A memorable occultation

Willie Koorts

Almost identical to 1882, when that year's transit of Venus was preceded by a spectacular event, a couple of rare spectacles pre-empted the 2004 transit. Although 2004's double comet show was by far not as spectacular as the Great Comet of 1882, it was supplemented by a double star occultation while the Moon was in full eclipse on May 4, 2004.

I first became aware of this event in the beginning of the year while reading through the wonderfully revamped ASSA handbook, *SkyGuide*. Since the times of the event favoured viewing for working people, even though it occurred on a weeknight, ideas of arranging a special event involving the public came to mind. After all, it would be extremely selfish not to share such a rare event, occurring on average only once in 50 years, with as many people as possible.

The search for a suitable venue brought me to the terrain of the Wamakersvallei Voortrekkers (Boy Scouts) in Wellington. Being on the edge of town and with the building cutting off the town's lights, it proved ideal.

Awareness of the event was created by placing short newspaper articles in Paarl/Wellington and Somerset West. Members of the informal OOG (Orion Observation Group), based mainly in the Boland, were specially invited to come and spend a laid-back evening under the stars. Apart from bringing a picnic basket and blanket, people were encouraged not to forget their binoculars.

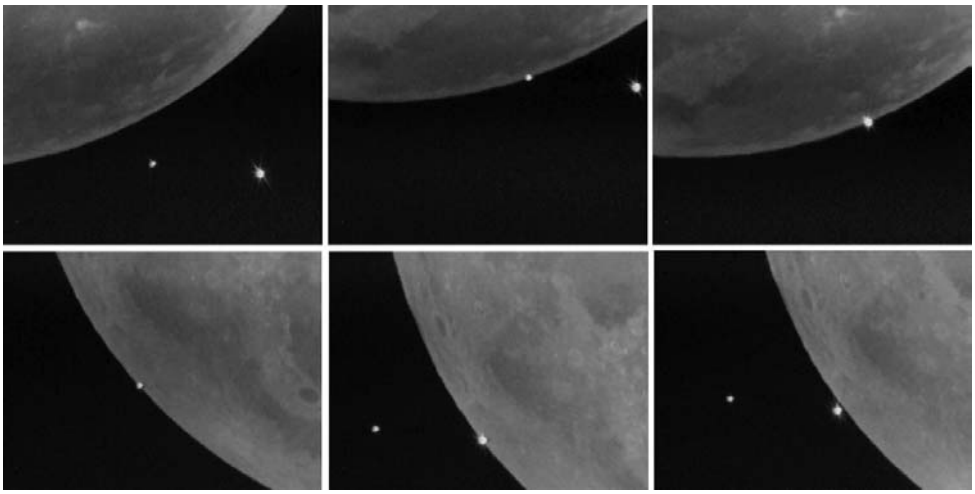
Some arrived early, settling on camp chairs around braai-fires while amateurs started setting up telescopes, cameras, binoculars, etc. Others arrived later, when seeing the partially eclipsed Moon reminded them of the gathering. A total of six telescopes, manned by observers from as far as Worcester, Somerset West and Durbanville followed the "show". Around 40 people in total joined in the event, some from as far as Hermanus. The bulk of the group stayed all night while others came for part of the time.

Even if we arranged it ourselves, we could not have managed more perfect weather! Apart from being perfectly clear, the temperature was very bearable with not a hint of dewing. Even the seeing was good for most of the night.

I prepared a short presentation which was repeated during the evening when a number of new faces gathered. This explained eclipses as well as occultations, illustrated by images and a computer animation of the night's events. The rarity of this special occultation, together with our fortunate geographical position, was emphasised.

We followed as the different phases of the eclipse unfolded and as it got darker, telescopes and binoculars were aimed at other

Young and old gathered to witness this rare event. (Photo: Neels Borstlap)



The relative brightness of the fully eclipsed Moon and the magnitude 2.8 and 5.2 Alpha Librae pair was a perfect match for taking nice pictures as well as visual observing. This sequence of frames grabbed from video footage shows snapshots of the four main events, flanked by views a little before and after. Times of the frames are 22:09, 22:13, 22:19, 22:51, 23:01 and 23:02 SAST respectively. For an animation, see [http://www.saao.ac.za/~wpk/occultation.gif].

objects, in particular comet NEAT C/2001 Q4 which became visible to the naked eye.

