

CANOPUS

The Astronomical Society of Southern Africa

Johannesburg Centre

Monthly Newsletter for July 1999

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The Sir Herbert Baker Library, 18a Gill Street, Observatory, Johannesburg

Editorial

We're well into Winter now - as this editorial is being "created" we are less than one week away from Midwinter's day...in fact, Canopus will probably go to press on the 21st of this month. The early evening sky is still quite magnificent and the view presented on the evenings of 16 and 17 June, with the thin crescent Moon and Venus, was quite beautiful. Nova Vela seems to have diminished in brightness fairly quickly after showing much promise at it's discovery last month - we hope most of you had a chance to see this good naked eye occurrence. It's now below normal naked-eye limits, but keep watching.

Bill Wheaton, who is currently taking a well earned vacation, has submitted an article on yet another discovery by the 2MASS project at JPL...Methane Dwarfs. This will entail the allocation of another class letter for identification. (the alphabet is rapidly depleting). We actually have a story this month on "Rain Making" - clouds being one of an Astronomer's favourite heavenly objects - sorry, that should read least favourite!!!

Eben van Zyl's article on the cores of our Planets has much food for thought and we have a couple of moon shots from a member-in-waiting who will be joining us after the AGM. These were taken on good old celluloid and scanned in for publication. Thanks Michael

Melvyn regales us with his story of a trip to Nylsvlei and Brian has submitted several pieces including the "Rain Making" one mentioned above, a bit on the telescope making class and as always, the star calendar for the months of July and August. Please make note of a special movie showing on Monday 19th July. Come along and enjoy the product of the endeavors of some of our Northern Hemisphere colleagues.

REMEMBER: The 14th July is our Annual General Meeting. Please be there for the various reports and to vote for the committee that YOU would like to steer us into the last year of the millenium.

The Editors

Chris chris@aqua.co.za,
 Ray rbarbour@liberty.co.za
 Lori barbour@global.co.za

Committee of the Johannesburg Centre of the ASSA for 1998/1999

Chairman	Constant Volschenk	972-6038
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Our Web Address is www.aqua.co.za/assa_jhb.htm
 Send e-mail to assa_jhb@aqua.co.za

Notice of Annual General Meeting

The **July** meeting of the Johannesburg Centre of the Astronomical Society will be held in the Sir Herbert Baker Library at the Old Republic Observatory on 14th July 1999 at 7:00 p.m.

Topic:

There is no special lecture this evening as it is the A.G.M.

Please note that after the A.G.M. ($\pm 20:00$) there will be a bring 'n braai.

*Please note that we need nominations for positions on your committee.
These must be made with the acquiescence of the person being nominated.*

Future Meetings

Aug 11 th	Test the Team	An Erudite Panel
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Dark Sky Viewing

On the Saturday nearest New Moon at Tom Budge's Farm in the Magaliesberg.

10 th July	9 th October	Year End Star Party
7 th August	6 th November	11 th December
11 th September		

ASSA Parent Body Annual General Meeting.

The Annual General Meeting of our parent body, the ASSA, will be held at the Pretoria Centre on the 28th July 1999 at 20:00. All members are welcome to attend the meeting which will be held at that centre's normal meeting place, the CBC in Silverton.

Swinburne 1999

Our annual trip to Swinburne will be held on the long weekend of 7th to 9th August 1999. If you are interested in this trip, please contact Ed Finlay for further details. We will arrive on the afternoon of the 7th and leave after breakfast on the 9th.

Our annual trek to Boyden will be held from the 9th to 11th July 1999. If you are interested in this trip, please contact Constant Volschenk for further details. Some information to hand regarding costs of accommodation at Aventura Maselspoort:- There are 2 bed chalets at R195 (SRS-2) or R220 (SCS-2) per day, and 5 bed chalets at R350 (SCD-5) per day. The codes in parenthesis are for use when booking the particular accommodation.

Other trips are in the process of being set up including an overnight jaunt to Suikerbosrand, later in the year, and a Saturday afternoon outing to Haartebeeshoek in late October (diarise the 23rd for the time being). There will be a small charge levied for this latter trip. More information to follow.

Special Movie showing - Monday 19th July

Please note that we will be having a special showing of some movies taken by a group of Austrian Amateur Astronomers of Comets Hyakutake and Hale-Bopp. These will be shown at the Society's normal meeting venue in the Sir Herbert Baker Library at the Old Republic Observatory, Gill Street, Observatory.

Please come along and enjoy some interesting Northern Hemisphere Cometary vistas.

Variable of the Month

0942-62 I Carinae

(Note to readers, 'I' is el, not one)

This is the first variable to be observed by me, some half a century ago. Like last month's variable, it is a naked eye star which makes it an ideal object for beginners.

I Car is a Cepheid of rather long period, 35.5 days. Its amplitude is one magnitude or rather more and its visual magnitude at maximum is 3.5 .

