

Rappahannock Astronomy Club

Minutes, September 19, 2018, Meeting

In attendance:

Bart and Linda Billard
Glenn Faini
Glenn Holliday

Scott Lansdale
Tim Plunkett
Tom Watson

The meeting began at about 7 p.m. Nine members and two visitors were present.

Program

Tom Watson presented a program on “Radiation.” He said radiation can be classified as non-ionizing and ionizing. The latter refers to radiation having enough energy to rip electrons from atoms. The distinction is important, he noted, because ionizing radiation can cause damage or harm humans. Tom mentioned “Sieverts” have replaced some older units of measurement for radiation as part of the International System of units (abbreviated SI). “Curies” and “rems” now have SI replacements.

Tom first covered radiation from terrestrial sources. He showed a chart of (mostly terrestrial) sources found in the United Kingdom to contribute a total yearly ionizing radiation dose of 27 millisieverts per person. Radon gas from the ground accounted for nearly half the dose while a similar amount resulted from medical sources, terrestrial gamma sources, cosmic rays, and intakes of radionuclides (excluding radon).

Next Tom talked about sources of radiation from space (cosmic sources): solar radiation and galactic cosmic radiation. Solar radiation includes visible, infrared, and ultraviolet sunlight, solar wind particles, some radiation from solar prominences (but most of the material falls back to the surface of the Sun), more from solar flares (which eject more material), and solar “proton events.” Another source is coronal mass ejections. Geomagnetic storms are a result of solar charged particle emissions when they interact with Earth’s magnetic field and atmosphere.

Glenn Holliday asked about other sources of radiation in the solar system. Tom agreed other sources exist but said it was hard for him to say how significant they were. A little later Glenn said he found Jupiter is a source of (non-ionizing) radio waves. Scott Lansdale said he had heard some, and they sounded something like ocean water.

When Tom talked about cosmic rays, he said his equipment detects secondary radiation from the rays striking the Earth’s atmosphere. These are called particle showers, and can be triggered by protons (90 percent of the cosmic ray particles), alpha particles (9 percent of the particles) or other elementary particles (making up the other 1 percent). Gamma ray bursts can also trigger them. Some of the phenomena involved are pair production (for energies higher than 1024 keV) and spallation. Tom said particle showers might help initiate lightning. He said gamma ray bursts are grouped as short (less than 1 second), long (more than 2 seconds), and ultra-long bursts of more than 10,000 seconds. They may come from collapsing giant stars.

Old Business

- Completed events—An MSRO introductory session was held August 4 at the Wilderness Library. The club picnic was held August 11. There was concern about the low turnout and questions about whether to try a different time or location. Linda Billard suggested a different month might be worth trying. The September 8 Caledon star party had to be cancelled because of weather. Scott reported a turnout of more than 100, including families, for the “Meet the Moon” night on September 18.
- Treasurer’s Report—Tim presented the reports for July and August. They included dues payments from Linda and Bart Billard, Ron Henke, Payal Patel, and Konstantin Ermolayev. He said his records showed Ron Henke was already paid through 2018, so he thought he should check whether Ron intended to pay through 2020.

New Business

- **Planned Events**—The first MSRO training session was rescheduled for September 29. Scott said that was also the date of the Virginia Association of Astronomical Societies convention to be held at Randolph Macon College this year. He said he may attend. The next Caledon star party date was October 6, and Glenn Holliday would present “Death from Above.” Scott said the Headquarters Library was requesting someone who could give a 15-minute presentation for young children on October 12, and the Embrey Mill outreach was rescheduled for October 18 or 19. Glenn Holliday was still looking for a volunteer to support the American Heritage Girls’ camping event at the Fairgrounds on October 20. David Abbou was doing a “Meet the Moon” event at North Stafford (same date?). The Stratford Hall outreach was planned for November 10. Scott and Glenn Holliday had differing impressions about whether a program prior to stargazing was desired, but they noted sunset would be near 5 p.m. Glenn Faini said he would go. Glenn Holliday said he also had a few responses via email. Glenn Holliday said Caledon was now offering December 8 as a possible star party date, although it is still the day scheduled for a youth hunting event during the day. It was agreed that the club did not want to be there on a hunting day.
- **October Club Meeting**—Scott reminded us to consider becoming a club officer. Nominations are made at the October meeting. Tom Watson volunteered to look for a restaurant with a room where we could hold the election night meeting in November.
- **Star Party Dates for 2019**—Glenn Holliday showed the proposed dates for next year.

Next Meeting

The next meeting is on Wednesday, October 17, 2018, at the Headquarters Library on Caroline Street, downtown Fredericksburg. We will be in room 2.