

**PERTH OBSERVATORY
VOLUNTEER NEWSLETTER
December 1998
Editor: Bevan Harris**



Merry Christmas

The Government Astronomer and the staff of Perth Observatory wish a very Merry Christmas to all volunteers and their families. Thank you for your help throughout the year, it is warmly appreciated and really helps the Observatory achieve its mission.

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Editorial

Echoing the sentiments expressed above, your humble editor wishes all volunteers and staff the compliments of this Christmas season and all the best for the coming New Year. I'd also like to thank you all for the positive comments I have received concerning my efforts with this newsletter and for your forbearance in its frequent late release. Although I don't believe in New Year's resolutions, in the coming months I will be striving to produce the newsletter in a more timely fashion and to tighten up on the annoying typos and errors which seem to always creep in. Who else noticed the incorrect spelling of *Pleiades* in last month's issue or the blooper which placed Jupiter in neighbouring Pisces instead of Aquarius? Another editorial anomaly was the inadvertent omission of the names of five people from the list of those who had returned their CLM205 forms, which caused some consternation among those involved. Please accept my apologies for any inconvenience caused.


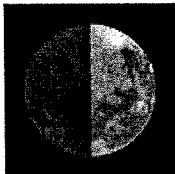

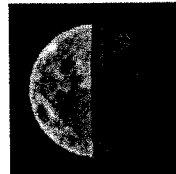
The coming summer is a busy one for the Observatory. There are several events where volunteer assistance would be appreciated, so if you are keen to be involved in any of these activities would you please advise Jamie of your intent as soon as possible and sign up on the AFN roster sheet.

Featured in this month's newsletter are details of ASTROfest, the Observatory Summer Lecture and the annular eclipse expedition. "In the Eyepiece" focuses on the Crab Nebula, the object that started it all for French comet-hunter Charles Messier. Although he was hugely successful in his chosen vocation, he is better known for the catalog he compiled of the objects that he didn't want to observe.



Highlights In The Sky

This month we see the Sun's furthest progression southwards with the summer solstice occurring on the 22nd at about 1000. The solstice marks, in common parlance, the longest day of the year. More correctly though, the (summer) solstice is the day which has the most daylight hours – about 14 ¼ hours at Perth's latitude.

<p>P · H · A · S · E · S OF THE</p> <hr/> <p>MOON</p>	 Thu 3 rd	 Fri 11 th	 Sat 19 th	 Sat 26 th
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If you missed the Leonids last month, or even if you didn't, the Geminids are active now with the peak occurring on the 14th. The shower often produces bright, medium speed meteors with a ZHR is usually around 110.

Mercury reaches inferior conjunction (located between us and the Sun) on the 2nd and will consequently be lost in the Sun's glare for the early part of the month. It will appear in dawn twilight from about the 10th near head of Scorpius and will be close to the thin crescent Moon on the 17th. It moves into Ophiuchus on the 22nd and on into Sagittarius on January 5th to be located near the Bow of Sagittarius on the 7th.

After being lost in the glare of the Sun for a couple of months, **Venus** reappears in the evening sky towards the end of the month. It will pass over M8 (the Lagoon Nebula) on the 12th and the globular cluster M22 on the 18th, although both of these objects will be invisible in the dusk. Venus will be passed by the slender crescent Moon on the 20th and will move into Capricornus on January 4th.

Located in western Virgo, **Mars** rises shortly before 0200 at the start of the month, progressing slowly eastwards throughout the month. It will be located near the waning crescent Moon on the 13th and rises at approximately 0030 as we welcome the new year. By January 7th the red planet will be located in the vicinity of Spica.

Jupiter remains in Aquarius, not Pisces, throughout month, though it does draw gradually closer to the celestial fishes as the month and the year draw to a close. The King of the Planets is now almost exclusively an evening object, setting at 0113 as the month opens, but setting before midnight from around the date of the solstice. On Christmas Day, Jupiter will be paired with the almost first quarter Moon providing a visual feast to accompany the traditional Christmas fare.

The ringed planet, **Saturn**, is situated in eastern Pisces for the entire month and is located high in the north as night falls. Setting at around 0300 at the start of the month, it will be setting just after 0100 at the month's end and around 0030 at the end of the first week of January. The waxing gibbous Moon will be near Saturn on both December 27th and 28th. Having been in retrograde (westerly) motion since mid-August, the planet will be stationary on December 30th and will thereafter return to its usual prograde (easterly) motion.

Uranus and **Neptune** are now all but lost in twilight as they set in the early evening, while **Pluto**, which recently passed behind the Sun, will be unobservable for the entire month.

Time Sheets

If you work out of normal hours and/or personally retain your time sheets, would you please send them to the Volunteer Coordinator (Jamie Biggs) AS SOON AS POSSIBLE after December 31st. Your forms are required so the Observatory can maintain an official record of the time you have generously donated. In order to 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.