Cepheids are of course well known as distance indicators as was first pointed out by Henrietta Leavitt back in 1912 and elaborated on by Harlow Shapley in 1917.

It is worth looking at every few days. Compare it with the adjacent stars *m*, mag 4.5, *h*, mag 4.1 and *upsilon*, mag 3.1 (All these are shown in Norton's Star Atlas, amongst others). When you have found the period to your own satisfaction, you could calculate its distance, following the directions which Eben van Zyl gave a few years ago when he invited Johannesburg centre members to do just that.

Enjoy the exercise!

Danie Overbeek.

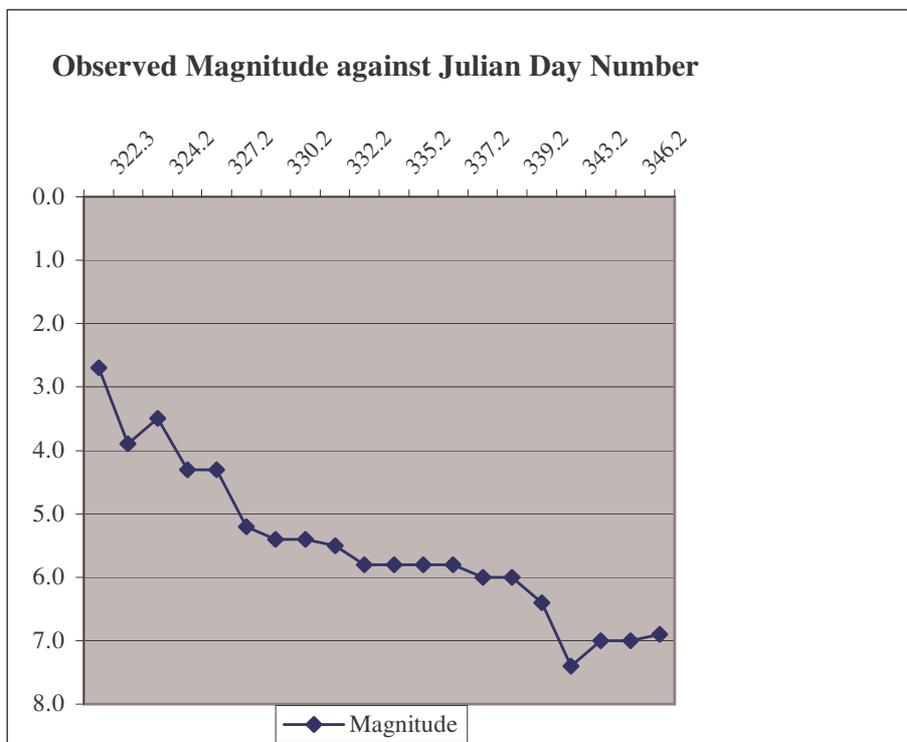
More on Nova Vela 1999

Canopus promised its readers a light curve of Nova Vel 1999, now known as **V382 Vel**. Here is the raw data from 23rd May through 17th June

Cheers
Danie.

-104051 V382 VEL Julian Day 322.2 Mag3.1 (JD 322 is 1999 05 23 and so on)

322.3	2.7
323.2	3.9
324.2	3.5
326.2	4.3
327.2	4.3
329.2	5.2
330.2	5.4
331.2	5.4
332.2	5.5
334.2	5.8
335.2	5.8
336.2	5.8
337.2	5.8
338.2	6.0
339.2	6.0
341.2	6.4
343.2	7.4
344.2	7.0
346.2	7.0
347.2	6.9

