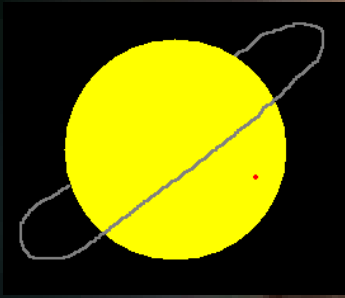


# SOLAR & SPACE E-ZINE



Spring 2007  
<http://solarandspace.tripod.com>  
Made in Bristol, UK

On the Cover: M51, this galaxy is interacting with NGC 5195. One of the best spring galaxies.

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# Editorial.

Welcome once again to another e-zine.

First thing I think you'll notice is my pic. Hope I didn't shock you!

Anyway to this issue, what's it all about? Well spring and autumn are full of galaxies. I'll be highlighting the highlights of spring galaxies. Just look

in the top ten for that. Of course there are a few globulars hanging around also. There is plenty to keep us occupied till the nebulae of summer pop round. If DSO's aren't your thing then Saturn has to be your target. Once again we'll have to wait until summer for the king! For more on Saturn go to the article Lord of the rings. No it's not about Sauron! But rather Saturn who's rings stand out most!



While reading through the Adobe version of December 06 I found something strange! The conversion of word to PDF file turned all the ancient greek letters (which are important to astronomy.) into their English equivalents. However Theta isn't q, but th! The ancient greeks didn't have q in their alphabet. So that's even more confusing!

Good observing and clear skies!

*O.J. Tunnah*

Oliver Tunnah

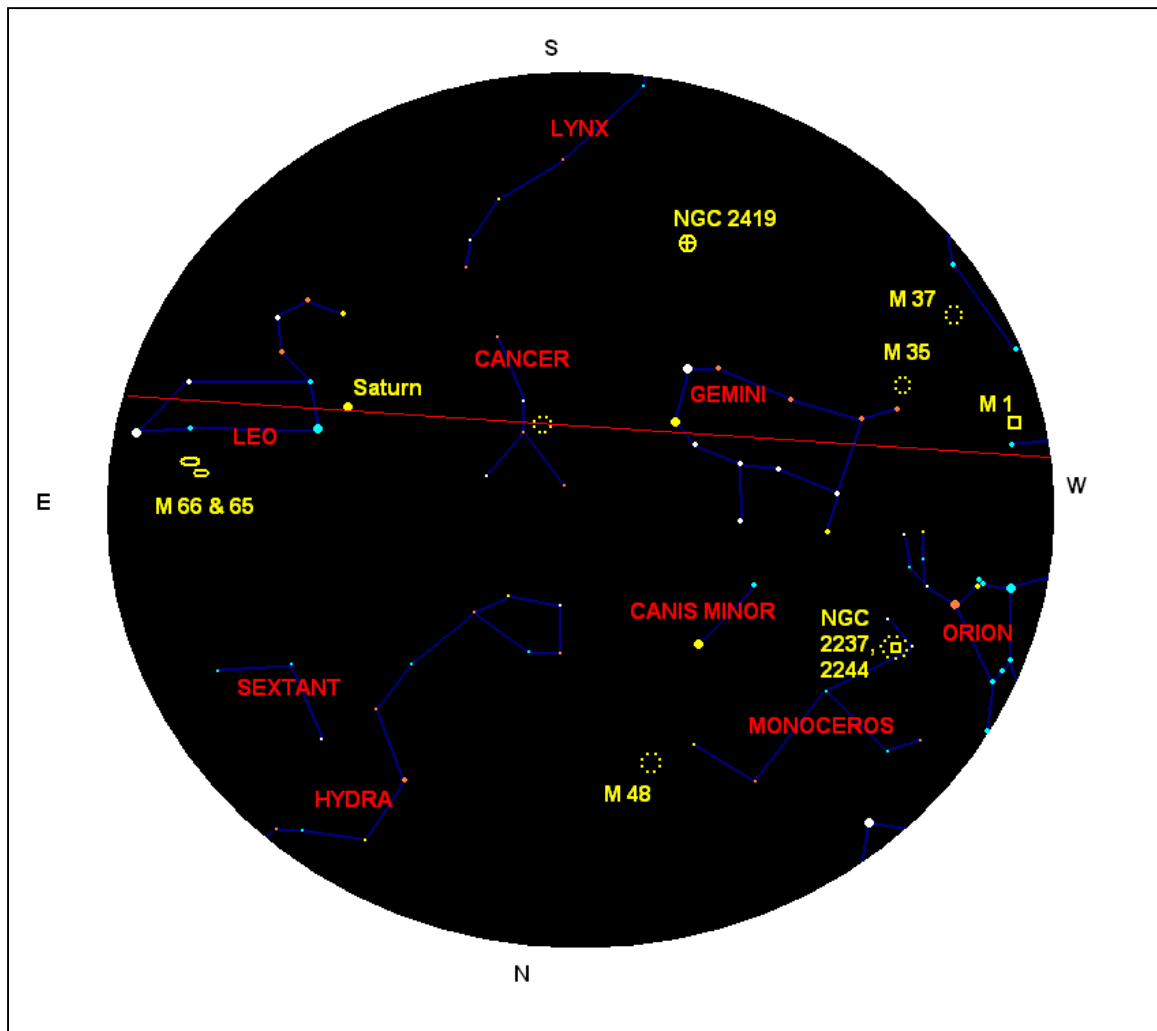
Editor.

