

Chapter 2

Planning and Recording Your Observing Sessions

2.1 Preparing for an Observing Session

After what seems like weeks of cloudy skies, you suddenly find yourself faced with a clear night. All too often, the keen observer rushes out totally unprepared and has little idea what they are going to observe. That is all well and good for short impromptu sessions, but if you are going to make a good night of it, you will be much more productive if you do prepare properly and do your homework.

2.2 Weather

What is the weather going to do tonight? Check the weather forecast. Is that current clear spell going to stay for the whole night, or is it just a short-lived event and clouds are soon to arrive? There are a multitude of Web sites or mobile phone apps available for checking the weather or looking at the latest satellite image, so make sure that you consult them before you start setting everything up. It can be frustrating and disheartening to take the time and effort to set everything up. Then, just as you start enjoying the sky, the clouds roll in and spoil your night. There are a number of generalizations that can be made about the weather and which should be kept in mind, wherever you are in the world.

Cold Air

Skies are usually very transparent, but the seeing is generally very unsteady. Good for deep sky objects, it is not so good for observing planets and the Moon.

Warm Air

Some cloud, haze or dust may be in the atmosphere. Here the transparency is usually quite bad, but the air is quite still and seeing very steady. This can be great for observing the Moon and planets, but awful for seeing faint deep-sky objects.

Solar Observing

On clear days observing the Sun make sure that you wear suitable clothing and cream to protect you from the Sun's UV. Even on a cold day, the radiation from the Sun can easily burn your skin.

Insect Bites

Observing at night can expose people to the worse of the biting insects. There are many products available to help protect you, but they are often oily and extremely smelly. Many of the repellants contain a substance called N,N-Diethyl-met-toluamide. (DEET). This should not be used on damaged skin and has some potential health concerns. It is also an extremely effective solvent and can dissolve plastics, synthetic materials and varnished surfaces, especially when used at more concentrated preparations. So it really isn't a very good idea to get DEET anywhere near your precious observing instruments and accessories.

Winter Observing

It can be extremely cold on clear nights. Wrap up with many layers of clothing. What you will soon find out when you start observing is that the temperature drops rapidly once the Sun goes down. First and foremost, think comfort. The best seeing conditions are very often on crisp, cold and frosty winter nights. It is very easy to get lulled into a false sense of security when you first go out observing. The temperature might feel quite comfortable initially, but as the evening progresses, or the early hours approach, under a clear sky the heat rapidly dissipates. It is very easy to get cold. Once you are cold, it is extremely difficult to get warmed up again. If you are not comfortable and warm, your concentration will suffer.

If you are lucky enough to have an observatory, it might shelter you from the wind somewhat, but it still gets very cold. Any heating inside would produce turbulent currents out of the roof and this will destroy the seeing. Some lucky observers have a warm room they can retire to when it gets cold. The author's observatory is so close to the house that he frequently goes back inside to warm up.

Many a great observing session has had to be abandoned when the observer starts shivering, feels totally miserable and just cannot stand the cold any more. Once you get to this stage, it's game over. The only way around this is to wrap yourself up as much as possible to retain as much of your generated body heat as possible.

The secret to keeping warm is to wear many layers of clothing. If you get too hot, you can always take off one of the extra layers. Wear warm undergarments. These are extremely useful at keeping the body warm on very cold nights. They act as a very good base for keeping in your body heat. Wear thick socks and stout boots. The feet are quite often the first part of the body to start suffering when the

toes go numb. This is especially so if standing on damp grass and your feet get wet. Also wear a thick coat. One with many (clean) external pockets will be useful as you could put your hands in them to keep them warm, or keep your eyepieces in them. This will also stop them misting up.

Wear gloves, but the thicker the gloves, the harder it will be to operate equipment. It might be useful to have a pair of gloves where the fingers can be folded back when required to change eyepieces, operate a camera etc. Hand warmers can also be very useful to warm up the hands. They are available fairly cheaply from camping and outdoor shops. They are small pouches that contain a gel. There is a metal clicker inside which the observer operates to release the heat. The gel rapidly crystallizes, releasing heat in the process. These can be placed in pockets for warming the hands. They are re-generated by boiling in a saucepan.