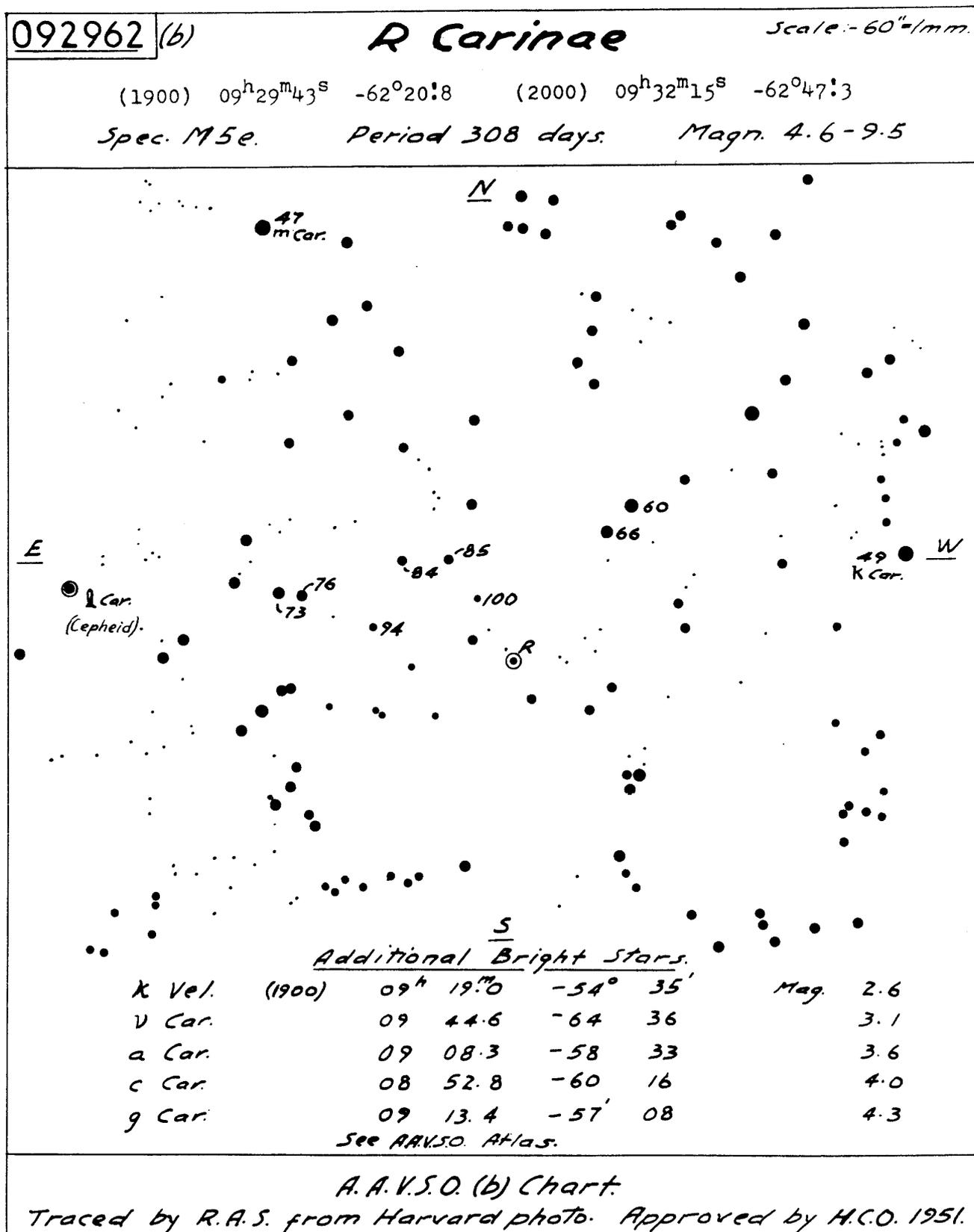


Thanks for the light-curve data Danie,
the Editors

Star Chart for this Month's Variable

(This chart is oriented with North up. Use your Star Atlas to find the general area first then use this chart).

Although this chart is labelled "R Carinae", you will find **I Car** off to the left-hand side. The chart is centred around R Car which is a long period variable.



JPL and NASA News

Bill Wheaton, IPAC - 1999 July

Methane Dwarfs: A new Spectral Type (T?)

Until recently GL 229B was the most extreme cool substellar dwarf known. It has strong methane (CH₄) features in its spectrum.

Both methane and water strongly absorb light in the near IR, between say 1.5 and 2.5 microns. Without those molecules, you tend to see down into the "star's atmosphere to a certain level, and then, when the atmosphere becomes hot enough to be opaque, it looks more or less like a smooth "Planck function" -- the universal black body curve -- for the temperature at the photosphere, which is the surface you see. (Actually there are always other lines and features, due to atoms, which complicate things a lot.) The smooth Planckian black body curve of emission versus wavelength is called "the continuum", to distinguish it from any lines, emission or absorption. That is, the continuum is the level of the spectrum between the lines. For the Sun this temperature T is about 5700 K, whereas for extreme dwarf M stars (dM stars, as they are often indicated) T is down about 2000 K. For the new class of L dwarfs, defined last year, T is in the range of roughly 1500-2000 K.

Probably about half of the L dwarfs are "brown dwarfs" -- too small (mass $M < 7.5\%$ the mass of the Sun, approximately) to make it to H burning and become real stars. Unfortunately you can't tell whether they are really brown dwarfs just from the colors, because near the dividing line the outside of the star looks pretty much the same, and you don't know their age. The brown dwarfs continue to cool off slowly with time, whereas real stars stop cooling as the nuclear power source takes over, and then they just hang there, with T nearly steady, for many tens of billions of years. Near the hot end of the L dwarf range (L0, say), most of the objects are real stars, and near the bottom (L9), most or all are brown dwarfs. Near the middle however, an L5 object could be either a younger brown dwarf, just passing through on its way to L9 and below, but which has not yet had a chance to cool off; - or it could be an extremely old star, gently simmering away, where it will remain apparently unchanged till "the end of time" -- or close enough for human purposes.

