New Zenith

The Monthly Magazine of the Vectis Astronomical Society

Vol 15 Issue 10 November 2007

Society News

From the Chairman

Hello! Children seem to have a natural affinity with space. They find it fascinating, if the enthusiasm shown by those who came to the observatory for the Sputnik celebrations is anything to go by. And it was not just rockets and astronauts that held their attention. They were equally interested in the telescopes, observatory and weather pictures received live from space. Hopefully through the event we will have inspired some children to take more of an interest in science and not write it off as boring.

Space is not just about science though. The Royal Astronomical Society has just announced the winners for its Newspaper Competition. Students are invited to put together a newspaper or feature article on a specified astronomy topic. This year they had to imagine what space exploration would be like by the year 2057 – the 100th Anniversary of the beginning of space exploration. This year's Runners-Up in the 7 – 11 age group was Class 5 of Node Hill Middle School, here on the Isle of Wight. Our congratulations to them, and I hope they enjoyed the experience.

As the nights draw in stargazing can be done in the early evening. If you have a telescope, why not show the heavens to family and friends. Being able to see craters on the moon or a planet comes as a surprise to many. Or watch out for satellites passing overhead. www.heavens-above.com provides lists of which satellites will pass over your area and when and how bright they will be.

With the clocks changing soon, there is even more time to gaze up at the stars in the evening. Hopefully we will get some good weather and be able to see them! - *Clear Skies*

Lucy Rogers - Chairman

From the Observatory

Over the next few weeks, an inventory of the Society's equipment is being prepared. It is important that any equipment provided on loan to members is identified and checked - if you have any loan items, no matter how small, could you please contact Richard Flux to arrange their inspection or return.

On a similar note: despite the adequate size of our observatory, we are facing some space(!) problems - there is some equipment at the observatory belonging to

VAS Website: www.vectis-astro.org.uk

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

The Editor New Zenith
35 Forest Road
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Sandown PO36 0JY

Tel: **01983 864303** or email: **brian@briancurd.com**

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

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Registered Charity No 1046091

Contents

members. As such items are specifically excluded from the society's insurance members should identify and claim personal items by 31/01/2008 as after that date items may be disposed of.

The Postal Strike

If any of the following members have sent their subscription to me, could you please ring or e-mail me as they have not been received.
Tel. 527959. E-mail tony.plucknett1@virgin.net

205 K. Methven	304 A. Kent
306 J. Gilland	307 D. Miller
308 P. Grattage	327 J. Abra
352/3 Mr & Mrs W. Akeroyd	
402 R. Nickless	417 P. Jeffery
431 L. Engelgard	434/5 Mr N. & Mr E. McGrath

Tony Plucknett - Membership Secretary

From the Editor

Thanks for the comments on the revised layout of NZ, I'm pleased to say that most of them were positive and encouraging. We did have a few production problems - text which showed weblinks was rather too light as were some of the photographs. These didn't show in the emailed version and hopefully didn't spoil your enjoyment too much.

Monthly Meeting

I knew there would be at least one omission in last month's NZ, the most glaring was the lack of any announcement of the September monthly meeting, sorry!

October's meeting will be held on Friday Oct 26th at 19:30hrs at Newport Parish Church Centre, Town Lane, Newport. Our speaker is Alan Drummond of Croydon Astronomical Society and the subject this month is Eclipses.

Advertising

At last month's committee meeting, it was agreed that New Zenith could contain a some advertising. We propose to allow 4, 9x9cm adverts and these will be made available on a "first come first served" basis
(A sample is shown on page 7).

We would of course prefer the adverts to be astronomy related but, if any member would like to advertise their business this will be allowed. Advertisements will cost £50 per annum (11/12 editions) and must be paid for in advance.

For details: Tel: 864303 or brian@briancurd.com

Brian Curd - NZ Editor

Sputnik Party - Quiz and Raffle Results

Junior winners :

- Danny Quinlan – 1st Shanklin Scout Troop
- Adam Gill – Newchurch Primary School
- Bryony Wedge – Node Hill Middle School

The winner for the over 16's quiz was:

- John Fredericks (Great 'Tie Breaker' - I think the VAS Sputnik Party was.... "*the only party I've been to in years that didn't serve booze*")

The winning raffle ticket numbers were:

- 82 - Ready to Fly Estes Rocket
- 69 - Patrick Moore's The Observer's Year, Springer Book
- 59 - Binocular Astronomy, Springer Book
- 77 - AstroFAQ's, Springer Book
- 68 - Society of Popular Astronomy Membership
- 30 - Astronomy Now Goodies
- 32 – Astronomy Now Goodies
- 15 – Astronomy Now Goodies

Event Sponsors

- Springer Books
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- British Astronomical Association
- EADS Astrium

Many thanks to them all.

We'd really like to hear from you!

As well as publishing articles from our regular contributors, we would love to hear from you if you have an article you'd like to share with others.
So, if you've:
Built your own equipment
Developed a special technique
Taken a great photograph
Why not tell us about it by writing an article for NZ?
Submissions to
brian@briancurd.com
or
The Editor
New Zenith
35 Forest Road
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This Month's Night Sky

Moon Phases

New	1st Quarter	Full	Last Quarter
9th	17th	24th	1st
On the 9th the moon will be at its furthest from the Earth for 2007, a distance of 406,672km.			

Planets

Mercury - Visible in the early morning until the end of the month. Look to the south east around 40 minutes before sunrise in the constellation of Virgo. For the first week of the month Mercury lies about 6 degrees to the east of the bright star Spica, moving further away and dropping down towards the horizon as the month progresses. I reaches it's peak altitude between the 6th and 11th when at the time of civil twilight the planet is about 10° above the horizon. With the thin crescent moon nearby on the 8th this is probably the best chance to spot this elusive planet.

