

The Very Amateur Telescope Maker 20 years on ...

By Trevor Gould

Introduction

I really wanted a telescope, so I approached Brian Fraser, who knew how to make one, and asked him to run a telescope making class for members of the Johannesburg Centre. He raised a number of valid objections.

I succeeded in clearing away each objection in turn, until he had no choice but to run a class, which began in the early 1990's... Some time later I had an 8 inch Dobsonian made at the class.

My 8 inch Dobsonian has been used over the past 20 years to observe stars, open clusters, globulars, nebulae, many comets, the moon, planets and asteroids, galaxies and the Sun [sunspots, eclipses, the Venus Transit] and has given me great joy. It is now in better condition than when it was first completed...

Photo: My 8 inch Dobsonian outside Sossusvlei in the Namib Desert, Namibia



It is robust and dependable, capable of lots of modification as and when I learn new tricks.

The only drawback is in not being motorised so I can't image the objects I look at. I hope to rectify this with the 16 inch Dob I am busy with now.



Photo: My scope is the little one behind the 12" Meade at a star party in the Vredefort impact crater. Alec Jamieson and Melvyn Hannibal are setting the 12" up for the evening viewing.

Its Travels and Accomplishments

It was originally used at home. When it was built I could see M57 [the Ring Nebula] from home, but as the area built up and more and more lighting was installed, particularly from our friendly neighbouring school [St Stithians], who installed lights for parking, sportsfield lighting etc, I stopped using the telescope from home.

It has however, been used all over South Africa, in Swaziland, Botswana and Namibia.

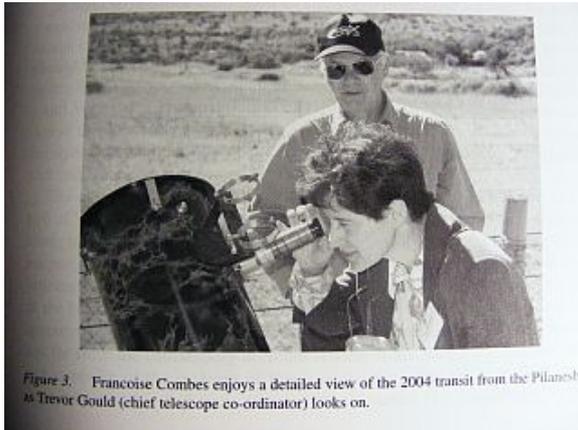


Figure 3. Françoise Combes enjoys a detailed view of the 2004 transit from the Pilanesberg as Trevor Gould (chief telescope co-ordinator) looks on.

Photo: From the book "Penetrating Bars Through Masks of Cosmic Dust" published by Springer – a conference held in the Pilanesberg organised by Professor David Block to co-incide with the Venus Transit in 2004.

Françoise Combes from the Observatoire de Paris viewing the transit.

It has been used at star parties, the observatory in Observatory, Johannesburg and at the local Planetarium, at specific events, such as

church weekends away, corporate events, even international professional astronomy conferences and was displayed at Wits Open Day.

Giovanni Fazio, PI of the Spitzer Space Telescope, has looked through my scope a number, as has Duccio Macchetto, Science Director of the Hubble Space Telescope – but they didn't offer to let me look through theirs!

We were observing Southern objects such as Omega Cen and Cen A, and some astronomers commented that they had written research papers on these objects, but that this was the first time they had seen those objects with their own eyes.

Dark Skies

The best times were when I used it in the Kalahari and Namib deserts, with incredibly clear skies, low humidity and usually only a few people to share it with. Nebulae were clear down to 5° above the horizon. These were times when the zodiacal light was visible in the early morning sky and M31 was a naked eye object.

To give an idea of how dark the desert is for the benefit of city dwellers we had one evening where Venus set, but its glare rose 30° above the horizon.

Photo: With the sub-diameter filter attached at the total solar eclipse in Beit Bridge August 2002. Author in the middle!



