



# Starscan

Johnson Space Center Astronomical Society

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## LX200 Scope Dome-Take II

Steve Scott

Last March, Mr. Taylor slipped a web page from my web site into the Starscan which discussed my (our) efforts to construct a 'mini-dome' for my 10" LX200 Schmidt-Cassegrain. The idea was to construct some protecting cover for the scope that would protect it for the elements, both while at star parties (ie Ft McKavett, TSP, etc.) and at our summer site in the central Colorado Mountains in the summer. Since the article, I have taken this nifty cover to Colorado and was able to install it, and use it as designed... with a few additional modifications. I will explain.



First, a recap. The cover is a section of an old swimming pool sand filter. An end was cut off, and, after some 'patching', took on the appearance to the right. A steel plate was used as the base to mount the telescope with hinges that are used to latch the dome to the base. As the design evolved, it became apparent that the final shape, size and weight would be more useful in fixed or permanent site, rather than a mobile cover. The last picture in the first article was a cut/past of what it should look like. The picture to the right is what it REALLY looks like! Pretty close!



The site is about 120 miles west of Denver in South Park. Our elevation at the site is about 10,000 feet. The largest problem we have here is the wind. In the spring, we have winds in excess of 40 mph! Occasionally we have gusts of over 60 mph. During the mid-summer months,



the winds stabilize and are only occasionally a problem. This summer, we were impacted by the wildfires starting in late May. The following images characterize the problem-not conducive to evening observing.



We watched the Hayman Fire grow to a real monster-forget observing! After the second week, we were actually IN the smoke any time the winds switched directions! Back to the mini-dome! After installing the scope/dome onto the permanent pier built last year, I realized that the additional weight created some instability in the pier. I decided to strengthen it by enlarging it. The pier is 8" in diameter-not enough. I bought another piece of 12" Sonotube and more cement! This made a big difference. Also, the dome received a blue paint job. Sonia wanted to add stars...I stopped short on that.



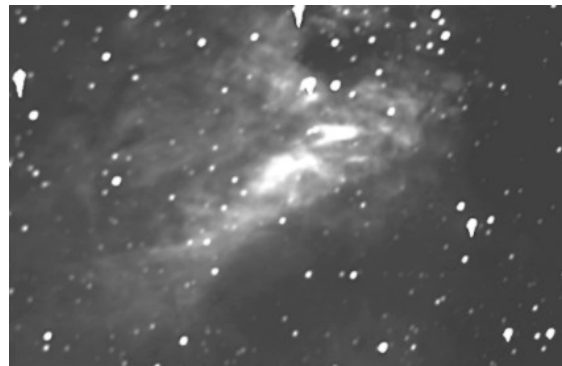
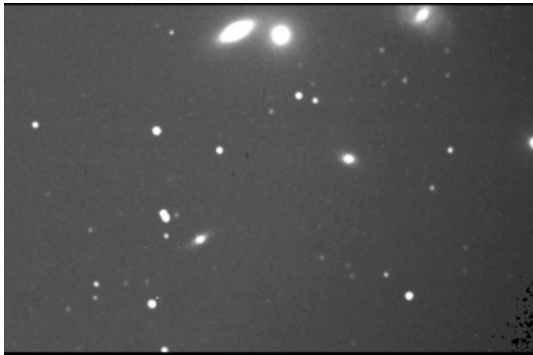
Adding my Milburn wedge to the configuration gives me a great viewing/imaging platform. I am now able to leave the scope mounted all summer-rain or shine! Now if I could only get the weather, wind and the moon to cooperate!



Before we left for Texas in September, we held a public star party for locals and the AVAS group (Arkansas Valley Astronomical Society). We had a dark, clear sky, and a great turnout.



I was able to do some imaging, but not as much as I hoped. M17 and cluster in Libra.



We did have, primarily due to the smoke, some fabulous sunsets!



Thanks (again) Bob!

