

CANOPUS

The Astronomical Society of Southern Africa

Johannesburg Centre

Monthly Newsletter for January 2002

Contents:

Editorial

Notice of Meeting

A.A.A.D.D. Chris Stewart

Calendar of Events The Committee

The Quasars Jan Eben van Zyl

Southern Sky Star Hopping..... Eric Brindeau

The Star Party..... Dave Gordon

S.A. Meteorite Recovery Program Trevor Gould

In The Sky This Month Brian Fraser

Loose Insert for Southern Sky Star Hopping

**The Sir Herbert Baker Library, 18a Gill Street, Observatory, Johannesburg
P.O.Box 93145, Yeoville, 2143**

Editorial

A thinner than usual Canopus this time – but with some excellent content all the same. We have had some really clear and brilliant viewing nights in the last week or two, but “some” is the operation word! There is still plenty of cloud around to spoil an evening’s viewing, but if you do manage to find a sizeable gap in the overcast, the views can be quite stupendous. Saturn and Jupiter are moving into the evening sky, the former just below the Hyades at present, and the latter still low-ish in the East but very bright. Some of our members have managed to spot comet Linear (your editor not being one of the few) which is moving quite rapidly at present.

Eric Brindeau has submitted another of his excellent Southern Sky Star Hopping articles, centred on the currently overhead (well nearly) constellation of Orion and using the catchy title “Turn Left at Orion”. He has supplied a diagram with pointers, which we have included as a loose insert..

Eben van Zyl moves on to an astronomical curiosity in his article titles “The Quasars” and **Dave Gordon** lets us in on all that happened on the night of the Annual Star Party/Leonids watch. The former was great - the latter a non-event for Gautengers in general.

Brian Fraser has supplied us with a general guide to the skies above for the next 2 months. Remember, if you need the tables for the Sun, Moon and Planets - just dive into the website where they will shortly be loaded covering the whole year.

LIBRARY BOOKS – each year at this time we carry out an audit of our Library to check for damaged and/or missing books. If you are currently in possession of any books/magazines/videos or anything else borrowed from the Library, would you please return it so that it can be audited.

Wishing You all Health, Wealth and Success as we enter 2002 - may the worst of the Year to come, be better than the best of the Year just past.

The Editor

chris@penberthy.co.za

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Notice of Monthly Meeting

The Monthly Meeting of the Johannesburg Centre of the Astronomical Society will be held in the Sir Herbert Baker Library, 18a Gill Street, Observatory, on Wednesday the 9th of January, 2001 at 20:00.

Multi-Wave Astronomy

By: Tom Marsicano

Telescope Making Classes

Would you like to make your own telescope?...or finish off a partially finished one? Well your opportunity has arrived (once again). Join the Telescope Making Class being held under the guidance of Brian, Evan and Chris. Contact Brian on (016) 366-0955 if you are interested.

If you have any ideas for topics or subjects that you feel should be presented at future meetings of the Johannesburg Centre, please contact one of the Committee members, or email us with the details thereof.

The Editor.

Public Viewing (weather permitting)

Public viewing nights are held *subject to suitable weather conditions* on the Friday nearest First Quarter, and are held at the Old Republic Observatory, 18a Gill Street, Observatory, Johannesburg. Starting time around 19:30. See the ASSA event calendar for the proposed viewing dates.

ANNUAL AUDIT of LIBRARY

If you are in possession of ANY items borrowed from our Library, would you please return these as soon as possible so that we can carry out our Annual Audit and check for missing and/or damaged items.

Age Activated Attention Deficit Disorder:

You'll have to excuse me: I have recently been diagnosed with AAADD - Age Activated Attention Deficit Disorder

This is how it goes ... I decide to do work on the car, start to the garage and notice the mail on the table. OK, I'm going to work on the car . . .

BUT FIRST I'm going to go through the mail. Lay car keys down on desk. After discarding the junk mail, I notice the trash can is full. OK, I'll just put the bills on my desk . . .

BUT FIRST I'll take the trash out, but since I'm going to be near the mailbox, I'll address a few bills ... Yes, Now where is the checkbook? Oops . . . there's only one check left. Where did I put the extra checks?