Venus - Venus' altitude is now starting to decrease but it remains a highly visible object in the south east as it crosses Virgo. You can use it as a guide to finding the much fainter Mercury which is lower down and to the left.

Mars - Now approaching opposition Mars with its high elevation in Gemini makes it ideally placed for observation. A small telescope will show surface features assuming that the Martian weather cooperates and the dust storms have subsided.

Saturn - Becoming more visible in the morning sky, located a bout 7° from Regulus the brightest star in Leo, Saturn is, after Venus the brightest object in that part of the pre-dawn sky.

Jupiter Uranus & Neptune - Are not favourably placed for viewing this month.

Meteors

The Taurids, a shower with two peaks, one on the 3rd and the other on the 13th. Both dates are favourable sitting either side of the new moon. This is a broad peaked shower look any time in the early hours of first fortnight of the month, you may be lucky and spot some.

The Leonids peak on the night of 17/18th. Again the early hours of the morning are best, the radiant (the point from which the meteors appear to emanate) rises at around midnight and the moon by then has already set. Look about 45° away from the radiant to see the longer trails. This shower has given meteor storms in the past, but past record is no guarantee of future performance.

Occultations

On the 29th at 0030 the moon starts to occult the open cluster M44 in Cancer with two of the brighter stars reappearing at 0147 and 0149. This is a bright cluster easily visible in binoculars, but the glare of the moon may make observation a little difficult.

Deep Sky Objects

M31 RA 0h 43m Dec 41° 54' mag 4.5

Easily visible to the naked eye this galaxy is at least twice the width of the full moon and the largest member of the local group. It is seen as an oval smudge in the central northern part of Andromeda. Viewed from this galaxy our own Milky Way would look very similar if somewhat smaller.

In dark skies binoculars just show Andromeda's two companion galaxies, but a telescope is really needed to appreciate them. Through a small telescope the view of Andromeda is not that much better than binoculars, it is such a large object that it completely fills the field of view with anything other than very low magnification. A larger telescope will show the dust lanes and tracing out the spiral arms.

M33 RA 1h 34m Dec 45° 8' mag 7

M33 in Triangulum is one of a number of galaxies that shares the common name Pin Wheel. It is another member of our local group of galaxies, but somewhat smaller than the Milky Way being only 1/7 its size. This galaxy despite its relatively bright apparent magnitude its large size, about that of the full moon makes it very difficult to see. It can be glimpsed in our skies with a pair of 10x50 binoculars as a slight brightening of the background sky. A telescope of at least 8 inches diameter is needed to see any structure in the spiral arms, and then it can be difficult. Don't be put off by the difficulties it is a worthwhile object for observation.

NGC752 RA 1h 58m Dec 37°41' mag 5.7

Another large object, this is an open star cluster a little larger than the full moon and just visible to the naked eye in a dark sky. A pair of binoculars will resolve up to 20 stars, and an 8 inch telescope with low magnification shows over 50. Some stars show colour, mainly yellow and orange.

