SCORPIUS

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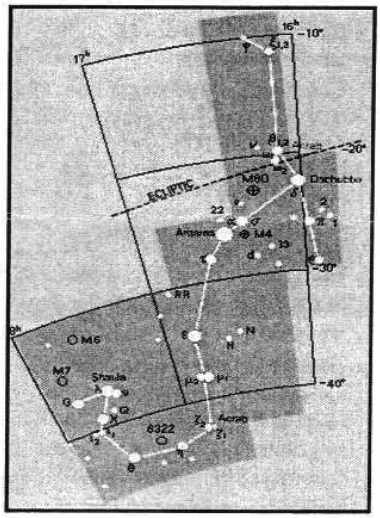
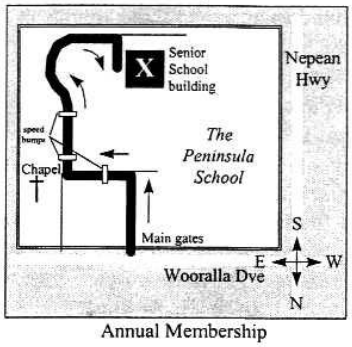


The Astronomical Society of Frankston was founded in 1969 with the aim of fostering the study of Astronomy by amateurs and promoting the hobby of amateur Astronomy to the general public. The Society holds a General Meeting each month for the exchange of ideas and information. Regular observing nights, both private and public are arranged to observe currently available celestial objects. For decades the Society has provided *Astronomy on the Move* educational presentations and observing nights for schools and community groups exclusively in the Peninsula and surrounding regions to Moorabbin, Dandenong & Tooradin.

Meeting Venue: *Peninsula School*, Wooralla Drive, Mt. Eliza (Melways map 105/F5) in the Senior School at 8pm on the 3rd Wednesday of each month except December.
Phone: 0419 253 252 Mail: P.O. Box 596, Frankston 3199, Victoria, Australia
Internet: http://www.asfnet.20m.com
E-mail: aggro@peninsula.starway.net.au

Visitors are always welcome!



Annual Membership

Full Member	$35
Pensioner	$30
Student	$25
Family	$45
Family Pensioners	$40
Newsletter Only	$16
Organisation	$50

DUE 1ST JAN EACH YEAR

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Committee of Management:
John Cleverdon, Jane McConnell, Russell Thompson, Don Leggett, Ian Sullivan.

All calls after hours and pre- 8:30pm please.

This Scorpius has a special on the Ken Bryant's 18 -inch telescope.

Viewing Nights:

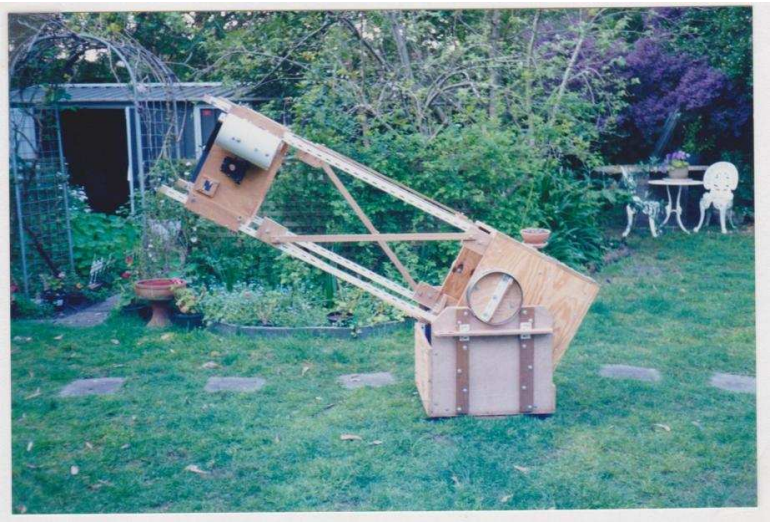
Members Only:

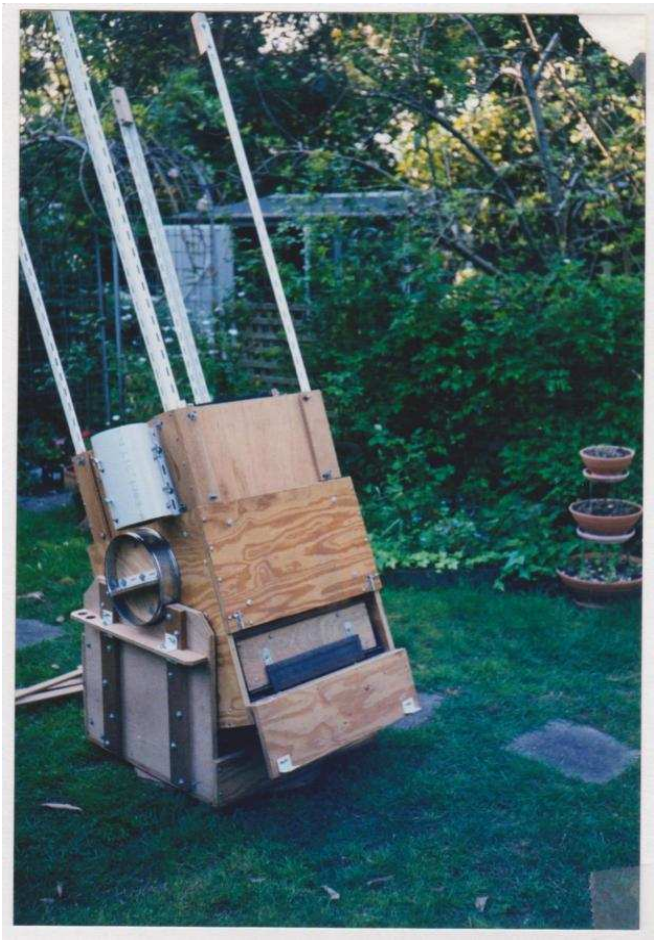
NOTE: Members nights are also now held on Fridays!

New attendees must always confirm with **David Girling** on 5975-6506 or 0421 452 428 before attending. Remember for security reasons you can only attend on planned Members' Nights, unless by prior arrangement with David who will liaise with *The Briars* accordingly. Last person out must switch on the shed security light. All attendees must sign the visitors' book in the observatory for insurance reasons.

Building an 18-inch Dobsonian with the simplest of materials. *By Ken Bryant*

Unfortunately Ken is no longer with us, so I've put together all his hand written notes and photos. *Greg Walton*





① 'TENSIONED TRUSS' DOBSONIAN
F 4.5 18 INCH OPEN FRAME
(NOT CONVENTIONAL SERRURIER TRUSS)
MULTI OPTION DESIGN

DESIGN OBJECTIVES

1 TO BE ONE PERSON MANAGEABLE — WITHOUT ASSISTANCE

2 TO BE CONSTRUCTED WITH STANDARD HARDWARE STORE MATERIALS — PLYWOOD, 'HANDY ANGLE', BUILDERS STRAPPING ETC — NO SPECIAL MATERIALS REQUIRED.

3 TO BE CONSTRUCTED USING SIMPLE HAND TOOLS — HAND SAW, HACKSAW, ELECTRIC HAND DRILL ETC — NO SPECIAL MACHINING INVOLVED.

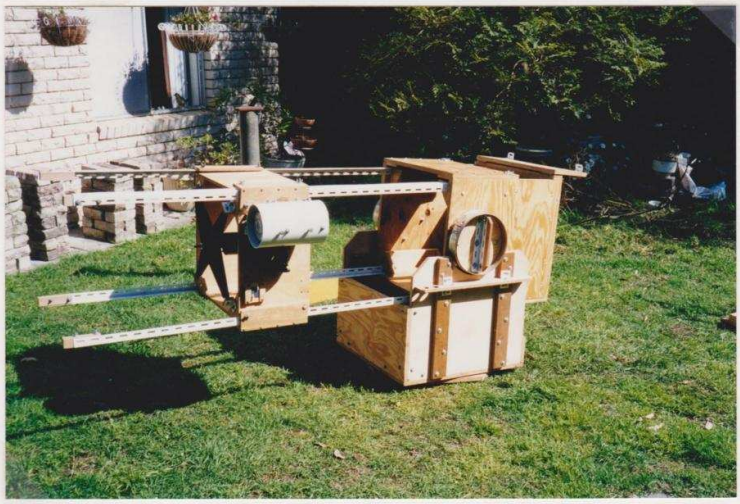
DESIGN FEATURES—AND ADVANTAGES

1 SQUARE TRUSS FRAME OF 'HANDY ANGLE' STRUTS — ALLOWS ADJUSTMENT OF FOCAL POSITION, AS REQUIRED — BY SIMPLY SLIDING DIAGONAL CAGE ALONG FRAME.