# AFRICA ECLIPSE 2002 THE TOTAL SOLAR ECLIPSE FROM AFRICA DECEMBER 4, 2002

Paul Maley

Lynn and I traveled to Mozambique to observe the 27th solar eclipse of the NASA JSC Astronomical Society. Because of anticipated poor weather prospects I decided to make this just a personal expedition. Mozambique offered a high elevation of the sun (47 degrees), new countries we could visit, and the fact that our Delta Airlines frequent flier miles could be used to make an expensive trip a much less costly venture.



This sign greeted eclipse-goers at Johannesburg Airport.  
Photos by Lynn Palmer

We flew on Thanksgiving Day from Atlanta to Johannesburg on South African Airways. In the past, such an experience in coach was horrible. A 14+ hour nonstop flight that was filled to capacity seemed like a repeat of prior experiences. However, in the past year SAA had upgraded their 747 aircraft with new video systems allowing a choice of 6 or 7 good movies that start when you want them to and excellent headsets. In addition I was able to get seats on the upper deck, which had been converted to coach seats. This made the overseas flights great. Crowded on the way over and empty on the way back (just 100 passengers on the return flight so we each had our own 3 seat row to sleep in).

Two young elephants going at it in Pilanesberg Park



Using the Holiday Inn at Johannesburg Airport as our base we took day trips to the kingdoms of Lesotho and Swaziland on days 3 and 4 in addition to negotiating a game park drive on day 2. To keep costs down we ate in the airport restaurants where the food was good and very inexpensive (9 rand= 1USDollar). In the airport we met Susan at the info desk. She had a friend (Doreen) in training for her tour guide certificate whose husband had dropped dead two months earlier after running a marathon in Pilaneseberg Park and suggested that we take a day tour to see the abundant animal life. She offered us a good price and we accepted.



No way to get past elephants-- you have to wait and wait and wait for them!



A cool Kudu gives us a look

Two hours west of Johannesburg lies this spreading 6,000 hectare preserve which houses all kinds of animals. It is not far from famous Sun City, the equivalent of South Africa's version of Las Vegas. It was our good fortune to spend nearly 10 hours at Pilanesberg. The animal photos in this report are a small sample of the wonderful game viewing opportunities we experienced. At one game blind we spent more than an hour watching a herd of 42 elephant cavort in the water hole. The 7 or 8 other visitors were so entranced that nobody spoke a word during the episode.



Getting a lot closer to rhinoceros than we should!

The independent kingdom of Lesotho is just an hour away from Johannesburg. Lynn jogged at the track at the Lesotho Sun Hotel before we set off on our tour of the kingdom. Our first stop was a hike up Tabo Busio, a mountain that is the burial place of Lesotho's kings. It is a great observing site but a tough hike in hot weather (86 deg F). Each person who hikes up the mountain is requested to put a rock on the rock pile (shown in the right side of the picture).

Hiking back down Tabo Busio mountain After the climb we visited the King's residence and a local museum. The museum is essentially one room with a few artifacts. However, a meteorite had fallen in Lesotho a few months ago and a small university at Roma is collating the pieces. It is thought they will eventually be housed in this remote little museum. On the way back to the airport, we saw the King of Lesotho zoom by us in his 3-car motorcade. Swaziland Here we had two game drives in



the heat of the day. Unfortunately in our vehicle there were also 4 Dutch tourists who insisted on being obnoxious, talking loudly as we approached an elephant. At one point, the elephant walked up to our vehicle as if to chastise them, flared his ears, then passed aside.

