

# Rappahannock Astronomy Club

## Minutes, October 19, 2016, Meeting

In attendance:

Bart & Linda Billard  
Don Clark  
Glenn Holliday

Jerry Hubbell  
Tim Plunkett

The meeting began a little after 7 p.m. Six members were present.

## Program

Glenn Holliday presented "How Astronomy Invented Pretty Much Everything." He said it was updated from a presentation he used about a year ago for the Kenmore outreach. His first slide, "People=Astronomy," showed artifacts 25,000 to 37,000 years old with possible astronomical interpretations. One had tallies that could be used in tracking the lunar month, and another had shapes suggestive of phases of the Moon. He said anthropologists like Brian Hayden have pointed out fireplaces, rings of stone, and other structures up to 100,000 years old that seem consistent with modern primitive societies that all have sophisticated astronomy with constellations and star names. Jerry Hubbell commented that our brains are built for pattern matching. Glenn also said modern primitive cultures tend to have secret societies with special knowledge, typically including astronomy. They are the beginnings of differentiation into elites, according to Hayden and other anthropologists.

Glenn also showed "Art=Astronomy" and "Stories=Astronomy." For example, a 13,000-year-old (Middle Stone Age) cave drawing in France shows a bull with a pattern of dots above it suggestive of the Pleiades. Also, cultures in both Europe and America, separated at least 20,000 years ago, have similar stories of hunters chasing a bear across the sky and of 7 people who end up in the sky as stars. He also illustrated "Writing=Astronomy" with a Babylonian tablet that concerns the sky, and "Math=Astronomy" with, among other examples, a 2,300-year-old Babylonian tablet that was translated and studied recently to reveal use of Kepler's Second Law of Planetary Motion to predict Jupiter's position with geometry, by approximating a curve with a polygon divided repeatedly (the beginnings of calculus). Navigation dates back 4,000 years, geometry 3,000 years, and trigonometry 2,500 years (including spherical trigonometry).

Technology served as the marker for the transition to more recent history of astronomy. Glenn showed an Iron Age (2,700 years old) lens, the oldest known, and Galileo's second telescope, from 1609. He noted Galileo's enthusiastic publication of his observations with the telescope, in which he provided evidence in support of the Copernican system, amounted to our first modern science writing. Two supernovas 35 years apart, Tycho's star in 1572 and Kepler's star in 1607 also stimulated development of the new astronomy by contradicting the Greek idea the stars are unchanging. Glenn found that the first student protest at Harvard was attributed to its astronomy course teaching the Earth-centered system instead of the Copernican system of the planets. He said three bright comets in 1664, 1680, and 1682 fueled the public imagination, the publication of almanacs, and astrology in America. He traced our modern citizen science (amateurs can sometimes do science when professionals can't) to the Enlightenment, when gentlemen were amateur scientists. George Washington had 15 telescopes. The pace has continued to accelerate ever since. Uranus and Neptune, discovered by Herschel and Galle, were the first planets found since ancient times, and Neptune's existence was predicted theoretically before the discovery. Spectroscopy in the 19th century and rocketry in the 20th provided more tools for astronomy. Glenn showed an example of astronomy on other planets: Curiosity took a picture of Earth and the Moon in the Martian sky. He closed with a picture of the James Webb Space Telescope, slated to be the next telescope to go into space and asked whether the one after that could be on the Moon.

## Old Business

- Treasurer's Report—Tim Plunkett's report showed dues received from 3 members, one of whom included Astronomical League dues. We now have 27 paid memberships for 2016, 6 for 2017, and 1 for 2018. We asked Tim to start providing email addresses for paid members, preferably at least to the Secretary. We also noted we need to fix the membership application forms (both the html and pdf versions) to show Tim's current address.
- Communications Committee Update—Glenn said the website did not have any problems last month. Don Clark said he changed the Twitter feature to a simple link to reduce the space used at the bottom of the web pages. He was also looking into restoring the calendar that was at the bottom left. He also reordered the widgets on the right. Jerry and Linda Billard said they liked his changes to add the MSRO widget and link along the top menu.
- MSRO Update—Jerry said MSRO has had some additional problems with the mount. At the last Commission meeting, we came up with an idea to use an Explore Scientific G11 mount that Jerry has and needs to test out. He said he was waiting on getting the Telescope Drive Master adapted to it. Bart showed images and results from the Aldebaran lunar occultation observation he and Myron made early that morning by working around the mount problem. Jerry talked about the MSRO web page the commission worked on at the last meeting and Linda and Lauren Lennon fleshed out with Don afterward. He said Lauren and Linda created an application that can be filled out online for requesting observations. Don suggested adding an equipment status box at the top of the page.
- Events Held—David Abbou supported an Elder Study group outreach in Fredericksburg on October 6. More than 40 attendees were present. He and Mark Burns also supported Meet the Moon Night at Porter Library on October 8. Despite cloudy weather, they had more than 70 attendees. They were able to have exhibits inside and do presentations and discussions. The Scouts had to cancel the October 15 event they requested Glenn to support.

## New Business and Astronomy News

- Officer Nominations—Jerry said he did not feel he could be a regular Vice President. He asked Glenn, who said he could, but it would mean he would have to reduce his other duties on the Communications Committee. We agreed that would be OK. Linda then nominated Glenn for Vice President. Jerry said Scott Lansdale was willing to continue as President and nominated him. Tim nominated Bart for Secretary, and Jerry nominated Tim for Treasurer.
- Review Event Calendar for Upcoming Events—Earlier in the meeting, Glenn mentioned that the *King George Journal* came out with our Caledon star party listed. He also said he had a request about the star party from a Girl Scout Troop, but that it was not clear whether they would come. Jerry asked how we felt about backing off somewhat on outreach commitments for the coming year. Linda thought it was a good idea. Bart wondered whether new members could get discouraged by the impression we needed their support for outreach. Could we instead encourage them to come out and enjoy as attendees? The next Caledon star party was October 22, and Glenn, Bart, and Linda indicated they planned to be there. The Virginia Astronomical Society Annual Meeting was scheduled for October 29. Jerry said he and Scott Lansdale talked about going. Linda, Bart, Jerry, Scott, and Glenn were planning to go to the Ferry Farm outreach on November 12. Jerry said he had been invited to give a Governor's Schools talk. One topic requested was planetary and stellar lifecycles. He thought it was a Thursday, probably November 10.
- Stargazer Update—Linda said she had not heard from Tom Watson. She was expecting something from Jerry, Bart, and Scott Busby. She was hoping to hear from Ryan Rapoza, who was visiting the southern hemisphere, and she had a couple of ideas for articles to do herself. One was about the demise of Rosetta and about where the comet it studied originated.
- Food for November Meeting—Jerry volunteered to pick up drinks and Linda volunteered to pick up the pizza.

## Next Meeting

The next meeting is the officer election meeting with pizza on Wednesday, November 16, 2016, at the Central Rappahannock Heritage Center.