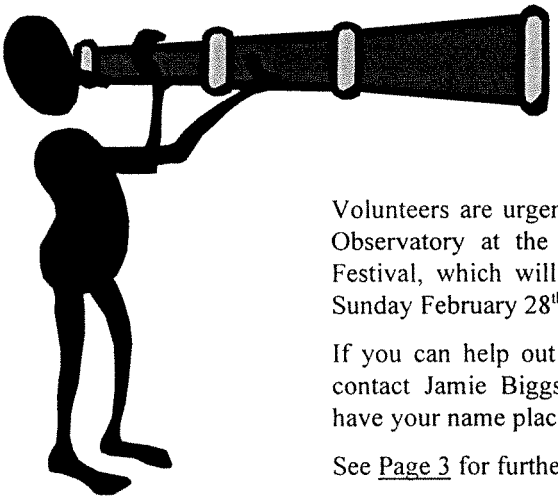
PERTH OBSERVATORY
Department of Conservation and Land Management

PERTH OBSERVATORY VOLUNTEER NEWSLETTER

February 1999

Editor: Bevan Harris



MORE HELP REQUIRED!!!!!!!

Volunteers are urgently required to assist the Observatory at the upcoming Sun & Stars Festival, which will be held at Yanchep on Sunday February 28th.

If you can help out on this occasion, please contact Jamie Biggs as soon as possible to have your name placed on the AFN roster.

See Page 3 for further details.

IN THIS ISSUE

Editorial

One of the beauties about Astronomy is that it is still in many ways a somewhat imprecise science – or shall we say a developing science. Take stellar classifications for instance. Last month in *Field* Stop I made mention of a neat little mnemonic which serves as a useful device for remembering the sequence of stellar classifications. I even gave a variation of "O Be A Fine Girl..." which takes into account the relatively recent recognition of a separate class of carbon stars.

It seems though, that my sense of self-satisfaction that I had covered all bases was somewhat misplaced, for within days I learned that the range of spectral classes can be extended to include both "W" and "L" type stars, which are extremely hot and extremely cool stars respectively. Additionally, the "S" type stars retain their status as a separate class instead of being swallowed into the "C" class. This gives the complete range of classes as WOBAFGKMCSL – let's see a catchy mnemonic for that one! Hmmm... rather than thinking up gimmicky mnemonics, perhaps I (or some other generous contributor) should pen a short description of the spectral classification system for a future issue of this newsletter.

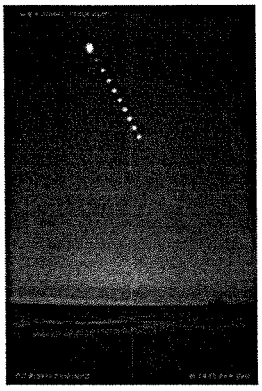
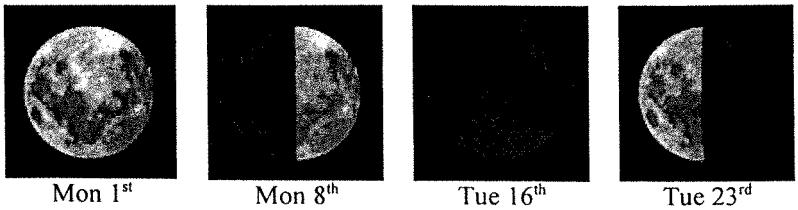


Image: Bob Yen – 26/02/98

While talking spectral classes, I'm sure you're all well aware by now that a certain nearby G2-type star will be eclipsed in rather spectacular style this month, and that Perth Observatory personnel and guests will be travelling north to "chase the Moon's shadow". For those of you who are unable to make the trek up to the Batavia Coast to witness it first hand, you can still be there in virtual reality by logging on to one of the webcast sites covering the event.

Swiss eclipse chaser Olivier Staiger, who will be at Greenough with the Perth Observatory expedition, is providing low bandwidth coverage at <http://eclipse.span.ch>, while the Japanese Eclipse Live! team <http://www.solar-eclipse.org> will be providing full video coverage from their observing station in Mullewa.

P·H·A·S·E·S OF THE MOON



Mon 1st | Mon 8th | Tue 16th | Tue 23rd

Highlights In The Sky

Preceding this month's annular eclipse is (was) a penumbral lunar eclipse, which occurred on February 1st. Penumbral lunar eclipses occur when the Moon passes through the outer part of the Earth's shadow. Typically there is little to no effect visible to the naked eye.

Mercury is lost to view in the early part of the month, as it only passed through superior conjunction (on the far side of the Sun) on the 4th. The day prior to conjunction (the 3rd), and consequently unobservable, Mercury was also in appulse (close apparent approach) with Uranus, which itself had passed through conjunction only the preceding day. Mercury moves into Aquarius on the 7th and is occulted by the Moon in a daylight event on the 17th, while just 10° from Sun. The first real chance to view this furtive planet will be around the 25th (on which date it crosses into Pisces) when the it may first be glimpsed as an evening object a few degrees lower than the close pairing of Venus and Jupiter. At the end of the month Mercury will begin to fall back towards the Sun. It will be visible about 4° below Jupiter on March 6th.

