



PERTH OBSERVATORY
Department of Conservation and Land Management

PERTH OBSERVATORY VOLUNTEER NEWSLETTER

APRIL 1999

Editor: Bevan Harris

Editorial

The recent passing of the March equinox is an important way-point for southern hemisphere observers – it signals the progressively lengthening nights as winter approaches. Here at Perth Observatory that means it's coming up to PLANET time, when the galactic centre sweeps majestically overhead and this cutting-edge search for extra-solar planets gets under way.

Be quick! There's a special lecture announced this month that features the Young Australian of the Year who is an astronomer – no less! Places are VERY limited, so it's a case of first come – first served if you'd like to hear this young ambassador of science.

There's also another of Russell Porter's excellent engineering drawings of the Hale 200" telescope project presented for your enjoyment. Read on!!

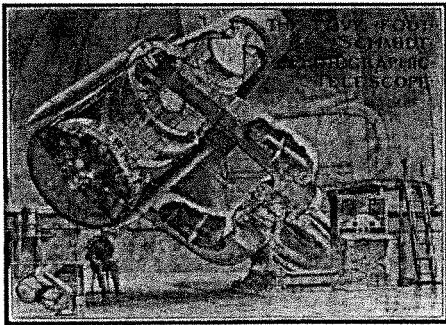
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Highlights in the Sky

Mercury, the winged messenger, is well placed as a morning object during the month of April. Located in Pisces near its border with Aquarius, the planet begins the month rising some one and a half hours ahead of the Sun and steadily increases its lead until mid-month. On the 14th Mercury will be visible beneath a slender crescent Moon and may even be glimpsed by the careful observer during daylight as the Moon's limb passes a scant 0.1° from the planet. [Note : Although the separation between Mercury and the Sun will be some 27°, extreme caution should be exercised when viewing at daytime. If possible, use a building, tree or some other obstacle to obscure the Sun from view.] Mercury reaches Greatest Elongation West (greatest angular separation from the Sun) on the 16th, on which date it will rise two hours and ten minutes before the Sun. Thereafter Mercury will be seen to gradually descend the morning sky as it falls back toward the Sun. It passes through Cetus from the 23rd -29th before approaching the rising Jupiter at the end of the month.

Venus still dominates the early evening skies, setting slightly before 2000 for the entire month. Beginning in Aries, it passes into Taurus on the 8th where it will be located some 2 ½ degrees south of the Pleiades on the 12th. The planet will appear close to the Moon on the 18th and 19th and terminates the month as it prepares to pass between the Bull's horns.



The Four Foot Schmidt Photographic Telescope

Mars is the only planet available for prime evening viewing during April. Initially located in the constellation Libra, it rises some ninety minutes after sunset at the beginning of the month and appears steadily earlier as the month progresses. The planet crosses into Virgo on 16th, on which date it rises around 1830, and will be visible for the entire night on the 25th when it is at opposition. Mars will be close to the Moon on three occasions this month – on the 3rd at the beginning of the month and on the consecutive nights of the 29th and 30th at the end of the month.

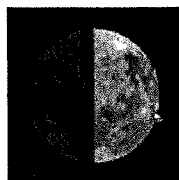
Following conjunction on April 1st, **Jupiter** will become visible again from about mid-month in the morning twilight. As it climbs away from the Sun in the latter part of the month, the giant planet will draw near to diminutive Mercury ahead of a close approach of the two planets in early May.

P · H · A · S · E · S
OF THE

MOON



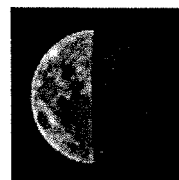
Thu 1st



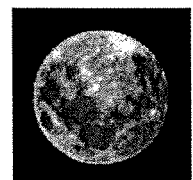
Fri 9th



Thu 15th



Fri 23rd



Fri 30th

Saturn becomes lost to view early this month as it heads towards conjunction on the 27th. It will reappear in the morning sky from mid May.

Uranus and **Neptune** are still in Capricornus, with both planets rising before midnight by the end of the month, while distant **Pluto** remains in Ophiuchus.

In the Eyepiece - Eta Carinae Nebula

Although the name more properly refers to the peculiar variable star η (eta) Carinae, the name **Eta Carinae** is often associated with the bright diffuse nebula NGC 3372 in which this star is embedded.

Preceding the Southern Cross by a few degrees, this vast nebulous region is one of the true treasures of the deep southern skies. Covering an area greater than its more well known cousin, the Orion Nebula, it is easily visible to the naked eye as a brilliant patch of the Milky Way. Binoculars and small telescopes reveal a stunning vista containing swirls of glowing gas alternating with dark lanes and interspersed with numerous jewelled star clusters.