2 REMOVABLE MIRROR CELL AND REMOVABLE BALLAST — LIMITS MAXIMUM WEIGHT TO BE LIFTED TO WEIGHT OF EMPTY MIRROR BOX ONLY

3 DIAGONAL 'TENSIONING' STRUTS OF HARDWOOD, WITH CLAMPS SLIDING ON HANDY ANGLE STRUTS — TO MAXIMISE TENSION AND RIGIDITY OF TRUSS — TENSION PROPORTIONAL TO PRESSURE APPLIED.

4 DIAGONAL CAGE AND MIRROR BOX CLAMPED TO STRUTS BY SIMPLE PLYWOOD CLAMPS — USING BOLTS AND WING NUTS — CLAMPING INCORPORATES



(2)

HANDY ANGLE STRUTS INTO JOINTS OF MIRROR BOX / DIAGONAL CAGE, MUCH INCREASING STRENGTH – STRUCTURE DOES NOT REQUIRE CONVENTIONAL GLUING OF JOINTS OR DOUBLING OF PLYWOOD THICKNESS.

5 SPIDER SUPPORTS SIT ON TOP OF CORNER REINFORCEMENTS AT TOP OF DIAGONAL CAGE – SLOTS IN PLYWOOD AND 'HANDY ANGLE' ATTACHMENTS ALLOW MOVEMENT OF DIAGONAL TO ANY POSITION WITHOUT SPIDER DISTORTION – A 'FLOATING' DIAGONAL

6 RECESSING OF, AND REINFORCEMENT OF BACK OF MIRROR BOX WITH 'HANDY ANGLE' – CREATES RIGID MIRROR BOX.

7 REINFORCEMENT OF INTERNAL ANGLES OF ROCKER BOX AND BOTTOM BOARD OF ROCKER BOX WITH 'HANDY ANGLE' – MAXIMISES RIGIDITY – FURTHER ENHANCED BY VERTICAL HARDWOOD REINFORCING BARS ON OUTSIDE OF ROCKER BOX

SET UP AND TAKE DOWN OF TRUSS TUBE

1 DIAGONAL CAGE PLACED ON TOP OF MIRROR BOX

2 'HANDY ANGLE' STRUTS SLID IN CLAMPS OF DIAGONAL CAGE AND MIRROR BOX

3 DIAGONAL CAGE PULLED ALONG STRUTS TO TOP

4 TRUSS CLAMPED, TENSIONING STRUTS ADDED

TAKE DOWN SEQUENCE IS REVERSE ADVANTAGES – NO HAZARD OF DROPPING

(3)

DIAGONAL CAGE WHILST SETTING UP OR TAKING DOWN
NO PERSONAL HAZARD WHILST ATTACHING / REMOVING DIAGONAL CAGE

ADDITIONAL FEATURES

1 HATCH FOR INSERTION / REMOVAL OF MIRROR CELL - AND VENTILATION OF MIRROR BOX
2 'MIRROR CELL PLATFORM' - STEEL PLATE RESTING ON COLLIMATION BOLTS ALLOWS MIRROR CELL TO BE SLID IN AND OUT - AND PROVIDES BALLAST - TOGETHER WITH STEEL ANGLE PLACED AROUND MIRROR CELL.
3 HEAVY 3 INCH FINDER LOCATED BY EYEPIECE - MADE POSSIBLE BY REMOVABLE BALLAST
4 TWO TEFLON PADS ON EACH SIDE OF MIRROR BOX SLIDE AGAINST 'EBONY STAR' LAMINATE ON ROCKER BOX INTERNAL SIDES - MAINTAINS MIRROR BOX ALIGNMENT AND LOWERS TURNING THRUST FOR GREATER STABLITY
5 HORIZONTAL PLYWOOD 'UTILITY STRIPS' ON SIDES OF ROCKER BOX - FUNCTION AS LIFTING HANDLES, SHELVES FOR FILTERS / OTHER SMALL ITEMS WHILST OBSERVING, AND AT THE ENDS, EYEPIECE RACKS FOR 1¼" 0.965" EYEPIECES
6 COLLIMATING BOLTS - THREAD THROUGH NUTS - CLAMPED IN POSITION BY CUT DOWN HANDY ANGLE SECTIONS
7 MIRROR CELL USES 2 INCH METAL STRAP SUPPORT FOR MIRROR - MADE FROM 1 INCH BUILDERS STRAPPING TAPED EDGE TO EDGE

18 INCH / 45cm "TENSIONED TRUSS" TELESCOPE

WITH 3½ INCH DIAGONAL MIRROR

3 INCH FINDER

MIRROR CELL HATCH OPEN, ONE SECTION OF BALLAST VISIBLE AND MIRROR CELL

TOTAL WEIGHT OF TELESCOPE = 216 POUNDS

WEIGHT OF ROCKERBOX / (GROUND) BOARD = 54 POUNDS

WEIGHT OF MIRROR PLUS CELL = 55 POUNDS

WEIGHT OF MIRROR = 37 POUNDS

WEIGHT OF BALLAST / MIRROR CELL PLATFORM = 43 POUNDS

270 POUNDS OR 122 KG

DIAGONAL (WOODEN) STRUTS HAVE SLIDING CLAMPS ON "HANDY ANGLE" STRUTS TO MAXIMISE TENSION

TRUSS STRUTS = "HANDY ANGLE" SLOTTED STEEL

TRUNNIONS = 10 INCH PLY DISCS / "SPRING FORM" CAKE TIN RIMS

TROLLEY WITH CLAMP ON EXTENSION - MOVES MIRROR BOX, ROCKER BOX, MIRROR CELL - SEPARATELY

ROCKER BOX ON TROLLEY

ALL CORNERS REINFORCED WITH 'HANDY ANGLE' PLUS TWO SECTIONS ACROSS BASE. LAMINATE ('EBONYSTAR') ON SIDES FOR 'SPACER BEARINGS' / LATERAL THRUST BEARINGS

MIRROR BOX CORNERS HAVE CLAMPS OF 3/4 INCH PLY, OPENING / CLOSING ON SLOTS TO HOLD BOTTOM OF FRAME STRUTS

(RECESSED) BACK OF MIRROR BOX HAS ALL CORNERS REINFORCED BY 'HANDY ANGLE' TOGETHER WITH TWO LENGTHS ACROSS BACK FOR RIGIDITY

SPIDER MOUNTED ON DIAGONAL CAGE CORNERS WITH HANDY ANGLE SECTIONS - ALLOWS 'FLOATING' POSITIONING ALONG SLOTS IN ANGLE AND PLY - TO ANY POSITION

FINDER IN PVC TUBE - COLLIMATED BY BOLTS THREADED THROUGH 3 PLY STRIPS HELD WITHIN PVC

PARTLY ASSEMBLED

ONE DIAGONAL BRACE FITTED

HATCH OPEN FOR SUPPORT PLATE (20 INCH SQUARE STEEL PLATE) AND MIRROR CELL →

ASSEMBLED TELESCOPE WITH HATCH HELD PART OPEN TO ENHANCE AIR CIRCULATION AND MIRROR COOL DOWN TIME →

TRUSS USES 48 x PRE-POSITIONED BOLTS/WING NUTS TO LOCK STRUCTURE - BY TIGHTENING ONLY

MIRROR BOX BEFORE INSERTION OF MIRROR CELL, COLLIMATING BOLTS THREAD THROUGH NUTS CLAMPED BY CUT DOWN 'HANDY ANGLE' SECTIONS

MIRROR CELL ANGLE GUIDES
MIRROR CELL SUPPORT PLATE RESTS AT FRONT OF MIRROR BOX (ABOVE)