But, if T is still lower, molecules, especially water (H₂O) and CH₄, can start to form in a star's atmosphere. If it's too hot, these molecules simply can't hold together against the violent shaking high T implies. At a T below about 1300 K, methane starts to be important, affecting the IR color of the object. CH₄ absorbs and scatters light so strongly in the near IR, along with water (i.e., steam in this context), that there are big bands where you cannot see down to the deeper levels, because the upper atmosphere is not transparent. High up, where you do see, the atmosphere is yet much cooler, so the emission due to the Planckian is for a lower T, and therefore much less intense. Thus observationally, the result is that there is a big hole in the continuum at those wavelengths.

Stars having this strong CH₄ absorption at about 2.2 microns look "blue" when you compare their J band (1.2 micron) and Ks band (2.2 micron) brightness. But they usually don't appear on the R (red) band visual image from the Palomar Sky Survey at all - they are too red and cool to show up, even in R

With 2MASS (the Two Micron All Sky Survey), Davey Kirkpatrick and coworkers had been looking for redder and redder dwarfs, and not finding them, although many extremely cool L objects have been turning up. It is clear now that the reason is that when the CH₄ absorption is strong, below 1300 K or so, they become *bluer* in the J-Ks color comparison. It's important astrophysically, because for stars as cool as GL 229B (900-1000 K), we can be sure they will never make it to H burning.

Ultimately, in order to make sure about these candidates, you have to take an object with these funny colors, check that it is not on the Palomar R plate, and then go to a large telescope with an infrared spectrometer - Kirkpatrick and his colleagues have been using the 10 m Keck mostly - and get a spectrum. Then you can see the methane and water absorption bands eating away at the continuum in the Ks band, and be sure nothing else strange is happening that would affect the IR colors ("J-H", say, comparing the J and H bands, and "H-Ks", from comparison of H and Ks). Only then can you obtain an accurate temperature and be certain. This is obviously a laborious process, limited by the amount of large telescope time you can get, in particular. Nevertheless, to speed up the process it is quite helpful to know in detail how the colors change with T. Then you can take only the best candidates to the telescope and spectrometer.

For the past few years GL 229B has been the only "methane" dwarf known, cooler than even than L9, the lowest T the new spectral class L can accommodate. After the summer meeting of the American Astronomical Association in Chicago, we have now 6 new ones, a total of 7 in all. Unlike GL 229B (the binary companion of the far-brighter GL 229A), the six new methane dwarfs are all "field" objects, isolated and floating alone in space. Two were discovered by the SLOAN Digital Sky Survey, a new and very sensitive 5-band optical survey between the near UV (0.35 micron) and the near IR (0.9 micron). The other four were discovered by 2MASS. At least one is cooler than GL 229B. Insofar as they can be estimated, their distances appear to be on the order of 10 pc.

It is clear that the venerable OBAFGKM spectral sequence, extended only a year ago to include the L dwarfs, will have to be extended yet again, as it is defined only above about 1500 K. While no official letter has yet been decided, there are only about three letters remaining that are not already in use one way or another. Eight are in the present sequence OBAFGKML, with three more for the carbon stars (C,S,N), making 11 for stellar spectral sequences alone. Another dozen or so are effectively used for other purposes, such as D for white dwarfs (DA, DB, DC), E for elliptical galaxies (E0-E9), and so forth, which would be bound to cause confusion. Kirkpatrick and his co-workers believe T is the best available choice; if that is accepted, we will then have OBAFGKMLT.

Next Month

A year or so ago, based on the experience with 1997 XF11, we predicted that many more asteroid impact false alarms would be forthcoming, based mostly on the realization that the chances of an object passing rather close (e.g. 65,000 km from Earth, say) is of course much larger than (e.g., about 100 times) the chance of our actually being hit. In the good old days we never noticed such quiet passages. Now that we can actually take action to affect the result if need be, it is inevitable that lots of close calls are going to be detected, evaluated, and worried about. In almost all cases these will eventually be dismissed as more accurate measurements become available showing that no impact is possible. Sure enough, two new potential impactors have turned up in the past month or so, the latest only in the past few days as I write. It is too early to evaluate the very newest threat (except to say the danger appears practically negligible, probability $P < 10^{-7}$ of impact), but the earlier one, 1999 AN10, is interesting -- though not at all alarming as yet.

We will leave the details of the story about 1999 AN10 until next month. Also, by the time this reaches you, the Far Ultraviolet Spectroscopic Explorer, FUSE, should be in orbit; its Delta II launch vehicle was just stacked last week. FUSE is one of those missions that has been patiently progressing towards fruition, year after year, for nearly two decades. Next month it should be safely in orbit, and unless something more urgent intervenes we will take a look at it in the August issue.

Calling All Farmers

by Anon

Mojaje, the rain queen, lives in the northern territory somewhere, and has a reputation for being able to do all sorts of wonderful things, including the bringing on of rain when it is needed. Being a very powerful Sangoma endows her with this remarkable talent.

However successful she is, her powers pale into insignificance compared to the powers astronomers have in bringing on rain.

