



Society News

From the Chairman

May was an exciting time for space telescopes. On the day that the ESA space telescopes Planck and Herschel were launched, NASA astronauts John Grunsfeld and Andrew Feustel completed the first of five spacewalks to service and upgrade the Hubble Space Telescope. They spent 6 hours outside.

The Herschel Space Observatory will be the largest ever infrared space observatory. It has a 3.5m diameter reflecting telescope and instruments cooled close to absolute zero, It will observe at wavelengths that have never previously been explored.

The Planck Observatory will be observing at microwave wavelengths, It will measure tiny fluctuations in the Cosmic Microwave Background with unprecedented accuracy, providing the sharpest picture ever of the young Universe - when it was only 380,000 years old. Planck will carry a 1.9x1.5m telescope, with an effective aperture of 1.5m.

Both Herschel and Planck are now part way through their four-month journey from Earth to the second Lagrange point of the Sun-Earth system (L2).

Much closer to home, Roger Hayward, our Observatory Director, has started training sessions at the Observatory at Watery Lane in Newchurch. If you would like training on the club's kit (and a key to the observatory), please contact Roger at director@wightastronomy.org, or come along on any Thursday evening from 7:30pm.

At 06:46 on 21st June it is the Summer Solstice. Earth's northern hemisphere will be at its maximum tilt towards the Sun. From then on, the position of the Sun at sunrise will slowly drift southwards until the winter solstice in December.

Dr Lucy Rogers
Chairman, Vectis Astronomical Society

Can You Help?

Our Secretary, Sue Curd, will be stepping down this year as she has other commitments.

Could you spare just a few hours each month?

If you are interested, or would like more details of this important position, please contact our Chairman, Dr Lucy Rogers at the Registered Office address below or by email to chairman@wightastronomy.org

VAS Website: www.wightastronomy.org

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

The Editor New Zenith
35 Forest Road
Winford
Sandown PO36 0JY

Tel: 01983 864303 or email: editor@wightastronomy.org

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

VAS Registered Office

Castle Haven Cottage, Castle Haven Lane, Niton Undercliff,
Isle of Wight, PO38 2ND

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

Registered Charity No 1046091

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Monthly Meeting Calendar 2009

Date	Subject	Speaker
Jun 26	The Distant Future of the Earth	Dr. Robert Smith Sussex University
Jul 24	Exploring Titan	Dr. Axel Hagermann Open University
Aug 28	Astro Imaging	Richie Jarvis
Sep 25	The Search for Novae and Supernovae	Guy Hurst
Oct 23	TBA	TBA
Nov 27	The Radial Velocity Experiment, the Gaia satellite & an historic coincidence	Dr. George Seabroke Open University

All details correct at time of publication.

International Year of Astronomy

VAS are planning events throughout 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 - editor@wightastronomy.org or
Bill Johnston - bill.johnston@onwight.net

For details of events elsewhere in the UK, please visit the IYA UK Website at <http://www.astronomy2009.co.uk/>

Below are the events organised so far and will be updated as we add to it. All events are free of charge unless stated. Information is correct at time of publication.

Date/time	Subject	Venue
Sat 25th July Provisional	Observing the night sky	Nettlestone Scout Camp (Private)
Mon 10th Aug 14.30 to 15.30	Starry Telling	Freshwater Library (Public)
October	Observing the night sky	St Thomas Pri Sch (Private)
Sat 21st November	Observing the night sky	Wellow Institute (Public)

For the latest IYA event list, visit the VAS website
www.wightastronomy.org

New Members

A very warm welcome to our latest new members,

- Lindsey Besley
- Mark Bloom
- Pamela Cranefield
- Mary Rawling
- Len Rawling

Tony Plucknett
Membership Secretary

SAGAS 2009 Event

Could any members going to the SAGAS event in Portsmouth in July order their tickets from Graham Bryant as soon as possible. Application forms are available on the website (details below) or at the Observatory, but please state on the form that you are a member of Vectis A.S. as SAGAS affiliated societies are given a discount to a very reasonable £10 for the day.

Admission is by ticket only, as the event hosts need to know numbers in advance. The Conference Centre of the Royal Maritime Club is in Queen Street which is within easy walking distance of Portsmouth Harbour Station.