A prominent object in the west after sunset, **Venus** begins the month located in the constellation Aquarius. It moves into Pisces on 17th and, despite being passed by the thin crescent Moon on the 18th, rapidly overhauls the lumbering Jupiter to be in appulse with this giant planet on 24th. Although the stunning visual pairing of the two planets will be apparent for several days, the best view from Perth will occur on the 23rd. In a rare departure from its travels through the zodiacal constellations, Venus will be located in Cetus for little more than one day at the end of the month.

At the start of the month **Mars** rises in Virgo shortly after 2300. It will be arranged in an attractive triangle with the Moon and Spica on the morning of the 7th and crosses into Virgo on the 15th. At the end of the month it will rise at around 2145.

Jupiter travels in an easterly direction though Pisces for the whole month, but too slowly to arrest its steady slide down the sky towards the Sun. While too low in the sky for serious telescope viewing, it provides a feast to the unaided eye or binocular viewer as it is first paired with the Moon on the 18th and is then in appulse with Venus less than a week later. By the end of the month is setting in dusk prior to 2000.

Visible high in the north west as darkness falls, **Saturn** still remains in eastern Pisces, but this month is the last one to enjoy this planet. The ringed planet sets just prior to 2300 at the beginning of the month and around 2115 at the month's end. On the 20th it will be joined in the sky by the thick crescent Moon.

Uranus was in conjunction with the Sun on the 2nd, and passed close to Mercury on the 3rd. As **Neptune** also recently passed through conjunction, both planets will initially be unobservable, only reappearing in the morning sky later in the month. Uranus will be alongside theta Capricorni on the 21st.

Located in Ophiuchus, **Pluto** is a morning object which rises around 0145 at the start of the month and just after midnight at the end. During the first week of March it will be rising prior to midnight, heralding its return as an evening object.

NEW MONTHLY RECORD for Star Viewing Sessions!!!!

Thanks to the efforts of volunteer and permanent staff a new monthly record was set when **798 visitors** attended the star viewing sessions in January 99. The record would have been higher had not 10 out of 31 scheduled sessions been cancelled! More tours have been allocated to the summer months in order to capitalise on the higher probability of good weather during this time. (Also, less tours have been scheduled at other times because of the greater chance of inclement weather having a negative impact on tours at that time.) We are still about 180 visitors short on the cumulative average but hopefully we will catch up in the rest of summer (over 1,400 are still on our waiting list!).

Time Sheets - URGENT

Could all volunteers who work out of normal hours and/or personally retain there time sheets please send them to the Volunteer Coordinator (Jamie Biggs) **AS SOON AS POSSIBLE**. It is essential that we have an official record of the time you have generously donated so that we can reward you, keep the insurance people notified and show the rest of our department the extent to which the Observatory and CALM are benefiting from the volunteer programme. Would you please forward your time sheets each quarter (ie the end of March, June, September and December).

Volunteer Rewards (well deserved - but still delayed!)

As well as the Eclipse trip mentioned below, volunteers are entitled to a reward for the assistance they have rendered the Observatory. The hours have not been tallied to date but it's hoped that the information will be available for the next newsletter. Jamie Biggs apologises for this delay.

ASTROfest

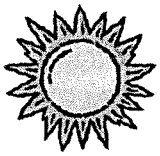
Thanks to volunteers Marcel F, John M, Lynley H and all staff who assisted the Observatory's contribution at the Astrofest. The attendance appears to be increasing each year and estimates this year ranged from 2,100 to 3,000 (depending on how many people were thought to have snuck in for free).

Observatory Summer Lecture

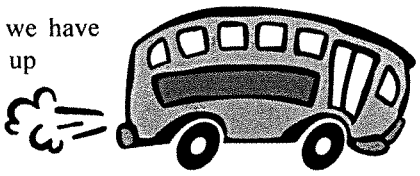
Thanks to all staff who assisted with the conduct of this year's Summer Lecture. Individual volunteers can't be identified as it appears some did not sign on or off for duty. Remember, for "Field Night"-type duties please sign on in the Astronomy Field Night registration forms. These are attached to a clipboard, under the Volunteer noticeboard, and in each of the Observatory's vehicles.

About 140 visitors enjoyed a multi-faceted talk about the Sun from the Learmonth Solar Observatory's director, Dr John Kennewell. His competitions and prizes will be a difficult act to follow! The attendance was a bit lower than normal but appears to be attributable to the Observatory's (not deliberate) inability to generate enough free publicity for this event.

Annular Eclipse – 1999, February 16 - a <u>really</u> Big Day Out!



As at Friday February 5th we have one coach-full of staff and participants (29) travelling up to Greenough. Lets hope the weather is fine!



Annular Eclipse Training Night - Thursday February 11th

A special training night will be held this Thursday, February 11th in lieu of the usual Monday night (which would ordinarily have occurred on the 15th). The night will be dedicated to preparation for the annular eclipse on February 16th and will be <u>compulsory for any volunteers who will be involved in the eclipse tours to Greenough</u>.

