



Greg Smith – editor	Volume 25, No.7 November 2019
Program: "Astronomy Christmas Wish Lists"	Meeting: November 20, 2019 7pm Mark Morris LGIC

Viewing Mercury

November 11, Veteran’s Day and the Transit of Mercury across the face of the sun, turned out to be a clear and sunny day. That morning sure was not promising. Clouds on the eastern horizon were intermittent and gave a hint that maybe you would see it. About 8:00 am a large band of clouds came overhead and sort of dashed our hopes. At around 9:15 those clouds disappeared giving us a clear



view of the sun and the end of the transit was exciting to see.

As you can see in the photo of Mark and Steve viewing through sun filtered binoculars, they did

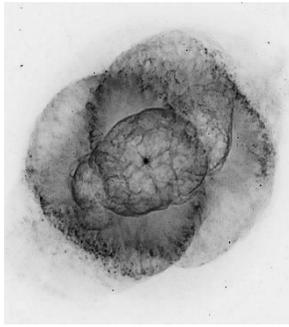
see the tiny dot of Mercury slowly approaching the edge of the sun. I used my solar scope and had a very nice sighting of Mercury. Even with my scope the dot of Mercury was very small; most sunspots are larger than this small silhouette of the planet. It was good there

were no sunspots, as it would have been hard to find Mercury among them.

For me, this was the last of the naked eye planets to be viewed in a telescope. I’ve tried to view Mercury in a scope before but could not get a disc shape out of bright spot near the horizon. This time it was a very good round black dot on the face of the sun.

In 2032 the next Transit of Mercury will happen, unfortunately it will be best viewed in Eastern Europe, Africa and the Middle East. We here in the Pacific Northwest will be left in the dark, as it will still be night. Even if any of us can make it to 2039, we will miss it again for the same reason. So, for most of us this was our last chance to see it. If I can live to be almost 99 years old, I will get a chance on May 7, 2049, a Monday, to see it again. My granddaughters will have to help me get to my solar scope, or I should say, their solar scope for they will have possession of it by then.

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



Round Asteroid a Dwarf Planet



ESO telescope reveals what could be the smallest dwarf planet yet in the solar system.

Source: ESO (European Southern Observatory)

Astronomers using ESO's SPHERE instrument at the Very Large Telescope (VLT) have revealed that the asteroid Hygiea could be classified as a dwarf planet. The object is the fourth largest in the asteroid belt after Ceres, Vesta and Pallas. For the first time, astronomers have observed Hygiea in sufficiently high resolution to study its surface and determine its shape and size. They found that Hygiea is spherical, potentially taking the crown from Ceres as the smallest dwarf planet in the Solar System.

As an object in the main asteroid belt, Hygiea satisfies right away three of the four requirements to be classified as a dwarf planet: it orbits around the Sun, it is not a moon and, unlike a planet, it has not cleared the neighborhood around its orbit. The final requirement is that it has enough mass for its own gravity to pull it into a roughly spherical shape. This is what VLT observations have now revealed about Hygiea.

"Thanks to the unique capability of the SPHERE instrument on the VLT, which is one of the most powerful imaging systems in the world, we could resolve Hygiea's shape, which turns out to be nearly spherical," says lead researcher Pierre Vernazza from the Laboratoire d'Astrophysique de Marseille in France. "Thanks to these images, Hygiea may be reclassified as a dwarf planet, so far the smallest in the Solar System."

The team also used the SPHERE observations to constrain Hygiea's size, putting its diameter at just over 430 km. Pluto, the most famous of dwarf planets, has a diameter close to 2400 km, while Ceres is close to 950 km in size.

Surprisingly, the observations also revealed that Hygiea lacks the very large impact crater that scientists expected to see on its surface, the team report in the study published today in *Nature Astronomy*. Hygiea is the main member of one of the largest asteroid families, with close to 7000 members that all originated from the same parent body. Astronomers expected the event that led to the formation of this numerous family to have left a large, deep mark on Hygiea.

"This result came as a real surprise as we were expecting the presence of a large impact basin, as is the case on Vesta," says Vernazza. Although the astronomers observed Hygiea's surface with a 95% coverage, they could only identify two unambiguous craters. "Neither of these two craters could have been caused by the impact that originated the Hygiea family of asteroids whose

volume is comparable to that of a 100 km-sized object. They are too small," explains study co-author Miroslav Brož of the Astronomical Institute of Charles University in Prague, Czech Republic.

