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**THE MORRIS MUSEUM
ASTRONOMICAL SOCIETY**

President - Anthony Pisano
 VP - Bob Caccaro
 Secretary - Bill Eberly
 Treasurer - Ron Furia
 Webmaster & Newsletter Editor
 Anthony Pisano

The *Heavenly Herald* is produced quarterly for the membership of the Morris Museum Astronomical Society

CONTACT INFORMATION

Address:
 6 Normandy Hts. Rd.
 Morristown, NJ. 07960
 (973) 637-0178
 Email:
mmastrosociety@gmail.com
 Web Address:
www.mmastrosociety.org
[Facebook.com/mmastrosociety](https://www.facebook.com/mmastrosociety)

Member of



Message from the President

Anthony Pisano, President

I hope this newsletter finds you all well, healthy and safe.

I am not going to dwell on the on-going historical events that are taking place as I type this. There are much better writers that will be able to put the world wide pandemic into perspective much better than I can.

The board of directors has taken on the task of updating and modifying the MMAS Constitution and By-Laws. All board members have played a part in the re-write, and I thank them all for the outstanding work they have done. We now have a finished product and we will be emailing out a copy to all the members before the May meeting.

As for our meetings. Unfortunately the virus has caused the muse-

DUES ARE DUE!!

\$20.00 for a family membership per year.
You can:

1. Give the Treasurer cash or check at the next meeting on March 12.
2. Send a check to:

Morris Museum Astronomical Society
 Attention: Treasurer
 6 Normandy Heights Road
 Morristown, NJ 07960

um to close indefinitely. That, not surprisingly, caused the cancellation of our April membership meeting and Astronomy Day 2020. Our April speaker has been rescheduled for November and we will revisit Astro Day next year. We hope to get back on track in May and June with our regular meetings before our summer break.

Reminder: please pay your dues to the treasurer ASAP, if you haven't

Club Meetings

May 14	Al Witzgall	"The Treasure Boxes of Apollo"
Jun. 11	Pizza Party	The gastronomical society invites you to stop by, catchup with friends and eat!!!!

Monthly Meetings are the second Thursday of each month at 7:00PM. No meetings Jan., Feb., Jul., & Aug. check the website for specific information.

Bright Comet ATLAS Could Blaze into View this Month

By: Joe Rao, Space.com

Already visible in telescopes and high-power binoculars, the comet may be bright enough to see with the naked eye by the end of April. There has been a lot of talk in recent days on social media regarding the approach of a new comet that could possibly evolve into a spectacular sight in the coming weeks ahead.

The comet has been christened "ATLAS" which is an acronym for Asteroid Terrestrial-Impact Last Alert System ("ATLAS"); a robotic astronomical survey and early warning system based in Hawaii, optimized for detecting smaller near-Earth objects a few weeks to a few days before they impact Earth.

When first sighted on Dec. 28, 2019, the comet was an exceedingly faint object, but in the days and weeks that followed, it brightened at an incredibly rapid pace. In fact, from the time of discovery through March 17, Comet ATLAS increased some 27,500-fold in brightness!

Such an incredible rise in luster, plus the fact that calculations showed that it was moving an orbit virtually identical to the "Great Comet of 1844," suggested that ATLAS was on its way to becoming a dazzling object. Indeed, some calculations suggested that when the comet arrives at perihelion — its closest point to the sun — on May 31 — that it might rival the planet Venus or even the full moon in brilliance!

But based on observations made over the past couple of weeks, that doesn't look very likely to happen.

What happened?

For all intents and purposes, Comet ATLAS hit a wall on March 17. Ever since that time, the comet's incredible rise in brightness has dramatically slowed. Over the last two weeks, the comet has brightened by only about 0.5 magnitude. As of April 1, a consensus of observations taken

the Comet Observations Database showed Comet ATLAS hovering at around magnitude +8.0. That's within range of a small telescope or good binoculars, though many have had difficulty in seeing it because its head, or "coma" is so large

Sizzler or fizzler?

The best way to determine if a comet is going to put on a good show is to pin down whether it is a "new" comet moving in a parabolic orbit. Comets that have been around the sun before will appear to be traveling around our star in the shape of a stretched ellipse, because gravitational interactions during their journeys through the solar system have reshaped their orbits. "New" comets, on the other hand, travel in parabolic orbits because they literally fall from the depths of space toward the sun in a straight line, swing around the sun and are then flung back out into space.

Where to look and when

On a positive note, its path through the constellations will continue to be very favorable for Northern Hemisphere observers as it will remain circumpolar — always remaining above the horizon. As darkness falls, it will be positioned more than halfway up in the north-northwest sky. The comet currently resides within the boundaries of Camelopardalis, the giraffe — a rather dim, shapeless star pattern. There it will stay right on through April.