Oh, there is my empty plastic cup from last night on my desk. I'm going to look for those checks . . .

BUT FIRST I need to put the cup back in the kitchen. I head for the kitchen, look out the window, notice the

flowers need a drink of water, I put the cup on the counter and there's my extra pair of glasses on the kitchen counter. What are they doing here? I'll just put them away ...

BUT FIRST I need to water those plants. I head for the door and ... Aaaagh! someone left the TV remote on the wrong spot. Okay, I'll put the remote away and water the plants . . .

BUT FIRST I need to find those checks.

END OF DAY: Oil in car not changed, bills still unpaid, cup still in the sink, checkbook still has only one check left, and I lost my car keys. When I try to figure out how come nothing got done today, I'm baffled because . . . I KNOW I WAS BUSY ALL DAY!

I realize this condition is serious ... I'll get help ... BUT FIRST ... I think I'll check my e-mail.

Chris Stewart

ASSA Jo'burg Centre - Calendar of Events

Month	Day/ Date	Event	Details
Jan 2002	Mon 7	Committee Meeting 17:30	
	Wed 9	Monthly Meeting	Tom Marsicano / Multiwave Astronomy
	Fri 18	Public Viewing	
	Sat 26	Wits Physics Solar Observatory	10:00 / Tony Voorvelt
Feb	Mon 11	Committee Meeting 17:30	
	Wed 13	Monthly Meeting	TBA / TAG
	Fri 15	Public Viewing	
Mar	Sat 9	Overnight at Tswaing Crater	Dr Dion Brandt
	Mon 11	Committee Meeting 17:30	
	Wed 13	Monthly Meeting	Trevor / Tektites
	Fri 15	Public Viewing	Meteorite Workshop
	Fri 29	Easter Expedition / Kalahari Safari > 7/4	Trevor
Apr	Mon 8	Committee Meeting 17:30	
	Wed 10	Monthly Meeting	Basic Quantum Theory / Rob Scott
	Fri 12	Public Viewing	
	Sat 20	Broederstroom visit: Celebration of centenary of Franklin-Adams telescope	
May	Mon 6	Committee Meeting 17:30	
	Wed 8	Monthly Meeting	Fermi's First Reactor/ Mike Smith
	Fri 17	Public Viewing	
	Sat 18	Telescope Extravaganza	Chris S
Jun	Mon 10	Committee Meeting 17:30	
	Wed 12	Monthly Meeting	TBA
	Fri 14	Public Viewing	FireWalking

Reminders

2002	ASSA Symposium / hosted by Pretoria Centre/ poss. At Aloe Ridge December 4, Solar Eclipse
2003	Centenary of Flight August: Mars opposition
2004	Centenary Sir Herbert Baker Library Building Johannesburg Centre to host 2004 ASSA Symposium June 8, Venus Transit

THE QUASARS

(Acronym of "quasi-stellar radio source")

Certainly the most talked-about discovery of radio astronomy was that of the quasars. The radio source 3C48 which was studied in 1960 by T A Matthews, was found by A R Sandage, by means of an exposure of 90 minutes with the 5-metre Palomar reflector to be a queer type of "blue star". (A blue star is one which has a negative or very small B – V colour index). Its spectrum showed inexplicable emission lines.

Another quasar, 3C273 underwent occultation by the Moon and this revealed it to be a double radio source. The 5-metre telescope found it to possess a faint jet. When M Schmidt studied the spectrum of 3C273 in 1963, he got the brilliant inspiration that the queer spectrum was due to a very large red shift, having a value of 0,16. This meant that it has a recession speed of 14,7% of the speed of light, so that its distance had to be

1400 million light years and thus its luminosity had to be 100 times the total luminosity of an average galaxy !

The optical spectrum of 3C48 could be explained if it was assumed that it had a red shift of 0,37 and a distance of 2980 million light years

An 80 year old photograph showed that the optical brightness of 3C273 was variable with a period of less than one year. It could thus not be as large as 1 light year. How could it then radiate 100 times the energy of a galaxy, at least 50 000 light years across? The puzzle deepened.

