



### Society News

#### Chairman's Report 2008

Vectis AS has had a very busy year. Along with our regular monthly meetings and newsletter, we have hosted numerous visits to the observatory and visited local schools and groups. Overall, 405 adults and 524 children either visited the observatory or listened to a talk by one of our members. This has helped our standing in the community, and has also contributed £674 to the society's funds. Many thanks to all those involved, particularly John Langley, Bert Paice and Graham Osborne.

The Sputnik event in October was well received, with many school children enjoying the chance to find out more about space and astronomy. We have also taken telescopes out and placed them on the pavement for the "Sidewalk Astronomy" event. Over one hundred members of the public looked through a scope and saw Saturn and its rings.

Despite the weather, the inaugural Isle of Wight Star Party was a great success, with delegates already signing up for the 2009 event (26th – 30th March – put it in your diaries now).

To further our education outreach, we have been awarded £3K in Leader-lite funding. Thanks to Sue Curd for securing this. Work is continuing on the project, and more details will appear in the 2008/9 Chairman's Report.

Our society has 125 members, of which 15 have joined for the first time this year. The membership, although slightly lower than this time last year, is on the increase and is now kept under close scrutiny by Tony Plucknett, so many thanks to him.

At the observatory, we have had the observatory 12 inch Meade refurbished, and it is now available on a regular basis for visual observations. We have also had some wonderful donations, including a 10 inch Dobsonian and a Sky Quality Meter, which helps to prove we have some of the darkest skies in the south. Again our thanks for these and all the other donations.

My thanks go to everyone involved for making this a very successful year for the society. Particular note should go to the officers and members of the committee, for their hard work in looking after their respective areas of responsibility, the organisers of the Star Party and other events, and most recently, volunteers who marshalled at the Garlic Festival and raised valuable funds for the society. I must also thank everyone who contributes to the New Zenith Magazine, and to its editor Brian Curd, for taking over and continuing a long Vectis tradition of good magazines. Also a special thank you to Peter Burgess, who enlightens us with his topical monthly astronomy stories at the Friday meetings.

I also thank you, the members for supporting our society, through your membership and enthusiasm. *(contd)*

**VAS Website:** [www.vectis-astro.org.uk](http://www.vectis-astro.org.uk)

Submissions or letters to New Zenith are always welcome and should be sent to:

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Material for the next issue by the 6th of the month please.

#### VAS Registered Office

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The Vectis Astronomical Society and the Editor of the New Zenith accept no responsibility for advice, information or opinion expressed by contributors.

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Next year is the International Year of Astronomy, so watch out for even more events and activities. If you'd like to get more involved, or have ideas about what you would like to see the society doing, please let me or any member of the committee know. I like to think we are all approachable and we all do our best to provide you, the members of the society, with what you want.

*Clear Skies!*  
**Dr Lucy Rogers**  
*Chairman, Vectis Astronomical Society*

### **Dates for your Diary**

**HAG Visit.** We are hoping to arrange a visit to the Hampshire Astronomical Group. If you are interested please contact **Richard Flux**.

**Isle of Wight Star Party.** Thurs 26th March to Mon 30th March 2009. Expressions of interest to **Stephen Griffiths** (info@iowstarparty.org). More details in NZ soon, or visit www.iowstarparty.org

**International Year of Astronomy.** Throughout 2009, VAS will be involved in promoting astronomy to the general public. *See page 6 for more details.*

### **VAS 2008 - Meeting Programme\***

Oct 24th	Beyond the Eyepiece - <i>Peter Burgess</i>
Nov 28th	Historic Telescopes of Cambridge University - <i>Mark Hurn</i>
* <i>Correct at time of publication</i>	

### **Minutes of Executive Meetings**

If any member of VAS would like a copy of the minutes from the monthly Executive meetings, please contact Sue Curd at secretary@vectis-astro.org.uk

### **New Members**

A very warm welcome to new member Mrs. P. Groves.

### **Contributors Needed!**

Your New Zenith relies on submissions from the membership and regular readers - *many thanks to them all!*

Your article or photograph can be published here too - contributions are welcomed by email or post. Don't worry about formatting etc as that can easily be sorted at production time.

Please send your articles to me - contact details on the front page.

**Brian Curd - NZ Editor**

## **Minutes of VAS AGM - 22nd Aug 2008**

1. The Chairman welcomed those attending the AGM. Attendance: 26.
2. **Apologies** were received from Roger Young.
3. The **Minutes of the last AGM** were agreed.
4. **Chairman's Report:** *See the Front Page of this NZ.*
5. **Treasurer's Report:** The Treasurer circulated copies of 2007/8 Accounts. Donations from talks amounted to £674 and it was this in part that enabled the member subscription rates to be kept at the same rate as 2006/7. The Treasurer explained that the £1,500 deficiency on the Income Statement related to depreciation of observatory equipment, the Balance Sheet however reflects the fact that the Society is very much solvent. Bert Paice commented that the Accounts were superbly presented and included a great deal of detail and proposed a vote of thanks to Graham Osborne for his diligent work in this respect. Approval of accounts proposed by Karon Hull, seconded by Paul England with all present approving.
6. **Election of Officers and Committee:** remains the same as 2006/7 with no new nominations received. *Officers elected:* Dr Lucy Rogers as Chairman; Sue Curd as Secretary and Graham Osborne as Treasurer. *Committee members elected:* John Langley, Bert Paice, Roger Hayward, Richard Flux, Roger Young, Brian Curd, Bert Buckett, Bill Johnston and Tony Plucknett.
7. **VAS Constitution:** Members were asked for any final comments on the proposed new constitution. Guy Moore suggested that the constitution be made available on the Society's website. Proposed by Bryn Davis, seconded by Graham Osborne with all present approving. A copy of the new constitution will be provided to the Charity Commission.
8. **Honorary Member Proposal:** It was suggested that John Smith MBE should become an honorary member of the Society. Proposed by Bert Paice, seconded by Peter Burgess. All heartily applauded John Smith.
9. **Any Other Business:** Guy Moore suggested that there be different levels of membership of the Society and the Chairman agreed that this be discussed at the next Executive Committee meeting. Paul England proposed a vote of thanks to the Executive Committee for their work during the year, seconded with all present approving.

