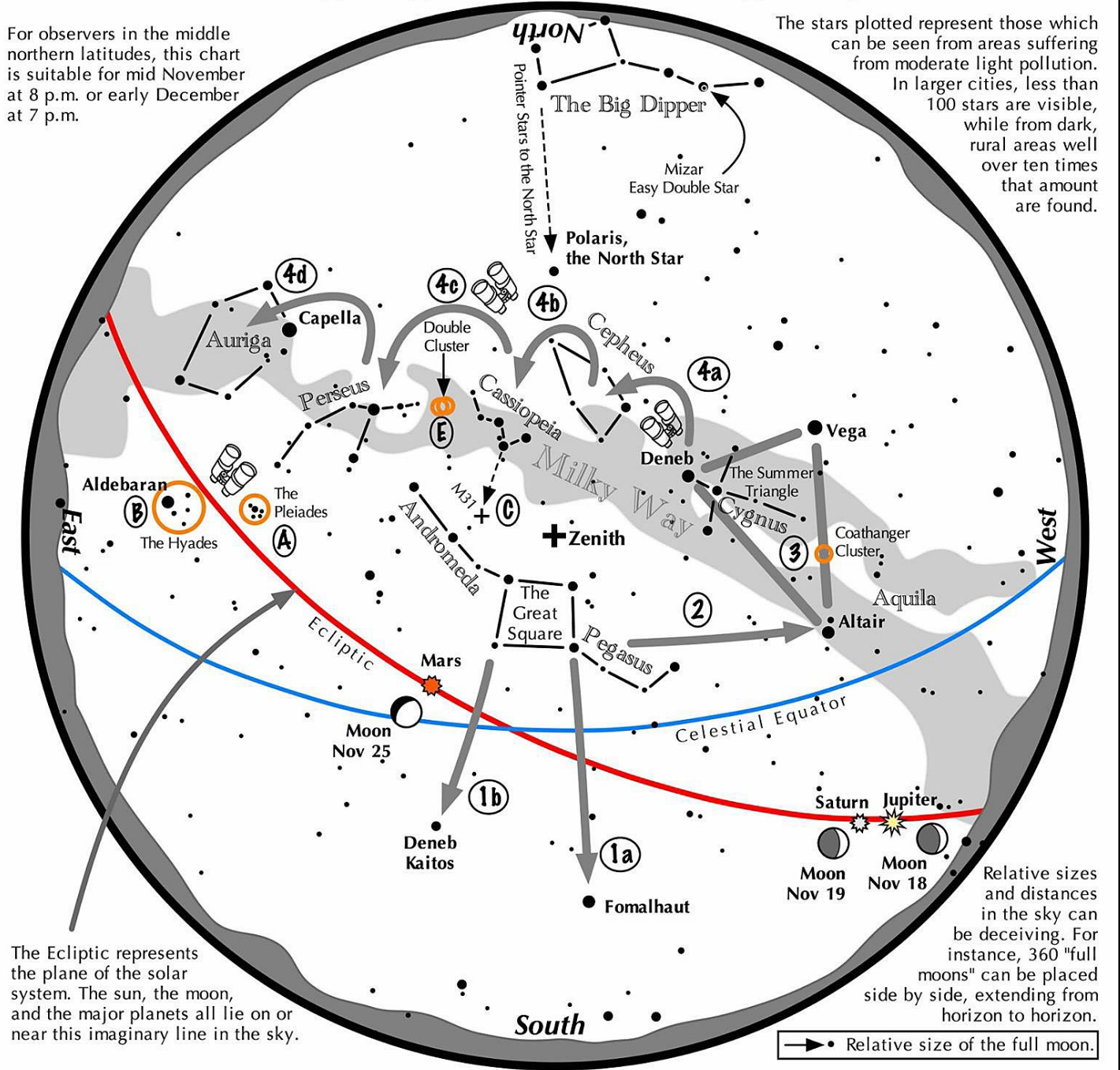


The photo of Mars at the left was taken by AAS member John Wingard earlier this month. It was captured using a Questar 3.5" scope, a 3X focal extender and an ASI 174-MC camera. This was not long after the closest approach of Mars to the Earth during the current opposition and likely the best one until 2033..

Navigating the November Night Sky

For observers in the middle northern latitudes, this chart is suitable for mid November at 8 p.m. or early December at 7 p.m.

The stars plotted represent those which can be seen from areas suffering from moderate light pollution. In larger cities, less than 100 stars are visible, while from dark, rural areas well over ten times that amount are found.



