



PERTH OBSERVATORY
Department of Conservation and Land Management

PERTH OBSERVATORY VOLUNTEER NEWSLETTER

JULY 1998

Editor: Bevan Harris

Editorial

Is the winter feeling a little bitter for you right now? Maybe it's because the Earth reached aphelion (ie its greatest distance from the Sun) on US Independence Day, receiving nearly seven percent less solar radiation than at perihelion. While our seasons are the result of Earth's axial tilt, our changing distance from the Sun modifies their effect slightly with summer and winter in the southern hemisphere supposedly being a little more severe than in the northern hemisphere.

This month also marks the 29th anniversary of the first manned Moon landing, achieved by Neil Armstrong and Edwin "Buzz" Aldrin in Apollo 11 on July 20th 1969. Have you ever tried to locate the Apollo 11 landing site? If you haven't, be sure to read "The Eagle has landed *where???*". Preceding this is an account of how, as a child, I perceived the race to the Moon in "One Small Step".

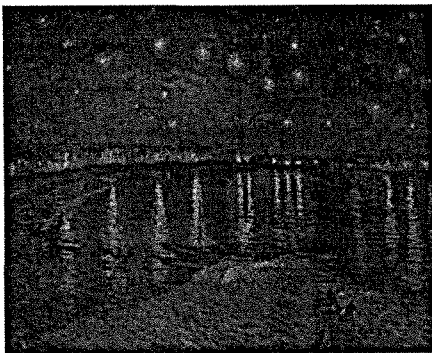
Highlights In The Sky

"Shallow" sky aficionados can now sleep a little easier, with July marking a gradual return of planets to the evening sky.

Mercury is the only bright planet visible in the early evening this month, providing the year's best opportunity to view it at a convenient time. Beginning the month in Cancer, when it sets a little more than ninety minutes after the Sun, it passed Praesepe on the 5th and moves into Leo around mid-month. After greatest elongation East on the 17th, Mercury brightens rapidly in the later part of the month and will be shining at mag -2.2 near to Regulus at month end.

Heading for superior conjunction in late October, **Venus** continues its descent of the morning sky and will be in twilight by the end of the month. It was next to the Hyades on the 3rd and will be just 0.3° N of the Crab Nebula on the 15th, before passing by Orion's club and into Gemini around the 20th to finish the month near Mars between the Gemini twins.

Although remaining caught in morning twilight throughout the month, **Mars** is gradually climbing away from the Sun, leading by an extra 22 minutes at the end of the month. It passed from Taurus into Gemini on the 7th and approaches Venus as the month closes prior to an appulse early next month.



Starry Night on the Rhone - Van Gogh

Consolidating the toehold it has gained on evening skies, **Jupiter** will quickly become a prominent late evening object. It remains in Pisces near the border of Aquarius, rising around 2330 early in the month and before 2130 on the 31st. It will be close by the waning gibbous Moon on the evening of the 14th and appears stationary on the 19th prior to entering retrograde motion until November. See p62 of *Astronomy 98* for a discussion of retrograde motion.

Saturn is in Pisces close to the borders of Cetus and Aries, rising shortly after 0200 at the beginning of the month. It is near to the first quarter Moon on the 17th and passes into Cetus on the 20th, where it will remain for a couple of months. Continuing its pursuit of Jupiter, it rises about a quarter past midnight on the 31st in preparation for its entry into evening skies in August.

Little has changed from last month with the outer planets, which are all evening objects. **Uranus** is in the middle of Capricornus, rising around 1950 at the beginning of the month and close to 1745 at the end.. **Neptune** is also in Capricornus, though much nearer to the border of Sagittarius. It rises around 1900 and 1700 respectively at the either end of the month and is at opposition on the 24th, when it is visible the entire night. Both Uranus and Neptune are in retrograde motion. Located in Ophiuchus, at the start of the month **Pluto** is well up in the east at the end of twilight and sets at around 0430. It moves into the extreme northern part of Scorpius around the 19th and will set at around 0230 at the month's end.

