

Society News

Dark Sky Special

Most of this New Zenith is given over to Dark Sky news. As members know, the planning group has been working hard investigating the future of VAS and astronomy on the Island. We have made significant progress and are now in the process of gaining “Dark Sky Status” for the Island.

There’s still a way to go before we see the results, but I urge all members to spread the word about the benefits, to all of us, from this initiative.

I hope you enjoy this special issue.

Observatory Telescope

The Meade LX200 in the observatory dome has now been removed from the dome. While it is being serviced and modified, the dome is now home to a Meade refractor configured for solar viewing. Several members are familiar with this configuration and will be happy to guide others.

Please do not change the configuration of this telescope.

The LX200 should be back in place by mid July and will then need to be fully re-aligned.

Junior Night

Unfortunately, due to low attendance, monthly Junior Night cannot continue. However I will try to give a month’s notice for further Junior meetings on a less regular basis.

Special Thanks....

Several members have been helping to clean up the outside of the observatory lately. Special thanks must go to Thomas Jones and Nigel Lee.

I have been assured by the NPS&CA that the grass on the playing field is going to be kept cut more regularly. It is also good to see repairs being made to the guttering system on the pavilion.

Clear Skies!
Brian Curd
Observatory Director

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

35 Forest Road, Winford, Isle of Wight, PO36 0JY

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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Observatory Diary

Monday, 19.30hrs	Members Only by arrangement Telescope and night sky training. Contact Barry Bates 01983 872979
Thursday, 19.30hrs	Members and Public. Informal meeting and observing.

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Monthly Meeting Calendar 2013

Do You Know a Speaker?

If you know speaker, or perhaps you would be prepared to have a go, please contact Elaine Spear at progorg@wightastronomy.org

Check the website for up to the minute information.

Travel for our monthly speakers is sponsored by:		
		
Date	Subject	Speaker
28Jun	Little Green Things- Detecting Life on Earth and Exoplanets	Prof William Martin
26 Jul	Practical Radio Astronomy for Amateurs	Paul Hyde
23 Aug	Particle Physics, ATLAS and the LHC AGM - Start at 19.00hrs	Dr Christopher Lester
27 Sep		
25 Oct	Radio Astronomy	Dr Sadie Jones
22 Nov		

All details correct at time of publication.

Garlic Festival



The Garlic Festival this year is to be held on the weekend of 17th-18th August 2012.

I'm sure most VAS members realise this is our single most important fund raising opportunity of the year.

As well as providing marshals for the event. VAS will also have a Society information tent.

Assuming you are reasonably fit, don't mind being on your feet for most of the day and can help during the weekend, please contact

Richard Flux - richard.flux@iow.nhs.uk

VAS Contacts 2013

Chairman	Bryn Davis chairman@wightastronomy.org
Secretary	Rebecca Mitchelmore secretary@wightastronomy.org
Treasurer	David Kitching treasurer@wightastronomy.org
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NZ Editor	Brian Curd editor@wightastronomy.org
Membership Secretary	Norman Osborn members@wightastronomy.org
NZ Distribution	Brian Bond distribution@wightastronomy.org
Others	Barry Bates Mark Williams

We're getting ever closer to August and our AGM!

Be part of the future of VAS, please consider joining the Committee.

2013/14 promises to be a turning point!

Island Planetarium @Fort Victoria

The Island's Telescope Professionals

New and Used Meade Celestron Telescopes
New dealers in Skywatcher & Vixen in 2013