The quasars were found to be strong emitters of ultraviolet light. Fine absorption lines in the spectra of some quasars implied that they have shrouds of gas around them, just like galaxies do.

The bizarre properties of the quasars showed that they are indeed rare birds:

1. Quasars are star-like objects;
2. Quasars are usually strong radiators of radio waves;
3. Quasars are strong emitters of ultraviolet light;
4. Quasars have large red shifts and are thus very far off- 10 to 18 thousand million light years;
5. Quasars are variable in all wave lengths;
6. Quasars have low B – V colour indices and are thus "blue";
7. The activity displayed by quasars is similar to that of Seyfert galaxies;
8. Several quasars are double sources as are several galaxies;
9. The visual light of some quasars is polarised as is the jet from the giant elliptical galaxy M87;
10. The radiation of some quasars increases in intensity with increase in frequency;
11. Some quasars have cocoons of absorbing gas around them, thus showing that they are at the centres of galaxies;
12. Optical spectra show that quasars are in great turmoil. This must be due to series of supernova explosions in their nuclei;
13. The spectra of the quasars show that their atoms are very highly ionised; this must be due to the extremely high temperatures caused by the Supernova explosions.

14. The abundances of elements such as hydrogen, helium, carbon, neon, magnesium, silicon, argon, sulphur and iron correspond to those of many galaxies;

15. The Quasars have spectra with wide lines caused by gases moving at great speeds of 2000 to 3000 km/sec; these gases must come from supernova explosions.

The average visual magnitudes of the quasars was found to be 14 to 19 and their absolute magnitudes, given their vast distances, between -24 and -31, with an average of -28,4. This implies a brightness of $2.512^{4,85 - (-28,4)} = 2.512^{33,25} = 2 \times 10^{13}$ times the brightness of the Sun; thus equal to the brightness of ten or 20 billion suns. (1 followed by 13 figures means 100 times 10^{11} which is the total brightness of the Milky way). No galaxy comes any-where near to the brightness of a quasar. The brightness of the quasars has to be ascribed to something beyond size. Taking this into consideration with their very short periods of variability, means that the only feasible explanation is that the quasars must be galaxies undergoing series of supernovae explosions in their nuclei. This explains both their great luminosities and their short periods of variation.

We see the quasars by the light which left them 10 to 18 thousand million years ago when the universe was very young, i.e. shortly after the cosmo-genesis (big bang).

The first stars that formed in the nuclei of the first galaxies consisted entirely of hydrogen and helium from the cosmo-genesis. In the nuclei of these stars elements heavier than helium were synthesised by the process of fusion whereby protons are fused together. Some mass is lost in this process and it appears as energy. The matter spewed out from the supernovae of the first stars was thus enriched by heavier elements. According to D N Schramm in "The Ages of the Elements" this first series of supernovae took place about 9000 thousand million years ago when the universe was about 4000 million years old. The quasars reveal the story of those events.

After another 4000 million years, about 5000 million years ago the second generation of stars that condensed from the material synthesised by the first generation of stars started going supernova and from the material they spewed out, now enriched for the second time, the third

generation of stars, of which the Sun is one, condensed.

The quasars thus tell us the history of the very

early days of the universe, a history of great violence.

Jan Eben van Zyl

SOUTHERN SKY STAR HOPPING

By Eric Brindeau

Turn Left at Orion*

This catchy book title grabs my attention every time I read it! My imagination runs wild, with visions of space travel and summer skies. At the moment we see the last of the winter constellations disappearing into the west, with Orion the dominant constellation of the evening sky.

Each year in the astronomical calendar, we are faced with two seasonal contrasts that considerably affect our time at the eyepiece.

In winter we have clear crisp skies with some of the greatest objects and constellations, but we find excuses not to venture out.

