

Thanks to the timing and technique of a Hawaiian Airlines flight crew, 65 scientists kept a date with a total solar eclipse.



PHOTOS: PAT PITZER

Last June, the chief pilot of Hawaiian Airlines asked me if I would like to navigate for "Operation Moonshadow." Since a project with a name like a spy thriller promised to be more interesting than a routine, fair-weather flight from Honolulu to Maui, I accepted immediately.

I soon learned that Operation Moonshadow was the project of Moonshadow Expeditions, a dedicated group of astronomers who will travel anywhere, any time, to view a solar eclipse. The group had chartered one of Hawaiian Airlines' new DC-9-80s to pursue the July 30 total eclipse of the sun.

Eastern Siberia afforded the best

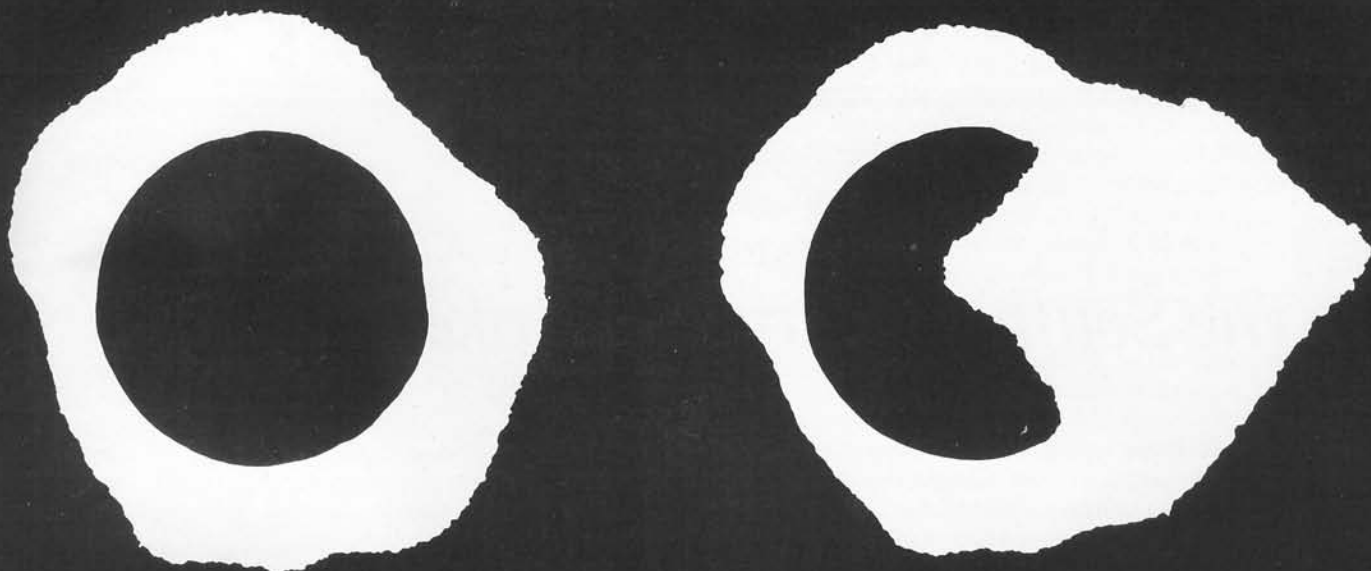
view of the rare celestial event, but political and other considerations made the other end of the eclipse path, which terminated northwest of the main Hawaiian Islands, a more feasible choice. We arranged to fly a track commencing approximately 350 miles northwest of Kauai. The Federal Aviation Administration cooperated by reserving a block of airspace, and the Hawaii Air National Guard agreed to monitor our flight's progress with long-range radar.

The flight plan for viewing the eclipse called for a 20-minute run at Flight Level 370, with a groundspeed of 450 knots and a course 199 degrees true. The goal was to intercept the

eclipse at an exact geographical point at a precise time. It would be after sunset at sea level, but at Flight Level 370 the sun would still be about 6 degrees above the horizon. In effect, we were to position the airplane along the rapidly moving imaginary line through the sun and the moon. Everything had to go right, since the total eclipse would last only 30 seconds.

The precision required was intimidating, a feeling exacerbated by thoughts of a plane load of angry scientists and no safe hiding places for the crew if we were to miss our narrow target. We decided to take out some insurance: by allowing for 20 minutes of holding before the start of the run,

Operation MOON



The starboard side of the DC-9-80's cabin was cleared for over a half million dollars worth of photographic equipment (opposite) so that scientists could record such celestial events as the moment of totality (left) and the "diamond ring" (right).

we could compute power settings to maintain groundspeed and compensate for wind drift so that we would pass over the starting point at the precise time. Omega would serve as the primary navigation system.

In the late afternoon of July 30, 1981, we took off over the Pacific for our rendezvous with a moonshadow. The flight crew included Captains Bob Maguire, director of flight operations, and Ken Sunderland, former chief pilot. Our aircraft was a brand-new DC-9-80 making its first revenue flight. Seats had been removed from the right side of the plane to give the 65 charter passengers more space for viewing the eclipse and for setting up a

veritable fortune in photographic equipment.

The average level of intelligence was probably the highest ever on a Hawaiian Airlines flight, even after allowing for dilution by the crew. One astronomer aboard literally wrote the book on eclipses, and others had studied as many as nine successive total eclipses around the world. A flight attendant said it all when he came to the cockpit with a bemused expression and said, "These guys all speak algebra."

Despite all of the real and imagined pressure, the flight went smoothly. As the moon slowly devoured the solar disc, the sound of clicking camera

shutters gradually replaced talking, then gave way to "oohs" and "aahs" at the moment of totality — along with audible sighs of relief from the crew.

The total eclipse was a sight of haunting and unearthly beauty. In 20 years of flying I have seen the atmosphere in many moods, but the sight of the sea and the clouds bathed in an eerie glow from a circle of light was unique. For just a moment the earth became like an alien planet in a science fiction movie. As we were momentarily overpowered by the awe of the universe, our flight attendant-philosopher once again said it all: "That eclipse, man, gave me like chicken skin all over." □

NSHADOW

By F/O John Earle (HAL)