



PERTH OBSERVATORY
Department of Conservation and Land Management

PERTH OBSERVATORY VOLUNTEER NEWSLETTER

January 1999

Editor: Bevan Harris

HELP!!!!!!

Vollies are urgently required to assist the Observatory at upcoming events such as the ASTROfest (23/1), Summer Lecture (28/1), Eclipse Expedition (16/2) and the Sun & Stars Festival (28/2).

Such events, on top of an already busy schedule, really impact the Observatory given its small number of permanent staff. Any assistance would greatly appreciated. Please read the appropriate sections for further information.

Editorial

Welcome to 1999! While it may not be the last year of the twentieth century, or even the second millennium for that matter (let's not enter too far into THAT debate!), it is without a doubt the last year of the 1900's.

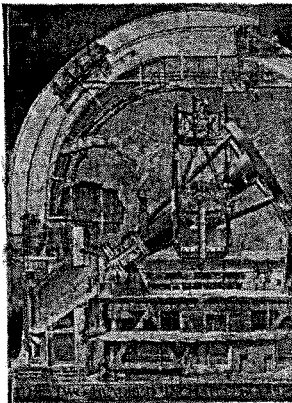
The year begins with plenty of interest, with the first event being Earth's passage through perihelion (closest approach to the Sun) on January 3rd. On that occasion we were a mere 146,995,000 kilometres or 0.9833 AU from Sol.

In the Eyepiece this month focuses on what is arguably the most famous of all the deep sky objects, the Great Nebula in Orion, while *Field Stop* presents yet another light-hearted method to help you make sense from the confusion. Also presented for your enjoyment is one of Russell Porter's excellent design sketches of the telescope known as "The Perfect Machine", the Hale 200-inch located on Mount Palomar.

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Highlights In The Sky



The Hale 200" Telescope

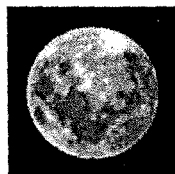
As the new year dawns **Mercury** remains a furtive object in the early morning sky. Visible low in the East shortly before sunrise, it slips quickly back towards the Sun's glow as the month progresses. After crossing into Sagittarius on the 4th, Mercury may be seen next to the globular cluster M22 on the morning of the 13th, but will become lost in twilight soon after. It will pass unseen into Capricornus on the 25th as it makes its way towards superior conjunction (on the far side of the Sun) in early February.

Venus is now an early evening object and is prominently visible low in the west shortly after sunset. After beginning the month in the constellation Sagittarius, it escaped into Capricornus on the 4th where it was adjacent to Neptune on the 5th. It will be near Uranus on 14th and is passed by the two-day old crescent Moon a few days later (on the 19th) before crossing into Aquarius on Australia Day. By early February it will already be halfway across Aquarius as it rapidly draws in on Jupiter.

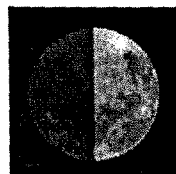
Located in the centre of the constellation Virgo, and with the strains of *Auld Lang Syne* barely fallen silent, **Mars** became the first planet to hail in the new year as it rose shortly

P · H · A · S · E · S
OF THE

MOON



Sat 2nd



Sat 9th



Sun 17th



Mon 25th

Astronomy 1999 Handbook

The new Astronomy 1999 handbooks are now available. If you haven't picked up your free copy yet, don't forget to do so the next time that you're at the Observatory. In order to assist the Observatory's stock register, please note that you have collected one on the back of your time sheet.

Volunteer Rewards

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 is hoped to have that information in time for inclusion in the next newsletter.

Star Viewing Sessions

Inclement weather has played havoc with the Star Viewing attendances in this financial year. Half of the 64 scheduled sessions were cancelled. As a result only 1,183 visitors have participated in this activity so far, compared with approximately 1,500 for the same period last year. This situation has left the Observatory with 1,670 visitors booked for future tours! Let's hope that the "summer months" (for which the number of sessions were increased) of January, February and March are clear.



