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May 2017

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To Salem Eclipse Adventure Participants:

We (my partner Janet Watchman and Senior Development Officer Kristine Cecil and I) look forward very much to sharing this journey with you. We expect that it will be a load of fun! We have already had the great enjoyment of traveling with many of you (and teaching and researching with some of you!), and we look forward also to making new friends on this trip!

I (Joel) have led numerous other Carleton alumni trips, usually with Janet as a participant. It has been a tremendous pleasure to do so because of Carls' good-heartedness and intellectual curiosity - qualities I cherish both in current and past students. (Outfitters frequently tell me that Carl Alumni groups are the most curious and interested that they have encountered. Therefore I now always bring along extra buttons to sew on, when mine burst upon hearing that statement.) Kristine, class of '84, brings a long-time executive commitment to the College and comes as a representative of the Alumni Relations Office.

A total solar eclipse is one of if not *the* most incredible celestial phenomenon that one can witness, and I am thrilled that you are making the time and effort to experience this one. I have found it to be an almost mystical experience, because it overturns all of our other daytime sky expectations. It is well worth traveling a long distance to see one.

Of course, we all need to be prepared for the quite real possibility of clouds at the critical time. For that reason, we (Director of Alumni Relations Sarah Forster and I) are planning a wide variety of other experiences that learning-hungry Carls will love, including talks and discussions on various topics not limited to astronomy! (Of course we would plan a wide variety of experiences anyway - that's part of what makes a Carleton Alumni trip so wonderful.) I will also schedule "office hours," and

you may also feel free to meet with me for discussion at any other time.

Other sky-related experiences are high on my list of non-eclipse activities. We specifically arranged for there to be evenings on this trip when I can share my starlore and sunsets and antisunset watches with you - among my very favorite experiences. I will show you that there are all kinds of subtle phenomena going on throughout the sky in the hour after the sun drops below the horizon. We will provide you with a flashlight to keep, and we suggest that you also bring binoculars (if available) for our evening activities. Note that most are totally optional. You are welcome to attend or skip any of them, as you wish; with the exception of one pre-eclipse talk that will deal with eye safety.

Speaking of eyes, you are probably wondering what kind of optical instruments I recommend:

- **Before and after totality, one must never look at the Sun without an appropriate filter.** Fortunately, we are bringing a pair of eclipse glasses<sup>1</sup> for each of you to use before and after totality. You just slide them on like glasses (or in addition to glasses if you wear them). Frankly, during the partial phases, a telescope with an appropriate filter will not show you much more than these eclipse glasses and your eyes will. And so for example, I will not be bringing a telescope at all.
- **During totality, one can look everywhere without a filter!** Yes, you can use your eyes, binoculars, or even a telescope without a filter during totality! (I have done so at numerous eclipses.) Any decent pair of binoculars without filters will do - my whole totality viewing equipment will consist of a single pair of binoculars, to be held in my hands. I will not even bring a tripod. (You may wish to do so in order to steady your binos, but the downside is that you then cannot easily swing them all over the sky and the ground to study all the other marvelous phenomena occurring in those few precious minutes.) I will probably try to find a wall or something to brace my arms to steady the images, but I am prepared to do without that steadiness in order to have the freedom to look around. And of course I will spend some time looking around during totality without even binos!
- As for photography, I am personally not a big fan. Partial phases, as I said above, are not all that interesting, and totality is too short for me to be fiddling with a camera. I want to experience totality with as little distraction as

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<sup>1</sup> The eclipse glasses were produced for the American Astronomical Society, and I snarfed them up for us at an AAS meeting over a year ago.

possible! Furthermore, professional photographers will be taking countless gorgeous pictures that will become publicly available. However, I certainly understand that some of you will wish to create your own personal photographic record of the experience. If you wish to do so, see category D of my selected materials below for two guides on eclipse photography. As a radio astronomer, I am not myself an expert.

I attach a printed resource, a few web links (which for ease of access we will send electronically as well, and a list of a few books on eclipses and other astronomical expeditions that you might consider purchasing. All are optional, as I will be presenting all relevant information on the trip.

Feel free to contact us if you have questions about any of these items (or others). Contact me for most questions except for logistical issues, and Sarah Forster for those. Email is the easiest way, to [jweisber@carleton.edu](mailto:jweisber@carleton.edu) or [sforster@carleton.edu](mailto:sforster@carleton.edu), respectively. If either of us feels that the other will give a better answer, we will forward your question to them. Looking forward to seeing you (pretty) soon!

Sincerely,

Joel Weisberg

P.S. Expect to get a trip questionnaire in mid-July from Alumni Relations. Please fill it out so that the Office can compile a trip Zoobook, enabling participants to know a little bit about each other before we hit the (Oregon) ground.

## Selected resources for the Carleton Oregon Eclipse Trip of 2017

### A. Carleton's Historical Eclipse Expeditions (This list is inspired by our trip participant Liz Gilpatrick)

1. "The Carleton College Eclipse Party [of 1889 in Chico, CA]." W. W. Payne(?), *The Sidereal Messenger* (published at Goodsell and edited by Payne, so I presume that the unsigned article is his), **8**, 177 (1889). The author describes the splendid rail trip, along with the nail-biting experience of having clouds almost up to totality. Sketches of the eclipsed Sun are included.

