

# Heavens Above - A Chronicle - 04 - November Nights

As mentioned in the Introduction Section, this is a collection of my columns that specifically relate to things best observed in the month of November. In most cases, they could also be observed in October and December at later or earlier times respectively.

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## 1. Changing of the Guard

for 17th November 1999

I always enjoy this time of the year. I have the feeling of a complete change of sky. Something new to look and marvel at.

For the past 6 months , from May to November, we have been able to enjoy the spectacle of Scorpius, the giant scorpion in the sky with a blazing red heart and its wicked curved tail; Sagittarius the Archer who looks more like a teapot, with its spout pointing towards the centre of our Milky Way galaxy; and of course our beloved Southern Cross with its attendant Jewel Box and two Pointer Stars.

But our world has travelled halfway around the Sun since May, and we are now looking out into the opposite side of our galaxy. So as these constellations we've enjoyed for the past half year disappear over the western horizon, we can look to the east and enjoy their successors.

And what are they. Our old friend Orion, with belt and sword and fiery red Betelgeuse, looms over the eastern horizon this week just after 9 pm. From now to April he will rise earlier and earlier. You can't miss him. From our view, he is upside down and looks more like a saucepan with handle. But he's still Orion, the mighty hunter.

But he's not alone. To his north rages Taurus, the Bull. We see the bull's angry red eye at the end of the star cluster Hyades, that looks like a giant V. And further north beyond Hyades, the beautiful Pleiades, a small cluster of stars that looks like another saucer, or a baseball cap.

Orion, Pleiades and Hyades are 1500, 410 and 150 light years away respectively. Each are a delight to watch through humble binoculars. . It's a case of "goodbye old friends, hello new friends."

## 2. Thar She Blows

for 19th November 2002

Moby Dick is alive and well in our northern sky this month.

The constellation Cetus is usually depicted as a sea monster. Greek mythology tells how the fair Princess Andromeda was chained to sea cliffs as a sacrifice to the great sea beast terrorising the local coast. Perseus did his hero thing, slew Cetus by turning it to stone with the head of Medusa and rescued the princess. Ah!!

That's why the constellations of Cetus, Andromeda, Perseus and Cassiopeia and Cepheus (Andromeda's mum and dad) all share a large part of the sky to tell this tale. (The latter three are mostly over the northern horizon and invisible to us.)

However, these days celestial historians are suggesting that Cetus may have been a whale. (Tell that to Perseus who was busy dodging razor sharp teeth and claws.)

Confusion about Cetus's whalehood aside, it can be found when facing north, about two thirds the way up from the horizon. The stars are generally faint (magnitudes 2 and 3) and best found on a clear dark night away from street lights. It is a big constellation with a confusing shape, representing the body and fins of a sea creature, a long neck and big head. The head is probably easiest to find. Look to the west of the big V in Taurus (with the red giant Aldebaran) and locate a largish 'circle' of five stars, about 6 degrees across. That's Cetus's head.

But if you go hunting the whale, remember, no harpoons please.

## 3. Starry Starry Sea

for 4th November 2003

This month is a time of changing of the guard, a time that coincides with a trip to that area of the sky called 'the Sea.'

The great months of Scorpius' ascendancy are coming to an end and now that the nasty scorpion is leaving, Orion is fast looming over the horizon, ready to take up guard (or is it pursuit?) over the beautiful Pleiades and Hyades sisters, and to do battle with Taurus the Bull for the next six months.

At sunset, it's a case of Scorpius is all but set, its wicked barbed tail poised above the western horizon, and Orion is about to rise. But what's happening in between?

Looking northward, the sky is dominated by constellations with a water theme. Though much fainter and less distinctive in shape than the 'in your face' Scorpius and Orion, they are all steeped in mythology with fascinating tales (or is it tails?) and date back to thousands of years B.C. Sweeping from west to east, we encounter Cygnus (a swan), Delphinus (a dolphin), Capricornus (a sea goat), Aquarius (the water bearer), Piscis Australis (the southern fish), Grus (a crane), Pisces (the fish), Cetus (a sea monster) and Eridanus (the river.)

Possibly the water theme can be explained by their proximity to Aquarius, which was the bringer of water (and thus life) to the ancient Egyptians. Or maybe the myth makers just had water on their brains. Either way, it's fun exploring that area of the sky while we wait for the big boys to rise.

## 4. Good Clouds, Bad Clouds

for 18th November 2003

Every cloud has a silver lining, they say. That's rarely so with astronomy, but this particular month there may be a case for it. However, the clouds I am referring to are not the rain bringing or star obscuring type, but actually clouds of stars.

