

THE GREAT AMERICAN ECLIPSE OF 2017

By Art and Sharon Storbo, August 2017

Introduction

Solar eclipses are special moments in time when our Moon comes between Earth and Sun at just the right distance and position to cast a shadow on a small strip of the planet. Eclipses have been recorded around the world for several thousand years, and as much as a thousand years ago their occurrences could be predicted. Only a few hundred years ago, solar eclipses were recognized for their scientific value; and they began to be studied.

This year's total solar eclipse, traveling coast to coast in the USA, was the first of its kind in 99 years. Madras, OR, was the place to be. The path of totality, 70 miles wide, would run east-southeasterly from the west coast, through central Oregon and across the USA, to the east coast in South Carolina. Outside the path of totality, observers from Canada to Mexico would see a partial eclipse, with the Sun obscured by the Moon some 60 percent or more, depending on how far removed from the path of totality they were located. Twelve million people live in that zone of totality, and a possible 30 million might migrate into that zone for the eclipse.



Preparation

We have been supporting members of Lowell Observatory (LO) in Flagstaff, AZ, for some years. LO, in conjunction with Seattle's Pacific Science Center, planned to have booths at the Madras football field. We would bring several telescopes for public use in the LO VIP area.

Before the Madras gathering, Art volunteered to help with the solar eclipse booth at Seattle's Museum of Flight, set up by the Seattle, Tacoma, and Boeing Employees Astronomical Societies to inform the public of the upcoming eclipse. This gave him first-hand experience in discussing eclipses

with the public, details of which could be found at www.greatamericaneclipse.com. He also met the speaker of the day, Tyler Nordgren, university professor and a former astronomer at LO, who gave a great talk on eclipses.

In addition, we bought a new solar telescope – a 60-mm Lunt, specially equipped with Ha (Hydrogen alpha) filters for safely viewing the Sun. This telescope complemented our 120-mm Orion white light refractor and our smaller 30-mm Coronado PST solar telescope. We also had 10x50 binoculars with solar filters, adequate to see details of the sun when on a tripod. On Friday, August 11, we did a dry run with all three telescopes and the binoculars set up on tripods in our front yard, verifying that we had all the necessary gear and that we could see through high, thin cirrus clouds satisfactorily.



GS Chris, Daughter Jennie, GS Ryan, and Sharon

August 20, Sunday: Setup at Madras

After breakfast at 7 a.m., the Storbo family, Art, Sharon, daughter Jennie, grandsons Chris and Ryan, and son Jeffrey (not shown) drove the 42 miles from Bend to Madras to deliver much of our telescope gear and canopy, storing it with other LO gear in the Performance

Arts Center (PAC) at Madras football field. Numerous LO staff were already hard at work preparing lectures or working remotely; setting out breakfast and lunch for the volunteer workers; and setting up tents, tables, and chairs on the field. LO had their primary booth in the end zone at the south part of the football field. There we stuffed more than 250 bags with metal thermos bottles, sun lotion, hand sanitizer, lip balm, and lunch tickets. These would be given out on Eclipse Day to persons holding LO reservations.

All the LO staff are like a large friendly family, helping one another and pitching in wherever needed. Art, with help from others, erected our canopy alongside LO's four tents and set out tables and chairs in the LO VIP area on the east side of the field. This area was for the 300 LO supporters with

reservations and the Pacific Science Center guests, while the remainder of the football field and the bleachers would be open to the general public. All would pay \$10 per head admission to the field on Eclipse Day, a good crowd control measure. Setup completed, we returned to Bend about 4 p.m. for a dinner and party at the River House Resort for 150 guests sponsored by Seattle's Pacific Science Center. The party ended at 8:30 p.m., as all had to get to bed early for the long day ahead.



The Lowell Observatory booth.

August 21, Monday: Eclipse Day

For weeks, the Oregon Department of Transportation (ODOT) and the news media predicted heavy traffic jams in the area around Madras. With a population of only 7,000, Madras was expected to be overrun by between 50,000 and 100,000 spectators. Late arrival at the eclipse was not an option for us, so we got up at 1:15 a.m. and started boarding our bus at 2:00. The five LO buses (250 people) left Bend promptly at 2:30 and arrived in Madras at 3:20. We then had 2 hours in which to try to sleep on the bus; some of us



Jeff, Sharon, and Ryan with telescopes.

succeeded. After disembarking at 5:30, and loading gear into our little red wagon, we stood in line until the gate opened at 6:00. Every gate entrant was given a pair of solar glasses. Fortunately, on this most important of days, the sky was nearly clear for the 6:15 sunrise, and remained relatively clear with only some high thin cirrus.

Jeffrey, Ryan, and Art proceeded to set up the three telescopes and solar-protected binoculars in LO's VIP area, which took until 8:00 a.m. We noticed

more and more car traffic arriving after 6:30 a.m., and the main football field began filling up with spectators, many bringing their own telescopes. Sharon was a greeter/hostess at the LO main tent, and along with Lowell Putnam handed out the bags packed the day before. With this task, Sharon had only limited time at the telescopes, but managed to be there during totality.

First contact came at 9:06 a.m. Then the scoreboard clock began the countdown. For the next hour plus, the Moon gradually ate more and more of the Sun, until totality at 10:19:34 gave rise to wild cheers from the crowd, now some 3,000 strong on the ball field and in the bleachers. Totality lasted 2 minutes 2 seconds, and then the Moon progressively gave up its coverage of the Sun until the fourth contact occurred at 11:41 a.m.



