

THE MAKING OF AN ECLIPSE BUM

Joseph O. Patterson *

O dark, dark, dark, amid the blaze of noon. -- Milton

On October 23, the residents of Melbourne, Australia experienced one of the rarest and grandest spectacles of nature: a total eclipse of the Sun. Although many people have witnessed a partial eclipse of the Sun, very few have ever seen a total eclipse, for the path of totality never covers more than one per cent of the Earth's surface. But for many of those who do find themselves in the Moon's shadow by luck or design, life is never quite the same again. Many become "eclipse bums", leaving family and job for several weeks to travel to some far-away island where the sky will go black for two precious minutes. Perhaps their zeal is like that of the mountain-climber, who cannot explain why he feels as he does, but whose determination and disdain for obstacles is legend.

I received my initiation into this strange fraternity on March 7, 1970, when a total eclipse passed within 300 miles of my home, then in New York City. I had seen two previous eclipses in which over ninety per cent of the Sun's disk was covered, so when the idea of driving to Virginia for the eclipse came up, I was pretty skeptical. After all, ninety percent is pretty close to total, right? Well, my friends' energy triumphed over my skepticism, and this is the story of that glorious day. It is part of a larger narrative about amateur astronomy, and so begins "in progress".

We arrived in Virginia Beach about 4:30 a.m., and I went into a motel in search of a local newspaper. The night proprietor was extremely cheerful and helpful as he directed me to a restaurant down the road. He also had an eclipse map which showed the center of totality passing through the Dam Neck area of Virginia Beach, about four miles down Atlantic Avenue. We drove down the road to the restaurant and Bill went in to get the paper, provoking one of the locals to remark, "Sure are a lot of freaks around here." Then we headed south with the intention of seeing Kitty Hawk and coming back in time to set up for the eclipse.

By 6:00 a.m. it was clear that we weren't going to make Kitty Hawk in time, so we aborted those plans and got out to view sunrise. The sun rose about 6:25, and through binoculars we could see three large sunspots. One filter of exposed film was just right at sunrise, but in a few minutes two were necessary. We then returned to Virginia Beach, had breakfast, and returned to the motel to re-examine the map. Cal struck up a conversation with an older gentleman from Baltimore who invited us to use his second-floor vantage point to view the eclipse. We lingered a while and Cal talked about camera settings; then we left to pick up some last-minute accessories like scotch tape and the New York Times.

Before going back to the motel we decided to scout the area for other viewing sites. By now it was 10 a.m. and the high cirrus clouds of early morning had vanished. Conditions were perfect. About three miles down the road we found a long pier extending about 130 yards out to sea, offering excellent prospects for seeing the approaching shadow. There we met a fellow who had come all the way from Idaho, with no equipment but a thick lens which he hoped-- in vain-- would allow him to project the image for easy viewing.

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We were still uncertain about where to view the eclipse, but we finally settled on a broad section of beach about a quarter mile north of the pier. We had an hour to wait for first contact. Bill noticed it first at 12:18 p.m. The Moon was approaching from south of the ecliptic, at what seemed like a very large angle. For some reason I had expected it to be right on the ecliptic.

I had a pair of 7X50 binoculars and had stopped down one lens completely and fitted two filters over the other. This was quite adequate for the partial phase, but I planned to remove at least one filter during totality. Bill was observing naked-eye with two filters, while Cal used 6X30 binoculars with two filters.

For the next hour and ten minutes we glanced periodically at the Sun and roamed around the beach chatting with other observers. Some kids had an RV-6 Dynascope next to us, and I amused myself watching the occultation of sunspots through it. By 1:00 p.m. it was noticeably colder and very slightly darker. It was not the darkness of twilight, but the eerie, ominous darkness that descends just prior to a summer storm. Opposite the Sun, the sky had turned a deeper blue.

At about the 70% phase, Cal noticed that his shadow was quite sharp and distinct on the right, but very fuzzy on the left. He asked me why, and I attributed it to the fact that the sand at the left border of his shadow was loose and irregularly distributed. Then I noticed that my shadow, along with everyone else's, had the same property! It then occurred to me that a crescent light source ought to cast an unsymmetrical shadow. This was a very pleasing discovery. Of course we should have looked after totality, when the crescent was reversed, to see if the shadow was reversed--but we didn't think of it.

All this time, of course, the sky was growing darker; but as late as 1:30 p.m., at about 96%, there was just no hint of the drama yet to come. I started looking through my binoculars with about 1 1/2 minutes to go, when Cal warned, "It's coming fast now." About 15 seconds before totality, he yelled, "Joe--the fringes!", and I turned to see light and dark bands moving across the sand at about 5 mph. The bands were 2-4 inches wide. I don't recall if the light bands were any lighter than the sand was before the fringes appeared--it would have been very difficult to tell anyway since the light intensity was changing very rapidly now. I watched the fringes for a few seconds, yelling "The fringes! There they are! The fringes!" or something like that. Then I ripped off one filter and looked back at the Sun. In a few seconds the diamond ring effect appeared, the last burst of light from the photosphere. Then Bailey's Beads flashed into view, and I lowered the binoculars to rip the last filter off. I had been lying down to view it comfortably, but by this time I was standing up, though I don't remember getting up. In my haste to remove the filter I lost my balance and fell, and in a kneeling position I glanced up to see the corona. All this took at most three seconds, so the corona must have appeared very suddenly. I looked around me and saw--if that's the word--the darkness that had enveloped everything. I heard myself yelling incoherently, "My God! It's incredible! Fantastic!" and so on. I heard Bill yelling similar things and I think I heard Cal, but I had no awareness that anyone else was present--except that I clearly recall wondering why nobody else was reacting to the spectacle, so I must have been aware of their presence. Later Bill and Cal told me that everyone had reacted with the same hysteria, many applauding at the beginning

and end of totality. So obviously my perception system wasn't processing all inputs.