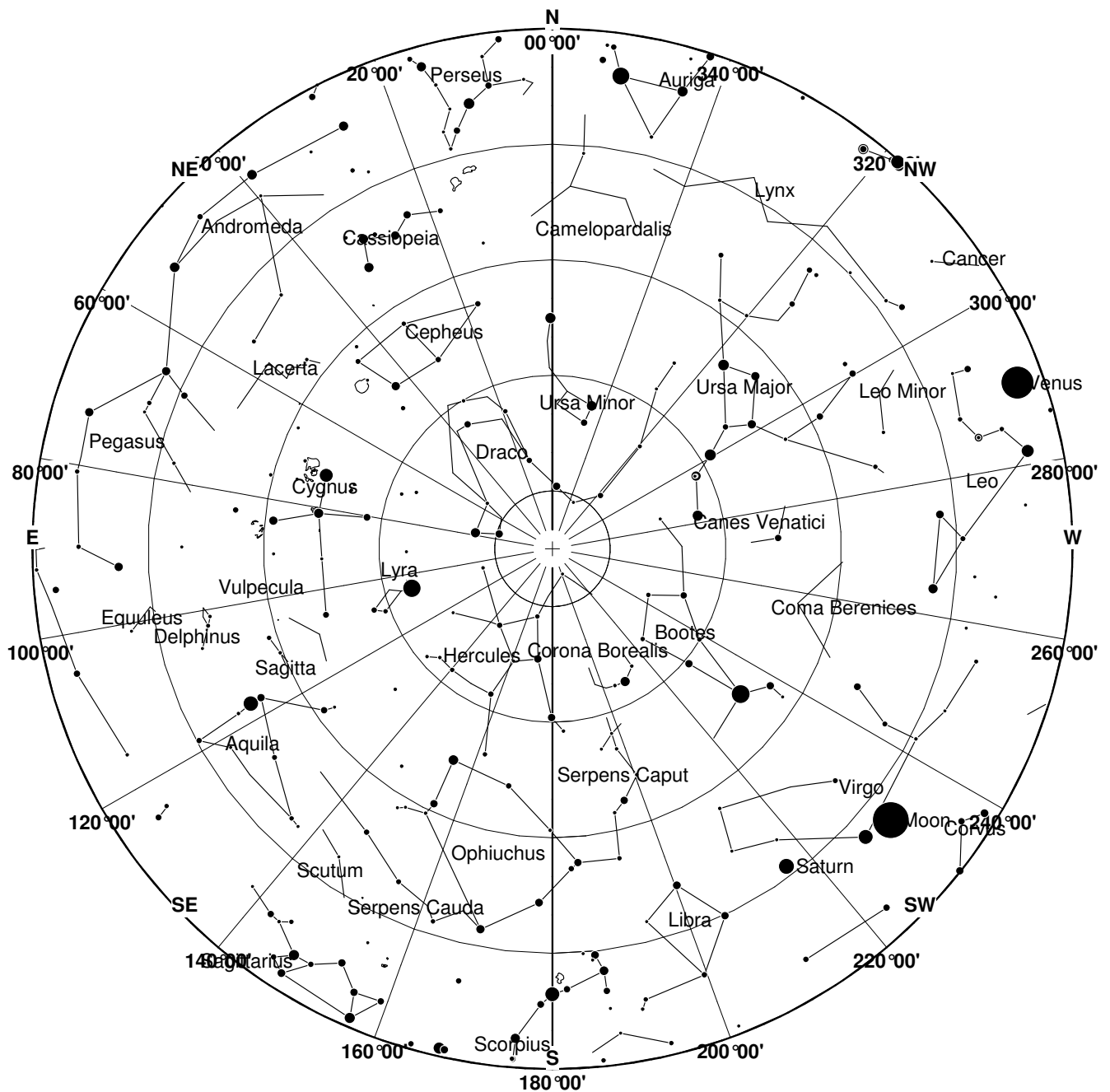
Used equipment in stock

TAL 200mm Newtonian Reflector
Skywatcher 180mm Maksutov Cassegrain
Celestron 150mm Reflector (NEW)
Celestron 120mm Refractor
Skywatcher 120mm Refractor
Various starter scopes and accessories

Discounts and deals for VAS members

Call Paul England – VAS Member
on 761555 - leave your number
if I am not there and I'll call you back
also - enquiry @islandastronomy.co.uk

July 2013 Sky Map



View from Newchurch Isle of Wight UK - 2200hrs - 15 July 2013



NGC 6633 is an open cluster, in the constellation Ophiuchus, that was, according to the Webb Society Deep-Sky Observer's Handbook, Volume 3 (Open and Globular Star Clusters), p. 3, discovered in 1745-46 by Philippe Loys de Chéseaux. It was independently rediscovered by Caroline Herschel, and been included in her brother's catalogue as H VIII.72.

This cluster is nearly as large as the full moon, and contains 30 stars which make it shine at a total magnitude of 4.6; the brightest star is of mag 7.6. Its age was estimated at 660 million years.