ASTROfest - Saturday, January 23rd



The next ASTROfest, once again sponsored by York Optical, occurs on Saturday, January 23rd at the Arena in Joondalup. It will run from 2.00pm to 10.00pm with most interest being in the evening session. Perth Observatory will have a display and will set up three telescopes for the evening viewing session, along with many others.

Please note that this is in the middle of a tour run at Perth Observatory, so volunteers will be invited to help at both sites. **About 6 volunteers will be required from 2.00pm to 10.00pm.**

Would you please notify Jamie Biggs if you are available to assist at ASTROfest and enter your name on the AFN roster sheet. (Where is the AFN roster sheet you ask? There are three copies, each attached to a clipboard. One is located on the desk under the volunteer noticeboard, the others are located in each of the Observatory cars. More details about the AFN volunteer programme is contained in the AFN Volunteer Manual. Contact Jamie if you want one.)

Observatory Summer Lecture - Thursday, January 28th

The next lecture in the popular Perth Observatory Summer Lecture series will be held on Thursday, January 28th commencing at 8.00pm. On this occasion the guest speaker will be Dr John Kennewell, Director of Learmonth Solar Observatory, who will present a talk entitled "Exploring the Sun". The talk, which will be conducted on the back lawn of Perth Observatory, is part of the lead up to the Solar Eclipse.

All volunteers are invited for free, with tickets for extra folk being available at a cost of \$4.00. Only 250 tickets will be made available. It would be great if some **volunteers could assist on the night** with parking, etc, but the telescopes will NOT be open for the public. Would you please call Jamie if you would like to help on this occasion and enter your name on the AFN roster sheet.

Annular Eclipse – 1999, February 16th – A Rare Opportunity

The expedition has been finalised. At 7:00am our luxury coaches depart the Wellington St coach rank. Arrive at Greenough Arms Inn at 1:00pm and eat lunch. Some short lectures will be conducted at that time. Witness the eclipse until 4pm. Then head back to arrive at Wellington St at 10:00pm. It will be a long day, but it's well worth it given the proximity of this rare event. An extra bonus is that we will also be accompanied by eclipse expert Pasachoff from Williams College, and astronomy text book writer Prof Jay Espanak from NASA's Goddard Space Flight Center, Maryland. This event is **free for all Observatory staff (permanent and volunteer).**



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Annular Eclipse Training Night - Thursday, February 11th

ADVANCE NOTICE FOR FEBRUARY'S TRAINING NIGHT. A special training night will be held on 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 compulsory for any volunteers who will be involved in the eclipse tours to Greenough.

Eclipse Eye Safety

The Observatory has produced a brochure concerning this important topic. Please familiarise yourself with its contents and distribute these as appropriate. There was a copy of the brochure included with last month's newsletter and additional copies are available at the Observatory.



Telescope Practice Nights

There is no telescope practice night held this month due to the holiday season, but the scheduled dates for the next few months are **Thursday, February 11th** (see above). Future practice nights are scheduled for March 15th, April 12th, May 17th, June 14th and July 12th, so please mark these in your diary now!

Time Sheets - URGENT

Could all volunteers who work out of normal hours and/or personally retain their 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).

Field Stop

Mnemonics are a great device for remembering sequences of things, so it is natural that astronomy should attract its fair share. If you've ever been stumped to remember the order of the planets or the full sequence of the Hertzsprung-Russell diagram (which describes spectral classifications), why don't you try these?

For the order of the planets (Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune and Pluto):

- My Very Educated Mother Just Served Us Nine Pizzas
- Many Volcanoes Erupt Mulberry Jam Sandwiches Under Normal Pressure
- Many Voters Earn Money Just Showing Up Near Polls

For the spectral classifications of the Hertzsprung-Russell diagram (OBAFGKMRNS):

- Oh, Be A Fine Girl (Guy). Kiss Me Right Now Sweetie. - or -
- Oh, Be A Fine Girl (Guy). Kiss Me Right Now... Smack!

And because R, N and S have been combined to form a new C class for carbon stars:

- Oh, Be A Fine Girl (Guy). Kiss Me Cutie.