[https://books.google.com/books?id=QsBLAAAYAAJ&pg=PA177&lpg=PA177&dq=carleton+college+eclipse&source=bl&ots=jTJBmAC6Q&sig=ZjUVf4X8af7TNPI21Mez472lc\\_4&hl=en&sa=X&ved=0ahUKewiEIJTmZTUAhVBzoMKHdR3DOEQ6AEIUzAJ#v=onepage&q=carleton%20college%20eclipse&f=false](https://books.google.com/books?id=QsBLAAAYAAJ&pg=PA177&lpg=PA177&dq=carleton+college+eclipse&source=bl&ots=jTJBmAC6Q&sig=ZjUVf4X8af7TNPI21Mez472lc_4&hl=en&sa=X&ved=0ahUKewiEIJTmZTUAhVBzoMKHdR3DOEQ6AEIUzAJ#v=onepage&q=carleton%20college%20eclipse&f=false)

2a. "Total Solar Eclipse, May 28, 1900 [in Southern Pines, NC]." H.C. Wilson, *Popular Astronomy* (an amateur and professional journal published at Goodsell until the early 1950's, when it was killed off by snazzier *Sky & Telescope*), **8**, 297 (1900). "The expedition . . . was made possible by the generous enthusiasm of the junior class in the college. . . [which] voted to defray the expenses of the expedition to the extent of one hundred and fifty dollars. We are greatly indebted also to the officials of the Chicago Great Western railway, through whose courtesy the party and instruments were conveyed to Chicago and back free of charge. . . The faculty and trustees of Guilford College, near Greensboro, N.C., were much interested in the expedition and contributed largely to its success, in securing a favorable location . . ." Photos of the eclipse and of the Carleton telescopes are included.

[http://adsabs.harvard.edu/cgi-bin/nph-data\\_query?bibcode=1900PA.....8..297W&link\\_type=GIF&db\\_key=AST](http://adsabs.harvard.edu/cgi-bin/nph-data_query?bibcode=1900PA.....8..297W&link_type=GIF&db_key=AST)

2b. "Total Solar Eclipse, May 28, 1900 [in Southern Pines, NC]." W. W. Payne, *Popular Astronomy*, **8**, 370 (1900).

<https://books.google.com/books?id=pOEzAQAIAAJ&pg=PA370&lpg=PA370&dq=carleton+college+eclipse&source=bl&ots=vdkA2AWKNs&sig=BwG7aL8c071ZjolQzompZHu3DQE&hl=en&sa=X&ved=0ahUKewixs8f7IZTUAhUBw4MKHR-8B6o4ChDoAQgmMAE#v=onepage&q=carleton%20college%20eclipse&f=false>

B. Two Books on Expeditions to Observe the Transit of Venus across the Sun (included to remind us of the great hardships involved in scientific expeditions in the old days, compared to our *relatively* comfortable trips to Oregon.

1. *Chasing Venus: The Race to Measure the Heavens* by Andrea Wulf, 2012, Vintage Books. Trip participant Liz Gilpatrick wrote me the following, which is what inspired me to add the other items. "[This book] is a fascinating tale . . . Written for us non-professional starry-eyed folk, it is a great tale well told about the race to catch the transit of Venus [in 1761 in 'remote corners' of the Earth, in order to measure the size of the solar system.]. . . . While it isn't about chasing across the globe to view an eclipse, it speaks to the dedication (or pure egoic idiocy) demonstrated a few hundred years back by scientists and adventurers to view a transit of Venus. . . It was a great little tale that serves to remind moderns of the almost unimaginable difficulties, discomforts, and dangers of global travel then...and life without cell phones."

2. *The Day the World Discovered the Sun* by Mark K. Anderson, 2012, Da Capo Press. This book, written by one of my first Carleton students, is also an excellent treatment of the purpose and difficulties of observing a transit of Venus across the Sun, this time in 1769.

### C. Various materials on solar eclipses (see also separate category "D" for eclipse photography)

1. The NSTA (National Science Teachers' Association) 8-page handout, "An Observer's Guide to Viewing the Eclipse," by Andrew Fraknoi and Dennis Schatz, also covers why and how an eclipse happens, with specifics on "our" eclipse. In my opinion, you don't really need anything else in order to understand what you should look for and what you will see. It is attached to this document as "SolarEclipseNSTA.pdf"

2. A very extensive *Eclipse Resource Guide*, by Andrew Fraknoi, is published by the Astronomical Society of the Pacific at <http://www.astrosociety.org/education/astronomy-resource-guides/eclipse-resource-guide/> . It lists and evaluates numerous eclipse books, articles, and websites.

3. Sky and Telescope magazine also has a (less extensive) listing of resources at <http://www.skyandtelescope.com/2017-total-solar-eclipse/2017-eclipse-resources/>

4. A more commercial general eclipse resource site is at <https://www.greatamericaneclipse.com/>

5. The book *The History of Solar Eclipses from Omens of Doom to Einstein and Exoplanets*, by Tyler Nordgren, Basic Books, 2016, was very positively reviewed in Sky and Telescope magazine, February, 2017, p.57.<sup>2</sup> It discusses both the history of eclipse viewing and modern techniques for doing so. Nordgren, an astronomer, writes a fine liberal arts book on the topic.

6. The book *"Eclipse: Journeys to the Dark Side of the Moon"* by Frank Close, Oxford U. Press, 2017, was also very positively reviewed in *Nature Astronomy*, **1**, 0045.<sup>2</sup> Close is a British astronomer, who also writes a fine liberal arts book.

7. A google search on "solar eclipse 2017 book" will reveal countless other books. Again I think item 1 above is adequate, but many of these books are fine too. Contact me if you have questions about any that you are considering.

#### D. Eclipse photography suggestions from *Sky and Telescope*

*How to Photograph the Solar Eclipse: A Guide to Capturing the 2017 Total Eclipse of the Sun* by Alan Dyer (2017, 290-page eBook, available for download from [amazingsky.com](http://amazingsky.com))

[mreclipse.com/SEphoto/SEphoto.html](http://mreclipse.com/SEphoto/SEphoto.html) helpful, time-tested advice and detailed tables for taking solar-eclipse photos

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<sup>2</sup> I can supply a pdf of the review to you, if you wish.