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[olivertunnah@gmail.com](mailto:olivertunnah@gmail.com)

# The Sky This Season.

All maps can be used from above 30° latitude. Looking south after 10pm.

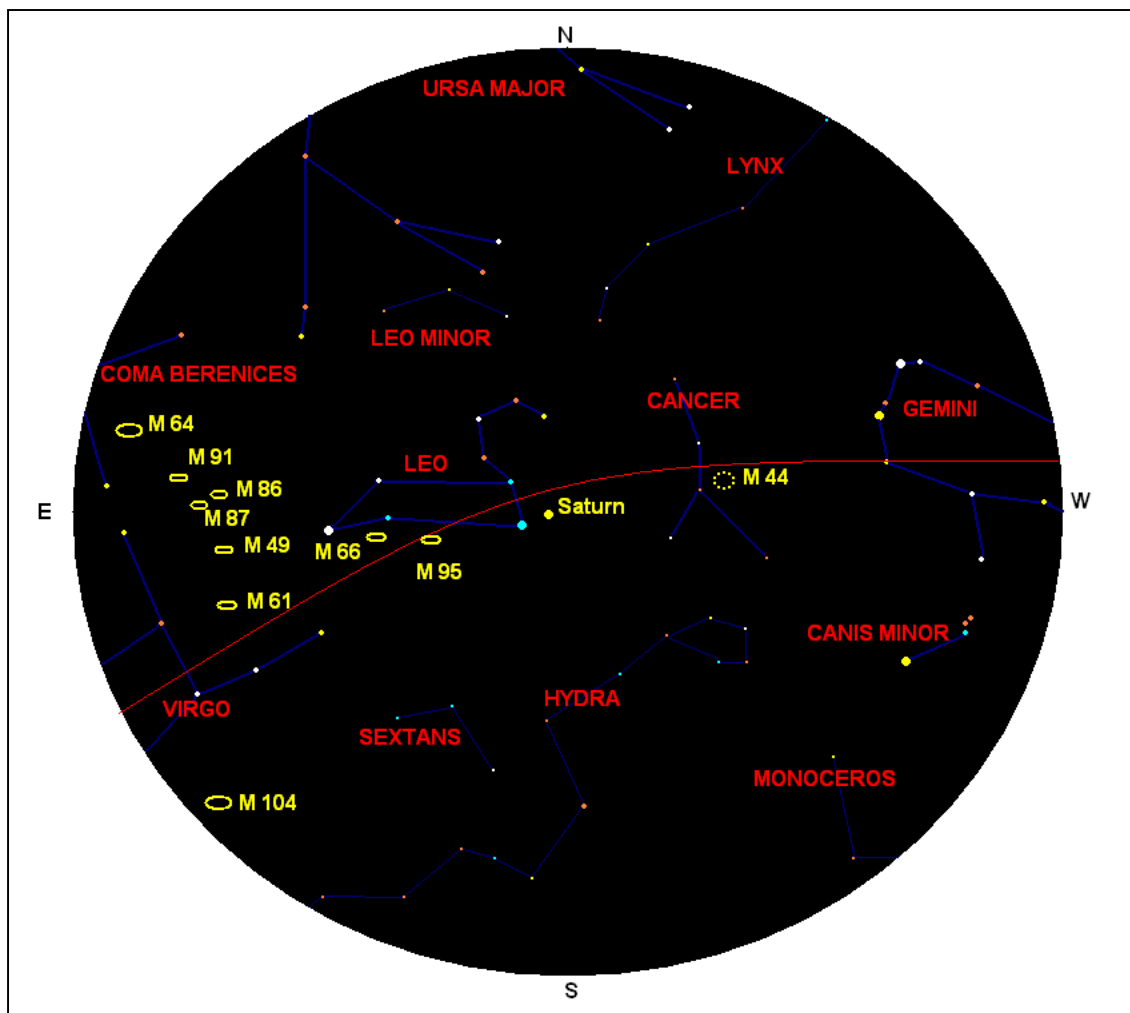


March's sky.

Highlights: Saturn

M 66 + M65

M 44 (Cancer)



April's sky.