## This Month's Night Sky

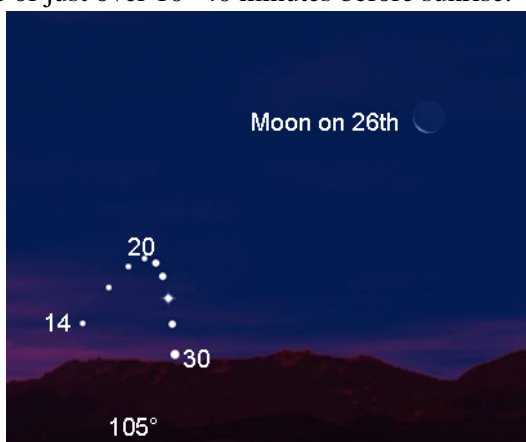
### Moon Phases

New	1st Qtr	Full	Last Qtr
28th	7th	14th	21st

All times are in BST - For GMT subtract one hour.

### Planets

In the latter half of the month early risers will be able to find **MERCURY** hanging in the morning sky just south of east. This is an excellent apparition which reaches a peak between the 22nd and 27th when the planet reaches an altitude of just over  $10^{\circ}$  40 minutes before sunrise.



*Mercury Shown every 2 days from 14th to 30th October*

**VENUS** is starting to track southwards along the horizon in the evening sky but will remain relatively low down for a while - in fact Mercury is the more favourable planet at the moment!

**MARS** is poorly placed right now as it is lost in the evening glare of the setting Sun.

**JUPITER** is still a nice evening object as it crosses the meridian at around 18:30 mid-month. This is around the time of sunset but the planet will be visible in a twilight sky as it is so bright.

**SATURN** is slowly starting to become more noticeable in the morning sky as it rises at 03:00 mid-month in the constellation of Leo.

**URANUS** is visible in the southern sky from darkness until after midnight.

**NEPTUNE** is due south as the sky darkens so is only clear of the haze for an hour or so after dark.

### Meteors

The **Piscids** reach their third maximum on the 13th Rates are low and the shower is unfavourable this year.

The **Orionids** are fairly favourable this year on the 22nd/23rd with the gibbous Moon rising in the early hours of the morning. This shower is another one which has an association with Comet Halley.



*Path of Uranus from October 1 to November 31.  
Stars to magnitude 7*

### Occultations

22nd	04:47	Disappearance of delta Cancri
22nd	05:59	Reappearance of delta Cancri

### Deep Sky

**M52 The Scorpion Cluster R.A 23h 25m Dec  $61^{\circ}$  37' mag 8.0**

Follow the line from Schedar through Caph for 6 degrees beyond Caph and you will find this fine open cluster. It is large, almost half the size of the full moon and the density of stars makes it relatively bright such that it stands out from the background Milky Way. A telescope will resolve many of the cluster members. A chain of 11th magnitude stars form a hook shape that bears a passing resemblance to the tail and sting of Scorpius. Two other stars of similar brightness mark out the claws. The brightest star in the cluster, a red tinged eighth magnitude star is not actually a cluster member but a line of sight coincidence.