The associated web site is www.nightlife.demon.co.uk

Graham Osborne
Treasurer, V.A.S

Great Lives - Sir Bernard Lovell

Sir Bernard Lovell, British radio astronomer and founder of Jodrell Bank observatory received an OBE in 1946 for his work on radar, and was knighted in 1961 for his contribution to the development of radio astronomy. His steerable radio telescope, which tracked Sputnik across the sky, is now named the Lovell telescope. Read more about his life at: <http://bit.ly/BOgb4>

IYA Helpers

If you can spare a few hours to help at any of the IYA events listed on this page, Bill or Brian would be very pleased to hear from you. We need members to bring their telescopes and/or expertise to these events.

This Month's Night Sky

This time of year the sky never gets truly dark making it difficult to view dim galaxies and nebulae. Globular clusters being bright condensed objects make the best targets for small telescopes in bright skies. While waiting for what little darkness there is to arrive, look to the northern twilight there might just be some noctilucent cloud. Here on the Island, we are towards the southern limit of where they can be seen, but they are not a rare occurrence during June & July. These are very tenuous clouds similar in appearance to cirrus, but much higher in the atmosphere; half way to the edge of space. They remain in sunlight for several hours after sunset and before sunrise, glowing with a slightly bluish tinge against the darkening sky. Sometimes lower 'ordinary' clouds can be seen in silhouette against them. The best time to look is when the Sun is between 6 and 15° below the horizon. At mid summer this means that for a week or so either side of the solstice they can be seen at any time of night. They are usually quite low down, at their brightest in the general area of **Capella**, the bright star that skirts the northern horizon during the summer months.

Moon Phases

New	1 st Qtr	Full Moon	Last Qtr
22nd	29th	7th	15th

Planets

Summer solstice occurs on the 21st when at 05:46 the **Sun** halts its northerly motion in Gemini. This for us is the longest day of the year and the start of summer.

Mercury is not well placed in the northern hemisphere. While it may appear to be 23° from the sun it will have risen by only 6° by sunrise. Observers much further south will have a good view of Mercury in the pre-dawn sky.

Venus is a brilliant object in the eastern sky before dawn. Its greatest western elongation from the Sun, about 46° is on the 6th. To mark the summer solstice on the 21st **Mars** and **Venus** have a relatively close association, spaced about 2° apart. On the 19th & 20th the **Moon** passes by making for a good photo opportunity but brightness difference of the three may make a good exposure tricky.

Jupiter is visible from the 'wee small hours' until daybreak. It is on the border of Capricorn and Aquarius.

Saturn sets just before midnight at the month end, but even before that it is becoming a less favourable object as its size and brightness diminish.

The nights are not yet long enough to permit observation of **Uranus** and **Neptune**.

Pluto is at opposition in Sagittarius on the 23rd.

Meteors

Look for the double peaked **Ophiuchids** on the 10th and 20th. Rates are fairly low at 5 per hour.

Deep Sky Objects

M13 The Hercules Cluster R.A 16h 42' Dec 36° 26' mag 5.8 - On a dark night the Hercules globular can be seen with the naked eye as a fuzzy star part way down the right hand side of the keystone asterism. This is the brightest and many would argue the best globular visible from the northern hemisphere. It lies some 25,000 light years from us, relatively close by globular cluster standards. As with all globular clusters the view improves with increasing aperture used to observe it. The view is of a sugar coated ball frozen in time, and surrounded by a flurry of sugar grains.

M80 Globular Cluster R.A. 16h 17m Dec -22° 59' mag 8.5 - A smaller than average cluster with a very condensed core. In 1880 a nova was observed here, one of only two novae ever seen in a globular cluster.

M10 Globular Cluster R.A. 16h 58m Dec -4°7' mag 7.5 - A classic globular cluster; a condensed core covered in what appears to be a dusting of sugar.

M12 The Gumball Cluster R.A 16h 48' Dec -1° 58' mag 8.0 - Slightly larger than M10, another classic globular cluster.

Peter Burgess

Island Planetarium @ Fort Victoria

The Island's Telescope Professionals

New Celestron & Meade Scopes and Accessories.
Other makes also available, just ask!

