

## Lunar Eclipse Star Party 3rd/4th March, 2007

Picture by Lucy Rogers

he lunar eclipse on the 3rd March, 2007 was enjoyed by about forty people at the Vectis Astronomical Society's Observatory at Watery Lane in Newchurch. Members of the public joined the Society's astronomers as the Moon passed into the shadow of the Earth and turned a beautiful coppery red.

A live image of the Moon was projected onto a screen outside

of the Observatory, so everyone could see the view through a telescope, without actually having to look down an eyepiece. The skies were clear and many constellations were visible, including Orion, Taurus, Cancer, Gemini and Leo. Telescopes were also pointed at Saturn and, as the rings were clearly visible, it provided the best view of the planet many people had ever seen.

Many thanks are due to all the members who turned out to make the star party such a success, particularly to Bill Johnston for setting up the Moon projection. *Lucy Rogers* 

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## FROM THE EDITOR

#### **Dear Readers**

**Such contrasts seen in our night skies within a few days of each other**. The view of the total lunar eclipse last month was truly magnificent and managed to cause much curiosity from the public at large. When I popped down to the Observatory on the evening of the 3rd, to find out how well attended the Moon Party was, I nearly tripped over the cluster of telescopes, people, projectors and screen outside the building. A huge image of the Moon was clearly seen on the screen by using the digital projector that Bill Johnston connected to one of the telescopes. A clever use of VAS equipment that offered non-proficient visitors the ability to appreciate the sheer beauty of the eclipse taking place.

**Then, from the sublime to the ridiculous** - most of the Island was 'treated'? to a searchlight display around the night skies. The source of the light pollution was the Chicago Rock Cafe in Newport. The premises had just reopened after a lengthy refurbishment, so its management celebrated by hiring a massive searchlight to advertise their presence once again. The first instance was on Thursday 8th March evening and each following evening (9th, 10th March). Complaints to the IW Council's Development Control Manager requesting a Stop Order on this illegal activity brought forth total apathy from County Hall. The light, visible even in cloudless skies from over 8 miles away, was allowed to destroy the view of the heavens without let or hindrance.

Should you feel let down by the Council's unwillingness to act, then an email to Andrew.Pegram@iow.gov.uk might well let them know how we feel.

All the best.

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## Stellar Collisions & Near Misses more massive stars than would normally be present.

Tom Maccarone

Southampton University

tellar collisions within our galaxy will be very rare since stars are typically a few light years apart. In globular clusters, however, the stars are much more tightly packed so that a million stars will be within a few light years of each other. As a result direct collisions, near misses and three-body interactions will happen regularly.

If the spectral class of stars is plotted on a graph against absolute magnitude then a pattern known as the Hertzprung-Russel (H-R) diagram is obtained. For most of their lives stars sit on the main sequence until they have burnt all their hydrogen. They then move into the giant stage burning heavier elements until all those are gone. The burnt out remnant of the star then collapses to a white dwarf, neutron star or black hole depending on its original mass. The more massive a star is the faster it burns and the sooner it leaves the main sequence. Heavier stars are also brighter and hotter so their position on the main se-

A number of other stellar oddities are also produced as a result of the conditions in globular clusters. Cataclysmic variables are characterised by periodic sharp peaks in brightness typically 100x their normal intensity. This is due to a white dwarf with a close normal star companion. The white dwarf attracts material off the normal star that collects in an accretion disc with a release of gravitational energy that heats up the gas. This energy is then released in bursts.

In some cases the older star is a neutron star that can have a mass greater than 1.4 times our Sun packed into a 10km radius. The contraction to this size will have caused the star to spin with a rotation rate of a millionth of a second and energy will be radiated aligned along the magnetic field lines. As the star rotates, the directed radiation will sweep across the sky. On Earth we see this radiation as a pulse of energy every rotation – a millisecond pulsar. If such a pulsar is associated with a normal star then a similar situation to the cataclysmic variable will exist but the radiation will now be at X-ray frequencies.



The closely-spaced binary pairs required for the cataclysmic variable behaviour occur due to tidal capture. As two stars approach, the tidal forces distort the stars removing energy from the system and allowing the two stars to end up in orbit about each other. Exchange interactions can also occur when a third star approaches a binary pair and the energy exchange

same age all the stars of a given mass will burn out at much the same time and move off the main sequence together. Plotting an H-R diagram for the stars in a cluster will therefore produce a picture in which the main sequence is cut short at a point corresponding to the age of the cluster. Above this all stars will have moved to the red giant phase and beyond.

of

the

However, it is also found that globular clusters contain stars still on the main sequence but above the cut-off point. These are known as blue stragglers from their colour and are evidence of stellar collisions producing

results in one of the original pair being ejected and the interloper captured.