**NGC7789 Open cluster R.A. 23h 56m Dec  $56^{\circ}$  47' mag 6.7**

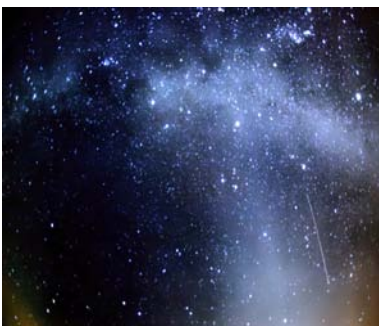
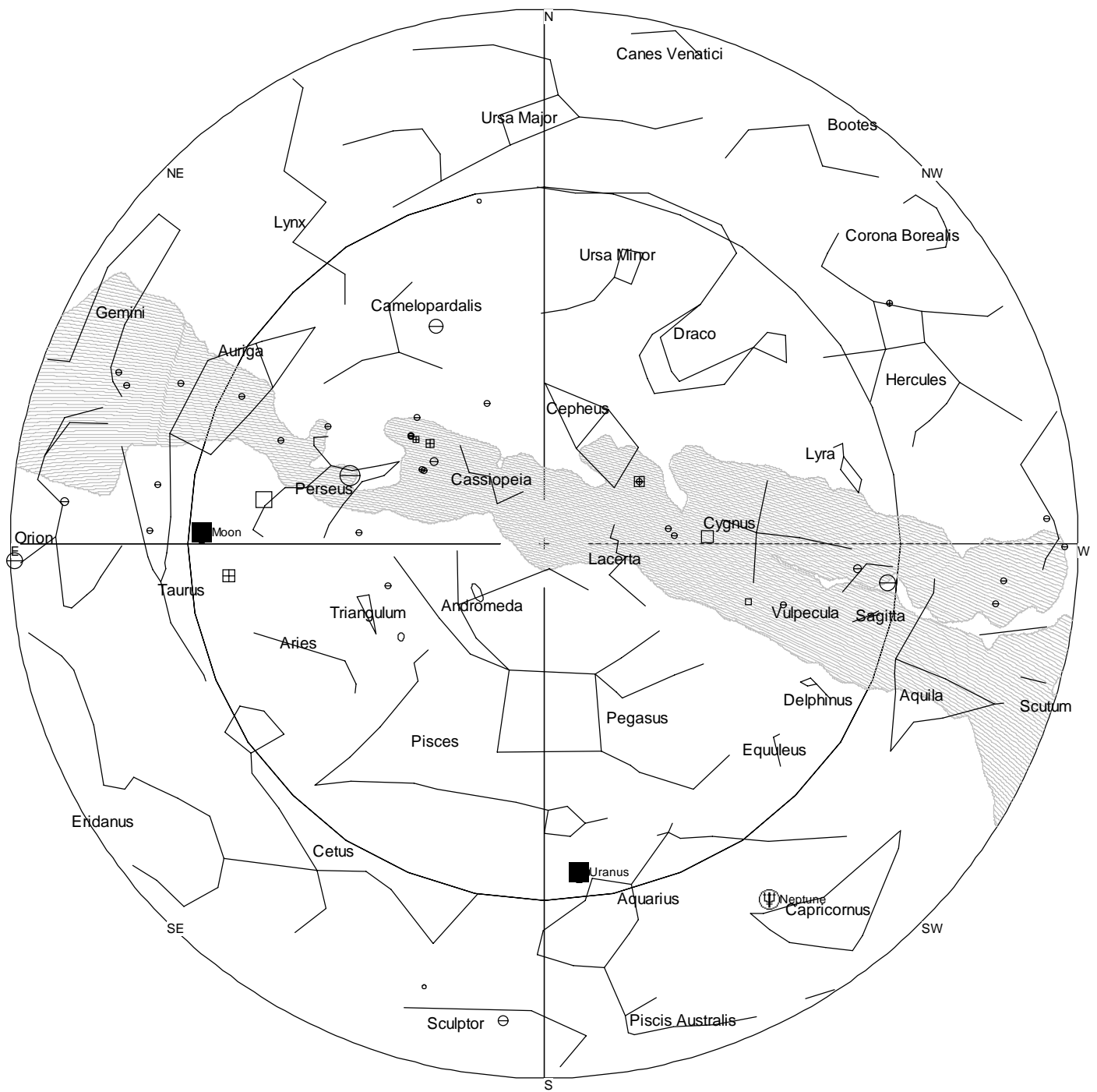
Turn right at Caph instead of going straight on, and only go half the distance and you will find one of the oldest galactic clusters known. Slightly larger than M52 this cluster is home to about 1000 stars many of which can be resolved with a telescope. Being bright the cluster takes magnification well helping to show some of the dark dust lanes.

**NGC457 The Owl or ET Cluster R.A. 1h 20m Dec  $58^{\circ}$  20' mag 6.4**

Best viewed in large binoculars or a low powered telescope, it is visible in 10x50s but the ET outline is just a little too small, it really needs more than 10 times magnification, but not too much. The star Phi Cass and a close companion make the two bright eyes and two more chains make the arms and body of the stick figure.

*Peter Burgess*

# October's Sky



<http://en.wikipedia.org/wiki/Image:Orionid12n.jpg>

The **Orionids** are an annual meteor shower, named after their radiant which occurs in the constellation Orion. The peak of the Orionid meteor shower is around October 21st. Typically the peak is 10-15 meteors an hour. The Orionid Meteor Showers are caused by the well known Halley's Comet, named after the astronomer Edmund Halley, which last passed through the inner solar system in 1986 on its 75-76 year orbit. The radiant of the Orionids is located near the left shoulder of Orion the Hunter, centered within a triangle consisting of Sirius (the brightest star in the sky) and the giant planets Jupiter and Saturn (These are in the south-eastern sky before dawn, as viewed from mid-northern latitudes). *This article is licensed under the [GNU Free Documentation License](http://en.wikipedia.org/wiki/GNU). It uses material from the Wikipedia article "<http://en.wikipedia.org/wiki/Orionids>"*



## The Cydonia Riddle (*Part 3 of 3*)

*“Spine-tingling action and adventure, where no one has ever been! A new concept in comics geared to the dawn of the space age! In this issue: From the Moon to the Red Planet! Where you will see the great eyes that look out across the ages! And have a story to tell! Listen to the giant FACE ON MARS.”*

So goes the front cover of a kitschy comicbook series entitled “Race For the Moon.” The story being referred to (one of a compilation of four separate stories) is entitled “The Face On Mars,” a brief synopsis as follows: “On an expedition from the Earth’s moon to the planet Mars, an international team of astronauts – led by American Ben Fisher – discover a huge carving of a Martian face – that’s as big as a mountain! Ascending to the inscrutable statue’s [the Face on Mars’] hollow eyes, Fisher plunges inside, where he finds it contains an ancient surviving memory of a civilization of magnificent giants; and visual history of the giant race’s heroic death against outside invaders. The Earthman sees images of one of the giant Martians pilot a rocket to destroy their enemy’s home base, an unknown planet located somewhere between Mars and Jupiter. Later, after leaving the martian surface, as they pilot their rocket to Jupiter, Fisher and his team take careful notice of the debris-strewn asteroid belt – the pieces of a planet that blew up between Mars and Jupiter....”