In summer, while we enjoy the outdoors and holidays, clear nights are few and far between. We seem to be plagued more by weather *systems* than afternoon thundershowers nowadays. There must be one astronomical law other than *telescope aperture*, which has to do with overcast skies or rain when planning a summer star party (just think of the past few ASSA year-end gatherings). This is the time when you want to share the sky with those you could not convince to venture out in winter, only to disappoint them. Summertime is also the seasonal phase when you consider swapping your equipment for a set of golf clubs!

However, there is nothing quite like a warm, clear summer evening when it does present itself. Some of my favourite deep-sky objects nestle in these constellations and I look forward to revisiting them each year.

Orion is up and the great nebula (M42) in the sword can satisfactorily be the focus of an entire viewing evening. It does not matter if you view the Orion nebula with three inches or thirty inches. It is magnificent. With such a captivating object, I often do not venture much further.

If you are not drained from the visual feast of M42 as well as scrutinising the well-placed Saturn and Jupiter, there is a worthwhile star-hop to one of my favourite deep-sky objects.

Turn Right at Orion

NGC 2362 is a gem of an open cluster in Canis Major, surrounding the 4th magnitude Tau Canis Majoris. I first became interested in NGC 2362 after reading the description in "*Observing the Constellations*" by John Sanford, and saw it for the first time a few years ago through Chris Stewart's 10 inch Meade during a casual observing evening with a few ASSA members. As with all the wonderful objects up there, one never forgets the first view.

I have been following a recent series of articles in *Sky & Telescope* along the lines of "*My Favourite Deep-Sky Wonders*". I compare my own favourite objects to these selections from well-known amateurs, as well as for future targets. I was not surprised to find this open cluster mentioned as being one of James Mullaney's top ten objects, author of *The Finest Deep-Sky Objects*. However, his beautiful description does not mention NGC 2362's most distinguishing feature.

Seeing Triple

The star-hop to NGC 2362 is straight forward, but should include a stop at Beta Monocerotis, making an evening of outstanding multiple stars. Starting at Orion's belt and moving right towards Sirius in Canis Major, try to identify the two brightest stars in-between these two constellations in an otherwise empty area of the sky. These are Gamma and Beta Monocerotis. Beta is the one closer to Canis Major as well as the horizon.

Beta is one of the best triple stars for small scopes and I have been able to split the star using a converted 80mm telephoto lens. William Herschel first discovered this trio in 1781. He described it as "one of the most beautiful sights in the heavens" (*Burnham's Celestial Handbook* – pg 1189).

NGC 2362 lies below what I call the "y" of Canis Major. This constellation has quite a few bright stars, an imaginary line from Sirius splits into a "y" shape.

Envisage a triangle using the two bright stars on the bottom "y" axis as a base. Tau Canis Majoris lies at

the apex. When looking through your finder or hunting it down through the eyepiece, you might miss it at first as there are a few bright stars in the area. Keep trying until you find the beautiful sprinkling of stars surrounding the 4th magnitude star.

A six-inch telescope should resolve the small cluster consisting of some 40 to 60 stars. Because of the small compact size and brightness, this object looks even more impressive in larger telescopes. Upon closer inspection and depending on the seeing, you should be able to see that Tau in the centre of this jewel box is itself also a fine triple star!

The discovery of NGC 2362 has also been accredited to William Herschel, but interestingly was first discovered by Hodierna in a catalogue published in 1654 (for more information - www.seds.org). Giovanni Batista Hodierna (1597-1660), astronomer at the court of the Duke of Montechiaro, compiled a catalogue of some 40 objects. Their rediscovery had to wait until the 1980's. He used a simple Galilean refractor with twenty times magnification.

Inside the boundaries

Canis Major rises high into the sky and will be well placed over the coming months. You could try to hunt down *Canis Major's Twenty-Six Star Clusters* (see Astronomy, February 1988 - pg 91). There are also a few brighter galaxies of which NGC 2207 is the most exciting and challenging, as it is an interacting pair which can be detected at high power in larger scopes. The tiny blue planetary nebula IC 2165 (8 arcseconds,

magnitude 12.5) is positioned near the border with Monoceros.