Phases of the Moon

FQ: Thu 2nd

FM: Fri 10th

LQ: Thu 16th

NM: Thu 23rd

FQ: Fri 31st

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) **WITHOUT DELAY**, as they are **URGENTLY REQUIRED** to enable Observatory records to be finalized for the end of the financial year.

It is an essential requirement for the Observatory that we maintain an official record of the time you have generously donated. This ensures that we can reward you, maintain our insurance obligations 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 at the end of each quarter (ie the end of March, June, September and December).



Community Involvement Forms (CLM 205)

Some of the Observatory volunteers have received a CLM 205 from CALM Como. Please do not fill these out, you should complete the Observatory's version instead ASAP. Contact the Observatory if you need us to mail one out to you. It is vital that that these are completed for the Observatory's records, then we will forward them to CALM Head Office in due course.

Night Tour Attendances - UPDATE

A late tour of students from the Goldfields has swelled the final tally of visitors for the 1997/98 Night Tour season to a record total of 4246! This represents a growth of more than 1% on the previous record which was set last year and is 93% higher than was achievable before we employed volunteer assistance. Thank you all for the fine effort which made this a reality, we could not have achieved it without you.

In addition to the night tour visitors, the observatory has also been host to nearly 1300 visitors on the regular Sunday afternoon tours and over 3400 visitors from tours by schools and other community groups.

Telescope Practice Nights

The first of the expanded format telescope practice nights, attended by 14 volunteers, proved to be an outstanding success. The evening commenced with a very interesting and informative talk and slide presentation titled "The Basics of Radio Astronomy" by Jamie Biggs who, as many would know, completed his PhD in this field. The talk prompted an active question time, which in due course was adjourned in favour of coffee, cheese and biscuits, and socializing.



With excellent sky conditions prevailing, nine people then ventured up to the VOF and the 16" telescope to hone their skills at telescope handling, finding objects (<RNGC> 5-1-3-9 <ENTER> <GOTO>) and general navigation around the sky. As a further point of interest, Bevan had brought along his Astroscan telescope (at Greg's request) which was made available for viewing and appraisal. For those who are not familiar with the Astroscan, it is a small richest-field reflector with a novel ball type mounting system (it looks like a red bowling ball with a short tube sticking out of it). After a fruitful and enjoyable time, most people had departed by about 11.00pm.

This month's training night, to be held on **Monday July 20** and commencing at 7.00pm, will feature a talk and slide presentation, as well as a hands-on demonstration of astrophotography by Vic Levis. Weather permitting, Vic's aim is to provide other volunteers with a practical introduction to basic astrophotography, then go into the darkroom to develop the photographs which were taken. This will enable participants to take home and show off the results of their night's efforts.

All volunteers are welcome to attend the slide show and talk, as well as any ensuing telescope practice, but due to limited facilities the practical astrophotography session will be restricted to eight people. **These will be accepted strictly on a first-come, first-served basis**, but those who miss out this time will be offered the chance next time - perhaps on next month's training night. If you are one of the lucky eight, you will need a 35mm SLR camera and lens(es), a lockable cable release, and (if possible) a tripod. Vic will be supplying the appropriate film, but it is preferred if you can BYO camera (although the Observatory does have one, maybe two, that can be used). Additionally, it is envisaged that this training session will be a little longer than normal, so your punctuality would be appreciated in order to ensure a prompt start. As per usual, would you please contact **Greg Lowe** on 9293 8255 for further information and to confirm your place for the evening.

In the Eyepiece - Lagoon Nebula

M8, also called the **Lagoon Nebula**, is one of the finest of the diffuse nebulae. Its discovery is generally credited to Le Gentil in 1747, though it was recorded as early as 1680 by Flamsteed, who described it as a "nebulosm" preceding the "Bow of Sagittarius".

Visible to the naked eye as a glowing patch, M8 is an excellent object for either binoculars or telescopes, covering an area of sky which is twice the apparent size of the full Moon.

Running through the middle of the nebula is a prominent curved dark lane which gives the appearance of a lagoon. It is from this feature that the object derives its name, which was probably first used by Agnes M. Clerke in her book *The System of the Stars* in 1890.