Binary stars can be found throughout the galaxy but closely-spaced pairs are most common in globular clusters. The common age of stars in these clusters make them a fruitful area to study stellar interactions and understand the evolution of stars and star systems.

Reported by Roger Young

# **April Skies**

John W Smith

### **The Planets**

**Mercury** is not visible this month.

**Venus** now presents a good image and will be found in the south west. It is gaining in altitude so will be an excellent object for viewing over the coming weeks. Being so bright it can be seen before sunset. It has an apparent diameter of 13 arc seconds. On the 20<sup>th</sup> the Moon passes within 2 degrees of the planet.

**Mars** rises approximately 1.5 hours before the Sun and will gradually become better placed for viewing as the year progresses.

**Jupiter** is in the constellation of Scorpius and may be located in the early hours.

**Saturn** remains well placed for viewing during the first half of the night.

**Uranus** and **Neptune** are not favourably placed for viewing.

### **Meteor Showers**

There are two active showers this month.

**1**. The *Virginid* and alpha *Virginid* showers both peak on the 12<sup>th</sup> and as the Moon is waning the conditions are favourable. The rates are about 5 per hour.

**2**. On the  $22^{nd}/23^{rd}$  the April *Lyrids* reach maximum in favourable conditions when some 15 per hour may be seen.

### **Moon Phases**

New	1st Quarter	Full	Last Quarter
$17^{\text{th}}$	$24^{th}$	$2^{nd}$	$10^{\text{th}}$

# **NGC4565** This edge-on spiral galaxy in Coma Berenices is well worth observing. (this was one of my favourites when I did practical astro-

**Deep Sky Objects for small telescopes** 

and binoculars

of my favourites when I did practical astrophotography years ago). It looks like a long needle with a bulge in the middle. CCD imaging will reveal the central bulge and the associated dark lanes. There is no Messier number as he missed this one!

**M64 NGC4826**. This spiral in Coma Berenices is commonly known as the "Black-Eyed Nebula", due to its shape and the dark central area that resembles an eye. (Big Brother *is* watching!). It lies about 12 million light years away.

**M106 NGC4258** This spiral galaxy with open arms in Canes Venatici is about 14 million light years distant. It is an easy object for a small telescope.

M101 NGC5457. This large, face-on, galaxy is a superb example of its type. Because the magnitude quoted is the integrated value and the object is very large, it is sometimes difficult to locate and will appear quite dim. A good clear night should chosen for viewing this object if possible.

## Coordinates

OBJECT	RA	DEC	MAG	SIZE
NGC4565	12h 34m	+26deg 16m	11	14.2 x 1.2
M64	12h 56m	+21deg 48m	9	6.5 x 3.2
M106	12h 17m	+47deg 35m	10	19.5 x 7
M101	14h 03m	+54deg 27m	11	22 x 22
•	•	•		•

## **PHOTO OPPORTUNITY**

Many VAS Members are keen on astro-photography. They will find something to whet their appetites on the evening of 19th April around 22:30. There will be a nicely framed crescent Moon, Venus, Taurus and the Pleiades up in the north of west sky. Have a go at getting a good image of the grouping and I will print the best picture in the New Zenith. For a more interesting effect try to include a prominent landscape feature such as a well-known Island building. Send your results via email with an attachment of your entry in JPEG format.

Editor



## **CHICAGO ROCK CAFE** SEARCHLIGHT SHOCK

a huge searchlight next to the Chicago Rock Cafe in Newport on March 8th caused the Chairman of the IOW Branch of the Campaign to Protect Rural England (CPRE) to fire this request to the IW Council years, and also refer to your action to stop Ryde's Planning Department:

"One of our (CPRE) members reports that this evening (8 March) at about 10.00pm a large searchlight, greenish in colour, was mounted on the ground, shining and waving into the sky outside the Chicago Rock nightclub, on the Coppins Bridge side of the multiplex She approached the doorman cinema at Newport. and expressed the opinion that the light was illegal. An administrator of some kind was called, who said "I'm sure we've got any permission that's needed. Why don't you telephone in the morning ?" When she left it was still shining and waving, and may be doing so for as long as the outlet is open.