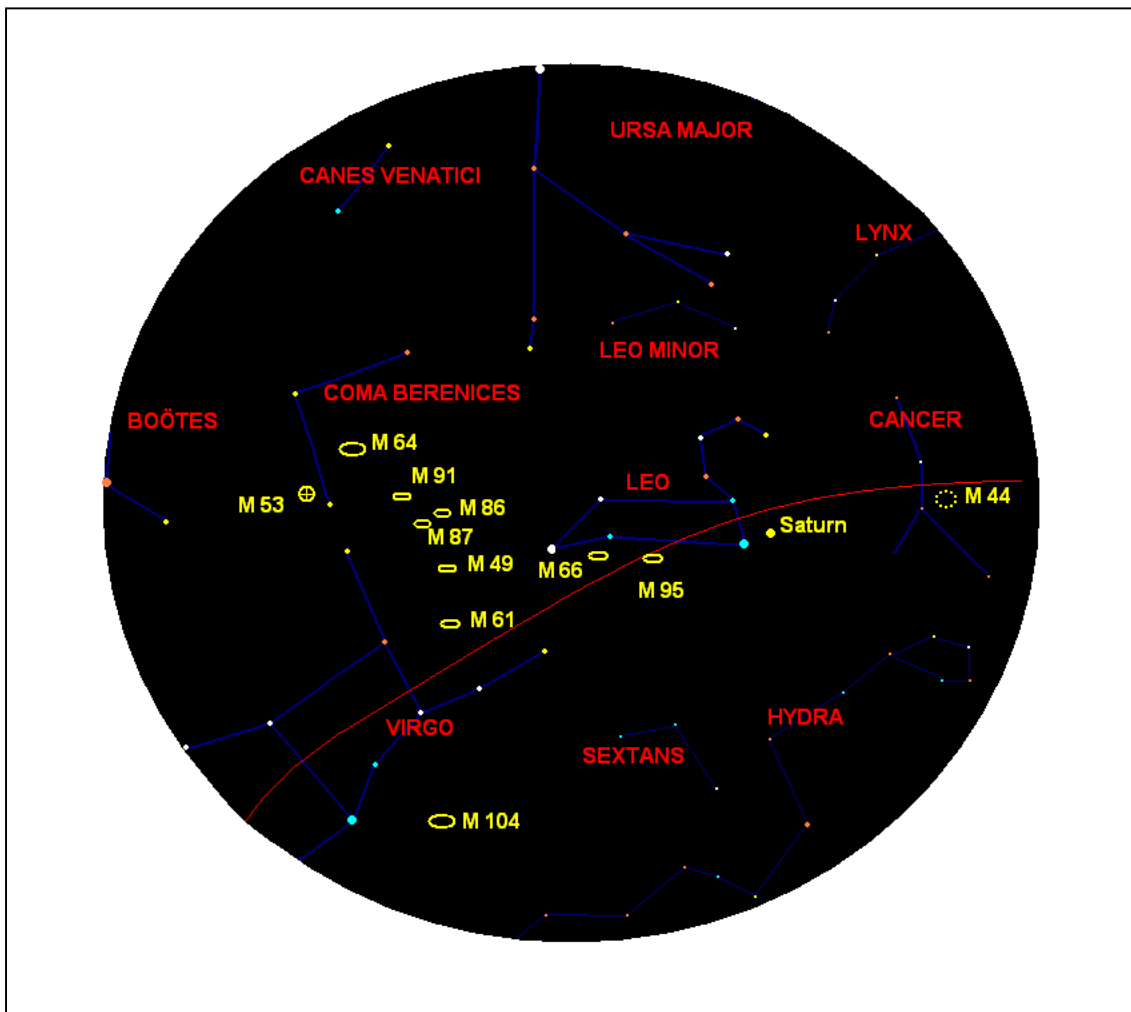
Highlights: Saturn

M61

M 104

The spring sky isn't the brightest. Leo and Ursa Major are the only real bright constellations. Both contain many galaxies. Look right of Regulus to see Saturn. The bright yellow star is very different to the blue of Regulus. The steadiness of the Saturn gives it away. Regulus blinks in several colours until it reaches high enough. Right of those two is the faint Cancer. The crab contains bees however. M44 or the Beehive cluster is a naked eye object. Or a good bino target from the city. Spring means galaxies. Ursa Major, Canes Venatici, Leo, Coma Berenices and Virgo are all full of them. Why? The lack of milky way is the key. The bright dust lanes of our galaxy blocks line of sight to the universe beyond. So in Spring

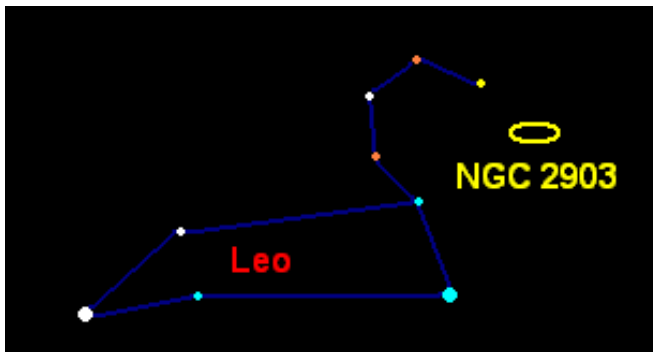
and Autumn when the milky way isn't visible then we see lots of galaxies. The best are highlighted later in the top ten. Canes Venatici and Coma Berenices also contain some globular clusters. M3 and M53 respectively. Lynx which is one of the most difficult to find is aptly named. Johannes Hevelius the constellations creator said you need the eyes of one to find it. But Lynx contains a couple of faint galaxies, and a runaway globular. NGC 2419 or the Intergalactic Tramp is a globular that is about to escape our galaxies gravity. It lies 210,000 light years away, so it may have already done this. It is so far away that it lies beyond the Large Magellanic cloud. Lynx is a constellation for the large telescopes. But enjoy this doomed cluster while you can. The spring sky contains something for everyone, so go out and enjoy it! May's sky.