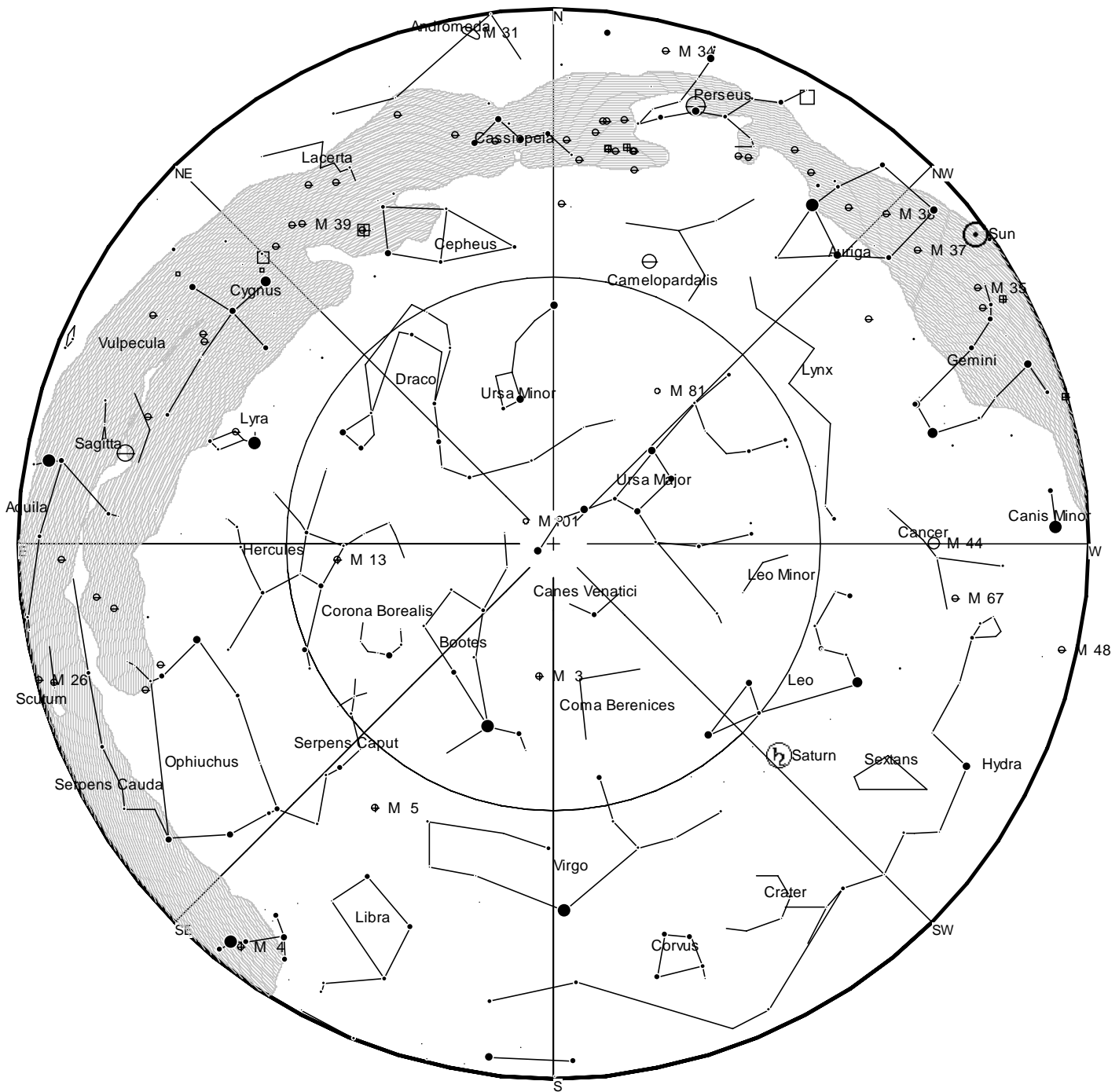
At least 10% discount on SRP for VAS Members

In stock demo and used scopes,
Celestron GOTO Starters and up to 8" SCTs

Call 761555, leave number if not there,
and we'll call you back.

enquiry@islandastronomy.co.uk

This Month's Sky Map



View from Newchurch Isle of Wight UK - 2100hrs - 15 June 2009



Venus is the second-closest planet to the Sun, orbiting it every 224.7 Earth days. The planet is named after Venus, the Roman goddess of love. Except for the Moon it is the brightest natural object in the night sky, reaching an apparent magnitude of -4.6 . Because Venus is an inferior planet from Earth, it never appears to venture far from the Sun: its elongation reaches a maximum of 47.8° . Venus reaches its maximum brightness shortly before sunrise or shortly after sunset, for which reason it is often called the Morning Star or the Evening Star.

This article is licensed under the [GNU Free Documentation License](http://www.gnu.org/licenses/fdl.html). It uses material from the Wikipedia article "Venus"

What is Diffraction? - a Story from Sylvius and Pluto

Diffraction is the ability of a wave, when meeting an obstacle, to change direction at its edges and to enter the geometric shadow. Together with 'interference', diffraction influences the resolution of the eye, optical instruments and radio telescopes. Here's more about diffraction in a story.