Encompassed in the eastern half is the star cluster NGC 6530, which contains about 25 stars of 7th magnitude and fainter. Although not necessarily appearing to be associated with the nebula, these stars are known to have formed from the surrounding gas. Contained within the cluster and surrounding nebulosity are about 18 erratic variable stars, which appear to be flare stars and T Tauri type irregular variables.

The western side of the nebula is dominated by two main stars, the brighter of which is 6th mag, 9 Sagittarii. It is this star which is considered to be the chief illuminator of the nebula.

A remarkable feature of the nebula are a number of dark Bok globules which appear in long exposure photographs. These are in the order of 7000 - 10000 AU in diameter and are believed to be protostars in their earliest stages of formation.



FACT file

Name :	M8
Type of object :	Cluster w/nebulosity
Other names :	NGC 6523
Constellation :	Sagittarius
RA :	18h 4m 01s
Dec :	-24° 15' 52"
Magnitude :	5.0
Distance :	5000Ly
Size :	35.0'x50.0'
Dimensions :	50x70Ly
NGC Description :	!!!,vB,eL,eiF,w L Cl

"...myriads of low-mag stars and a few brighter units resembling somewhat the Pleiades, involved in the wide wastes of incandescent hydrogen and helium, overflung with dark absorbing patches.....A naked-eye wonder." C.E.Barns

Annular Solar Eclipse - February 16 1999

The Observatory is in the process of arranging a number of public tours to the Greenough region to observe the annular solar eclipse next February 16. Volunteer assistance will be needed for these tours, with transport and meals being supplied by the Observatory where this is required. Would those who are interested in assisting on any of these tours please contact Jamie Biggs. Further details will appear in this newsletter as they become available. Due to lack of space in this issue, details about the eclipse itself have been held over until the next month's newsletter.

Archiving Volunteers Reach Milestone

Brian Goynich and Tricia Turner, who are our archiving volunteers, have recently reached a milestone with the completion of a major task. The task completed was to proof-read the Observatory archival material contained in the



Buildings of the original Perth Observatory

draft of Mrs Muriel Utting's (our Honorary Historian) latest book, which is the fifth in a series about the history of Perth Observatory. It details the times when Hyman Spigl was Government Astronomer (1940-1962).

Completion of this task has taken a considerable amount of time and dedication by Brian and Tricia, who have now moved on to assist in the preparation of an index for Mrs Utting's four previous books. This work will also play a vital role in the establishment of a list of keywords in the (long overdue - but Jamie's working on it) archiving project.

New Enclosure for 16"

Site preparation for a new telescope enclosure to accommodate the 16" has recently been completed. Located between the VOF and the Astrograph dome, the site has been cleared of trees, trenches dug for electrical cabling and two-meter deep holes drilled (thanks to Night Tour volunteer and drilling rig operator Vic Levis) in order to erect the pier.

The new enclosure is due to be constructed soon, and will possibly be completed before the next night tour season. Although there are no firm plans at this stage, it was convenient to also prepare a space for a second new building to house another telescope.



Upon completion of the new enclosure, the C14 will be returned to its former domicile in the existing domed building, relieving congestion in the VOF.

Other Observatory News

- **Jamie Biggs** has just returned from Adelaide where he attended the annual ASA conference, which is a professional conference for Australian astronomers, and a meeting of the National Committee for Astronomy.
- **Peter Birch** is on annual leave, which he is spending in Canada and Alaska. His last words before his departure were "See you in the springtime!".
- A new **computer based cash register** equipped with a bar code reader has been purchased for use in the sales area. Its acquisition will make inventory work easier as well as provide valuable information about sales and revenue.
- Next February NASA will be launching the **Stardust mission** which will visit **Comet Wild 2** and return a sample of the comet to Earth by the year 2006. To mark this historic mission, a JPL initiative is including the names of more than one million people from all over the world on the spacecraft. If you would like the Observatory to submit your name for inclusion on the Stardust mission, would you please give us notification no later than July 31.

One Small Step

I was born in the year that manned spaced flight began, so I guess it was inevitable that my boyhood sense of adventure was captivated by the unfolding of the world's fledgling space programs and the Great Race to the Moon. With the Cold War at perhaps its deepest, the wireless gave an unashamedly Western bias, but nonetheless a constant stream of reports gave news of the latest launches and who was ahead in the race.