# Eye On The Sky.

NGC 2903 in Leo is a bright galaxy Messier missed. However it is worth a look. Perhaps Messier missed the galaxy because his small telescope only saw the nucleus region. That would appear stellar (Star like) in the scope. Also the sky around Paris (Even in the 1800's) wasn't too good.

NGC 2903 is a barred spiral galaxy. Dust is dominating its central region. There is an outer halo where its two arms protrude.



How to find NGC 2903. Just west of the sickle asterism. Alternatively look south of Lambda leonis. (Not shown.)



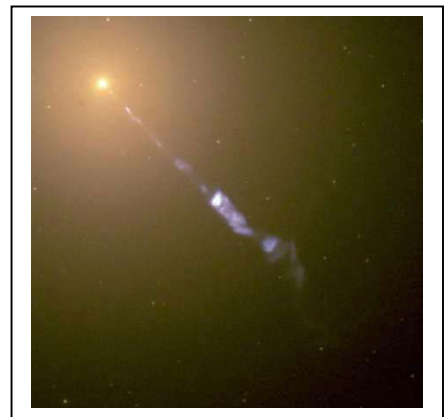
NGC 2903 in all its glory. The central regions show dust and nebulae. Active star growth is going on here. The two arms harbour the halo.

# Top Ten Spring Galaxies.

Running from Ursa Major south to Hydra the sky is full of galaxies. Not just faint ones either! We count down the top ten spring galaxies.

10:

M87 The bright elliptical galaxy is perhaps the biggest we know. M87 will be the biggest and brightest elliptical within the Virgo field. With large professional scopes a jet has been seen emerging from the centre of the galaxy. But you will still need a CCD to see that. To observe the galaxy you will need no more than a pair of binos. At magnitude 8.6 it will be visible as a large round glow. There is very little detail in ellipticals.



Hubble Image © NASA

9:

M61 This large spiral galaxy lies on it's own when compared to other galaxies in Virgo. The galaxy is around the same size as the Milky way, some 100,000 light years across. If the Milky way lost 2 -3 arms it would look very similar to M61. Small scopes show a round glow here while bigger scopes will reveal the spiral arms visually. M61 has a binary nucleus. Using the dark cloth technique and 200x will show it.





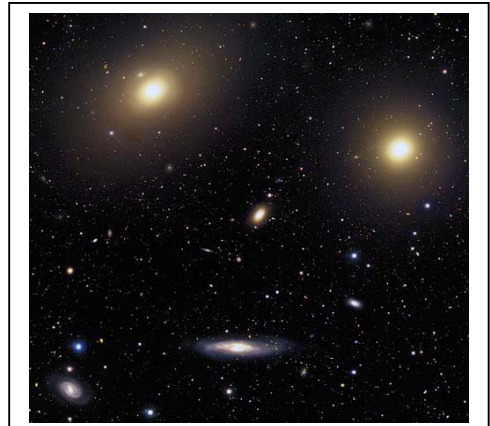
8:

M64 Coma Berenices lies north of Virgo and so shares galaxy richness. The brightest galaxy in the constellation is M62 or the Black eye galaxy. Very tight spiral arms give the impression of an elliptical. But there is an area of dust dominating the central region. This does give it the look of a black eye. Use a 4" or larger to see the dust.



7:

M84 + M86 This double galaxy combo lies at the western end of Markarian's Chain. Two giant ellipticals that are northwest of M87. There are many other galaxies around these two. M84 and M86 create two eyes. The nose and mouth lie just below them, in the form of small spindles. Sweep northeast along the chain to see many more galaxies, even with binos!



© Jean Charles Cuillandre

6:

The Leo Triplet. This group of 3 galaxies in Leo is one of a few. The Leo Triplet is made from M66, M65 and NGC 3628. They will all show up in binos. M66 is a barred spiral that is face on. There is a lot of star forming regions in the arms. Look for pink areas. M65 is a spiral galaxy. Large dust lanes can be seen near the centre. NGC 3628 is larger than the other 2 so is dimmer. Look for a dust lane to the centers south.



© Tom Diana

5:

M63 This very pretty galaxy is also called the Sunflower galaxy. It's not hard to see why. Any scope will reveal the galaxy, but as usual larger instruments are needed to see any detail. M63 lies in Canes Venatici. To find it, use a wide view. Head from Alpha up towards M51 and Ursa Major's tail end star. About halfway lies the smudge of M63.



© Stefan Heutz

4:

M104 Back to Virgo and M104. But this one inhabits the southern reaches of the constellation. Thought it is far from the rest of the group it seems to be attracted to it.