If you can find a clear and moonless night after twilight this month or even December, you'll be treated to not one but two galactic clouds high to the south. These are the Larger and Smaller Magellanic Clouds, dwarf galaxies that are satellites of our Milky Way galaxy.

Simply face directly south, look up about 45° above the horizon and you should see a cloudy patch about 7 moon diameters across. That's the Small Magellanic Cloud (SMC) 190,000 light years away. Now move down and to its left and you'll see another cloudy patch about twice the size of SMC. That's the Large Magellanic Cloud (LMC) and is about 170,000 light years away.

The SMC and LMC each contain tens of millions of stars and binoculars or a small telescope will reveal individual stars, star clusters and nebulae. It's worth just cruising along these clouds to see what you can see.

A special treat for binoculars just above and to the right of the SMC is the globular cluster 47 Tucanae, the second best in the whole sky, while attached to the bottom left of the LMC is the superb Tarantula Nebula, a glowing star nursery about 1,000 light years in diameter.

## 5. The Andromeda Strine

for 2nd November 2004

Overall, I believe the southern hemisphere offers the best astronomical sky, but there are times I'd give my right binocular lens for a view of the northern hemisphere's sky. But we have to make do, particularly this month with the nearest spiral galaxy up for viewing.

The Andromeda Galaxy is a staggering sight in a dark sky without light pollution. From our location though, it is very close to the northern horizon so one needs to 'get out of town' and away from the northern light glow. That said, what and where is it?

A slightly larger 'twin' of our own Milky Way galaxy, the Andromeda Galaxy contains over 400 billion stars and is about 2.4 million light years away. It looks like a fried egg slightly edge on. With binoculars, you should be able to see the central bulge like a big white egg yolk. Conditions permitting, you may be able to see a hint of the inner disk of stars around the bulge. A telescope (on low magnification) will show you more.

To find it, locate the Square of Pegasus directly to the north and its two right hand stars. Extend them down one Square length, then to the east by half a length. That should land you smack on the galaxy. Be patient, let your eyes adapt to the dark, and you should find it. This is what our Milky Way would look like from 2 million light years distance.

## 6. Finding South by the Magellanic Clouds

for 14th November 2006

How many times have you wanted to find the precise direction of south (or even north, east or west) at night but you couldn't use the well known method using the Southern Cross and Pointers because, at this time of year, they are either below the horizon or hidden by trees? Oh... really? Well, I have many times.

There are a number of other simple tricks using the sky and this is one of them. From around October through to March before midnight, the two Magellanic Clouds are

conveniently well above the horizon. Depending on light pollution, they can generally be spotted with the naked eye as those large patches of light (like wispy clouds) separated from the Milky Way. They are in the general southerly direction near the bright stars Achernar and Canopus.

Here's the trick. Using the line between the two clouds, make an equilateral triangle with that line as one side and the apex in the direction away from Achernar and Canopus. From that apex, drop straight down to the horizon and that is South. And you can use Achernar and Canopus in the same way to make an even bigger triangle to get the same result. You can work out North, East and West from there.

## 7. Mythological Mayhem

for 30th October 2007

When you look at the apparently random patterns of stars, you may not be aware that the sky is a vast mosaic of mythological mayhem. Our names and shapes of the northern and overhead constellations are based mostly on Greek mythology.

So when you scan the northern sky from east to west as the world turns, you come across lurid tales of the war between the gods of Olympus and the Titans, fantastic creatures who fought for or against these gods, monsters from the deep, heroes and their foes, tales of love, sacrifice, betrayal and murder. It's all up there, you just need to know where to look.

For example, in November to the south west, we see the giant scorpion (Scorpius) hovering head downwards towards the horizon. Here is the creature that Gaia, Goddess of Earth, had sting the great hunter Orion for his drunken boasting that he could... and would... kill all the world's creatures. Above Scorpius there is the well known Tea Pot, an impolite description of the fierce archer centaur Sagittarius. It was Sagittarius who shot an arrow and killed the Scorpion for stinging his friend. Orion.

Further to the North, there is the eagle Aquila, loyal servant to the super-god, Zeus. This is best recognized by the short row of three stars pointing downwards. The centre and brightest star is Altair, about which the 'Forbidden Planet' orbited in that film. Aquila was multi-skilled in Greek mythology. He shot Ophiuchus (at Zeus's request) when he healed Orion from the sting. He carried out the perpetual torture on the good Titan, Prometheus, by pecking out his liver every morning. (Prometheus had angered Zeus by taking fire to the mortals after Zeus had stolen it from them.) He also kidnapped Ganymede and took him up to Olympus to be drink pourer for the gods.