Another image of dark skies was using a telescope at a place in the Namib desert that appears on the map of Namibia, but consists of only one building. I set up the scope and was observing when I was called for dinner. On a night like this I was happy to miss dinner altogether, but our hosts insisted. My dark adapted eyes were no longer dark adapted.

After a quick meal I returned to the telescope, but could see NOTHING. I waited for some degree of dark adaptation to take place, but still nothing. Mist from the Atlantic Ocean had quietly flowed in...

One evening I had set the scope up in a dry pan in the Kalahari and knew that the Moon would rise in a specific area – above a sand dune some 2 kilometres away. The scope was trained on the expected site. It was dark! As the Moon rise approached, the grass on top of the dune was backlit and a dramatic, monstrous, yellow Moon rose. Unforgettable!

It is always marvellous to show people the sky and watch their faces light up [in the dark] as they see the rings of Saturn live for the first time.

Provided I had a car with a fold down back seat, the scope and its mount could be taken anywhere.

Once it was loaded into a 4X4 in the Golden Gate / Drakensberg area. I had been asked to do a Christian talk to a group of guys from Durban. We stayed overnight in a cave and this was where I did the talk, but there was thick mist, so the telescope was not deployed.

For logistical reasons use was made of an 8" Celestron scope to show Comet Hale-Bopp to a local radio station group from Johannesburg. We travelled to Rossing Mountain north of Swakopmund in Namibia. We climbed the mountain and observed the sky and the setting of the comet over the Atlantic. It was quite scary to walk down the steep mountain in desert darkness carrying the scope in my arms. Others carried the weights etc.

Annual Projects

As I get older, my back goes out more often than I do: an annual project was set up to reduce the total mass of the scope so it was easier to handle to and from an observing site.

Finder scopes were progressively replaced with lighter ones, the original box [see image] was done away with.

A bolt-on cover was built from an old PC casing in which I placed an offset sub-diameter solar filter, which enabled me to use the scope for eclipses, sunspot observations and the Venus Transit.

Photo: The original configuration of the Dob, and my daughter Tamlyn.

The scope allows much room for improvement. The finder is too heavy; the box housing the tube can be done away with etc.

It is always a chore to carry the scope to an observing site, if the place where you park your vehicle and the place where you park your scope are different. Recently a new Mars Rover on a Russian mission was going to de-orbit, having failed to leave the Earth



orbit. I had hoped it would fall in my backyard, so I could salvage the rover, build some radio controls and a place to stow all the telescope parts, and tell it to 'take the telescope over there'.

The Rover now lies at the bottom of the Pacific Ocean, if anyone is interested in doing a similar project.

Interesting comments from potential observers

Those who take their scopes to skyshows are used to the comments made, but for those who are not, here are some that I have experienced.

At a skyshow in Nylsvlei, I had set the scope up some distance from the lights. Visitors used torches to make their way across to the telescope.

One, shining a torch into my dark adapted eyes asked "Are you the astronomer?"

I therefore shielded my eyes from all light and when a light similar to a car headlight appeared suddenly I instinctively covered my eyes and heard someone shout "Did you see that meteor? It lit up the whole landscape!"

I could have kicked myself...

At a lunar eclipse event at the Planetarium, a young couple asked if I could see Heaven with this scope. The only answer I could give was that I couldn't see it with this scope, but it was still worth searching for.

I showed a security guard at the Observatory the first quarter Moon and he told me that his science teacher had explained that the Moon was progressively eaten by a goat, but each time it grew back. I understand that South African science education is no worse than in other countries...

A regular question asked is how do I know that that star is, for example, Sirius. I ask in return "but can't you read the label?"

One public observing event was held at an hotel in Rosebank, Johannesburg in honour of the close pass of Mars, which, according to the e-mail 'would be as large as the full moon'. I told them that the e-mail which gave rise to the event was hoax, but they said it was already arranged. Unfortunately, the public could also not tell an arc-minute from arc-second and arrived at the event. It was also arranged that the telescope would be set up in the courtyard, a brightly lit area and the lights could not be turned off 'for safety reasons'....