Also known as the Sombrero due to its resemblance to the hat. Head out to dark skies and let M104 delight you. Head towards Hydra from a Spica (Alpha Virginis) starting point. You can't miss the Sombrero. The dust lane is visible. Use averted vision to see more from this superb galaxy.

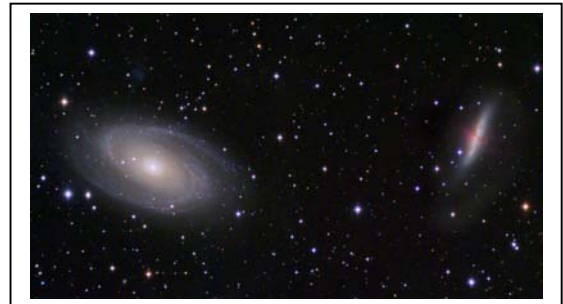


© NASA

So what edged out the rest get into the top 3?

3:

M81 + M82 In the northernmost reaches of Ursa Major is M81 and M82. Also known as Bode's Galaxy and the Cigar Galaxy. These two are a well known double. Binoculars will show both of them. M81 and M82 are profiled later on in constellation look.



© Alison Wong

2:

The Antennae. NGC 3038 and NGC 3039 are interacting galaxies within the obscure constellation of Corvus. Between Virgo and Hydra. However these are only targets for the very large scopes. Though they can be seen in 6" scopes they are barely recognisable. Up the aperture and power to see star formation and strings of stars flung out from gravitational forces. Eventually they will become a large elliptical galaxy.



Hubble Image, © NASA

1:

M51. The Whirlpool is Spring's top galaxy. Seen with any instrument even from city suburbs. I have seen it with my little 2" scope from my back garden. However with the little scopes all that will be seen is a smudge with a smaller smudge off to the side. Scopes of 12" or more will reveal the spiral structure. Pink areas of star formation where sparked from the interaction of M51 with NGC 5195.



Hubble Image, © NASA

There are so many galaxies to see I could only highlight the best 10 sights. Virgo is worth sweeping through with a medium scope.

## The Lord Of The Rings.

Spring heralds the arrival of Saturn. The sixth planet is easy to find and observe. But what do we know about this globe of frozen gas 12,774,000,000 Miles away?

Well the planet was named after the roman god of the Harvest. The planet makes the appearance for the southern autumn.

So how were the rings created? When a small object passes within Saturn's Roche limit it is ripped apart by the tidal forces and settles in orbit along the equatorial line. In case your wondering for the Moon to break up like this it would have to come within a Nanometer of Earth. But by then it's too late!

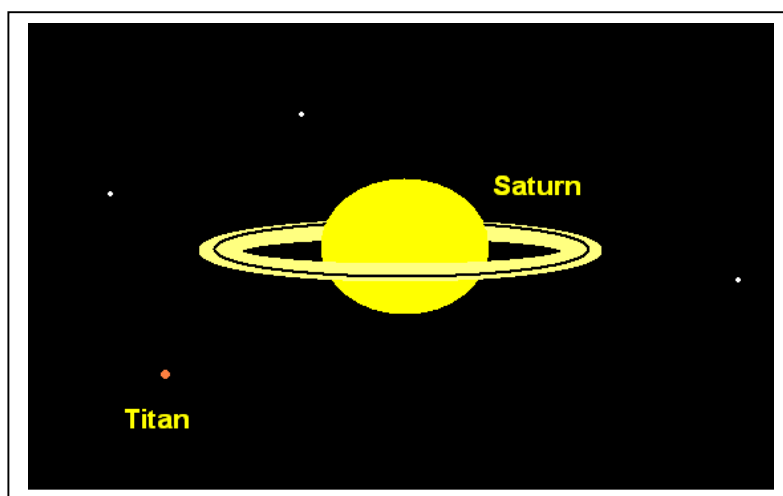
Saturn has 49 satellites each one different to the last. Titan is the biggest and on the receiving end of ESA and NASA attention in the last years. The primordial world seems a perfect place to harbour life. No luck just yet. Cassini has shown us the satellites and rings in a different light. For instance on Enceladus Cassini found geysers and warmer spots. In the ring system the probe found some complex structuring. Also Cassini has shown us storms around the pole and found many new satellites.

So how about observing Saturn. What do you need? To see Saturn you need absolutely nothing! The bright yellow star in Leo is the planet. Get some binos and the planet will look oval. Get some 50x binos and stick them on a tripod and voila Rings! A small scope will get a better magnification of the planet. It may also reveal Titan. Titan will appear as a magnitude 8 white dot that will move around the planet from night to night. A medium scope will show many more satellites. Try and spot the Cassini division. The dark area between the bright A and B rings.