Also wear a hat, and the woollier, the better. Do not forget, in the dark no one can see what you look like, so do not worry if the style is not “in fashion”. As long as it keeps you warm, it means you will be able to get the most from your clear skies.

There are still going to be some occasions where the worse of the cold will always win, but the best-prepared observer will be able to get stay out longer and be able to achieve far more.

2.3 Gain Knowledge of Your Quarry

When hunting, knowing the behavior, intimate details of their nature and the habits of your quarry will always give you the best chance of a successful hunt. The more you know about them, how they behave, how they might look, and when and where are the best places to find them, the greater your chances of success. Astronomical observing is very much the same. The observing targets are your quarry, now we need to find out how best to track them down and observe them.

What Objects Are Visible Tonight?

As we will see later in this book, every object has its best time of the year or night for viewing. The best time to view most objects is to catch them as high above the horizon as is possible. Having good knowledge of the objects, and when they are best observed, will increase your chances of observing them successfully. If you timed your observing session properly and went out a little earlier, or a bit later, would it make your intended target(s) easier to observe? Do your homework before stepping outside.

Check for predicted or new events. Is there anything out of the ordinary or unusual happening tonight while you are out observing? We have all done it! Many a time an observer has had a great observing session out in the garden and then read the next morning of other observer's experiences of an event that they too should have seen had they been looking in the right direction that very same night. You just never know when a supernova is going to go off, or a new comet has been discovered. Only by keeping up to date will you know what you need to look out for. Keep

your eye out in astronomy magazines, Web pages, astronomy forums and even the national news, so you are as prepared as you can. Just try not to notch up too many missed opportunities.

2.4 Keep an Observing Notebook

When making your observations record everything by writing down what you have seen. This produces a permanent reference for future use.

Some people diligently fill in dairies every day, documenting down to the finest detail everything they (and in some cases what other people) do. Others find the whole process a real drag and never fill one in. In this case, they rely solely on their memory to recall what has happened.

Observing is a constant challenge. What you have seen should, in an ideal world, always be recorded in some way. From the constant bombardment of information we are exposed to today, your memory can, over time, often be tricked into convincing yourself that you have already seen something that you really have not. Many experienced observers are the worse for not documenting completely what they observe, the author being a typical example. Looking in your completed observing log in the future will tell you exactly what you saw and how you saw it. This is especially useful if going back and revisiting previously observed objects.

If you do try and find one of your targets and fail, make sure that you also include that in your notebook. Failures in finding an object, or failing to see some particular detail will help to develop your observing skills. So always include your failures in your write-ups alongside your successes.

How detailed should your recording be? That decision is entirely yours to make. There really is no right or wrong way of doing things and there is no need to be too regimental about the whole thing if you do not want to. Remember that it is your hobby. You do it in the manner that gives you the most pleasure. Put too much pressure on yourself, or try and do something you are not really comfortable in doing and you will not enjoy the experience. This will result in the hobby becoming a drag and you will discourage you from going out and observing.

As a minimum, keep a small notebook handy to use as an observing log. A typical observing entry in your log should, as a minimum, include the information in Sect. 2.5.

2.5 Date and Time of Observation

Date

If an observation is to be submitted, it will usually be dated according to Universal Time. So make sure that your conversion to Universal Time (and Date) is correct to give you the correct time and date. Especially when observing at midnight.

Gregorian Calendar

This civil calendar is the one we recognize and share across the world today. It is composed of the Day, Month and Year. It is commonly expressed in the following format: dd/mm/yyyy, or mm/dd/yyyy, where numbers replace the letters accordingly.

However, there is a need to watch out here, especially if sourcing information from the internet. The convention of writing down the date differs in other countries. So the 15th of August 2013 will be expressed in different ways. In the UK and Australia it will be expressed as 15/08/2013. In the USA this will be expressed as 08/15/2013.

Luckily on days in the month above 12 the difference is easily spotted. Let us take another example of 8th March 2013. In the US it will be written as 08/03/2013. In Europe and Australia it will be written 03/08/2013. So the dates can be easily confused if you interpret the wrong format.

This is something that will be easily mistaken if you have electronic equipment, such as telescope handsets. They often only accept one form of the date, which may differ from your local tradition. Some reports require you use yyyy/mm/dd when submitting observations. So make sure that you are aware of this. Keep your eye out for any differences that could cause confusion.