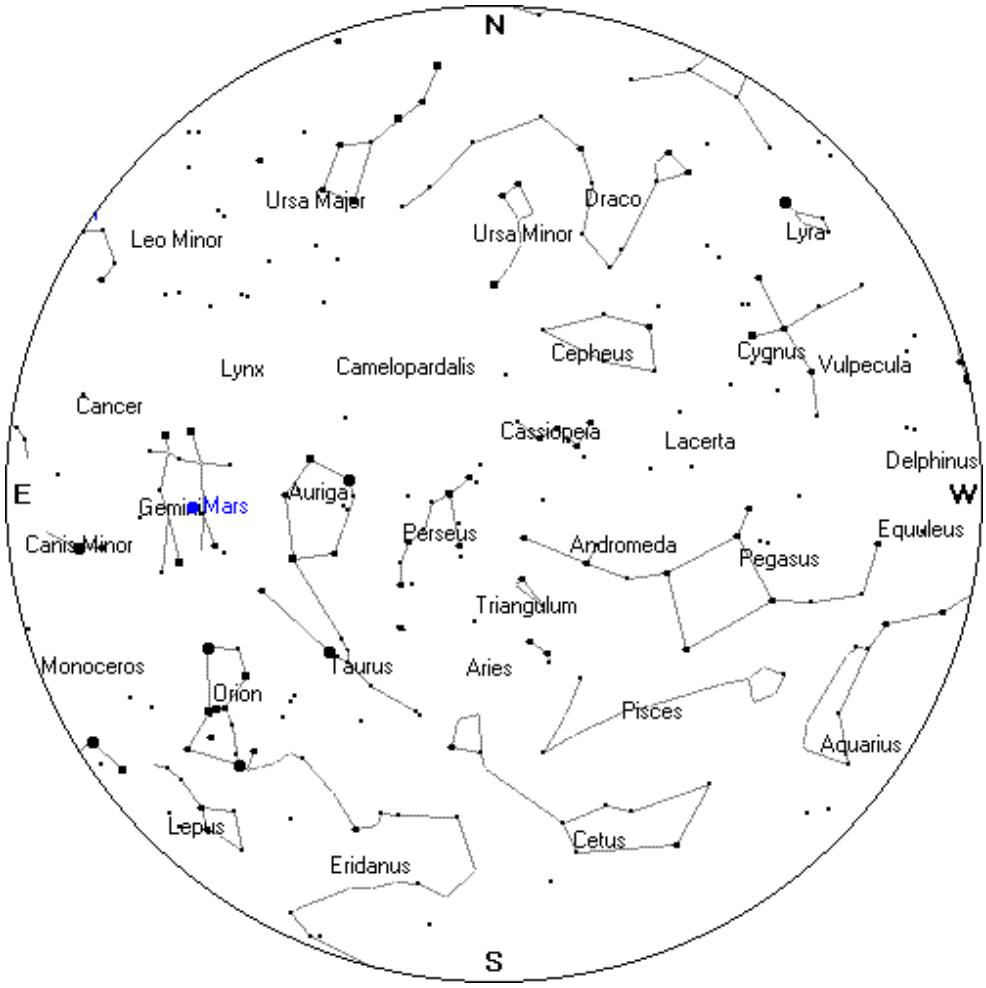
M34 RA 2h 43m Dec 42° 48' mag 6.0

This open cluster in Perseus is a little smaller and slightly fainter than NGC752 it contains 70 to 80 stars and as with most star clusters it is best viewed using binoculars or a low magnification telescope.

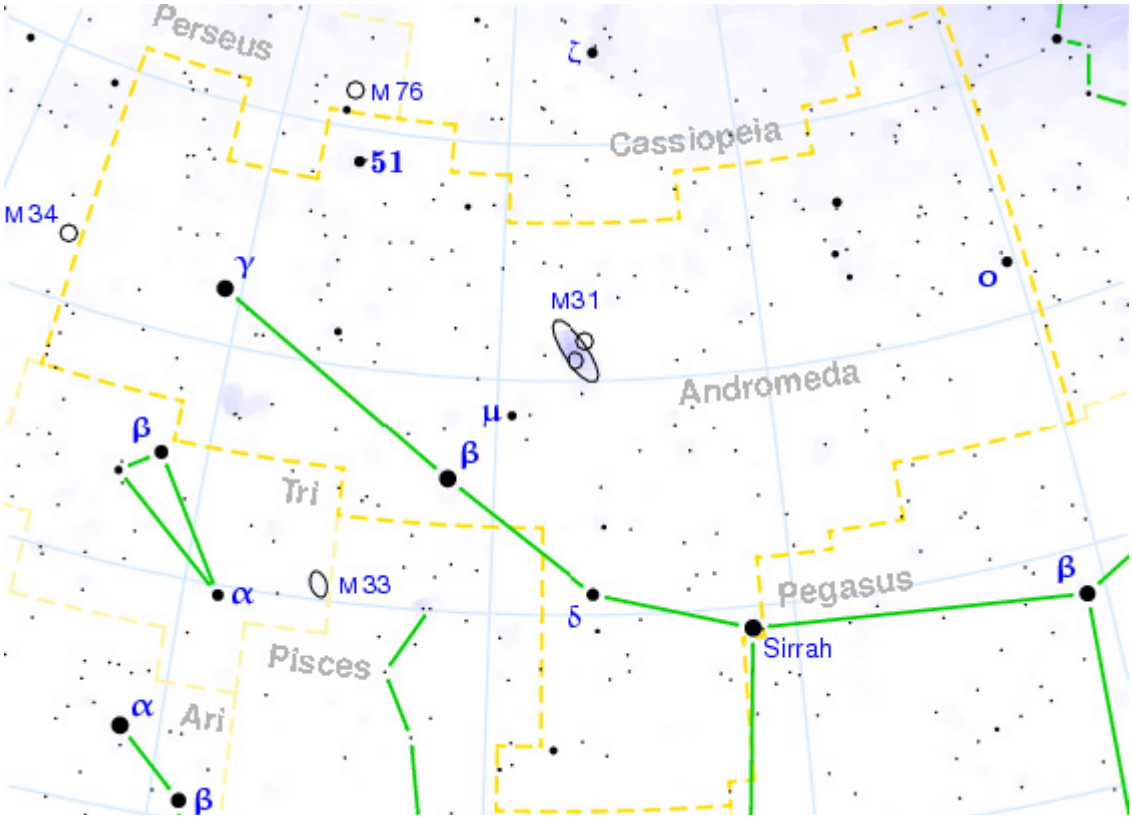
Peter Burgess

November's Night Sky Charts

http://www.heavens-above.com/



http://en.wikipedia.org/



What We Have Learnt from Hubble

The Hubble Space Telescope (HST) was launched on 24th April 1990. Compared to modern computers the processing capability is very limited but by placing a telescope above the Earth's atmosphere better observing has been possible than with any Earth based telescope.

Within our solar system the HST has been able to provide better pictures of the planets and their moons than has been possible before. Detailed pictures of asteroids were obtained as well as many new asteroids being discovered. Comets can be tracked to much greater distances from the sun than Earth based telescopes can manage.

Deep space images show stars down to 30th magnitude (compared with magnitude 6 for the naked eye from the Earth surface). The depth of field means that objects to within 95% of the edge of the universe can be seen. This capability is limited to some extent by the red shift cut-off. Distant objects are receding due too the expansion of the universe and this shifts the visible light towards the red end of the spectrum. Eventually, at high enough red shift, the light is shifted completely out of the visible region and cannot be seen optically. Hubble images reveal that distant galaxies are much more irregular than nearby ones suggesting there must be a process of evolution since the distant galaxies are seen as they were long ago.

Measurements of Cepheid variables and supernovae in distant galaxies have allowed astronomers to obtain a better estimate of the value of the Hubble constant. This measures the expansion rate and hence the age of the universe. Currently the universe is estimated to be between 13-15 billion years old.

HST images of distant galaxies also reveal intergalactic 'blobs' between the galaxies. These blobs are typically 2-3000light years across making them smaller than galaxies at around 8000 light years in diameter. The blobs are not apparent at shorter distances so they must have evolved in some way - possibly coalescing into irregular galaxies. It is still unclear how the spiral and elliptical galaxies formed from the distant irregular galaxies.