TELESCOPE PARTLY ASSEMBLED

6¼ INCH 'STOP' FOR PLANETARY VIEWING
& MIRROR SLIDE-ON COVER TO LEFT
MIRROR CELL POSITIONING BAR/GUIDE
& 3 SECTIONS OF 3 INCH STEEL ANGLE BALLAST TO RIGHT

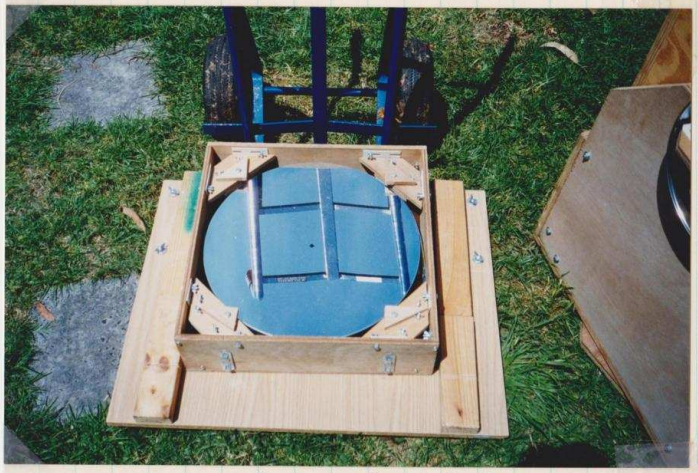
MIRROR Box ON TROLLEY WITH CLAMP ON EXTENSION
(8 INCH TELESCOPE PILLAR AT REAR)

TWO TEFLON "SPACER BEARINGS" TO LEFT OF MIRROR Box ENHANCE RIGIDITY OF ROCKER Box/ MIRROR Box UNIT AND LOWER CENTRE OF GRAVITY AND THRUST WHEN TURNING IN AZIMUTH / LATERAL THRUST BEARINGS

DIAGONAL CAGE SITS ON TOP OF MIRROR Box PULLED UP ALONG FRAME STRUTS TO POSITION AGAINST WOOD BLOCKS AT FOCAL POSITION

MIRROR CELL ON TROLLEY, CLIP ON COVER FOR TRANSPORT

MIRROR CELL HAS METAL STRAP SLING FOR MIRROR. FOUR PLY CORNER CLIPS & AIR SPACE AT BACK OF MIRROR



18 INCH GALAXY OPTICS MIRROR IN CELL, CARRIED ON TROLLEY WITH CLAMP ON EXTENSION. PARALLEL TIMBER BARS HOLD CELL IN PLACE

MIRROR Box HANDLES MADE OF "HANDY ANGLE" SECTIONS WITH PLY STRIPS AS GRIPS

MIRROR Box IN ROCKER Box, HATCH OPEN WITH MIRROR CELL PARTLY INSERTED SITTING ON 20 INCH PLATE OF ¼ INCH STEEL. MIRROR CELL POSITIONING BAR / GUIDE ON RIGHT

(1)

REVIEW OF HISTORY OF DOBSONIAN TELESCOPES

STARTS MONASTERY SAN FRANCISCO in 60's
UNUSUAL MONASTERY, - VEDANTIC - 4 Vedas
UNUSUAL MONK - JOHN LOWRY DOBSON

BORN PEKING 1915
GRANDFATHER - Peking Uni founder
FATHER - " " Zoology Chem

CHINESE CIVIL WAR / COMMUNISTS / NATIONALISTS
RETURN TO USA / SAN FRANCISCO 1927
UC Berkeley - Biochemistry
" Find out how to Keep Enzyme alive"

"MILITANT ATHEIST"
UNCONVENTIONAL MUSICIAN / DANCER - LONGHAIR 1937

MET SWAMI ASHOKONANDA - IMMEDIATE CONVERSION
BROKEN STUDIES - GRADUATES MATH/CHEM 1943
→ BERKELEY RADIATION LAB 1944 - WAR
ATOMIC BOMB PROJECT
LEFT → VEDANTIC MONASTERY 1944
(2 FBI investigations)
WANTED TO "SEE UNIVERSE TO UNDERSTAND IT"
1 SMALL Refractor made
2 A.J. Thompson "HOW TO MAKE TELESCOPE"
TELESCOPE MAKING 12 INCH IN MONASTERY
UNDERWATER GRINDING
UNUSUAL MOUNTING - "DOBSONIAN" heretofore
GUN BARREL / CANNON TYPE "4 BARREL 12"
TEFLON / FORMICA - SCRAP PLY CARDBOARD TUBES
NEIGHBOURHOOD TELESCOPES

→ SACRAMENTO MONASTERY SEVERAL MORE TELESCOPES
12 INCH → STREET USE
EXPELLED 1967 after 23 YRS
by SWAMI ASHOKANANDA UN-MONASTIC ACTIVITIES

(2)

RETURN SAN FRANCISCO - friends apartment
→ More "Sidewalk telescopes"
"SIDEWALK ASTRONOMERS" group of 3
BRIAN RHODES / JOHN DOBSON - 24" telescope (Delphinium) in 3 months
SIDEWALK TELESCOPES - well known in S/FRANCISCO of HIPPIES, FLOWER POWER in HAIGHT-ASHBURY

ALL ALTAZ MOUNT DOBSONIAN
NATIONAL PARKS - YOSEMITE
CONVERTED BUS VANS GRAND CANYON, DEATH VALLEY
REPORTS OF PLEIADES nebulosity
SLEPT IN 24" TUBE 4 stars RING NEBULA
STEFANS QUINTET

NEWS SPREAD
→ SOUTHERN CALIFORNIA - RIVERSIDE Telescope convention
COMMERCIAL "ODYSSEY 13" BY COULTER

Later SF SIDEWALK ASTRONOMERS → INDIAN RESERVES
MEXICO
INDIA - Odyssey donation
1988 AUSTRALIA / ASF / ASV

TRUSSTUBE - IVAN HAMBERG / Coulter 17½"
SERRURIER
1993 TOM CLARK - 36" YARD SCOPE
? 200 lb MIRROR

TRANSPARENCIES

(3)

PERSONAL DOBSONIAN CONSTRUCTION
SPECIAL FEATURES 1 REMOVABLE MIRROR CELL/BALLAST
2 SQUARE TENSIONED TRUSS FRAME

Personal interest
magazine articles Sky & Tel. Astro 1973 → LARGE DEEP SKY SCOPE' - EARLY PLANS
Wrote Sky Designs / Coulter 1990 - Brochure
Planning in earnest 1992 - Arthur Geddes / ballast
17½" Coulter ordered May 93 → $695 US ASV Exhibition 1993
Criteria
1 ONE PERSON MANAGEABLE (X) + TROLLEY/EXT
weight minimisation for lifting
→ Truss Tube AND Removable MIRROR CELL + Removable BALLAST
not solid
2 SIMPLE CONSTRUCTION MATERIALS / METHODS
NOT SERRURIER TRUSS AND SQUARE DIAGONAL CAGE
→ FRAME Handy Angle = slotted steel
"TENSIONED TRUSS"
Wood CLAMPS inside mirror box, outside diagonal cage

(X) WEIGHT COMPARISONS 6", 8", 14", 18"
cube of diameter
ACTUAL WEIGHT 18" COMPONENTS 72lb, 54lb, 24lb

SQUARE TRUSS BENEFITS of SERRURIER
SLIDE DIAGONAL CAGE TO POSITION
ADJUST DIAGONAL CAGE TO REQUIRED FOCUS/Spherical error
"FLOATING" OF SPIDER ON CAGE CORNERS
HANDY ANGLE becomes INTEGRAL PART OF BOX/CAGE
→ NO GLUE, SINGLE THICKNESS PLY
EASIER CONSTRUCTION OF CAGE/CLAMPS

OVER

BALLAST - SUPPORT PLATE 2 lb
STEEL ANGLE 17 lb
MIRROR CELL PLACEMENT - ANGLE GUIDES, POSITIONING BAR

With Slides / Transparencies

(4)

With Slides / Transparencies

HANDY ANGLE BRACING - Mirror box base
Rocko box corners
COLLIMATING BOLTS / CLAMPED NUTS

MIRROR CELL SLING - metal strop
conforming support - experimental
2 Tiers - Air circulation