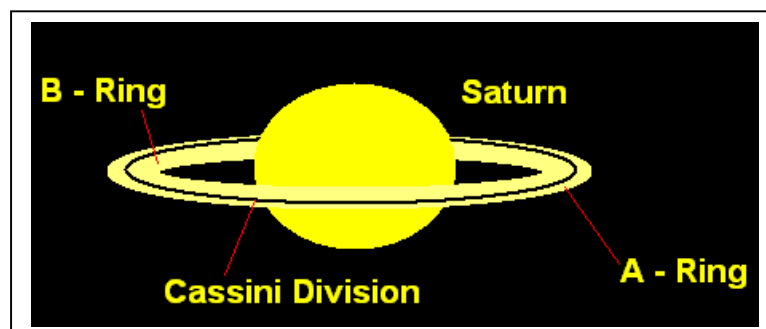
With a big scope try and spot the Encke gap also. It splits the A ring into two, and is ruled by the satellite Pan.

Saturn reached opposition in February and begins the trek back eastwards through Leo. This means the views won't be as good, but still very nice!

Saturn and its many satellites including Titan can be seen near the planet through medium scopes.

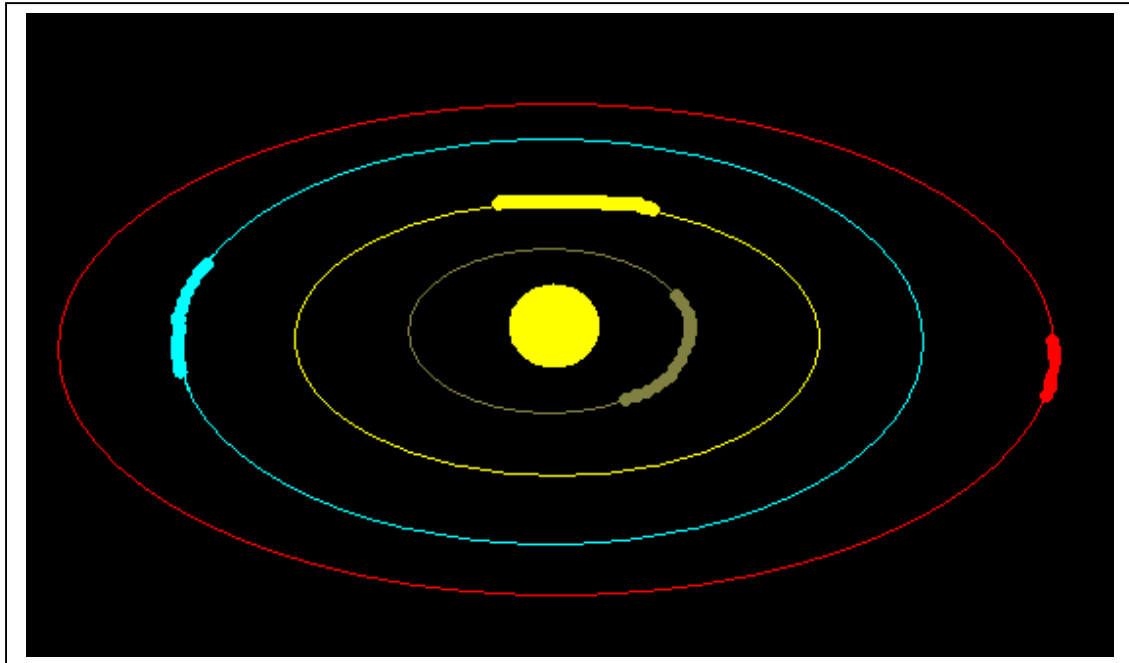


Look for the Cassini division between the A and B rings.



# The Planets.

The Planets continue their annual parade around the Sun. The Inner Solar System this month.



Lines represent orbits, the thick lines show the planets movement.

Mercury:

Mercury reaches greatest western elongation this March. This means it is best seen in March mornings. The planet rises before the Sun and will be a pinkish star.

Venus:

The planet is easily seen in the evening sky as a very bright star. In March it sets some 2.5 hours after the Sun. Look through binos or a scope to see a gibbous phase of the planet. The show gets better for Summer.

Mars:

Mars hangs around near Uranus and Neptune. Around May time look for it early in the morning. Mars will be really faint as it lies on the other side of the Solar System. No features will be apparent.

### Jupiter:

The king lies in the Scorpius/Ophiuchus border. On April 1st it lies south of Xi Ophiuchi, no joke! By May it has drifted westward towards Scorpius. Details will be seen along with the four satellites of Ganymede, Callisto, Europa and Io.

### Saturn:

The ringed wonder lies in Leo during this year. The Lion is pouncing on the planet. The brilliant yellow gives it away. Point any scope at it to see the graceful rings and maybe Titan. For more tips look at the above article 'The Lord of the Rings'.

### Uranus:

The 7th planet is still hanging around in Aquarius. However it has moved from Lambda to Phi. A green disk will be apparent. No other star is green as they appear white. The planets ring system lines up edge on this year so no lucky occultations will reveal it.

