

## A Jigsaw of Constellations

I am reminded by my New Astronomers' Group members of just how perplexing the night sky can first seem. That simple task of looking up at a bunch of bright stars and recognising them as a Constellation does come with practice, so take heart. Like the picture on the front of a jigsaw puzzle box the night sky looks attractive, yet you suspect the detail within will be challenging. Most people, young or old, timid or bold, poor or gold can feel overwhelmed seeing thousands of stars for the first from a dark country site. This why the ASV runs "Sky for the Night" demonstrations to reveal the patterns and shapes we can all use to navigate the night sky.

Likewise, a first glimpse of Saturn with its majestic rings, an edgy galaxy, or cluster peppered with subtle colours often indelibly tattoo themselves on the brain as stories to be re-told many times over for years to come. So you might as well accept that resisting the temptation to search out your first monthly constellation highlight is futile. Like gravity, the pull of the night sky will eventually reach out and draw you in. This is equivalent to opening that jigsaw box. Hard to resist, yet suddenly you can be confronted with a jumble to assemble into something you only vaguely recognise anyway.

Do we need to be wary of looking down at our mobile devices instead of looking up at the night sky? Well, a quick 5-10 mins "you tube" video will help you swap out your phone battery or secure some knots when borrowing next door's 6x4 trailer. There's no such video that empowers you to step outside and know exactly which stars you're looking at. However there are apps that allow you to hold your phone or tablet up to the night sky and show a coarse map of where you're looking. These interactive tools will also advise you're looking at Venus or Jupiter and not a UFO! Why spurn the phone's invitation of help? Instead embrace the technology to help you identify those first star patterns and find names for those brightest stars? Or... take the whole family to the planetarium.

### What is a Constellation?

My pocket Macquarie dictionary shows the word **Constellation** is preceded by **Constant**. This is quite apt because the stars of a Constellation maintain a constant pattern as they wheel across the sky from season to season, year to year, even generation to generation. The word **Constellation** is followed by the word **Consternation**. Again quite apt as you may suffer this feeling as you struggle to jostle those first bright stars into a constellation shape. Just like a jigsaw you will (hopefully) build confidence and find some rhythm as you fit more & more pieces of sky together.

Civilisations the world over have placed deities, animals, flora, fauna & other objects central to their culture into the star patterns that adorned the heavens above. In doing so their local stories, cultures and traditions were passed from generation to generation even before the written word. Learning the night sky is not a motor skill like riding a bike or juggling balls. It is more akin to exploring your local town or surrounding suburbs. The more you explore, the more pathways you discover, places become familiar, you discover a community that is welcoming. My recommendation is to start learning the brightest stars so they become your guide posts. Learn their names and the shapes they are part of. Like finding hand holds and following cracks up a rock face these beacon stars guide you.

The 88 constellations globally recognised today have been on planispheres and star charts for generations. Try thinking of a constellation as a suburb in a city or place in a large country town. When given an address you typically start by travelling to that suburb. Next you locate the main road that connects to the street, before working it down to a place number. Therefore... when a new comet is announced as being in the tail of Scorpius everyone knows which suburb of the sky to head for.

## The Jigsaw connection

I grew up with jigsaw puzzles. One of my early favourites (completed some 100 times) was Sydney Harbour. Some 45 years later when I actually got to Sydney Harbour I somehow just knew where the Ferries docked, located those steps on a sea wall, those white nested shell shapes became imposing up close, the familiar coat hanger span loomed affront the more distant Luna Park. That glorious Opera house which anchored a harbour bobbing with all manner of watercraft finally became real.

So I proffer we should be able to assemble a basic night sky map in our heads like a simple jigsaw puzzle so we can determine which direction to point our binoculars & telescopes. Beware there are many layers within the night sky. As we apply binoculars, small telescope, and then larger scopes the number of pieces grows until we are left with a street directory of details we can't hope to remember.

Just like any jigsaw puzzle the shape of each piece is not real and disappears as you fit them together. Likewise constellation boundaries are not real as they are only seen on a star map. Instead look for the brightest stars and the asterisms (stick figure shapes) they are a part of. As these shapes wheel across the sky they can tilt left/right, even turn upside down (when circumpolar). Often you need to step back and take a wider view that includes three or more bright stars to confirm your orientation. The night sky jigsaw has no edges, in fact it arguably has none except (maybe) the horizon? Therefore, there are no corner pieces or straight edges that you can start with. While you can distinguish a north/south, the east/west are not always definite except in relation to something else.

