

# The Great Solar Blackout of 1980

by PETER DEWEES

As the train lurched to a halt, I looked out the window to verify that I had at last arrived in Puri. In the two months since I had left California, I had come halfway around the world to get to this spot on the eastern coast of India. Why Puri? Because on that February afternoon there was to be a total eclipse of the sun, and Puri lay directly in the path of totality.

It would be misleading to suggest that I had undertaken this trip with the express purpose of catching an eclipse in India. I had been wandering through the South Pacific and Southeast Asia, and Puri was only my next stop — chosen because back at Caltech I had read about the coming eclipse and realized that I could watch it in Puri if I stopped there on my way to Nepal to go trekking in the Himalayas.

Trying in Calcutta to arrange to make the Puri stop had introduced me to the bureaucratic hassles and piles of red tape that bog down every process in India that requires paperwork. It took me the better part of a day to track down a train ticket. First, I had to get an allocated seat from the "tourist quota." Then I had to make a reservation, buy a ticket, and confirm the reservation. All of this may sound like standard tourist trouble, but each step required going to different windows in different buildings in different parts of a very large city. And in front of each window was a queue of at least ten people trying to do the same things as I.

The train left on schedule in the early evening, and 12 hours later I woke up in the chill of the early February morning, shaking a layer of soot off my blanket. The coal-powered locomotive sent clouds of the stuff billowing out of its stacks, and half of it seemed to have ended up in my compartment.

At the Puri station, which we reached about 10 A.M., everything was relatively subdued. The ticket office was conveniently located right there, making it possible to book passage easily for the next leg of the trip. Getting something to eat turned out to be not as easy as I'd hoped,

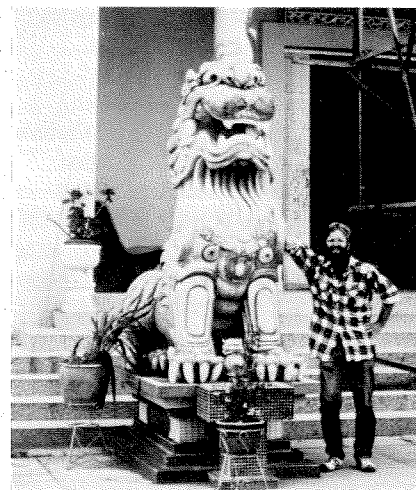
and by that time I was hungry. Indian train stations usually have restaurants of sorts, offering food of reasonable quality and variety. I sat down at a table in the restaurant adjacent to the Puri station and glanced over the menu printed on a sign in Hindi and English. I decided on *masala dosa*, a wonderfully spiced vegetable mix wrapped in a thin bread shell. But, my waiter informed me, they had no *dosa*. Okay, I would have *dalbaht*, a thick lentil soup poured over a bed of rice. No *dalbaht* either. Several suggestions later I asked the waiter what they did have.

Eggs. I could have anything made out of eggs — scrambled, hard-boiled, or omelets. Most food, it seems, would be poisonous during the lunar passage, but for some reason eggs were safe, perhaps because their shells protected them. In Puri, the restaurants were taking no chances.

I was aware that the coming eclipse had caused quite a stir throughout the country. The Calcutta newspaper, for example, had been filled with warnings about some of the very real dangers of watching it, referring specifically to retinal damage that could be caused by staring directly at the sun. But there were other articles too that reflected some widely held beliefs about actually nonexistent dangers (to Western minds). Not only would food be tainted, but one might even die from the effects of the eclipse. Pregnant women would later give birth to infants with birth defects. In the 20th century, these were very real fears for people who had never gotten out of the Dark Ages. The *Hindustan Times* of February 14 had an article that said:

"The sun will be in great agony during the coming eclipse, and all our prayers will be for its health," said a sadhu [a holy man] today in a temple on the Yamuna bank. Most of the sadhus and Brahmins have decided to go to Kurukshetra and stand in the holy waters there for the duration of the eclipse.

The people were quite intent in their fears. The country had come to a standstill while



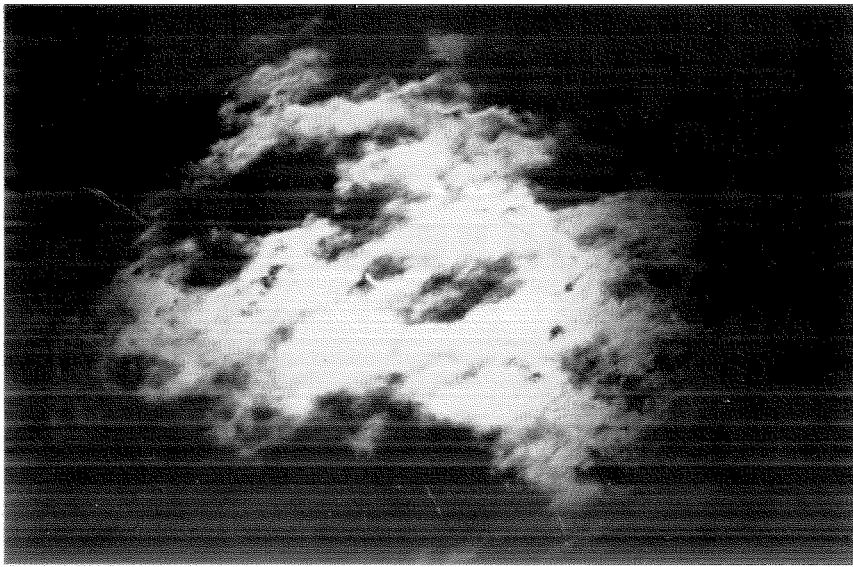
Peter Dewees outside a Buddhist temple in the Cameron Highlands, Malaysia, which was one stop in his travels during the year after he graduated from Caltech in 1979. Another stop is described in this article. Dewees is currently a graduate student in biology at Dartmouth College.

its 620 million inhabitants waited for the outcome of that afternoon's celestial happening.