Although I do have early memories of the Mercury and Gemini missions, it was the announcement of the larger Apollo missions which really gripped my imagination. I marvelled when newspaper reports told me about new Saturn V stack which, with a height of 363 feet (more than 110 meters), was taller than Perth's tallest "skyscraper" at the time. There was even a depiction of a Saturn V stack next to the T&G Building in St George's Terrace, just to prove the point.

The first crewed Apollo flight, Apollo 7, signified a tremendous advance toward the goal of a manned lunar landing, but it was the subsequent launches of Apollo 8 and 10 which quickened the pace of my expectation (Apollo 9 was an Earth orbital test of the lunar module). My imagination stretched to comprehend a tiny spacecraft as it spanned the yawning chasm between Earth and Moon, yet I also felt regret for its precious cargo of three humans who travelled an incalculable distance only to return without being able to claim the prize. In spite of these thoughts, it still seems incredible to my mind that the prize was attained just a scant nine months after Apollo 7's important first steps.



July 16 1969 was a Wednesday. It was also Moon-Launch Day, and that morning there was a souvenir lift-out in *The West Australian* which detailed the schedule for the historic mission. In Perth time, the launch from Pad 39A at the Cape Kennedy Space Center was to occur at 8:32pm, so that evening after dinner was finished (and the dishes done, of course) I sat with my family by the radiogram to listen to the live broadcast. I wonder in how many other homes that scene was repeated, a young son clutching a newspaper lift-out and with eyes full of dreaming, counting down though the last seconds with launch control - 10, 9, 8, 7, 6, 5, 4, 3, 2, 1... blast-off!

At speeds of up to an incredible 24500 mph (over 39400 km/h), it took more than three days for Apollo 11 to arrive in lunar orbit. Orbiting the Moon for an extra day while preparations occurred, it wasn't until shortly after midnight on Monday morning (Perth time) that LM *Eagle* separated from *Columbia* for the final descent to the lunar surface below.

Snuggled asleep in the wee small hours, I was unaware of the moment of touchdown, but I awoke to a world agog to the news that, at 3:17am WAST, the *Eagle* had landed and man had reached the Moon!

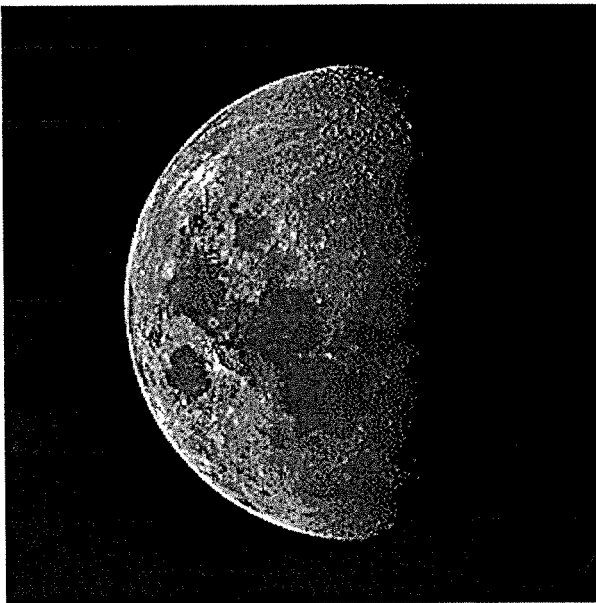
The day of the Apollo 11 landing is one that many who were aware at the time can recall where they were. I have long forgotten the reasons why, but that day I had a "sickie" from school. Mum was visiting a friend from church who had a TV, so I had the good fortune to be able to witness those memorable scenes as Neil Armstrong and then "Buzz" Aldrin walked on the surface of the Moon. I stared in awe at the flickering black and white images on the screen before me, of Neil Armstrong stepping off the ladder and crackling those historic words...

"That's one small step for man, one giant leap for mankind."