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It uses material from the Wikipedia article "NGC 6633"

July 2013 Night Sky

Moon Phases

New	1 st Qtr	Full	Last Qtr
8th	16th	22nd	29th

Planets

Mercury

Mercury is not visible this month as it passes in front of the Sun.

Venus

From sunset until when it sets at about 10pm Venus is visible as a very bright Evening Star low in the western sky. Because the Sun is starting to head back south for the winter, the ecliptic in the evening sky lies low down in the south west. This means that Venus will not get very high above the horizon making this a rather disappointing showing.

Mars

Mars is visible with some difficulty low down in the predawn sky. Use the very much brighter Jupiter as a signpost. On the 22nd it will pass about a moon width above Jupiter. It remains within about 2 moon diameters from the 20th to the 24th.

Jupiter

From mid month Jupiter becomes visible low in the north east just before sunrise. It is too close to the horizon for useful observation; it can be used as a pointer to finding Mars.

Saturn

Saturn can be found low in the south western sky after sunset. It is rather too close to horizon to be considered favourably placed for observation.

Uranus

By mid month Uranus will have risen out of the haze above the horizon by about 2 am. It can be readily found using binoculars, follow the line between Delta and 96 Piscium, and carry on about half as far again. Uranus is the only nearby object having a similar brightness to 96 Piscium.

Neptune

When the sky has fully darkened Neptune can be found about a degree to the right of magnitude 4.8 star sigma Aquarii. At magnitude 8 Neptune is visible using binoculars, but a small telescope on a sturdy stand will make finding it much easier.

Deep Sky Objects

M14 Globular Cluster

RA 17h 38m Dec -3° 15' mag 7.6

Despite its magnitude this is quite a difficult binocular object, it is quite large but does not have a particularly well condensed core. This means that the available light is spread out rather thinly. Larger aperture telescopes are needed to resolve some of the cluster stars.

IC4665 Open Cluster

RA 17h 47m Dec 5° 42' mag 4.2

This is a large cluster slightly more than a degree in diameter. It is best viewed in a rich field telescope or large binoculars. The brighter members form right angled triangular patterns around the cluster's centre.

NGC6633 Open Cluster

RA 18h 28m Dec 6° 34' mag 4.5

Although it is clearly visible in binoculars it is best viewed through a rich field telescope where the brighter members of this cluster form a rather wavy looking wedge of stars. If viewed before the sky darkens too much restricting the number of visible stars the scene is reminiscent of a miniature Leo, the backward question mark is a little indistinct, but the back and haunches are easily distinguishable.

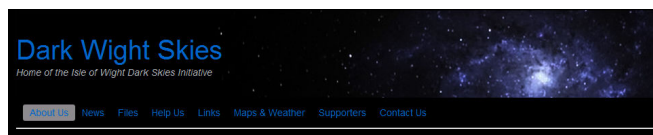
IC4756 Open Cluster

RA 18h 39m Dec 5° 27' mag 4.5

Located a short distance to the southeast of NGC6633 this cluster is also an easy binocular target, but again is best views through a small low magnification telescope. There are a number of long chains of stars throughout the cluster the brighter ones form a rough five pronged Catherine wheel shape covering most of the cluster. The brighter foreground stars form a slight distraction when observing this cluster.

Peter Burgess

The Dark Skies Initiative now has its own website



darkwightskies.com

Please visit for the latest news, documents and links

Light Pollution - Dark Future?

Lecture report 24 May 2013

Three speakers:

1. Bob Mizon MBE FRAS
*The British Astronomical Association (BAA)
Campaign for Dark Skies (CfDS)*
2. Martin Morgan-Taylor LL.B., LL.M., FRAS
*Law Department, de Montfort University,
Leicester*
3. Chris Wood
IW Dark Skies Coordinator, VAS

The Chairman, Professor Bryn Davis, introduced the three speakers and their talks, in turn, mentioning the progress being made to achieve International Dark Sky Association Status for the IoW, particularly the South West region. Bob Mizon has visited before and is well-known for his work to reduce light pollution.