Situated at its heart and silhouetted against the brilliant central portion of the nebula is this object's most famous feature – a dark notch called the Keyhole, so named because of its distinctive shape.

The star η Carinae is itself an object which arouses great interest. Although it now only glows at a modest 6th or 7th magnitude, this has not always been the case. During the past its brightness has fluctuated erratically, with a peak magnitude of -1 being recorded in 1843. It was at during this most recent outburst that the star ejected a large quantity of material. The resultant expanding shell of gases, sometimes called the Homunculus Nebula, has been imaged by Hubble Space Telescope.

Today η Carinae remains one of the most massive and luminous stars known in our galaxy, and perhaps the universe, with an estimated mass some 150 times that of the Sun and 4 million times brighter. It radiates 99% of its luminosity in the infrared part of the spectrum, where it is the brightest object in the sky at 10-20 microns wavelength.

Such large stars are extremely unstable and are considered to be prime supernova candidates. It is highly probable that such a fate awaits η Carinae, with astronomers predicting it will end its life in a massive supernova explosion within the next 100,000 years.

"... to convey a full impression of the beauty and sublimity of the spectacle offered by this nebula, when viewed in a sweep, ushered in as it is by a glorious and innumerable procession of stars, to which it forms a sort of climax."

Sir John Herschel



FACT file

Name :	NGC3372
Type of object :	Bright nebula
Other names :	Dunlop 309
Constellation :	Carina
RA :	10h 43m 44s
Dec :	-59° 51' 48"
Magnitude :	1.0
Distance :	10000 L.y.
Size :	120.0'x120.0'
Dimensions :	
NGC Description :	! great neb,Eta Carinae

Volunteer Training Nights



Arie Verveer demonstrating the site-testing telescope

March's training night was an opportunity for those who attended the annular eclipse to relive their experiences and also to share them with others who had missed the expedition. Commencing with some relaxed conversation around a cheese platter and cake while passing around photographs (courtesy of Mark Emmons), the evening progressed with a slide presentation by Peter Birch as well as highlights from the eclipse video.

Vic Levis, who shunned the main Observatory group in favour of a mob of sheep, photographed the eclipse from a location near Walkaway. He produced a selection of excellent images that had been transferred to computer files, and also aroused great interest when he showed off the instrument he used to acquire them - a Meade ETX-90.

Many thanks are due to all those who attended the night and made it such a success, especially to those who brought something to share - whether it were the photographs or the nibbles.

Thanks also to Arie Verveer who graciously allowed us to overrun his sanctuary while he demonstrated one of his latest projects, an attachment that allows accurate site-testing through the Observatory's portable telescopes. The device works by producing two separate images of

the same object. Differences observed between the two images provide a reliable measure of "seeing" and therefore the suitability of a particular site for astronomical observing. Arie also showed the plot of a mini-earthquake he had recorded that evening on the seismograph he has located at the Observatory. The quake's magnitude was around 2.5 on the Richter scale.

Astronavigation Practice Nights – (7.00pm) Monday 99/04/12 and 99/05/17

Superstar star viewing volunteer **Bert Hollebon** has kindly offered to share his knowledge of **astronavigation** with us. All staff are strongly encouraged to participate in this unique opportunity to learn about this fascinating topic from a person who has actually used this technique many times in "field" conditions. On **April 12th** the theory will be discussed and in the next month (**May 17th**) we will conduct the practical component with Bert's sextant. Sincere thanks are expressed to Bert for action above and beyond the call of duty. If you are planning to attend either of these sessions, would you please notify **Greg Lowe** on 9293-8255 of your intention.

Unfortunately, we have visitors using the VOF on both these nights so telescope practice will not be possible (sorry – JB ☹).

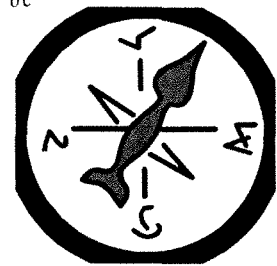
Note that the dates for the next few training nights are:

April 12th
Astronavigation
(theory)

May 17th
Astronavigation
(practical)

June 14th
TBA

July 5th
TBA



Observatory Open Day

As announced briefly in last month's newsletter, there is to be an **Observatory Open Day** held on Sunday May 2nd (12:00 noon – 5:00 pm) in conjunction with the Bickley Valley Harvest Festival and the National Science Week.

Volunteers are required to assist in operating the solar projection telescope, directing the public around the grounds etc. **Volunteer help will be essential** as some permanent staff will not be able to attend. Please register your willingness to help on the Astronomy Field Night roster sheet (attached to the clipboard under the under the volunteer noticeboard).