Since the eclipse obviously had such great religious and mythological importance, I later made an effort to identify some of the common themes. In Hindu solar mythology, Surya, the Sun god, is manifested in 12 solar divinities, each of whom serves all sorts of useful functions. Puchan provides food for all living things. Indra, the Lord of the Gods, is the destroyer of their enemies. Varuna dwells in the heart of the waters and gives life to the universe. Vivasvan causes good digestion.

Vishnu is the manifestation of Surya who rides about the sky in his solar chariot, not unlike the Apollo of the Greeks. In eclipse mythology, a demon, Svarbhanu, once drank some of the nectar of immortality, and in retaliation Vishnu lopped off the demon's head with his sword. But because the demon had become immortal, his head goes flying about the heavens for all eternity. Whenever Svarbhanu's head catches up with Vishnu, it devours him, thus causing darkness to fall upon the earth. Indra then frees Vishnu from Svarbhanu and restores light to the earth.

This mythology helps to make it clear why Hindus so greatly fear eclipses. Vishnu, the preserver and bringer of all good things, is no longer manifest. Minor demons have free reign over the earth while Vishnu is hidden by Svarbhanu. Mere mortals must hide for their lives from the



A tiny sliver of solar crescent shows through the broken clouds as the eclipse of the sun nears totality. Puri, India, February 16, 1980.

demons who will wreak havoc upon the earth during the period of totality.

Even though the mythology also explains why eclipses take place, there has long been an understanding in India that such events do not occur randomly. There are reports that Indian astronomers from the 15th century could predict the coming, the length, and the path of totality of eclipses to an amazing degree of accuracy. But in spite of the scientific knowledge, the mythology — and the fears — remain.

As everyone waited for this eclipse, Puri was like a ghost town, with the shops boarded up tight and few people on the streets. One exception was at the famous Jagganath Temple, which seemed to be the only place where people were congregated in any numbers — perhaps just because it was a religious edifice.

As a young American traveling alone in India, I was an object of curiosity. People would approach me on the street, in train stations, in museums and parks, and ask, "Please, what is the purpose of your

visit?" In Puri it was difficult to persuade anyone that I was just an interested tourist, not a European scientist there to observe the eclipse. As far as I could tell, there were no Western scientists in town, but I understood there was a scientific expedition from an Indian institution. When I tried to track them down, I got the impression they were trying to avoid the throngs of the curious who were pestering them. I was just one of the throng.

Totality was to take place around 3:30 P.M., and with a few hours to kill I wandered down to the beach on the shore of the Bay of Bengal to write a few letters and update my journal. Even there my presence attracted a small crowd of people, among whom was an Indian university student who introduced himself and asked me if I would go with him to meet some of his friends and watch the eclipse with them.

I followed him to a three-story brick structure that turned out to be a dormitory, and there I at once became the uneasy center of attention for about 30 of those

friends. Most of them just stared at me and smiled. I figured it was going to be a really long afternoon if I just stared at them and smiled back, so I started telling them about myself and what I was doing there. Only a few of them really spoke English, but a torrent of questions followed — about my Levis, for instance; did everyone in America wear them? Who was going to arrange my marriage? What did I study? The answer, "cell biology," only drew blank looks. The only types of biology these students seemed to recognize were botany and zoology.

I didn't get the impression that the students I met reacted differently to the eclipse than the rest of the population. In answer to my questions about food, they said (perhaps in deference to me) that they didn't think the eclipse would really have any effect on it, but that the holy men had told them dire consequences would come from eating, and they thought it best to listen to their holy men. I was left with the feeling that the ban on food was an attempt to purify the body and spirit so that the people would be strengthened in their ability to prevail against any evil that might come to them during the eclipse. The concept of a fast in Christian countries seems to me to be quite similar.

As totality approached, we went to the rooftop. High clouds had threatened to obscure the view, but they broke in the last minutes before darkness. The sequence of events leading to totality was no different here than in an eclipse anywhere else. Twilight began to fall by midday. Birds took off in flight. Shadows became distorted by the crescent sun. Dogs started barking. Suddenly it became like night. The stars came out. A pink glow extended around the horizon. What I didn't expect were the cries, the wails, the moaning that rose from the town. Horns were blown and drums were beaten, presumably to ward off the darkness or the evils that might come from it.

Then, as quickly as it had come, the darkness was gone. Bright beads of light first glimmered as the sun peeked through the valleys of the moon's profile. The beads gave way to a sliver of a solar crescent. Within an hour, the sun was restored to fullness.

Svarbhanu had once again been vanquished by Indra. Vishnu's fiery chariot could continue its celestial journey, bringing light and good to the hearts of men. And the world did not come to an end — this time. □



Indian astronomers have predicted eclipses since the 15th century. This observatory in New Delhi was constructed by the Maharajah Jai Singh II about 1730.



Indian university students adopted Dewees for the afternoon of the eclipse, which they all watched from the roof of the student dormitory.