

CANOPUS

The Astronomical Society of Southern Africa

Johannesburg Centre

Monthly Newsletter for April 2003

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

Editorial

The world's a funny (peculiar) place isn't it. The year started out pretty well and most people seemed to have a good feeling about the year to come. Then came the double whammy - first Columbia and now the ill-tempered argument in the middle-east. It makes one wonder what else is in store for us in the months ahead. Of course, as the Rand strengthens against the Dollar, telescopes become more affordable!

If you get a chance, go out and try to find the new comet New Comet Juels-Holvorcem (*I think I spelt that right ... Ed.*). It is apparently quite visible and brightening in Andromeda and is moving Southwards.

Once again, Hobby-X was a good source of membership applications and we have some 19 new members as a direct result of persons seeing our stand and talking with those of us who were representing the Society. **Dave Gordon** is to be congratulated on the excellent stand which he built and manned during the course of the exhibition. Scope-X is just around the corner - and hopefully our membership will be up over the 200 mark once the exhibition, lectures and Star Party are all over.

Melvyn Hannibal presents an article on the Medley of Astrophotography evening at the last monthly meeting as well as asking some interesting questions of your editor, while **Lerike Cross** has submitted the Lecture Schedule for ScopeX 2003. **Trevor Gould** is still seeking some hardy adventurers to go prospecting for meteorites in die ou Kalahari. According to members who have joined one of these expeditions, they are hard work but enjoyable, and who knows, maybe this time a meteorite may well be discovered by one of you. **Eben van Zyl** supplies us with facts and figures surrounding some types of Variable stars, and **Brian Fraser** lets us know what's happening up above during the next two months.

Members - how about letting us (the committee that is) know what you'd like to have presented at the monthly meetings, or the kind of articles that you would like to see appearing in Canopus. These requirements should be of an Astronomical bent or at least something of a scientifically related nature. If it is in our power to do so - we will try to meet your request(s).

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, 9th of April, 2003 at 20:00.

Pulsars

By: **Prof. Fabio Frescura**

Telescope Making Classes

Would you like to make your own telescope?...or finish off a partially completed 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. You may also subscribe to the email list server by sending an email to assa_telescopemaking-request@list.to with the word SUBSCRIBE in the body of the message. It will mail you back asking for confirmation - just follow the instructions.

To send email to all subscribers to the list, merely send a single message to assa_telescopemaking@list.to and the list server will distribute the message to everyone concerned.

Other ASSA Lists

	To Subscribe	To send messages
ASSA Jo'burg Centre:-	assa_announce-request@list.to	assa_announce@list.to

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. *Please check with Constant on 972-6038 or email- tabbie@icon.co.za to ensure that viewing IS taking place on the specified evening.*

NOTE: - Public viewing has been resumed - the Dome motor has been fixed.

Welcome to new Members

We would like to welcome the following new Members to the Johannesburg Centre who have joined our society during the last month.

Gerda van Niekerk	Mr Magnussen	Merry Freeman	Daven Compton
Cobus Beukes	Mark Beching	Alan Gerig	Robert Hayes
Andrée Hughes	Stavros Karamitsos	Nicole Kennerley	Marie Korsketidis
Jacques Maree	Ludolf Meyer	Niel Meyer	David Rick
Ruaan Uys	Roy Voogt	Ronald White	