As the Full Moon was dimmed to more bearable proportions, the 2.8 and 5.2 magnitude α Librae pair could be clearly seen, even with the naked eye, sneaking up to the Moon.

Watching an occultation is normally a one person event – only the one with their eye at the eyepiece can witness the event, lasting only a few milliseconds. In an attempt to bring it to a larger audience, I mounted a modified surveillance camera at the Newtonian focus of my 9-inch reflector. The camera's video output was recorded on a video recorder and displayed on a monitor.

About half an hour after the Moon entered full eclipse, a group of expectant onlookers eagerly gathered around the monitor, telescopes and binoculars and nobody dared to even blink an eye. A spontaneous cheer was uttered as α^1 Librae was the first to disappear behind the Moon in an instant, like a light being switched off. Brighter α^2 Librae followed about 15 minutes later with similar responses from everybody. Since it was recorded on tape, those who missed it could relive the event by watching the replay.

Half an hour later α^1 was due to re-appear, but exactly where it will happen is always the million dollar question with occultations. To ensure that the camera was looking at the right spot and to be aware of when to expect it to happen, a live computer simulation using a planetarium program was vital here. Similar roars from the group resulted as the two stars, in order of bright-

ness, instantly popped out, one by one, from behind the Moon.

With the luxury of four events to play with, some people got adventurous and experimented with different methods of observing. It was found that the re-appearance of bright Zubenelgenubi (+2.8 mag) was easily visible to the naked eye while the Moon was still dimmed by the umbra. In fact, the naked eye view shortly after re-appearance was quite amazing – someone described it as the diamond ring effect of a lunar eclipse!

Some six minutes after the last re-appearance, the Moon started coming out of eclipse.

When we packed up around midnight, most of the people had left and the Moon was well on its way to being "restored". To a good number of people the occultation was even more unforgettable than the actual eclipse – a truly memorable evening indeed.

Two southern asterisms

Auke Slotegraaf

In her latest deepsky contribution(1) Magda Streicher describes three of the many asterisms she has recorded in her sky-travels.

In Pavo, at RA $19^h03^m29^s$, Dec –57°51′40″, lies her "Japanese Fan" grouping, a wide semi-circle of stars "which stands out proudly against the busy background... it is made up of some 10 stars of varying brightness and fits comfortably into a 32′ field of view." A 25′x25′ image from the Digitized Sky Survey is shown in Figure 1.

To investigate if this grouping might be more than a chance alignment, I extracted a 25′ square region from the Second U.S. Naval Observatory CCD Astrograph Catalog (UCAC2) and UCAC2 Bright Star Supplement. The proper motions of the eight brightest stars are shown in Figure 2. One would expect the stars in a physically connected group to share a common proper motion. However, the figure suggests that these stars have dissimilar proper motions, and are thus not a real clustering.

At RA $21^h26^m41^s$, Dec –77° 51′14″, in Octans, is a star-string that resembles a radio telescope, Magda writes. "Approximately 12 stars form this group, with eight reasonably bright outstanding stars contained in this 15′ area." The dish of the radio telescope points north-west (see Figure 3). "This grouping," Magda continues, "I would like to dedicate to one of our professional radio astronomers and a dear friend, Derck Smits of UNISA."

I investigated the proper motions of the brighter stars in the region as for the Japanese Fan grouping. For the eight stars with *V* brighter than 13.0, the proper motion distribution is shown in Figure 4. The proper motions are dissimilar, showing significant scattering, leading to the conclusion that these stars are unrelated.

Even though these two stellar groupings are mere chance alignments, they are nevertheless charming telescope sights. If any readers have discovered their own star strings, I'd be keen to hear about them.

(1) available from the Deepsky Section's news page at [http://www.saao.ac.za/assa], click on Sections > Deepsky)