One would be forgiven for thinking that this story was inspired by the Martian Face formation discovered at Cydonia by the Viking orbiter in 1976. In fact it comes from a September 1958, Harvey Comic book series, Issue #2 - real life imitating art! It’s incredible that a 1950’s pulp-fiction comic strip seems to be nearer the truth when it comes to what is waiting for us on the Red Planet than our modern purportedly “scientific” community, which, despite the accumulated evidence that shows the “Face on Mars” is a huge, intelligently-created landform, has accustomed itself to scoffing dismissal. The comic strip’s Martian explorers are depicted wearing only oxygen masks and sport mountain-climbing garb which is a motif of most pre-Mariner/Viking Mars science fiction, with the idea that the Martian atmosphere was about like Earth’s at the top of Mt. Everest, so explorers of Mars could get away with just warm clothing and oxygen instead of space suits. They even have a tent-style encampment at the base of The Face flying a little pennant-style flag – not, interestingly, the Stars and Stripes.

Although the “pyramids on Mars” meme was alive and well long before such features were actually discovered on the Red Planet, this one-and-only prescient fictional murmuring of giant faces was written (and drawn) by the so-called “King” of comics from the 1950’s to the 1970’s, the inimitable Jack Kirby. Kirby wrote this amazingly prophetic tale only eleven months after the Space Age officially began with the surprising Russian launch of

Sputnik 1, October 4, 1957 - but eighteen years before the rest of us would see (from Viking 1) what was potentially waiting for the human race on Mars. “Curiouser and curiouser”, said Alice.....

At the start of the 20th century, the village of Avebury in Wiltshire was a farming community. Restoration, conducted in later decades, cleared away much of that community and its buildings, to reveal an ancient site. There were many strange stones positioned on the site that dated-back thousands of years, combined with an equally ancient, bizarre, circular ditch, originally 40ft. wide and 30ft. deep along with a large external bank. It turned out to be the largest prehistoric ritual Henge monument of Britain now broken by entrances from the north, east, south, and west with the village nestling within the site. Inside this circular ditch are the remains of a circle complex of 100 standing stones, up to 14ft. high - at 1,100ft. in diameter, the largest stone circle in Europe. As a defence against invading hordes, the Avebury ditch is far too shallow to be effective. As things turned-out, it was aerial shots that would reveal the crater-like nature of Avebury.



*“Avebury.” Online Photograph. Britannica Student Encyclopædia. 9 Sept. 2008*

Could Avebury be a mirror image, a scaled-down 14:1 version, of the Martian “complex” at Cydonia? When you superimpose topological maps of both places (Ordnance Survey map of Avebury and surrounding area, and the 1976 Viking mosaic image of the Cydonia region), the correlation of objects and the distances between them is remarkable, including a martian crater that matches with the Avebury ditch. Nearby Silbury Hill (the biggest human-made earth mound in Europe) matches with a Martian mound which shares characteristics with it’s apparent analog near Avebury. These relations suggest that the builders of the Avebury structures shared the same knowledge as the builders of Cydonia (assuming the Martian landforms are artificial), either through direct contact or sharing this common source. The obvious implication is that the builders of the English landmarks were either aware of the Martian features (or the Martians were mimicking Earth’s features).

For those readers who have been paying attention to the Cydonia research, and the apparent prevalence of a certain tetrahedral angle embedded amongst the ruins; the main axis of the Avebury stone circle complex has been found to be 19.5 degrees off north! On February 27th 1992, a former NASA consultant addressed a special meeting of delegates, staff, and invited guests in the Dag Hammarskjold Auditorium at the United Nations headquarters in New York, on the topic of the Cydonia research, vis-à-vis the "Face on Mars," et cetera, including some of this Avebury/Mars correlation. I have DVD copies of these proceedings to give away if any readers want to e-mail me. There appears to be nothing at Avebury that corresponds to the "Face, on Mars" as this is now a field used for raising crops. But, as though to reference the sphinx-like Face at Cydonia (*see my article in New Zenith vol 15 no.7 (August 2007)*), located on the Red Planet, there is a public house called... the Red Lion! today in Avebury, right in the middle of the stone circle. Sometimes real life seems determined to take us down the rabbit hole and through the looking glass... Avebury, truly the village "twinned" with Mars.

### Related links

Jack Kirby comics catalogue (Face on Mars comic):  
<http://www.kirbymuseum.org/catalogue/view.php?pp=4078>

Details of the Avebury/Cydonia mirror:  
<http://www.aulis.com/mars.htm>

The Red Lion at Avebury is unique in that it is the only public house in the world that actually resides inside a stone circle.  
<http://www.pub-explorer.com/wiltshire/pub/redlionavebury.htm>

Any thoughts to New Zenith or, conversely, I can be e-mailed at: [alan.matthews3@jobcentreplus.gsi.gov.uk](mailto:alan.matthews3@jobcentreplus.gsi.gov.uk)

*Alan Matthews*

## For Sale

### Tasco 11 TR Newtonian

*Complete with assembly instructions, tripod and  
 20mm & 4mm eyepieces.  
 Unused for years, looking for a new home!*

**£30**

Tel: 01983 840436  
 Mrs Zelig Gordon

## International Year of Astronomy 2009

VAS are planning events throughout 2009 and welcome any suggestions for suitable locations and partnerships with other interested clubs and organisations.

