MACARTHUR ASTRONOMICAL SOCIETY Inc.

Journal

PRIME FOCUS

Volume 2 Issue 2 **March 1997**

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Contents of this Issue:

President's Report

Welcome to all our members and guests. Firstly I would like to thank all of those who attended our first 1997 meeting and made the evening a success. All members of the committee wish to thank those who nominated them. We hope to make the Society bigger and better than last year. Also thankyou to Eric who conducted the election and Peter for his very interesting talk on Astrophotography.

Committee News

Congratulations to all members who were re-elected and a special warm welcome to our two new committee members Karen Bates (Social Secretary) and Peter Druery. It is hoped with now seven of us in the brains trust we can make the Society more organised and go where no Society has gone before. The Committee consists of:

President: Phil Ainsworth
Vice President: Noel Sharpe
Secretary: David McBean
Treasurer: Robbie Charlton
Editor: Bob Bee
Social Secretary: Karen Bates
Peter Druery.

President's Report (cont'd)

Speakers

Speakers lined up for this and future meetings are:
Chris Barnett --Computers in Astronomy
Jonathon Nally of Sky and Space (still needs to be confirmed for April/May).
If Jonathon is unavailable yours truly, if we have our slides, will present a basic talk mainly on the Solar System.
Other guests include Ron Royal of Sydney Observatory on how to make a scope.
Col Bembrick--Geology of Mars.
Melissa Hulbert--Comets Hale-Bopp & Hyakutake.

Events

March 15th - Star Camp at Carol's.
March 18th - Talk at school by Eric.
April 12th - Talk with School.
May - 2nd Camp at Carol's (date to be confirmed).
May -Telescopes at Broughton School (Date to be announced).
??May--Ilford.
June/July Open Day/Night with SETI.
Special guest is hoped to be the well known and highly respected Seth Shokak of SETI from the United States (Knows Carol Oliver quite well).
He is one of, if not the most entertaining lecturer I have ever heard speak.
More in next issue and accurate dates.

Latest News

Mars Pathfinder/Global Surveyor are well on their way to Mars and will reach their destination respectively July 4th and Sept. Both craft are running smoothly and hopefully with no Galactic Ghoul to prevent the first landing on Mars in over 20 years.
When the spacecraft start to send us the first pictures and they are released, Prime Focus will have all the latest information.

Shuttle News: --Hubble ST successfully repaired and Space Station MIR revisited and an exchange of cargo and people.

APOLLO (An Overview)

From 1965-1973 the Apollo spacecraft went from an early disaster to a giant success story, and later another problem to a very successful finale.

President Kennedy in the height of the cold war with Russia, set out a challenge to place a man on the Moon before the end of the decade.

Each Apollo mission made advances in stages. Basically stage one was to be able to orbit the Earth, Stage 2, was orbit the Moon, and finally stage 3 to land and return a man from the surface of the Moon.

For the landing and taking off from the Moon a small spacecraft was designed and called the Command Module (CM). The Command Service Module (CMS) remained in orbit around the Moon with one astronaut piloting the craft and two flying down in the CM and walking on the surface.

The vehicle needed to propel the astronauts toward the Moon was a large Saturn V rocket which needed three stages and three rocket motors to launch it into its trajectory towards the Moon.

Stage I lifted the rocket to an altitude of 62 kms, Stage II to 185 kms and the third to Earth orbit and capable of escape velocity.

A massive effort was put in by all the people in NASA to have a 99.9% success rate, that meant Astronauts would have a 999/1,000 chance of coming back alive (pretty good odds to me). The success rate in this highly risky business was very good with only three deaths which occurred with Apollo 1 and a near catastrophe with Apollo 13.

President's Report (cont'd)

Apollo 1-6

Last issue I asked if anyone knew the Astronauts who flew in Apollo 1 as it was 30 years Jan 27th 1967. The Astronauts were Virgil Grissom, Ed White and Rod Chaffee.

The Apollo era started back in January 27th, 1967 after many successful Mercury and Gemini flights (articles on them in a later issue after the Apollo series).

In 1967, for Apollo 1, the three Astronauts Grissom, White and Chaffee started conducting tests aboard the CM on top of the huge Saturn V rocket and checking to see if the CM could operate on internal power alone. For 2 hours the men worked with the hatch open before they closed and pressurised the cabin with a 100% oxygen mixture. 3 hours and many practice simulations later a surge in the electrics caused a short circuit and a fire broke out in the CM. The ground crew were there within 5 minutes and had a difficult time in opening the hatch which had non-explosive bolts and were very difficult to open in an emergency, unlike the Mercury and Gemini which could be released easily.

