

Rappahannock Astronomy Club

Minutes, February 15, 2017, Meeting

In attendance:

Jon Bachman
Bart & Linda Billard
Don Clark

David Hiles
Glenn Holliday
Jerry Hubbell
Scott Lansdale

The meeting began at 7:05 p.m. with introductions around the room. Six members and two visitors were present.

Program

Scott Lansdale presented "Pluto and New Horizons." His topics included Pluto's discovery, "What is a planet?" the New Horizons mission, facts about the Pluto system, the unexpected, and what's next for the New Horizons mission.

Clyde Tombaugh used blinking of images to discover Pluto in 1930. When Scott explained this technique, Scott asked about using it with the Mark Slade Remote Observatory (MSRO). Jerry Hubbell confirmed it works with MSRO and that we have done it for asteroids. The images only have to be 45 minutes apart to see asteroid movement, not days apart like the Pluto images. Tombaugh also discovered a number of asteroids.

Tombaugh was working at Lowell's observatory at the time. Scott said Tombaugh was searching where Lowell had predicted they should look based on anomalies of the orbits of Uranus and Neptune. He said Lowell had used an incorrect mass for Neptune, and consequently finding Pluto may have been a lucky coincidence.

Scott said the International Astronomical Union (IAU) revised the definition of a planet in August 2006. The new answer to "What is a planet?" lists:

1. It orbits the Sun.
2. It has enough mass for a nearly spherical shape.
3. Its influence has cleared the neighborhood around its orbit.

This definition demoted Pluto to a minor planet because it is part of the Kuiper Belt and has not cleared its neighborhood. Glenn Holliday commented that while preparing for a historical astronomy talk some time back, he came across some old books that he found had a few of the major asteroids listed as planets.

Scott's next topic was the New Horizons mission. He said New Horizons launched in January 2006 to visit the last planet yet to be probed (7 months before the IAU made it a minor planet). New Horizons made a fast flyby of the Pluto system, so it was programmed to just gather data, storing it to begin transmitting after completion of the flyby. It made a flyby of Jupiter in February 2007 and began observing in fall 2014, about 200 days before the Pluto flyby.

Pluto is smaller than the Moon and several satellites, such as Ganymede, Titan, and Triton. Scott showed a comparison of Pluto with Mercury and several satellites, three of which are greater than twice Pluto's size. Pluto orbits up to 49 astronomical units away from the Sun and is part of the Kuiper Belt. Pluto has a retrograde rotation and is about two-thirds rock and one-third ice, with nitrogen ice at the surface. Pluto and Charon, its largest moon (1,207 km diameter), orbit each other more like a binary system, and they are both tidally locked. Like our own Moon, Charon may have formed from a collision of something with Pluto.

Pluto is not the cold-dead Kuiper Belt world it was thought to be. Scott's highlights of the unexpected included cryovolcanoes, active geology, and mountains up to 11,000 feet. Pluto's surface is younger than expected. The heart-shaped region named Sputnik Planum has red deposits from the UV breakdown of hydrocarbons that generates tholins.

Scott told us the next target for New Horizons is Kuiper Belt object 2014 M69. He said New Horizons had recently completed a course adjustment, and the flyby was expected New Year's Day in 2019. (It is a billion miles further than Pluto.) Jerry noted 2014 M69 was discovered about the same time as the Pluto flyby. Bart Billard said he recently saw a call for observations of possible occultations involving it that were predicted for this year.

Scott ended with a few videos about Pluto from a series, "Pluto in a minute," and one made from images taken during New Horizon's approach to Pluto.

