PERTH OBSERVATORY
Department of Conservation and Land Management

PERTH OBSERVATORY VOLUNTEER NEWSLETTER

August 1998

Editorial

Some of you will be aware that, aside from my involvement in the volunteer program, I'm also a member of the Astronomical Society of WA. Now far be it from me to blow my own trumpet, in fact my first choice would have been to allow this knowledge to pass more quietly, but as a consequence of ASWA's recent annual general meeting I am pleased (some may say surprised) to announce that I have taken on the role of President. I am ably assisted in this position by another Perth Observatory volunteer, Mark Haslam, who has chosen to take on the role of ASWA Secretary after a one-year sabbatical.

Highlights In The Sky

The month of August sees the appearance of the planets in the sky to be in seeming conformance to the natural division caused by that band of planetary rubble we call the asteroid main belt. While the gas giants parade in the evening sky, the nearby planets of Mercury, Venus and Mars huddle together in morning twilight. Watch on the 21st as the three wanderers gather in the brightening sky, lying scattered across Cancer close to the horizon in the ENE. Can you see also the whisper-thin crescent Moon between Venus and Mercury? The cluster Praesepe may also still be visible, slightly above and to the left of Venus. (Tip:- Try at around 0615 and be sure to use binoculars if you want to see the Moon. Use the accompanying table as a guide to their positions.)

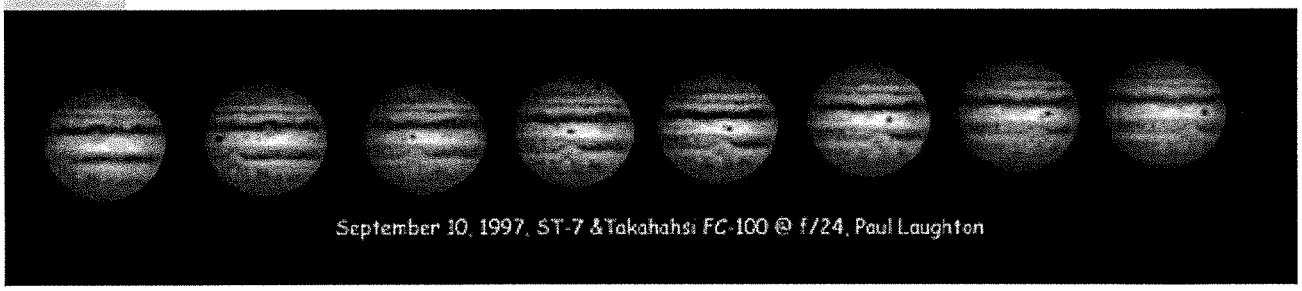
	Altitude	Azimuth
Moon	1.50°	70.50°
Mercury	2.25°	73.50°
Venus	3.75°	65.25°
Praesepe	4.50°	63.25°
Mars	9.25°	58.00°

At the start of the month **Mercury**, which is slipping towards inferior conjunction (when the planet is between Earth and the Sun) on the 14th, is located alongside Regulus low in the evening sky. While still lost in the glare of the Sun, it moves into Cancer on the 15th and reappears in the latter part of month for a somewhat disappointing apparition. It is stationary against the background stars on the 23rd when it pauses to meet with Venus, which leads it back into Leo on 30th to be together again with Regulus on September 7th.

Seen in appulse (apparent close approach) with Mars in the constellation Gemini during early August, **Venus** crosses into Cancer on the 12th to be seen by Praesepe on the 19th. It precedes Mercury into Leo on the 28th, where the two lie together near Regulus on September 7th. Watch how Venus seems to skip southwards along the horizon during this month, maintaining virtually a constant altitude for the same time each morning. A plot of Venus's path during August, along with those of Mercury and Mars, can be found on p13 of *Astronomy 98*.