I don't have to remind the LPA about the similar searchlight which was mounted on the Balcony Club on Ryde Esplanade, which also was unauthorised, and which resulted in enforcement action for removal.

In my opinion, there is no way this could have received planning permission, as we monitor all such applications carefully, and have seen nothing of this kind. We believe that it constitutes an illegal advertisement, it constitutes a Statutory Nuisance as defined by the Clean Neighbourhoods & Environment Act 2005, and if planning consent were sought it would be contrary to policy D14 on Light Spillage.

We request that an enforcement officer investigates this installation, and places an immediate Stop Order to prevent any further use.'

That scared the pants off the Council, so much so that three nights later the baleful glare was still merrily despoiling our night sky environment. From Editorial Towers in darkest Alverstone, in clear night conditions, the meandering beam could be seen clearly. That was at a distance of some eight miles.

On behalf of VAS, the following email was sent on March 13th to the Council department (un)concerned:

Dear Mr Pegram

I write to you on behalf of over 140 dedicated Isle of Wight astronomers who were 'treated' to a total destruction of the environment where we normally enjoy

magnificent visibility of the stars right out into deepest space. This is because your department took no apparent action on the CPRE request for a Stop Action to prevent Newport's Chicago Rock Cafe using the he sudden and unwanted appearance of night sky as a massive advertising billboard by means of a huge searchlight.

> Such activities, as you must be surely aware, have been deemed illegal. See the case of a Guildford nightclub vs the Dept of the Environment in recent Balcony Nightclub doing the same only a couple or so years ago. If you can stop one premises why cannot you prevent another from such desecration of our famous dark skies?

> What is even more worrying is that the Civil Aviation Authority had no record of being informed of the searchlight's presence. The IOW lies directly beneath one of the busiest Airways in the south of England. Aircraft use this route to make approaches to Gatwick and Heathrow and other airports further north. One of our astronomers noted that the searchlight had an aircraft within its beam for quite a time when flying over the Island. This has been referred to the CAA Safety Regulation Group for investigation. They were quite interested to discover that a Stop Notice had been requested on the 8<sup>th</sup> March but no apparent action had been taken by your department.

> It would appear the intentions of the Clean Neighbourhoods and Environment Act 2005 have not yet filtered through to your offices. Neither have the Environment Department of the IOW Council got any greater knowledge of this vital legislation. The Officer I spoke to in that section had to be informed by myself to try downloading the said document from the HMG website in order to discover what it was that was causing such immense annoyance. The Act had been given Royal Assent in 2005 - it is now 2007 and the Council is still in the dark. The pity of the situation is that astronomers prefer to be in the dark but other people prevent it ...

On behalf of the Vectis Astronomical Society's membership I would appreciate a speedy response regarding this worrying matter.

Yours faithfully

John Langley VAS Director of Astronomy Services

Should VAS Members wish to add their views, the address to send to is

Andrew.Pegram@iow.gov.uk

#### Spiral galaxies, wet carpets and dark marmalade! Dr.Guy Moore

n unusual story is unfolding... 25 years ago, I bought a BBC Micro and used it to calculate the characteristics of radiation within a fractal universe. This theory, published by me in the American Journal of Physics **S8** 1990p581, supposes that if the Universe had been created, there was 'nothing for the Universe to push against in the first place' and so the momentum of the Universe must be zero - the 'fun' starts here because this must be true with respect to all inertial frames. I also looked at galaxies and adjusted my thinking to two ideas (a) stars in galaxies might have chaotic motions, and (b) I was not convinced that astronomers made enough allowance for 'outward gravity' inside rings. Inside a uniform spherical shell, gravitation due to the shell is zero, whereas inside a ring, gravitation acts radially outwards. Thus if a ring of matter exists outside a star's galactic orbit and is in the same plane, this would cause the star to orbit the nucleus more slowly - yes, this is mathematically correct!