We wish you clear skies and many happy years of observing

ASSA Jo'burg Centre - Calendar of Events

Month	Day/ Date	Event	Details
Apr	Mon 7	Committee meeting	
	Wed 9	Monthly Meeting	Pulsars Prof Fabio Frescura
	Fri 11	<i>Public viewing</i>	
May	Sat 26 to Sun 04	Post-Easter 2003 Expedition	Southern African Meteorite Recovery Program
	Fri 9	<i>Public viewing</i>	
	Sat 10	==> Scope-X 2003 <==	At War Museum
	Mon 12	Committee meeting	
	Wed 14	Monthly Meeting	Libyan Impact Craters Prof Uwe Reimold
Jun	Fri 6	<i>Public viewing</i>	
	Mon 9	Committee meeting	
	Wed 11	Monthly Meeting	Planetarium Meeting
	Sat 21	Grand Solstice Cleanup	At the Observatory
Jul	Mon 7	Committee meeting	
	Wed 9	Annual General Meeting	Section Reports and elections for the Committee.
	Fri 11	<i>Public viewing</i>	
Aug	Mon 11	Committee meeting	
	Wed 13	Monthly Meeting	T.B.A.
	Fri 29	<i>Public viewing</i>	
Sep	Mon 8	Committee meeting	
	Wed 10	Monthly Meeting	T.B.A.
	Fri 26	<i>Public viewing</i>	
Oct	Mon 6	Committee meeting	
	Wed 8	Monthly Meeting	T.B.A.
	Fri 24	<i>Public viewing</i>	
Nov	Mon 10	Committee meeting	
	Wed 12	Monthly Meeting	T.B.A.
	Fri 28	<i>Public viewing</i>	

Reminders

2003	Centenary of Flight August: Mars opposition Mercury Transit
2004	Centenary Sir Herbert Baker Library Building Johannesburg Centre to host 2004 ASSA Symposium June 8, Venus Transit

Variable Stars

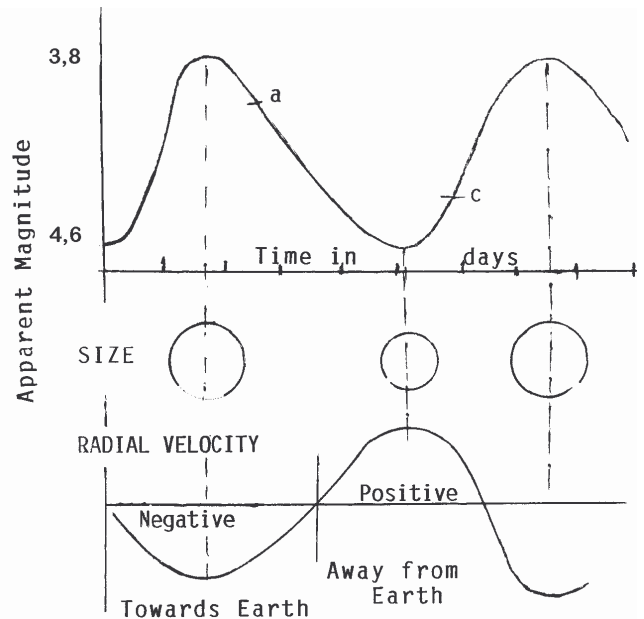
1. Delta Cepheid Types

The monitoring of variable stars should form a good part of the observing done by an amateur astronomer and it can be work of a professional standard as was shown by the late Danie Overbeek whose work received world-wide acclaim.

There are two main types of variable stars: those that revolve around each other as eclipsing binaries and those that undergo intrinsic changes in their interiors. A very important type of the latter is the Cepheid variables of which the star Delta Cephei is the prototype. It was discovered to be variable in brightness by a friend of John Goodricke, the deaf and dumb amateur who died at the age of 22. However, John is credited with the discovery in 1784. He correctly diagnosed the variability as being due to pulsations of the star, whereby it alternately expands and contracts, swelling up and shrinking. The curve of apparent magnitude against time could not be explained by any form of eclipse. The rise to maximum brightness is steeper than the decline to minimum. Actually the brightness reaches a maximum one-quarter period after the star reaches maximum size and minimum one-quarter period after it reaches minimum size, shown by the points *a* and *c* in the diagram. When the star expands, its surface area increases and its temperature drops. The subsequent contraction raises the temperature so that the brightness increases. Further contraction decreases the size of the radiating surface so that the total flux of energy decreases. In the diagram the sizes of the star are exaggerated. According to C Hoffmeister, G Richter and W Wentzel in their book *Veränderliche Sterne* (Springer-Verlag, London), the pulsating of the Cepheids leads to the absorption of energy from the star's centre by doubly ionised Helium (He III) at a depth of a few hundred thousand kilometres below the surface. An undamped oscillation then causes the over-lying layers to expand so that the temperature drops and the apparent magnitude changes from 3,8 to 4,6. While so doing the spectral class changes from F to G, proving that