During the 1950s, walking the world with his dog Pluto, is a youngish man from Russia. His name is 'Sylvius' - easier to pronounce and it connects with the Latin, *sylva*, a wood - a man of the woods. He sometimes does paintings and sells them in the cities, then he and Pluto continue on their long journey. Walking across the Canadian prairies, where there is little to see except flatness by day and sometimes the Moon, they see in the distance, a rectangular block, Fig.1.



Fig. 1

Two hours later they arrive and find it's a stack of cargo. Each box carries the label "THIS MATERIAL DOES NOT TRANSMIT SOUND", Sylvius sits down, see Fig.2, and Pluto ventures round the corner. Finding biscuits and a dish of water, Pluto barks, "Woof woof!" See their positions in plan in Fig.3.



Fig. 2

Now a question for you: Decide whether Sylvius can hear Pluto bark or not. Sound can't travel through the blocks, and there's nothing to reflect the sound around the corner. So what about Pluto's "woof woof"? Persons usually¹ say, "yes of course he can hear his dog barking around the corner." But how? - diffraction, of course!

Nothing like an experiment - you can test diffraction around the corners of the VAS Observatory, a few hand claps here and there, listening in various locations, at least two people are needed. The bushes nearby may reflect sound.

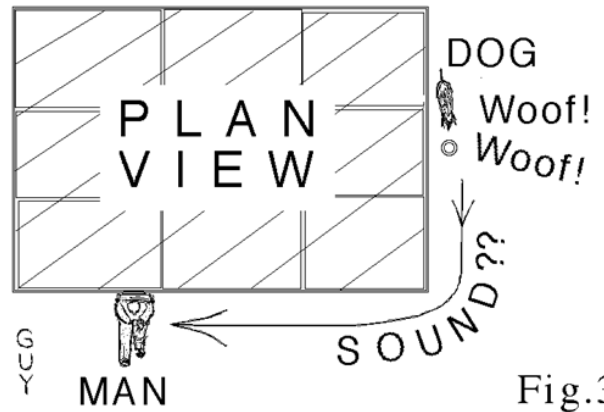


Fig. 3

If you have already agreed, "yes," to the question, then diffraction is already on your menu of common sense experiences. But the ancient Greeks² had different ideas, they suggested that we possess an inherent knowledge which comes from our previous lives - so if you are a teacher, it's your job to tap into these memories by asking the right questions³! Maybe, or maybe not. We are free to choose. But looking at just the physics, neither reflection nor refraction can explain how the barking gets around the corner. Diffraction is the answer - but that's only a word - how does it work?

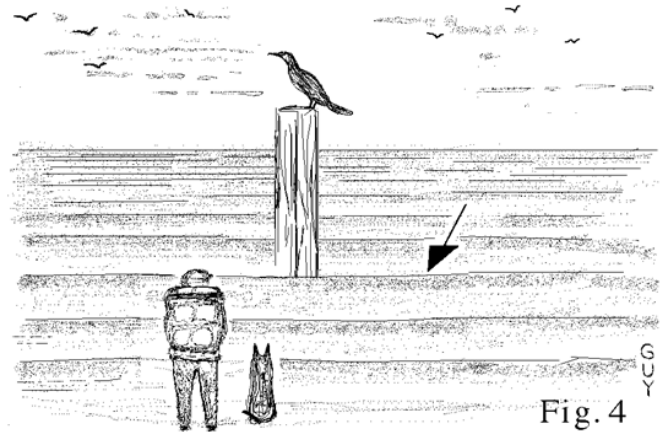
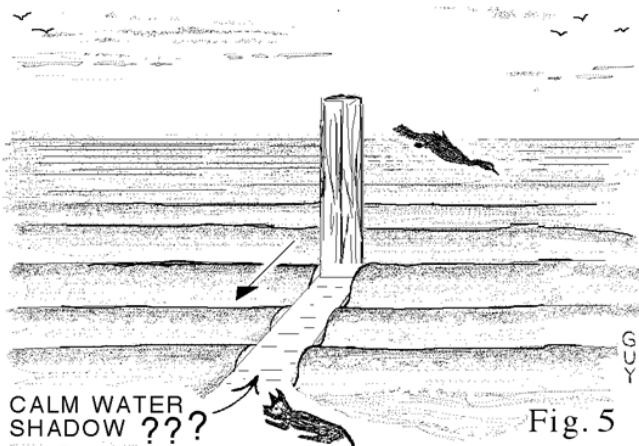