TRUNNIONS WOODEN DISCS ¾" PLY
10" SPRINGFORM CAKE TINS RIMS

Later
COULTER RECEIVERSHIP OCT 95 → GALAXY US $2095
GALAXY 18" DELIVERED autumn 1996
Construction commenced '96 autumn
→ Problems
96 BULKHEADS not satisfactory
→ SLIDING CLAMPS replaced ✓
→ WORKING OUT DETAILS AS CONSTRUCTION PROGRESSED
FIRST LIGHT APRIL 98 - no finder
3" FINDER ATTACHED + QUIKFIND
→ CONTINUING LEARNING OF BEST SETUP/TAKE DOWN procedures/techniques

VIEWING EXCELLENT DEEP SKY VIEWS
TARANTULA NEBULA, 47 TUCANAE
ETA CARINA, OPEN CLUSTERS
ORION NEBULA

PLANNING → MOBILISATION inc. TROLLEY
POSSIBLE PURCHASE LARGER VEHICLE?
PANEL VAN/VAN

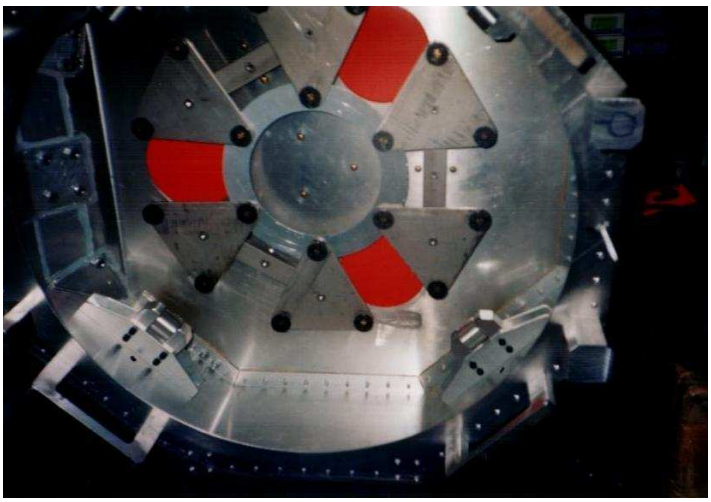
→ TRANSPARENCIES
→ SLIDES

Building an 18-inch fork mount telescope - Sky Venture. *By Greg Walton*

The Astronomical Society of Frankston has need of a large telescope and observatory ever since they lost their last observatory. A long-time member of the Society, Ken Bryant, built an 18" Dobsonian telescope after meeting John Dobson when he visited Australia. Ken built this telescope from plywood and handy angle steel, the mirror he bought from Galaxy Optics in 1996, it's 50mm thick. Ken had not long finished the telescope when after a short illness he passed away in 2002. His family donated the telescope to the Astronomical Society of Frankston, which the society appreciated but they really needed a telescope that could find and track objects across the sky.

So the Society asked if I would rebuild the telescope like my 21.5-inch telescope but on an equatorial mount with motor drive for tracking. I said yes, but it will take 6 months. When I built my 21.5" Telescope I had to buy too much aluminium, the left over I used on this telescope. I first built the aluminium octagonal mirror box with an 18-point floating mirror cell made from stainless steel. I used 4 rollers 90 degrees apart to support the edge of the mirror, see below. With this design the mirror box needs to be able to tilt and roll to any position, so a Dobsonian strap type support can't be used.

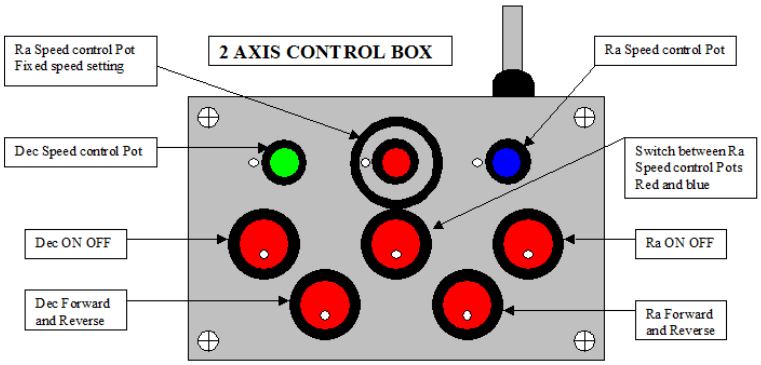
The upper cage was made from 12mm square aluminium tube and lined with very thin sheet aluminium. Then I found the focal length by moving the 2 parts back and forth till something came into focus, and then I measured the separation and made the truss tube rods that length plus 50mm. Then I set up the telescope on a temporary mount on wheels so I could test the telescope, see below right. I found I had to shorten the rod by 60mm so a camera could be used at prime focus. I also made the upper cage so it could be rotated, as with this telescope on an equatorial mount the eyepiece could end up in a position that would be impossible to use.

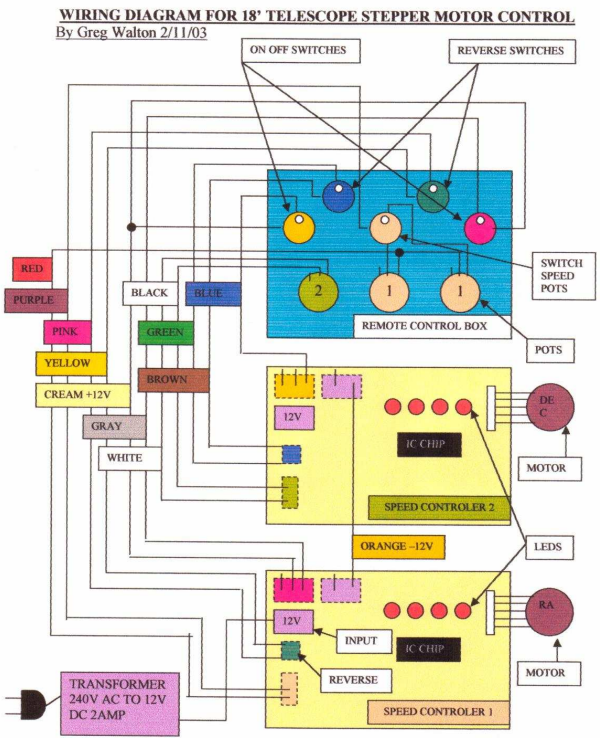


I decided on a fork mount because we needed to keep the telescope as close to the ground as possible. The equatorial fabrication is steel that supports the RA bearings and main shaft, which attaches to the fork, made from steel tube 50mm by 100mm by 3mm thick. We used stepper motors which best runs at one rev per second to drive the telescope in both axes, the RA axis has a 84,000:1 ratio (equal to number of seconds in a day) and the Dec axis has a 42,000:1 ratio. The two main gears are 201.5mm in diameter bronze with 360 teeth, driven by a 12mm by 1.75mm pitch stainless steel thread. The secondary gear on the RA axis is 80mm diameter aluminium with 240 teeth, driven by 6mm by 1mm pitch stainless steel thread. The secondary gear on the Dec axis is 40mm diameter aluminium with 120 teeth driven by 6mm by 1mm pitch stainless steel thread. In the photo at below right you can see how the gears were made, the gear spun freely on its shaft; as the tap rotated, it turned the gear. I just raised the gear into the rotating tap every 10 minutes or so and waited. Eventually ending up with a worm gear with hopefully 360 teeth, the trick is in estimating the diameters of the gear. (Pitch times number of teeth divided by Pi)

	Number Teeth	WORM Pitch	PI=3.141592654 Circumference	Diameter	Diameter +(Pitch X 0.6) MEAN Diameter
FIRST GEAR both axis	360	1.75	630mm	200.5352283	201.5852283
SECOND GEAR Ra	240	1	240mm	76.39437268	76.99437268
SECOND GEAR Dec	120	1	120mm	38.19718634	38.79718634

These 6mm worm threads are joined to the stepper motors, which I bought at Jaycar at $50.00 each. They come with a circuit board control kit that needs to be soldered together. A 240V ac to 12V DC 2amp transformer powers the motors. When assembling the circuit boards instead of attaching the ON/OFF switch, reverse switch and speed control pots to the circuit board I placed them in a remote control box. This can be held whilst looking through the eyepiece, so adjustments can be made to the tracking and position of an object. This would be needed if objects were to be photographed. In the control box I fitted 2 speed control pots for the RA axis with one switch to change between the 2 pots, so one pot for tracking (Red) which is set to counter the Earth's rotation and the other pot (Blue) can be used to make positioning adjustments. There is only one speed control pot for the Declination axis (Green).