Notes

Object	Type	Const.	R.A.
Beta Mon	Multiple star	Monoceros	
	6h28.8m	-7°02'	
NGC 2362	Open Cluster	Canis Major	
	7h18.8m	-24°57'	

Sky & Telescope Articles

My Favourite Deep-Sky Objects – by Jay Reynolds Freeman

S&T October 2001 - Pg 110

My Favourite Deep-Sky Wonders – by David Levy

S&T April 2001 - Pg 113

My 10 Favourite Deep-Sky Wonders – by James

Mullaney

S&T December 2000 - Pg 120

My Favourite Deep-Sky Wonders – by Stephen James

O'Meara

S&T August 2000 - Pg 105

*Turn Left at Orion

By Guy Consolmagno and Dan M.Davis

Eric Brindeau

2001 Johannesburg ASSA Summer Star Party

As the familiar saying goes "It never rains, it pours". And it certainly did in the days leading to the Annual Star party held on the 17 November at Dave Gordon's small holding in Blue Hills. A record breaking 170mm of rainfall has tumbled down during the month of November. It seemed that the chances of seeing stars (and the Leonid meteor shower) on that night were approaching Lotto® odds.

Well, we all should have taken tickets that night because we did see stars!

The enthusiasts started arriving at around 4pm to a partly cloudy sky but the promising glimpse of sunshine. Tables and chairs were arranged on the lawn and braais were prepared. There was much joyful banter around such topics as indigenous trees, global positioning systems, telescope mounts, sun pillars, homemade radiation chambers . . .

Just as the fires were ready for cooking, heaven's watershed opened yet again.

This just served to bring the party of about 35 star-hopefuls closer together as we huddled under the eaves, cooked, prepared meals and continued our lively debates.

Sharon Tate spotted two red stars on the horizon. In fact, she insisted they were red giants: alpha Vodacomei and gamma MTNus. They were well placed for observing on rainy nights; low in the horizon and only 5 degrees apart.

As tummies filled with food, the rain eased and the occasional star peered through the hazy but slowly clearing night sky. Some people departed but more folks arrived in the hope of glimpsing something stellar.

At around 10:30 pm Bruce Dickson arrived with his 12" LX200, gleefully proclaiming that he had seen a star in Orion from his house ... maybe even the whole belt ... and there was a chance! As we prepared his telescope, unbelievably the skies cleared to a

magnificent vista of stars. The seeing and transparency was surprisingly good for a short time during which Bruce treated us to some magnificent views of Jupiter and Saturn using his 14mm wide field high magnification eyepiece. He exclaimed that the Great Orion Nebula (M42) was gorgeous this night with superb definition and even hints of colour.

By now, Dave Gordon's 10" LX50 was commissioned and running a tour of Jupiter, Saturn and NGC 253 (edge on spiral galaxy in Sculptor).

Midnight, and still more people arrived! The enthusiasm for some star gazing and the expectation of a good Leonid Meteor shower was wonderful. Hot coffee and biscuits ... astronomers fuel we were all set and ready for the show!

"Oh no! I've got dew on the corrector plate" growled Bruce. "It's no wonder I haven't been able to focus my telescope for the past 10 minutes" Dave responded. No problem, a hairdryer to the instant rescue.

About that time some party goers arrived at the wrong address. Coincidentally, there was a birthday party happening on the same road, but different address. As they were given directions, they peered curiously over shoulders at a bunch of people huddled around two rocket launchers waving hairdryers at the barrel-ends!

While we were beating the dew on the telescopes, we failed to notice the enemy creep quietly above and over us and deprive us of our joy. Clouds! How could this be? We fought a gallant battle of cat and mouse with the clouds but they finally tired of our game and closed over completely. It was 2 in the morning and we felt great that we had, at least for a short while, beaten the weather odds and stolen some precious observing time.

Small beginnings, but your ASSA Society plans to make the Johannesburg Star Party one of the biggest in the Southern Hemisphere.

Dave Gordon

Here we have a Photograph snapped by Dave catching some of the Party-goers in various stages of enjoyment...