Every astronomer knows that one only has to acquire a telescope and it will be cloudy for a week, starting the very night you get your telescope assembled. On the other hand BUILDING your own telescope will ensure that it is cloudy for three weeks. This only applies to 6-inch telescopes. The duration of the cloudy weather is also proportional to the size of the telescope one has just made. Bigger telescopes bring on more cloud. A 12-inch would probably turn the Kalahari into a swimming pool.

The English had an attempt at rain making by inventing the game of cricket. Close monitoring of the World Cup, currently in progress could determine the effectiveness of this tactic. It is possible since this invention is over a hundred years old that its effectiveness is wearing off.

Personally, I have a very high success rate just by washing my car. The rain I manage to bring on does not produce a huge deluge though, but usually just enough to settle all the dust from the atmosphere in little brown globules onto my nice shiny car.

My wife, on the other hand, has a great deal of success by watering the garden. We can have six months of drought with the garden looking dry and droopy and just by giving it a good soaking she can guarantee 100mm of rain in the next 24 hours.

The reason this topic came up was because of the success Trevor Gould has had in attracting rain - at a time of the year when Johannesburg NEVER has rain. Trevor organised two groups of visitors to the observatory recently and on each occasion the visits were wiped out, not by cloud, but by unseasonal rain storms. This rain persisted, on and off, for a fortnight. A 100% success rate.

So when the country is next in the grip of a serious drought, I can recommend one person to consult for instant relief - and it is not Mojaje.

Submitted by
Brian Fraser

Snippets from the Astronomical Press

NASA Press Release: 99-65

HUBBLE COMPLETES EIGHT-YEAR EFFORT TO MEASURE EXPANDING UNIVERSE

The Hubble Space Telescope Key Project Team today announced that it has completed efforts to measure precise distances to far flung galaxies, an essential ingredient needed to determine the age, size and fate of the universe.

NASA Press Release: 99-66

FIRST GLOBAL 3-D VIEW OF MARS REVEALS DEEP BASIN AND PATHWAYS FOR WATER FLOW

An impact basin deep enough to swallow Mount Everest and surprising slopes in Valles Marineris highlight a global map of Mars that will influence scientific understanding of the red planet for years.

UNIVERSE TODAY News Release

EUROPA PROBABLY DOESN'T HAVE LIFE

Although it's been speculated that Jupiter's moon Europa could sustain life, new evidence casts suspicion on the possibility. This is due to the fact that the planet is most likely covered by a 6 mile thick ice sheet which would smother all light that could reach the oceans beneath.

http://abcnews.go.com/sections/science/DailyNews/europa_990603.html

<http://www.msnbc.com/news/276462.asp>

LUNAR PROSPECTOR'S DELIBERATE CRASH PLANNED

NASA officials have confirmed that the Lunar Prospector, currently circling the moon, will be crash-landed in the hopes of discovering water on the Lunar surface. Weighing as much as a car, and traveling at 1,100 mph, they hope by colliding the spacecraft into the moon, it will kick as much as 40 pounds of water vapour into space - detectable by Earth instruments.

NASA Press Release

June 2, 1999

CHLORINE DISCOVERY NEAR JUPITER MOON HINTS AT SALT PRESENCE ON SURFACE

The recent discovery of chlorine above Io, a moon of Jupiter, indicates the odd object may hold common table salt, according to two University of Colorado at Boulder scientists. Prior to the discovery of chlorine, the only elements observed escaping from Io's atmosphere were sulfur, oxygen, sodium and potassium.

Associated Press Release

Mir Space Station Could Crash

AP-NY-06-02-99 1758EDT

By ANNA DOLGOV

MOSCOW (AP) -- The Mir space station could crash on land when it is abandoned because Russia does not have enough money to adequately guide the station's descent, according to a report released Wednesday. The 130-ton Mir is tentatively scheduled to be discarded early next year.

Ground controllers were planning to direct the station -- which would turn into a firebomb in the atmosphere -- over a desolate area in the ocean and let it fall into the water.

THE CORES OF THE PLANETS

By Eben van Zyl

Jupiter, the largest planet in the Solar System, is known to have a diameter 11,19 times that of the Earth, a mass of 317,8 times and a volume of 1318 times that of the Earth. Truly a giant! But how does Jupiter's core which must consist of elements heavier than hydrogen and helium, the so-called metals, compare with the cores of the Earth and the other planets?

Jupiter's atmosphere of hydrogen and helium extends many thousands of kilometres above the cloud decks which are fairly near to Jupiter's surface. The surface layer of hydrogen, with an admixture of helium, is calculated to be 25 000 km thick. Because of the great pressure exerted by the atmosphere, the surface layer is in the liquid state and the hydrogen and helium are in the molecular form. Below this there is a layer of metallic hydrogen, calculated to be 31 000 km thick. Right in the centre is the core which is calculated to have a radius of 14 400 km. These figures give Jupiter an average density of 1,33 grams per cubic centimetre. Saturn, which is very similar to Jupiter, has an average density of only 0,704 gm per cubic cm, so that it would be able to float on water!

