

**Greg Smith – editor**

**Volume 26, No.3  
July 2020**

**Program: FOG picnic—At Ted  
Gruber home**

**Meeting: July 25, 2020  
Picnic at 6:00 p m**

## Third time the charm!

We have a new evening comet. Comet NEOWISE is an early evening object. It is in the northwest just below Ursa Major. It will be rising closer to the feet of the Bear as the week passes. I believe that the best views will be in binoculars for a quick look. It is low on the horizon an hour after sunset. It will slowly rise with each day. You will need a clear view of the northwestern horizon in order to see it. I'm going to a nearby location to get a chance to view it. I will try several times this week.

This is the third comet in the past several months that has been projected to be a good show. The previous two both broke up before they got to a point that they were a binocular item for all to see.

It has been reported that the other two comet nucleus were small, only tens of meters in diameter. Comet Neowise is being measured in the tens of kilometers in diameter. This one should stay together as it passes by.

I did get a view on Monday as I was writing this article. I was invited to an impromptu comet party. Nothing could really be seen till just about ten o'clock. By this weekend the comet should be higher in the sky and visible a little earlier as that part of the sky will be further

from the horizon. This will put it away from the glow of the set sun.

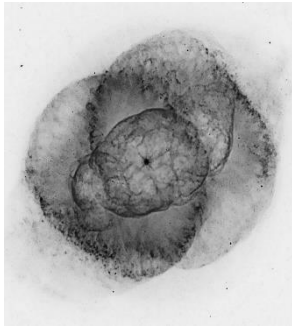
Good luck viewing the comet.

In next few days and next week Earth will be sending three new explorers to Mars. Two landers, an American rover, and a Chinese rover. Then there will be a weather monitor from the United Arab Emirates. This will be the UAE's first attempt to sending an orbiting spacecraft to Mars. This will also be China's first attempt to Mars as well. They have an ambitious first go at Mars as they are sending a lander as well as a rover. They have proven themselves at sending complicated missions as they have already sent a rover to the far side of the Moon. The entry through Mars atmosphere will be the tricky part.

The US has done it a couple of times before, but you can never get complacent with Mars. This rover we are sending is quite large and will require a lot of power to gently bring it down to the surface.

Enjoy the comet and hopefully we can zoom back together next month.

**Every Day is a Star Filled Day,  
Every Night is a Starry Night**



## Astronomers want to get in on NASA's push to the moon

By Meghan Bartels 12 hours ago

The Apollo 16 mission to the moon in 1972 included the first telescopic observations taken from the lunar surface.

(Image: © NASA)

NASA wants to go to the moon, and astrophysicists want their instruments to ride along, too.

The details are still in flux, as scientists are figuring out what makes the most sense given the scientific and logistical constraints of the moon. But they're confident that NASA's current priorities at the moon offer benefits that would support their goals. The agency's priorities are embodied by the Artemis program, which aims to land humans on the moon in 2024 in a sustainable, long-term way that offers a future for science as well as exploration.

"Heavy launch capability, astronauts, serviceability, in-space assembly — all of those things are things that we care deeply about," Heidi Hammel, a planetary astronomer at the Association of Universities for Research in Astronomy said during the Lunar Surface Science Virtual Workshop held on May 28. "And they are a core part of the return to the moon initiative."

A few telescopes have already operated on the moon. NASA's Apollo 16 mission in 1972 carried an ultraviolet telescope that astronaut John Young used to image nebulas, stars and Earth's atmosphere. China's Chang'e-3 mission, which landed on the moon in 2013, also carried an ultraviolet telescope.

But the moon is generally new territory for telescopes, Hammel said, and the details of how astrophysicists might tap into the Artemis program remain to be determined. One important distinction may be between telescopes *on* the moon and telescopes *at* the moon. That's because even terrestrial dust is a problem for delicate astronomy equipment — and lunar dust is a whole lot more aggravating than its Earthly counterpart.

That said, it's not impossible to picture telescopes thriving on the lunar surface, Hammel said. She pointed to a volcanic mountain at the heart of Hawaii Island, Maunakea. Today, it's known for the dozen astronomy facilities perched on the mountain's summit, where the atmosphere is still and observing conditions are favorable. But in the 1960s, it was a key training site for Apollo-era astronauts practicing moonwalks and geology.

"Maunakea was a proving ground for [the] lunar exploration program," Hammel said. "If we've learned nothing over the past 50 years ... we have learned how to build telescopes in that kind of an environment." Those lessons, she said, may be applicable for any instruments that do need to be placed on the lunar surface.

Besides, astronomers have learned a lot about launching telescopes into space since the days of that first lunar telescope. Ground-based and space-based telescopes alike have improved exponentially. Consider the power of the Hubble Space Telescope, which, as future lunar-orbiting telescopes could do, has relied on visits from astronauts to refresh its equipment as it aged.

And although a launch to the moon would require smaller instruments than astronomers on the surface of Earth can employ, the frequent visits to the moon that are meant to be the trademark of the Artemis program would suggest that scientists could send larger telescopes than they have to date.

So assuming that scientists can send more mass, keep instruments fresher with maintenance from astronauts, and sort out the dust challenges, what sort of instruments might they send?

Astronomers have plenty of ideas for what they could do with radio telescopes on the moon because such instruments face a major constraint on Earth. The constant barrage of radio signals we generate with our bevy of electronic equipment on the surface and in orbit wreaks havoc on radio observations made from Earth, and the far side of the moon is the only place in the solar system safe from those signals.