intrinsic changes do take place in the star. The temperature changes from 6500° to 5500° . The absolute magnitudes of these stars range from -2 to -7 so they are giants. The visual magnitudes change by only 0,6 to 1,7 magnitudes.

The periods of Cepheid variables range from less than 2 days to hundreds of days. It is best to classify these variables according to the lengths of their periods:



(a) Less than 2 days, the RR Lyrae variables

(b) 2 to 20 days
(c) 20 to 40 days

} Classical Cepheids.

(d) Long period variables having periods of more than 40 days. They are of types K and M

Below is appended a list of Cepheids which an amateur can use as starting material. The values of apparent magnitudes and periods in days have been rounded off so that the amateur can taste the pleasure of determining them accurately. With an electronic photometer the values of apparent magnitude can be determined correct to two places of decimals. The stars have been selected to cover right ascensions around the clock and the declinations are within the range of southern observers.

Star	R.A	Dec.	Magn itude		Period days	Spectral type
			Max	Min		
δ Cep	22 29,0	+58 24	3,5	4,5	5,4	F5 Ib - G IIb
SV Mon	06 21,4	+0,6 28	7,5	9	15	F6 - G4
RT Aur	06 28,3	+30 30	5	5,8	3,7	F4 Ib - G IIb
ζ Gem	07 03,9	+20 35	3,6	4	10	F7 Ib - G3 Ib
VY Car	10 44,6	-57 34	6,9	3	19	F6 - G4 Iab-Ib
U Car	10 57,6	-59 43	5,5	7	38	F6 - G7 Iab
S Cru	12 54,4	-58 26	6	7	4,7	F6 - G1 Ib-II
U Sgr	18 31,9	-19 07	6	7	6,7	F5 Ib - G1,5 Ib
TT Aql	19 08,2	+01 18	6	7	13,7	F6 - G5
η Aql	19 52,5	+01 00	3,5	4,3	7	F6 Ib - G4 Ib
S Sge	19 55,5	+16 37	5	6	8	F6 Ib - G5 Ib, V
VX Pup	07 32,6	-21 56	7,5	8,5	3,0	F5 - F8
AX Vel	08 10,8	-47 42	8	8,5	3,5	F8 -G2
Y Car	10 32,2	-58 30	7,5	8,5	3,6	F2 - F8
U Tra	16 07,3	-62 55	7,5	8	2,6	F5 - F7

Jan Eben van Zyl

A medley of Astrophotography!

I went to the meeting expecting to learn from those who have done it, and to see some of their works. I imagine there were many more at the meeting with the same expectations.

Kurt's talk covered the basics of equipment, and was delivered in a manner which everyone who owns a camera could understand. He must be asked to do follow up talks.

The next speaker, whose name I did not catch, gave a very well informed description of what a CCD chip is, and how they work. Unfortunately quite a number of the audience found the talk to be far too technical and "over their heads".

Bruce then gave a very brief and honest comment on his experiences with his CCD camera.

Chris Stewart would have shown us some of his slides, but the projector lens was missing, (a victim of the recent burglaries?).

I think that quite a fair number of the large audience were somewhat disappointed with the evening.

In the "book for suggestions", I noticed a request to explain the back page of Canopus. To most of us - especially the committee members - the data is so obvious that we cannot imagine that someone might not understand these tables. It is evident that we are not addressing the needs of our new members. We must keep in mind that

not everyone has our knowledge, which we only acquired by asking "silly" questions, and having someone able to appreciate our needs. I suggest that this is a major factor in the high turnover we have in our membership.