The radius of Jupiter's core is only 2,26 times that of the Earth's radius of 6738 km and 2,38 times the radius of Venus, 6057 km. The Earth and the other terrestrial planets consist entirely of heavy elements - its atmosphere and surface water being insignificant compared to the thousands of kilometres of heavy elements. Saturn's core is calculated to have a radius of 10 000 km and those of Uranus and Neptune 8 000 km each. Yet the latter two planets have radii of almost 4 times that of the Earth and volumes of 64 and 60 times respectively.

Because the amounts of heavy elements in the cores of the planets are so very similar, the distribution of heavy elements in the primeval nebula from which the planets condensed, must have been fairly uniform throughout. This process of condensation is known as accretion and the greater masses of the giant planets are due, largely to the masses of the overlying lighter elements. The volumes of space in the primeval nebula from which the giant planets accreted their cores, are considerably larger than those from which the terrestrial planets accreted.

At the start of the process of accretion, the finely divided material must have coagulated into many thousands of small clumps. These clumps must then have attracted each other gravitationally, thus becoming larger and larger. These clumps are called planetesimals. G W Wetherill (Scientific American, October 1969) made a computer study starting with 100 planetesimals and allowed them to grow by accretion. He found that after only 30,2 million years these would have accumulated to only 22 separate bodies; after 79 million years to 11 bodies and after 100 million years to only 4 separate bodies. The four terrestrial planets, Mercury, Venus, the Earth and Mars could thus have formed by accretion in a period of only one hundred million years which comprises only 2% of the age of the Solar System.

Only four bodies in the Solar System, Jupiter, Saturn, Uranus and Neptune, have radii of heavy elements, more than 8 000 km; two, Earth and Venus have radii of 6000 km and Mars 3 400 km. Mercury and Jupiter's largest satellite, Ganymede, have radii of 2 000 km. There are 7 bodies, Io, the Moon, Titan, Europa, Callisto, Pluto and Triton, which have cores with radii between 1 800 and 1 00 km. Another eight, Titania, Rhea, Oberon, Iapetus, Umbriel, Ariel, Tethys and Ceres, have radii between 800 and 500 km. The average radius of the 24 bodies listed above, is only 3 160 km - half that of the Earth and Venus. Ceres is the largest of the Minor Planets and there are thousands with radii less than 500 km.

The gravities of bodies such as Venus and the Earth were not great enough to hold on to lighter gases such as helium and hydrogen, while bodies such as Uranus and Neptune, with cores only one-third those of Venus and Earth, did hold on to extensive atmospheres of hydrogen. Thus, somewhere between radii of 6 000 and 8 000 km, is the dividing line between cores able to become giant planets, shrouded in hydrogen and small planets which are able to hold on to atmospheres of the heavier gases, such as carbon dioxide, nitrogen and oxygen. Since both Venus and Mars have atmospheres consisting of more than 95% of carbon dioxide, it seems safe to assume that the Earth also started off with an atmosphere consisting largely of carbon dioxide. This atmosphere must have been consumed by the first forms of life, the algae, which ruled the Earth for three thousand million years and during that time exuded the poisonous gas oxygen which today comprises 20% of our atmosphere.

Telescope Making Class

Mary McKinnon is nearly there with her telescope. In fact by the time you read this, she will probably have finished her 8-inch, in a smart-looking Dobsonian mount, varnished and polished and all. She started making the mirror about a hundred years ago, in one of the old mirror making classes and has slowly and steadily got together all the other bits and pieces and will soon have a working telescope. John Scott has been helping her put it all together, and when you see it, as no doubt one day you will, you will agree it is a great effort. Mary says that so many people have helped her with this telescope she is going to have to attach a list of "credits" on the side of the tube somewhere. But then that is what happens in these telescope making classes - people help each other and in the end you find somebody with advice or a helping hand to get over your little problems.

There are so many others who have, over the years, half- finished their telescopes, or got their mirror "nearly finished" and put it away in a box in the cupboard with the vague idea of one day getting back to it. If you happen to be one of those people then why not come and join us at the Saturday afternoon telescope making sessions at Parktown Boys high school. We have access to all the machine tools one could wish for, including a lathe and welding equipment.

All YOU need to make that telescope is a little enthusiasm.

Brian Fraser

A Vote of Thanks

Chris Stewart, who is on a short visit from the gastronomic delights of Belgium, has reminded us of our indebtedness to the Parktown Boys High School, and in particular, **John Scott**, in respect of the abovementioned telescope making class.

We do make extensive use of their facilities and if we have maybe been a little lax in acknowledging this in the past, let us remedy this oversight forthwith.....

Many thanks John and the Parktown Boys High. Your help and facilities are much appreciated.

Catalogue of National Public Lectures to be Presented in Association with the 62nd Annual Meeting of the Meteoritical Society at the University of the Witwatersrand, July 1999.