The RA main 50mm shaft can only be rotated one full turn; this is to stop the wires that run through the main shaft to the Declination axis motor and control board from being damaged. Both axes have friction clutches so the telescope can be moved without undoing any locks.

I fitted declination setting circles to both sides of the fork mount so as to make it easy to use. Once the points were adjusted we shouldn't need to adjust them ever again, as the telescope is too heavy to transport. For the RA-axis setting circle, I found a black aluminium cooking pot which I scribed 24 hours around it in 5 minutes intervals. The RA setting circle can be rotated so it can be set to a star co-ordinate.

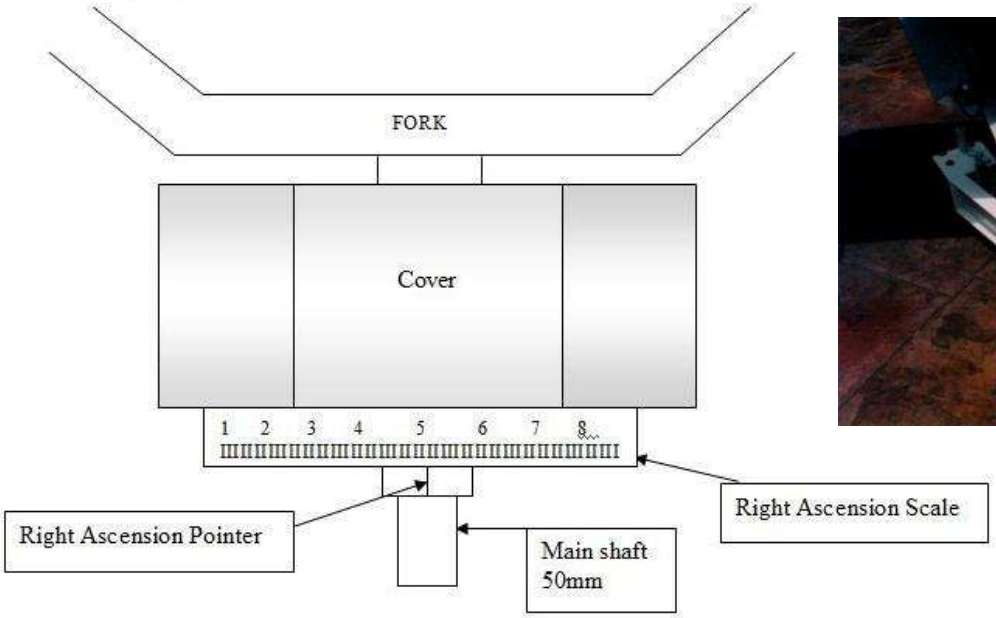
I then made a trolley with 3 jacking points and high quality wheels, so we can roll the 200 kilogram telescope in and out of the shed. I measured the door of the shed and made the telescope narrow enough to fit through the door.

The view through the 18-inch was slightly sharper than my 21.5" Dobsonian, but I could see fainter galaxies in my 21.5" Dobsonian which is expected. It also suffered coma, as does my 21.5" Dobsonian. I found my Televue coma corrector fixed this problem and I could easily see the sixth stars in the Trapezium in the Orion Nebula. I bought a cheap pair of 7 x 50 binoculars and cut them in half, then attached one half to the upper cage. I find this easier to use than the straight-through finder scopes, as everything is the right way up. I also attached a **QuickFinder** which uses an LED to illuminate 2 circles projecting them on to a piece of glass. I fitted a wooden handle to the upper cage so we can steer the telescope around the sky. I attached an 18mm stainless steel shaft to the back of the mirror box to hold balance weights in case a heavy camera is used at the eyepiece. Also made a camera-mounting bracket which clamps to the 18mm shaft on the mirror box. Made a black material shroud to block out any stray light. I named the telescope SKY VENTURE because astronomy is one big adventure.

Once I was happy with the way the telescope worked I dismantled it and loaded in the ute. The equatorial mount needed a chain block to lift it and needed several members to lift it out of the ute. We spent the afternoon reassembling and adjusting before nightfall. Then came the trick job of polar aligning the mount. We pointed the telescope towards the south celestial pole and rotated the telescope tube till a star in the centre of the eyepiece didn't move. Then we set both DEC axis setting circles to zero and start jacking the telescope up and down and moving it left to right until we found the star of the south celestial pole in the constellation Octans. Then we scratched a line in the concrete for next time.

How the setting circles work on Sky Venture.

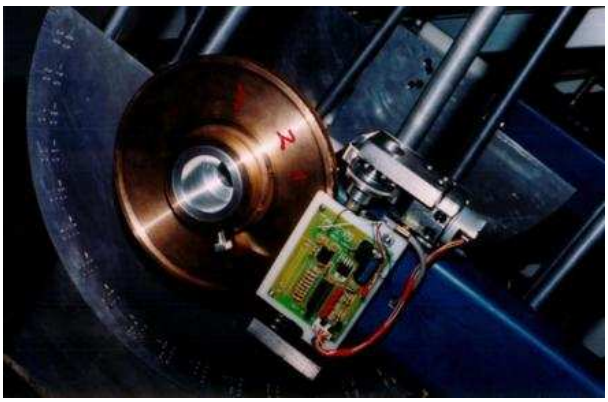
Find a star in the sky and centre it in the eyepiece, then adjust the Right Ascension setting circles for that star. The Declination of the star should be automatically correct. I would do this twice on the same star to double check. Then we can move the telescope to another star we know the Right Ascension and Declination of and look in the eyepiece to check if the star is there, If not something must be wrong; recheck everything. It's best not to set up on a star near the horizon because the refracting (bending) effect of the atmosphere may cause errors. So it is best to set up on the stars directly overhead. The Declination circle only needs to be set once (on installation of the telescope). So each time the telescope is used the Right Ascension circle is the only one to be set. If the tracking is not accurate, you will need to reset periodically, until accurate tracking is achieved.