The Julian Date

Although the more casual observer rarely uses it himself, the Julian date is used quite a lot in astronomical calculations, so it is worth the observer being aware of it. These times can be obtained from most planetarium programs, other software or online. This date is derived from the time that has elapsed since midday on January the 1st 4713 BC.

If you are interested in why this particular date was chosen, visit this Web site: <http://scienceworld.wolfram.com/astronomy/JulianDate.html>

The Julian Date is quite often used by planetarium software in its calculations to avoid the annoying complexities of extra days added onto leap years and the like. Using the Julian Date, midday on our chosen date of 15th of August 2013 will be expressed as the Julian Date of 2456520.00000. The five decimal places enables the observer to break down the day into very small fractions, so that a very precise (perhaps too precise) time of a particular event can be given. Using the Julian date also avoids the confusion if a change in date occurs while making observations.

Time

Universal Time (UT) is generally used in astronomical observations for consistency. This is equivalent to Greenwich Mean Time (GMT). For convenience to us humans the Earth has been divided up in a number of time zones. This is so that at midday the Sun is always approximately at its highest in the sky, wherever you are on the Earth. At the extreme north and south the Sun may not be above the horizon in the depths of winter. However, it will be at its minimum distance below the horizon at that time.

A diagram of the Worlds time zones is available at <http://www.worldtimezone.com>.

This diagram is a simplification as there are more than 24 time zones that can be seen at first glance. There are some isolated pockets of local time within other time zones.

As an observer, you probably know in which time zone you reside and how many hours ahead (East) or behind (West) Greenwich (UT) you are. Therefore, an observer living on the Eastern Seaboard uses Eastern Seaboard Time (EST) and this time zone is 5 h behind UT.

Daylight saving time comes into force in many countries from spring until the fall. This usually puts the clocks an hour ahead at your location for the summer months. Do not forget to take this into account if daylight saving time is in operation in your country at the time of your observation. Convert back to Universal Time, unless you state explicitly that local time has been used.

A convenient Time Zone Converter can be found here:

<http://www.timeanddate.com/worldclock/converter.html>

Sidereal Time

This is a measure of the time based on the Earth's rotation in relation to the stars. This is measured by noting the line of Right Ascension that is moving across the observer's meridian at the time of observation. i.e. the time that has elapsed since the vernal equinox has passed across the meridian. This is equivalent to the right ascension of a star that is currently on the meridian. This may or may not be included in your observing log, but it is useful to be aware of your current sidereal time.

Sky Conditions

Make a note of the general sky conditions while making your observations. Is the sky really dark, observations made in Twilight? Is it slightly hazy (haze generally helps with planetary or lunar observations)? Are the skies really clear and transparent? Is there any wind? Are the stars twinkling wildly or do they show a much steadier light than usual? How much light pollution is there at your observing site? Is it better or worse than normal? Are there any neighboring lights or general light pollution?

It is always worthwhile checking out the general sky conditions as you might just spot some auroral activity or the presence of noctilucent clouds while doing so. If you are really lucky to have very dark skies, the Zodiacal Light or the even more elusive Gegenschein may also be visible. Therefore, it is always best to keep a look out at all times and always have a broader awareness of the sky as well as your intended target.

A night where the image is steady and calm would be perfect for viewing double stars, planets and the Moon. On nights of very poor seeing, nothing but the most casual observations can usually be made despite the fact it is a perfectly clear night, with the image shaking and wobbling all over the place. On nights like this fine detail is extremely hard to resolve.

2.6 The Seeing Scale

Astronomers across the world use the Antoniadi Scale to give an indication of seeing conditions while observing. This is caused by the turbulence of the air in the atmosphere above our heads. Conditions can change in a matter of seconds. A perfect

night for viewing will have naked eye stars that are visibly twinkling a lot less than usual. This is usually very obvious if you observe a star, the Moon or a planet through the telescope.

The seeing scale is a five-point system as shown below:

- I. Perfect seeing, without a quiver.
- II. Slight quivering of the image with moments of calm lasting several seconds.
- III. Moderate seeing with larger air tremors that blur the image.
- IV. Poor seeing, constant troublesome undulations of the image.
- V. Very bad seeing, hardly stable enough to allow a rough sketch to be made.