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Deo Gloria
2001.06.03

Spring 2001 Expedition

Members

Trevor Gould
Stephan Laubscher
Brian Fraser
Val Fraser

Results

More samples were returned to the University of the Witwatersrand for analysis than on the previous expedition. Of these three proved to be worthy of further analysis and Professor Uwe Reimold and Dr Paul Buchanan called for thin sections to be made. Unfortunately, they all proved to be volcanics.

Acknowledgments and thanks

The team wish to thank the South African Heritage Resources Agency for kindly providing a permit to collect any meteorite finds in specific areas, and especially Ms Mary Leslie.

Thanks also go to the Department of Geology, University of the Witwatersrand, for general and specific assistance with the expedition and its objective.

The location was clarified by Professor Bernie Moon: our thanks go to him for taking the time to help us.

We would also like to thank Stephan Laubscher, a professional geologist, for taking time out to come along and share his expertise with us.

Thanks are also conveyed to the Council for Geoscience, both in Pretoria and Upington, for assistance rendered.

Expedition Area

The search area was defined as the set of permanent dunes North of Upington and South of the Kalahari Gemsbok Park. The intention was to find locations with minimal sand, such that inter-dune areas would

be essentially desert pavement and to search the inter-dune areas.

The logic of this approach was that even permanent dunes move slowly and that as they move they would absorb any meteorites and eventually deposit them on the trailing edge: i.e. the desert pavement.

Site Description

The inter-dune areas seen were extensively vegetated, and included thick sand cover. The dunes were vegetated to a higher degree than expected, but it would have been unlikely to find other than fresh falls on dune surfaces anyway.

Therefore searches were restricted to dry pan surfaces, of which there were a number in the vicinity.

The pans were of two types – the most common surface was covered in gravel and boulders related to erosion of Dwyka tillite, while less commonly we found salt encrusted surfaces with similar Dwyka tillite erosional remains.

The Dwyka represents a period of continental glaciation in South Africa, and this means that the provenance of the remains was generally far distant and of widely different rock types.

This provided a rich source of many different rock types, which also had the effect of reducing the signal to noise ratio hoped for: many rocks had magnetic signatures, and demonstrated expected meteoritic features.

A reasonably large number showed black 'fusion crusts' which proved to be desert patina. One even

had a radial flow pattern on one side of a rounded dark rock, which looked just like and oriented meteorite: the radial pattern resulted from radiating dolomite crystals!

Another dark rock lay on the white salt surface [Norokei Pan] and showed regmaglypt features

characteristic of iron meteorites: it is magnetic, heavy, but proved to be terrestrial.

On one salt pan [Wit Pan] which was relatively devoid of any rocks a number of tiny greenish rocks were found in what appeared to be a strewn field pattern: they were magnetic, but proved to be weathered lavas.