Fig. 4

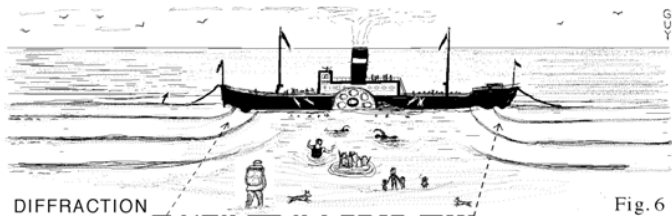
After their picnic, Sylvius picks up a piece of scrap tarpaulin, as the nights are quite cold. Later he and Pluto arrive at a lake. Here they watch a cormorant, Fig.4, sitting on a post with waves coming past. Since the waves are approaching the shore (see the arrow), then, from the point of view of the waves, 'behind the post' is the shore side where Sylvius and Pluto are standing. 'In front of the post' is on the far side away from them.

"Now wouldn't it be strange if the post made a shadow in the waves as in Fig.5, with calm water behind it?" thinks Sylvius...oops... the cormorant dives off. **Back to Fig.4,**

where the waves bend around the post and **fill in behind it - this makes a lot more sense.** "Yah, well, I suppose that's diffraction", thinks Sylvius (yes it is).



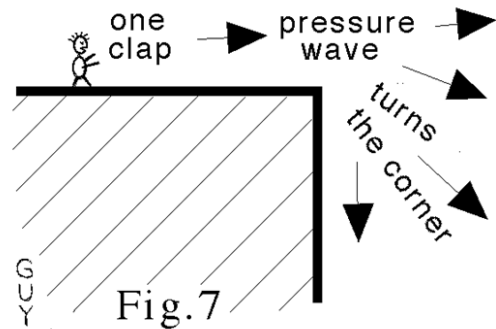
The next time you are waiting on Ryde pierhead, or you are looking at breakwaters, find a post sticking out of the water to watch. Observe the water level rising and falling, keeping nearly the same level around the post at any instant. Now observe the direction of the waves and estimate the wavelength - probably tens of metres. The width of the post being less than a metre, it occupies just a few percent of the wavelength. Under these conditions of **very commonplace diffraction**, the waves fill in behind the object, almost as good as passing through the object as if it were transparent to the waves, or didn't exist! The ancient Greeks were probably very familiar with this effect! Although diffraction is very considerable in these circumstances, it doesn't appear so particularly special as to require physicists to explain it.



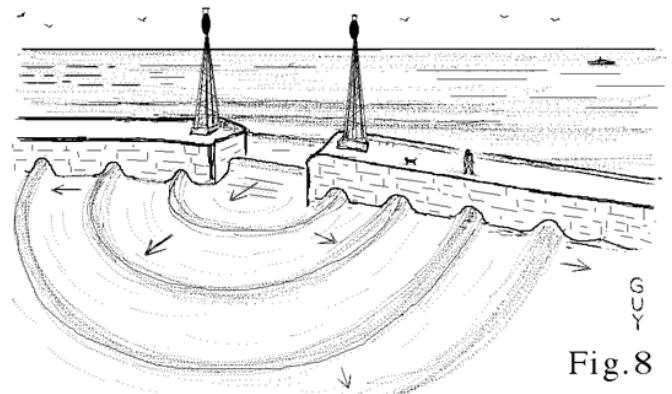
Later, Sylvius and Pluto see a paddle-steamer close to the shore, with waves bending around the bow and the stern, Fig.6. Between the ends is calm water, where passengers swim and play. How do the waves get around the ends? - diffraction, but the boat is sufficiently long that the waves don't have time to fill in behind (on the shore side) of the boat, because the waves at each end go up and down too quickly. So the boat is long enough to make a shadow in the waves. To cast a shadow, the object must be bigger than the wavelength. That's why a narrow post makes no shadow in the sea-waves - Fig.5 was just a 'foil' to highlight reality.

One day in a city, Pluto and Sylvius enter a building where they find they're in a physics lesson. They learn that if you clap your hands, you make a pressure wave. Sylvius puzzles over this. If one clap makes a wave, then what would its wavelength be and what do you measure to?