I was being interviewed about Mars on DSTV and the interviewer asked "Do astronomers think there is intelligent life out there?" and it was on the tip of my tongue to answer "They are still trying to find intelligent life here on Earth" but I stopped myself in time.

Trials and Tribulations

I was observing on a cold night, and the metal spider vanes contracted and split. Observing ended suddenly.

On another occasion the telescope was blown over and rained on in a sudden storm, and damage was incurred, which had to be fixed.

Once, I had used the scope at a conference at Sossusvlei in Namibia. The scope was wrapped in bubble wrap and trucked over the course of a month to the site. I decided to keep the optics [mirror, secondary] with me and take them on the flight to Windhoek, followed by a long busride over gravel roads to Sossusvlei and back.

The mirror and secondary were damaged during the course of the flight and busride, but the assembly survived the truck journey and relatively good viewing was enjoyed by all.

We had made a journey to the site in December 2009 to ensure all would be O.K. for the conference. We checked the sound systems, the quality of the digital projector, the rooms, the food etc. When the delegates arrived for the conference in April no-one could be found to turn off the outside lights, despite December assurances to the contrary.



Photo: My wife, Glynis, and daughter Tamlyn decided that if the telescope had to live in the house, it ought to look good. The tube I had used was blue plastic drainpipe, and it looked O.K. to me. They did a good job of wrapping the tube in kitchen contact to make it look presentable. It now lives in the house with a black plastic rubbish bag over it to protect it from dust.

Once Melyvn Hannibal and I travelled to Hermanus for a skyshow. The telescope had been trucked down a few weeks prior to the event. We arrived on time, but the site was completely rained out, so we overnighted in the area and flew back to Johannesburg the next day.

Robert Groess and I travelled to Witsand Nature Reserve to view Mars at opposition. I wanted to see some features. The first evening: Mars was very bright, but I couldn't make out any features at all. The second night was the same. When we got home the local newspaper had a front page colour image of what the Hubble Space Telescope saw – also no features owing to a planet wide dust storm on Mars.

On another occasion, Robert Groess and I were leaving Witsand and drove on a little used road to Olifantshoek. A trailer was attached to my car and the telescopes were in the trailer.

When we got home, there were a number of nuts and bolts missing and hiding in the bottom of the trailer as a result of the corrugations and the fact that the trailer did not have adequate suspension.

An unusual problem surfaced while preparing for an observing event. The telescope had been collimated and now it was the time to try it out. The finder was adjusted to look at the antenna on a building a few kilometres away, and the telescope was looking at the

same field. I slowly lifted the scope to look at a bright star, clear in the middle of the finder, but not visible in the scope.

I re-adjusted the finder and scope on the antennae and tried again. Same problem. I checked the tautness of the finder. It was good. I checked for loose parts on the scope. The scope was good. I must have been imagining it. I tried again. Same problem. Gave up and went inside.

Later I removed the finder and tried it: I heard a sound from the finder, which was a converted half of a pair of binoculars. I discovered an interior lens was loose. This was glued back in place and the next evening, the scope worked!

For those guys busy with their mirror or contemplating building a telescope, don't see the potential or current problems – keep your eye on what you are going to see through that scope.

Also, think about projects, especially where observations are needed. There are too few observers in the Southern Hemisphere!

Consider sharing your viewing with others, doing sky shows, making new friends, learning new things, and adding value to your life!

I'm looking forward to the completion of the portable 16" which will use struts instead of a tube. Hey, any excuse to get to the desert!



In his professional life, Trevor works for himself, is a Chartered Secretary and contracts in the areas of corporate governance and compliance, including King III and certain ISO standards and I.T. business analysis.

Hobby interests include astronomy, geosciences, planetary geology and meteoritics. Trevor looks after the South African meteorite database.

Trevor is a committed Christian.