

# Rappahannock Astronomy Club

## Minutes, December 17, 2014, Meeting

In attendance:

- Terry Barker
- Bart & Linda Billard
- Don Clark
- Ron Henke
- Jerry Hubbell
- Scott Lansdale
- Tim Plunkett
- Joe Spencer
- Adam, Zachary, and Noah Zwierko

President Jerry Hubbell called the meeting to order shortly after 7 p.m. Eight members and four visitors were present.

## Program

Scott Lansdale presented the program “Radio Jove Summary.” Radio Jove is one of several programs the Society of Amateur Radio Astronomers (SARA) recommends for amateurs. The Radio Jove project is sponsored by NASA and focuses on radio emissions from Jupiter and its satellite, Io. Another recommended program targets emissions from the Sun.

Bernard Burke and Kenneth Franklin first discovered that Jupiter was a strong source of radio emissions relatively early in the development of using radio for astronomical research. This discovery led C.A. Shain to reexamine records he had made of 18.3 megahertz observations, and he found that it included bursts from Jupiter 5 years earlier that were unrecognized at the time. Consequently, scientists had a 5-year baseline of data to work with very soon after the first discovery of radio emission from Jupiter.

In 1964, Keith Bigg discovered Io has a role in emissions from Jupiter. Scott said Io is heated by tidal forces, making it the most volcanically active world in our solar system. He said that Jupiter’s magnetic field is 20,000 times stronger than Earth’s, and particles from Io can become charged and trapped in a ring-like disk in the magnetic field. Some particles approach Jupiter’s north magnetic pole region, where they emit radio waves in a cone-like pattern with a frequency range of about 15 to 29 MHz. We can detect these emissions when the cone is oriented toward Earth. The demodulated signals sound like ocean waves (these are called L bursts) or short bursts like static pops (S bursts). Scott played us some samples. One sample on the Radio Jove website had audio of S bursts slowed way down. They sounded like a bunch of changing-frequency whistles.

Kits are offered for antennas and receivers needed to monitor Jupiter’s emissions, along with software for working with the equipment, sharing data, and predicting best observing times. The preferred antenna is a two-element phased array that can be adjusted to point at Jupiter. The equipment can also be used for observing radio bursts from solar activity. Scott said a kit, including a receiver, is about \$200. You need some additional materials for the antenna supports.

One person asked Scott about the significance of the data you can get monitoring Jupiter radio emissions. He said that one use of the data is to compare interactions of particles in Jupiter’s magnetic field with Earth’s. For himself and many amateurs, he suggested, it can be the educational value of working with the circuits and equipment and making the observations. The Radio Jove home page URL is <http://radiojove.gsfc.nasa.gov/>. Scott emailed a pdf of his presentation to Glenn Holliday for posting on the club website.

## Old Business

- Treasurer’s Report—Tim Plunkett presented the report for November. It included dues payments and the donation from Northumberland Preservation, Inc. as amounts received, and reimbursements for the food and drink purchases for the November meeting as outlays. One of the reimbursements was applied as a dues payment plus donation. We now have five paid memberships for 2015 (one of them paid through 2016).

- Next Year's Presentations—Ron Henke talked about programs he had lined up for next year's meeting schedule. He told us Scott Busby would host the club picnic in August but said that work would prevent him from participating in other events. Ron said he would talk about the size of the solar system for the January program, and Lauren Nicholson would do a presentation on the Sloan Digital Sky Survey in February. He noted that we would need to switch the program with the business meeting to accommodate her late work schedule, and the website would need an announcement of that change in schedule. Bart Billard will present an update on the Kepler mission in March. Ron had Myron Wasiuta scheduled to talk on telescope collimation in April and Jerry on how to obtain an IAU minor planet observatory code in May. David Abbou will talk about his *Free Lance-Star* column and NASA ambassador duties for the June presentation. Ron said he still needed about four more presentations to fill out the rest of the schedule.

He also mentioned a few website edits were needed. He had found one of the links still has Ben Ashley as the point of contact, and that no information is available with a mouse over the event coordinator. Jerry suggested the president should be the event coordinator. Ron asked about getting the member list from Tim as discussed at a previous meeting. Tim said he needed to make a reminder to himself to do it.

- Star Parties, Events, and Meetings—Ron discussed the Stratford Hall request for a 2016 outreach. Our previous outreach for them was in the month of September. September would avoid it being too close to the probable dates for Northumberland, but Ron wanted us to choose times with good opportunities to view the Moon and some planets. Someone tried looking up Moon phases for 2016, but found it difficult to tell which dates were Saturdays, and we concluded it would be better to check offline after the meeting and revisit the subject.

We have tried to hold a telescope workshop outreach in past years. Ron asked whether we should try another in 2015, and whether it should be part of a Caledon event one month or a separate, possibly substitute, event.

- Loaner Equipment—Scott presented the sheet he made up from Glenn's input for tracking the loaner equipment status. It would also serve as a list to bring to meetings to show what is available to be checked out and provide a place for members to sign up for equipment they would like to check out. He requested pictures to add on a second page that would also list what is included with each loaner item.
- Update on the next Newsletter Status—Linda said she had not had time to work on the newsletter this month and had no update.

## **New Business and Astronomy News**

- Ron expressed his thanks to Jerry for his 3 years as club President. Jerry's advice was to try to find a way to make your mark on the club. He said starting the newsletter and getting the website redesigned gave him a sense of satisfaction with his tenure as President.

## **Next Meeting**

The next meeting is on Wednesday, January 21, 2014, at the Central Rappahannock Heritage Center.