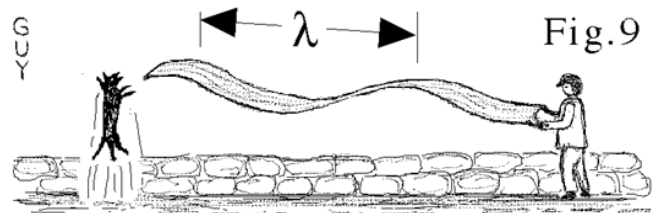
Nevermind that for now, when a pressure wave reaches an external corner, like in Fig.7, there's nothing to stop it propagating around the corner, so that's what it does - that's how diffraction works⁴.



Although diffraction is so commonplace, it doesn't 'come to light' until the publication in 1665 of the work of Francesco Maria Grimaldi (1618-1663), a mathematics professor at Bologna. He experimented with sunbeams passing through pinholes, observing coloured fringes and the very slight non-geometrical behaviour of light rays.



It's all a matter of scale. Sodium light has a wavelength of 0.0005mm (half a micron). So neither a wire nor an opaque particle, each of one-tenth of a micron diameter, cast crisp shadows in sodium light. The light waves just wrap their way around them.



Just as Sylvius is thinking up an awkward question, Pluto gives him a tug. Sylvius wonders - "How big is a corner?" A box has width, length and height, but a corner seems devoid of size. But if an external corner is all you need to get diffraction, and light is a wave, how come when Sylvius heard Pluto barking around the corner, Pluto didn't remain visible as well? The sound came round the corner, but the light didn't, so what's going on if they're both waves?

Outside, they walk along the harbour wall, Fig 8. The sea waves are arriving parallel to the wall, but as they pass through the harbour entrance, the waves travel in semicircles across the harbour. "H'mm, another example of diffraction," thinks Sylvius. "Woof woof!" agrees Pluto. They unwrap the tarpaulin, which flaps in the wind, giving a large wavelength λ (lambda), as in Fig.9 - this isn't a problem for them, large wavelengths are good at wrapping around smaller objects such as themselves. They settle down at the end of the wall, under 'several wavelengths' of tarpaulin, listening to the sea, Fig.10.



Fig. 10

...this story could continue for another episode...or so...

Dr. Guy Moore

1. Of the hundreds of students asked, about 90% immediately agreed "yes".
2. See *The Meno*, one of Plato's dialogues.
3. Teaching methods are often debated. An interesting experiment with some subjects is to assume that your pupils already know deep down what you are about to teach them. Now try to bring this knowledge (as opposed to information) to the surface by asking questions. It's an exciting way to teach geometry, deduction, reasoning, algebra, etc.
4. Schlieren photography can capture images of sound, using the variations in refractive index caused by the fluctuating air pressure.

ScienceDaily (May 18, 2009)

Members of the international Nearby Supernova Factory (SNfactory), a collaboration among the U.S. Department of Energy's Lawrence Berkeley National Laboratory, a consortium of French laboratories, and Yale University, have found a new technique that establishes the intrinsic brightness of Type Ia supernovae more accurately than ever before. These exploding stars are the best standard candles for measuring cosmic distances, the tools that made the discovery of dark energy possible.

Read more at: <http://bit.ly/zob4j>

Starting as a Stargazer...

It was one in the morning, frosty and clear. Having noticed that the stars were spectacularly sharp, I had gone out for a quick look. Two hours later, I was still there, wearing trousers, a nightdress, two pairs of socks, boots, two pullovers, a dressing gown, a coat, a scarf, a hat and gloves, and I was rather glad no-one could see me. My teeth were chattering, there was a crick in my neck and I knew I would be ridiculously tired in work the next day. I was trying to find Perseus.

I've always had an armchair interest in astronomy, beginning in the 1960s by whining to make my mother let me stay up to watch 'Sky at Night' programmes. Standing there in the garden it seemed silly that forty years later I could still only recognise five constellations.

And so I began to stargaze, going out on bright nights and trying to find my way around. It wasn't easy. If you are a long-time skywatcher, you have probably forgotten that stars don't really look like those diagrams in books!

To help me, I had an oldish book called 'Seasonal star charts'. In a large format, it has a simple planisphere on the front, and just 8 leaves in stout cardboard - easier than paper to turn when wearing gloves. The charts have black stars on a white sky background, which I could read with a dim torch (I was learning to conserve my night vision).

Then I bought a cheerful book called 'The Stargazer's Guide' by Emily Winterburn. She has arranged the book in twelve chapters, one for each month of the year, containing a potpourri of which constellations to look for, how the moon causes tides, the mythological stories told about stars, the work done by Caroline Herschel and all sorts of other things. It is the first time anyone made me understand what the plane of the ecliptic is! If you are interested, you can look at the book at amazon.co.uk. There is a 'look inside' feature, allowing you to read part of the book to see if you like it - useful.