This scale can sometimes be very subjective. Many an observer has frequently given seeing conditions a score of II or a III, but when they have gone to clearer and better skies, found others referring to II and III, with much steadier skies. Therefore, their system was much different to others. This was because of their own personal experience. Whatever your perceptions, always try to be consistent in the way you measure these things, so you can compare notes later. If you failed to see something on one night because the seeing was so bad, but you saw it another night when the seeing was better, your notes should indicate why that observation was successful. You will then start to appreciate the best conditions that will start to give you the greatest opportunities to observe your intended objects.

Another scale sometimes used to measure seeing is the Pickering Scale. This uses a 1–10 scale with one being very poor seeing. Ten having excellent steadiness to the image with perfect observing conditions.

2.7 Note Down How and What You Observed

What Object/s Did You Observe?

A planet, Double Star cluster, Nebula, Galaxy or another object? Make sure you use its currently accepted name, e.g. Messier, NGC catalogue etc.

What Optical Instrument Did You Use?

You might have made an observation with the Naked Eye, Binoculars or a telescope, or a mix. If a telescope was used always include its Aperture, Focal Length and whether or not it was driven to track the sky. Did the object(s) look different in different instruments/apertures? What eyepiece(s) and magnification did you use? Did you use a variety of eyepieces to try and get a different view? Did the view differ? How? Were any filters used to aid your observation?

Did you swap filters to see if it made a difference?

Did you try anything else differently?

Your Observations: What Did You Actually See?

Did you notice anything different or unusual about the objects you observed? Did you manage to see any detail in the object? Did the light intensity vary across the object or was it smooth? Did the view differ when observed directly

or when you used averted vision? From what you tried, what worked really well? What didn't? How different was the view from the different combinations you tried?

2.8 Astronomical Drawing

They often say that “A picture is worth a thousand words” and so it is. Making a quick sketch of what you have seen really does capture what you have seen while observing and is an excellent way of reminding you what you saw while you were “out there”.

Before the advent of photography the only way to produce an accurate visual image through a telescope was to draw what you could see. Eminent names in astronomy including the likes of Christian Huygens, Giovanni Domenico Cassini and William Herschel all made significant contributions to our knowledge of the solar system through their drawing work. The Dutch astronomer and mathematician Christian Huygens produced the first known drawing of the Great Orion Nebula in 1659. In doing so he noted that the interior of the nebula consisted of stars – a first for seventeenth century science.

Today, astronomical drawing is a purely recreational activity. While no longer directly contributing to our developing scientific knowledge, it does challenge our senses – particularly our vision, spatial awareness and hand-eye coordination. It's very accessible too. Anyone can draw. You don't have to be an artist. In fact the less artistic ability you have the better. The whole process needs to be objective and methodical, relying more on your ability to push the limits of your own vision than anything else. As always the case in visual astronomy, the more you look and observe, the more you will see.

Why make drawings? Visual astronomy is about the experience. It's the thrill of tracking down a distant object many light years away and seeing its photons for the very first time. Perhaps you're seeking out minute or low contrast details that you've often read about but never seen first-hand. Sometimes it's the faintest of smudges in the night sky that mean so much when you know their enormous distances and the stories behind them.

Only when you start to understand what you're looking at, and begin to appreciate the enormity of scales involved across dimensions of space and time, does visual astronomy come alive for a lot of people.

In addition, it's right here where astro-drawing develops meaning. We're not talking about the aesthetics of a pretty picture, but more about the raw power of emotion in capturing what you see. It follows that you might also like to relate and share your visual experience with others. We all want to share with others what excites us the most and astro-drawing gives each and every one of us that outlet. All that is needed are a few pencils, some paper, a dim red light and plenty of patience at your telescope.

2.9 Getting Started with Drawing

The starting point for every drawing must be the quality of the visual observation. The very best astro-drawers are people who train their eyes to look for small-scale tonal variations in the objects they track down. Like anything it does take practice. The more you observe and practice seeking out these small variations, the more detail you'll soon find yourself able to see and record in your drawings.

Perhaps the most important aspect in all of this is having the knowledge to stack your visual observing conditions in your favor. Without doubt, the more your eyes are in tune with the apparent brightness of the object you're observing, the more detail you will get out of it.