So, yes a different approach is required but the methods are not too unfamiliar. A jigsaw picture usually contains a number of interesting features or objects that draw the eye while less interesting parts in-between include grass, water, leaves, sand or such. The night sky tends to be more severe with blank and indistinct areas only defined by fainter magnitude 3 to 4 stars. Lucky blank areas harbour deep sky treasures that draw in observers hunting them, while others remain bereft and go mostly unnoticed. For these reasons a Novice observer can start with identifying just a handful of constellations. As confidence grows this will feed curiosity, which will extend hunting trips into areas of the sky you never knew existed. Making that pursuit fun is what can make for your success.

## Local Astronomy club

This is the role of a local Astronomy club like the Astronomical Society of Victoria (ASV). They know the local dark sky locations, build up facilities for members, organise fun events that bring people together, and create Sections for like-minded to find one another. They also run events to introduce the public and groups like schools to the night sky treasures. What can possibly be better than sharing the Universe with others and celebrating those discoveries?

## The Planisphere idea

Call me old school as I prefer using a planisphere with a red torch than the phone app idea. A planisphere doesn't require a connection, doesn't burn through your phone battery, or require all the shiny toys like GPS, accelerometers, compass etc. which may or may not work from a remote location.

I start with "setting" the planisphere by turning it until the date and time are aligned. The cut-out of stars now represents the night sky above. The way I work is to divide the sky into 5 sectors being North, East, South, West & overhead. If Scorpius happens to be in the West I turn my chair that way, hold the planisphere out in front of me with West at the bottom. Tilt and turn a little in my hand to match the orientation of the brightest stars. Then I can look for the shapes of the constellation(s). It also shows what is nearby. So the job of a planisphere is to simply show what is up, when, and which direction to look. The job of hopping all the way down to deep sky objects goes beyond this article.

## Dipping your toes in

Once you start identifying constellations pull out your star atlas or fire up your favourite Astronomy app like Stellarium, Starry Night, or Sky Safari (there are many out there). Look for deep sky objects within reach of your equipment and sky conditions. Don't wait until the puzzle is finished to pull out the binoculars and telescope to have some fun. Indeed scratching around helps you remember!

One mistake to avoid is only looking for constellations. The latest version of the Stellarium app includes a new feature called Asterisms. These other shapes can be used to tag otherwise awkward areas of sky. You may have heard of the Diamond Cross, False Cross, the Pointers, Tea Pot, the Saucepan (or shopping trolley). This asterism feature has only recently been added (2019). Like previous features I expect the number of Asterisms will grow. In fact the Chandler Planisphere (highly recommended) lists some 30+ such names like LMC, SMC, the Emu, Coal Sack, Winter Hexagon and Summer Triangle that Professor Google can help you discover more about.

Some people like to keep an observing log. It's no secret the act of writing things down helps you remember. Logs can be like a trail of breadcrumbs to remind us where we've been and what we've seen. Share your log with friends and others with an interest? The Messier hunt requires this!

## Pulling it all together

Just like the Jigsaw analogy starting with easy to recognise chunks makes a lot of sense. For example Orion, Leo, Crux, Scorpius, Sagittarius and Canis Major are all bright, easily recognisable, with interesting objects for even a small scope. Connecting these chunks requires fumbling through the awkward pieces that don't seem to fit anything. Typically the picture on a jigsaw box is your only guide. However there are many maps and charts of the night sky available. Monthly articles often trawl through constellations and even larger areas of sky. So make good use of resources to be found online, in your favourite Astronomy magazine, yearbook or Star Atlas.

Another method is to reverse your normal thinking. For example... If you know two constellations near each other then ask yourself the question, what lies in-between? Your known constellations might form a larger triangle or line of stars that help you find the fainter constellation(s) next door. These are yet more handles to grab hold of unfamiliar pieces of night sky.

## Consumer advice

When tackling your night sky jigsaw please pay attention to what's printed on the box.

**- Recommended for 3 to 5 years -**

It may take that long to become comfortable under a sky that constantly changes with the seasons. Many people never assemble all the pieces because 20 to 50 constellations is enough in our busy modern lives. It's certainly enough to seek out many fine objects to observe, study or photograph.

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