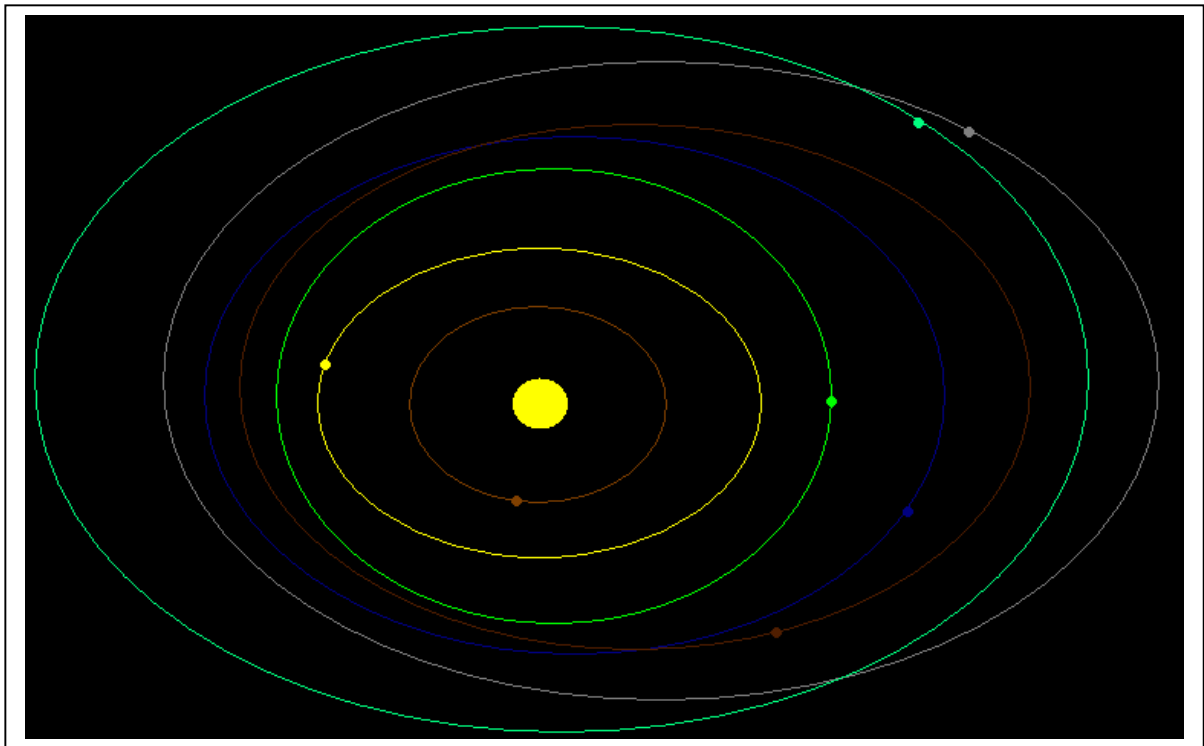
### Neptune:

Like it's almost twin planet Neptune has barely moved at all. But it has moved towards Gamma Capricorni. But that's more to do with the Earth's movement.

### Pluto:

The 9th planet is still in Serpens Cauda. However as opposition is in summer the planet will be at magnitude 14 rather than a brief appearance into 13. Use monitoring of the stars over several day's to make Pluto betray its existence.





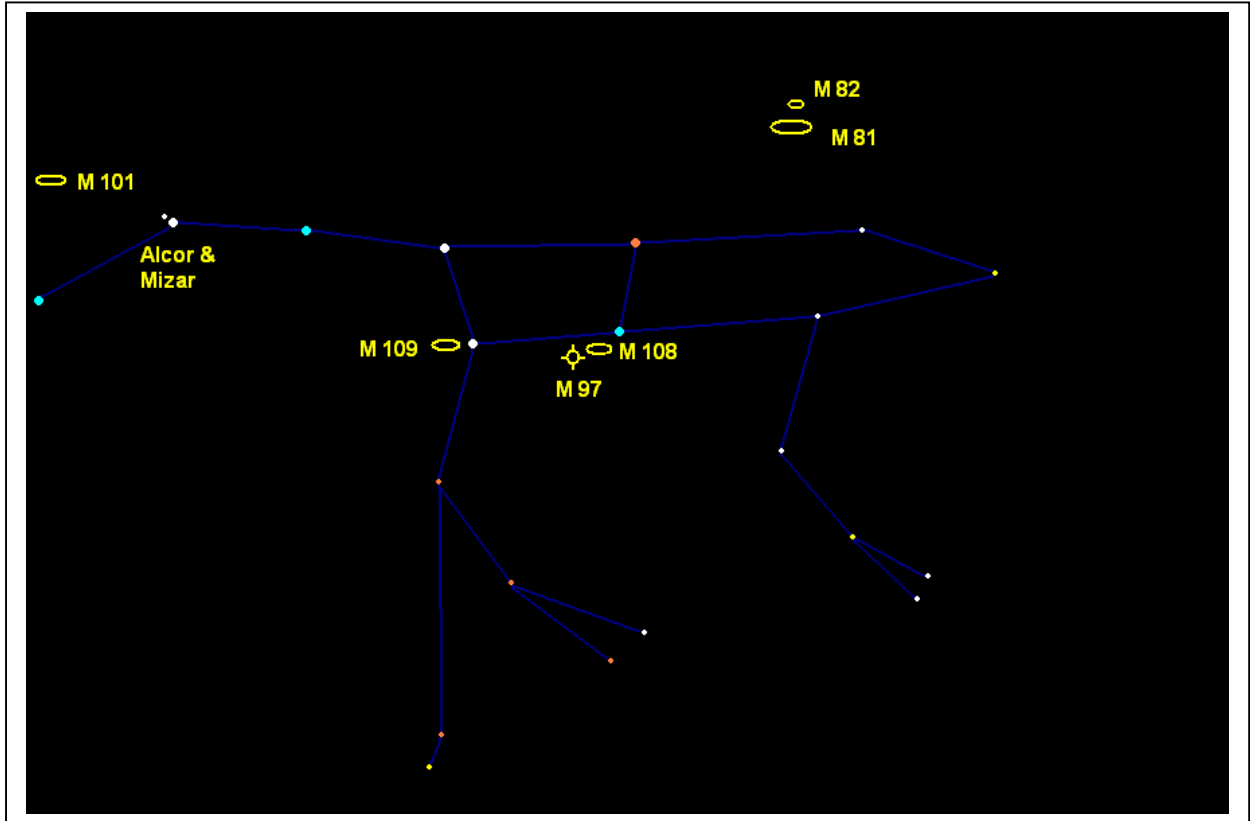
The Outer Solar System this month. The two new orbits are Sedna (Aqua) and Eris (Gray) Pluto is now Reddy brown to represent it's colour.