Bob Mizon - Summary

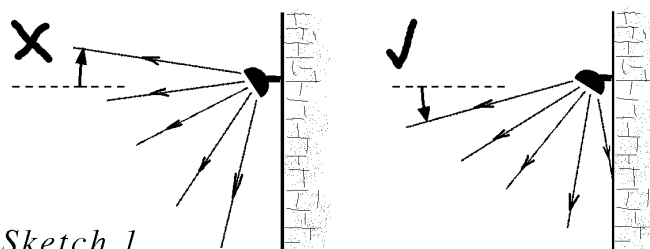
Although the night sky covers 50% of the environment at night, it is the only part of the environment with no protection in law. The Clean Neighbourhood and Environment Acts, Section 102, legislates against lights shining through windows, but doesn't protect the night sky - contrast that with the hefty penalties for upsetting the environment by fly-tipping or chucking a shopping trolley into a river.

As a child, my playground was the bomb sites of London where, soon after the war, the street lights were turned off at 11pm, consequently the view of the night sky was fantastic. In the library, I saw the Larousse Encyclopedia of Astronomy and I never looked back, always up, but now I'm of an age where I have witnessed the growth of light pollution. In the 1960s, the very thick fogs, smogs and pollution were remedied on the basis of asthma and health. As you will see, there are health issues associated with light pollution too. We will never be rid of it entirely, but beginning to ensure that we don't over-illuminate the environment and do not waste energy, is leading to improvements in a number of places. Like the London smog, one day light pollution will be a thing of the past.

The Campaign for Dark Skies, CfDS, was founded in 1989. Turn to a lighting journal of those times and you'll find a proliferation of bad lights shining in many directions, including above the horizon. Since then, the Institute of Lighting Engineers have a new name, becoming the Institute of Lighting Professionals and articles with titles such as "Light and Sleep - a Health Time Bomb" are appearing.

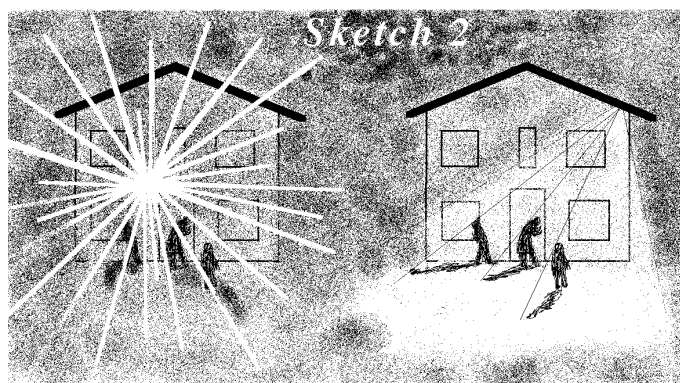
The professionals are very much attempting to get things put right - this is a metamorphosis of thought leading to limitations of light emission and reductions of light spill. My degree is in French, my colleague Martin, a committee member of the CfDS, is qualified in law. Nigel Pollard, a lighting professional, has taught us a lot about this important subject. Salisbury Cathedral is now revealed at night using a system causing hardly any night glow, meriting an award, the 'up and over' floodlights installed in pits in the 1960s being removed. I have seen many types of lights - some of the best I have seen are motion sensitive downward-illuminating solar lights made by Zeta of Bicester.

The CfDS have been talking to DEFRA, and to central, regional and local government, particularly planners. Amateur astronomers are well aware of the problems of light pollution - so these leaflets here are for you to pass to councillors, planners etc, who, once they get on board, will help to tackle the problem of light pollution.



Sketch 1

At a recent lighting professionals conference ("Light Pollution and Planning Controls" Leicester 2012), with a recorded opening address by Lord Rees and a conclusion by Lord Taylor, much was discussed. We are aware that very good lights are being made, but often they are incorrectly installed, particularly security lights causing glare and creating sharp shadows where burglars can hide, see Sketches 1 and 2. Some councils are dimming street lights late at night, or turning half of them off and in Weymouth this has been accompanied by **crime reduction**. Lighting can work both ways, the riots in London were in well-lit areas. **Crime is not a lighting problem** but a societal problem and actually research into their relationship is not so decisive as the anecdotes suggest.



Burglars invisible

Burglars visible

Roadway lights are now being designed to point below the horizon. Things are happening. The Welsh Assembly has resolved to defeat light pollution, and now it is possible to see the Milky Way from back gardens in Newport, South Wales. Sky-beams are subject to licensing. Various councils have heeded the message on light pollution - for example, see www.ealing.gov.uk, and the *Basingstoke Light Pollution leaflet* (via Google). In Anglesey, there is a nature reserve and a holiday park with muted lights, and there are star gazing holidays in Wales and other places in the UK. Awards are being made and a lot of persons in central government do care about light pollution.