Community Involvement Forms (CLM 205)

A big thank you to J Bell, L Bell, P Crake, R Delfonseka, K Ford, T Dunn, M Emmons, M Fortsch, C Gazey, R & B Goynich, B Harris, D Hartley, M Haslam, L Hewett, K Hogan, B Hollebon, K Kotze, V Levis, J Mills, J Milner, L Moore, J Morris, B Taylor, N Turich and T Turner for returning their completed CLM 205 forms. If you have not returned your form and you still wish to participate in any Perth Observatory volunteer programme, (even those which are not formally in operation - such as the archiving project), would you please return it to Jamie Biggs ASAP. **PLEASE NOTE - if your Community Involvement Form is not current, you are not covered by CALM's volunteer insurance policy. Only those people who have returned their form (and volunteers in dormant status) will be retained on the volunteer mailing list from 1st January 1999.**



Farewell to Carmel

Carmel Borg has announced her retirement which is effective from December 17th. Carmel has worked as secretary and administrator at the Observatory for 18 years and will be sorely missed. In her absence she will be leaving a large "black hole" for a while. Janet Bell is currently acting in Carmel's place, with Sheryle Smith filling the duties in the front office.

Carmel, we will miss you and we wish you all the best for the future!

In the Eyepiece - Crab Nebula

M1, better known as the Crab Nebula, is the one of the most intensively studied objects in the sky. It was first discovered by English physician John Bevis in 1731, but was later independently discovered by Charles Messier in September of 1758 while he was observing the comet of that same year. The object was first christened the "Crab Nebula" in 1844 by Lord Rosse who detected its filamentary structure and considered it to resemble a crab's legs.

It was Messier's discovery of the Crab Nebula that prompted him to compile his now famous catalog, hence the reason for the object's pride of place in that listing. However, the reason the catalog itself was compiled was not to provide a listing of objects for study, but rather to eliminate them from consideration when he and other observers were searching for new comets.

The nebula is located about 1° degree NW of zeta Tauri, the star which marks the southern horn of Taurus. It is detectable in 3-4 inch scopes, but rather larger instruments are required to resolve its filamentary structure.

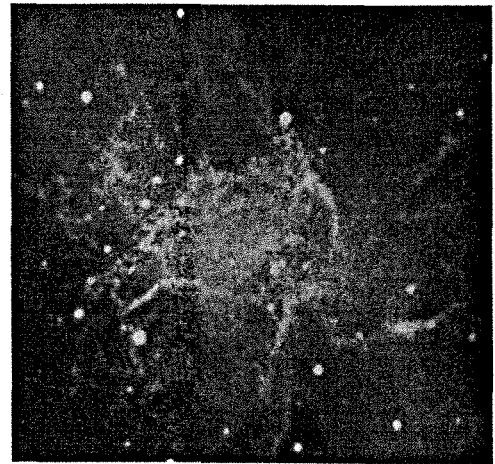
Professional studies from the early 1920's revealed motion inside the nebula and it was subsequently calculated in 1942 to be expanding at a rate of 0.2" per year. Modern estimates have derived an expansion velocity of 1800 km/s.

M1's high expansion rate strongly suggested it originated some centuries ago in a cataclysmic explosion such as a supernova. Following determination of its age, the cloud became associated by researchers with a "guest star" observed in Taurus by Chinese astronomers in 1054. This event was also observed by American Indians but, rather strangely, it seems to have escaped the notice of European astronomers.

The Crab nebula was identified as a strong radio source in 1948, while a high-altitude rocket detected X-ray emissions from the object in 1964. The energy emitted in X-rays by the Crab nebula is about 100 times more than that emitted in the visual light, even so its absolute (visual) brightness is equivalent to more than 1000 times that of our Sun!

In 1968, a pulsating radio source, the Crab Pulsar was discovered in M1. It has now been established that this pulsar is a rapidly spinning neutron star, which is the remnant of the star that exploded, rotates about 30 times per second! The neutron star is an extremely dense object, denser than an atomic nucleus, concentrating more than one solar mass in a volume of 30 kilometers across. This energy source is 100,000 times more energetic than our sun.

"... a nebulosity above the southern horn of Taurus.... It contains no star; it is a whitish light, elongated like the flame of a taper; discovered while observing the comet of 1758" Charles Messier



FACT *file*

Name :	Crab Nebula
Type of object :	Supernova remnant
Other names :	M1, NGC1952
Constellation :	Taurus
RA :	5h 34m 27s
Dec :	+22° 00' 50"
Magnitude :	8.4
Distance :	6300 L.y.
Size :	6.0'x4.0'
Dimensions :	10 L.y.
NGC Description :	vB,vL,E135,vglbM, r

Telescope Practice Nights

Fourteen volunteers were present at last month's training night to hear Tom Smith recount his meteorite hunting experiences. The talk and slide-show included a travelogue of relatively recent expeditions to China as well as reports and amusing anecdotes of numerous similar, but more fruitful, expeditions in the remote parts of this state. He also described the various types and sources of meteorites and gave pointers on how to recognize them in the open.

Due to overcast conditions and predicted high winds, there was no telescope practice, but this did not deter those present from an entertaining evening. There is no telescope practice night this month due to the proximity of Christmas, nor in January because of holidays.

ADVANCE NOTICE FOR NEXT 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. Please note that should places be limited on the tours, preference will be given to those volunteers who have contributed the most hours and/or the Night Tour volunteers who attended the September telescope practice night (JB ☺).