All talking ceased at this point. Following this, our driver took us up to a water hole where no less than 14 rhino lay in the mud. The vehicle stopped 15 feet from one rhino. Hearing the Dutch tourists, the rhino charged the vehicle and attempted to flip it over with its horn. Yes, this really happened! Then he backed off and we turned around. Our driver then drove us to the

other side of the same water hole. Unlike any other game drive, we were told could get out and walk up to the edge of the water hole and take whatever pictures we wanted. The group did it cautiously. Then several rhino at once made quick moves toward everyone and us ran like hell back to the vehicle. That is the last time anybody got close and personal with animals. We had lunch in the park and afterward the food table was raided by a giant wart hog who pulled down plates and tablecloth, as well as an ostrich that gobbled up all the food she could get before being chased off.

An unrelated attempt to observe an occultation of a 6.8 magnitude star by the asteroid Asterope was a failure in Durban due to clouds. The daily weather pattern that we had witnessed showed clear skies every day until the day before the eclipse. It would cloud up in the afternoon and then rain in the evening. By dawn it was clear again. We got a couple of good sunburns during our game runs. Then, on December 3 a massive system brought multiple cloud layers from southwest to northeast over Johannesburg and toward Mozambique.

Mozambique It was that day that we flew to Maputo, capitol of Mozambique and checked in at the Holiday Inn. Located on the beach fronting the Indian Ocean, it was the best hotel in town and a great place to be in an otherwise very impoverished country. Our guide Philippe picked us up at 3am the next morning (eclipse day) and we headed northeast toward Xai-Xai—a big collection point for eclipse observers in the area or so we were told. When we walked out of the hotel it was totally overcast with multiple decks of clouds. This was a really bad sign. We had seen NOBODY headed for Mozambique and certainly no Americans. We had been told that about 500 foreign tourists and 800 Mozambicans were encamped at Xai-Xai. Was this a myth? The expected 2.5-hour trip took 2 hours with Philippe driving at 100 to 150 km/hour in a new Kia sedan. His English was poor and it took Lynn trying to speak in Spanish in order for us to communicate 'effectively'. Since Portuguese is the local language, Spanish is a close second. Dawn appeared before 5am and it was my goal to set up at the southern edge of the eclipse path where about 40 seconds of totality was expected in between Baily's Beads phenomena. But the skies were horrendous and it seemed we had no chance of ever seeing the sun.



Minutes before totality clouds dominated the sky at our site At 5:45am the three decks of clouds began to break and it was 50% clear for a time. But more clouds began to move in from the south and I decided to move eastward toward Xai-Xai where it looked much clearer. Totality was predicted for 8:26am. Where were the expected hordes of observers? About 20 cars passed us at high speed while we were on the road, but that was it. By 6:30am we were approaching Xai-Xai

and a long narrow highway was under construction with teams of heavy machinery causing single lanes in each direction. We saw a banner or two welcoming people for the eclipse. The clearest sky was to the west. So we backtracked and headed back into a clearer area. I used a Garmin GPS III Plus to navigate between the centerline and southern limit. We stopped at least 4 times in isolated spots to gauge the sky and cloud movement.

There was no pattern, just random motions, which is very typical for Africa. At 7:45am I moved for the last time driving west then northeast in the direction of Chibuto—a town on the centerline. But the roads were made of red dust and not paved so driving on them was slow. Local people walked in the roads and even though Philippe attempted to push our rent car to

the limit (30km/hr), time was getting short. Clouds were thickening and the partial phases had begun 30 minutes earlier. Finally we stopped in front of a house and this was to be our observing spot. The house was in a village with no name. I set up one camcorder in front of the house to tape the eclipse darkness. The clouds had gotten worse and there was no hope in continuing to drive further. Over us was really just one level with a patchwork of clouds and holes in between. We could get good partial phase views every 10 or 20 seconds. At the house there were numerous birds, mostly swifts and darters that flew back and forth around our heads. A few children came out to watch us but sat back and did not bother us. Very atypical behavior judging from our past experiences. Ants scurrying about in a nest by the car disappeared as totality approached. Nobody seemed to know or care about the eclipse in this collection of widely spaced huts and houses. As totality descended the north horizon took on a look as you would see at sunset with various colors changing back and forth. The west horizon had more clouds and was mainly just white while the rest of the sky turned darkish gray. The south and east were already subdued due to advancing rain clouds. As the moon's shadow descended quietly moving in from the west and headed for more eager eclipse-goers in Australia, it got quite dark. The next photo shows a dramatic view of the shadow on the earth. This is the dark horizontal line; the photo was taken by International Space Station astronaut Don Petit at 07h58m UT on December 4 as the shadow is in the south Indian Ocean and the ISS is about 900 miles to the northwest. This photo was shot 1h32m (or about one ISS orbit) after our encounter with the shadow in Mozambique. This nearly horizontal view of the shadow gives the viewer an idea of the darker umbral size (79 km) compared to the much larger size of the lighter penumbral shadow.