Expedition Diary

<p>Saturday 8 September 2001</p>	<p>Stephan and I left at 02:00. Travelled directly to Upington. The destination was a Bed and Breakfast about 50Km North of Upington on the road to the Kalahari Gemsbok Park. Our experience of the B'nB enables us to recommend it without hesitation: the owner provided excellent local knowledge, enables contacts to be made amongst local farmers, took us around to different places and made us feel welcome. Stephan stayed at the B'nB, while I camped near a pan half a kilometre away. Paul, the owner of the Kalahari Gastehuis, took us for a drive to one of his other farms past a commercial salt pan. We looked at some desert pavement areas, very complex in terms of the huge variety of rock types found, including jaspers, marble, lavas etc. The drive included a number of high speed switchbacks over the dunes, which was marvellous! We returned via the Noenieput road.</p>
<p>Sunday 9</p>	<p>Searched a pan [Blou Pan] to the North of the B'nB all day on another neighbour's farm. The pan was covered wall to wall with dark rocks. Later a farmer [Gysbert] and his wife arrived in their 4X4 and invited us to see their salt pan [Wit Pan]. We followed him, but the final trip to the salt pan was made on the back of the 4X4. As one travelled over seemingly endless red dunes, one suddenly came across a blindingly white pan surface stretching for kilometres in all directions. The farmer drove to the middle of the pan, dropped us off and told us he'd collect us at 17:30. The salt pan experience was wonderful: the salt crust was thin – a few millimetres- and beneath it was a fine soft sand. It was quite hot and the Sun reflected off the pure white surface: if it hadn't been for copious quantities of sunblock we would have been pretty badly burned. On returning in the twilight we saw a spring hare, a ring tailed mongoose and a mouse. In the evening we drove into Upington for supplies.</p>
<p>Monday 10</p>	<p>The Sun rose on a beautiful windless day. My tent was parked on a red sand dune under a Shepherd Tree. There was a lot of tree'd vegetation on this sand dune and below it on all sides was a dry pan. The temperature at sunrise was about 6 degrees. The thin cirrus clouds showed high wind speeds aloft. A small family of meerkats live on the dunes. We first went to the offices of the Council for Geoscience in Upington. After lunch Stephan and I searched the commercial salt pan [Norokei Pan]. On our return to the B'nB, Brian and Val had arrived. We had hoped to do some observing in the evening, but clouds appeared out of nowhere and put paid to that idea.</p>
<p>Tuesday 11</p>	<p>A big storm swept through the area at about 02:00. I awoke at 02:00, thirsty, and spied a can of Coke that I had left in the tent and drank it. A few raindrops struck the tent, which flapped around in the wind. Gysbert took us to a distant pan [Filanders Pan] which we spent the morning searching on. In the afternoon we searched Bloupan. It was cold- of the order of 7 degrees, with a freezing wind. You could see the wind coming, accompanied by dust, and the most effective defense was to turn your back to it. On our return to the B'nB, we heard about New York. The world had changed. We felt very sorry for the innocent victims. Stephan expressed an observation that we were never going to find any meteorite, unless we stumble across one. He felt that our time would be better spent looking at the Namaqualand flowers, on the grounds that at least the flowers were there.</p>

	This observation disappointed me and left me feeling very de-motivated, but in retrospect, our task must be done. If it was easy, everyone would do it.
Wednesday 12	We travelled back into Upington and visited the Upington High School, which was reported to have a meteorite. The Headmaster told us that it had been given to the school in 1940 by a farmer, and that it had become part of the school tradition. This large rock lay next to the Headmaster's desk on the carpet. It proved to be magnetite. The Headmaster was advised that if one finds such things, it is always best to hand them in for analysis: then only can one be sure. In the afternoon we travelled to the farm next door to the B 'n B – a distance of about 50Kms away – to look at another reported meteorite, which also proved to be a lump of magnetite. The wind was cold and strong and blew all night.
Thursday 13	The cold front continued to intensify and in the morning the temperature inside the tent was 5.7 degrees. The clouds dissipated, but not the wind. We spent the day searching on Norokei Pan and Komkom Pan. It rained during the night, but didn't really make anything wet. Huge gusts of wind. It has been cold for almost all of our stay.
Friday 14	Broke camp. Watched the sun rise over the Kalahari dunes for the last time. Went to the B 'n B for a bath. We went via Upington to Augrabies Falls, where apart from the wonderful scenery, we watched CNN reporting on the World Trade Centre. We then travelled westwards, stopping at Aggenys, then on to Springbok, where Stephan and I camped. Brian and Val stayed at the Springbok Lodge, which has a lovely mineral collection. After booking in, we all drove to Port Nolloth and watched the Sun set over the Atlantic from the deck of a supply vessel. We all observed the green flash – the first time in my life I had seen it.
Saturday 15	Broke camp, and went to Nababeep and visited the Mine Museum, which was good. The Namaqualand flowers were all around and provided a magnificent spectacle. We drove South on the main road toward Cape Town, losing Brian and Val in the process. At Vanrhynsdorp we turned off and drove over the Vanryns Pass to Calvinia, Williston, Carnarvon, Victoria West and toward Kimberley. We stopped on the side of the road for a short sleep at Heuningneskloof, a place which brought back old memories for me, then through Kimberley and back to Johannesburg. The total journey distance was in excess of 4000Kms.

Comment

Despite the lack of success, we built some local knowledge and experience of the art of meteorite hunting.

Given one recoverable meteorite per grid 10Kms on a side, we would be within 5Km of one if we stood in the middle of the grid. This looks easy, but let's look a little more deeply.