The Ecliptic represents the plane of the solar system. The sun, the moon, and the major planets all lie on or near this imaginary line in the sky.

Relative sizes and distances in the sky can be deceiving. For instance, 360 "full moons" can be placed side by side, extending from horizon to horizon.

→• Relative size of the full moon.

Navigating the November night sky: Simply start with what you know or with what you can easily find.

- 1 Face south. Almost overhead lies the "Great Square" with four stars about the same brightness as those of the Big Dipper. Extend a line southward following the Square's two westernmost stars. The line strikes Fomalhaut, the brightest star in the south. A line extending southward from the two easternmost stars, passes Deneb Kaitos, the second brightest star in the south.
- 2 Draw a line westward following the southern edge of the Square until it strikes Altair, part of the "Summer Triangle."
- 3 Locate Vega and Deneb, the other two stars of the Summer Triangle. Vega is its brightest member, while Deneb sits in the middle of the Milky Way.
- 4 Jump along the Milky Way from Deneb to Cepheus, which resembles the outline of a house. Continue jumping to the "W" of Cassiopeia, then to Perseus, and finally to Auriga with its bright star Capella.

Binocular Highlights

A and B: Examine the stars of the Pleiades and Hyades, two naked eye star clusters. **C:** The three westernmost stars of Cassiopeia's "W" point south to M31, the Andromeda Galaxy, a "fuzzy" oval. **D:** Sweep along the Milky Way from Altair, past Deneb, through Cepheus, Cassiopeia and Perseus, then to Auriga for many intriguing star clusters and nebulous areas. **E:** The Double Cluster.

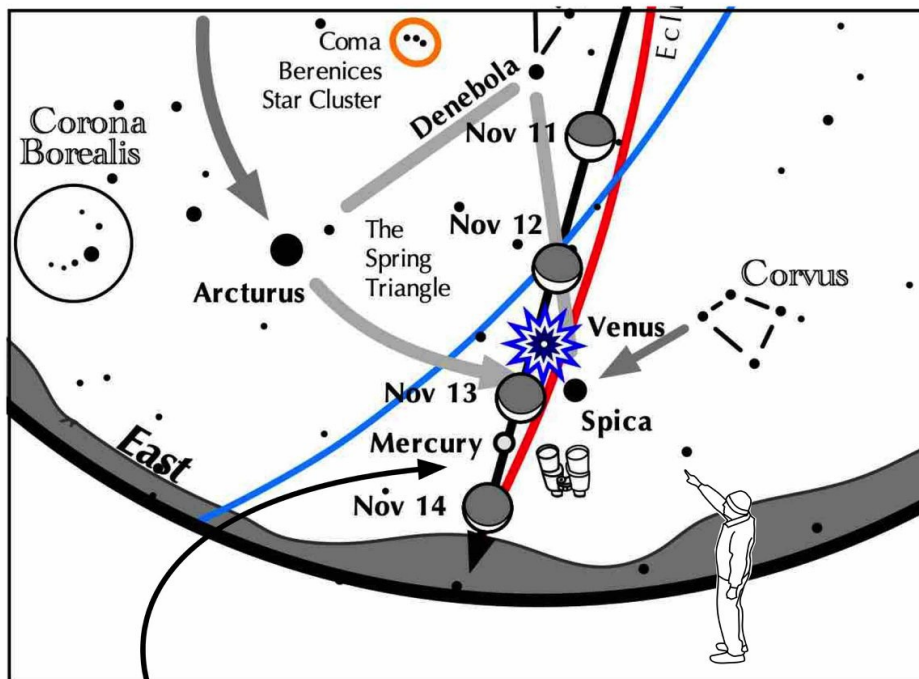


Astronomical League www.astroleague.org/outreach; duplication is allowed and encouraged for all free distribution.

If you can observe only one celestial event this month, see this one:

Mercury, Venus, Spica, and the crescent Moon in the morning twilight

Have you ever spotted Mercury? Many stargazers have not. November 4 through November 22 presents a good opportunity to catch the elusive little planet in the morning sky.



- Look low into the east-southeastern twilight **forty minutes before sunrise**.

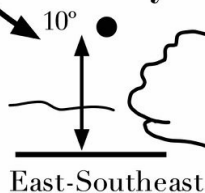
- Mercury will be placed 1 fist width above the horizon on Nov. 6 – 15. Directly to its right, twinkles Spica on Nov. 2–7.

- Bright Venus is about twice the distance from the horizon as the dimmer Mercury.

- The waning crescent Moon glows just above Venus on November 12; and between Venus and Mercury on November 13. Spica lies just to the right of the Moon.