Considerable lighting improvements have taken place at the massive installations at Fawley, which we visited, and the area north of the A31 in the New Forest, between Southampton and Bournemouth, is now a dark area. British Sugar has replaced its lights. Lymm High School sports field is carefully illuminated. However, Stonehenge, an English Heritage and UNESCO World Heritage site is affected by night-sky glow.

The country has more dark sky reserves, such as Galloway Forest Park, Sark, Exmoor, and Brecon Beacons, than any other country. In the queue for dark skies status, including the IW, are the North Yorkshire Moors NP, Kielder Forest, New Forest NP, Lundy, Coll, Bardsey Island, and Romney Marshes.

On the world scene, Cunard offers astronomy cruises. Hong Kong is concerned about light pollution too, and books in Arabic on the subject are appearing - the pictures are easy to follow (attractive book covers were shown). Awareness and education are improving, not only because of wishing to see the stars but also in not wishing to throw money away by wasting light. **The CfDS has never asked for turning off beneficial lights, but wants the correct light to be used to illuminate only the required areas to the right levels at the desired times.**

CfDS would like exclusion clauses in the Clean Neighbourhoods Act which apply with respect to light, to transport facilities such as docks, harbours and bus garages, to be removed. They would like to see retailers not selling poorly designed security lights. A new threshold for courtesy lights is needed.

We will see a reward when our ancient view of the stars becomes possible again. The concluding message is **“Fight light pollution! The Future will be darker but we need to work towards it. Good lighting and dark skies are not mutually exclusive.”**

References:

1. Leaflet: “Starry, Starry Night” BAA Campaign for Dark Skies.
2. www.britastro.org/dark-skies

3. “Blinded by the Light?” BAA CfDS, 2009, “A handbook for campaigners against the misuse of artificial light, victims of light pollution and friends of the terrestrial and celestial natural environments.”
4. “Light Pollution” Bob Mizon, isbn 9781461438212
5. “Defence of the Night Sky and the Right to Starlight”, La Palma Declaration, 2007 (see Google).
6. www.lightpollution.org.uk
7. www.dmu.ac.uk/lighting
8. **“Light Pollution” Wikipedia**
9. “GP12: Towards Understanding Skyglow”, Institution of Lighting Professionals 2007 (non-member price is £60)

Martin Morgan-Taylor - Summary

The following summary does not cover this talk in enough detail. The reader is particularly referred to the following hard-facts reference paper, which includes an easy to follow pictorial presentation:-

“Light Pollution, Nuisance and Planning Laws in the UK: The Legal Methods of Controlling Light Pollution in the UK”, Martin Morgan-Taylor, 2012, conference in Seoul, www.sustainablehealthybuildings.org/PDF/8th/martintaylor.pdf (or via Google), the article contains many links.

The loss of the night sky is caused by glare and by sky glow. Glare is excessive contrast between bright and dark areas in the field of view. Sky glow is the scattering by aerosols and particulates of upward escaping light, giving a greyish-green glow above populated areas, extending for many miles. It largely comes from street-lighting, commercial premises and warehouses, over-bright buildings and signage, public sector lighting, sports facilities, incorrectly installed security lights, including domestic ones, particularly those emitting light above the horizontal. (The much less indirect sky-glow comes from light reflecting from the illuminated areas, such as roads.) Sports lighting is covered by British Standards, having three categories, from HD broadcasting levels for top competitions, to less bright for schools and clubs; these minimum standards are often exceeded in the belief that higher lighting levels are better but over-illumination is a particular problem for small facilities close to residential areas lacking enough space for trees. **Light pollution is caused by artificial light in excess of what is needed for the particular task, and by providing it where and when it is not needed.**

Astronomy societies are triumphant that addressing light pollution fits in well with the political climate of not wasting energy and of reducing carbon emissions. But it does not follow that dark skies will come about just as a

convenient by-product of energy and emissions policy. There are many issues, such as differences in the interpretation of the law by local authorities. Ongoing research into the physiological responses of humans and wildlife to various light types may lead to changes in legislation - the Law of Nuisance does not yet cover harm to human health through circadian rhythm disruption. The categories of nuisance under which action can be taken may alter depending on changes to the definition of light pollution and whether it will include the night sky.