Unfortunately when the ground crew finally unlocked the hatch all three astronauts were dead.

Only 2-3 weeks prior Astronaut Grissom had been interviewed and stated,

"If we die, we want people to accept it. We're in a risky business and the conquest of space is worth the risk of a life."

After a lengthy delay and over 1,300 changes to the CM including a easy release hatch in the CM, more launches were made and Apollo's 2-6 were all unmanned until Apollo 7 in October 1968.

In next month's Journal stay tuned for APOLLO 7, the first Apollo manned flight.

Phil Ainsworth (President) ■

Lost in Space

I thought the above title would be a most appropriate way of starting this article as it describes how I feel when observing from very dark skies.

The Society's observation sites at Wilton, Bargo and Bringelly are the most accessible we have at the moment. However, the skies further out, say at Ilford, Taree or a beach somewhere on the South Coast definitely offer more opportunities and have ultra dark skies.

What is meant by dark skies? Basically, no light pollution, no street lights, no suburbs or freeways. i.e. completely without light from anywhere except from the stars above.

From our local backyards we can identify a fair amount of the brighter stars and constellations. However, when observations take place from dark skies, even the more experienced astronomers in our society will admit to getting a little 'lost in space'.

I would now like to describe my experiences as follows:

My first introduction to what things really look like was at my friend's property at Cuttabri, a small township about 1.5 hours north of Siding Spring. The sky out near the Pilliga scrub is the darkest I have ever seen. I can observe horizon to horizon with zero light pollution. To describe the heavens above as anything less than breathtaking would be an understatement in the extreme.

My previous knowledge of the night sky consisted of the Moon and the Southern Cross. However, since joining the Society 12 months ago, my knowledge is such that

Lost in Space (cont'd)

I can now recall my recent experience with confidence. So with your indulgence, I'd like to share one of those events with you.

On New Years Eve (31/12/95) I was fortunate enough to purchase my TASCO 114mm reflector. I put it to the test by observing at Rosewood, my friend's property as described earlier. What I saw was the following:

A) The Southern Cross with thousands of stars surrounding it. In fact I could only tell it was the Cross as the Coal Sack was huge and it was just like someone had erased part of the sky.

B) Orion, or as I previously knew it, 'The Pot', was unmistakable and I saw a fuzzy spot on its handle. What was that?

C) Taurus. This is a memory I'll always cherish as the red flaming eye of Aldebaran was very distinct. The constellation was very nicely placed for viewing with many bright stars within it. Stars you never see here.

...even the more experienced astronomers in our society will admit to getting a little 'lost in space'.

Recently, in October last year, I visited my friends with my new scope - the 200mm Meade - and prepared myself for a long night observing.

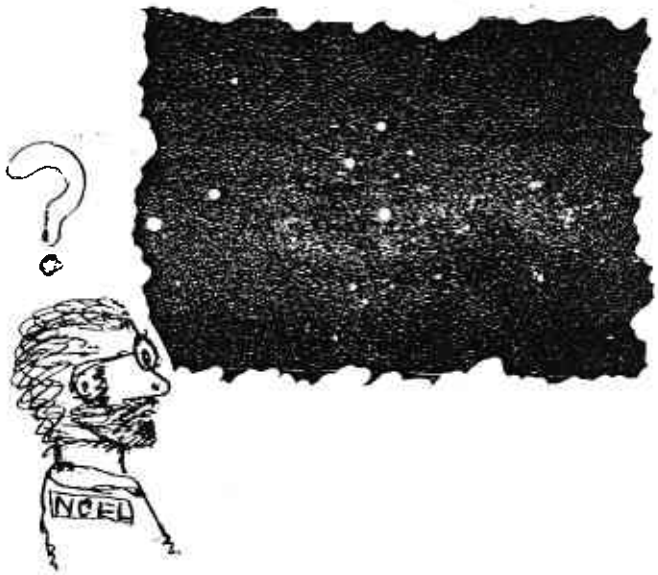
I'm rather embarrassed to admit, but the night sky overwhelmed me. I became confused and eventually unmotivated. The reason was that I was trying to locate objects that I hadn't located before, like the Crab Nebular, the Beehive Cluster and Eta Carinae. But every time I put eye to lens I'd see millions stars and just could not get my bearings. It was as if my telescope had expanded its aperture by several inches.