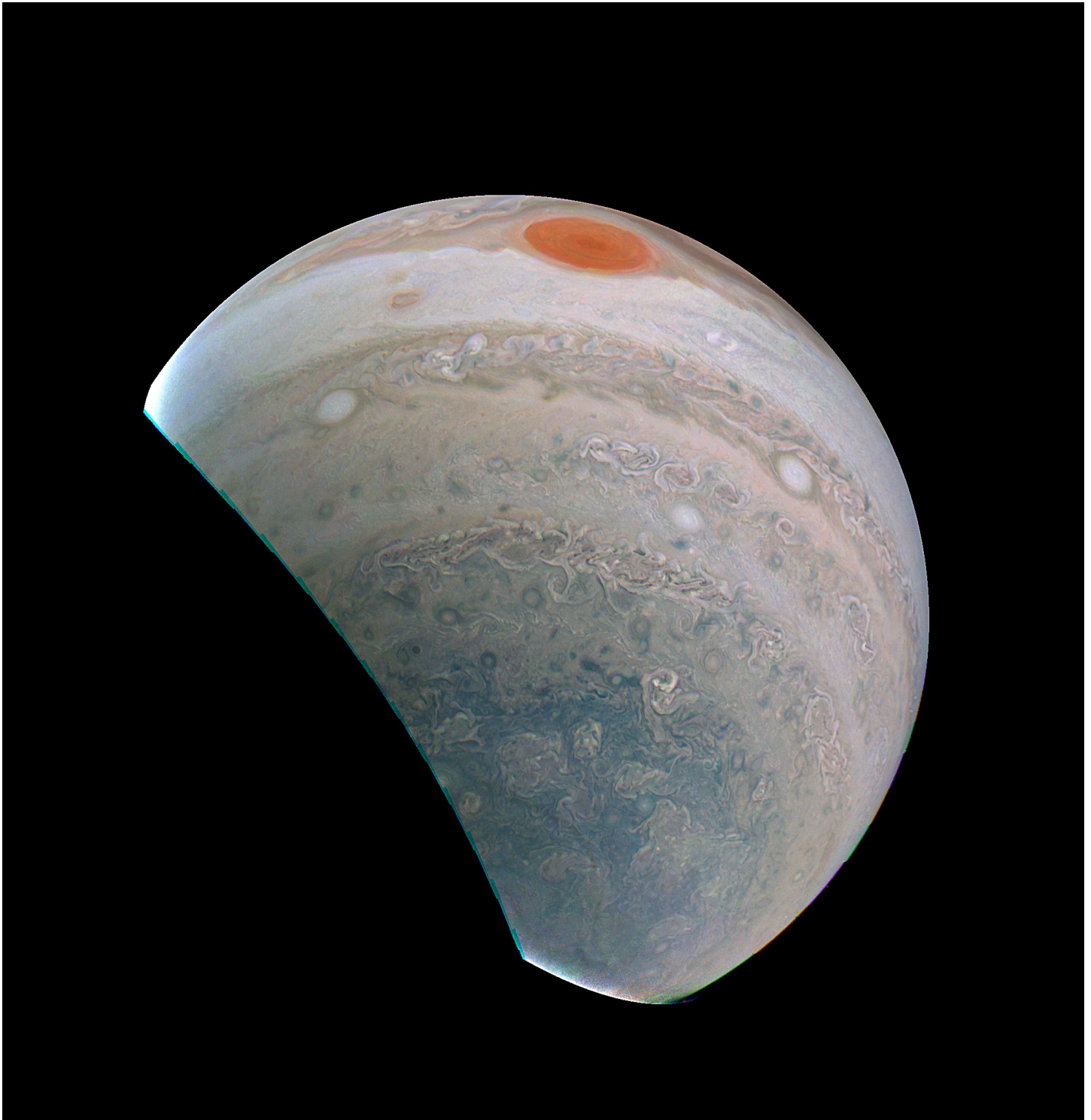
Mercury



Mercury appears about "1 fist-width on a fully extended arm" above the true east-southeastern horizon forty minutes before sunrise.

You may have seen some of the incredible images of Jupiter that have been coming in from NASA's Juno spacecraft currently in orbit around the planet. They are taken by the probe's JunoCam imager. However, the camera system is not the primary mission, that being to study the planet's magnetic field and atmosphere. NASA has created a web page where the raw camera images are made available for anyone to download them and play with them using their own imaging processing software. I just recently downloaded the image below and did some basic processing in Adobe Photoshop. I picked this particular one since it featured "The Great Red Spot." The spacecraft is in a very large polar orbit that affords some rather unusual views of the planet but the beauty of most of these images is in the intricate details contained in the various cloud bands. If you would like to try some of these you can go to the website below:

<https://www.missionjuno.swri.edu/junocam/processing>





This article is distributed by NASA Night Sky Network

The Night Sky Network program supports astronomy clubs across the USA dedicated to astronomy outreach. Visit nightsky.jpl.nasa.gov to find local clubs, events, and more!