Below Aquila, there is the very small constellation Sagitta, the Arrow, which looks just like one. It was the arrow that Aquila shot to kill Ophiuchus, and also the arrow that Hercules shot to kill Aquila on his last breakfast on Prometheus.

It gets better.

Above and north of Aquila, there is the large 'admirals hat' of Capricornus, the Sea Goat. This represents the god Pan after he tried to transform to a fish to escape the horrible Titan giant Typhon by swimming up the Nile. He was only half successful, so ended up half goat, half fish.

To the east of Capricornus is the constellation Aquarius, the Water Carrier. This represents Ganymede mentioned earlier.

The further to the east you will see the giant Square of Pegasus, four 'brightish' stars in a very empty field. This represents the famous flying horse, and it features prominently in the story of the rescue of Andromeda by Perseus from the sea monster Cetus, then returning her to her Mum and dad Cassiopeia and Cepheus. Of those characters, all constellations, only Pegasus, Andromeda and Cetus are reasonably visible from 'Down Under'.

As you can see, it's a very busy sky this month, most of in murder and mayhem.

## 8. A Fishes Tail

for 27th November 2007

Those of us with longer memories can hum the tune “It’s the Age of Aquarius” from Hair, but we’d be wrong. The precession of the Earth’s axis being what it is, the vernal equinox - the intersection of the ecliptic (the Sun’s path in sky) and the celestial equator - won’t be in Aquarius until the year 2597 AD. At present, it is The Age of Pisces.

Pisces, or The Fishes, is directly to the north these nights. It’s an odd shaped constellation. There is a circlet of 7 stars about 8 degrees width lying directly above the Square of Pegasus. From this a faint string of stars runs eastward towards Alpha Piscium which lies 18 degrees above the constellation Aries (The Ram). From there another string of stars turns sharply and runs down between Aries and Pegasus ending up level with the bottom of the Square. You really need a star chart to help trace it.

Pisces represents Venus and her son Cupid who turned into fish to escape up the Nile from the monster Typhon. (They were on the run just like Pan. Thankfully their transformations were more successful.) They tied their tails together with bull rushes so they wouldn’t be separated, hence the strings of stars.

## 9. Maiden in Distress

for 10th November 2009

Attached to the bottom right star of the Square of Pegasus, found directly north this month, is a string of stars making up the constellation of Andromeda. The stars fall away towards the horizon to the east of Pegasus. Andromeda was the beautiful daughter of Cepheus, King of Ethiopia, and his vain queen Cassiopeia. When Cassiopeia bragged that she was more beautiful than the fifty Nereids, they demanded that Poseidon punish her. He did, sending the sea monster Cetus to ravage the coast line.

To be rid of the beast, Cepheus was forced to chain Andromeda to a sea rock as sacrifice to Cetus. It’s a long and dramatic story, but eventually our hero Perseus, flying by on Pegasus, sees Andromeda and frees her by killing the monster using Medusa’s head to petrify it. They marry and live happily ever after.

Below the stars of Andromeda, just 15 degrees above the horizon is a spectacular galaxy, easily visible to binoculars and small telescopes. It’s M31, the Great Andromeda Galaxy, only 2.5 million light years away. Over 400 billion stars, just hanging there – like Andromeda. Check it out on a moonless night.

## 10. The River's End

for 24th November 2009

If you look due south and about 60 degrees above the horizon around 9pm, you should see a distinctive 1st magnitude blue-white star amongst all the fainter stars. This is a fairly significant star, named Achernar meaning “the river’s end.” It is the brightest star in the very long and meandering constellation Eridanus “The River”, which starts its watery journey near the supergiant star Rigel in the constellation Orion and ends at Achernar, near the southern constellation Hydrus and the Small Magellanic Cloud.

Achernar is the 9th brightest star in the night sky (between Procyon and Betelgeuse) and is only 144 light years away. Achernar is so far south it wasn’t part of the original river named by the Greeks but added later, lengthening the river. It is never seen from most of the USA.

Achernar is interesting because, as well as being a classic hot blue-white star about 3,000 times brighter and 7 times the diameter of our Sun, it is the ‘flattest’ known star in the Milky Way. Its spin is so fast its equatorial diameter bulges out 1.5 times its polar diameter, like an egg.

(WATCH THIS SPACE FOR FUTURE NOVEMBER NIGHTS ARTICLES)