A number of galactic collisions have been observed where individual galaxies structures are disrupted due to gravitational forces as the galaxies pass through each other. On the galactic scale galaxies are relatively closer together than stars are within a galaxy. Therefore galactic collisions will occur but direct collisions of stars within the galaxies are unlikely. However, the gravitational forces can disrupt stars in their orbits and eject them into the intergalactic medium.

Quasars are among the most distant objects observed and are receding at up to 70% of light speed. They are very distant but very bright and the HST has been able to show the absence of any haloes suggesting quasars are not galactic cores as had been suggested.

Some of the HSTs most famous images have been of gas clouds such as the Pillars of Hercules. These are regions of star formation and as the young stars ignite they enter a T-Tauri stage with a strong solar wind that clears the neighbourhood of remaining gas from the original cloud. Evaporating Gaseous Globules (EGGs) appear inside the gas clouds protecting the gas from the T-Tauri winds but also triggering the next stage of star formation. In this way successive cycles of star formation occur in the gas clouds every few million years.

The HST has been able to resolve large nearby stars into discs. Betelgeuse has been shown to have hot spots possibly like our own sunspots. Eta Carina shows huge variations in magnitude and can be seen in HST images to be a complex very massive object.

Globular clusters are small groups of stars outside the plane of the galaxy. Theories of their formation suggest they should only contain old stars but the HST has revealed the presence of young blue stars known as blue stragglers.

The HST has already outlived its expected life and is still working but attention is increasingly turning to the next generation of telescopes. Both Earth based telescopes using special techniques to see through the atmosphere and space based telescopes will be designed to see to the edge of the universe and to provide information to help understand how galaxies formed.

September Monthly Meeting by Rob Turner

Reported by Roger Young

Living on Earth may be expensive, but it includes an annual free trip around the Sun!

The Martian Enigmas 2007 (Part 7)

Kydonia, or Cydonia, meaning "city of glory" was a city of ancient Mediterranean Crete that was located where the modern city of Khaniá, or Chania, stands now. According to legend, King Minos' grandson Kydon (son of Apollo), founded the city during the Classical Greek and Roman periods. "Cydonia" was originally appropriated, to a region of the Martian surface by the late 19th century Italian astronomer G.V. Schiaparelli -- naming the Martian regions according to his intimate knowledge of Classical literature. Schiaparelli's Martian nomenclature being clarified in 1958, whereupon the mysterious "Cydonia ruins" would be first imaged by one of the 1976 unmanned Viking Space-probes. This "first" Cydonia on Earth also has another, remarkably symbolic claim to fame: the home to a special variety of fruit, a quince, known as "Malus Cydonia" or the Cydonia Apple, and classified by botanists as Pyrus Cydonia. This "quintessential" fruit, as it turns out, is an esoteric fruit of knowledge, and, amazingly, the word Pyrus is linked with Mars! Pyrus comes from the root word Pirois, or Pyroeis (meaning "fiery one"), an often-used early Greek name for the planet Mars! This "enlightening" Quince then became a word for illumination, light, or fire: words such as pyramid (meaning "fire-begotten"), pyrotechnic, pyre, and Paris ("city of light" - "la Ville Lumière"). The name Paris is derived from an eminently more ancient source than the Greeks, it is rooted in he original Book of Genesis' Hebrew text of the story of the fruit of knowledge: as "Parity," meaning "a fruit" - this will become more relevant in a moment.

The Greeks referred to the ordinary quince as strythion but with their skills in cultivating fruits and vegetables, developed a finer quality in the Kydonia area of Minoan Crete. The new variety was eventually named Cydoni or mela Kudonia translated as "apples of Cydonia" - the Greeks generically called tree fruits "Apples." The Cydonia fruit was highly regarded by the Greeks and Romans because it was thought to be the "Golden Apple" of myth, the symbol of enlightenment and hidden knowledge, which appears in the Biblical Old Testament book of Genesis as the fruit of the "tree of knowledge." Renaissance painters depicted it in the Garden of Eden as a quince. - intriguingly, Schiaparelli also named a Martian region, that directly adjoins Cydonia, "Eden!" And Just like their Biblical counterparts, the "Cydonian Apples" when consumed gave one Eternal Life and "the knowledge of the gods." A common point in all the arcane symbolic tradition has always been the equivalence between apples and knowledge - think Sir Isaac Newton!

Given to Zeus's chief consort, Hera, on her marriage to Zeus (the chief god of the Olympians), these "Cydonia Apples" were treasured so much, it is written, that she placed them in a "special garden" in the protection of the Hesperide nymphs -"the Garden of Hesperides" - where they could forever bear more fruit, guarded over by a dragon (serpent) coiled in the tree. The ancients believed that remnants of this symbolic fruit remained on Earth - sought by Heroes of legend. In Greek Mythology, for example, this became the fabled "Golden Fleece," which, in the mythology, was ascribed to wisdom and knowledge and rested in the "grove of Ares [the war-god "Mars"]" hunted by Jason and his Argonauts, and guarded over by a "great serpent", similar to the Biblical Eden. (Mallon, the Greek word for "sheepskin," being derived from the same root as melon, the Greek word for "apple;" and, in a strange twist of etymology, the Latin word malum means "tree-fruit.") The serpent, so often shown wound around the trunk of the tree, signifies the power of thought, the "eternal tempter" or "urge"; and transfers the symbol of knowledge in the form of an "apple." It is said in the mythology that the Garden of Hesperides was planted by the goddess Hera at the foot of Mount Atlas along the Prime Meridian - thought to be where heaven and earth connected (the Doomsday book of 1086 mentions that old quince trees are planted as boundary markers - and still are, especially in European countries that lie on the Prime Meridian). It is therefore of interest that Schiaparelli's Martian Prime Meridian, runs through the centre of Cydonia - the current Prime Meridian selected (When Mariner 9 mapped the surface in 1972) for modern maps of Mars is different and has no particular significance; with a 0.5km-wide crater, subsequently named "Airy-0" (within the large crater Airy in Sinus Meridiani) being used as the longitude zero point.