2.10 Equipment Needed for Drawing

Drawing is a very low cost imaging route. There's very little in the way of financial outlay to get started. All that you need is:

1. Pencils – A set of graphite pencils from your local stationery store will do the trick. To give you the freedom to plot those small-scale tonal variations that you might see in some objects it's best to invest in a set that offers different graphite grades. A set that ranges from 4H to 6B will work well.
2. Colored Pencils – A set of colored pencils are useful to have but not essential. More than 95 % of the objects that you view in your telescope will be seen by your eyes in grayscale tones. The other 5 %, which includes, Mars, Jupiter, Saturn, some double star systems and a handful of nebula, will show varying degrees of color to the human eye. For the planets colors will mainly be earthy tones – browns, oranges, yellows and maybe some green. For stars and nebulae shades of blues, yellows, oranges and reds might be needed.
3. Sketch Pad or Paper – When starting out a 90gsm or 100gsm standard copier paper attached to a clipboard will work well. As you grow in confidence its worth experimenting with different textures and weights of paper to see if it adds to your drawing style or detracts from it. Don't forget that more flimsy paper will be the first to suffer in damp weather.
4. Drawing template – To get an accurate drawing you will need a frame of reference. If you're drawing a whole eyepiece view then a printed or drawn circle representing the outer edge of your field of view is recommended. The best way to do this is to set up a template containing varying sized circles on a word processor or similar software. You can then experiment with different sizes for your eyepiece frame of reference to see what works best for you.

Drawing planetary detail requires a template more representative of the planet's visible disc. Many of the observing sections of astronomical organizations discussed later have drawing templates and observing forms available for planets and deep-sky observing. It's worth noting that all the planets but Saturn have a standard

template that can be used for any observation of the planet in question at any time when it is visible in the night sky. The angle of Saturn's rings as seen from our viewpoint here on Earth changes from year to year and even from month to month. You will therefore need to select a template that is best representative of the angle of Saturn's rings at the time of viewing.

A number of planetary (and other) astronomy drawing templates can be downloaded from here: <http://www.perezmedia.net/beltovenus/templates.html>.

Red Light

Drawing what you see on paper of course requires some light for you to accurately plot down the details. Don't forget to use a dim red torch to enable you to see what you are doing, but still preserving your night vision.

2.11 How to Draw

Once you're confident that your eyes are fully dark adapted and you've spent enough time studying the object in search of those tiny standout details that characterize it, you are now ready to put pencil to paper.

Drawing Galaxies, Nebulae & Globular Clusters

The best way to draw galaxies, nebula and globular clusters is to use grey on white, where the brightest parts of the object are represented by the darkest shades of grey.

1. Start by plotting down the brighter stars that you can see in your field of view. This will help you pin down a framework in which to draw your object. It's quite surprising how easy it is for the eye and brain to exaggerate size and distances when drawing from the eyepiece. By building a framework of reference stars

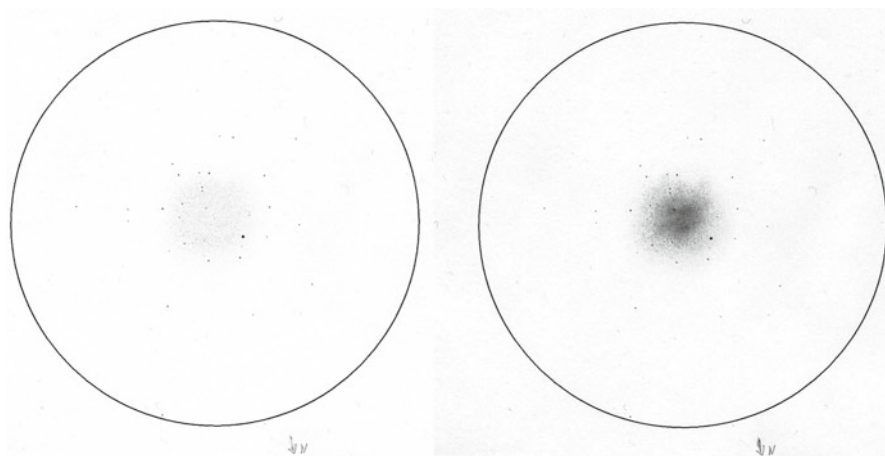


Fig. 2.1 Draw in the bright stars first, before putting in the fainter ones (Courtesy of Seb Jay)

inside your field of view you'll be able to contain your drawing better so that it is representative of actual viewing size.