Art with 120-mm Orion telescope.



Ryan (left) and Chris working the crowd.

Throughout the 2-1/2-hour event, our 60-mm Lunt solar scope mounted on our Celestron Go-To equatorial mount followed the Sun well on auto-track with only two or three minor corrections. This was not bad for a hand-compass orientation and hasty selection of Redmond (25 miles to the south) for latitude/longitude.

Our other two telescopes, on manually-guided mounts, required frequent adjustment to keep the Sun in the field of view. Jeffrey and Ryan quickly learned how to do this, and were a big help with this task and with explanations to the public.

We could see in the red images of the solar scopes several prominences arcing off the Sun's limb, their length equivalent to a dozen Earth diameters.

With the yellow images of the white light Orion, we could see numerous dark sunspots scattered across the face of the Sun. The audience delighted in looking at these features, and asked numerous questions.

Altogether, we talked to well over 100 people, possibly 200. Many came to our telescopes for a look during the eclipse; some came back several times; and some tried taking cell-phone or camera photos through the eyepieces, a few with reasonable success. Ryan was interviewed live when the eclipse began by Seattle's King 5 TV news and appeared again briefly on the 5 p.m. newscast.

Jennie, Chris, Sharon, Jeffrey, Ryan, and Art were all together for totality. We had planned to sketch, afterward, our separate views of the corona; but, in the end, we decided to just watch and enjoy this first-time-for-us spectacle. We didn't see any shadow-bands leading up to totality, but they might have been present.



Sun and Moon at totality. Photo from Internet.

We did see crescents of light, passed through colanders and boards filled with small holes, displayed on white-boards or a sheet on the ground. There were no nearby trees, so we didn't notice if the birds stopped chirping. We did notice



Jennie showing light crescents just before totality.

the temperature drop (10 degrees) a few minutes before totality; and during totality, the temperature dropped another 10 degrees. We saw Bailey's Beads and the Diamond Ring just before and after totality; they each lasted only a second or two. During totality, one couple on the field took the opportunity to dance with each other, a cute performance.

After totality, Sharon noticed many people wearing jackets or blankets to ward off the chill, but she didn't think to don her own coat. Luckily the temperature rebounded quickly. During totality, our ball field neighborhood had a twilight



Twilight at 10:30 in the morning.

level like that usually experienced 30-40 minutes after a northern late-summer sunset. Nearby streetlights came on; but the sky low in the east was brighter, as if the sun was about to come up. Planet Venus stood out brightly some distance from the Sun, but it was the only "star" we could see given the hazy sky with light reflected from the nearby

smoky atmosphere. Altogether, totality was every bit the wondrous, mystical, fleeting experience it is said to be. There was precious little time in the 2 minutes and 2 seconds to do more than we did.

After 12:30 p.m., we began taking down our telescopes and canopy, and by 1:45 we had all our gear stowed on the bus. With all our activities, we missed the seven lectures given by various LO astronomers throughout the morning and afternoon at the PAC. Our bus left Madras at 2:00 p.m.; and instead of taking Hwy 97 south to Bend, it followed Hwy 26 southeast toward Prineville, missing some of the traffic. Even so, it took our bus 1 hour 50 minutes to return to Bend.

There were two other eclipse events in the area: Solarfest at the Madras fairgrounds (30,000 were expected there) and Prineville's Symbiosis (35,000 was their predicted number). We saw one large field still full of cars and tents on the way out of Madras; and there were many smaller gatherings of cars, tents, and people all over the area. In the first 10 miles



Traffic through Redmond 4 hours after eclipse.

south out of Madras, there was a rolling slow-down line of cars as far as we could see. We had no idea how many visitors descended on Madras, but they probably totaled no more than 50,000. After the slow start, traffic moved well enough to Redmond, where it thinned out. Back at the Fairfield Inn, we all went swimming and then had dinner and were in bed by 9:00 p.m.

August 22, Tuesday (Day after Eclipse)

This was a day to recover, sleeping in until 9:00 a.m. Sharon's choice was lunch at McMenamini's (the old St. Francis School) in downtown Bend.

Our last LO-hosted event was a dinner party of some 80 people at the Cascade Room of River House Resort. Earlier in the day, Ryan had prepared a statement citing his 6 hours of work at yesterday's eclipse, meeting a public service requirement for his Boy Scout program. During happy hour preceding dinner, Ryan got Jeff Hall's endorsement on his statement.

Lisa Actor was the M.C. during the dinner; she introduced Jeff Hall, Director of Lowell Observatory. He recapped highlights of yesterday's eclipse events and recognized a dozen individuals for their contributions to the Lowell event, including Art for bringing telescopes to the LO VIP area and Ryan, at age 11 the youngest person in the room, for his help in setting up and minding the telescopes and talking to the public. We each, in turn, stood up and were acknowledged with applause.



Art and Sharon Storbo

In summary, this was one fine vacation trip, filled with interesting experiences, outdoor fun, educational events and opportunities, many friends, and tolerably good weather when we needed it. We'll always remember the Great American Eclipse of 2017, thanks to Lowell Observatory and to all astronomers who contribute to our knowledge of suns, planets, moons, and celestial events.