We hope to set up a working group tasked with promoting astronomy during 2009 and would appreciate the help of members during the year. If you think you can help with this project in any way, please contact either

**Brian Curd** - [brian@briancurd.com](mailto:brian@briancurd.com) or

**Bill Johnston** - [bill.johnston@onwight.net](mailto:bill.johnston@onwight.net)

For more details of events throughout the UK, full information and other links please visit the IYA UK Website at

<http://www.astronomy2009.co.uk/>

## Equipment Maintenance

In order to maintain and update our observatory equipment, Richard Flux is preparing a list of items requiring attention.

If you are aware of anything which needs refurbishing or updating, please contact Richard with details.

## Slow Computer?

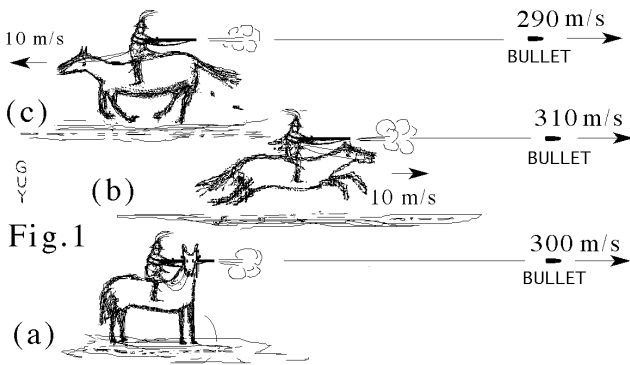
- PC Health Checks
- Virus & Spyware Scans
- Broadband Setup
- Upgrades
- Repairs

Call 01983 864303

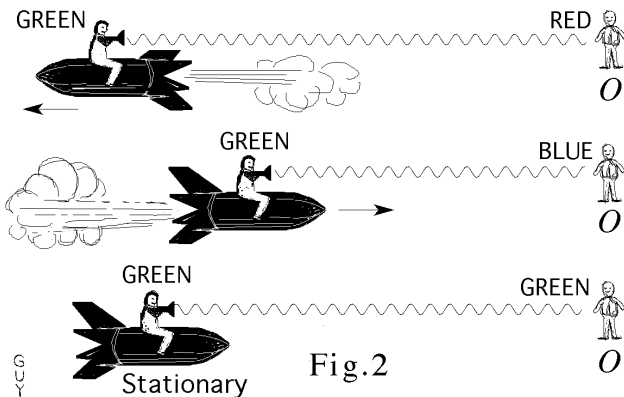


### Let's explore Special Relativity (Part 1)

1. **'Bullet maths'**: Light and all electromagnetic waves, such as radar, can travel through the vacuum of space. But so can bullets. In Fig.1(a) the man has a gun that fires bullets at 300 metres per second (m/s). He rides a horse at 10 m/s and firing forwards, Fig.1(b), the bullets are speeded up to  $300+10=310$  m/s relative to the ground. Firing backwards, Fig.1(c), the bullets are slowed to  $300-10=290$  m/s.



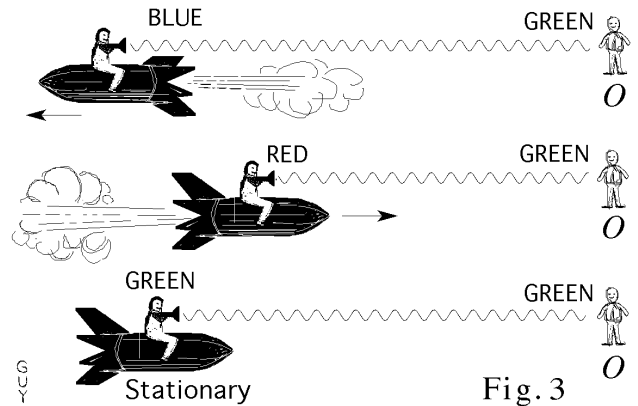
2. **Doppler effect**: In Fig.2 the spaceship rider carries a green lamp, so when stationary relative to the observer *O*, (bottom picture) then *O* sees a green lamp in the distance. When travelling towards *O* (middle picture), *O* sees the green shifted into the blue, and when travelling away (top picture) shifted into the red.



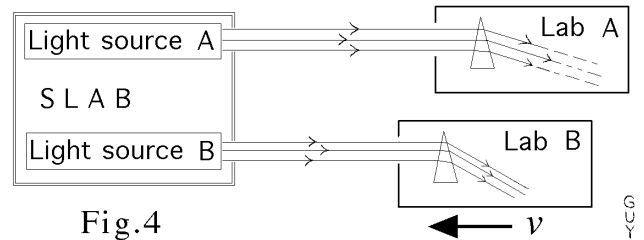
3. **'Bullet maths' fails for light**: Fig.3 is the same as Fig.2 except the rider carries different coloured lamps chosen to compensate for the redshift and blueshift, so the observer sees the distant lamp green in each case. All fine so far? - but now the green rays in Fig.3, according to 'bullet maths', travel at different speeds, just like the bullets of Fig.1.