Main Public Lectures

1	On Tuesday 13 th July 1999, Dr Carolyn Shoemaker, of the United States Geological Survey, Astro-Geology division, co-discoverer of Comet Shoemaker-Levy 9, and famous meteorite impact crater researcher, will present a Public Lecture at the SANLAM Auditorium at RAU in Johannesburg at 18:30. The Title of her Lecture is: "The Sky is Falling" <i>Admission is free.</i>
2	On Thursday 15 th July 1999, Prof. Phillip V. Tobias of the Palaeo-Anthropology Research Unit at the University of the Witwatersrand will present a special Public Lecture entitled: "Catastrophism and the History of Life" with a footnote on "Little Foot" and the amazing find at Sterkfontein. This will take place in the Great Hall on the East Campus of the University at 16:00. <i>Admission is free.</i>

A National Lecture Tour by four international speakers on Meteoritics has been arranged in association with the 62nd Annual Meeting of the Meteoritical Society. These lectures will take place at venues around the country.

Please verify the starting times for all lectures

Location: Johannesburg Planetarium, University of the Witwatersrand, Yale Ave.

1	Saturday, July 10, 1999: 17:00 Dr Alex Bevan, Curator of Mineralogy and Meteoritics, Department of Earth and Planetary Sciences, Western Australian Museum of Natural Science, will speak on "Meteorites: A Journey through Space and Time"
2	Friday, July 15, 1999: 19:00 Dr Monica Grady, Head of the Division of Petrology and Meteoritics, Curator of Meteorite Collection, Natural History Museum, London, will speak on "Meteorites: Messengers from Outer Space"

Contact the Planetarium [011- 716- 3199] for further details.

Location: Port Elizabeth at the Port Elizabeth Museum

1	Monday, July 19, 1999 at 19:30 Dr Monica Grady, Head of the Division of Petrology and Meteoritics, Curator of Meteorite Collection, Natural History Museum, London, will speak on "Meteorites: Messengers from Outer Space" Contact Person: Nielsen Schaeffer Phone: 041-581-3624 or Sandy / PRO at PE Museum: 041-586-1051 <i>Admission free.</i>
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Location: Cape Town at the Auditorium of SOEKOR

Address: 151 F, Conradie Street, Parow

1	Tuesday, July 20, 1999 at 17:30 for 18:00 Dr Monica Grady, Head of the Division of Petrology and Meteoritics, Curator of Meteorite Collection, Natural History Museum, London, will speak on "Meteorites: Messengers from Outer Space" Contact Person: Prof. Hartwig E Frimmel Department of Geological Sciences, University of Cape Town Phone: 021-650-2901 Fax: 021-650-3783 E-Mail: hef@geology.uct.ac.za <i>Admission free.</i>
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Location: Pietersburg

1	<p>Monday, July 19, 1999</p> <p>Dr Alessandro Montanari, of the Osservatorio Geologico di Coldigioco, Italy, will speak on "When the Sky fell on the Dinosaurs"</p> <p>The contact person is Dr G Brandl, Council of Geosciences, Pietersburg. Phone: 015-295-3471</p> <p><i>Admission free.</i></p>
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Location: Thoyandou: University of Venda

1	<p>Tuesday, July 20, 1999 at 16:00</p> <p>Dr Alessandro Montanari, of the Osservatorio Geologico di Coldigioco, Italy, will speak on "When the Sky fell on the Dinosaurs"</p> <p>The contact person is Prof. Willem van Biljon School of Environmental Sciences University of Venda 0159-824-757>>789 Ext. 2567</p> <p><i>Admission free.</i></p>
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Location: Durban

1	<p>Monday, July 19, 1999</p> <p>Dr Alex Bevan, Curator of Mineralogy and Meteoritics, Department of Earth and Planetary Sciences, Western Australian Museum of Natural Science, will speak on "Meteorites: A Journey through Space and Time"</p> <p>Contact: Prof. Andrew Mitchell, UDW</p> <p><i>Admission free.</i></p>
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Location: Richards Bay at Richards Bay Country Club, Mondi Room 18:30 for 19:00

1	<p>Tuesday, July 20, 1999</p> <p>Dr Alex Bevan, Curator of Mineralogy and Meteoritics, Department of Earth and Planetary Sciences, Western Australian Museum of Natural Science, will speak on "Meteorites: A Journey through Space and Time"</p> <p>Contact: Prof. Siegfried Weinert at U Zululand</p> <p><i>Admission free.</i></p>
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A few additional notes:

Tickets for the Free Public Lectures at RAU and the Planetarium are available from Computicket, but be aware that a minimum booking fee will probably be levied.

You may attend Prof. Tobias' lecture at the Wits Great Hall on a "first come first seated" basis.

...and once again...

Please verify the starting times for all lectures

"Rock Art and Stars"

Visit to Nylsvlei - 28 - 31 May 1999

Many months ago Ed Finlay mentioned that he had been approached to give a talk on astronomy, and would I bring my telescope along! It was all very vague, and we understood that we were to be going to Nelspruit to talk to a group of bird-watchers. When Ed confirmed the event some weeks ago, we were still uncertain as to where we were going, and to whom we would be talking. Then Ed received the navigation data, and we realised we had been somewhat off the mark, and were going to Nylstroom.