A searcher can successfully scan 2.5m on either side and therefore searchers are spread 5m apart. On a 10Km side, there are 2000 search lines, each 10Km long. To find one recoverable meteorite, expect to walk 20 000Kms!

The grid of 100 square km. is also slightly optimistic, as the Saharan experience is one meteorite per 200 square Km.

Again, you assume that your under-trained searcher will recognise a meteorite after walking in the hot sun all day.

I am not surprised we have found nothing as yet, but the only place where success comes before work is in the dictionary.

Therefore:

Spring 2002

For the Spring Expedition, we'll be returning to the Upington / Kalahari Gemsbok district. The Expedition will be paired with a Deep Sky Observing Expedition, again under the auspices of the Johannesburg Centre.

Dates are: Good Friday 29 March to Sunday 7 April.

Hope you join us for this exciting Kalahari Safari!

Trevor Gould

The Sky this Month

January 2002

dd hh	dd hh
1 06 Jupiter at opposition	18 09 Moon at apogee
2 08 Moon at perigee	18 10 Mercury stationary
3 12 Earth at Perihelion	18 22 Mars 5.3 N of Moon
6 04 LAST QUARTER	21 18 FIRST QUARTER
9 12 Mercury 1.2 S of Neptune	24 15 Saturn 0.1 N of Moon...Occn.
11 10 Mercury greatest elong. E(16)	25 13 Venus 1.4 S of Neptune
12 19 Mercury greatest brilliancy	25 23 Mercury 4.5 N of Venus
13 13 Venus 1.4 N of Moon	26 10 Mercury 3.2 N of Neptune
13 13 NEW MOON	26 19 Jupiter 0.8 S of Moon...Occn.
14 11 Venus in superior conjn.	27 20 Mercury in inferior conjn.
14 16 Neptune 3.6 N of Moon	28 14 Neptune in conj. with Sun
15 02 Mercury 4.0 N of Moon	28 22 FULL MOON
15 22 Uranus 3.8 N of Moon	30 09 Moon at perigee

February 2002

dd hh	dd hh
4 14 LAST QUARTER	13 17 Uranus in conj. with Sun
7 10 Venus 0.8 S of Uranus	14 21 Moon at apogee
8 09 Saturn stationary	17 00 Mars 5.1 N of Moon
8 16 Mercury stationary	20 12 FIRST QUARTER
10 05 Mercury 5.0 N of Moon	21 00 Saturn 0.3 S of Moon...Occn.
11 01 Neptune 3.7 N of Moon	21 18 Mercury greatest elong. W(26)
12 08 NEW MOON	23 02 Jupiter 0.9 S of Moon...Occn.
12 08 Uranus 3.8 N of Moon	24 12 Mercury 0.5 S of Neptune
12 20 Venus 3.3 N of Moon	27 09 FULL MOON
13 07 Mercury greatest brilliancy	27 19 Moon at perigee

LOCAL TIMES of RISE and SET for the MAJOR PLANETS, 2002

Site Location:- Long. **+28.0** deg. Lat. **-26.0** deg. Local Time:- UT **+2.0** hrs.

Date	Sun		Mercury		Venus		Mars		Jupiter		Saturn	
	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set
Jan 01	05.20	19.02	06.27	20.09	5.05	18.49	10.25	22.53	18.57	05.27	16.36	03.20
Jan 11	05.28	19.03	06.55	20.16	5.23	19.02	10.18	22.34	18.12	04.42	15.54	02.38
Jan 21	05.35	19.03	06.39	19.43	5.41	19.12	10.11	22.15	17.28	03.57	15.13	01.57
Jan 31	05.43	18.59	05.14	18.23	6.00	19.17	10.04	21.56	16.44	03.13	14.32	01.16
Feb 10	05.50	18.54	04.10	17.29	06.19	19.19	09.57	21.37	16.01	02.30	13.53	00.36
Feb 20	05.57	18.46	03.56	17.17	06.36	19.18	09.50	21.19	15.20	01.48	13.14	23.57