On my BBC Micro, I modelled six gravitating bodies released from rest - how surprising to see pictures like Fig.l. I was interested in rare events that might eject



objects from clusters with unusually velocities. large My notes of 1993 show that I also tried to sum the

tutes the basic

evidence for the

existence of dark

matter. The stan-

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explain

gravitational effects of rings of differing densities in the attempt to build an annulus so that the orbital velocity of a star within the annulus would be constant regardless of orbital radius. It is this constancy of star velocity, producing 'flat velocity rotation curves' of galaxies such as M31, sketched in Fig.2, that consti-



ies, is that gravitation must fall inversely with the radius, not radius squared. The extra gravitation at bigger radii must be provided by hypothetical 'halos of dark matter'. Doubting this argument, especially when its advocates say that dark matter represents the only solution permitted by Newtonian mechanics, I set my BBC Micro struggling with calculations lasting 150 hours - and turned to other matters! But I remained puzzled - Voyager in 1980 had revealed braided particles in Saturn's rings, apparently defying

the laws of gravity. Carl Sagan declared this a 'stunning development'. Then came reports of mystery moon hopping. If our understanding of gravity is so poor that we cannot understand such phenomena, how can we be so sure about the existence of dark matter?

One day I met an astronomer. I drew some scribble,

see Fig.3, and said, "stars in the outer regions of galaxies may not be in circular orbits, they might travel wiggly fashion with speed V whilst moving with а



slower drift speed of, say, a half of V, around the galactic centre. Moreover the gravitation inside rings of matter is not zero, but negative (outwards), this would slow the stars and lead to galactic core mass underestimations." I wrote down his reply, "You have just destroyed all the standard theories of galaxies in five minutes!" (I'm not an astronomer - yet! - so that didn't bother me.) Nothing came of the conversation, whereas I had, in fact, handed to the astronomers an alternative solution to the dark matter hypothesis on a plate at that time.

Recently, I saw an advert for a G3 Tower Macintosh. It cost £50 and looked so good, I added 3 jars of my homemade dark marmalade to complete the bargain. I set to work with my brother Richard on a big physics problem. Then last Christmas, taking a break, I looked at galaxies again.

"Wow! I can now do hundreds of hours of BBC computing in just a few minutes - so let's see what hap-

pens." Fig.4 simulates а group of ten stars moving in 3-dimensions, initially launched with equal velocities across a weak



gravitational field. The stars soon behave like iceskaters holding hands, moving in a group with average speed V. Individuals sometimes have more than twice the average speed, and sometimes are momentarily static, like ice-skaters

falling down before being whisked along again by their faster chums. What fun! - figure skating is my hobby - I also plotted 'velocity dispersion charts'. Since astronomers calculate speeds from red-shifts, they might conclude that a star that is apparently static could not be orbiting the galactic core and should therefore be ignored, or one that is moving twice as

(Continued on page 8)

#### (Continued from page 7)

core with that speed - this might skew the data towards higher speeds and provide an alternative solution to the dark matter hypothesis.

But what about the rings of gravitating matter? Despite the faster computer, it took several hours to calculate what I wanted. During this time I made another batch of dark marmalade - lovely Seville oranges from Regent Street, Shanklin, this year. And now, be warned - the story becomes dramatic, I can only sketch the gist. Firstly I tried superimposing a uniform gravitating spherical core upon an annulus containing a central hole, the core just filling the hole. I soon found by tapering the annulus and adjusting the mass of the core, I could compute a 'velocity rotation curve' accurately flat out to several times greater than the core radius. This 'Eureka' result demonstrated in principle that additional gravity from an annulus could make up for the core gravity falling off according to the inverse square law. A comparatively thin annulus is involved and significantly reduces orbital velocities in the core's outer regions as I had expected.

But my solution had looked rather too easy! Had I stumbled by luck into a 'parameter quirk'? Puzzling over this, I discovered what I call 'the wet carpet effect' - I found that whatever the mass in the core, I could scarcely shift the gravitational effect within the annulus further out. This reminded me of the time when I carried my bedroom carpet into the garden and made the silly mistake of filling a watering can with hot soapy water and watering the carpet all over several times. From then on, no matter how much I lifted the carpet at the edge, I could not get the rest of the carpet clear off the ground. It is here that the carpet analogy with annular gravity fails - the carpet split as I tried to heave it over the washing line, and I blamed gravity.