On the subject of planetarium software. There are some really strange names given to star groups in these programs. Two which caught my eye recently were the "Bear Claw cluster" and the "Salt and Pepper cluster". After a bit of bother with the actual position of the cursor relative to the items, I found that the Bear Claw cluster is NGC 2537, and the Salt & Pepper item is NGC 2099. At the time I was only able to observe the latter cluster. It consists of a group of faint stars, and does actually look like a spill of salt on a dark surface. The Bear Claw was hidden behind the Library building, so I don't know how descriptive the name is.

We all have our favourite items, which we look at every time we do any observing. This can result in missing something nearby. A case in point is NGC 104 (47 Tucanae). This common favourite has a close relative only three degrees away, but which is possibly unknown to many. Also a Globular cluster, NGC 362 is smaller version of 47 Tuc., but just as pretty. I also discovered this while looking at my program. Try observing NGC 362, 104, and 5139 (Omega Cen.) in that order. (spring & autumn)

Another worthwhile pastime is to browse the classic observing handbooks, such as Burnam, and Hartung. Those of you who own these books might like to look up Sigma Orionis, then point your 'scopes there.

No prize for this, but what is NGC 1976 more commonly known as?

On a different note, may I ask the Editor to explain what & where "Scorpio" is? I cannot find any reference to it in any of my books and planetarium programs.

Here is another gripe! Please can we have space news other than NASA? Did you know that there was an Ariane 5 failure last December. There IS life outside the b\$^%# USA!!! How many of you know what Ariane 5 is?

Melvyn Hannibal

Apologies Melvyn and All - It appears that "Scorpio" is hidden somewhere within the confines of Scorpius - one of my regular errors this - and the spell checker allows it through without complaining! Regarding the news from other Space Agencies - they seem to be far less inclined to advertise their prowess than their colleagues across the Atlantic and thus I have less to fall back on from them vs. NASA. If you find ANY news whatsoever that you would like published (as long as it isn't copyrighted or previously published in a magazine) please pass it on to me and I'll get it into Canopus. I do take articles as coming from the person who forwarded them to me unless they specify the actual source, and will always credit them accordingly Ed.

Project Venus 2004

An observational project of amateur astronomers to determine the scale of the solar system with the aid of the Venus transit in 2004. Groups investigate the historical calculations and observations, set up new procedures, prepare the observation and carry out the evaluation.

Actuality, Introduction

On June 8th 2004, in major parts of Europe, Africa and Asia – in particular in the complete German speaking area - a Venus transit takes place which is observable during it's entire duration. This is a rare astronomical event. The last transit of Venus took place on Dec. 6th 1882, the one following the next on June 6, 2012 (which will only be partly visible in the German speaking part of Europe). Assuming good weather, Venus will be seen as a small, black disk moving slowly across the sun. For various reasons these transits could only be observed and evaluated by professional astronomers in the past. The astronomer E. Halley (1656 to 1742) had the idea to determine the distance from the earth to the sun (the astronomical unit, AU) from the transit times (together with a bit of geometry) with an error of only a few percent. In particular the transit of Venus of June 3rd 1769 was observed and then evaluated: for instance from Varda (Sweden) and Tahiti.

The mathematical and astronomical instruments available today enable the present day amateur astronomers for the first time to observe and evaluate such a transit. From this emerged the idea for the project „Venus 2004“, initiated by the Astronomical Society of Zurich, Switzerland.

Our Project Goals

1.- We want to learn about the history of the past Venus transits and the corresponding kinematic conditions and to re-enact for the first time on occasion of the coming transit of Venus of June 8th, 2004 with the means available to the amateur what has been only possible with professional means in the past.