I gave up and rested back on my chair, staring at a starwheel, getting confused and getting nowhere fast. I was about ready to pack it in, sell my scope and quit the club. Boy, was I in a bad mood that night, but glancing upward one last time, I noticed the Milky Way which was now high above. I saw a huge spread of light. I aligned my telescope and saw vast clouds of gas with large dark lanes streaking across it. It took the entire field of view to observe and then some. Still I had no idea what I saw, but I do know now. This sight of Eta Carinae made my night worthwhile and I retired at 4am.

I suffered from a lack of confidence that night as everywhere I looked I got lost and confused. So, what's the answer?

I put this challenge to the more experienced observers in the Society to answer my question in the next issue and rescue me from getting 'Lost in Space'.

Will Robinson
(aka Noel Sharpe - Vice President) ■



From The Editor's Desk

Who says there isn't a Santa Clause? Shame on you!

Recently, in an endeavour to improve the visual presentation of Prime Focus, while observing copyright laws, I wrote to the Publicity Officer of the Anglo Australian Telescope asking (OK, let's face it - pleading) if they might have any cast off photos I could use, with acknowledgement, and without fees. I enclosed a copy of the last issue in 1996 to illustrate the standard of Prime Focus and what we were trying to achieve. No harm in asking, I thought.

...amateur astronomy starts at home.

In my February stocking, I received a bundle of *beautiful* B&W photos of a variety of astronomical objects. With it was a letter from (at this stage I sat down with a crash) David Malin himself. As well as offering the enclosed photos for use without fee (with acknowledgement of source, of course), he also graciously consented to the copying of photos from his publications under the same conditions. (In B&W of course. As soon as Prime Focus graduates to colour, the consent is withdrawn.)

Folks, the skies have opened in more ways than one. Hopefully, you will see and appreciate a new dimension to Prime Focus from now on. (Two of David's photos are included in this issue). As I said to David in a prompt reply letter - Thank You!

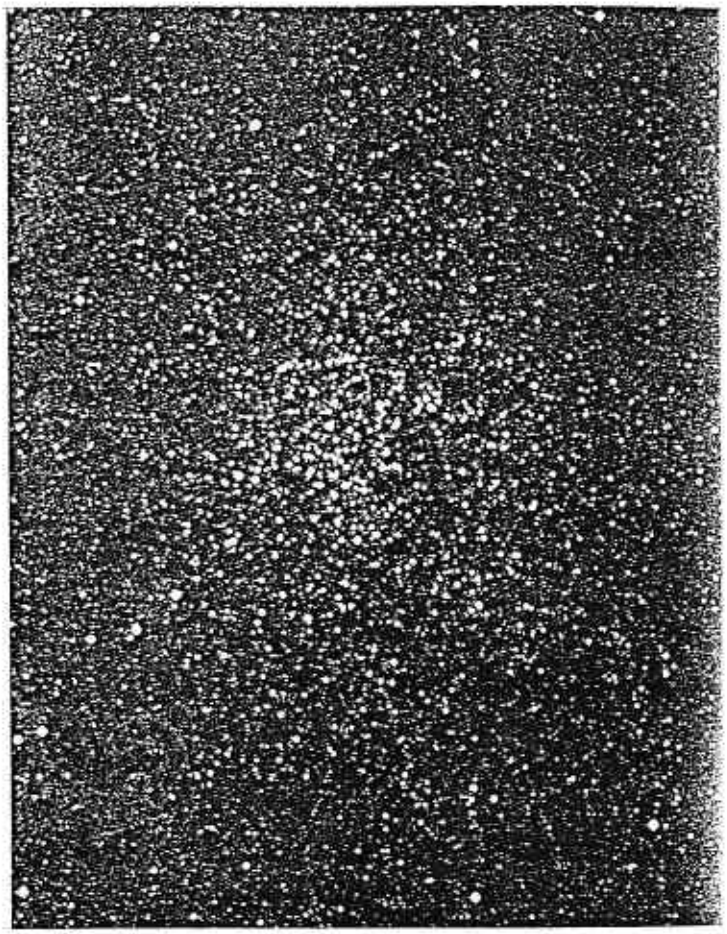
BUT... that doesn't release you, the MAS members, from my request for ***your*** photos. As I am sure David Malin would agree, amateur astronomy starts at home.

