

Rappahannock Astronomy Club

Minutes, June 21, 2017, Meeting

In attendance:

Jean Benson
Bart & Linda Billard
Don Clark
Gary Forjan
David Hiles
Glenn Holliday
Jerry Hubbell

Scott Lansdale
Logan Palmer
Payal Patel
Michael & Betsy Rodrigue
Talulah & Calvin Rodrigue-Calipenia
Matt Scott

We spent several minutes with introductions around the room before beginning Scott Lansdale's program about 7:20 p.m. Ten members and 6 visitors were present.

Program

Scott presented his program on "The Sun," beginning with some statistics. The Sun's diameter is 109 times that of Earth, and it rotates once every 25 to 35 days, depending on the proximity to its equator. (Sunspot motion takes longer in the equatorial zone.) The composition is 74.8 percent hydrogen, 25 percent helium, and 0.1 percent everything else. The temperature at the surface is 10,000° Fahrenheit and ranges down to 6,300° Fahrenheit in sunspots.

Scott said the internal structure of the Sun includes the core, the inner 20 to 25 percent of the radius where nuclear fusion supplies the energy to keep the Sun shining, followed by a radiative zone, then a convective zone. Outside the surface layers, the corona is very hot—higher than the temperature of the core. Scott showed a Hertzsprung-Russell diagram of stars plotted against their color (representing temperature) and luminosity, or brightness as they would appear at the same distance from us. Stars on the "main sequence" (leaving out the red giants and white dwarfs) of his diagram ranged from dim red stars near the lower right to bright blue stars near the upper left. Glenn Holliday brought up the question, "Why are there no green stars?" We could see red, orange, yellow, white, and blue, but not really any green on the diagram. Glenn explained that although green was where the eye was most sensitive, it was a narrow range of the spectrum, especially compared with red, yellow, or blue.

Glenn said he had done a daytime outreach observing the Sun for about 10 hours, and he was able to see changes in the appearance of sunspots. He also described two historical magnetic storm events, one in the 1860s and one in the 1970s. The first caused damage to telegraph stations, and the second caused power outages in Canada.

Scott next talked about observing the Sun. He started with the warning never to look directly at the Sun. Always use solar filters, protective eyewear, equipment designed for solar observing, or a pinhole camera. Scott mentioned some of the satellites that were monitoring the Sun. He said the Parker Solar Probe, named for Eugene Parker, was scheduled for launch in 2018 and would go through the Sun's atmosphere at 4 million miles from the surface. Scott said it had a 4-1/2 inch thick carbon composite shield. It would try to find more about how energy moves through the corona and what drives the solar wind.

Scott's final topic was solar observing via amateur radio astronomy. He mentioned his radio astronomy group, the Society of Amateur Radio Astronomers (SARA). It meets in West Virginia each year in June or July. Scott said SARA offered an inexpensive kit for monitoring sudden ionospheric disturbances (SIDs) caused by solar activity. X-rays from a coronal mass emission event affect the ionosphere, causing changes in very low frequency (VLF) signal reception. Scott showed recordings from his antenna and amplifier made on his computer and pointed out some features showing variations from day to night and disturbances from solar activity. He said VLF signals were used because they could go even farther than AM band signals.

Old Business

- Communications—Don Clark said he had another idea for improving navigation of the club website, especially on phones. He said he needed to work it out a little more, having sent out a message on it a little prematurely. Payal Patel suggested using [Meetup](#) to help spread word about our meetings, star parties, and outreach. She offered to create a meetup for us. Jerry Hubbell offered a motion to add members who were providing social media publicity for the club to the communications committee. It was seconded and approved on voice vote.
- MSRO—Jerry said the instrument was running, that people were doing some science on variables and asteroids, and that some guest observers had come on for observing sessions. He said Explore Scientific had added a web page to its site called “Destinations and Experiences” that now features MSRO. Jerry said it would help fund us. He said currently about 60 percent of the MSRO equipment was donated and about 40 percent was on loan. This source of funding would help MSRO gain full ownership of all of its equipment. Don suggested considering offering an MSRO session or a field trip to the observatory on a non-star party month. Jerry said the next MSRO Commission meeting would be on July 14. Payal asked about a writeup of step-by-step instructions. Jerry said he had done a YouTube video for Explore Scientific and would work on one to provide MSRO instructions.
- Events—Glenn described his Renaissance Faire participation for this year. He was one of the cast members who walked around the Faire this year and had a few sets of props he could exchange in between trips around the Faire in order to do various acts. One act allowed him to engage children in a game that modeled the solar system. Glenn said the May star party was clouded out. This time he had been prepared to show a program, but no one showed up. Scott did an event with David Abbou at Mountain View High School. He said the weather was great, and some 20 to 25 students and parents showed up. They were able to see Jupiter, the Moon, and Saturn.
- Treasurer’s Report for May 31, 2017—Tim Plunkett’s report showed \$42.50 received in dues payments for the club and Astronomical League memberships. With two additions the evening of this meeting, the number of paid members for 2017 reached 30.

New Business

- Additional Program Ideas for 2017—Scott needed program ideas for September, October, and December. Bart Billard thought he could do a talk about his interferometer project in October. He and Jerry agreed they could talk about exoplanets in December. Glenn said he was willing to revive an older presentation of his for September. Linda Billard proposed we should talk about the eclipse in July in conjunction with the astronomy news topic.
- Upcoming Events—Embrey Mill was scheduled for July 1. Jerry was going with Myron Wasiuta to Spruce Knob, West Virginia, for the [Almost Heaven Star Party](#), July 21–25. They were giving talks on the Sunday, and Jerry would have a booth to show Explore Scientific equipment. Scott noted it was the same weekend as the SARA conference, and he and Jerry worked out that they were 15–20 miles apart. Scott said Stafford Parks wanted some sort of outreach in September. Glenn did not think he had all their emails, and Scott concluded he should forward the ones he had to Glenn.
- Stargazer Update—Linda said Jerry and Myron were going to write something on their Almost Heaven Star Party trip, and Tom Watson would do a couple of items. She said Bart may be able to write something about his interferometer project, and Scott could possibly do something on the SARA conference.
- Club Picnic August 12—Jerry suggested the club picnic would be a chance for members to take their eclipse observing equipment to try out.

Next Meeting

The next meeting is on Wednesday, July 19, 2017, at the Central Rappahannock Heritage Center with Astronomy News including, in particular, the eclipse.