After trigonometric function guesswork, the 'wet car-

pet effect' provided the clue to what I needed. Take a look at If the curve labelled Fig.5. 'velocity rotation curve' represented the fizziness of a glass of lemonade, you would be correct to complain that it is 'terribly flat'. But in terms of astronomy, this is what might be called 'a stunning result!' (please note, the annulus 'getting thinner and thinner' refers to the area matter density, whereas in my 3D modelling, the annulus

has significant geometric thickness. I used a 'layered vatory. annulus' and probed gravity between the layers - compromising between avoiding big numbers with conse- Thanks are expressed to Human-Computer Interface quent subtraction errors, and trying to mimic 'reality'.) unfair blame. I checked the lengthy computer pro- for many discussions.

gram. If the 'velocity rotation curve' really is as flat as fast as the average, might travel around the galactic this, there has to be a reason. I struggled with the mathematics, with integrations involving first and second order elliptic functions...and then? ...1 cancelled my skating lessons and struggled for three weeks...a lot of thinking at 3am, and then early one morning, I got the mathematical solution. My lucky computer result had not been a parameter quirk but was the consequence of a general mathematical effect coming entirely within the realms of Newtonian mechanics - hypothetical dark matter was not needed. Mathematically, a 'flat velocity rotation curve' can extend all the way to infinity! (and skating restarted)

> Applying standard astronomical procedures (described in Cosmology E.R.Harrison, CUP Cambridge 1981 p67) I found that my annular galactic models possessed hidden-to-visible mass ratios of 2, 3... 4... 8 and bigger! The numbers crept upwards as my modelling improved. All this suggested that a tapering annulus creates a 'hidden gravitational cupboard' in the middle of a galaxy, which must be filled with stars before the core gravitation switches from radially outwards to radially inwards, permitting stars to orbit the nucleus. The amount of mass needed to fill the cupboard I called the 'nullification mass',

> Scientific papers have now been submitted, but within such formalities, I couldn't mention the 'wet carpet effect' or the dark marmalade, or various other things I thought you might like to hear about. There is more, including a physical explanation of why rotating annuli of stars tend to self-adjust and exhibit 'flat velocity rotation curves'. But next month I will provide some technical detail so that you can compute and generate the crucial data for this very special but possibly common type of galactic annulus. Meanwhile, I look forward to having a 'proper look' at the Andromeda galaxy through the 18 inch Dobsonian telescope which I helped to restore recently at the VAS Obser-



Limited, Cambridge, who supplied the BBC Basic Could it all be a computer fault? Computers often get emulator for the Macintosh and to my brother Richard Guy

## Why does Easter move?

ecause the heavenly bodies - the Moon and the Sun – and not the civil calendar, are used to determine the date on which it will fall. It is also always on a Sunday.

The Christian festival that commemorates the resurrection of Christ has been celebrated since the second century. However, different Christian churches did not always observe it on the same day. Some celebrated on the day of the month of the resurrection, and others focused on the day of the week.

The gospels say that Jesus was crucified on the day after the Last Supper. This has been taken to represent the Jewish Passover feast. According to custom, this feast is eaten on the 14th day of Nisan - the first month of the Jewish ecclesiastical year. The gospels also state that the resurrection was on a Sunday.

In AD 197, through the efforts of Pope Viktor, most Christian churches agreed to celebrate Easter on the Sunday which follows Nisan 14th. This caused pagans to ridicule the Christians, as they always needed to consult the Jewish authorities to ascertain the date for Passover. This Jewish festival was calculated from the relationship between the phase of the Moon and the position of the Sun, and could only be determined by the Jewish rabbis.

The Council of Nicaea, made up of over three hundred representatives from all of Christendom, defined the date of Easter in AD 325. Easter was to be celebrated on the first Sunday that came after the 14th day of the Paschal Moon – the Moon which when 14 days old, falls on or after the Spring Equinox – when night and day are of equal length. This also ensured that Easter day was never on or before Jewish Passover.

Nowadays, the method is given in the Book of Common Prayer. The rule states:

"Easter day is always the first Sunday after the Full Moon which happens upon, or next after the twentyfirst day of March; and if the Full Moon happens upon a Sunday, Easter Day is the Sunday after." The supplementary table in the book provides a method to calculate the date of Easter day. The process is complicated, but takes into account leap years and the occasions when the Spring Equinox does not fall on the 21st March. Easter can be as early as March 22nd or as late as April 25th.

#### **CPRE STUDY INTO LIGHT POLLUTION 2007**

he Campaign to Protect Rural England (CPRE) and the British Astronomical Association's Campaign for Dark Skies asked members of the public to go out on particular nights in the past few months and count the number of stars they could see within the Orion constellation, one of the most easily identifiable groups of stars in the night sky. The first night of the study was wiped out by clouds and thick fog on the Island, but the second night was quite clear. Both nights were chosen to coincide with a lack of a Moon to upset the results

Around 50 stars should be visible in this constellation on a truly dark night to people with good eyesight. But the results of the survey paint a bleak picture for stargazers: only 2% of the 2,000 people who took part said they could see more than 30 stars; 54% said they could see fewer than 10 stars in Orion, a level that the campaigners said indicated severe light pollution.