But the connection between an ancient Grecian city and its modern Martian counterpart begins in ancient Greece, in none other than Homer's recitation in "The Iliad" of the infamous Trojan War. A war ultimately triggered, not by the "Face of Helen" and her "thousand ships" (as we all learned in school) but by Eris - the goddess of Discord and Strife, daughter of Hera and Zeus, twin sister of Ares the Martian God of War. Eris, who, in the mythology is angered at not being invited to the wedding banquet of Peleus and Thetis, turns up nevertheless but is refused admittance, Eris throws one of the Golden Cydonia Quinces, inscribed "For the Fairest", into the wedding feast, seeking to create some major "Discord." She succeeds, starting a dispute between the goddesses Hera, Athena, and Aphrodite as to which of them was the most beautiful. In order to settle the ensuing dispute Paris, a mortal prince of Troy, was asked to judge among them, finally awarding the Cydonia apple to Aphrodite after she tempted him with the most beautiful mortal woman in the world: Helen, wife of Menelaus of Sparta. Paris ended up running off with Helen…. and the rest is Greek mythology, ending ten years later in the fall of Troy. This myth is an esoteric Greek metaphor for the process of enlightenment/ illumination ("Paris" - "enlightening fruit"), ultimately symbolised by "Helen" meaning "light" - hence "Helios," the Greek Sun god. Because Ares and Aphrodite, and their Roman counterparts Mars and Venus, were united in the

sacred union of myth, it is appropriate that Paris choose to give the golden Pyrus Cydonia, to Aphrodite - confirming the Quince's "Mars" connection. The ancient Greeks then associated the Quince with fertility, and it played an important role in wedding celebrations where it was offered as a gift. To the Romans, because of this symbolic marriage, the Quince was held sacred to Venus, who is often depicted with a Quince in her right hand, the fruit sent as presents, or shared, as tokens of love. The custom was handed down, and throughout the Middle Ages Mars Cydonia Quinces were often used at wedding feasts.

The "Cydonia Oblonga" quince is the present generic botanical name of the sole member of the genus Pyrus Cydonia (there are four other species in separate genera, these are the Chinese Quince Pseudocydonia sinensis, a native of China, and the three flowering quinces of east Asia in the genus Chaenomeles - another unrelated fruit, the Bael, is sometimes called the "Bengal Quince"). Botanically, the Pyrus Cydonia Quince, having white flowers, is from the Rosaceae (Rose) family, and is a deciduous thornless shrub or small tree. The fruits are light golden-yellow, green or orange, usually pear shaped, but sometimes round and apple-shaped, and very fragrant - they were once popular as room deodorisers. Individual fruits can weight up to ½ kg (1lb) or more, and ripen late in the autumn. Quinces have long been grown for flavouring apple pies, ices and confections. The golden fruits are too hard and acidic to be eaten raw but are delicious stewed or baked, and they are used to make jam or jellies - in medieval times, Quince marmalade was popular in Britain. Wine and cider can be made from the fruit, and Quinces have long been used as an herbal medicine.

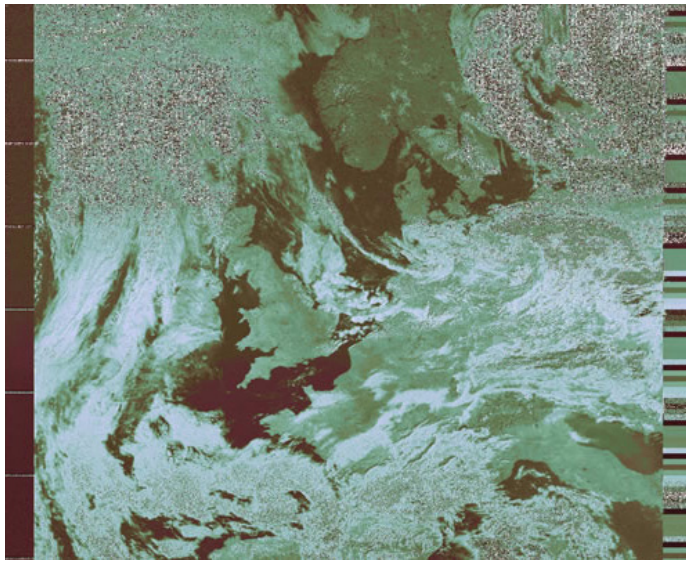
Alan Matthews

Sputnik 50th Anniversary Party

To celebrate the 50th anniversary of the launch of Sputnik, the world's first artificial satellite, Vectis Astronomical Society held several rocket events.

On Thurs 4th Oct, members of the society launched rockets in front of all of the pupils at Newchurch Primary School. The children joined in with a very loud countdown, and the rockets flew to about 25 metres high. The four and five year olds in Miss Saunders' reception class then launched their own air-powered "stomp" rockets across the field, which they tried to land on a moon target – although many were more likely to leave the solar system!

At the Isle of Wight Observatory in Newchurch, more rockets were launched (reaching a height of about 75m) and a half scale model of Sputnik was on display, along with information about the start of the space age. Weather pictures were received live from satellites and, after it had become dark, satellites could be seen passing overhead. Telescopes were also used to look at the stars and planets. The VAS invited school groups and a scout troop to participate, and the event was also open to the public on the evening of Friday 5th and Saturday 6th. About 130 members of the public and a further 30 VAS members enjoyed the celebrations. Thanks to all who contributed to making the event such a success.



