

A LOOK BACK TO APRIL 8, 2005

By Francis Graham

The research question was: **How close to the actual geometric limit of a partial solar eclipse can a partial solar eclipse actually be observed?** The solar eclipse of Thursday, April 8, 2005 gave us an excellent opportunity to find out.

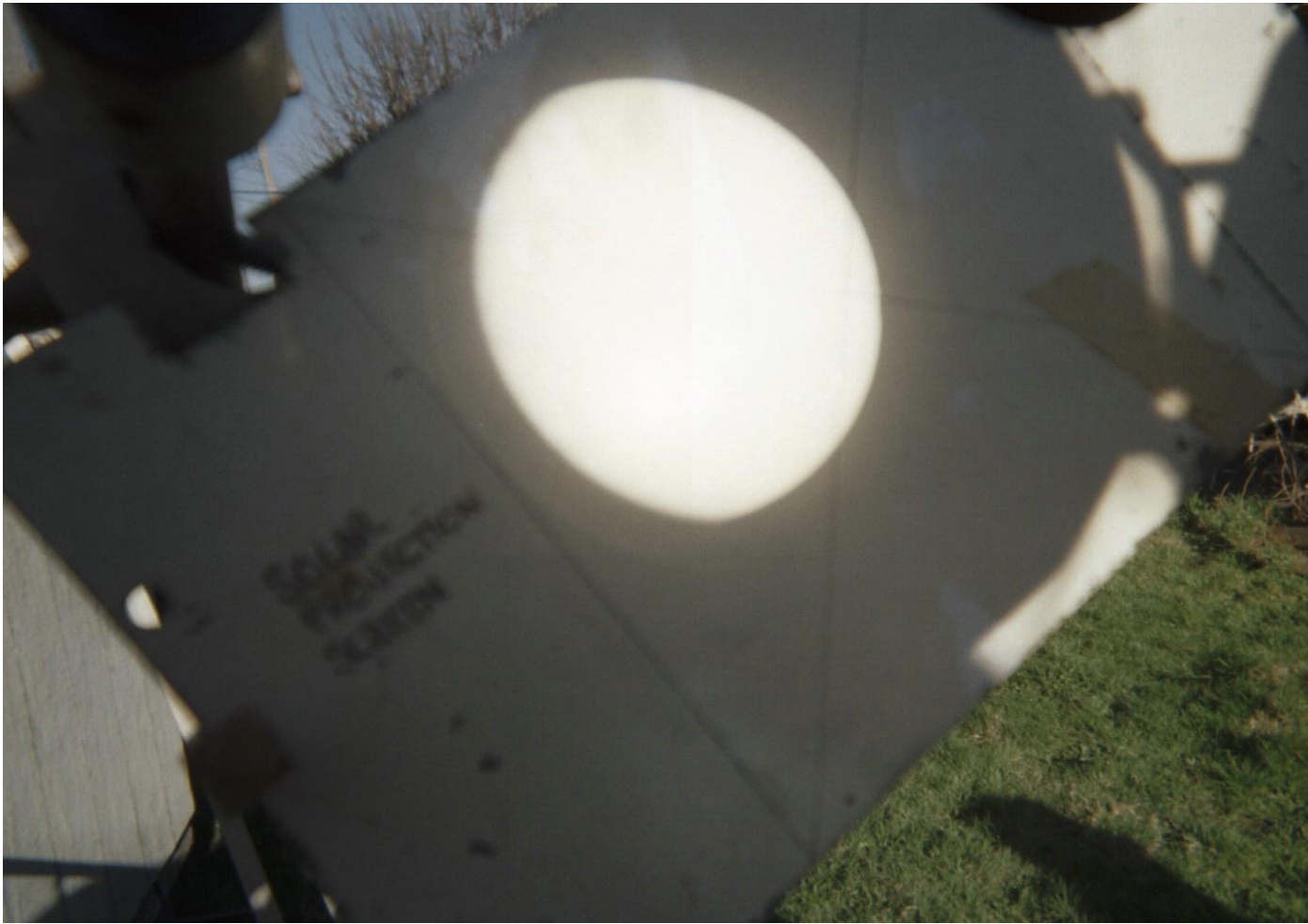
The eclipse was visible completely in Panama, but here in Pittsburgh we were very near the predicted northern limit. At the extreme limit of a solar eclipse, the Moon will just be seen to brush the Sun tangentially. Just inside the limit, the Moon will make just a “nick” in the Sun. The geometric limit of this eclipse was a few miles north of East Pittsburgh, Pennsylvania and site of the Christina Alley Observatory.

I had done an experiment of this nature before, with a small portable telescope, of the May 21, 1993 eclipse from Toledo, Ohio, and reported the results in a slide show that evening to the Akron Astronomy club. But in East Pittsburgh I would use the quasi-permanent 7-inch f/15 Gadela refractor. I also had access to other reports around the area of eclipse sightings and no-sightings, so a good determination of the answer to the research question could be made.



The Gadela Refractor mounted outside the Christina Alley Observatory, showing the Sun in projection in eclipse. Left to right: John D. Weinhold, Glenn A. Walsh, Theresa M. Graham and William B. Hall.

Although 10 km. from the northern limit, which ran approximately at the latitude of Aspinwall, we had no trouble seeing a small arc of the Moon silhouetted against the solar photosphere. It is visible in the accompanying photograph at the location where the horizontal fiducial line on the solar projection screen intersects the solar image. You might want to use your “zoom” feature in your Adobe viewer to see it clearly.



Projected image of the Sun showing solar eclipse, April 8, 2005.

William Blake Hall is a veteran of many eclipse observations and so he came to assist with this one. Glenn A. Walsh and the late John D. Weinhold are former members of the staff of the old Buhl Planetarium (John was a volunteer), and Glenn had organized the 2004 observation of the transit of Venus atop Mount Washington at the Duquesne Incline. Theresa was very kind and prepared food on an outdoor hotplate. I think it was soup, as I recall, or chili.



Glenn Walsh in front, behind are John Weinhold and Theresa Marie Graham

We did not get any positive observations from closer than about 7 km. to the geometric limit, and so this is a rough guide to limiting observations of a partial solar eclipse. These results were all written up and published : “A Minimum Solar Eclipse” *Selenology* 23, 1



Theresa Marie Graham offers soup and soda.

A final experiment regarding this research question might be carried out June 1, 2011 in New Brunswick and Nova Scotia. We'll have more information about that a bit later.