The excitement of totality was far too great for me to remember clearly what I did during the next 2 1/2 minutes. Venus was shining very brightly about 6° west of the Sun, and the sky was quite dark--not black but a deep, deep midnight blue. I looked for Mercury to the east and couldn't find it, then looked far to the west for Mars and Saturn, again unsuccessfully. I looked again for Mercury and found it--I thought--about 4 degrees east of the Sun, at about 4 o'clock. I glanced around randomly for stars and was surprised to find none, as it seemed to be dark enough to permit seeing at least a dozen stars. All this time I kept glancing back at the corona--sometimes with binoculars, sometimes without--and perhaps its brightness hurt my night vision sufficiently to explain this. I barely made out one star in the south, which I later identified as Fomalhaut. I noticed that the street lights had gone on, and that the horizon was red in all directions. I screamed at Bill to notice this, and he did, but I remember wondering why no one else had responded to my shout. Perhaps their perception systems were as blocked as mine.

The sensations crowded in on me with overwhelming rapidity and power. The breathtaking, silver splendor of the corona; the fragile, crimson light of the horizon; the fierce brilliance of Venus; the deathly black disk that hung in the sky surrounded by a ring of fire; the ominous cold and darkness that surrounded everything; and the spectacle of tiny, insignificant human beings congregated on a beach, staring openmouthed and awestruck at the heavens, and sharing emotions that their miserable language couldn't begin to express. The feeling of power over nature that science fosters was utterly absent. All my knowledge of astronomy and attention to observational detail vanished, or became irrelevant; I was a member of homo sapiens and hence afflicted with that species' most notable characteristics: fear, and an insatiable curiosity. This event that I was witnessing called up the strongest of these emotions. I felt no conscious fear, but without doubt the experience touched feelings and fears anchored deep within my species identity. For though I was unafraid, my not-very-remote ancestors were deathly afraid, and perhaps--though I have no biological basis for this claim--the ancient terror still lingers in some form.

I was looking at the corona when suddenly I could see two or three giant, red, snake-like figures between 5 and 6 o'clock on the Sun. I suppose these were prominences in the chromosphere, but I didn't have much time to observe them, since within five seconds Bailey's Beads again flashed into view, and I think I began yelling again. When the first rays from the photosphere came through, I looked down at the sand and saw the fringes again. This time I shouted at Cal and Bill to notice this, and was again amazed that nobody around us had reacted to my discovery. I was even a little angry.

By the time I looked up, about 8-10 seconds after totality, the beach was bathed in a very intense light. It was as if someone had turned on a 200-watt incandescent bulb in a small, dark room. Since over 99% of the Sun's disk was still covered, this effect was no doubt due to the fact that our eyes had become dark-adapted in the preceding 2 1/2 minutes. I feel sure that had I looked to the northeast, I would have seen a black shadow moving over the water--but the excitement was too great, and I forgot. I also failed to notice Venus being extinguished.

Within one minute almost everyone had started to dismantle his equipment, which seemed awfully incongruous since there was still a 99% partial eclipse

overhead. But having experienced the grandeur of totality, it was natural for us to feel disdain for such things as partial eclipses. So we threw everything in the car and joined the procession of cars winding north on Atlantic Avenue.

NOTE: Although this year's October eclipse was not seen anywhere in the Northern Hemisphere, there are two eclipses in the next 2 1/2 years that will be fairly accessible to Texans. On October 12, 1977, the path of totality will sweep southeast from a point north of Hawaii, pass below Baja, California, crossing Columbia and Venezuela. Sky and Telescope magazine will carry full details on the eclipse, including information on the many chartered boats and planes that will be following it. The information most pertinent to Texans will also appear here in the McDonald Observatory News.

The eclipse of February 26, 1979 will be the last total eclipse visible from the United States in this century. The path sweeps eastward across northern Oregon, Idaho, and Montana, then heads northeast across Canada to the Hudson Bay. The weather prospects in the Northwest during the winter are not encouraging, but this will be a very popular eclipse for American amateur astronomers. In the event of clouds on eclipse day, the most popular people in town will be the owners of small aircraft.

LETTERS TO THE EDITOR

Dear Sirs,

My grandfather and I have suddenly taken a great interest in your studies of stars. I would appreciate it greatly if you would send me 12 copies (January - December) of your McDonald Observatory News. I am thinking quite seriously of taking a weekly study (using your charts) of the constellations.

I was looking at the March copy and I noticed the Big Dipper. In the way you have it and some other stars connected, a form similar to a giraffe takes shape. I have circled it in red on a small chart I made. Look at it and think it over.

Sincerely,

*Melissa Sullivan
Waco, Texas*

Dear Melissa,

Thank you for your chart and perceptive observations on the shape of the Big Dipper and surrounding stars. After thinking it over, I agree with you: Ursa Major does indeed resemble a giraffe. The Greeks and Romans, among the first to name the star patterns in the sky, also saw an animal form in that star group, only to them it was a bear. They called it Greater Bear or Ursa Major in Latin. Had the giraffe been a part of their mythology like the bear, Ursa Major today might be called Great Giraffe.

I hope you have been able to continue your weekly and profitable study of the constellations.

-Ed.

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