As to how bright Comet ATLAS may get, I have followed the predicted light curve of Japanese comet expert Seiichi Yoshida, which is posted on his "Visual Comets in the Future" website. His values suggest that ATLAS might become faintly visible to the unaided eye by the end of April or beginning of May. By mid-May, the comet might reach second magnitude — as bright as Polaris, the North Star. During the final week of May, as the comet disappears into the glare of the setting sun, it possibly could attain first magnitude or brighter.

Then again, it could also disappoint. We're just going to have to wait and see.

Trailblazing Astronomer Margaret Burbidge, Who Helped Reveal What Happens Inside Stars, Dies at 100

By: Meghan Bartels, Space.com

Margaret Burbidge, an astronomer who made vital contributions to our understanding of what happens inside stars and who worked on instruments for the Hubble Space Telescope, has died at 100.

The University of California, San Diego, where Burbidge had worked from 1962 to 1988, announced her death on Twitter Monday (April 6), noting that she had died on Sunday (April 5). Burbidge was most famous for her work establishing how stars produce increasingly heavy elements and distribute them throughout the universe.

In the 1950s, the fact that elements are born in stars had already been established, but the mechanism was unknown. Burbidge led a four-person team that published a 100-page paper outlining the details of the reactions that take place within stars, astronomical observations that supported the idea, and a hypothetical chain of events that would cause stellar explosions that distributed elements across space. A colleague later won the Nobel Prize for the team's research on these stellar reactions.

"It was the first, and still is, the most important paper that's ever been written on that subject ... giving you the cookbook of how you make the elements and why," Mark Thiemens, a chemist at the University of California, San Diego, [said in a statement](#) released to commemorate Burbidge's 100th birthday.



The work led some to nickname Burbidge "Lady Stardust" in recognition of her role discovering how the reactions that take place within stars create the elements all around us.

Burbidge also researched quasars, or super-massive black holes that create high-speed jets, including using data gathered by the Hubble Space Telescope on such objects. She encouraged the construction of Hubble, including working on the Faint Object Spectrograph, which spent seven years observing in space.

Like many other female astronomers conducting research in the 20th century, Burbidge had to break through systemic obstacles to her work. At one point, she gained access to a premier observing facility by pretending to be an assistant to her husband, who was also an astronomer and who collaborated on her stellar chemistry work.

Later in her career, she declined a prominent award for women in astronomy, writing, "It is high time that discrimination in favor of, as well as against, women in professional life be removed."

Born in 1919, Burbidge grew up in the U.K., fell in love with the night sky as a child, and worked in her father's chemistry lab.

When she saw a [spiral galaxy](#) for the first time, according to astrophysicist Andreea Font of Liverpool John Moores University commemorating Burbidge's centenary in [The Conversation](#), she wrote: "I felt it was almost sinful to be enjoying astronomy so much, now that it was my job and the source of my livelihood."

Night Sky Network

Astronomy Clubs bringing the wonders of the universe to the public



The Moon





APR. 2020

	First Quarter	01
	Full Moon	07
	Last Quarter	14
	New Moon	22

MAY. 2020

	First Quarter	30
	Full Moon	07
	Last Quarter	14
	New Moon	22

JUN. 2020

	First Quarter	29
	Full Moon	05
	Last Quarter	13
	New Moon	21

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A Spacecraft Headed to Mercury Will Observe the Moon this Week During an Earth Flyby

By: Meghan Bartels, Space.com

The BepiColombo mission, a joint project of the European Space Agency and the Japan Aerospace Exploration Agency. The mission is ultimately bound for Mercury, but in order to reach the innermost planet, it needs to execute a complex series of flybys, the first of which will carry it past Earth in the wee hours of April 10. Beginning the day before, on Thursday (April 9), one of BepiColombo's instruments will be aimed at the moon to test the device before its arrival at Mercury.

"After about 20 years of intensive preparations, the time will finally come on Thursday," Harald Hiesinger, a planetary geologist at the University of Münster and principal investigator for the instrument that will gather the observations, said in a statement from the German Aerospace Center (DLR). "Our long wait will be over, and we will receive our first scientific data from space."

The instrument in question is Mercury Radiometer and Thermal Infrared Spectrometer (MERTIS), which is designed to help scientists understand Mercury's composition and mineralogy. But during the Earth flyby, MERTIS will be perfectly poised to study the moon without our planet's atmosphere getting in the way.

The instrument will spend four hours studying the moon, from distances of between 420,000 miles (680,000 kilometers) and 460,000 miles (740,000 km). That's not all that close — approaching twice the distance from Earth to the moon — but still worth taking advantage of for the BepiColombo team.

The opportunity is in part just pragmatism: Several other instruments on the spacecraft will be gathering observations during the Earth flyby in order to test and calibrate those devices before the spacecraft's arrival at Mercury. "This is also an excellent opportunity to test how well our instrument works and to gain experience in preparation for operations in Mercury orbit," Helbert said.

"The moon and Mercury are not dissimilar in size, and their surfaces resemble one another in many ways," Hiesinger said. "We will obtain new information on rock-forming minerals and the temperatures on the lunar surface and will later be able to compare the results with those acquired at Mercury."