On 1st December last year, driving home from work, I noticed in the darkening sky a very fine crescent new moon. She had 'the old moon in her arms' and just touching the lower limb of the moon was a brilliant star. It was an extraordinary sight. By pure luck I'd seen the end of the occultation of Venus, although I didn't know it then.

But I did know I was hooked.

Rebecca Mitchelmore

Astronomy Software

The list which accompanies this article comprises mainly “Open Source” or “Freeware” applications. I would suggest a little further reading for those interested in discovering the difference between these terms and to be sure that you understand the terms and conditions of any applicable usage license: See Google or Wikipedia for more details.

How can this stuff be “free”?



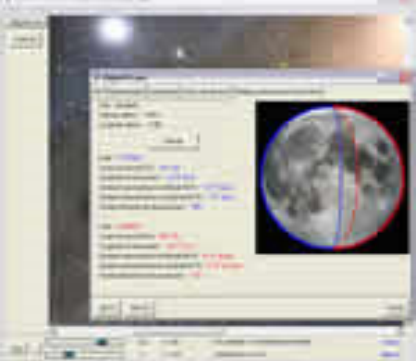
Well, that’s down to the various authors of the software and in some cases the continued prompting for you the user, to upgrade to another version of the application with perhaps some extra features. That said, I have tried to restrict the list to software I have used and which contains no nagging requests to upgrade.

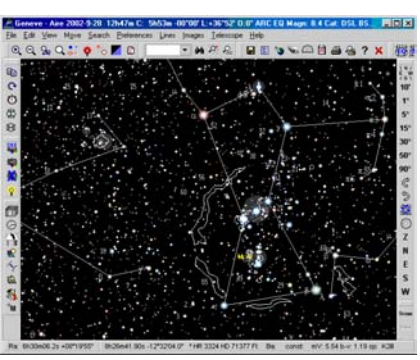
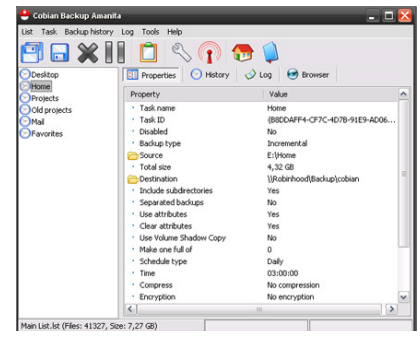

What do I need to use the software?

In general terms, the software in this list can be used on almost any PC capable of running Windows (XP) and may often also be available for those users with Apple (OSX) or Linux (L) computers. As a rule of thumb, if your PC is less than 5 years old the applications should run, though obviously the higher the spec. of your machine the better!

The very fact that these items are “Open Source” means they are updated quite often - a broadband internet connection is recommended.

Here we go then, and in no particular order:

	<p>Stellarium</p> <p>XP, OSX, L - Is a free open source planetarium for your computer. It shows a realistic sky in 3D, just like what you see with the naked eye, binoculars or a telescope.</p> <p style="text-align: right;">http://www.gimp.org/</p>
	<p>Celestia</p> <p>XP, OSX, L - The free space simulation that lets you explore our universe in three dimensions. Unlike most planetarium software, Celestia doesn't confine you to the surface of the Earth. You can travel throughout the solar system, to any of over 100,000 stars, or even beyond the galaxy.</p> <p style="text-align: right;">http://www.shatters.net/celestia/</p>
	<p>Audela</p> <p>XP, L - Is a free and open source astronomy software intended for digital observations (CCD cameras, Webcams, etc.). Its concept is entirely new, because whilst it features advanced image processing and acquisition functions like existing software, its originality lies in the fact that it is entirely reprogrammable using simple scripts. It can control many telescope mounts and cameras or DSLRs.</p> <p style="text-align: right;">http://www.audela.org/english_audela.php?langue=english</p>

