Zrínyis diákok cikke a Griffith Observer (Los Angeles, USA) 2000. májusi számában

Eclipse in Hungary

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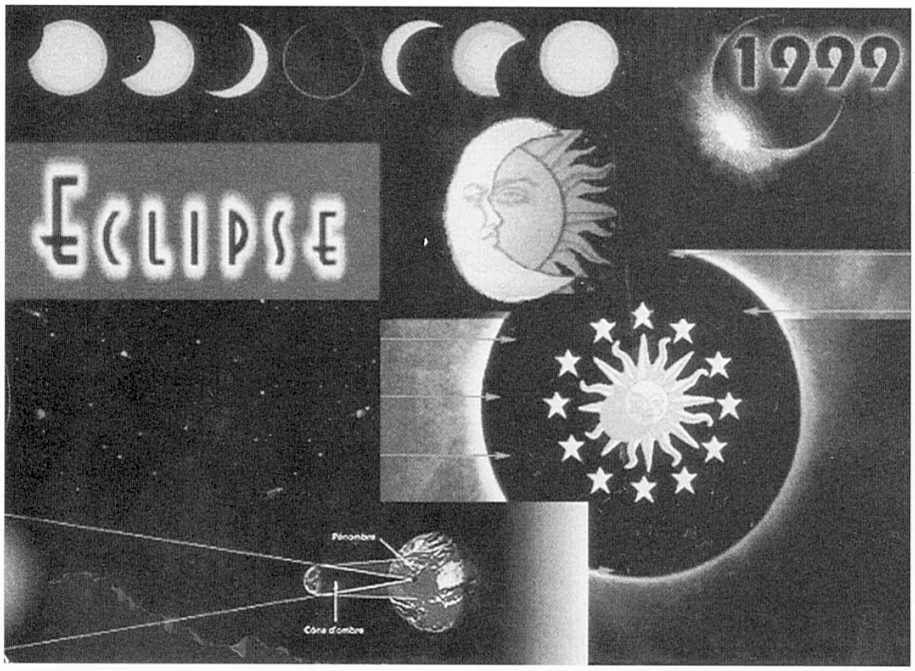
Anticipating clear Hungarian skies on 11 August 1999, Tibor Juhasz mobilized his students for scientific observation of last summer's total solar eclipse. Like much of Europe on eclipse day, the prospects at Egervar village looked poor, but the clouds broke after all. As a consequence, Hungary is able to help satisfy the eclipse appetite of our readers.



Hungary's eclipse memorabilia included this eclipse postcard. It was sent by Norma Leszt, a Friends Of The Observatory eclipse cruise veteran who watched the 11 August 1999 total solar eclipse from solid ground in Hungary. **(collection E.C. Krupp)**

No matter where you live—male or female, young or old—whether you belong to the modern, so-called civilized world or are part of a remote pocket of archaic, traditional culture, you will be profoundly affected and perhaps regenerated by a total solar eclipse.

Our class from Zrinyi Miklos Grammar School (Zalaegerszeg, western Hungary) prepared well for the total solar eclipse on 11 August 1999. This kind of eclipse is rare, and we knew that some nomadic tribes or tourists, in Oceania, had practically gone mad during another solar eclipse.

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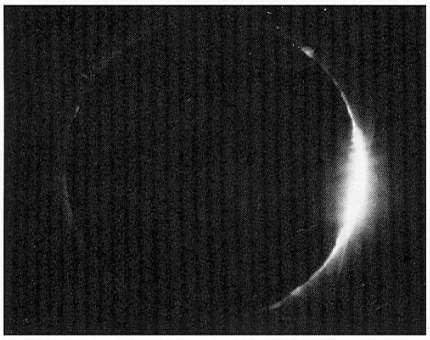
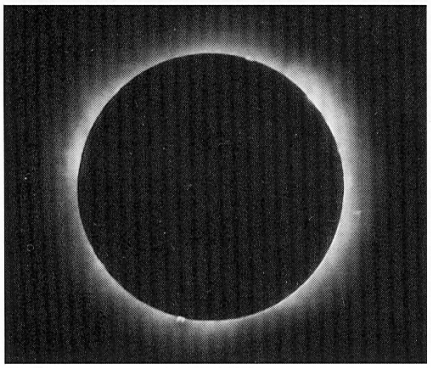


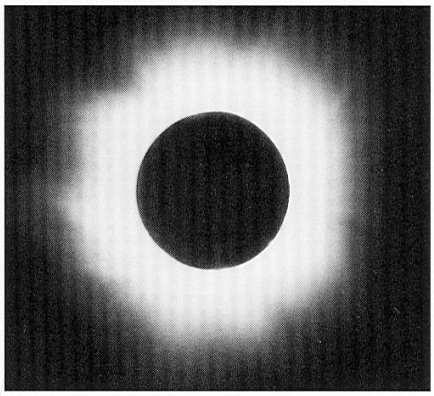
***Committed to totality above the* Stella Solaris *on the Black Sea, the dark disk of the moon allows the sun a moment of glory at second contact with this diamond ring.* (photograph Jose A. Martinez, Fuji 800, Canon A2E, 800-mm lens, f/16, 1/6000 second)**



***From Altomunster (Bavaria), Germany, Ernie Piini cultivated "a garden of rosy pink prominences" that encircled the totally eclipsed sun.* (photograph Ernie Piini, Kodak Royal Gold-100, C-90 telescope, f/11, 1/60 second)**

It was horrifying, later, to realize that our reactions to this eclipse were similar.