Annular Eclipse - 1999 February 16

The expedition has been finalized. Two luxury coaches will depart the Wellington Street bus terminal at 7.00am and are scheduled to arrive at Greenough Arms Inn at 1.30pm. A three-course lunch will be provided upon arrival and some short lectures will be conducted during the meal. Following lunch, the group will witness the eclipse until 4.00pm (the Observatory will screen the event in the hotel for our group, plus other groups who will pay) before heading back to Perth to arrive at Wellington Street at 10:00pm.

It will be a long day, but it is well worth it given the proximity of this rare event. An extra bonus is that we will also be accompanied by eclipse expert and astronomy text book writer Prof Jay Pasachoff from Williams College, Massachusetts and eclipse expert Dr Fred Espenak from NASA's Goddard Space Flight Center, Maryland.

ALL VOLUNTEERS ARE INVITED FREE OF CHARGE, the cost to other folks is \$125. Pamphlets advertising the event are now available. Please assist in the distribution of these if you can.

FIGURE 3: THE ANNULAR SOLAR ECLIPSE OF 1999 FEBRUARY 16 THROUGH AUSTRALIA



Eclipse Eye Safety

The Observatory has produced a brochure concerning this important topic. Please distribute these as appropriate.

ASTROfest

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 four 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

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 titled "The Sun". The talk, which will be conducted on the back lawn of Perth Observatory, is in 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.

Observatory News

- 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. Please make a note on the back of your sign on sheet to indicate that you have obtained your copy.
- Andrew Williams has recently attended a PLANET conference in Hobart with other members of the world wide PLANET (Probing Lensing Anomalies NETWORK) team.
- A NEW CCD camera has been offered to Perth Observatory by PLANET, so the work of recent years has been rewarded. This camera will significantly enhance the Observatory's research capabilities.
- Comet Hale-Bopp is almost gone but not forgotten. Peter Birch observed the comet at 7AU with the photometer last new moon. This is around the same distance as it was discovered, so this comet has been observed over the widest range of heliocentric distance ever. The comet still appears as a fan shape in the 61cm eyepiece – but only with moonless skies, and dark conditions. Spatially, it is up there near the LMC, but only 1 "light hour" away, compared to 168000 light years for the LMC.

Leonids 1998

Last month I told you that I had been contacted by a group of US and interstate amateur astronomers who were travelling to WA to put themselves in the box seat for the Leonids display. Well, I don't suppose many of you would want me to remind you of that event... but I will any!! ☺

Perth was totally drenched in a surprise storm, with the only light show being a rather spectacular display of lightning. To add insult to injury, the Leonids peaked some fifteen hours early, so that those few who did manage to get away clear skies (myself included) saw only a relative few fireballs instead of what would otherwise have been the experience of a lifetime. Nonetheless, I feel that you may enjoy this account of the visit by these travellers to both WA and Perth Observatory.

The visiting group totalled eight people, including five from the US and three from New South Wales. The US contingent was comprised of David and Billie Chandler (producers of those neat plastic planispheres which are available in the Observatory shop), their good friends John and Barbara Gossett, and ex-NASA engineer Hayden Brown, who worked on both the Apollo and SkyLab missions during the sixties and seventies. These days Hayden spends his time aboard *Aldebaran*, the seventy-foot schooner which he built and calls his home on San Francisco Bay. (Are you green with envy yet??). Quasar Publishing staffers Glenn Dawes and Ken Wallace (who produce our Observatory yearbook), along with their friend John Sumner, made up the remainder of the group.



L to R: John Sumner, Ken Wallace (standing), John Gossett and David Chandler. Not pictured are Billie Chandler, Glenn Dawes and Hayden Brown. Barbara Gossett was not present.

Escorted by myself and three other local amateurs, we travelled 200km to Miling to view the Leonids and showcase the southern skies for the folk from the US. In spite of the almost complete dearth of bright fireballs (we witnessed two

shortly after 0130), we observed around 20 meteors (Leonids and others) per hour and were also treated to a rather spectacular view of the storms over Perth. The viewing of the southern sky, especially the Magellanic Clouds, was most enjoyable and the company was most convivial. In Billie's own words "good friends, good food, good conversation – what more could one want?"

That afternoon was taken up with a tour of the Observatory. During the tour, the visitors made many appreciative comments about both the facilities that the Observatory has as well as its location. They were very impressed with the older instruments (the Astrograph and the Calver) as well as the 24" Perth-Lowell Telescope, and were particularly intrigued with the main telescope tower. Additionally, the group were able to meet several of the staff who were starting to arrive for the evening shift.

So, in spite of seeing only a scant handful of Leonids instead of the storm that had been hoped for, the event was an unqualified success.

Oh... and returning for one moment to the view most people from Perth had of the Leonids, particularly if you headed up to Vic's place as Tricia Turner, Lyn Hewitt and Jamie Biggs did, you might care to check out this month's *Field Stop*.

(Thanks Vic for your hospitality and lightning proof patio! JB)

Field Stop



Source: Sunday Times – December 6th, 1998

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