2. Using a hard pencil (4H or 3H) held at an oblique angle to the tip lightly lay down a patch of graphite on your paper that represents the shape and maximum extent of the object that you can see. Use a finger or a piece of cloth and lightly spread the graphite around in the area. This will help you get a smooth and fuzzy look to your object, especially around the edges as it fades to the background.
3. Using progressively softer and darker pencils, build up layers of brightness visible in the object. Galaxies and globular clusters normally brighten to their core, so often it is a matter of building darker shades of grey towards the central area of the object, obviously being mindful to develop any lighter and darker features visible as you go. Drawing nebulae can be a bit trickier as frequently there is no central condensation. Therefore more care is required in building up the brightness layers.
4. Complete your drawing by filling in the fainter stars that you can see in and around your field of view, plus any fine detail that leaps out at you during this process. Often, when you're concentrating on pulling out the faintest points of light more detail in the object you've drawn suddenly jumps out at you!

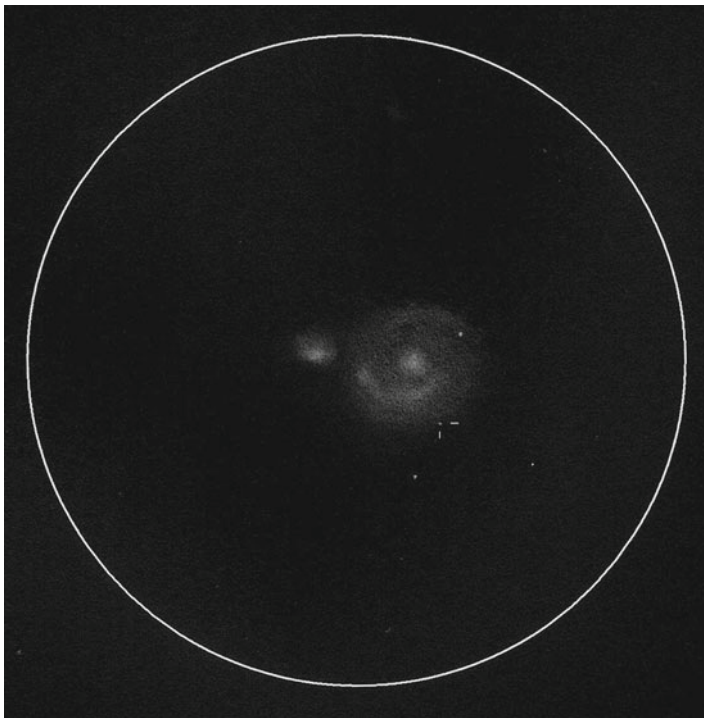


Fig. 2.2 Drawing of the galaxy M51 and Supernova 2011DH (Courtesy of Seb Jay)

Drawing Star Clusters

As for galaxies and nebulae, star clusters are best drawn black on white.

1. Start the same way as above by plotting the brightest stars in your field of view to generate a reference frame for the rest of the drawing. The very nature of a star cluster means there will be a larger number of brighter stars to note down at this initial stage than in a drawing of a galaxy or nebula. The key to plotting these bright stars accurately is to look for patterns – particularly triangles.

Triangles in the broad sense of the term are very useful for judging relational positions of stars. Once you have two stars accurately plotted in a line your third star will always form an apex to a triangle (normally a scalene triangle where no side or angle is equal) when using the other two stars to form a baseline. Every subsequent star then will also form an apex to a triangle when used with a choice of two other stars on your developing drawing.

As you note down more stars you might find it easier to switch to looking for other patterns that consist of four or more stars. Squares, rectangles, rhombus and rhomboids are among some of the common shapes to look for to help you plot down correct star positions.

2. The brighter your star the softer the pencil you should use. In a range from B to 4B, the 4B is your softest pencil. A 4B pencil lays down graphite the darkest and should be used for marking out exceptionally bright stars. Pencils graded 3B, 2B and B should then be used to plot down stars with progressively less luminance.

Note that brighter stars tend to shine with a larger halo of light than fainter stars. It's a visual effect and probably needs to be noted on your representation. Therefore, draw brighter stars a little larger than fainter stars to capture this dynamic representation.