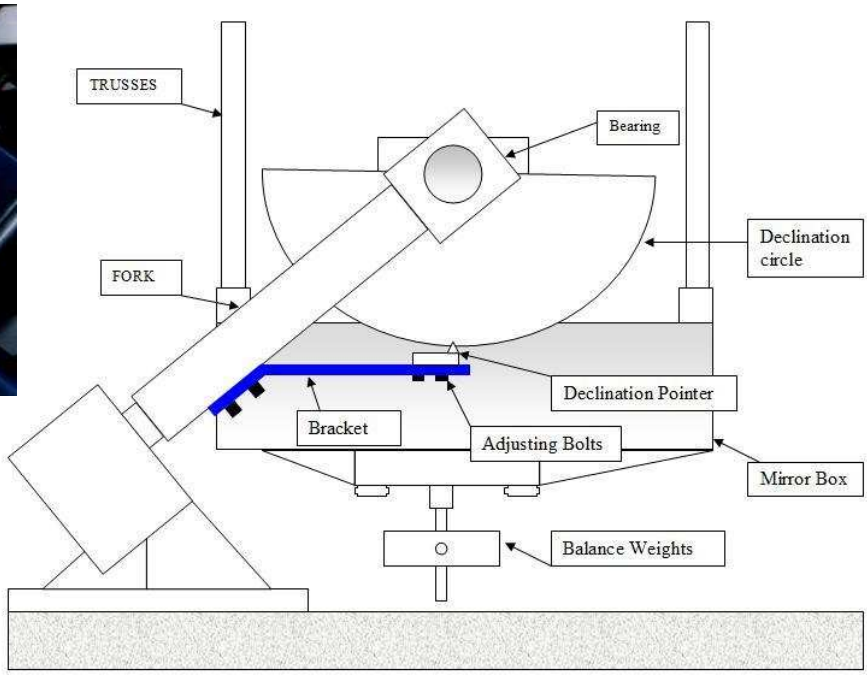


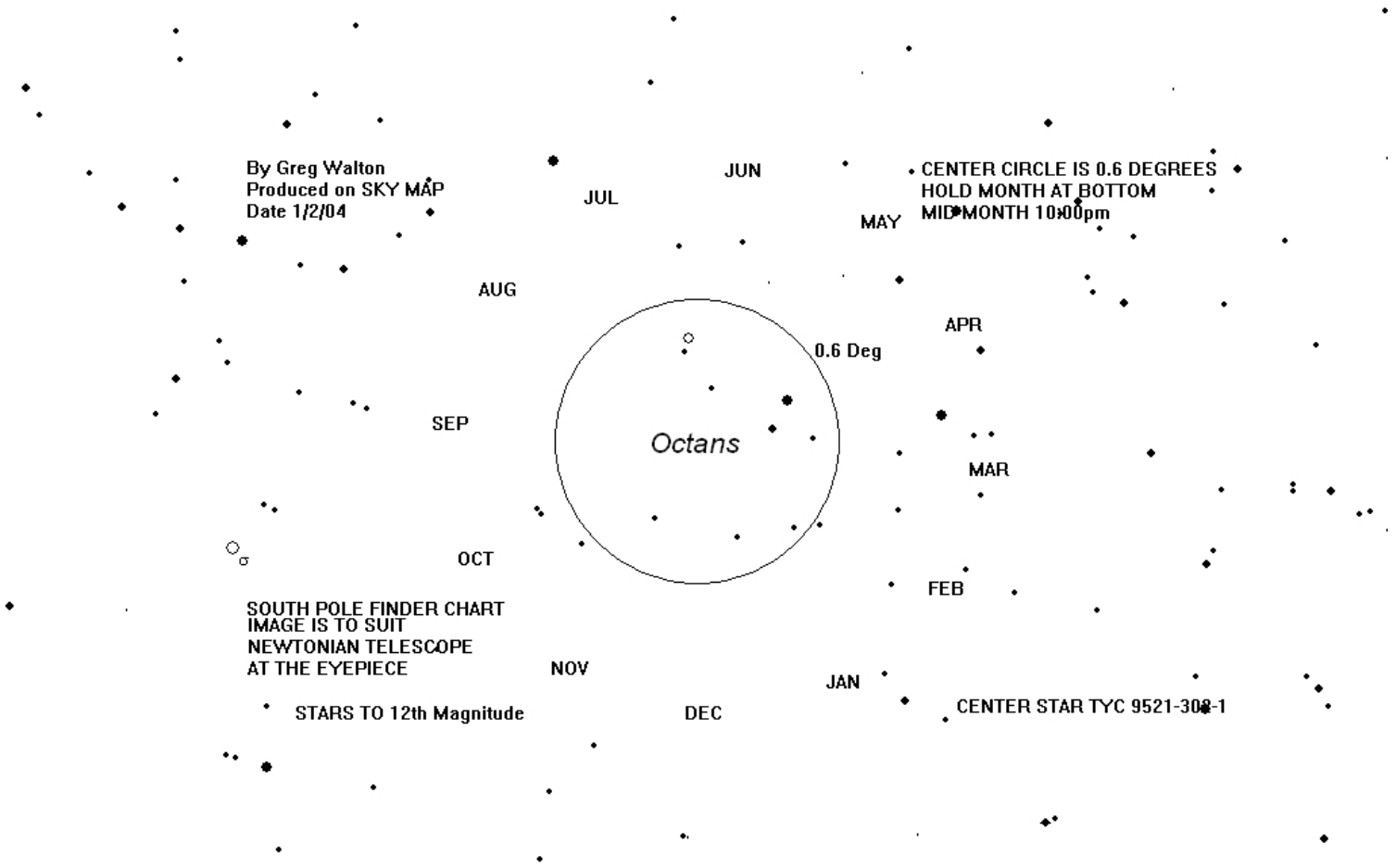
The Main shaft is attached to the fork, which is attached to the telescope. The Right Ascension scale is attached to the Right Ascension gear by a friction clutch so as the gear moves the Right Ascension scale moves with it. The Right Ascension gear is attached to the Main shaft by a friction clutch. When the telescope is moved by hand the Right Ascension gear and Right Ascension Scale do not move. The Right Ascension Pointer moves with the Main shaft by a friction clutch, so it moves with the telescope.

The RA main 50mm shaft can only be rotated one full turn; this is to stop the wires that run through the main shaft to the Declination axis motor and control board from being damaged. Both axes have friction clutches so the telescope can be moved without undoing any locks.

The Declination circle is attached to the telescope mirror box. The Declination pointer is attached to a bracket with adjustment slots that is attached to the fork.







Sky Venture and Sky Dancer, *by Greg Walton*

Working Bee at Briars site.

6th October 2002

Photo by John Cleverdon

Attendance:
David Girling
Jeremy Scott
Jane McConnell
Roger Chandler
John Cleverdon

Telescope Learning Day at the Briars.

12th October 2002

Photo by John Cleverdon

Attendance:
David Girling
Hans & Elsa Rummel
Simon Birch
Jeremy Scott
Roland Knabe
Sally Zetter
Ann
John Cleverdon

Ken Bryant Scope Day at the Briars.

9th November 2002

Photo by John Cleverdon

Attendance:
David Girling
Jeremy Scott
Roland Knabe
Alex Dickson
Greg Walton
Bob Heale
Hans & Elsa Rummel
John Cleverdon

Ken Bryant Scope Day at the Briars.

9th November 2002

Photo by John Cleverdon

Attendance:

Kevin Rossitter
Ian Sullivan
Sally Zetter
Roger Chandler
Simon Birch

Solar eclipse at Arthurs Seat.

3rd December 2002

Photo by John Cleverdon

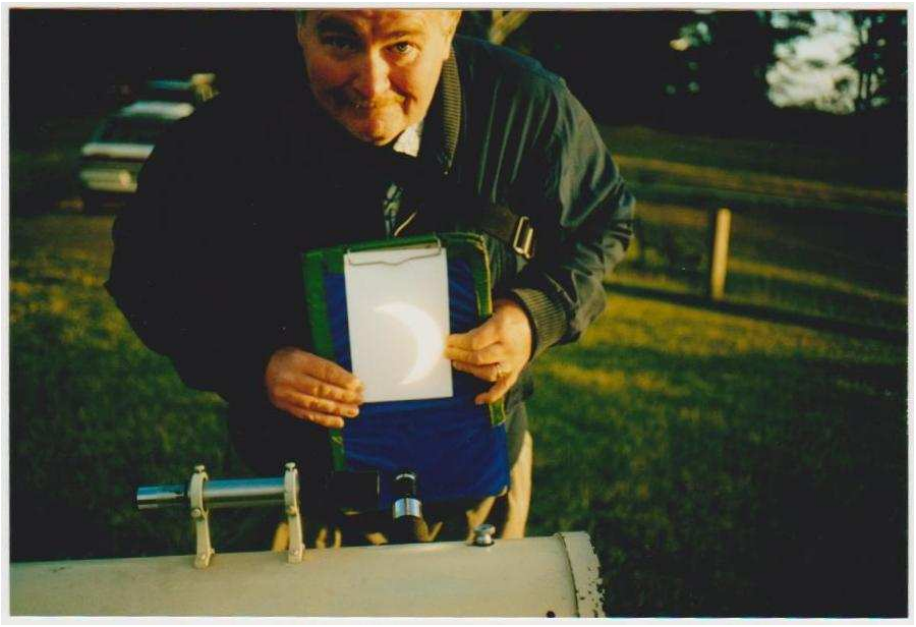
Attendance:
David Girling
John Cleverdon
?
?
?

Solar eclipse at Arthurs Seat.

3rd December 2002

Photo by John Cleverdon

Projecting an image of the sun onto a piece of white paper.