The coming Venus transit we want to

- prepare well
- observe by different methods
- process the raw data and standardise in order to enable the data exchange

We want to interest other amateur astronomers in this project to observe this same transit at the same time from the southern hemisphere.

2.- We want to evaluate these observations and data by different methods, taking into account the given means, in order to determine the parallax of the sun and from that the astronomical unit with the best possible accuracy.

3.- We want to do all this for our own pleasure and within the scope of the teamwork among friends. We appreciate the help of professional astronomers.

We have become aware of the fact that the success of the project depends essentially upon the motivation and cooperation of a sufficient number of amateur

astronomers, but also upon the meteorological conditions on June 8th, 2004 and, above all, whether

we will be able to evaluate the large number of observational data in a statistically correct way.

Structure, Tasks and Expected Results

Name of the Group (responsible)	Main Tasks and Results
Project Management (Andreas Inderbitzin)	Andreas Inderbitzin, president of the Astronomical Society of Zurich, is the primary person to be adressed to ref. all questions concerning the project Venus 2004. The project manager is, e.g., responsible for conducting the plenary sessions. He accepts suggestions as to the points to be discussed.
History, Statistics (Dr. Andreas Verdun)	By consulting the original publications, get to know the history of Venus transits and the various methods of observation and evaluation and transpose them into our present day conditions. Provide the statistical foundations (procedures, forms, ...) for the evaluation (of a large number) of observational data.
Kinematics (Renato Hauswirth)	Taking advantage of the means available to the present day amateur, comprehend the kinematics of a Venus transit and from the predicted/measured times of contact (from several geographically different places) determine the astronomical unit in (mathematical) closed form (including estimates for the error in AU as a function of the precision of the times of contact).
Instruments, Observation (Marc Eichenberger)	Compile a list of sites for observation and of the instruments, establish the Observation Record in cooperation with the group Evaluation and the corresponding manuals for the observation and compilation of the observational data.
Evaluation, Results (Hugo Jost)	In cooperation with the group Instruments/Observation establish the Observation Record and the corresponding manuals for the observation and compilation of the observational data. Prepare (in consideration of the statistical foundation of the group History and Statistics) the processing of the observational data, establish the work flow, design the evaluation to determine the AU (including estimation of the error).
Contacts (vacant)	Establish contact to amateur astronomers outside the project (in particular South Africa and Germany), explain the project, and motivate to cooperate. Provide help in translating (into English) of the „Observation Record“ and the manuals for the amateur astonomers abroad. Later on: contact the media in Switzerland (print and TV).
Astroinfo (Dr. Roland Brodbeck, Arnold Barmettler)	In cooperation with the project maintain an information platform within the internet portal astro!info of the society Astroinfo (www.astronomie.ch / .info and www.CalSKY.com) taking advantage of the professional (mainly the theoretical knowledge and foundations) possibilities of the members of Astroinfo.

Time Schedule of the Project

2000	Fall: Start of the project
2001	Spring: Clear up questions among the work groups
	Fall: Compile list of instruments and places for observation
2002	Spring: Clear up goals; draft Observation Record
	Fall: Finalize Observation Record, draft Manuals. Establish statistical methods for evaluation. Establish contact to South Africa and convey Observation Record in English. Open internet site under www.astroinfo.ch
2003	May 7th: Observe Mercury transit as rehearsal.
	June: Get Comments on procedures
	Summer: Evaluate, finalize procedures
2004	June 8th: Venus Transit
	Fall: Evaluate Observations. Final report on project.

The Work Groups

1. History

The history group has first reported on the large scale explorations in 1761 and 1769, in particular on the travels of Le Gentil. For various reasons these endeavours were not successful: inaccuracies in determining the geographical position; the black drop effect; inadequate kinematic models; lack of statistical methods.