Climbing gradually out of the twilight, **Mars** is in appulse with Venus on the 5th, when the two appear to pass each other going opposite directions. In actual fact both planets are travelling eastwards against the stars, but the more sedately paced Mars is steadily out-stripped by Earth's own orbital motion, which in turn is easily out-paced by the more speedy Venus. As a consequence, Mars loses pace against the Sun and gradually climbs away into darker skies while Venus continues to advance towards the Sun. Mars moves into Cancer on the 18th and will be near Praesepe on September 1st. During the first week of September it will rise at around 0500.

Phases of the Moon	FM: Sat 8th	LQ: Sat 15th	NM: Sat 22nd	FQ: Sun 30th



Io races the Great Red Spot across the Jovian face in this series of images taken last September 10 by Paul Laughton

Jupiter, the King of the Planets, is a prominent evening object this month. Shining at magnitude -2.7 in Pisces near the border of Aquarius, it rises around 2120 on the 1st and will be near the Moon on August 11th (an occultation will occur on the African continent). Rising around 1910, it will edge into Aquarius near the end of the month and will rise around 1840 on September 7th.

The ringed planet, **Saturn**, finally becomes an evening object early in the month (4th) when it rises just before midnight. Located in Cetus for the entire month, it will be near the Moon on the 14th and will be stationary on the 17th which marks its enter into retrograde motion. This completes the tally of the gas giants, with all four now traversing their backwards loop across the sky. Saturn will again be stationary on December 30th, when it will resume prograde, or easterly, motion. In early September, Saturn will be rising prior to 2200 and at magnitude +0.4 will be an easy late evening object.

Located in the centre of Capricornus, **Uranus** is at opposition and will be visible the whole night on the 3rd. By the end of the month it will be rising at around 1545 and will already be high in the east at dusk. **Neptune**, which leads Uranus by about 45 minutes, is also in Capricornus and is immediately next to the border of Sagittarius. **Pluto** remains in the extreme north of Scorpius and is high in the west at dusk. By early September it will be setting shortly after midnight.

Telescope Practice Nights

Courtesy: Bob Taylor - Thanks Bob!!

Although last month's training night was, rather unfortunately, clouded out (let's admit it - hoping for a repeat of the conditions for the June meeting was a rather tall order), the evening was still a great success. Fourteen volunteers were present as Vic Levis provided an interesting presentation on the basics of astrophotography, demonstrating how simple it was to get started using modest equipment and yet still produce some impressive results. He also related his own experience, from his start as a rank beginner and through to his current level of advanced proficiency, of experimenting with different techniques and his own determination to succeed.

Illustrating his talk with numerous examples of his own work, Vic seemed especially proud of his 12-hour circumpolar star trail photograph which exceeds David Malin's closest equivalent by 1.5 hours. However there is one particular feature of some of David Malin's work that Vic is yet to better - that of the phantom night assistant with the red torch (you would probably need to have attended David Malin's lecture at the Observatory last December to understand this "jibe"). Adjourning to the darkroom, Vic continued with an account of some of the more radical processing techniques he has used and developed in his pursuit of "that" exposure and also explained some of the more traditional procedures involved in processing photographic film.

Weather permitting, Vic will conduct the hands-on demonstration of introductory astrophotography following the talk at this month's Telescope Practice Night, which will be held this **Monday (August 17)**. Commencing at the usual time of 7:00pm, **Ralph Martin** will be presenting an account of the **"History of the Perth-Lowell Telescope"**, giving particular attention to the automation of the instrument and the dome in the early 1990s.

The same provisions and restrictions as last month will apply (see last month's newsletter) for those who wish to be involved in the astrophotography. Places will be limited to the first eight people who notify Greg Lowe of their desire to participate. Of course, there is no restriction on numbers wishing to attend Ralph's talk or the ensuing telescope practice - but it would be appreciated if you could notify **Greg Lowe** on 9293 8255 for any further information and to confirm your place for the evening.

