



PERTH OBSERVATORY  
Department of Conservation and Land Management

**Perth Observatory Volunteer Newsletter**  
**August 1997**  
**Editor: Nikola Angus**

### **Training Nights - URGENT!**

Two Training Nights have been scheduled before the next season.

Monday 1st September 7pm

Thursday 4th September 7pm

The Observatory needs to find out which volunteers still want to participate, update volunteer registration forms, update volunteers on the minor changes to night tours and to start the roster system again. The meeting will take about 30 mins and there will be telescope training after. Contact James Biggs to confirm your place so that we can evenly distribute participants over both meetings.

**NOTE:** Attendance at either of these sessions is **compulsory** if you want to participate in the Night Tours programme (J.B)

September is just around the corner and so is the start of the Night Tours. Two **volunteers are urgently needed** for the first set of tours commencing on the 7th and 8th of September with the first tour starting at 7pm volunteers will be required to be at the Observatory by 6.30pm. Two more volunteers will be required for night tours on the 23rd and 24th of September. The Night Tours will be in full swing from the October the 6th onwards and volunteers to add their name onto list as soon as possible.

Two Astronomy Field Night volunteers are needed for the 8th of September in Subiaco and one volunteer is required an Astronomy Field Night in Applecross on the 9th of September. Could those interested please contact Peter Birch. Those interested in learning to set up tripods and telescopes please contact Vic Levis (9293 5392) for training night details.

### **Highlights for August**

**Venus** is still dazzling in the western evening sky setting approximately 2 hours after the sun. **Mars** can be seen high in the north western evening sky setting around 11pm. **Jupiter** is visible the whole night and on the morning of the 28th of August can be seen without any moons in the sky near the planet. The reasons for this is: Callisto is in eclipse, Ganymede is in occultation, Europa is in transit and Io is in occultation. **Saturn** can be seen in the late evening sky, rising around 10pm to the east. **Mercury** is best for viewing in the western evening sky until mid month. The planet then swings back toward the Sun getting lower in the western sky.

As you may have read in Night Sky column of Monday's West Australian Newspaper there has been many reports of meteor sightings, coincidentally Jacquie Milner has sent in another contribution for the newsletter on Falling Stars and Meteor Showers.

### ***Falling Stars and Meteor Showers***

*Falling stars are correctly called meteors. They only become meteorites once they hit the ground. The average size of a meteor that is seen is only the size of a large grain of dust. They are burning up as they hit the Earth's atmosphere 100 km above us. The best time to see meteors is between midnight and dawn, as this when the Earth begins to "turn" into them as it travels in it's orbit. For those people who mutter to you that they've never ever seen a meteor there's only one solution - keep looking up.*

*At certain times of the year you are more likely to see meteors than others, when we have a meteor shower. A shower describes the meteors observed that seem to radiate out from the same point in the sky. So we have the Eta Aquarids, because the radiant of the shower is very close to the star Eta Aquarii. These showers occur when the Earth intersects the debris streams of comets. Comets leave dust trailing behind them, following them around in their orbits. The Eta Aquarids in May and the Orionids in October are both associated with the orbit of Halley's Comet. The Leonids in November are associated with Comet Temple-Tuttle. Other major showers have their own associated comets too.*

*Comet Temple-Tuttle returns every 33 years and will next do so in 1998-1999. The Leonids are most famous for their storm events. In 1966 rates were estimated at their peak to be around 144 000 per hour! The storm event was only seen over several hours and only over the Americas. The possibility of another storm like the last raises questions of safety for satellites which may be severely damaged, and the space shuttle if it flies at the time.*

The meteor showers that can currently be observed are the Aquarids, the Alpha Capricornids, and the Perseids. Best viewing should be in the early morning sky, with meteors coming from the North East.

### **Observatory News**

At the last staff meeting action on the following issues were discussed:

- Children on tours - advise against under 10's when booking and attempt to book in early tour.
- Meade 16" telescope - ordered and about to be shipped from US, new dome designed, construction to go out to tender.
- September Night Tours - will only be partially booked due to high percentage of canceled tours from bad weather in May. Instead 1 week Deep Sky (Mon to Thur) in November and extra Day Tours on those nights canceled in September - in future (1998) 2 weeks of Day Tours in September.
- Casual staff - is required for Observatory office, work will alternate between 4 day shifts and 4 night shifts. For further information and to register your interest please contact James Biggs.
- Start times - earliest 7pm, latest 9.54pm (Dec & Jan)
- Tour content - No 24" or Astro visit unless we don't have any stars to show, or if we need to make up some time, Tours should be kept to around 90 mins.

Attached to this month's newsletter is a copy of the Perth Observatory Programme Report 96/97 it was prepared for the CALM 96/97 and highlights the results of the department and government.

### **Road Works**

Walnut Road is currently being widened. The road is quite hazardous during the day so please be careful when traveling to the Observatory at night.

### **Special Events**

Total Lunar Eclipse **02:50 AM** 17 September 1997

All those wishing to view this event at the Observatory call James Biggs to reserve a place. Vic Levis will be on hand to assist those wishing to photograph this event.

## PERTH OBSERVATORY PROGRAMME REPORT 96/97

The following was prepared for the CALM 96/97 annual report. It is not meant to be comprehensive and is somewhat skewed towards highlighting results for the benefit of the department and government.