NOAA 17 - Captured Weather Satellite Image

Special thanks to Island Planetarium at Fort Victoria, Freshwater, where rockets and telescopes can be purchased.

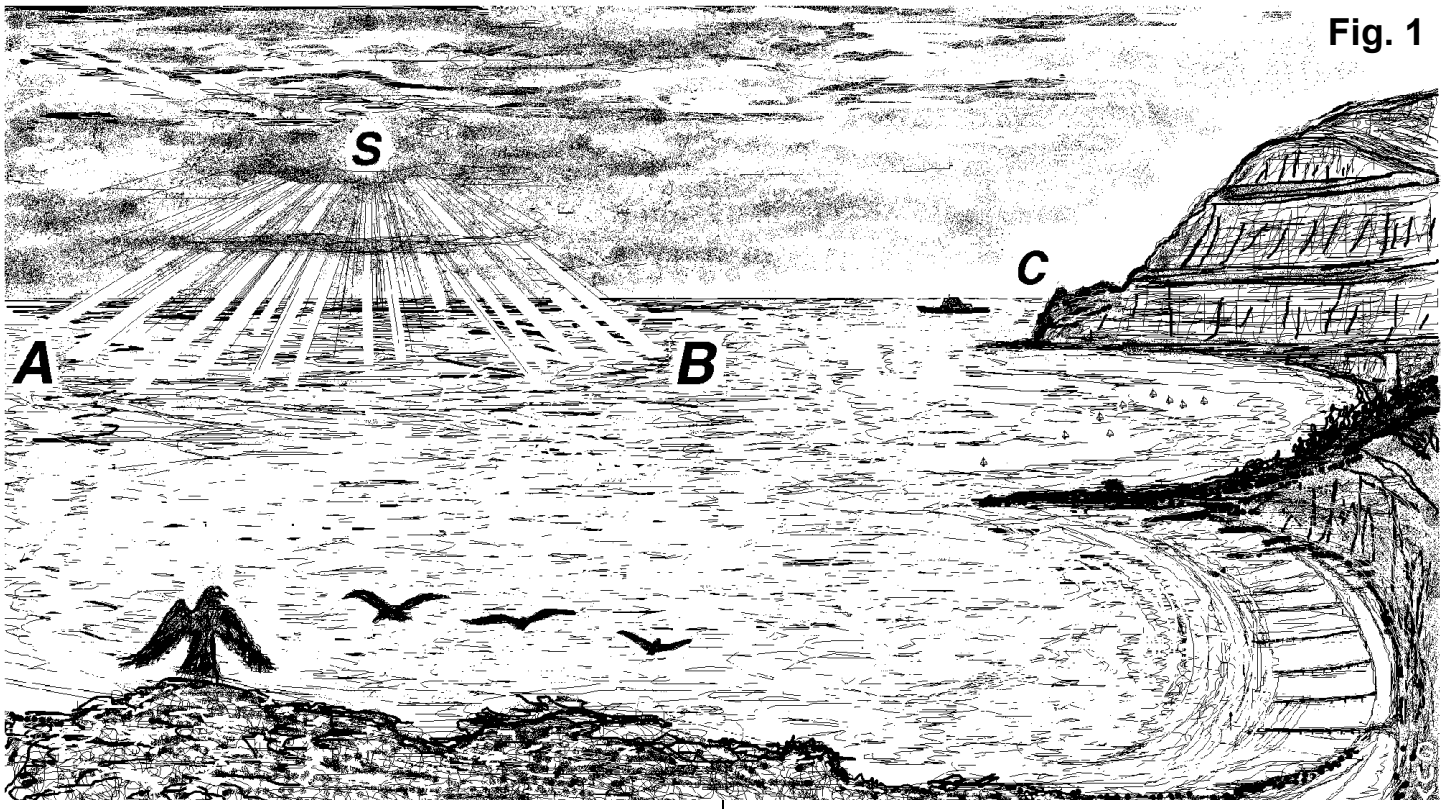


Fig. 1

Putting Things into Perspective

When we were working at the Observatory, Trevor asked - "How do you explain we can see the Sun's rays coming through clouds in many directions, when they're supposed to be parallel?" - something like Fig.1 - hence the comment "...more about perspective and the Sun's rays another time!" in my Moon-cheese-scarecrow article *(NZ August 2006)*...

Parallel lines, we are sometimes told, meet at infinity. Artists approximate infinity by 'vanishing points' on the horizon. At those points in the distance, parallel lines, like straight railway tracks, appear to converge. If you agree that a train travelling into the distance subtends a diminishing angle at the observer until it appears no bigger than a point, then straight railway lines appear to converge to a point in the distance on the horizon.

Since the scene in Fig.1 is 5 miles across at most (from A to B), whereas the Sun is 93 million miles away, then triangle ABS is, in reality, very long and thin. S is any point on the Sun, obscured by clouds in Fig.1. Angle ASB, in Fig.2, comes to 5/93000000 radian= 0.01 arcsec, so AS and BS are practically parallel. The observer, near to the crow in Fig.1, is looking at an inclined triangle, base AB on the sea, and apex S is 93 million miles away behind the clouds. Remove the Sun from Fig.1 and place a police helicopter apparently at S in the picture and the beams from its swinging search light might give a similar looking scene. Of course the search light beams change angle, but the Sun's rays aren't like this. The Sun's rays, parallel to within half a degree because of the size of the Sun, arrive through holes in the distant clouds. Apart from scattering and refraction, they meet the sea at the same angle to within half a degree. Perspective tells us that S is the vanishing point for rays SA and SB. Fig.2 shows Trevor pondering the situation in 3D.