	<p>Cartes du Ciel</p> <p>XP - This program enables you to draw sky charts, making use of the data in 16 catalogues of stars and nebulae. In addition the position of planets, asteroids and comets are shown.</p> <p><i>Note: this is used to produce the Night Sky charts in NZ</i></p> <p>http://www.stargazing.net/astroipc/index.html</p>
	<p>Cobian</p> <p>XP - A departure from the theme of Astronomy software BUT this is a free and fully functional, easy to use file backup program. Essential for all users.</p> <p>Cobian Backup is a multi-threaded program that can be used to schedule and backup your files and directories from their original location to other directories/drives in the same computer or other computer in your network. FTP backup is also supported in both directions (download and upload).</p> <p><i>Note: Choose "Download Cobian Backup 8"</i></p> <p>http://www.educ.umu.se/~cobian/cobianbackup.htm</p>
	<p>The GIMP</p> <p>XP, OSX, L - GIMP is a freely distributed program for such tasks as photo retouching, image composition and image authoring. It can be used as a simple paint program, an expert quality photo retouching program, an online batch processing system, a mass production image renderer, an image format converter, etc.</p> <p>GIMP is, for all but the most expert user, a no cost alternative to software like Photolysis.</p> <p>http://www.gimp.org/</p>

The list above is just a small selection of the software available but should give you an insight into the "no-cost" alternatives to some of the more expensive applications available. There are many more available and I hope to produce a follow up to this article at some time in the near future. Meantime, if you know of any software like this that may be of interest to other members, please let me know and I'll be sure to include a mention of it in New Zenith.

Also if you have expertise in any of the more complex software and would like to contribute an article on how you use it or any particular problems you have overcome, I'd also be please to hear from you. As ever you can contact me at the Editor's address shown on the front page or by email at editor@wightastronomy.org.

If you are interested in supporting Free Software or Open Source Software you may like to visit and explore some of these websites:

The GNU Operating System - <http://www.gnu.org/>

The Free Software Directory - <http://directory.fsf.org/>

The Open Source Initiative - <http://www.opensource.org/>

Creative Commons - <http://creativecommons.org/>

Sourceforge - <http://sourceforge.net/>

Brian Curd

THE BACK PAGE

LINKS, COMMENTS AND OBSERVATIONS

News and Events

The Next 20 Years in Astronomy and Cosmology

Professor Martin Rees, Astronomer Royal

Date: Monday 29 June 2009

Time: 6.30pm

Venue: University of Portsmouth, Richmond Building

There has been amazing recent progress in our understanding of cosmic phenomena and cosmic evolution. But, as always in science, progress brings into focus a new set of questions that couldn't have been posed before. In particular, says Sir Martin, we want now to understand the detailed processes whereby the universe developed its present complex structure. In this lecture Sir Martin will explore a set of fundamental questions about the very beginning, the nature of space, and the total extent of physical reality.

This lecture marks the opening of the Dennis Sciama Building, home to the Institute of Cosmology and Gravitation.

Admission is free, but places are limited so please make a reservation by contacting events@port.ac.uk or 023 9284 3757

The Ten Commandments for Amateur Astronomers:

1. Thou shalt have no white light before thee, behind thee, or to the side of thee whilst sharing the night sky with thy fellow stargazers.
2. Thou shalt not love thy telescope more than thy spouse or thy children; as much as, maybe, but not more.
3. Thou shalt not covet thy neighbour's telescope, unless it exceeds in aperture or electronics twice that of thy wildest dreams.
4. Thou shalt not read "Astronomy" or "Sky & Telescope" on company time, for thine employer makes it possible to continue thine astronomical hobby.
5. Thou shalt have at least two telescopes so as to keep thy spouse interested when the same accompanies thee under the night sky or on eclipse expeditions to strange lands where exotic wild animals doth roam freely.
6. Thou shalt not allow either thy sons or thy daughters to get married during the Holy Days of Starfest.
7. Thou shalt not reveal to thy spouse the true cost of thy telescope collection; only the individual components, and that shall be done with great infrequency.
8. Thou shalt not buy thy spouse any lenses, filters, dew shields, maps, charts, or any other necessities for Christmas, anniversaries, or birthdays unless thy spouse needs them for their own telescope.
9. Thou shalt not deceive thy spouse into thinking that ye are taking them for a romantic Saturday night drive when indeed thou art heading for a dark sky site.
10. Thou shalt not store thy telescope in thy living room, dining room, or bedroom, lest thou be sleeping with it full time.

THE UNIVERSE
YOURS TO DISCOVER



INTERNATIONAL YEAR OF
ASTRONOMY
2009

Quotes

This is Red with White letters. If it looks blue you're going too fast.

Car Bumper Sticker

"If the lord almighty had consulted me before embarking upon his creation, I'd have recommended something simpler."

Attributed to Alfonso the Wise (1221-1284), King of Leon and Castille, on having the Ptolemaic system explained.

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.