Old Business

- January Caledon Star Party—Scott said he took his M42 image at the star party. The seeing was excellent. Except for Venus there were no planets high enough for good viewing. Scott said Venus was sharp and about appeared about half full-crescent. They did find several Messier objects. The event had about 20–30 people attending. Some saw Tom Watson's Twitters, and some may have seen the January newspaper article about MSRO.
- Website Status—Don Clark said he had not had time for the planned conversion to the new Theme that would make the site look better on mobile devices and other non-desktop browsers. He also said that instead of SSL, a third-party authentication service from Cloudflare is recommended with the new Theme. Scott said he had been looking through the site trying to check all the pages to see if he noticed any problems. He said he had started a spreadsheet for it.
- MSRO Update—Jerry discussed the current status and how we got there. The G11 mount provided by his employer, Scott Roberts, was installed and working. The computer was also replaced, and the older computer's hard drive was attached as an external disk drive. An autoguider telescope was added, replacing the webcam used as a finder. The goal is 5-minute exposures with round stars. Ryan Rapoza and Payal Patel had started training, and Jerry said Bart's training was complete. A friend of Myron's in Alaska might also train, and one of Myron's Culpeper group members was training. Jerry said his employer proposed offering an "experience" of remotely observing with the MSRO, which would be a possible source of funds. Jerry also said he had done some Astronomy.FM interviews, and another one was coming up. He noted the *Free Lance-Star* had an article on January 4 about MSRO, and it was picked up by the *Richmond Times*.
- Mountain View High School Outreach—Scott said he helped David Abbou with this outreach, which took place after school let out. David presented a NASA Ambassador brief about the solar system and NASA programs studying the planets. Scott spent 15 minutes talking about the club, Caledon star parties, and the Marine Corps event coming up next month. He said he got some indications of interest. He also learned one of the students had been to a Caledon event. The program was planned for only an hour, however several students stayed after to learn more about the club telescope and the club itself including upcoming events.
- Treasurer's Report—Tim's emailed report for January 31, 2017, showed a total of \$87.50 coming in since December. The number of paid memberships for 2017 was 14.

New Business

- *StarGazer* Update—Linda Billard said the latest issue went out this month, and she had nothing yet to report on the next issue.
- MSRO Equipment List—Jerry said he had worked on an equipment list, and he planned to talk about it next month.
- Next Caledon Star Party and Outreach—The next scheduled star party date was February 25. The Marine Corps Museum outreach was scheduled for March 11. Scott said there was a possibility of setting up inside if completely overcast. He noted there would be a full Moon then.
- Outreach Requests—Scott said he received a solar eclipse outreach request. It would be August 21, between about 1:30 and 3:00 p.m. He expected several members would be away traveling to the totality zone, and it would be hard to support the request. Scott said in response to an email from Stafford Parks he had proposed doing a Curtis Park event sometime in September. Don said he had 2 weeks in September he would be unavailable. Scott said he was also thinking October would work and perhaps be better, except for Saturn.
- Club Picnic—Scott said a new date, August 12, was set for the picnic.

- Stratford Hall Public Event, May 6 & 7—Jon Bachman was visiting from Stratford Hall to discuss his ideas for the event. He planned to have strong marketing for it as a star party and solar opportunity. He said he was aiming especially at Boy Scouts, who could camp that weekend for \$3. Some lodging would be available to club members at a discount, with breakfast included. Members could also camp, including with RVs. Jon passed out a preliminary schedule along with some Stratford Hall handouts. One of the handouts was a calendar with the event dates included. The schedule showed 5:00 p.m. for arrival of club members. Weather permitting, they would set up on the Oval and could then park at the admin parking lot. The astronomy event would start at 6:00 p.m. with an informal lecture on the Oval. The working title was an *Introduction to the Hobby of Astronomy*. Between 7:00 and dark, visitors could see telescopes and talk with club members about the evening viewing opportunities, which would begin about 9:00 (or dark). The lecture would be moved to the Council House for inclement weather. Sunday morning from 9:30 a.m. to noon would be for solar viewing. Jon said alternatively, the morning could start with a lecture about the Sun in the presentation center (rain or shine) at 9:30, with viewing afterward. He mentioned he had been allocated some funds for the event and would entertain suggestions for purchases, listing solar glasses or a guest speaker fee for example. He was interested when we talked about Glenn's Renaissance Faire Thomas Digges persona. Glenn suggested the April meeting for a run-through of programs planned for the event.
Jon also said Stratford Hall had a free-to-the-public event on July 4, from 10 a.m. to 5 p.m. He said we could set up a table to advertise the club. Scott said he would like Bart's minutes to remind him to send out a message about it.
- Programs for March and beyond—Scott suggested having observing as a topic for March, with a focus on suggested objects for viewing the following weekend at the Caledon star party. He said he had in mind using *Stellarium*. Jerry offered *Cartes du Ciel* as an alternative. Bart suggested doing a few Messier Marathon objects with MSRO if clear that evening. Jerry thought ten or so objects would be possible. Scott liked the choice of a Stratford Hall preview for April. He asked about Jerry's Richmond club contact and Jerry agreed to forward the email address. Scott proposed repeating "Astronomy in the News" for June or July, whichever the minutes say it was last year. (It was July.)
- Club T shirts—Jerry proposed doing a design so that people could then order some. He estimated they would run about \$10–15.

Next Meeting

The next meeting is on Wednesday, March 15, 2017, at the Central Rappahannock Heritage Center.