If this is how Nature behaves, then light rays, even of the same colour, can travel at different speeds through space. This upsets the formula for refractive index of a medium, being the ratio of the speed of light in vacuo, to the speed of light in the medium. The theory of diffraction goes haywire too, etc. - this is **unacceptable!** Doppler shift occurs, yes, but light always travels at the same speed through space,

regardless of the source motion. This might be resolved if light required an aether, like sound requires air, except for point 4.



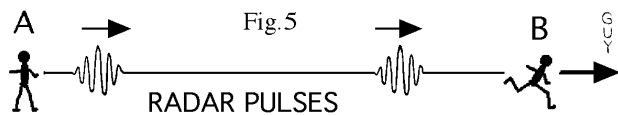
4. **Motion of the observer**: In Fig.4, out in space, two light sources initially of the same colour are bolted to a slab. Lab *A* is stationary relative to the slab, but Lab *B* heads towards it at speed *v* experiencing a blueshift of the light. Source *B* is adjusted to restore the original colour. If light enters Lab *B* at greater speed than Lab *A*, then light of the same colour behaves differently in the two laboratories. This too is **unacceptable**.



5. **Einstein's insight**: In 1905 Einstein came up with his theory that the speed of light in free space is a constant, irrespective of the inertial motion of the source or the observer, so in Fig.4, light enters both laboratories at the same speed! Einstein must quietly have been over the Moon. For centuries people had followed Newton like sheep and he overthrew the lot from his lounge. He does not mention Michelson and Morley by name in his paper, passing over their very famous experiment in general terms, but his friend Besso's help is acknowledged. (Is there something odd going on here? - definitely yes - more later.) Scientific papers of that time often had no academic address. It was an age of enviable scientific freedom of expression without stolid referees to block new thinking. Nor did individuals need the imprimatur of institutions. Working to very high self-imposed scientific standards was enough to assure publication. Einstein's theory did away with the aether and soon explained the source of energy in radioactivity, famously studied by the Curies, and how stars could burn for so long - what a brilliant way to start a century of new physics!

6. **Bondi's radar pulses:** Side-stepping history, let us dip into the late Sir Hermann Bondi's book *Assumption and Myth in Physical Theory* (CUP 1967). From memory his argument for how electromagnetic waves behave, I adapt here.

Imagine a volume of space containing an imaginary straight line of fixed direction relative to the stars. Two observers *A* and *B* are moving apart at constant speed *v* along this line, Fig.5, where *A* is regarded as stationary and observer *B* is running away. If you are observer *B*, you can regard yourself as stationary and observer *A* runs away in the opposite direction. The situation is symmetrical. Both observers carry identical clocks.



Observer *A* emits radar pulses towards *B* separated by intervals of 100 seconds. Observer *B* receives the pulses spaced by longer equal intervals because *B* is moving away from *A*, so they take longer to reach *B* by equal amounts for each pulse. Now imagine, for convenience, that *B* is moving so fast that the intervals between the received pulses are exactly 200 seconds. This is possible for a large enough *v*.

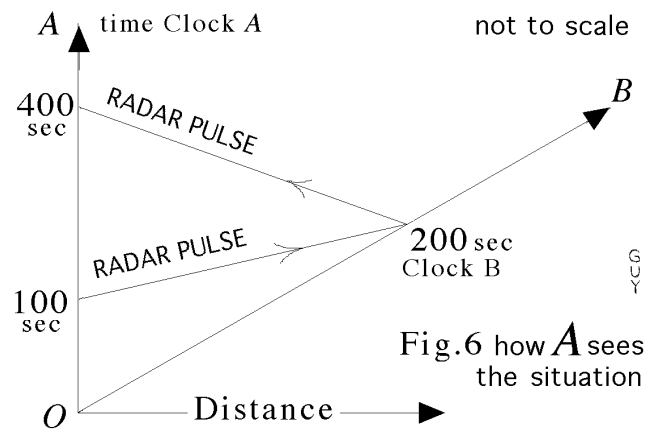
7. **Remember, the situation is symmetrical:** For this particular separation speed *v*, the pulse spacing doubles when going from *A* to *B*, and vice versa, from *B* to *A*. So if *B* emits pulses separated by 100 seconds, then *A* receives them separated by 200 seconds. If you accept this - **congratulations!** - you now believe in Special Relativity!

8. **What if *B* carries a reflector?** Suppose *A* emits pulses separated by 100 seconds, *B* receives them separated by 200 seconds. Using a copper sheet, *B* reflects them back to *A*, and *A* receives the pulses spaced by 400 seconds - two doublings because they've been to *B* and back.

9. **Restart with a shake of hands!** Let's start afresh with a new experiment. Suppose I am observer *A*. I shake hands with *B*, we set our clocks to zero and *B* sets out with speed *v*. I regard myself as stationary and Fig.6 shows what happens graphically, with time (on my clock *A*) shown vertically and distance horizontally. The motion of *B* is represented by the inclined line through *O*.