That evening, I gazed at the fat crescent Moon for a long time, enthralled in the possibility that as I looked up and waved, another human could have looked down and waved at me. Not understanding how the Moon could be upside-down (when viewed from the Southern hemisphere), I was a bit confused as to where Apollo 11 had landed, but nonetheless I imagined I could see where they were. I thought also of Mike Collins and his lonely sojourn in the Command Module *Columbia*, necessarily denied the opportunity to walk on another world so that his crew-mates could return safely home.

Several months later, as the Apollo 11 crew visited Perth during their victory tour of the world, I was among the thousands of well-wishers who lined Great Eastern Highway to welcome these pioneers to our city. At our vantage point at the Belmont Fire Station, I was honoured when a generous fireman invited me to sit in one of the fire engines and sound the siren as the limousine carrying Armstrong, Aldrin and Collins swept past. Did I see them turn to wave at me in return?

The Eagle has landed *where???*



Courtesy: Antonio Cidadao

very easiest to locate. In this image of the nine-day old Moon, the Sea of Tranquility is one of the most obvious features, it is the dark patch forming the "head" of the "Rabbit". Immediately below it is Mare Serenitatis (Sea of Serenity), which forms the "body", while the left and right "ears" are formed by Mare Fecunditatis (Sea of Fecundity) and Mare Nectaris (Sea of Nectar) respectively. The Apollo 11 landing site is located just to the north of the tip of the promontory which protrudes into the Sea of Tranquility. Note that this image corresponds to a naked eye view from the Southern hemisphere, with North at the bottom and East to the left of picture.



Source: <http://www.nasm.edu/APOLLO/AS11/AS11-40-5867.html>

Often disregarded by experienced astronomers, the Moon remains an object of fascination for many people's first view through a telescope. Even using binoculars, a stunning vista of smooth "seas", bright rays and rugged craters and mountain ranges springs into view

Closing in with a moderate sized telescope reveals intriguing detail with the craters revealing terraced sides and soaring central peaks. Larger telescopes and higher magnification allow the exploration of subtle details on crater floors, while snaking valleys give tantalizing suggestions of a watery past.

An added interest when observing the Moon is to try to locate the landing sites from the plethora of manned and unmanned missions which targeted our nearest neighbour during the sixties and early seventies. A total of at least 28 US and Soviet missions either landed or impacted on the Moon during this time, with the Apollo missions from 1969 to 1972 easily being the most famous.

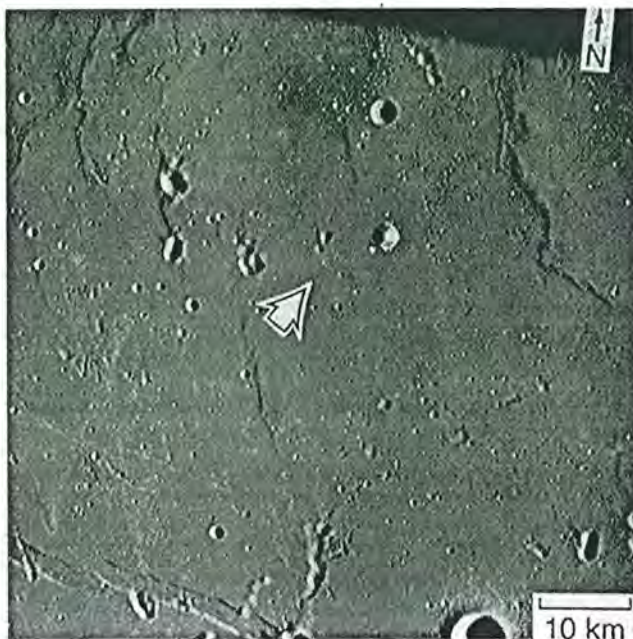
Even low power (I used 36x) is sufficient to at least roughly identify many of the sites, with the Apollo 11 site on the edge of Mare Tranquillitatis (Sea of Tranquillity) being among the

In this Earth-based telescopic image, the southern portion of the Sea of Tranquillity is seen in close-up. An arrow indicates the position of the Apollo 11 landing site, which is located north west of a bright-rayed crater named Moltke. Other craters in the vicinity of the landing site are Sabine to the west and Maskelyne to the north east.