The dots represent the planets positions this season.

Note: Eris lies in Cetus and Sedna slightly above nearer the ecliptic In Pisces/Aries.

# Constellation Look.

This time we focus on Ursa Major. The most famous of all constellations!



M81: This spiral galaxy lies within the northern regions of the bear. A medium scope will show a large core and tight spiral arms. But if you just want a peek then binos will show the galaxy. Even in the city!

M82: The Cigar galaxy. Named after its resemblance to one. You may be mistaken for thinking this galaxy is odd. But it is! You may see Jets emerging from the centre. (Look at the pic in top ten galaxies for a look!) No the galaxy isn't blowing up, as such. Huge clouds of gas are colliding and producing stars at 10 times the Milky way's rate. This forces the gas out of the core at extreme speeds.

M101: This galaxy is notoriously difficult to see. But take heart in the fact Messier spotted it from Paris with a 3" scope. What you may see is a face on spiral, with tight arms. Why is it hard to see? Well it's light is spread over a large area, therefore has a low surface brightness.

M97: The Owl nebula. A 3" scope and a dark sky may reveal a green glow, with two dark patches where the eyes are. A triangle of unrelated stars make the beak.

M108 & M109: Two galaxies at the southern end of the plough. Both need medium scopes to see detail. However both can be seen in small scopes.

Alcor & Mizar: This optical double is resolved by eye. This is because the two stars lie 1 arc minute apart. The naked eye can see detail down to 1 arc minute. However Mizar is a true binary and can be split by binos or telescopes.

There are many NGC objects throughout the bear. But to really appreciate Ursa Major you have to see it as the Bear rather than the plough! If the sky allows look for the bear shape. Some stars can be seen from the suburbs, others will need a dark sky!

# Pluto.

In the Autumn of last year the IAU (International Astronomical Union) demoted Pluto from planet to Dwarf planet. Of course the debate over its status has two firm camps, no in-betweens! However the IAU also created a definition that only a few voted on and liked.

For a solar system body to be a planet then it needs to:

- 1) Orbit the parent star.
- 2) Have enough gravity to become spherical.
- 3) Have cleared its orbit from other debris.

The first two are fine but the third is a grey area. Pluto was ruled out for this reason. But Jupiter and Earth haven't cleared their orbits. This would mean Earth is now a minor planet.

More planets share their orbits than not. This means we only have a few Planets but loads of dwarf planets. The term dwarf doesn't fit Jupiter at all!

So this definition was created and passed by votes under 4% of the astronomical community. Does this mean a referendum is in order? Well if someone could sort out one it would be great. But it is a logistical nightmare.

The problem as I see it is there is no sound reason for Pluto, Eris or even Sedna not to be planets. There is only a few round asteroids out there! Ceres is one. This asteroid at one time was going to find it's self amongst the ranks of the Planets before part 3 was added. And that's fine by me. Ceres is the largest asteroid in the solar system and lies in the asteroid belt.

Solar & Space's stance is; there are no dwarf planets but any spherical object in the solar system that orbits the Sun is a planet.

Solar & Space's solar system.

Sun = Parent Star.

Mercury = Planet

Venus = Planet

Earth = Planet

Mars = Planet

Ceres = Planet

Asteroid Belt

Jupiter = Planet

Saturn = Planet

Uranus = Planet

Neptune = Planet

Pluto = Planet

Kuiper belt

Eris = Planet

Sedna = Planet

I know I've just made some enemies, but this is logical and fine. Don't forget you can always share your views with me.

## **Next Season.**

Take a look at the top nebulae sights.

Cygnus is profiled.

Two planets are worth a look next season. Venus and Jupiter have themselves looked at.

Take a ride through Ophiuchus' Globulars.

And plunge in and swim through the southern milky way!

High Blue Moon in June!

Available to download from 25th May.