Above - Xmas BBQ at the Briars. 14th December 2002 Photo by John Cleverdon

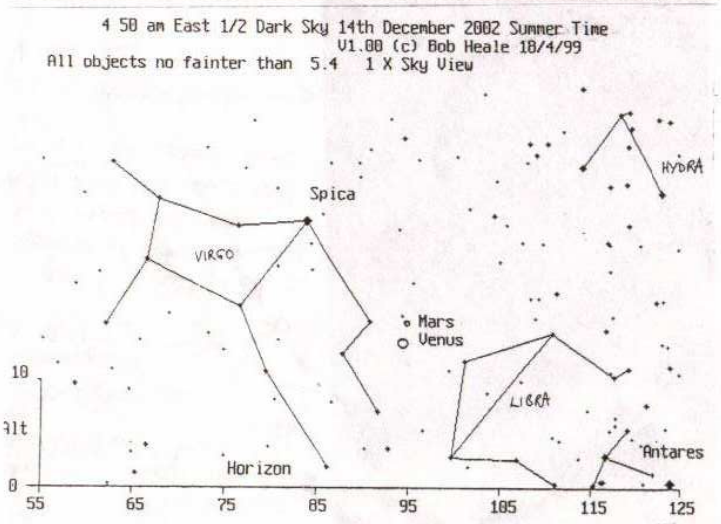
New Years Eve BBQ Briars

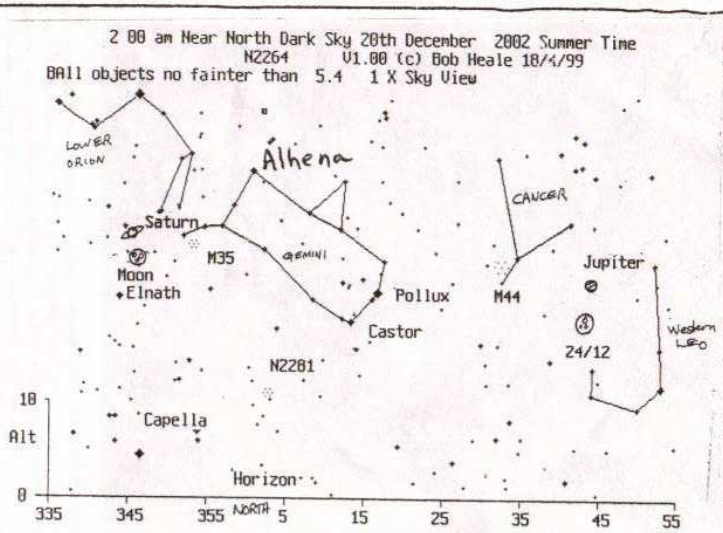
31st December 2002

Photo by John Cleverdon

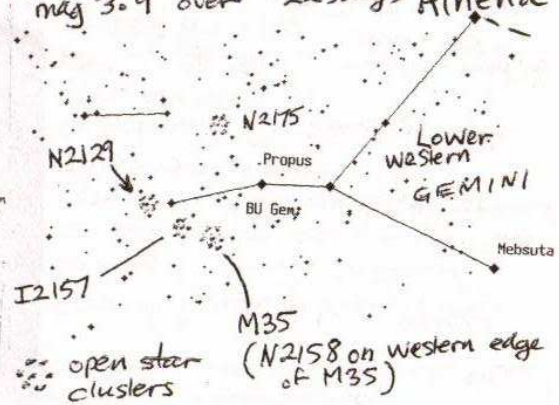
Attendance:
Mark Hillen
Don Leggett
Sally Zetter
?
David Girling

SKY FOR TWO MONTHS, MORNINGTON PENINSULA 20 NOVEMBER TO 15 JANUARY 2002-2003

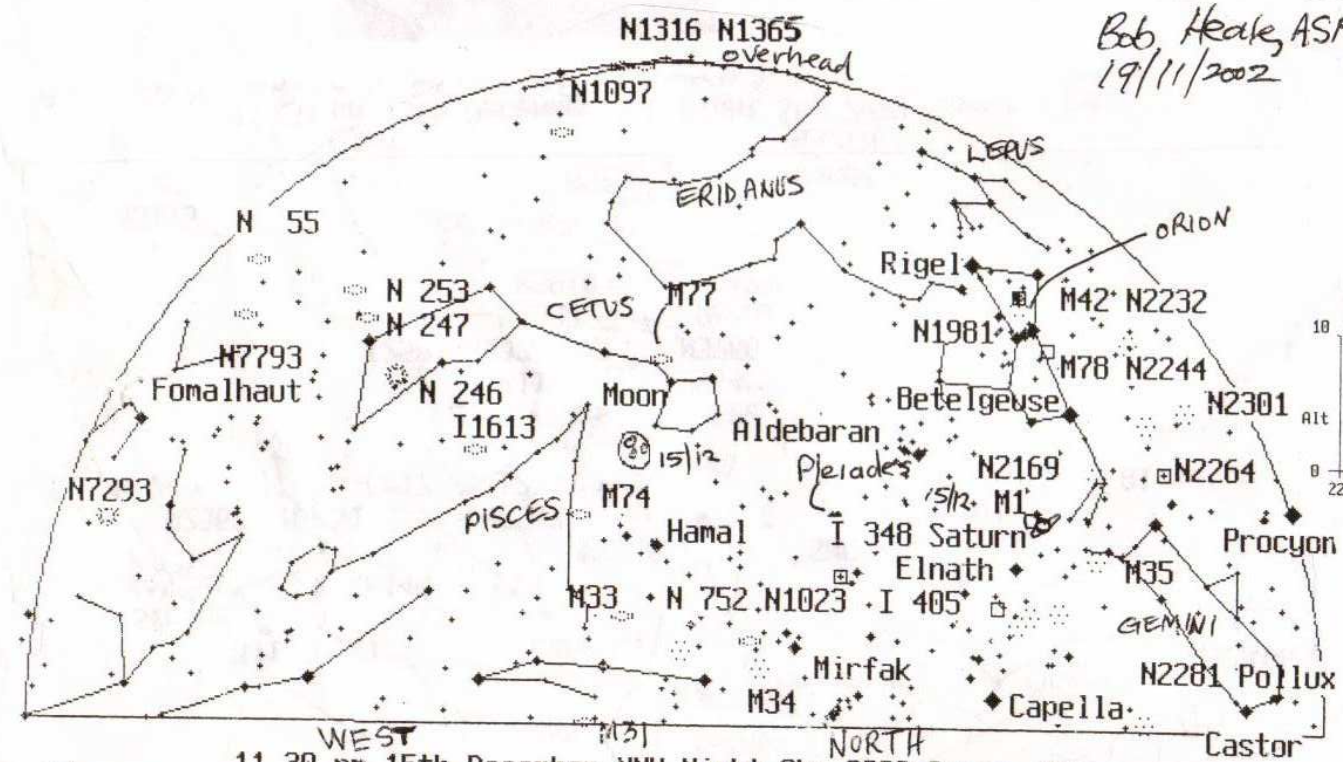




Propus or Eta Geminorum is a very red semi regular variable star: it 'fades' from mag 3.2 to mag 3.9 over 223days