The two large craters in the lower right of the photograph are Theophilus and Cyrillus, with Theophilus being the younger crater as its rim truncates that of Cyrillus. Theophilus is known as a ring mountain, and it is 100km in diameter and at least 4400m deep. The massive central peak towers 1400m or more, while the walls of the crater rise 1200m above the surrounding plain.



Coincidentally, the Apollo 16 landing site also appears in this photograph. The darkened crater partially cut off by the lower edge of the image is Abulfeda, which is immediately south west of the partially disintegrated Descartes, the crater which gives its name to the region. Apollo 16 is located due north of Descartes at the eastern edge of the dark patch below the twin craters Lindsay B and C.



The photograph at left was taken from the Lunar Module *Eagle* and includes both the landing site (arrowed) and the Command/Service Module *Columbia*, which is to the upper right of the arrow. The crater Moltke is cut off at the base of the picture.

To the north and west of the landing site are secondary craters which are believed to result from ejecta thrown out of Sabine Crater. An interesting point is that the crater located to the north of the landing site is one of forming an almost straight line running east-west which are named after Apollo 11's crew members. The one pictured is Collins, while Aldrin and Armstrong are located out of picture to either side.

Two other landing sites are shown in these images. In the top image, the hard-landing probe Ranger 8 is located due north of Moltke near the top of the frame, while the soft-lander probe Surveyor 5 is to be found in the image at left. It is located near the top of the picture directly above the arrow and is due west of Collins Crater.

Field Stop

A common question asked on night tours is whether or not any of the lunar probes can be seen through a telescope. I could tell you the simple answer, but let us work it out for ourselves. Without going into unnecessary detail, the maximum theoretical resolution of a telescope is derived from the Dawes' Limit, which is simply expressed as $114/d$ (where "d" is the diameter of the telescope objective in millimeters). Therefore, assuming perfect conditions (which are rarely, if ever, achieved), the maximum theoretical resolution of the 16" telescope is:


$$114 / (16 * 25.4) = 0.28 \text{ arcseconds}$$

But how small an object does 0.28 arcseconds equate to at the distance of the Moon in a measure we can understand? This is easily calculated by converting arcseconds to radians, then multiplying by the average lunar distance. So, the smallest details we can resolve with the 16" telescope at the distance of the Moon is:

$$(0.28/3600) * (\pi/180) * 384000 = 0.521 \text{ km or } 521 \text{ meters}$$

Even the currently largest conventional optical telescopes (the Keck 10m) in the world would only be able to resolve features down to about 21 meters. Given that the maximum width of the typical Apollo descent stage is marginally less than 4.3 meters, the answer is quite obviously a resounding "No"!

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



Please note that this is only a draft copy and it will be modified by others before it is published in the CALM annual report. But remember... you read it here first!

Perth Observatory Annual Report

DRAFT COPY

MISSION AND OBJECTIVES:

To meet the demand for general and specialised up-to-date Astronomical information and services from the public, business and educational community while furthering scientific research in Astronomy in conjunction with other Astronomy institutions and universities.

HIGHLIGHTS:

- ◆ Very favourable external review of Perth Observatory astronomy research
- ◆ 4 supernovae discovered
- ◆ New 16" aperture telescope operational for visitors star viewing
- ◆ Record numbers of visitors for star viewing programme
- ◆ Successful Open Day conducted

This year the most significant event concerning Perth Observatory was a review of its scientific activities. Four external referees (three from overseas) reported on the merit of our astronomical research. Their responses were highly complimentary and they indicated the Observatory's research was impressive, significant and extremely relevant. As a result of this review the Observatory now formally constitutes a research group within the CALM Science division.

Several discoveries were made during this period. Four supernova star explosions (designated SN1998A, SN1998E, SN1998X, SN1998ce) were discovered in our ongoing search for these objects using the 24-inch Lowell Telescope. Also, the change in light output in supernova 1998A was monitored and found to be unlike similar objects, except for supernova 1987A - the brightest supernova discovered for over two centuries. Accurate positions, that not only confirmed their detection and assisted the follow-up observations by many other astronomers, were acquired for supernovae 1998A and 1998ce using the 10" robotic telescope.