If there is only room enough left in a draft layout of Prime Focus for one photo, and I have a choice of a member's photo or one of David's, I assure you that the member's photo will be chosen. Fair's fair.

So start them coming. Hopefully I will receive some great shots from the Camp Constellation of last weekend.

Good Seeing,

Bob Bee ■



NGC2477 - A large cluster of about 160 stars, in Puppis. Visible in Binoculars like a loose globular. About 4200 l.y. away. Can you spot this in March and April high in the North West?
(Photo by David Malin/AAT.
Used by permission)

Treasurer's Report

Macarthur Astronomical Society Inc. has over the year increased its membership from nil to 51 Members. This in turn has brought our finances, with the sale of star wheels, to $1091.64, with of course bank interest.

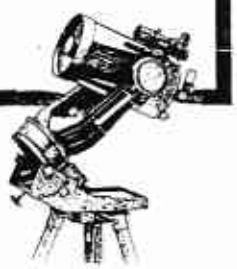
The purchases of star wheels and 'Astronomy 1997' books for the sale to members was a total of $182.00. The monies for the books has not come into Society.

Our expenditure over the past twelve months has been $637.29, which takes into account our registration and insurance as well as office expenses.

All this has left us with an amount of $454.35 in the bank for the start of the year. This amount is better then we had expected for the year.

Profit & Loss Statement
31/1/96 Through 6/2/97
Category Description

INCOME/EXPENSE			$
INCOME			
Business			70.00
Investment			0.00
Membership			470.00
Subscription			550.00
Income - Other			1.64
TOTAL INCOME			1,091.64
EXPENSES			
Bus. Expenses:			
Bank Chrg		2.29	
COGS:			
Purchases	70.00		
TOTAL COGS		70.00	
Insurance		223.00	
Other Exp.		230.00	
Bus. Expenses - Other		112.00	
Total Bus. Expenses			637.29
TOTAL EXPENSES			637.29
TOTAL INCOME/EXPENSE			454.35



The Learning Curve

I am hopeful that this will become a regular feature in our Journal, but only if it is received well. It's my intention to share with you my experiences in things 'astronomic'. If you like, you could call this "novice corner", for I know personally of many members who might benefit from reading about my exploits.

I had two telescopes when growing up. I remember the last one I had was very good. It had an adjustable tripod and was a refractor of 60mm diameter. That's the size of the lens in front of the telescope tube. Like binoculars, you observe from behind.

That telescope was for my 16th birthday and is now a distant memory. I was interested in astronomy but never used the scope to look at the night sky. For the next 20 years, music was my passion and I played drums in several bands, even became professional for a while, but that's another story.

I fell in love with a TASCO reflector. It was huge, and had weights and cables.

Playing music ended for me in September 1995. After a few months was looking for a hobby, something to occupy myself with outside a demanding working life. I thought about golf, chess, or I might even try my hand at writing. However, I've always noticed a clear night sky. It seemed the time was right to learn more about astronomy and with this in mind, I bought a telescope.

What Telescope To Buy And Where To Buy It!

In consultation with the Minister for Finance...the wife... I budgeted for about $300 to $400 maximum. The choice in that price range is extensive in camera stores and Australian Geographic shops. You can even get a pre-loved unit from Cash Converters. However, please take care when purchasing second hand goods without warranty. I will add at this stage I had no knowledge of shops that specialise in telescopes. The three major city stores are York Optical, The Binocular & Telescope Shop, and Astro Optical Supplies in Crows Nest.

I fell in love with a TASCO reflector. It was huge, and had weights and cables. I had refractors before but when I used to look through the scope, the view was very small and dull. I believed that the reflector, being a huge 4.5 inches of mirror would give me a superior viewing. i.e a huge field of view when looking through the scope. This is absolutely false, as the eyepiece determines field of view.

At $699, the reflector was way outside my budget. It always pays to shop around and I got really lucky when I spied the same scope in another store for $499. So with great excitement, I purchased the TASCO 11TR 114MM Reflector, around December 1995. For that price, it had the following features of which I had no knowledge whatsoever:

* A very small telescope on top.
* Something called an Equatorial mount - looks really fancy.
* Right ascension and Declination controls.
* Slow motion control cables.
* Weights.
* Clamps, locks, Barlow lenses.

The Learning Curve (contd)

It was a major upgrade on the telescopes I had before and I must say a very big challenge, even just to assemble it. Instruction books were supplied, however, I've learned more from hands-on experience and advice from Eric and Peter which was and is invaluable. At this point the TASCO 114mm (or 4 ½") is the most popular telescope in our Society - about 6 members currently have them.