10. **Clocks in trouble:** When my clock *A* says 100 seconds, I send a pulse to *B*, who receives it when his clock *B* says 200 seconds. I receive the reflected pulse when my clock *A* says 400 seconds. The flight-time of the pulse is  $400 - 100 = 300$  seconds, and the time taken to travel each way is half this = 150 seconds. Watch

very carefully! - I sent a pulse at 100 seconds, received it back at 400 seconds, the pulse travelled the same distance each way because I regard myself as stationary while *B* is whizzing away. On clock *B*, *B* receives the pulse at 200 seconds. But I correctly insist that the pulse arrived at *B*, according to my clock *A*, half-way between 100 and 400 seconds = 250 seconds (try the easy maths! - add the flight time to the time the pulse was sent =  $150 + 100 = 250$  seconds, or take the average of 100 and 400 =  $500 \div 2 = 250$ ). Everything tells me that when clock *A* says 250 seconds, clock *B* says 200 seconds - but I cannot travel at infinite speed in order to find out if this is true. But if *B* modulates the reflected pulse with the information that he received it at 200 seconds, I can get the information back, he says "200 seconds", I say "250 seconds". His clock is 50 seconds slow! How can this be when the situation is supposed to be symmetrical?



11. **How does *B* see the situation?** *B* receives the first pulse when clock *B* says 200 seconds and it is reflected back to *A*, who receives it at 400 seconds on clock *A*. *A* can reflect the pulse again, and *B* receives it at 800 seconds on clock *B*. The average of 200 and 800 is 500 seconds, so *B* correctly insists that *A* received the pulse at 500 seconds on clock *B*, yet clock *A* said only 400 seconds when the pulse arrived at *A*. Thus each observer regards the other clock as running slow, the more so the more that time passes - so the situation is still symmetrical! Don't make the very easy but not obvious mistake of pretending to be both observers at once, for then the logic fails and nothing works properly!

Questions are welcome - please submit them to the editor!

*Note: Fig.6 is not to scale because non-Euclidean relativity prohibits it!*

**Dr. Guy Moore**



## Uranus and Neptune

*In last month's New Zenith, Peter Burgess told us where to look for these two elusive planets. Not a great problem nowadays but back in the old days nobody knew they existed. The story of their discovery is a fascinating one...*

In September 1670, John Flamsteed visited Cambridge and entered his name as an undergraduate at Jesus College. While it seems he never took up full residence, he was there for two months in 1674. He was ordained a deacon and was preparing to take up a living in Derbyshire, when he was invited to London. On 4 March 1675 he was appointed by royal warrant as "The King's Astronomical Observer" — the first British Astronomer Royal, with an allowance of £100 a year. There is a strong probability that he was an associate of the Isle of Wight scientist Robert Hooke at this time. In June 1675, another royal warrant provided for the founding of the Royal Greenwich Observatory, and Flamsteed laid its foundation stone in August. In February 1676, he was admitted a Fellow of the Royal Society, and in July, he moved into the Observatory where he lived until 1684, when he was finally appointed priest to the parish of Burstow, Surrey. He held that office, as well as that of Astronomer Royal, until his death. He is buried at Burstow.

Flamsteed accurately calculated the solar eclipses of 1666 and 1668. He was responsible for several of the earliest recorded sightings of the planet Uranus, which he mistook for a star and catalogued as 34 Tauri. The first of these was in December, 1690, which remains the earliest known sighting of Uranus by an astronomer. And that was that for almost 100 years.

Sir William Herschel announced his discovery of Uranus on March 13, 1781, expanding the known boundaries of the Solar System for the first time in modern history. This was also the first discovery of a planet using a telescope. Uranus is similar in composition to Neptune, and both have different compositions from those of the larger gas giants Jupiter and Saturn. As such, astronomers sometimes place them in a separate category, the "ice giants". Uranus' atmosphere, while similar to Jupiter and Saturn in being composed primarily of hydrogen and helium, contains a higher proportion of "ices" such as water, ammonia and methane, along with the usual traces of hydrocarbons. It is the coldest planetary atmosphere in the Solar System, with a minimum temperature of 49K(-224 °C). It has a complex, layered cloud structure, with water thought to make up the lowest clouds, and methane the uppermost layer of clouds.

There was a problem with Herschel's discovery — the orbit of Uranus did not quite follow the rules of Kepler. For some time, arguments took place as to the reason for this and eventually it was thought that there must be another, undiscovered large mass beyond Uranus affecting its orbital stability.

Two eminent mathematicians, John Couch Adams in England and Urbain le Verrier in Paris each took up the challenge of predicting not only the existence of yet another gas giant planet but its position in the sky. Both worked independently of each other and the race was on. Le Verrier announced his final predicted position for Uranus's unseen perturbing planet publicly to the French Academy on August 31, 1846, two days before Adams's final solution (which turned out to be 12° off the mark) was

privately mailed to the Royal Greenwich Observatory. Le Verrier transmitted his own prediction by September 18 letter to Johann Galle of the Berlin Observatory. The letter arrived five days later, and the planet was found with the Berlin Fraunhofer refractor that same evening, September 23, 1846 by Galle and Heinrich d'Arrest within 1° of the predicted location near the boundary between Capricorn and Aquarius.



*Le Verrier's tombstone in the Montparnasse Cemetery, Paris*

There was controversy over the apportionment of credit for the discovery. There is no ambiguity to the discovery claims of Le Verrier, Galle, and d'Arrest. Adams's work was begun earlier than Le Verrier's but was finished later and was unrelated to the actual discovery. Not even the briefest account of Adams's predicted orbital elements was published until more than a month after Berlin's visual confirmation, for reasons that have proved increasingly difficult to defend or define. Scholars' opinion has been moving in recent years to increased awareness that Le Verrier's open pre-discovery publication of his predictions merits his credit as sole mathematical discoverer of Neptune.