3. Fill in the remainder of the cluster's stars moving from brightest to faintest. For very faint stars consider using a light touch with the tip of a 2H or 3H pencil to ensure good brightness correlation with the other stars.

Drawing the Moon and Planets

Drawing planetary detail requires an altogether different approach from Deep Sky objects. First off you're drawing in positive light – i.e. dark features are drawn in darker shades of grey or color and light features in lighter shades of grey or color.

1. Start your drawing by getting familiar with the surface and/or cloud detail you can see on the disc.

Mars rotates around its axis at a slightly longer period than our 24 h day here on Earth. The features you see on the surface will therefore move through the night due to this axial rotation. Overall you probably have about a 1 h window to plot down features accurately without them shifting too far from their initial positions. Jupiter's rotation is quick. The giant planet completes a full rotation once approximately every 9 h and 55 min. It makes plotting features accurately a little more challenging as appreciable movement becomes obvious after just 20–25 min of viewing.

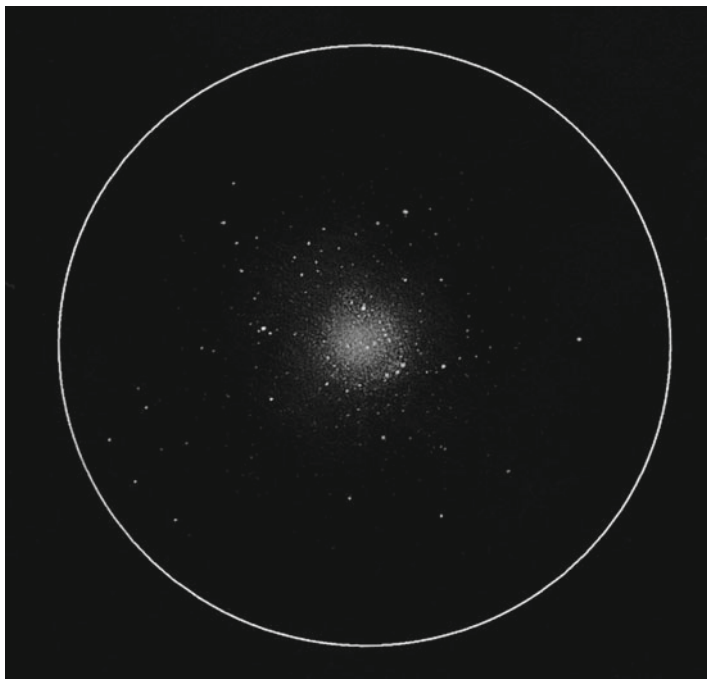


Fig. 2.3 Drawing of globular star cluster M53 (Courtesy of Seb Jay)

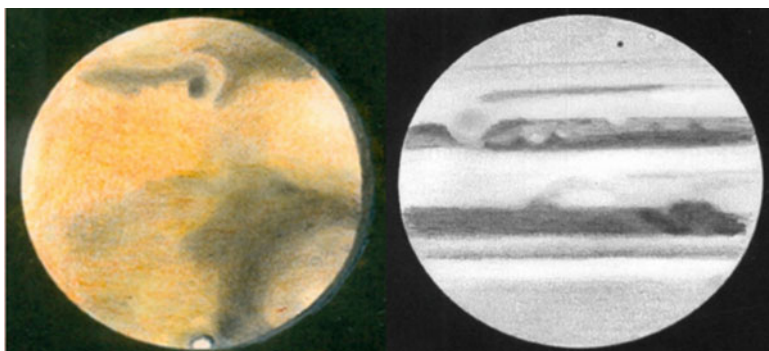


Fig. 2.4 Drawings of Mars and Jupiter (Courtesy of Seb Jay)

2. Note down the positions of the main features you can see. For example, on Jupiter roughly pencil in the positions of the main bands, spots, barges and bays that are obvious to your eyes. Look to finalize the placement of these within the first 5–10 min of starting. These will form the framework for your drawing to which you can relate the finer detail later on as features move across the planets disk.
3. Working from the western limb to the eastern limb, begin building those finer details using progressively darker pencils. Why work from west to east? Just as Earth rotates in a clockwise motion so Mars and Jupiter do the same. Features rise on the planet's eastern limb and set on the western limb. If you work from west to east you can be sure that you'll be able to plot features accurately before they move off the edge of the planets disc.
4. To complete the drawing, spend time at the eyepiece searching out the really fine and low contrast details. During the course of your observation you'll notice that the steadiness of your view will vary, regardless of the overall calmness or turbulence of that slice of upper atmosphere your telescope is peering through.