True, False or Maybe

Q1) When you purchase your scope, you will see what's described on the box. i.e. comets, moons of Jupiter, Saturn's rings etc.

Answer: Not really. It depends on the size of the lens or mirrors and quality. The TASCO 114mm will get you there, but not in colours like on the box and the objects will be very small. However, lunar observation, as well as major deep sky objects like M42 and Eta Carinae will be spectacular.

Q2) What's an Equatorial mount and why is it different to Alt-Azimuth mountings?

Answer: I'll need 10 pages for this, but put simply, equatorials have movement horizontal, vertical and a third movement in an arc. This mount is essential for astrophotography (except for large professional telescopes - Ed) and tracking your sightings at high magnification. Alt-Azimuth is Altitude (up & down) and Azimuth (sideways). Not complicated and easy to use. You need no knowledge of polar alignment, but it has limitations.

Q3) Is a finder scope important?

Answer: You will be lost without one. Absolutely essential for aligning your telescope to an object. Without one, you'd be looking for a needle in a haystack.

Q4) Counterweights - what for?

Answer: Well, in alt-azimuth there are no counterweights. In equatorial they are essential in order to balance the scope to the forces of gravity, so the scope tracks smoothly without backlash on its gearing system.

SUMMARY.

I've covered a lot here but it's essential to understand the basics of the TASCO 11TR 4.5" reflector. It's a fine scope, great features and a reasonable price. MEADE is also comparable as a 4.5" reflector with equatorial mount.

You can improve the scope by buying larger eyepieces which the 11TR will accept at a diameter of 1 1/4". You'll be amazed by what good quality eyepieces will do.

I've included some photographs which describe the basic telescope functions.

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major deep sky objects like M42 and Eta Carinae will be spectacular.

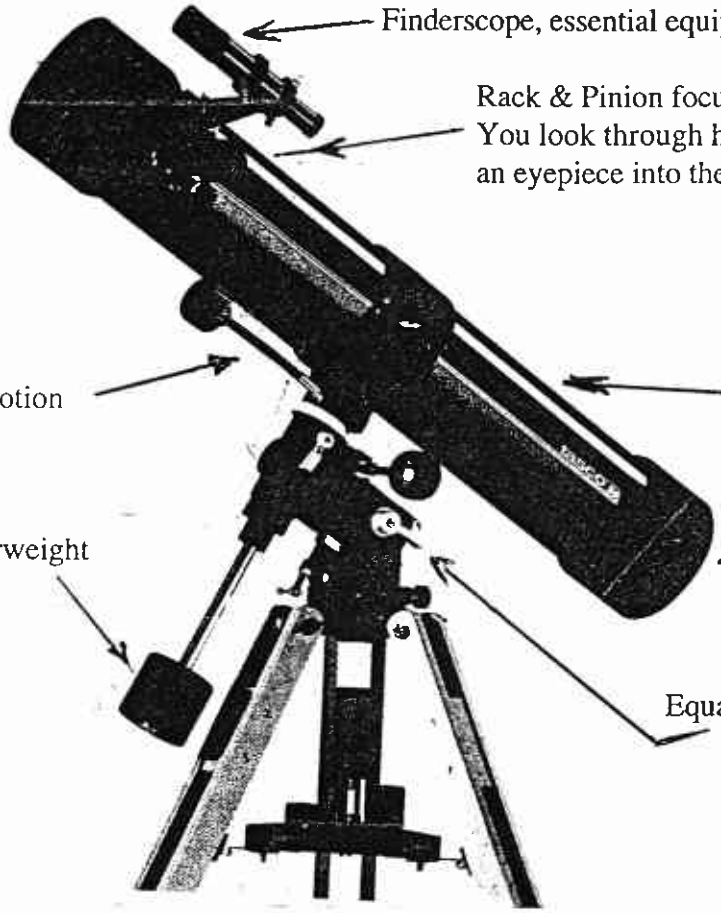
Next Week:

Using the 11TR for the first time.

Remember, if you need help, just ask - or better still, join us for the regular Camp Constellation Workshop.