The team decided to investigate further. Using numerical simulations, they deduced that Hygiea's spherical shape and large family of asteroids are likely the result of a major head-on collision with a large projectile of diameter between 75 and 150 km. Their simulations show this violent impact, thought to have occurred about 2 billion years ago, completely shattered the parent body. Once the left-over pieces reassembled, they gave Hygiea its round shape and thousands of companion asteroids. "Such a collision between two large bodies in the asteroid belt is unique in the last 3-4 billion years," says Pavel Ševeček, a PhD student at the Astronomical Institute of Charles University who also participated in the study.

Studying asteroids in detail has been possible thanks not only to advances in numerical computation, but also to more powerful telescopes. "Thanks to the VLT and the new generation adaptive-optics instrument SPHERE, we are now imaging main belt asteroids with unprecedented resolution, closing the gap between Earth-based and interplanetary mission observations," Vernazza concludes.

Minutes of the October Meeting

FOG Minutes, 10-16-19

Business meeting with majority present voted to proceed with Roy's proposal for FoG to use "Square" credit card payment option. Roy and Steve will implement. I would think that Steve, Roy, Ted might need access to operate the club's app. for Square. After adjournment, Steve and I discussed probably setting dues for those paying via Square at $\$24+1 = \$25/\text{year}$, so that the net payment is not $< \$24$. We might adjust price of calendars with some surcharge to cover Square cost to FoG;

RCA's proposed sale of their modified 2020 Calendar featuring club astrophotography (~\$6 to FoG members) was discussed. Steve reported that Astronomy Magazine's calendar ordering process is broken.

Greg Smith has names, emails, phone #'s for our 2 guests: Jim Smith, and Alan Severson who both want e-mailed newsletters. I am uncertain if either may become members. I didn't get to introduce our newest member, Walter Stephaniv, who intended to attend. His requests about the club's telescope library will need the officer's clarification for FoG's checkout policy that has arisen.

I promised the membership, that Ted and I would make a decision based on 5-day weather forecast around Nov. 7th about a FoG organized sunrise observing event to view the Transit of Mercury on Monday morning Nov. 11th. Membership would be e-mailed with event details ~ Nov.8-9th. We would need some bigger binoculars with safe solar filters or a solar telescope for that event;

Greg Babcock was thanked for a very interesting presentation regarding the evolution of his user-friendly book about binocular stargazing. Several members purchased his discounted 2nd edition;

The refreshment sign-up list through next May, only had 2 volunteers, Hakkayya for snacks 11/20, Chuck for snacks 1/15. Carolyn Hail was thanked for bringing beverages for this meeting;

The FoG Christmas Party has Dec. 11th reservation by Peg Miller at River's Edge Condos;

Roy's update for the Solstice Lantern Walk reported very good progress. However, there is a vacancy for a new Saturn Sponsor. He also solicited help for the lantern making workshop;

November 20th program selection was not announced and is still pending;

I mentioned the latest issue (Sept.'19) Reflector arrived in mail this week. Hakkayya hasn't received any of her issues yet.

Steve Powell didn't receive the packet for ordering calendars like usual in August. He has called and was told it was emailed; he never received the email. Instead we will buy the RCA calendar for \$6. Steve is taking orders. We will buy 20 of them and then first come, first serve for getting them from Steve, unless you pre-order them.

The speaker's pre-meeting dinner at the Sizzler restaurant was attended by 8. Greg Babcock's meal charge was submitted to Steve (in lieu of honorarium).

Tom Meek and Chuck Ring were thanked for arranging the two FoG meeting announcements in TDN in Oct. 12th issue, page B6;

I forgot to announce that 5th Mount St. Helens Star Party is now scheduled 8/21-22, 2020.

That's what we covered. I counted 15 persons in LGIC Wednesday evening. Please let Becky know if any corrections or additions to this list for her Oct. Meeting minutes in the Nov. Newsletter. Pray for clear skies for Monday, Nov. 11th sunrise. Mark, VP filling in for Ted

☞ November 2019 Meeting ☞	
DATE:	Wednesday November 20
TIME	7:00 PM
PLACE:	Mark Morris LGIC
PROGRAM:	"Astronomy Christmas Wish List: 1. Books & Resources by Greg; 2. New Stuff & Accessories by Mike"
SNACKS:	Hakkayya
DRINKS:	

2019 FOG Activities and Viewing Schedule

NOV MOON: FULL=12, NEW=26

20 Club Meeting (MMHS LGIC)

28 Thanksgiving Day

DEC MOON: FULL=12, NEW=26

11>18 Annual Christmas Party (Location TBA)

21 Solstice Lantern Walk (Lake Sacajawea)

Friends of Galileo Club Officers

PRESIDENT	Ted Gruber
VICE-PRESIDENT/ 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:

grlyth@msn.com

Greg Smith
1622 22nd Ave
Longview, WA 98632