Most of the time your telescopic image will shake and shudder about and look very smeared; other moments will plateau in a state of calmness, at which point super-fine details on the disc will suddenly be revealed. These moments might be fleeting but you need to be able to make the very most of them to pick out those really small and low contrast features to make your drawing really special.

Once you are happy the resulting drawing is finished it can be cut out and stuck into the appropriate page of your gradually increasingly filled observing log.

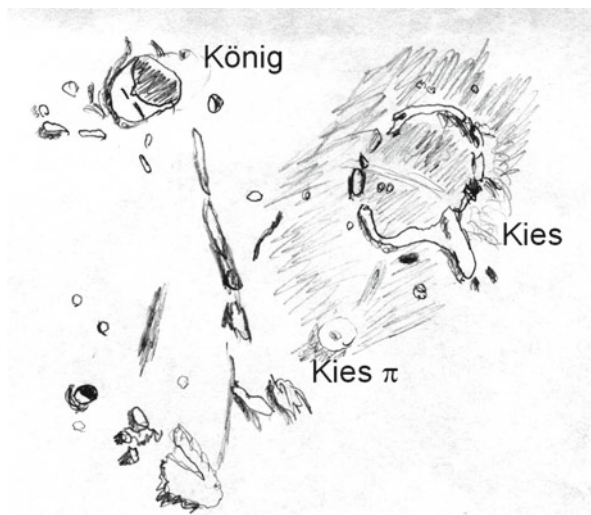


Fig. 2.5 Drawing of the Lunar Surface close to Kies and the Lunar dome Kies Pi (Courtesy of the author)

2.12 Finalizing Your Drawings for Presentation

The best way to do this is to use a flatbed scanner to upload the drawing onto the hard disk of your computer. Unless you have a color element to your image choose to scan your drawing in grayscale as a .jpg or .png file. Use the highest pixel setting as possible without producing too big an image.

Once the image has been digitized there are a couple of other steps you might like to do if you have the appropriate software.

Deep Sky objects may benefit if you turn the image into negative (for a positive light image). That way your dark greys will become light and your light greys dark. The white background will become black. Your drawing will represent exactly what you have viewed in the eyepiece – bright stars and nebulae on a black background.

Once your drawing is complete and you are gaining confidence that your drawings really are representing your eyepiece view, you might want to share it with others. Observing coordinators will be extremely pleased to receive copies of them. Alternatively, how about submitting them to an astronomical magazine for publication?

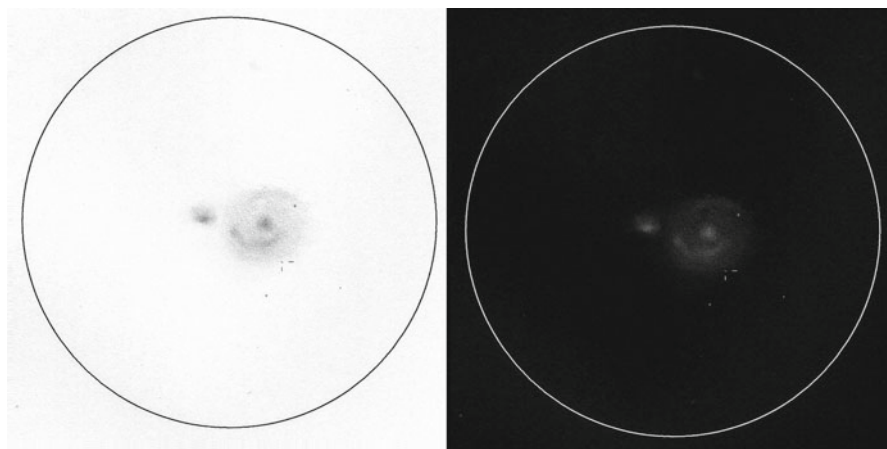


Fig. 2.6 Changing your drawing to white on black (Courtesy of Seb Jay)

<http://www.springer.com/978-1-4614-8765-4>

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