The International Space Station: 20 Continuously Crewed Years of Operation

David Prosper

Did you know that humans have been living in the International Space Station, uninterrupted, for twenty years? Ever since the first crew members docked with the International Space Station (ISS) in November 2000, more than 240 people have visited this outpost, representing 19 countries working together. They have been busy building, upgrading, and maintaining the space station - while simultaneously engaging in cutting-edge scientific research.

The first modules that would later make up the ISS were launched into orbit in 1998: the Russian Zarya launched via a Proton-K rocket, and the US-built Unity module launched about a week and a half later by the Space Shuttle Endeavour. Subsequent missions added vital elements and modules to the Space Station before it was ready to be inhabited. And at last, on November 2, 2000, Expedition-1 brought the first three permanent crew members to the station in a Russian Soyuz capsule: NASA astronaut William M. Shepherd and Russian cosmonauts Sergei Krikalev and Yuri Gidzenk. Since then, an entire generation has been born into a world where humans continually live and work in space! The pressurized space inside this modern engineering marvel is roughly equal to the volume of a Boeing 747, and is sometimes briefly shared by up to 13 individuals, though the average number of crew members is 6. The unique microgravity environment of the ISS means that long-term studies can be performed on the space station that can't be performed anywhere on Earth in many fields including space medicine, fluid dynamics, biology, meteorology and environmental monitoring, particle physics, and astrophysics. Of course, one of the biggest and longest experiments on board is research into the effects of microgravity on the human body itself, absolutely vital knowledge for future crewed exploration into deep space.

Stargazers have also enjoyed the presence of the ISS as it graces our skies with bright passes overhead. This space station is the largest object humans have yet put into orbit at 357 feet long, almost the length of an American football field (if end zones are included). The large solar arrays – 240 feet wide - reflect quite a bit of sunlight, at times making the ISS brighter than Venus to observers on the ground! Its morning and evening passes can be a treat for stargazers and can even be observed from brightly-lit cities. People all over the world can spot the ISS, and with an orbit only 90 minutes long, sometimes you can spot the station multiple times a night. You can find the next ISS pass near you and receive alerts at sites like NASA's Spot the Station website (spotthestation.nasa.gov) and stargazing and satellite tracking apps.

Hundreds of astronauts from all over the world have crewed the International Space Station over the last two decades, and their work has inspired countless people to look up and ponder humanity's presence and future in space.

You can find out more about the International Space Station and how living and working on board this amazing outpost has helped prepare us to return to the Moon - and beyond! - at [nasa.gov](https://www.nasa.gov).



The ISS photobombs the Sun in this amazing image taken during the eclipse of August 21, 2017 from Banner, Wyoming. Photo credit: NASA/Joel Kowsky More info: bit.ly/eclipseiss



A complete view of the ISS as of October 4, 2018, taken from the Soyuz capsule of the departing crew of Expedition 56 from their Soyuz capsule. This structure was built by materials launched into orbit by 37 United States Space Shuttle missions and 5 Russian Proton and Soyuz rockets, and assembled and maintained by 230 spacewalks, with more to come! Credit: NASA/Roscosmos More info: bit.ly/issbasics



Auburn Astronomical Society Membership Application Form

Name:

Address:

City: _____ State: _____ Zip: _____

Phone: _____ Date of Application* ____/____/____

E-mail:

Telescope(s):

Area(s) of special interest:

Enclose: \$20.00 for regular membership, payable in January. *Full-Time* student membership is half the Regular rate.

If you are a NEW member joining after the first of the year, refer to the prorated table below

Jan \$20.00	Feb \$18.33	Mar \$16.66	Apr \$14.99	May \$13.33	Jun \$11.66
Jul \$10.00	Aug \$8.33	Sep \$6.66	Oct \$4.99	Nov \$2.33	Dec \$1.66

Make checks payable to: Auburn Astronomical Society and return this application to:

Auburn Astronomical Society
c/o John Wingard, Secretary/Treasurer
#5 Wexton Court
Columbus, GA 31907

For questions about your dues or membership status, contact: jwin1048@gmail.com

Thank you for supporting the Auburn Astronomical Society!