Noel Sharpe ■

REFLECTORS



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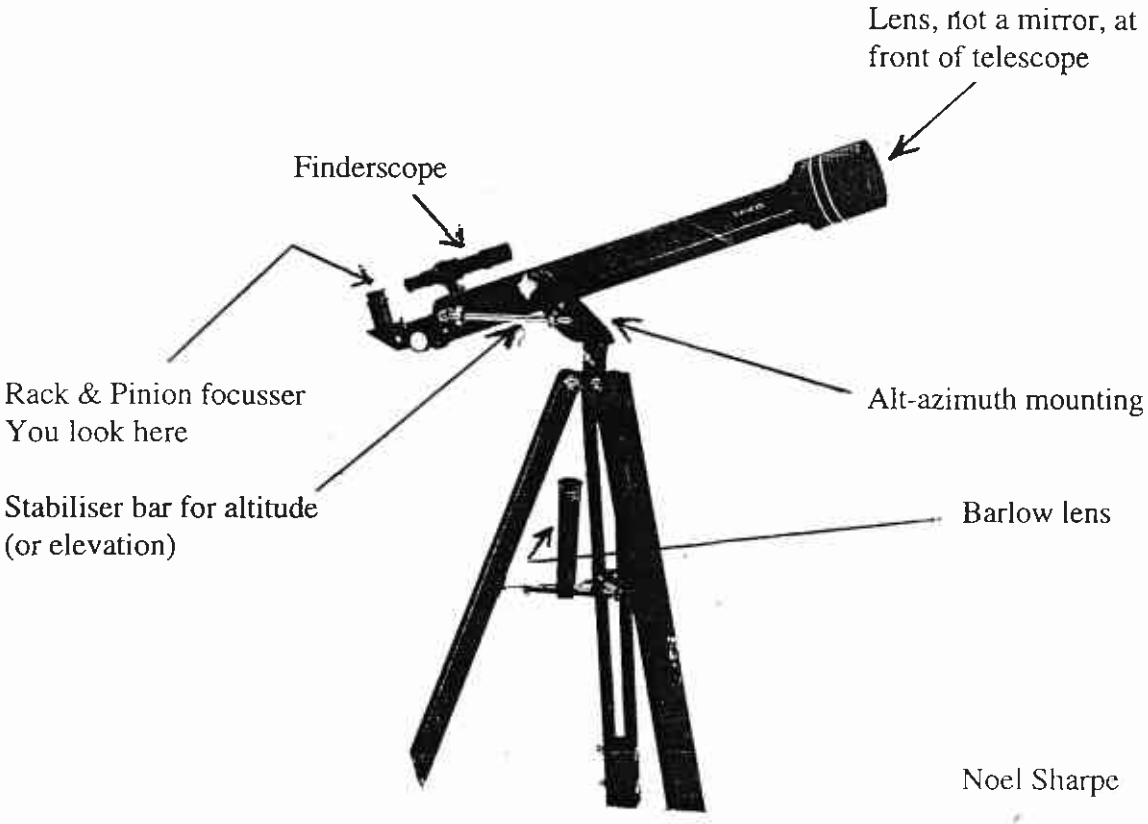
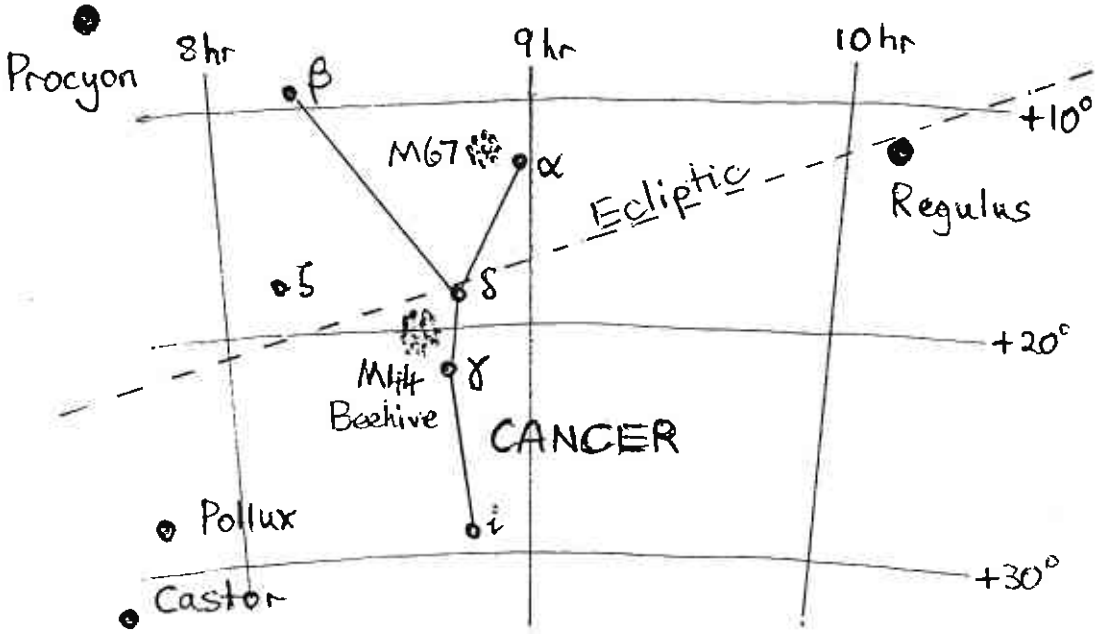