As expected, those who saw the fewest stars were in the most built-up areas but even those in rural areas were surprised by how few stars they could see.

Every light shone into the sky contributes to the problem of light pollution. The familiar orange glow above many British cities is a testament to the ubiquitous sodium street lamps. As a result, the starlight is lost in the glare.

Bob Mizon, UK co-ordinator of the Campaign for Dark Skies, said: "In an era when energy considerations loom ever larger, it makes a lot of sense to direct lights carefully and use sensible wattage, not just to reclaim our view of the stars, but also to cut pollution and help ensure our energy stocks for the future."

According to astronomers, only 11% of the UK sky remains totally dark. Thirty years ago, it was possible to see 7,000 stars in the Milky Way over Liverpool now only between 50 and 200 can be seen on a clear night. A report by the House of Commons science committee in 2003 said that half the population of England will never see our own galaxy, the Milky Way. Even the more familiar constellations that make up the signs of the zodiac are suffering. Astronomers say that at least five have been lost in the glow around the most light-polluted cities.

Here on the Island, we are fortunate in being able to see the Milky Way but there is no room for complacency. Let's all help combat light polluters.

©Lucy Rogers

# INTERESTING FACTS PART 29

Just about everybody knows the following mnemonic:

"Thirty days hath September, April, June and November. All the rest have thirty-one, Excepting February alone, Which has but twenty-eight days clear And twenty-nine in each leap year."

But if one shoves that into an anagram engine, this little marvel emerges:

"The handy brain-jogger that we Exercise repetitively, Ensures that we'll learn by heart, The days of the month, time apart, And hence unravel by and by, Any uncertainties which apply..."

# Website of the Month

http://www.guardian.co.uk/ flash/0,,419794,00.html

Will direct you to The Guardian science page where there is an interesting video of how a total eclipse of the Moon takes place.

(And, yes, there <u>is</u> a double comma in the above address)

PHOTO QUALITY IN THIS ISSUE All pictures are good quality

PROGRAMME CARDS 2007

The website for VAS on the card is our old one, but it will still connect you to the site as below on this page

## LATE NEWS

A reply has been received from the IW Council regarding the searchlight in Newport. It said that:... "I can confirm that no consent was granted by this service for the installation

and operation of the light, which in these circumstances would be deemed to be an advertisement. Consequently, the operation of the light was illegal for the purposes of planning. In this respect, the authority would have the option to prosecute the operator and land owner.... I advised that if the light was used in future without the appropriate consent first being obtained, the authority would be in a position to take legal action. This advice has been followed up in writing to the parent company on the mainland.... had the Chicago Rock continued to operate the light, we would not have hesitated to take the appropriate action. However, on the basis of the information we have received about the company's future intentions regarding the operation of the light, I do not consider that it would be in the public interest to bring about a retrospective prosecution."

The upshot being that we (VAS) were quite correct in making our complaint

# **People Power!**

The following piece has been swiped from Stargazey Pie March 2007 (Highlands AS Magazine)

here is an online petition to ask the Prime Minister to ensure that all exterior lights are shaded to direct their light downwards, so as to prevent light pollution obscuring the beauty of the night sky. <u>Click here</u> ( those without the benefit of electronic NZ, go to http://petitions.pm.gov.uk/starry-night/) to sign it now! There are over 2000 signatures on it so far, so please go ahead and add your name to the list of concerned citizens.

VAS Members are urged to put their own names on the petition and tell those in charge what we think. *Up the Revolution*!

Submissions to the NEW ZENITH are very welcome and should be sent to the the following address The Editor NEW ZENITH 'Keepers Lock', Youngwoods Way Alverstone Garden Village Sandown PO36 0HF Tele: 01983 407098 E Mail: johnvl@tiscali.co.uk (any attached files in Word Document format, preferably)

#### FIND VAS ON THE INTERNET

Members should note the Vectis Astronomical Society Website address:

http://www.vectis-astro.org.uk

MATERIAL FOR THE NEXT ISSUE TO BE RECEIVED BY THE 6TH OF THE MONTH The Vectis Astronomical Society and the Editor of the New Zenith accept no responsibility for advice, information or opinion expressed by contributors