Our ongoing collaboration with astronomers working in Tasmania, the Netherlands, Chile (based in the US) 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 events we find details about this unseen matter which poorly-tested cosmological theories suggest compose a large proportion of the matter in the universe. Two scientific papers concerning this work are about to be published. Perth Observatory's efforts in this collaboration has also been rewarded by the donation from our US collaborators of a new set of optical filters and an advanced work station to facilitate rapid data reduction. This work was also facilitated by the upgrade of the electronic camera employed with the installation in it of a blue-sensitive detector and the improvement of an auxiliary camera that aids the tracking of the Lowell Telescope over long-duration time exposures.



A 16-inch aperture Schmidt-Cassegrain telescope was also acquired in this period. It was temporarily housed in one of the visitor's observing facility enclosures. Site works were commenced for a new enclosure in which it will be permanently stationed. This telescope, with the largest aperture in our visitor's facility, has proved very popular with members of the public attending star viewing sessions. In the near future it will be automated and conduct scientific observations outside the times of the viewing sessions.

Another instrument acquisition has been a 12-inch aperture Schmidt-Cassegrain telescope donated by Kent State University (Ohio, USA) in order to facilitate Perth Observatory's participation in project ASTRONET. This project will enable participating students from around the world to acquire astronomical observations during their class time. For example, the operation of a telescope in Perth enables students in the US to observe in their day time, and reciprocal arrangements will exist for WA students to enable them to observe with the Ohio facilities. In due course other telescopes around the world will become involved. This should prove to be a very educationally rewarding experience for students as the Science Education group at Edith Cowan University will also contribute their expertise to the project.

Perth Observatory workshop staff have not only worked on the above mentioned instruments but also converted a telescope for viewing the Sun on a projection screen. This method ensures the safety of the observers and enables the Observatory to conduct astronomical observations of our Sun, the nearest star, in the day time for the benefit of visitors.

Automation of the Observatory has also proceeded with the commissioning of a rain and cloud sensor. They have been tested and calibrated, and by using data from the Bureau of Meteorology automatic weather station on-site predict the cloud cover. This information can now be accessed across the Observatory's computer network so that enclosures can be opened and closed, telescopes parked or reactivated, depending on the presence of rain or cloud. This facilitates observation and data acquisition with minimal operator intervention.

Numbers attending the Observatory's star viewing programme in 1997/98 set new records. The attendance of 4,246 visitors for the year was a new record, and in January, during an long interval of clear weather, a new monthly record was set when 757 visitors attended. Also, the level of customer satisfaction remained high with over 98% satisfied with their visit. Furthermore, the effectiveness of the observatory remains high because the number of people who visited the Observatory, that called our information service, attended talks, or attended an Astronomy field night tallied over 21,800. Also, an estimated 6,000 people telephoned the Observatory for information and others were informed of Astronomical events in 110 radio, 4 television, and 74 newspaper interviews.

Over 1,100 visitors attended Perth Observatory's Open Day - the first it has conducted in living memory. This event was held on the day of Bickley Valley Harvest Festival and was assisted by a successful grant application from the federal Department of Industry, Science and Tourism's National Science Week initiative. Over 700 day time visitors enjoyed such activities as a safe view of the Sun (and its sunspots), guided tours of the facilities and "surfing the net" to astronomy sites. Star viewing with our telescopes was enjoyed by over 400 of our visitors in the evening.

The "Sun and Stars" Festival held in conjunction with Yanchep National Park continues to grow in popularity. Over 1,900 visitors enjoyed the park environment and a safe view of the Sun with our solar telescope in the day as well as a view of the night skies with the Observatory's transportable telescopes. We also brought Astronomy to rural areas by providing telescope viewing at many schools and National Parks around the state. All up, a new record of over 6,800 people viewed the stars with observatory telescopes that were transported to their locality for one of these "Astronomy field nights".

The volunteer programmes continue to provide valuable assistance to the star viewing sessions, astronomy field nights and history archiving project. During this year another project was organised in which suitably trained volunteers can assist with research activities such as observing and data analysis. For example, volunteers in this programme made a significant contribution to the calibration of the Observatory's cloud sensor.

The growth in the number Observatory activities and achievements attests the hard work and skill of both our permanent and volunteer staff.