Noel Sharpe ■

Cancer (The Crab)



Not the most spectacular of constellations as bright stars go, the main stars being about 4th magnitude or fainter. Also, the shape of the constellation reminds me more of a 'Y' for Yabby than a Crab.

However, from my second story front balcony, with a street light blazing cursedly in front of me to the north, my faithful 12x50 binoculars were still able to pick out the main stars and, wonders of wonders, the Beehive Cluster. Poetic justice perhaps. Alas, possibly because of too much light pollution, I couldn't spot M67. Better luck at the Star Camp maybe.

The Crab has mythological significance as having given our hero Hercules a good nip on the toe while he was having a dust-up with the many-headed Hydra. For this impertinence, the Crab was squashed under heroic sandal and dispatched to the sky. (Think of it as The Big Nipper! No?)

So, where is it? There is a very convenient triangular area in the northern sky with the pair Caster and Pollux (in Gemini) at one point, and Procyon (in Canis Minor) and Regulus (in Leo) at the other two points.

At this time of the year around 9pm, they are towards the NNE about 45° above the horizon, nestled inside this triangle.

Briefly, the stars of some note are:

α **(Alpha) Cancri** - aka Acubens, the Claw. A white star, 130 l.y. away, mag 4.2. An aperture 75mm+ should show a faint mag 12 companion.

β **(Beta) Cancri** is actually the brightest star in Cancer at 3.5 mag. An orange giant, I is about 160 l.y. distant.

The stars γ (Gamma) and δ (Delta) Cancri are known affectionately as the Northern and Southern Donkeys (Asellus Borealis & Asellus Australis) respectively, if not respectfully. This relates to their appearance of flanking the stable 'manger' (Praesepe) which is better known as the Beehive Cluster.

γ **(Gamma) Cancri**, a white star about 280 l.y. away, is mag 4.7.

δ **(Delta) Cancri**, a yellow giant about 160 l.y. away, is mag 3.9.

Cancer - The Crab (Contd)

ι **(Iota) Cancri,** forming the foot of the 'Y', is also about 160 l.y. away, a 4th mag yellow giant. Just visible in binoculars, and thus easily visible through a small scope, iota has a blue-white companion, mag 6.6.

ζ **(Zeta) Cancri,** a star to the left of the 'Y', forming a right angled triangle with Beta and Delta, is worth a close look with a telescope. Two yellow stars of mag 5.1 and 6.2 are a genuine binary pair with an orbital period of 1000 years. These can be resolved by a small telescope. Yet a larger telescope will resolve the 5.1 mag star as another binary, period 60 years. At this time, you'll probably need a 200mm scope to split them.

M44. The star attraction (sorry about that!) in Cancer is the open star cluster M44 - the Beehive (aka Praesepe - the Manger, as previously mentioned). On a good clear, dark night, this is visible to the naked eye as a fuzzy cloudy patch. Best seen through binoculars, or a small scope, (being about 1.5° in diameter) it appears as a gorgeous cluster of about 50 to 300 stars (depending on which book you read - my money's on 300). At about 500 l.y. away, it is one of the nearest clusters to the Sun.

M67. At a distance of 2600 l.y., M67 (or NGC2682) is a smaller, dense cluster of stars estimated to be over 10 billion years old - one of the oldest. Not visible to the naked eye, it is visible to binoculars or small scopes as a misty ellipse, with an estimated 200 (?) stars. Can you resolve individual stars in your scope?

So, Cancer is an interesting constellation, even for binoculars and small scopes, if only for the Beehive.