### HIGHLIGHTS:

- Centenary commemorated in September 1996
- Four asteroids named
- Annual conference of the Astronomical Society of Australia hosted
- Record numbers of visitors and enquiries received
- Nearly 750 hours of assistance returned by three volunteer projects
- Scientific programs established on 10-inch robotic telescope

Centenary celebrations of the foundation of Perth Observatory - Australia's only fully-operational state government-funded Astronomical observatory continued in the second half of 1996.

The highlight of these celebrations was the formal ceremony in September at which the state Premier unveiled a stone plaque to commemorate 100 years of continuous operation of the Observatory. Speeches were also delivered by notable dignitaries such as the Minister for the Environment, the Director of Lowell Observatory (the USA's largest private observatory), the Trustee of Lowell Observatory, and the Executive Director of the Department. Also on that day, the Observatory was privileged by being able to announce the naming of four asteroids (discovered at Perth Observatory) after four people who have actively supported the institution's endeavours over the years.

In July, 1996, a scientific highlight of the Centenary was Perth Observatory's role as host of the annual conference of the Astronomical Society of Australia - the body that represents Australia's professional astronomers. It was the first time this conference was conducted in WA in the 30-year history of the Society. Nearly 110 people attended, most were from the eastern states, several from overseas and some were local amateurs. Verbal and written feedback was very positive and attests its success.

Free star viewing nights were continued as another important Centenary celebration activity. Over 1000 people viewed interesting night-sky objects from Perth City during WA week, and the Fremantle Festival. Three other similar events conducted in 1997 were an "Astrofest" (held in conjunction with the local Astronomical community), viewing the bright Comet Hale-Bopp from Scarborough Beach, and a "Sun and Stars" Festival at Yanchep National Park. We also brought Astronomy to rural areas by providing telescope viewing at many schools and National Parks around the state. All up, over 5,100 people viewed the stars with observatory telescopes that were transported to their locality for one of these "Astronomy field nights".

Numbers attending the Observatory for tours in 1996/97 set new records. This was mainly the result of the near doubling of numbers attending night tours, and the restoration of day tour numbers to the level normal in past years. Also, the level of customer satisfaction remained high with nearly 97% satisfied with their tour. Furthermore, the effectiveness of the observatory increased because the number of people on tours, that called our information service, attended talks, or attended an Astronomical field night tallied over 22,800, compared with 17,900 in 1995/96. Also, an estimated 6,000 people telephoned the Observatory for information and others were informed of Astronomical events in over 115 radio, 5 television, and 64 newspaper interviews.

## PERTH OBSERVATORY PROGRAMME REPORT 96/97

Night tour numbers were mainly increased by the establishment of the Observatory's volunteer programme. The first volunteer project attempted provides assistance to permanent staff conducting night tours and thus permits more visitors per tour. The success of this project has spawned two other volunteer projects: assistance with the Astronomical field nights and the other assists in the preservation of the Observatory's archives, some of which are over 100 years old. It is planned to train more volunteers each year in what is turning out to be a very popular and productive programme.

Another factor in improved attendance is our facilities upgrading. The Centenary celebrations prompted an upgrade in our display material in our museum and telescope domes, and fostered many restoration projects. The most significant, and the one in which the public most directly benefit, is the restoration of the 12½-inch Calver Telescope. The Observatory workshop have carefully restored this telescope that was purchased so that the public of WA could view Halley's Comet - in 1910! Current night visitors thoroughly enjoy climbing up a ladder to view objects through this venerable scientific instrument. Another instrument was also ordered, a 16-inch aperture Schmidt-Cassegrain telescope. This will have a dual purpose - sky viewing of very faint objects for the public during night tours, and eventually automated scientific operation at other times.

Aside from an extensive and ongoing programme of equipment maintenance, other output from the workshop included upgrades to the 10-inch robotic telescope and 24-inch Lowell Telescope. These will assist in their automation so that observation and data acquisition can occur with minimal operator intervention. To effect this capability, automatic weather sensors were constructed, and are in the process of being tested and calibrated so that domes can be opened and closed, telescopes parked or reactivated, depending on the presence of rain or cloud. Astronomical staff also tested software that will be used to remotely control the computers, that in turn control the telescopes in order to exploit automated operation once the weather sensor system is fully tested and calibrated, and operating with the requisite accuracy.

Significant scientific research continued even though Centenary activities dominated staff time for a substantial portion of this period. One supernova star explosion (designated SN1997z) was discovered in our ongoing search for these objects. Our ongoing collaboration with astronomers working in Tasmania, the Netherlands, Chile and South Africa was continued in which we monitor continuously over 24 hours, the brightness variations of stars. These variations occur when a very faint object passes in front of a distant star. By monitoring these event we find details about this unseen matter which poorly-tested cosmological theories suggest compose a large proportion of the matter in the universe.

Five refereed research papers were published in this period along with nine other reports and minor publications. Also, our long standing international collaboration as one of the very few Southern Hemisphere observatories to monitor the positions of comets and asteroids continued. One of these objects was Comet Hale-Bopp, mentioned above, and it's brightness was such that it was of great interest to the public and media.

Three project students from Curtin University began research projects using the 10-inch robotic telescope. Not only is this the furtherance of one facet of our educational activities, but it also assists us in our research work whilst testing the capabilities of this new telescope.

All of the above work could not have been accomplished without the hard work and dedication of all the Observatory staff - both permanent and volunteer.