Riding on the back of reducing the energy wastage are questions concerning how to counter light pollution and how to tackle the local community. The French approach has a number of advantages - they address the issues with wider legislation relating directly to the nocturnal requirements of **animals, bats, birds, insects and moths**.

Low energy and LED bulbs are blue-rich. This light, is scattered more and attracts insects which then fly around aimlessly, eventually dying of exhaustion, affecting species higher up the food chain. This can effect pollination too. Bats are protected in the UK and by European legislation, thus constraining how historic buildings are illuminated by floodlighting. The Institute of Lighting Professionals ILP and the Bat Conservation Trust have issued joint guidance notes.

Birds tend to avoid high illumination for nesting, and quite a number of bird species have become less common. Large scale migration of tens of millions of birds at night is adversely affected by sky glow, including from North Sea oil and gas platforms.

Well-lit is often understood to mean brightly lit, but this is not so, **well-lit means appropriately lit to the level needed and only where and when it's needed.** Light incorrectly emitted above the horizontal adds up to millions of pounds of wasted electricity per year, accompanied by millions of tons of carbon dioxide emission. Belief that reducing light pollution reduces the benefits from lighting, is a myth. A common justification for lighting is crime reduction, but it is important that this is not used to justify high levels of all-night lighting. (CCTV cameras operate best with a less than 4 to 1 difference between foreground and background light.)

Humans can suffer **sleep disturbance** from artificial light - it may not be bright enough to wake you but can give you poor quality sleep, but the issues go deeper. The body has a '**circadian rhythm**' only manufacturing the hormone melatonin, an anti-oxidant, during darkness at night, and this substance increases our resistance to cancer. White or blue-rich lighting, mimicking daylight, is being increasingly used at night, but it particularly suppresses the production of melatonin. An avoidable exposure to white/blue rich light at night (i.e. you are exposed to it when it could be avoided) may increase a person's susceptibility to some cancers. Street-lighting, is increasingly moving to

whiter and blue-rich energy efficient types. Given the increasingly 24/7 culture, there is a call for further research and assessment of health risks. Older people are more susceptible to glare, and with an ageing population, lighting legislation becomes crucially important.

Huntingdonshire and Dacorum District Councils have developed clear and detailed planning guidance. The impact of new lighting on the nearby environment requires an impact assessment and correct installation.

Planning law can prevent problems but the main problem with planning legislation is that it does not apply to all lighting, only to new buildings and existing buildings where lighting amounts to a development. Categorization as a 'development' requires a material change affecting the exterior daylight appearance of a building, but modern small light fittings, including ground-based up-lighting, do not alter daylight appearance, thus coming outside the planning legislation.

Legislation is needed specifically to protect the night sky. According to CPRE data, overall light pollution increased by 24% in England between 1993-2000, only 11% of England had truly dark night skies remaining by the year 2000, so CPRE is campaigning for the protection of the night sky as a part of the natural night-time environment.

In winter holiday seasons, dark skies help to bring people in during the low season. This was realized in Galloway Park, and it helps local business, helps retailers selling lighting and new products, so everybody wins, including the nocturnal wild life.

The Council of Europe has recommended that nations be invited to review their legislation concerning lighting, to consider whether pan-European measures are deemed necessary. The latter approach would facilitate a far more holistic approach than areas of law designed for different tasks in different countries. Presently, more work is needed before objective standards can be adopted in terms of lux levels, wavelengths, flickering and flashing.

Fighting light pollution can be done in the context of encouraging people to save energy, keeping heating turned down, turning indoor lights off and external lights too. So save money and do your bit for the environment and help to cut carbon emissions! The problems go far beyond sky glow and loss of the night sky.