Bob Bee ■

Book Review

'A View Of The Universe' by D Malin. Sky Publishing Corp. And Cambridge University Press. (Price $59.95)

And what a view!. This is not for the colour blind. This rather large book contains 235 pages of dazzling colour photography, showing just what the Universe is made of. And to back up the pictures, David Malin provides detailed narrative describing what it is you're seeing, and why it is that way.

David Malin is obviously a photographer who knows his subject and can describe it in a simple, entertaining manner. What makes the book even more intriguing is the fact that most of the photographic techniques and films were developed by the author in order to achieve the superb images presented in the book.

Warning: This book does not contain a single photo of our Solar System. This is strictly for Deep Space types. Gaggles of galaxies, crowds of clusters, numerous nebulae.

After an some informative introductory chapters about the art/science of astrophotography (colour from B&W plates no less, unsharp masking to reveal fine detail, and many more), David takes us on a tour first of the Milky Way, then the Local Group, then beyond.

I would dare to suggest that short of owning your own 4 metre telescope, or having a FTL space ship, this is the closest you'll get to being there. Great value!

Bob Bee ■

Book Review

'Comet' by Carl Sagan & Ann Druyan.
Random House. (1985) 396 pages.

For people who are interested in comets, for whatever reason, this is both a good read and a great reference book. There is a mine of information, both cultural, historical and technical, for those school projects.

Obviously aimed at the market to be generated by the (then) imminent 1986 return of Halley's Comet, this book provides copious commentary on early man's perception of comets; biographical details of Halley and technical info of his study of comets and the prediction about THE comet itself; the anatomy of comets; their chemical composition; tales about tails; the origins and fates of comets; comet impacts (dinosaurs beware!); chasing comets; and many other aspects of those mysterious wanderers.

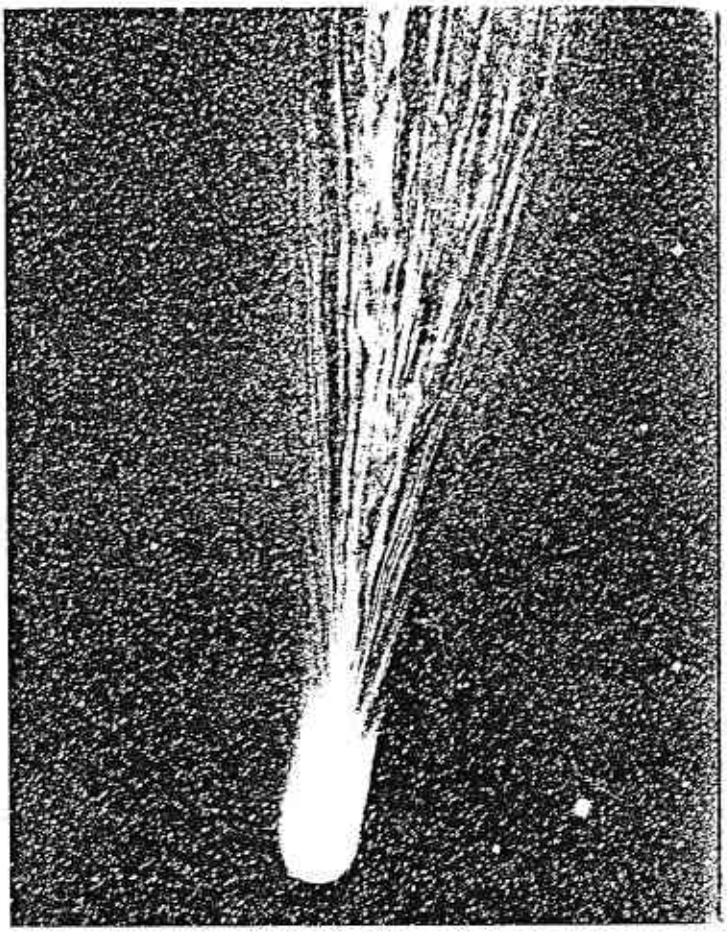
As a pick up - read - put down book, it is very enjoyable. But keep a book mark handy.

There are hundreds of great photos, paintings, diagrams, ancient reproductions and sketches. A treat for the eyes.

As a gimmick, on the top right hand corner of every odd page is a diagram showing the date and location of Halley's Comet from 1875 to 2006. Like an old silent movie, flick through the pages and watch the comet orbit the Sun, time after time. Cute!

Though I've only read about half, I've glanced through the whole book. By any measure, this volume is a fitting memorial to the late Carl Sagan.

Bob Bee ■



Halley's Comet, 1986

(Photo by David Malin.
Used by permission.)