Please note that Telescope Practice Nights are held each month on the Monday after Last Quarter and commence at 7:00pm. We will endeavour to provide a talk on an astronomical topic on each occasion, with the telescope practice

following a refreshment break. These nights provide an ideal opportunity to expand your knowledge and skill, as well as have a bit of fun. The dates for the remainder of the year are:

September 14th **October 19th** **November 16th**

IMPORTANT - Community Involvement Forms (CLM 205)

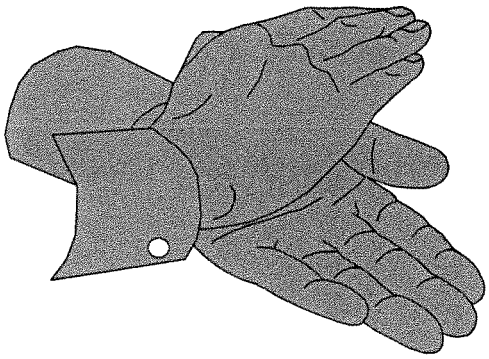
Enclosed with this newsletter is a CLM205 form and a Perth Observatory stamped addressed envelope. Would you please complete the form and return it to the Observatory as soon as possible. These forms are vital for the Observatory's own records and they will also be forwarded (by us) to CALM Head Office in due course.

PLEASE NOTE: Permanent staff and those volunteers who have already updated their forms are not required to complete these forms.

Volunteer Contribution for 1997/98

The volunteer contribution has set yet another Perth Observatory record for financial year 1997/98! A total of more than 2,330 hours of assistance were rendered by volunteers from all programs, which is the equivalent of approximately another 1.2 full-time staff.

A big vote of thanks from the permanent staff is expressed to all those who contributed.



The details for the individual projects are given in the table below.

Project	Days	Hours	No. of Volunteers
Observatory Assistant	128	893.4	8
Astro Field Night Assistant	11	45.1	8
History & Archiving Assistant	95	456.1	5
Night Tour Assistant	232	939.0	28
TOTAL	**466**	**2333.6**	**39**

(NB: some volunteers are involved in more than one project)

Star Viewing Sessions

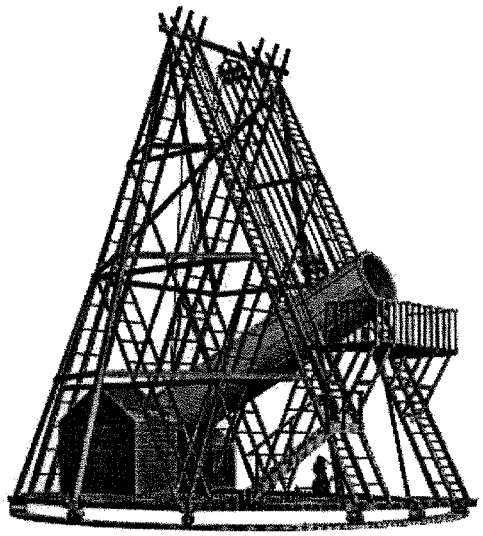
The schedule for the 1998/99 tour season is about to be published in brochure form and will be distributed in the next newsletter. Please ensure that you read these when you receive them as there have been changes in some details (eg the Night Tours are now known as Star Viewing Sessions instead). Another change, which is in response to a directive from the highest levels of government, is that the prices have been increased in order to recover full cost.

These new prices are fully described in the brochure but, as it is no longer a flat fee structure, some details of the exact pricing for the Star Viewing Sessions may require clarification. If you require additional explanation concerning the new pricing schedule, would you please direct your enquiries to the Administration Staff. However, an explanation will appear in a future newsletter if demand warrants it.

Site for 16" Telescope Enclosure

As announced last month, site preparation for a new telescope enclosure to accommodate the 16" has been completed. Located in the area between the VOF and the Astrograph dome, provision has been made on the cleared site for two enclosures - the second of which has not yet progressed beyond the "good idea" stage.

Good ideas are also being sought for how best to utilize the area surrounding the planned 16" telescope enclosure. If you have any suggestions how this area can be best developed to promote astronomy, preferably with a practical perspective, Jamie Biggs would welcome your input.