We decided to watch the eclipse from the top of a hill near Egervar, a village near Zalaegeroveg. The weather was quite nasty. Looking out of the window, we could only see dark gray clouds above and sleepy puddles below. This was upsetting on the threshold of a unique natural miracle such as a total solar eclipse. It occurs only



***A radially-symmetric sunspot-maximum outer corona haloes the sun in total eclipse. Despite the aesthetic appeal of eclipse photographs, the camera cannot record the intricate structure of the corona, which looks a lot less uniform to the unaided eye.* (photograph Jose A. Martinez, Fuji 800, Canon A2E, 800-mm lens, f/16, 1/125 second, on board the *Stella Solaris*, 75 miles east of Varna, Bulgaria)**

once in a blue moon, and then you miss it because of bad weather. Awful.

Suddenly, a real wonder occurred. The sky began to clear, and fifteen minutes later the sun was shining. By that time most of us had arrived.

We were ready to take on the hill. It wasn't sky-high, but it was rather steep. Finally, we reached the top, put our blankets down, and made ourselves comfortable. We talked, made measurements, sang, and played the guitar. We amused ourselves by selecting songs like "Fade to Black," "Night Time Eclipse," "Fear of the Dark," and so forth.

We watched the partial phase of the eclipse through special eye-protecting goggles. Close to totality, the sky was still bright. We thought the eclipse would not take place as described and that it would be bright during the whole phenomenon. But then, in ten to fifteen seconds, the sky darkened. It was mysterious, as if the lights had been switched off. Some of us began shouting and tearing around, but most of us stood nailed to the ground. The two minutes of totality were unforgettable. Time seemed then to stop for awhile. It then began to brighten as fast as it had darkened before. We realized that the faintest

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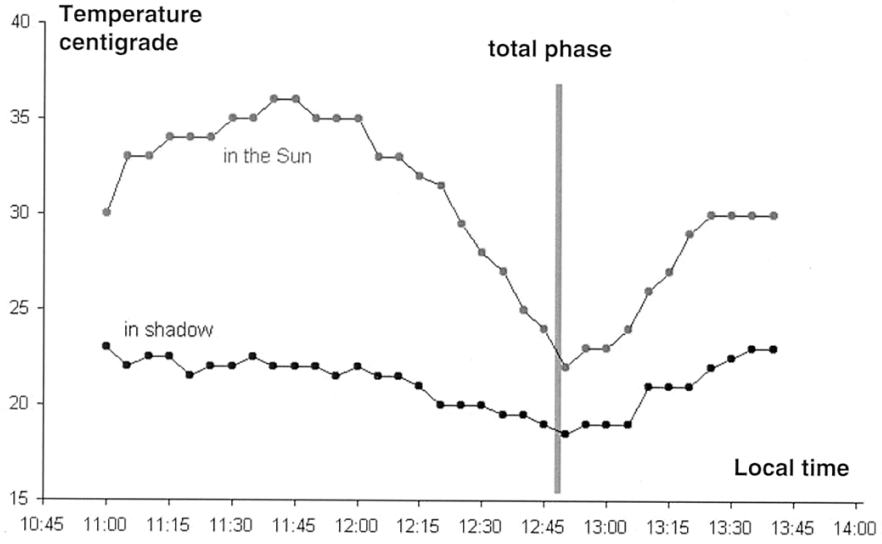
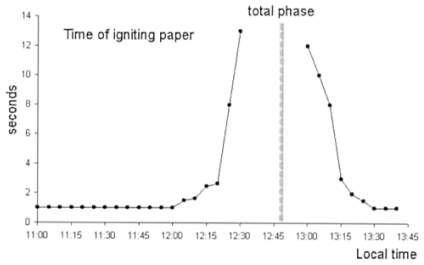


The students of Zrinyi Miklos Grammar School measured the air temperature in full sunlight and in the shadow before, during, and after totality. Although the temperature in the shade did bottom out in totality, the drop in open sunlight was much more dramatic. **(diagram Zoltan Bajnoczy, Bea Bobies, Balint Kovacs, and Istvan Natran)**



As the fire seemed to go out of the sun, the authors measured the ignition time of paper subjected to sunlight transmitted by a magnifying lens. No real effect was observed during partial eclipse until about three-quarters of an hour before totality. Over the next 15 minutes, ignition time gradually increased and then abruptly lengthened. Through roughly 12 minutes on either side of mid-eclipse, the paper would not catch fire at all. The sunlight was too weak to reach Fahrenheit 451. **(diagram Zoltan Bajnoczy, Bea Bobies, Balint Kovacs, and Istvan Natran)**

sunbeam could illuminate the landscape. It was a tremendous experience.