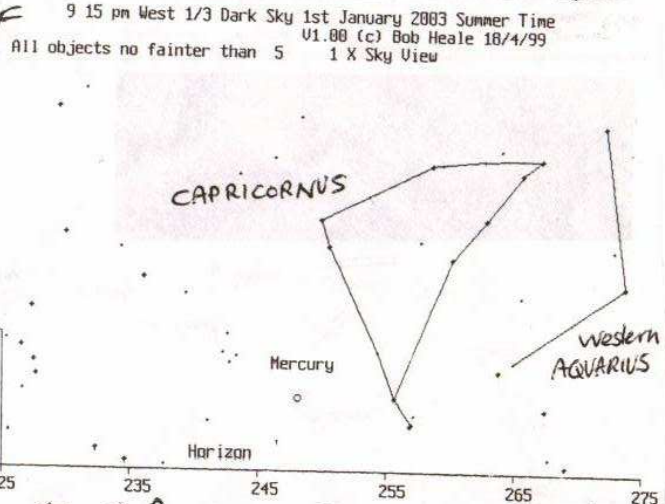


Bob Heale, ASF
19/11/2002



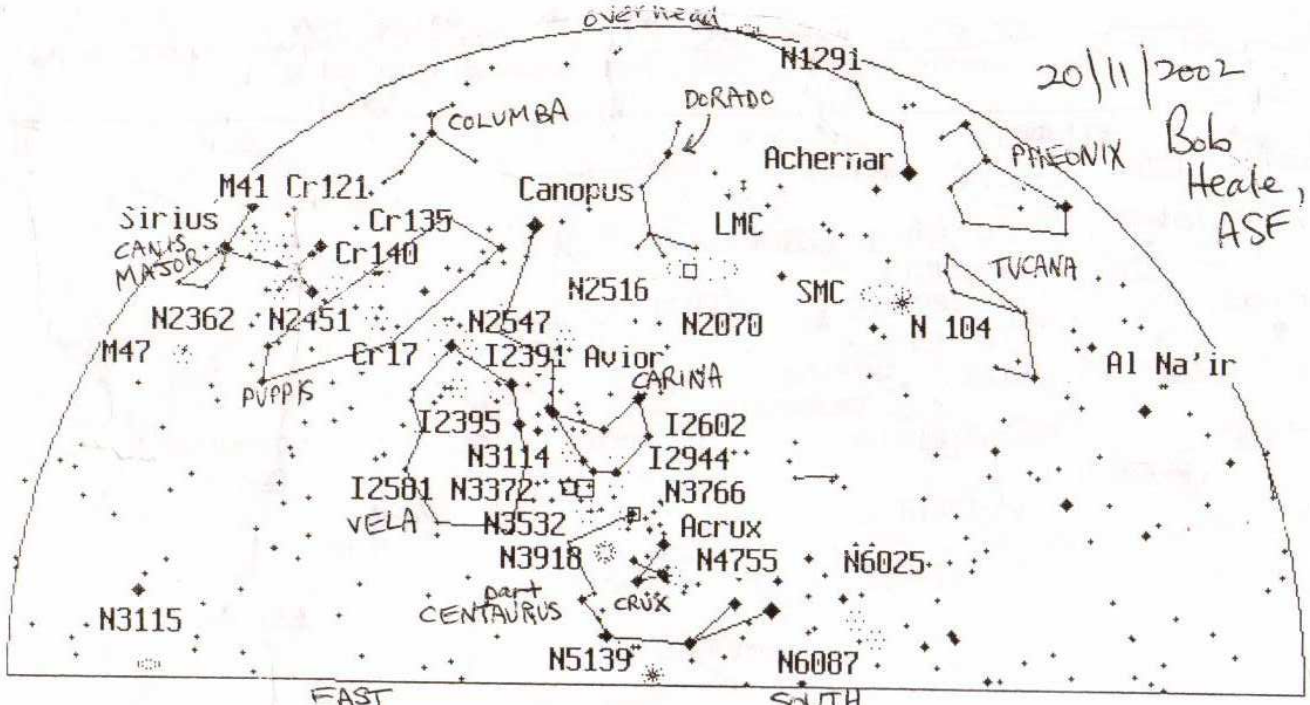
11 30 pm 15th December NNW Night Sky 2002 Summer Time

Also 20 November 9.45pm or 15 January 9 30pm SummerTimes (Not Moon)



Apart from easy Saturn, Jupiter, Moon and labelled bright stars, easy picking objects are M42, M35 Christmas tree open star cluster N2264 (and nebula if your lucky) Silver coin galaxy N253 face on spiral galaxy M77 inverted L shaped cluster N1981 (below M42) M74 M78 (car head-lights), the rest by star hopping or a well prepared computer telescope

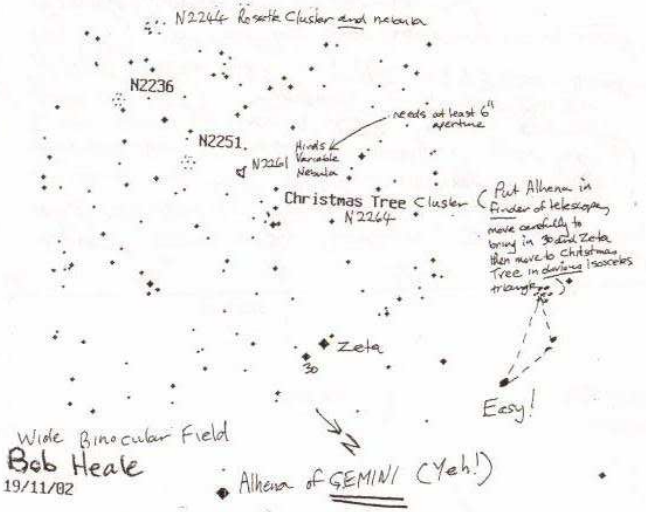
Mornington Peninsula Astronomical Society



20/11/2002 Bob Heale, ASF

11 30 pm 15th December SSE Night Sky 2002 Summer Time

Also 20 November 9 45pm, 15 January 9 30pm Summer Times



The Jewel Box is one of the finest telescopic clusters. It has an obvious A-shape of bright stars. The central bar members are red, blue and white 'jewels'. Masses of fainter stars gather around these supergiants. It is bright enough to be seen with the smallest of optical aids as a hazy spot on the eastern side of the second brightest star in the Southern Cross, Beta Crucis.

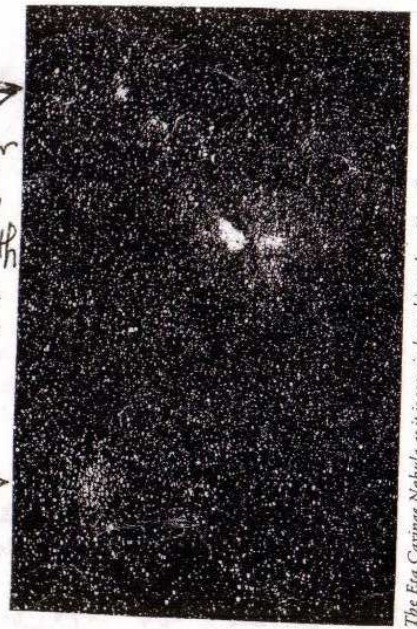
N4755 Not resolvable in binoculars!

This photo orientation - who knows!

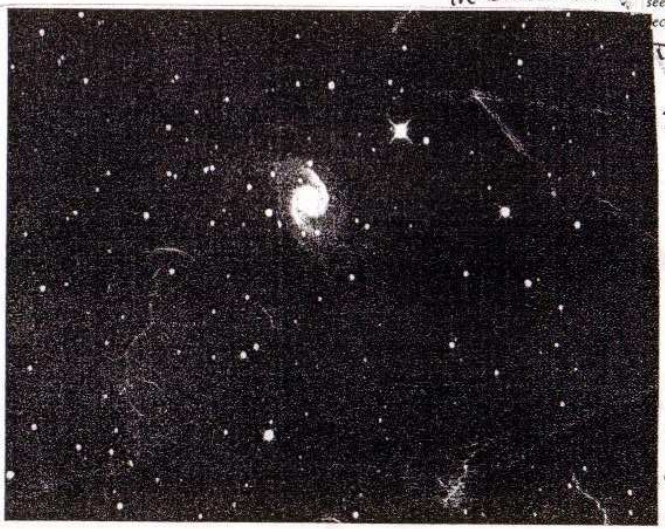
Exquisite 'Diamonds and Rubies cluster' N3293 or 'Heale' cluster

Eta Carinae Complex N3372 → South

To get to N3293 get on centre of Eta Carinae and move telescope along dark lane till this gem comes into view: open star cluster → N3532



The Eta Carinae Nebula as it is seen in large binoculars. Note the relatively small, elongated and very dark nebula on its southern (bottom) edge. The star cluster NGC 3532 in the top left corner is probably the richest telescopic cluster in the sky for small telescopes. The bright spot to the top right of the nebula is the bright compact cluster NGC 3293.



The Spanish Dancer galaxy is a delicate, classic two-armed spiral. Photo: S Quirk

N1566 in DORADO

Spanish Dancer galaxy N1566 is mag 9.5 and smallish so should be easy - get that computer telescope out, forward thinkers and movers!

Coordinates for the very wide open clusters

Cr121	06 54.2	-24 38	mag 2.6 diam 50'
Cr135	07 17.0	-36 50	mag 2.1 diam 50'
Cr140	07 23.9	-32 12	mag 3.5 diam 42'

Cr17 should be Cr173 I hope and is 08 04 -46 06p (given once only) 370'

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