That interference means scientists have spent decades imagining the potential of radio observatories on the far side. Such instruments could see into the earliest days of the universe or listen for signals produced by a hypothetical extraterrestrial techno-civilization, for example.

But for other wavelengths, lunar possibilities are a bit less obvious, particularly with only the precedent of a couple ultraviolet instruments to work from, Hammel said. "One reason we have a lot of back and forth about putting telescopes to the moon [is that] the state of the art on the ground, on Earth, and in space has advanced so far during the last 50 years that it's difficult for us to imagine what we would put on the surface in the UV [ultraviolet] and optical and near infrared," Hammel said. "It's difficult to imagine what we would need to build there."

One compelling opportunity, she noted, would be to look back at Earth from the moon as practice for studying worlds beyond our solar system. Exoplanets are compelling scientific targets, but at such great distances' scientists struggle to grasp the details of these worlds and interpret what they might look like up close.

"It won't matter that it's a small telescope, because exoplanets, we can't really resolve them anyway," Hammel said. "Being able to study the Earth in multiple phases, multiple wavelengths, over very long-time durations, and short time durations, will give us really powerful information for understanding Earth-like exoplanets."

Hammel said ultraviolet observations in general are tantalizing, since such wavelengths can't be studied from Earth's surface. The same atmosphere that protects life on Earth from being fried by ultraviolet radiation also prevents ground-based telescopes from studying astronomical ultraviolet radiation. But there's no atmosphere to interfere on the moon.

Although astrophysicists are still piecing together the details of what lunar observatories could look like, the community is already on board the Artemis program. The first two robotic science freight loads that commercial companies will deliver to the lunar surface as part of the program, which will launch next year, include two astrophysics projects, including a radio astronomy experiment.

*Email Meghan Bartels at [mbartels@space.com](mailto:mbartels@space.com)*

## **Minutes of the May Meeting**

Ted Gruber, president, called the meeting to order. He thanked everyone for coming.

Ted gave the presentation tonight called Observing Messier Objects. Messier Objects are deep sky objects such as star clusters, galaxies, nebulae, and more. Charles Messier is the creator of the Messier Objects. He was a comet hunter but started finding objects that did not move in respect to stars. He called them "embarrassing objects" and started cataloging them. His first object was the Crab Nebula.

The Sky Report was given by Ted. Jupiter and Saturn have both returned to the evening sky. Mars and Venus are in the morning sky now, with Mercury joining them in July.

Mike Fiest has graciously agreed to host our socially distant star parties this summer. The first star party will be next weekend. Details will be in an email that will be sent to club members later this week. The dates for future star parties are July 17th or 18th, August 14th or 15th, and Sept 18th or 19th. The first date is always a Friday then the second is the back up in case of bad weather on Friday night.

We will have our annual club picnic on Saturday July 25th at Ted's. Everyone will need to bring their own food due to COVID restrictions. If the weather is nice, you can bring your scope and do some viewing when it gets dark.

We will not have a virtual club meeting in July, but instead have the meeting during the socially distant club picnic at Ted's on July 25th.

Steve Powell gave the Treasurer's Report. Dues are coming in slowly. He has received 12 checks in the mail with another 7 people saying they will renew. Steve will be mailing the payment to the Astronomical League in the next few days.

As of right now, the 2021 Mt St. Helen's Star party is scheduled for August 28 -29, 2021. These are not ideal dates due to the moon rise; Mark will see what he can do about it.

Roy Gawlick has the bill for the website hosting and domain name. He will pay the bill and send the receipt to Steve for reimbursement.

Meeting adjourned.

## 2020 Friends of Galileo Astronomy Viewing Schedule\*

**July** Moon: Full=5, New=20

21/22 Club Star Party – Backup Dates (Mike’s)

18/19 Club Star Party (Mike’s)

**September** Moon: Full=2, New=17

25 Club Picnic/Meeting (Ted’s)

16 Club Meeting TBA (Zoom vs. MMHS)

**August** Moon: Full=3, New=18

18/19 Club Star Party (Mike’s)

14/15 Club Star Party (Mike’s)

\* Cancellations:

19 Virtual Club Meeting (Zoom) ?

· All public “Sidewalk Astronomy”

· Oregon Star Party

· Mount St. Helens Sky & Star Party

### 👉 July 2020 Meeting 👈

DATE: **SATURDAY July 25**

TIME 6:00pm

PLACE: Ted Gruber Home

PROGRAM: Annual Picnic

Drinks : Bring your choice

Snacks : Whatever is in your Cupboards

Bring your own utensils

## Friends of Galileo Club Officers

|                                  |              |
|----------------------------------|--------------|
| PRESIDENT                        | Ted Gruber   |
| VICE-PRESIDENT/<br>PROGRAM CHAIR | Mark Thorson |
| SECRETARY                        | Becky Kent   |
| TREASURER                        | Steve Powell |
| WEBSITE                          | Ted Gruber   |
| NEWSLETTER ED.                   | Greg Smith   |
| ALCOR                            | Tom Meek     |

## Next Month's Newsletter Deadline

The deadline for items in next month's newsletter is:  
**Wednesday: seven days before next meeting.**

**Please feel free to send in your thoughts and experiences about your astronomical adventure.**

Submit your material by E-mail to: [gryth@msn.com](mailto:gryth@msn.com)

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