Note that there are several restrictions to what can be accommodated at the site. These are:

- It must be low cost (preferably REALLY LOW COST).
- It must be of the highest value for money.
- It must have an astronomy theme.
- It must not require large amounts of water.
- It must be low maintenance.
- It must not obstruct the view from the VOF and other current or planned telescope enclosures (a structure such as the one illustrated would likely not pass the test).

If you would like to contribute, would you please put your ideas in writing and forward them to the Government Astronomer, Jamie Biggs by September 1, 1998.

1998 Night Tour Volunteer Intake

Due to current staff shortages, any intake of new volunteers to the Night Tour program will most probably be delayed until November.

In the Eyepiece - Butterfly Cluster

As one of the largest and brightest galactic star clusters, **M6** (also known as the Butterfly Cluster) appears to the naked eye as a 6th magnitude glow near the tail of Scorpius.

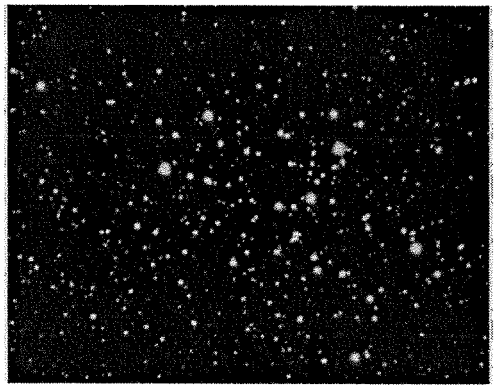
Despite its definite naked eye visibility and apparent references to its existence as far back as Ptolemy, the discovery of M6 is generally credited to P.L. de Cheseaux in 1746. Together with the neighbouring M7, it is described in Ulug Beg's catalog as *Stella nebulosa quae sequitir aculeum Scorpionis* or "The Cloudy Ones which follow the Sting."

Occupying nearly the same area of sky as the full Moon, M6 is easily visible in binoculars and is particularly well suited to viewing with a small telescope, comfortably filling a 25' view.

Some uncertainty exists concerning the distance to M6, but this is a common circumstance for objects located in heavily obscured regions. Generally held to be about 50% more distant than M7, the most reliable modern estimates place M6 about at a distance of about 1300Ly. This translates to a diameter for the main "Butterfly" figure of approximately 9Ly, with the width for the entire cluster being close to 20Ly.

With a computed age of 100 million years, M6 is somewhat older than the Pleaides, but is less than half that of its near neighbour, M7.

The cluster comprises a scattering of about 80 stars between 7th and 10th magnitudes which are arranged in radiating chains. These are mainly B-type main sequence stars, with the brightest member, which highlights the NE wing tip, being a K-type giant. This star is the semi-regular



FACT *file*

Name :	M6
Type of object :	Open Cluster
Other names :	NGC 6405
Constellation :	Scorpius
RA :	17h 40m 01s
Dec :	-32° 12' 49"
Magnitude :	4.2
Distance :	1300Ly
Size :	15.

variable BM Scorpii which varies between 6th and 8th magnitudes over a long cycle of 850 days.

Dimensions :	20Ly
Number of Stars :	80
NGC Description :	Cl,L,iR,lC,st7,10...

"... one of the most attractive clusters in the heavens for very small telescopes, a completely charming group whose arrangement suggests the outline of a butterfly with open wings". Robert Burnham Jr.

Field Stop

Here's a test for all the young and young at heart. The following ditty is a well known children's nursery rhyme and song which has been translated into so-called "scientific" language. Granted, the translation is not perfect, but do you know which one it is? Perhaps more appropriately - would your three year old recognize it??

Scintillate, scintillate constellation vivific

Fain would I fathom thy nature specific

Loftily poised in the ether capacious

Strongly resembling the gem carbonaceous

Starry Night - Van Gogh

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