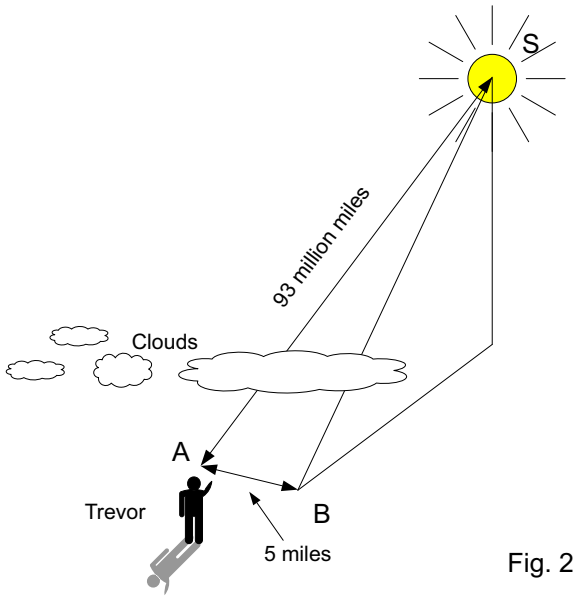


Fig. 2

If you erected a straight rail track with a 5-mile gauge from Earth to the Sun's centre, the rails would appear to converge at the Sun. Take the Sun away and continue the track to infinity, and the track still vanishes in a point where the Sun was - you wouldn't see any track sticking out behind the Sun. As you look further and further along the track, the line you are looking along makes such a shallow angle with the track, eventually it follows the track

and coincides with it. So an infinite straight line across the Universe appears to start at a point in the heavens, crosses the sky, and terminates at another point diametrically opposite the first point, with you at the middle. The line would 'feel curved' because it seems to 'bend around you'. But unless this line be horizontal, then you only see one 'vanishing point' because the Earth you stand on hides the other one.

If we lived on a 'flat Earth', or a sphere of infinite radius, no matter how high we flew, the horizon would always appear on the same level as ourselves, all around. But on our finite Earth, the higher we go, the lower the horizon is depressed from the horizontal, not a lot for hill walkers. Fig.3 gives the geometry with the observer at height h. For an observer (Fig.1) close to the Ordnance Survey 30m contour, on Lake cliff, using Pythagoras and the formulae given in Fig.3, the sea horizon is 19km distant and 19/6000 radian =11 arc minutes below the 'flat earth horizon' or the horizontal. If the horizon sea level changes by ±3m, then the sea horizon changes level by ±3/19000 radian = ±0.5 arc minutes.

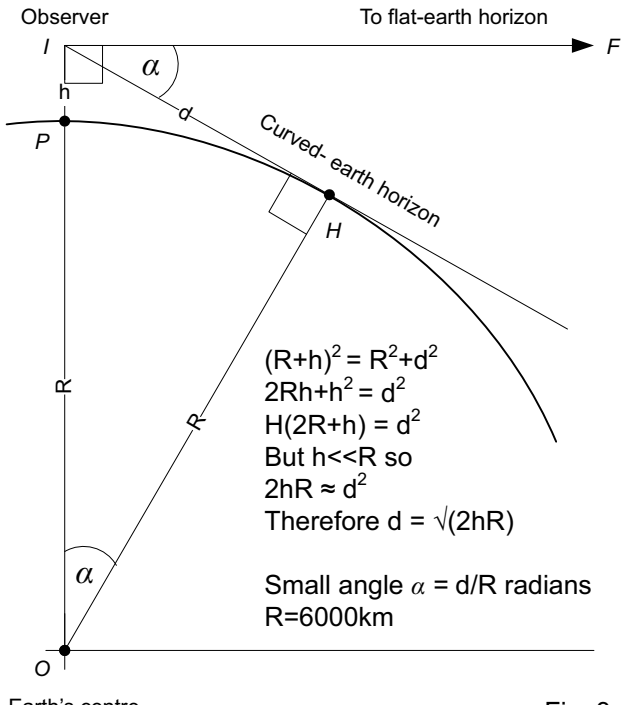


Fig. 3

Artists with their remarkable method of 'linear perspective' have hit on a good approximation - but their constructions apply to a flat Earth viewed with one eye! The difference between our curved-Earth and flat-Earth horizons is exaggerated in Fig.4. Straight rail tracks intersect at a point on the flat-Earth horizon, very slightly above our real horizon. A railway engine on the horizon of our Earth is at a finite range and hence has not shrunk to a point, so rail tracks don't quite converge to a point on the curved-Earth horizon. But given the width of the artist's brush stroke, or pencil line, in many situations you won't notice the difference! If you wish to draw the railway sleepers in Fig.4, the popular book Perspective by G.White (John Murray and later Batsford) shows you how - making the approximation that small lengths of great circles behave like straight lines - quite accurate for scenes a few miles across.