Young Australian of the Year – Special Lecture at Perth Observatory Wed 99/05/12 7:30pm

The Australia Day Council has contacted Perth Observatory and organised for Dr Bryan Gaensler, Young Australian of the Year, to deliver a lecture to university students at the Observatory. At this stage we are unsure of the topic but we have requested it that it be related to his (recent) experiences in the education system and in particular astronomy education. No doubt it will be filled with all sorts of astronomical tidbits. Space is limited and the talk is aimed at students, however ten spaces are available to Perth Observatory volunteers. To reserve your seat, please contact Volunteer Coordinator Jamie Biggs before Monday 99/05/03. After that date any spare seats will be reallocated to others. Finger food and drinks will be served after the lecture.

VIP (Vollies In Print)

Congratulations to Jacquie Milner and Bevan Harris, who feature (separately) as authors in the latest issue of "Sky & Space". In both instances they write about their experiences during the recent annular eclipse expedition to Greenough.

Once in a Blue Moon

Two full moons occur in Western Australia this month. According to a recent tradition, the second occurrence of a full moon in the same calendar month is referred to as a "blue moon". If this use of the term is only a recent phenomenon, the question begs an answer as to how it came about and just what is the true origin of the phrase "Once in a blue moon"? The following article, authored by Philip Hiscock, seeks to explain the term. Originally appearing on Usenet in the "alt.usage.english" newsgroup FAQ several years ago, it was reposted to the "sci.astro.amateur" newsgroup earlier this year. An updated version of the article, from which minor alterations have been drawn, also appeared in the March 1999 issue of "Sky & Telescope" magazine (pp 52-55).

The phrase "blue moon" has been around a long time, well over 400 years, but during that time its meaning has shifted around a lot. I have counted seven different meanings that have been carried by the term, and at least four of them are still current today. The earliest uses of the term are in a phrase remarkably like early references to "green cheese". Both were used as examples of obvious absurdities about which there could be no argument. Four hundred years ago, if someone said "He would argue the moon was blue", the average 16th-centuryman would take it the way we take "He'd argue that black is white." The earliest citation is a 1528 poem "Rede Me and Be Not Wroth": "Yf they say the mone is blewe/We must believe that it is true."

This understanding of a blue moon's being absurd meaning, that of "never". To say that turned blue was like saying that it would got a day near Christmas assigned to

But of course, there are examples of the third meaning: the moon's Indonesian volcano Krakatoa sunsets green and the moon blue all two years. In 1927, a late monsoon moon. And the moon in 1951 when huge forest fires in the sky. Even by the 19th century, it moons were rare, they did happen from blue moon" came about. It meant then was fairly infrequent, but not quite regular four, and today it is still the main one.



(the first meaning) led eventually to a second something would happen when the moon happen on Tib's Eve (at least before Tib her).

the moon actually turning blue; that's visually appearing blue. When the exploded in 1883, its dust turned around the world for the best part of in India set up conditions for a blue Newfoundland was turned blue in Alberta threw smoke particles up into was clear that although visually blue time to time. So the phrase "once in a exactly what it means today: that an event enough to pinpoint. That's meaning number

I know of six songs that use "blue moon" as a symbol of sadness and loneliness. In half of them, the poor crooner's moon turns to gold when he gets his love at the end of the song. That's meaning number five: check your old Elvis Presley or Bill Monroe records for more information.

And did I mention a slinky blue liquid in a cocktail glass, one that requires curaçao, gin, and perhaps a twist of lemon? That's number six.

Finally, in the 1980s, another was popularized (chiefly by the game Trivial Pursuit): the second full moon in a month. The earliest reference cited for this is *The Maine Farmers' Almanac* for 1937. Rumour has it that when there were two full moons in a calendar month, calendars would put the first in red, the second in blue. While there is no evidence to support this assertion, it has not stopped its rapid acceptance into modern folklore.

Robust debate continues on this topic with a second instalment appearing in the May 1999 issue of "Sky & Telescope", as well as on Internet discussion groups. One argument is that a "blue moon" is actually the fourth full moon to occur in a given season, while others reaffirm the second full moon in a month (citing antique calendars as proof). All I can say is "stay tuned."

Field Stop

Following last month's *Field Stop*, I received a letter from fellow volunteer John Mills which contained this somewhat deep offering (Thanks John!). If you have some astronomical tidbit, humorous or otherwise, why not follow John's example and share it around in another *Field Stop*?

Two astronomers were talking in a restaurant.

"Yes," said one "According to these calculations in about eleven billion years the sun will swell up and engulf the earth."

A man sitting at a nearby table rushed over :

"How long did you say? How long did you say?"

"About eleven billion years."

"Thank God! I thought you said eleven million!"

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