Our regular telescope practice nights resume from next month, with the next few scheduled dates being March 15th, April 12th, May 10th and June 14th. If you haven't done so already, would you please mark these in your diary.

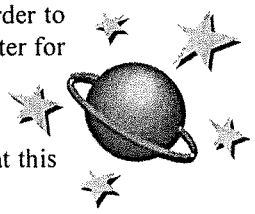
Pinhole Cameras for Eclipse Eye Safety

The Lions Eye Institute, in collaboration with the Observatory, has produced simple pinhole cameras in order to promote solar eclipse eye safety. Please take one, or more and distribute them as appropriate. Also, there are still some of the Observatory's Eclipse Eye Safety brochures available for those who would like additional copies.

Sun & Stars Festival - Yanchep National Park (Sunday, February 28th 2-10pm)

<u>Assistance required please.</u>

Yanchep National Park and the Perth Observatory are conducting this fun event in order to highlight our activities as well as engaging the participation of other community organisations around Yanchep. This year there will be a substantial presence from other groups within CALM in order to highlight their activities also. The event will be opened by the Hon. Minister for the Environment, Mrs C Edwardes, at 2pm and attendance trends suggest that about 4,000 visitors will attend over the day.



Would volunteers please notify Jamie Biggs if you are available to assist at this event and enter your name on the AFN roster sheet.

Where or what are the AFN roster sheets?

AFN (or Astronomy Field Night) roster sheets are used "Field Night"-type activities at various places including, at times, the Observatory. There are three copies, each attached to its own clipboard. One is located on the desk under the volunteer noticeboard and the others are located in each of the Observatory cars. More details about the AFN volunteer programme is contained in the AFN Volunteer Manual, copies of which are available from Jamie on request.

In the Eyepiece – Tarantula Nebula

The **Tarantula Nebula**, also variously known as the Great Looped Nebula, NGC2070 and 30 Doradus, is the largest of the 50 or so bright diffuse nebula scattered across the Large Magellanic Cloud (or LMC for short). In fact, the Tarantula Nebula is so large that it is not known to have any equal in the entire observable universe.

Thought to be twice the size of NGC604 in M33, the outer filaments and streamers of this mammoth region extend to a total size of some 1800Ly x 1700Ly. If it were as near to us as the Orion Nebula, it would cover some 30° of the sky and at a brightness some three times greater than Venus, would cast shadows at night and be visible in daylight.

Located in eastern part of the LMC, under dark skies the Tarantula is easily visible to the naked eye. It shows well in binoculars and small telescopes, but study in larger instruments reveal the complex looped filamentary spidery structures from which it acquired its name.

As a deep southern object it is unreachable from the great observatories in the northern hemisphere, but much early study of the region was effected by M. Le Sueur with the Great Melbourne Telescope.

It is an active star birth region, extremely complex in form with much structural detail in the shape of extending filaments and streamers. Radio observations reveal its total mass to be 500000 solar masses and that it is the strongest radio source in the LMC.

In its centre is the compact cluster 30 Doradus (by which name the whole object is sometimes referred to) containing more than 100 supergiant stars, the largest of which was thought to be an implausibly massive star of 1000 solar masses. This has only recently been resolved by ground based observations and confirmed by HST.

FACT *File*

Name :	Tarantula Nebula
Type of object :	Cluster w/nebulosity in LMC
Other names :	NGC2070,30 Dor
Constellation :	Doradus
RA :	5h 38m 40s
Dec :	-69° 05' 21"
Magnitude :	8.3
Distance :	170000 L.y.
Size :	20.0'
Dimensions :	1000 L.y.
NGC Description :	!!! vB,vL,looped

Field Stop

Having recently survived an IAU proposal to designate Pluto as minor planet 10000, this tiny rocky outpost is set to celebrate – by once again becoming the furthermost major planet from the Sun. This past twenty years Pluto's highly elliptical orbit has carried it inside that of Neptune (so my other mnemonic should have been "My Very Educated Mother Just Served Us Pizzas... Nine"). Pluto became the "eighth" planet on February 7th 1979 and reached perihelion on September 5th 1989. However, on Thursday February 11th at 11:22 UT (19:22 WAST), Pluto will cross back over Neptune's orbit to regain its status as the ninth planet. Further details are available from Lowell Observatory on the web at: <http://www.lowell.edu/users/buie/pluto/pluto.html>

Hmmm... 19:22 on the 11th – that's the training night. Perhaps we could have a countdown?

Another snippet of information about Pluto I learned from this exchange on the Internet.

Tom Rankin : I read somewhere (and I can't find it now), that Uranus actually comes closer to Pluto than Neptune ever does!

Bill Ferris : Correct. Pluto never gets closer to Neptune than about 1.5 billion miles but comes to within about 1 billion miles of Uranus. Source: "Pluto and Charon" by Alan Stern and Jacqueline Mitton: Figure 5.5, page 142.

If you have something to contribute to the newsletter, you can submit it to me via fax on (08) 9250 8240 or e-mail to <bmh@bigpond.com>. Alternatively, submissions may be pinned to the volunteer notice board for collection. Thanks, Bevan