There was, however, something else to do. Besides enjoying the pleasure of watching this extremely spectacular phenomenon there was a scientific dimension to our observation of the total solar eclipse. Mr. Tibor Juhasz, our physics teacher, had drawn our attention to measurements that could be performed. Two of these measurements could be obtained by us. In our first experiment, we set fire to a piece of paper by using a convex lens (diameter = 7.5 cm, focal length = 8 cm). At first, the ignition times we measured were extremely short, only 1 to 2 seconds, but after the first contact, the ignition times grew longer and longer. Then, a few minutes before totality, we were unable to light the paper. After totality, ignition was again possible, and the times got shorter and shorter until they reached their original brevity.

Our second measurement involved the temperature, which we observed throughout the event. We discovered the difference in temperature was up to 10 degrees Celsius, from prior to

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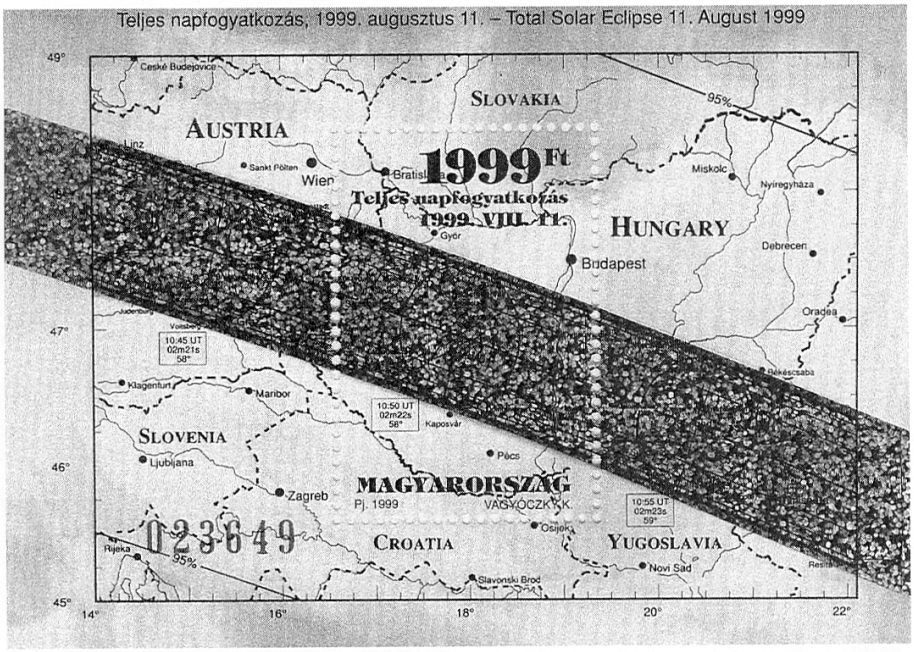

Several European nations in the eclipse path issued stamps to commemorate totality, but Hungary released a philatelic souvenir sheet. It maps central Europe in soft green and yellow ink, but the path of total eclipse is overprinted in silver. **(collection E.C. Krupp, provided by Tibor Juhasz)**

the eclipse to totality, which is quite shocking if you consider average temperatures in summer. The change of temperature followed the same pattern as the previous measurement, and we have charted the data from both studies.

Besides the two measurements above, we also observed other most interesting phenomena. In one case, we saw how a small hole acts like a lens—it creates a picture. When the sun was half-covered by the moon, projection of light through the pinhole onto a piece of paper allowed us to see an image of the half-covered sun.

We also noted the effect of the leaves on the trees. They acted just like the hole and created an image.

It was not only people who responded to the total solar eclipse. Animals and plants also reacted to it. Farm animals and pets attracted attention. Hens did not react in the same way everywhere. In some places, they gathered together and stood stunned, disoriented by what was happening. Elsewhere, the chickens went to roost as if it were evening. Roosters, however, crowed everywhere throughout the entire eclipse.

In the gardens, flowers closed their petals, but because totality lasted only for a little more than two minutes, they did not have the time to finish the procedure. When the sun started shining again—unexpectedly—they first closed their petals fully and then opened them again. Birds stopped singing and did not fly. They also thought it was evening. During totality day time insects—like bees and wasps—disappeared, and twilight insects—like mosquitoes—appeared. Fortunately, the mosquitoes did not bite..

Near a village Ketvolgy, two deer were deceived by the rare natural phenomenon. They came out of the forest and began to graze peacefully. When it grew lighter again they retreated back into the forest.

All in all, the eclipse was cathartic. It induced a cleansing and purifying sense of natural wonder. At the same time, it prompted us to celebrate and make fun of the unusual circumstances.