Sketching
Deep Sky Objects

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Why draw Deep Sky objects?

• An opportunity to really study an object
  – gives an increased appreciation of the sky
  – stems the desire to hop from object to object

• Teaches you to really look at an object
  – cannot draw details unless you have first seen them

• A chance to practice and improve observing skills and techniques
  – averted vision
  – use of different magnifications
  – use of movement
  – filters

• Test your observing skills by comparing with published photos or others drawings

• Creates a record to browse on those cloudy nights

• Something to show others at club meetings
What equipment

• For sketching at eyepiece
  – Clipboard preferably with integral adjustable light
  – White fine grain cartridge paper of a size to suit clipboard
  – Selected HB pencil with fine round points with good quality tip erasers

• For final drawing
  – Paper as above
  – Wide selection of pencils, erasers and smudgers
  – Lightbox
  – Logbook?
  – Glue roller
Equipment- illuminated clipboard
Selecting your target

- Enough detail to make an interesting drawing
- Not so much detail that you will lose interest and drawing will be a test of patience rather than something enjoyable
- Star clusters and globular clusters good for smaller scopes
- Planetary nebulae and galaxies good for larger scopes
- Reserve faintest objects for best nights
- Draw what interests you
Drawing Star Clusters

• Generally use low or medium power- generally problem is one of too much detail rather than too little

• First step is to create a frame on the paper of the brighter stars that are within field of view
  – pick a magnification which frames object nicely within field of view
  – do not start at the centre and work outwards as will end up with distorted frame of stars
  – draw two widely-spaced brighter stars
    • use HB pencil to draw in stars as dots where size is related to star brightness
    • use the width of the paper to give yourself room
    • if make a mistake on a star position then use eraser or mark over with a cross
    • use arrows to indicate that some star positions should be shifted on final drawing
    • add notes as necessary
Drawing Star Clusters

- Once first two stars are drawn then it is all about judging relative distances and angles to accurately add in other brighter stars individually or in patterns and pairs.
- After framework of brighter stars finished then add in fainter patterns/pairs.
- Add fainter stragglers next with smaller dots.
- If background of unresolved stars then shade in with side of pencil and rub over with finger to blur.
- Finally
  - let drift in field to determine directions (P=preceding)
  - pick two stars that are widely spaced and make an estimate of % width of field of view of eyepiece to determine distance scale
  - note magnification used and sky conditions.
Drawing Star Clusters- M44 example

M44, Cancer, 12/1/75, N.London, 3” refractor
Drawing Star Clusters- M44 example

- Draw two widely spaced brighter stars across width of paper
Drawing Star Clusters- M44 example

- Once first two stars are drawn then it is all about seeing patterns and judging relative distances and angles to other stars
  - Often use triangle method
Drawing Star Clusters - M44 example

- Once first two stars are drawn then it is all about seeing patterns and judging relative distances and angles to other stars.
Drawing Star Clusters- M44 example

- Add in brighter stars forming pairings/chains in similar manner
Drawing Star Clusters - M44 example

- Next add fainter patterns/pairs
Drawing Star Clusters - M44 example

- Add fainter stragglers
Drawing Star Clusters

• Redraw more neatly in following few days

• Use light box to trace positions through onto new piece of paper
  – note any crosses or arrows to indicate positional shifts

• Calculate scale on drawing from know field diameter of eyepiece
  (If apparent field of eyepiece was 60° and power is 100x then actual field is 0.6° or 36’. So if star separation was 2/3 of f.o.v this =24’. If they are 48mm apart on paper then 10mm=5’)

• Add size scale and p marker onto drawing (enables calculation of N,S,E,W for comparison with photos)

• Stick into logbook with details of object name, date, sky conditions, magnification used and instrument
24/01/2012

Drawing Star Clusters

29th/30th April 2000 - 2145-0315 UT

Galaxies adjacent to Clarenhead Reservoir, Eila Valley.

Pongy limb mag 6.8 at Phe, but variable.

1 scraping on 59° SW.

A round WOLAS observing started at same location as last year, but there was no observing done, this year was very different.

The forecast center in the week was quite deceiving with highs and lows surrounding Britain, but improved a little as the weekend approached.

Continuous rain whilst setting up on my arm until the Welsh border reached 7pm, occasional. Friday night the rain continued & we awoke on Saturday morning to the same. However, hopes were raised by the forecast which looked quite hopeful. Indeed by midday the cloud had started to break up with blue patches, causing mixed expectations. Thursday promised 59° the country helpfully kept the cloud to break, better and as the rain set down the convective umbrella started to divide.

Twilight seemed to go on forever, but actually it was short. Cloud persisted for some time in SW. 59°
Drawing Globular Clusters

- Generally use higher power for globular clusters as this enables fainter stars to be seen and improves degree of resolution.
- Once start to resolve globular then problem again is one of too much detail rather than too little.
  - first step is to mark in brighter surrounding stars and brightest resolved stars.
  - use similar techniques for drawing as for star clusters.
    - use HB pencil to draw in stars as dots where size is related to star brightness.
    - use the width of the paper to give yourself room.
    - if make a mistake on a star position then use eraser or mark over with a cross.
    - use arrows to indicate that some star positions should be shifted on final drawing.
  - as for clusters draw in individual stars from seeing patterns, pairings and for globulars especially, chains too.
Drawing Globular Clusters