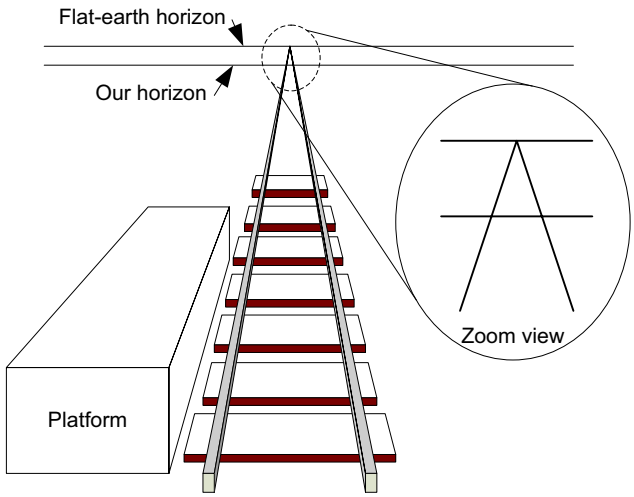


Fig. 4

I was told (or misunderstood) that if you see an object at the same level as the horizon then it's at your eye level. So in Fig.1, the ledge (Knock Cliff) beyond Shanklin is near to the same level (30m) as the observer on Lake cliff since the horizon meets it near C. This would put the ledge at a height of 30m. But there's something wrong here - consider the ship near to C in Fig.1 with the top of the superstructure level with the horizon. If this were the 'flat-earth' horizon then the ship would be 30m tall from its waterline. But in Fig.3 the ship is 'squashed' between line IH and the curved sea, so it isn't as tall as flat-earth logic suggests! More Pythagoras and knowing it's 3km to the rocky ledge puts the ledge height at 21m (try it by developing your own formula!).

You may be amused to hear how I remember that the radius of the Earth is 6000km. Take the frequency of the British mains of 50Hz. Divide this into the speed of light, 300,000,000 m/S. This gives the wavelength of the British mains = 6000km, or from here to the middle of the Earth. This means that from North to South England, about 600km, is one tenth of the wavelength of our electricity supply. Finally, let's convert the speed of light into metres per microsecond, by dividing the big number by a million. This comes to 300m/μS (near to one million times the speed of sound in air). 1μS is along time in electronics! In that long time, light only travels 300m, so light travels really quite slowly, (sound travels 0.3mm/μS). But don't forget - nothing in this Universe travels faster than light! Perhaps this helps to put our Universe into perspective!

Thanks to my brother Richard for peering at OS maps with a magnifier, and to Trevor for his question.

Dr. Guy Moore

THE BACK PAGE

LINKS, COMMENTS AND OBSERVATIONS

Web Links

*VAS and its officers are not responsible for the content of the web sites linked here. It is **your** responsibility to ensure you are protected against viruses and malware.*

The Monthly Skyguide - http://www.skyguide.org.uk/
Your Sky - http://www.fourmilab.ch/yoursky/
Science Daily - http://www.sciencedaily.com/
Eclipse Chaser - http://www.eclipsechaser.com/
The NGC/IC Project - http://www.ngcic.org/

Christmas is Coming so don't forget....

The terms used on telecope packaging can be translated thus:

- **ALL NEW** - The power supply, connectors, and software are not compatible with previous versions. Even the screw threads are different.
- **ADVANCED DESIGN** - Salespeople don't understand it.
- **BREAKTHROUGH** - It nearly worked on the first try.
- **DESIGN SIMPLICITY** - It was developed on a shoestring budget.
- **EXCLUSIVE** - We're the only ones who have instructions how to use it.
- **FIELD TESTED** - The manufacturer has no way to test it.
- **FOOLPROOF OPERATION** - It's unrepairable, short of sending it back to the factory (which can't fix it either).
- **FUTURISTIC** - It only runs with the help of a next-generation computer, which isn't available yet.
- **HIGH ACCURACY** - Screw threads match the threads of the holes they're supposed to mate with.
- **IT'S HERE AT LAST** - We've released a 26-week project in 48 weeks.
- **MAINTENANCE FREE** - see Foolproof Operation.
- **MEETS OR EXCEEDS OPTICAL STANDARDS** - We haven't the foggiest idea about the total wavefront accuracy.
- **NEW** - It comes in a different colour to the first version.
- **PERFORMANCE PROVEN** - It worked through beta test.
- **QUALITY STANDARDS** - It works most of the time.
- **REVOLUTIONARY** - Everything that's supposed to go round and round actually goes round and round.
- **SATISFACTION GUARANTEED** - We'll send you another manual if this one fails to work.
- **STOCK ITEM** - We shipped it once before and we can do it again, probably.
- **UNMATCHED** - No one else wants to copy our design.
- **UNPRECEDENTED PERFORMANCE** - May mean two things:
  1. Actually worked the first time right out of the box.
  2. Nothing before ever ran so erratically.
- **YEARS OF DEVELOPMENT** - We finally got one to work.

Seriously though, why not ask a member of VAS before buying a telescope? Come to the observatory any Thurday evening after about 19:30hrs and ask your questions before spending anything.

Overheard in the Observatory

"We need more space.."

"Which folder is it, Dome on Control or Control on Dome?"

"You'll have someone's eye out with that!""

When a distinguished but elderly scientist states that something is possible, he is almost certainly right. When he states that something is impossible, he is very probably wrong.

- Clarke's First Law

...and finally...

Sherlock Holmes and Dr. Watson go on a camping trip. After a good dinner and a bottle of wine, they retire for the night, and go to sleep.

Some hours later, Holmes wakes up and nudges his faithful friend. "Watson, look up at the sky and tell me what you see."

"I see millions and millions of stars, Holmes," replies Watson.

"And what do you deduce from that?"

Watson ponders for a minute.

"Well, astronomically, it tells me that there are millions of galaxies and potentially billions of planets.

Astrologically, I observe that Saturn is in Leo. Horologically, I deduce that the time is approximately a quarter past three.

Meteorologically, I suspect that we will have a beautiful day tomorrow.

Theologically, I can see that God is all powerful, and that we are a small and insignificant part of the universe. What does it tell you, Holmes?"

Holmes is silent for a moment. "Watson, you idiot!" he says. "Someone has stolen our tent!"