But if you're looking for a sure-fire way to remember the order of Jupiter's Galilean moons (Io, Europa, Ganymede and Callisto), these are this little mnemonics:

- I Eat Green Caterpillars
- I Enjoy Good Cooking

I'm sure there are many more out there (I know Greg Lowe can provide one or two), so if you'd like to share them with others why not submit them for inclusion in a future *Field Stop*?

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

after 0030. Early on the morning of the 10th it was caught between the last quarter Moon on one side and Spica (or Alpha Virginis) on the other. The planet will rise before midnight for first time (for this apparition) on the 14th and by the end of the month will be rising before 2315 near the border of Libra.

Having been a prominent evening object for several months, **Jupiter's** steadily diminishing altitude means this month will provide the last really good opportunity until winter for telescope viewing of this giant planet. Located in Aquarius at the start of the month, when it rises around 2315, it edges across the border of Pisces on the 17th where it will be positioned near the Moon on the successive evenings of the 21st and 22nd. By the end of the month it sets at about 2130.

Saturn is still situated in eastern Pisces, where it remains throughout the month. It set at 0100 on New Year's Day and will become an evening only object on the 16th when it sets at midnight. The planet will be visible near the almost First Quarter Moon on the 24th and by the end of the month it will be setting close to 2300.

The furthestmost two of the gas planets, **Uranus** and **Neptune**, are now lost in evening twilight in the constellation Capricornus. They will reach conjunction on the far side of Sun on February 2nd and January 22nd respectively. **Pluto** is now in the early morning sky, located in the constellation of Ophiuchus where it is passing by the third magnitude star Zeta Ophiuchi (closest approach occurred on the 6th).

In the Eyepiece – Orion Nebula

The Great Nebula in Orion, more simply called the Orion Nebula, is also known as M42 and less frequently as NGC1976. There is no mention of it in any known ancient or medieval records and it was apparently not noticed by Galileo. Discovery of the object is credited to Nicholas Peiresc, a French lawyer, in 1610. William Herschel's observing career was launched in 1774 when he observed the Orion Nebula through a reflecting telescope he had built himself.

The nebula is seen as a faint hazy patch spreading around the central star in the Sword of Orion the Hunter and is actually part of a larger association of gas and dust covering much of the constellation. It yields rich rewards whether it is viewed through binoculars or the largest of telescopes. Dominating the view are two large "bat wings" which sweep away majestically from either side of the body, while a dark feature known as the "Fish's Mouth" separates the main nebula from a smaller portion which was labelled M43 by Charles Messier.

Another prominent feature of the nebula is the central star cluster Theta Orionis. More commonly referred to as the Trapezium, the cluster is comprised of four bright stars arranged in an irregular square, accompanied by a handful of fainter stars which may be apparent to the careful observer (or at least a luckier one with a larger telescope).

The main stars are designated "A" through to "D" in order of right ascension, though at magnitude 5.4 "C" is actually the brightest star of the group (the actual order of brightness is C-D-A-B, with "A" and "B" components known to be eclipsing binaries). Fainter "E" and "F" components (around 11th magnitude) are located adjacent to stars "A" and "C" respectively.

The Trapezium is actually the bright core of an expanding association of some 300 stars brighter than 17th magnitude which cover a radius of approximately five arc-minutes and is considered to be a region where active star formation is still occurring.

Though colour is rarely seen with the naked eye in extended objects, the Orion Nebula is one of the rare exceptions. It is often described as being somewhat greenish in colour, with some observers also able to detect tinges of red and other colours in the main body. These (redder) hues are accentuated in many photographs of the object, while the greenish visual appearance is indicative of the emission lines of doubly ionized oxygen.

"...stars apparently completed, shining like gems dropped from the hand of the polisher, and around them are masses, and eddies, currents and swirls of nebulous matter yet to be condensed, compacted and constructed into suns..."

G.P. Serviss



FACT File

Name :	Orion Nebula
Type of object :	Cluster w/nebulosity
Other names :	M42, NGC1976
Constellation :	Orion
RA :	5h 34m 52s
Dec :	-05° 32' 14"
Magnitude :	4.0
Distance :	1600 L.y.
Size :	66.0'x60.0'
Dimensions :	30 L.y.
NGC Description :	!!!,Theta Orionis & great nebula M42