- need to decide how faint to go if many hundreds of stars actually resolvable
  - draw in impression of background stars if necessary
- draw in unresolvable stars as a haze using side of HB pencil tip to gently shade in
  - smudge with finger tip
  - a softer pencil may make a mess!
- use eraser tip to mark in star poor areas/dark regions and lanes
- add notes as required eg brighter centre or elongated top to bottom slightly more
- add in angular distance scale and proceeding direction (p)
- make note of magnification used and object name!
Drawing Globular Clusters

M3, Canes Venatici, 8/4/75, N.London, 3” refractor
- not enough background stars!
Drawing Planetary Nebulae

- Nice to draw because often show some interesting details and rarely too much detail to make it a chore
- High magnification can pull out details invisible at lower power
  - lots of Planetaries have high surface brightness and can take high power on steady nights
  - can use much higher magnifications than would employ on planets even on best nights
- Try different powers to pick out different details
- Try nebular filters (OIII and UHC)
- First step is to decide on final drawn size of nebular on page
  - large enough to see details but not so large that can’t see the object’s context within the star field
Drawing Planetary Nebulae

• Draw in background stars as for star clusters
• Lightly outline planetary in correct position then start to slowly fill in detail
  – slowly build up with layers of light shading using HB
    • smear carefully with tip of finger
    • don’t use soft pencil as will make a mess
    • use chisel point eraser to define details
  – add notes as before eg *sharper edge on LHS*
  – if stars present within nebulosity then draw a ring around them so they stand out clearly
• Add in size and direction indicator together with note of magnification/filters used
Drawing Planetary Nebulae- Ngc 246

24/01/2012

Ngc246

25” Dobsonian, 100x, UHC, l.mag 7.0, Parador Hotel, Tenerife
Drawing Planetary Nebulae

Saturn Nebula, Ngc7009
18" Dobsonian, 340x, l.mag 6.3, Sky Camp 2003, nr. Thetford, Norfolk

Owl Nebula, M97
18" Dobsonian, 102x, OIII, l.mag 5.7, Piggotts farm, nr. Spleen, Bucks

Ngc7008
10" Dobsonian, 113x, OIII, l.mag 6.3, Llanafan, nr. Aberystwth

24/01/2012
**Drawing Planetary Nebulae- Hi Mag.**

- **Cats Eye Nebula, Ngc6543**  
  18” Dobsonian, 762x, l.mag 5.5, Hindleap Warren, E.Sussex.

- **Eskimo Nebula, Ngc2392**  
  18” Dobsonian, 762x, Ant II-III, l.mag. 5.0, St.Albans, Herts.

- **Blue Snowball, Ngc7662**  
  18” Dobsonian, 680x, l.mag 5.8, Piggotts farm, nr. Spleen, Bucks

- **Humaston 1-2, PK86-8.1**  
  18” Dobsonian, 508x, l.mag 6.3, Sky Camp 2003, nr. Thetford, Norfolk

24/01/2012
Drawing Emission Nebulae

- As for planetary nebulae- nice to draw because often show some interesting details and rarely too much detail to make it a chore
- For brighter nebulae, higher magnification can pull out details invisible at lower power
  - lower powers than planetaries generally because surface brightness lower
  - big variation in angular width of detail so try different magnifications to bring out different features
- Try nebular filters (OIII and UHC)
- Employ similar procedures to those already described for planetary nebulae
  - Decide on size of nebula on page
  - Draw stars first, then outline nebula, then fill in details
Drawing Emission Nebulae - Horsehead Nebula

Horsehead Nebula, B33,
25” Dobsonian, 100x, UHC, l.mag 7.0, Parador Hotel,
Tenerife
Drawing Emission Nebulae

Ngc 6888, Crescent Nebula
10” Dobsonian 76x, OIII, l.mag 6.0 Llanafan, nr.Aberystwyth

Ngc 2359, Thor’s Helmet
18” Dobsonian, 156x, OIII, l.mag 5.9, Piggotts farm, nr. Spleen, Bucks
Drawing Emission Nebulae

M42

3” refractor, no filters, Finchley, N.London
Drawing Galaxies and Galaxy Groups

- Great variety in size, brightness and detail for galaxies and galaxy groups
- Although most fainter galaxies show little detail they can make a pleasing sketch when in pairs or groups in combination with a star field
- Individual edge-on galaxies can make a good object to sketch
- For brighter and larger galaxies higher magnification can pull out details invisible at lower power
  - lower powers than planetaries generally because surface brightness lower
  - big variation in angular width of detail so try different magnifications to bring out different features e.g., halo, spiral arms, core
  - filters little use
- Employ similar procedures to those already described for nebulae
  - decide on size of galaxy on page
  - draw stars first, then outline galaxy, then fill in details
Drawing Galaxies - simple with stars or in groups

Bear Paw Galaxy, 18” Dobsonian, 254x

Ngc7331 and companions, 18” Dobsonian, 156x
Drawing Galaxies - more detailed groups

Hickson 68, 18” Dobsonian, 254x

Hickson 61, 18” Dobsonian, 156x
Drawing Galaxies - individual detail

M51, 10" Dobsonian, 184x & 113x

M101, 18" Dobsonian, 102x

Ngc1365, 25" Dobsonian, 143x

24/01/2012
Drawing Galaxies - individual detail

Ngc4565, 18” Dobsonian, 156x

Ngc4762, 18” Dobsonian, 156x

Ngc891, 10” Dobsonian, 184x & 113x

24/01/2012
General Difficulties

- Preserving night vision with light on
  - keep light as dim as possible
  - use one eye
  - Remember as much as possible before going to paper
- Dew making paper damp
- Holding too many things
  - pencil
  - board
  - light
- Poor pencils or paper
  - trial beforehand