E. Halley proposed his idea already early in the 18th century. It was L. Euler (1707 to 1783) who finally worked out the mathematics in detail including statistical treatment. He arrived at an estimate of the parallax of 8.80" in 1770. J.F. Encke (1791 to 1865) of Berlin, Germany, evaluated the observations again using the least squares method but arrived at a surprisingly inaccurate result.

2. Kinematics

Several people in this group (H. Blatter, F. Messmer, R. Hauswirth) followed up Halley's ideas (cf. internet address below). The result is that amateurs today can determine the AU in good quality by measuring the contact times (in particular 2nd and 3rd contact) at observation points that are as far apart as possible (e.g. Europe and South Africa). The accuracy will be determined essentially by the accuracy of the times of contact.

It is for that reason that we are seeking cooperation from astro amateurs of South Africa. Switzerland and South Africa are extremely well suited for observation of the event.

Another approach is to measure the radial distances of Venus from the sun during transit at various times and compare them with the geocentric ephemeris. This enables one solitary observer to determine the parallax (cf. R. Brodbeck at the internet address below).

3. Instruments / Observation

Various problems facing an observer have been discussed, in particular the Black Drop Effect. This

seems to have seriously impaired earlier observations of the contact times.

The primary goal the group has set itself is to establish guidelines for the observation. The result, influenced by the experience of some members in (semiprofessional) groups for observing minor planets is the „Observation Record / Beobachtungsprotokoll“ which is part of this report. A manual as a guide for carrying out and recording the observations is in preparation.

This Observation Record should be tried out on the occasion of the Mercury transit on May 7th, 2003.

4. Evaluation / Results

It has been decided to do the evaluation of the data centrally, that is, all observations have to be submitted to Hugo Jost who is working on the procedures to evaluate the data.

5. Contacts

Contacts have been established with Germany and South Africa and we intend to contact La Réunion as well, where an observatory is located with which Swiss astronomers have had contact in the past.

It has been pointed out above that it is crucial to this project to have observations from far apart places on our planet. It is the hope of the Swiss astro amateurs engaged in this project that we can establish cooperation with a number of amateur astronomers in South Africa to carry through the method Blatter-Messmer.

6. AstroInfo

This is a portal in the internet dedicated to the astro amateurs. The project is represented there under www.astronomie.info/projectvenus . - This report is in part a translation of what is to be found in German under the given address and it will also be made available there. - Several articles as well as the Observation Record can be downloaded from

<http://eclipse.astronomie.info/transit/venus/project2004/pub.html>

SCOPEX 2003 LECTURE SCHEDULE (as @ 26 MARCH 2003):

TIME	LECTURER	TOPIC
10h00	Jim Knight - Former Director of the Solar Section of ASSA	Solar Observing
11h00	Prof Okkie de Jager - Department of Physics, Potchefstroom University	The H.E.S.S. Gamma Ray Telescopes in Namibia
12h00	Dr Claire Flanagan - Director Planetarium, Johannesburg	People in Space
13h00	Dr Matie Hoffmann - Senior-lecturer: Department of Physics, University of the Free State	Recent and future developments for Optical Astronomy in SA: Boyden and SALT
14h00	Dr. Michael Gaylard - Hartebeesthoek Radio Astronomy Observatory	Is Astronomy useless? No, it can tell what the time is and where you are. Space Geodesy at HartRAO
15h00	Prof David Block - Director: Cosmic Dust Research Laboratory: University of the Witwatersrand	Cosmic Dust
16h00	TBA	
16h40	Emmanuel Petrakakis – Presenter at the Founding Convention of the Mars Society in Boulder Colorado 1998	Mars Society
17h00	Dave Gordon – Chairman of ASSA JHB	What's up in the Sky.

Southern African Meteorite Recovery Program

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Amateurs in the Service of Science

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South Africa

Deo Gloria

Post-Easter 2003 Expedition

You are invited to join the post-Easter 2003 Expedition to the Kalahari semi-desert, North of Upington, to search for historic meteorite falls.