As this copy of New Zenith will be issued on September 26th, 2008, it is worth noting that Neptune was discovered on September 23, 152 years ago and that Le Verrier died on the very same day in 1877 at the Paris Observatory. It may also be of interest that my wife, Ann, recently discovered a previously unknown cousin in Richmond who has been carrying out her own family research with a spooky coincidence – she was distantly related to "the man who discovered a planet with the point of his pen". We are now carefully tracking this cousin in the hope that we shall discover yet more family members beyond her orbit!

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**John Langley**



## News From Around the Web

### Celestron Sponsors IYA 2009

Celestron have announced that they are a global sponsor for the International Year of Astronomy 2009. Learn more at the Celestron IYA 2009 site:

<http://celestronlife.com/IYA09>

### Riding with Robots on the High Frontier

This website, with its tagline "Saddle up for a trip with the robotic spacecraft now exploring the wild black yonder!", updates daily with amazing photographs and animations from various exploration spacecraft. **Well worth a visit.**

<http://www.ridingwithrobots.org/blog/>

### From the 2005 VAS Archives!

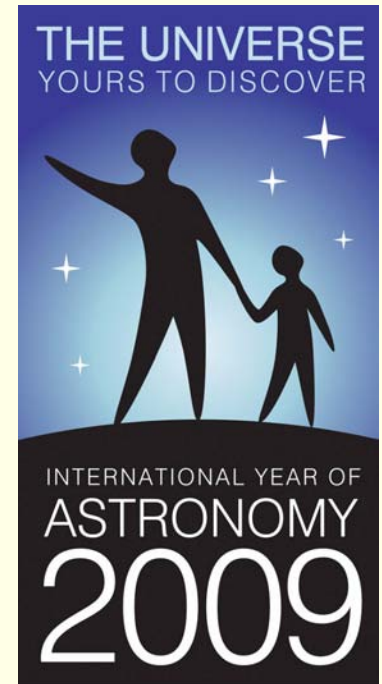
Owing to the unusual weather conditions the Isle of Wight is experiencing at the moment (clear skies), a massive Astronomical Festival took place at an observatory near to Newchurch on the Isle of Wight. Five persons had been seen at this location for most of the night of the 28-29th Aug. We know that this occurred by the crisp packets and tea cups not to mention biscuits strewn all over the place and the cries of "Wow look at that!" when an astro image was taken. Also heard was the mad rush from telescope to laptop to computer projector as the image was projected on the observatory screen. In the excitement Barry Bates fell down the stairs. I fell over a trailing lead and Bill Johnston, well I don't know what he did, but it was his brand new camera that had taken a magnificent view of the Milky Way. An eight megapixel Canon camera, Roger Hayward was heard to say, "I'm going to get one of them". Barry Bates exclaimed "wow so am I for Christmas" (his birthday is close to Christmas so it can be combined bless him). What a night! clear as a bell. Barry was heard to mumble "yes but not as good as the south of France". Rubbish was the reply as we all continued to look in awe at the Milky Way stretching from Perseus right down to our feet into Sagittarius. The 12" telescope was used to drive Bill's Cannon 350D camera (I'm getting one of them).

Then it happened, you could hear it across the playing fields, a man running as if possessed crying "I've done it, I've done it", I've seen the Pleiades. This was one of our younger members, Matt Brewer, in his excitement to tell us about the Pleiades (which had just risen over John Smith's house) and to see the magnificent images that Bill had just taken, he fell up the observatory step and ended up in the store room he's since recovered.

So who was the fifth person I hear you shouting, that was Trevor Tuckwell. You should see his bins. Well 25x100s are absolutely brilliant when you look at them with the dew shields on, you would be forgiven to thinking it was brains in Thunderbirds and not Trevor the bins. Then it was a sad time, we had to go home. Why I don't know because I did a further three hours at the 14" at home. It's strange the way the old dog looks up at you when you come in from the garden at 4AM, she probably thinks some strange human ritual, but really you know that's not the case it's just the VAS astronomers exercising their rights to do visual astronomy. Well all those that are out there you know where we are on a Thurs evening from 7.30PM. You guessed it. Observing and talking about the Universe at the Isle of Wight observatory Newchurch. But as you walk down the path past the pavilion after a long observing session (the red lights are still on but we won't mention them just in case) you can hear in the distance the rattle of cups and the cursing because we have run out of water to wash them up with. This will be Trev doing the last bits before retiring, no he doesn't go home he actually lives there, at least it appears that way.

Now an appology to Bill Johnston, as we finish drinking our tea and coffee we must remember not to throw the dregs out of the observatory door OR if Bill could leave his car in the car park it would save an awfull mess for him to clear up in the morning. It is so dark you can't see anything. Those that had got dark adapted helped Barry into the middle of the football pitch to show him the Pleiades - he just grunted and lit up another cigar!

**Roger Hayward - 29/08/2005**



### August's Riddle

Sorry for the delay:

The answer to the riddle in August's NZ is "The 7 key on a mobile phone".

### Quote

Astronomers, like burglars and jazz musicians, operate best at night.

**Miles Kington**

### Observatory

For your own safety when visiting the VAS observatory, please remember to bring a torch. Also, please make sure you close the car park gate if you are the last to leave.

### Articles Needed

New Zenith welcomes letters, articles or pictures related to all aspects of astronomy. Please send contributions to the Editor at the email or postal address on the front page.