The eclipse as viewed from space. Courtesy of NASA.



The temperature had never gotten much above 74 degrees and stayed within a few degrees of that most of the morning. Our spot turned out to be 11km north of the southern limit in a tiny village with no name. We were warned about not getting off the road due to mines, but we luckily encountered none. We also expected hordes of mosquitoes but only saw one. Just flies, lots of them. It is interesting to note that as totality approached the flies vanished. Several children who had been watching us scampered up the road. During the eclipse, Philippe had met the owner of the house and gone inside for a chat. As totality ended he came out but nobody else did. We could hear music from a radio. There had been publicity in Mozambique about the eclipse yet the event had no apparent effect on the locals around us. We were far from any semblance of eclipse observers. They seemed completely oblivious and more concerned about their daily survival. Whenever we stopped before, we had a small but respectful audience. I brought a Meade ETX90 and decided that due to the clouds there was no point in setting it up. The moon's shadow passed over us at 8:26am local time (6h26m UT) and the holes in between the clouds that were bright white turned dark blue. Had we been on the centerline we could have experienced about 91 seconds of totality. But we were near the edge. Venus, brilliant as ever, popped out in a hole in the clouds almost overhead. I gazed up at where the sun should be and saw a faint glimmer in the cloud. Then a hole opened up---it was the corona! Two prominences peeked out on the eastern side of the sun's disk. Seconds after that the western side of the sun showed corona. Ten seconds later the sun was gone again. All of this was captured on videotape, not still images. Though it was brief, we could see this beautiful sight as if it was for the very first time. We had

thought it would have been impossible to see anything. From our location, we had been under the eclipse for 46 seconds. Then it was over. The shadow lifted and the sky brightened remarkably fast from the west. The bird chatter resumed—it had fallen silent briefly during totality. Philippe and Lynn used mylar, binoculars and welder’s glass to watch the crescent as it began to reform. My colleague Friedhelm Dorst observed from a site that had thinner and less cloud near the village of Navashila. Here he observed 90 seconds of total eclipse. Both of the beautiful photos below were taken by him using a D1H Nikon using ASA 200 film.



We got in our car and headed back to the Holiday Inn at 140km/hour where we dined on baked calamari in the hotel restaurant. It rained on us on the way back and the clouds were clearly worse. But we connected to our international flight without mishap until we arrived in New York. There we had to change from JFK to LaGuardia airport as a snowstorm was beginning. This is the same storm that left hundreds of thousands of residents of the Carolinas without power for days. I got the last flight out of LaGuardia before it was shut down. Lynn had to go to Washington DC for a meeting and was stuck in the shuttle terminal. She had the good sense to take a cab to the train station and got one of the last trains out before that system was either booked up or shut down. One person at her meeting had to spend the night on the Newark airport floor. Africa was again a wonderful experience. The people, the animals; yes, even the mayhem of trying to outrun the clouds. Many others shared our fate and worse. But we were certainly lucky again this time because we had a 10 second vision of the sun unplugged.

## Wanted

Carl Reynolds is looking for a lightweight 8” Dob, if you have one and are willing to part with it, please contact him. (281-483-1837).

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