Dates: Saturday 26 April to Sunday 4th May [or part thereof].

Volunteers who are prepared to assist with the search for meteorites are requested to contact the writer for further information. Those who would simply enjoy joining the expedition in order to observe from exceptionally dark skies are also welcome.

Note: while it may be possible to stay at or near a Bed 'n Breakfast establishment, it may prove necessary to camp in remote area with no access to ablution facilities.

Volunteers need to be fit to walk the expected distances. No medical facilities will be available.

The timing is intended to fall between the cold of winter and the heat of summer, however, the week away could well see heat, cold, wind and rain.

Nights are usually cold, but clear, and telescopes for star viewing will be brought along. Note that electrical power is unlikely to be available on campsites.

Roads are usually suitable for ordinary sedan vehicles: bakkies or 4X4's, while useful, should not be necessary.

For those able to come, there will be a workshop covering both procedure / logistics of the Expedition and Field Recognition of Meteorites to be held at the Observatory 18a Gill Street, Observatory, Johannesburg at 20:00 Friday 11 April 2003. We hope that some real meteorites will be available at the workshop.

This workshop will also provide a sample list of things to bring, including food, water, camping equipment, medicals etc. Meteorite hunting equipment will be available.

The Itinerary shown is subject to change.

Itinerary for Meteorite Hunters

Saturday 26 April	Travel to Witsand Nature Reserve. Camp. For those who wish to stay in accommodation, please contact Witsand directly. Witsand is the home of the Roaring Sands of the Kalahari. Watch the sun set from the top of one of the dunes.
Sunday 27 April	Public Holiday. Nature walk. Mid-morning travel to Koppieskraal Pan, just South of the Kalahari Gemsbok Park. Camp. Observe the brilliant night skies of the Kalahari weather permitting.
Monday 28 April	Public Holiday. Meteorite hunting. Observe from the ultimate dark sky site.
Tuesday 29 April	Meteorite hunting. Observe from the ultimate dark sky site.
Wednesday 30 April	Meteorite hunting. Observe from the ultimate dark sky site.
Thursday 1 May	Public Holiday. New Moon. Meteorite hunting. Observe from the ultimate dark sky site.
Friday 2 May	Travel to Augrabies Falls. Camp or obtain accommodation. Some hiking in the beautiful reserve.
Saturday 3 May	Hiking at Augrabies Falls. Travel to Kimberley and camp at the magnificent Municipal Camp Ground in sight of the Kimberley Mine headgear.
Sunday 4 May	Return home

Trevor Gould

083-212-8945

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Enjoy stargazing and maybe want to build your own telescope?
Own or want a telescope or related gadget, be it self-made or bought?
Come to ASSA's annual Telescope & Astronomy Exhibition!

Saturday, 10 May 2003
9am to 9pm (Star Party from 6pm)

VENUE: SA Military History Museum - Johannesburg
22 Erlswold Road, Saxonwold (Entrance Fee: Adults R10, Children and Senior Citizens R5)

There will be self-made and commercial telescopes and accessories on display and to buy, lectures, mirror-making demonstrations, books and a raffle with great prizes.

Check-out the website for more detail or call 082 650 8002.

The venue also caters for the not-so astronomically inclined members of the family: the Johannesburg Zoo is next door and the Museum itself boasts a Gun Park with displays of 20th Century artillery, tanks, planes and other interesting military exhibits.

<http://www.assajhb.co.za>

A Letter from Swellendam

6 MURRAY STREET
6740 SWELLENDAM
7 FEBRUARY 2003

TO ASSA JOHANNESBURG CENTRE
P.O.BOX 93145,
2143 YEOVILLE
DEAR ASSA, JOH'BURG,

THANK YOU FOR STILL SENDING ME CANOPUS, I HAVE READ THEM WITH INTEREST, BUT SINCE DECEMBER I HAVE MOVED TO SWELLENDAM WITH MY FAMILY AND WILL NOT BE ABLE TO ATTEND THE MEETINGS.