A friend and I had spent many hours looking for the "Nile's Eye" in the area between Warmbaths & Nylstroom without success, notwithstanding the many signboards. Our error was in expecting a single spring-like source, being unaware of the marshy area north of Nylstroom known as "Nylsvlei". This wetland is a long strip with the motorway running parallel to it, is a nature reserve formerly administered by the Transvaal Province, now run by the Northern Province.

The accommodation is comfortably basic. The building that Ed & I were in contains eleven bedrooms, each with two beds; and two bathrooms (showers). There is another "sleeping" building, about which I know nothing, and a third building containing a kitchen and dining room. The dining room doubles as a lecture hall and has a projection screen..

These buildings are in good repair, and the grounds neat & tidy, thanks to the efforts of our hosts - The Friends of Nylsvlei. This group of people have taken it upon themselves to maintain the facilities in the reserve. I think that they are all members of the Wildlife Society, mostly from Pretoria, who have adopted this reserve, and are doing a splendid job of keeping it up to Parks Board standards.

The driving force and guiding light of this group is Marion Dunkeld, and it was she who had been in contact with ED. The week-end event was not for the members, but for the general public who had responded to an advertisement to attend a course on "Rock Art and Stars".

Our job was to deliver lectures on astronomical subjects (Ed), and to provide an opportunity to view some of the wonders of our universe (Bill Lockhart, who brought his ten inch LX200, and I). Unfortunately, no thought had been given to the moon, and on this week-end it was almost full, so we were unable to do much more than view the brighter objects. However the moon is always a good subject for newcomers to astronomy.

Both Ed and Bill agree with me that this site provides a better alternative to Swinburne for our annual Star Party, as there are no bright lights in view, it is closer to Jhb, and the weather is possibly more stable, and would cost much less. The down side is the absence of supplied meals, and a pub, neither of which is a serious loss.

Marion came up with a very attractive idea for a "Millennium Party" - to go into the bush to watch the Last Sunset and the First Sunrise. As the moon will be ten days past full, the night could be used for viewing (weather permitting). The fact that the millennium only changes twelve months later, could be a good reason to repeat the exercise! (six day old moon)

"Rock Art and Stars" was a very pleasant and happy week-end, and I hope that the other participants had an equally enjoyable time. I feel that an association with the Friends of Nylsvlei would be mutually beneficial.

Melvyn Hannibal



These fine Moon pictures by Michael Karakashian

In the Sky this Month

July 1999

dd hh

1 02 Neptune 0.7 S of Moon Occn.
 2 03 Uranus 0.6 S of Moon Occn.
 5 12 Earth at Aphelion
 6 12 LAST QUARTER
 7 15 Jupiter 4.2 N of Moon
 8 15 Saturn 3.2 N of Moon
 10 09 Aldebaran 0.8 S of Moon Occn
 11 06 Moon at perigee
 12 03 Mercury stationary
 13 03 NEW MOON
 13 10 Venus 1.6 S of Regulus
 14 09 Venus greatest brilliancy

dd hh

14 09 Mercury 2.9 S of Moon
 15 21 Regulus 1.1 S of Moon Occn.
 15 22 Venus 3.2 S of Moon
 20 09 FIRST QUARTER
 20 22 Mars 7.1 S of Moon
 23 08 Moon at apogee
 26 09 Neptune at opposition
 26 17 Mercury in inferior conjn.
 27 20 Venus stationary
 28 08 Neptune 0.9 S of Moon Occn.
 28 12 FULL MOON Eclipse
 29 07 Uranus 0.7 S of Moon Occn.

August 1999

dd hh

4 02 Jupiter 4.2 N of Moon
 4 18 LAST QUARTER
 5 00 Saturn 3.1 N of Moon
 5 15 Mercury stationary
 6 17 Aldebaran 0.8 S of Moon Occn
 7 18 Uranus at opposition
 8 01 Moon at perigee
 10 03 Mercury 1.2 S of Moon Occn.
 10 14 Venus 7.7 S of Regulus
 11 12 NEW MOON Eclipse
 12 05 Venus 9.0 S of Moon
 12 07 Regulus 1.1 S of Moon Occn.
 14 17 Mercury greatest elong. W(18)

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18 12 Mars 7.3 S of Moon
 19 02 FIRST QUARTER
 20 01 Moon at apogee
 20 12 Venus in inferior conjn.
 20 23 Pluto stationary
 24 06 Mercury greatest brilliancy
 24 15 Neptune 0.0 S of Moon Occn.
 25 12 Jupiter stationary
 25 13 Uranus 0.9 S of Moon Occn.
 26 12 Mercury 10.2 N of Venus
 30 15 Saturn stationary
 31 07 Mercury 1.4 N of Regulus
 31 09 Jupiter 4.0 N of Moon