I HAVE BEEN A MEMBER FOR ABOUT 20 YEARS, STARTING WITH MONTY FROM WALKERVILLE.

I HAVE ALWAYS BEEN INTERESTED IN ASTRONOMY AND STILL AM AND WILL REMAIN A MEMBER OF ASSA IN ORDER TO GET MNASSA AND THE HANDBOOK. I HAVE MADE CONTACT WITH JAN HERS, BUT WILL NOT BE ABLE TO GO TO HIS MEETINGS, AS I TURNED 90 LAST OCTOBER, BUT THE INTEREST IS THERE! I PROJECTED THE PART_ECLIPSE OF 4 DECEMBER WITH MY BINOCULARS AND ENJOYED IT WITH MY FAMILY!

SWELLENDAM GETS A LOT OF MIST BUT I SEE VENUS IN THE EARLY MORNING!

WITH BEST WISHES FOR CLEAR SKIES,

MANY THANKS AND GREETINGS FROM

Mrs.J.van STEENDEREN
6 MURRAYSTREET
6740 SWELLENDAM

What a lovely letter.....Ed.

The Sky this Month

April 2003

dd hh	dd hh
1 20 NEW MOON	16 19 FULL MOON
2 19 Mercury 3.9 N of Moon	17 04 Moon at perigee
4 02 Moon at apogee	23 07 Mars 3.2 N of Moon
4 05 Jupiter stationary	23 12 LAST QUARTER
4 14 Mercury greatest brilliancy	24 04 Neptune 5.2 N of Moon
7 22 Saturn 3.1 S of Moon	25 16 Uranus 4.8 N of Moon
9 23 FIRST QUARTER	26 22 Mercury stationary
11 08 Jupiter 4.0 S of Moon	28 17 Venus 2.7 N of Moon
16 13 Mercury greatest elong. E(19)	

May 2003

dd hh	dd hh
1 05 Moon at apogee	19 13 Mercury stationary
1 12 NEW MOON	21 12 Neptune 5.1 N of Moon
2 04 Mercury 2.8 N of Moon	21 20 Mars 3.0 N of Moon
5 08 Saturn 3.2 S of Moon	22 23 Uranus 4.9 N of Moon
7 08 Mercury in transit	23 00 LAST QUARTER
8 18 Jupiter 4.2 S of Moon	28 07 Mercury 2.4 S of Venus
9 12 FIRST QUARTER	28 14 Moon at apogee
13 14 Mars 2.1 S of Neptune	29 03 Mercury 2.4 S of Moon
15 14 Moon at perigee	29 04 Venus 0.1 S of Moon Occn.
16 00 Neptune stationary	31 04 NEW MOON <i>Eclipse</i>
16 03 FULL MOON <i>Eclipse</i>	

LOCAL TIMES of RISE and SET for the MAJOR PLANETS, 2003

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
Apr 01	6.18 18.06	7.04 18.36	3.38 16.24	23.56 13.37	14.51 1.39	11.47 22.21
Apr 11	6.22 17.56	7.46 18.46	3.52 16.22	23.45 13.23	14.12 1.00	11.11 21.44
Apr 21	6.27 17.46	7.55 18.37	4.07 16.18	23.34 13.07	13.34 0.22	10.35 21.08
May 01	6.32 17.38	7.17 18.04	4.21 16.15	23.22 12.51	12.57 23.46	10.00 20.33
May 11	6.37 17.31	6.10 17.14	4.36 16.11	23.09 12.33	12.20 23.10	9.26 19.58
May 21	6.43 17.26	5.15 16.32	4.51 16.09	22.55 12.14	11.45 22.36	8.51 19.24
May 31	6.48 17.23	4.54 16.08	5.07 16.09	22.40 11.53	11.10 22.03	8.17 18.49