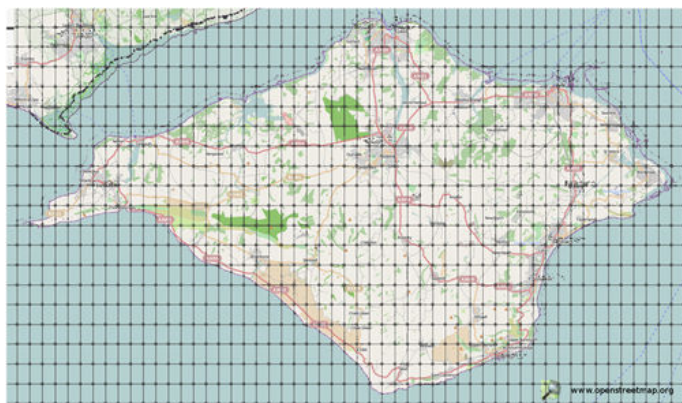
See also

www.nnhs.info/astroarchive/astlightobjection.htm - this concerns an objection to sky beams, and provides information on airports too - pilots need to locate airports whereas light clutter can make it difficult to see the navigation lights on other aircraft.

Chris Wood - Summary

In May 2012 the VAS Planning subcommittee was formed to decide future directions, to develop the Dark Skies potential and the Observatory and Outreach possibilities. It was decided to retain the VAS core structure. It noted the remarks of a professor at the University of Hertfordshire, "*with the data we have from the IW, you potentially have the best combination of dark skies and clear weather in the UK*". Some of the data comes from the *All Sky Camera at Niton*. Star parties and Outreach help to raise public awareness of the stars and their various colours, as well as planets, meteors, satellites, features on the Moon and so on, and thus the public becomes more aware of the benefits and desirability of having dark skies.

VAS is working with the IDSA (International Dark Skies Association) and the IW Community. The Dark Skies project is supported by many IoW organisations, by commerce and tourism. Mark Williams is mapping the darkness of the night sky measured at points in a grid of 1 km squares across the IW, in preparation for application for the BAA CfDS award. IW Council & Towns are involved. The benefits will be to tourism, in reducing the environmental impact of light, in encouraging science and education, and in increasing the enjoyability and tranquillity of the IW. If you know of more groups and businesses who may be interested, let us know.



Discussion covered the filtering of LED lights to reduce their blueness, making a warmer light which scatters less, and new LED lights with better colour characteristics. It was suggested that the IW Natural History Society would be interested. A question was asked about the bright lights at the prisons. Fostering links with other CPRE groups was discussed, so also were the excessively bright lights on vehicles and some bicycles, sometimes flashing, which can affect other persons' abilities to see. Sometimes it is believed that because LEDs consume much less power than filament lamps, that these are completely environmentally friendly, whereas they can be blue-rich, increasing sleep disturbance and affecting insects, bats and birds. Hope was expressed that new lights planned for the IW will be of good colour, be remotely

adjustable and carefully installed, etc. Perhaps a polite informative leaflet could be designed for VAS members for delivery to properties where bright lights have been incorrectly installed, with a view to encouraging interest and participation in improving our environment - not just for astronomers, but for everybody.

In reporting this, some issues escaped consideration such as:-

1. Could training and qualifications for light installers be provided and could domestic external lighting require certification before it can be used? (this might spare everybody a lot of 'agro'.)
2. Concern is being expressed over some new lamps containing mercury, arsenic or lead, so a street-lighting system needs adequate provision for recycling when lamps require replacing. Operational, maintenance and lamp lifetime comparisons for different types are needed.
3. Lamps are sometimes seen operating in daylight - it is a waste of energy to compete with the Sun!

Dr. Guy Moore

Isle of Wight AONB Dark Skies Guidance



When there is an absence of light pollution thousands of stars are revealed at night in what are termed Dark Skies.

One of the special features of the Isle of Wight AONB is its tranquillity and 'dark skies'. Dark Skies are areas where there is little ambient light pollution and on a clear night the night stars can be clearly seen.

These sorts of areas are becoming harder to find due to urbanisation and increased light sources lighting up our skies at night. The Isle of Wight is lucky to have a vast majority of the South East's 'dark skies' and here at the AONB Unit we do our best, through advice and the planning system, to protect this rare resource.

The AONB Partnership considers the Island's dark skies to be an economic as well as a cultural and scientific asset, which makes a valuable contribution to tourism by attracting people to the Island as well as for the enjoyment of residents.

For more information please download the *IOW AONB Dark Sky Guidance*

Some Quick Definitions...

- Light pollution** Light that shines where it is neither needed nor wanted
- Good lighting** Lighting that shines only onto the ground (where it is needed!)
- Bad lighting** Lighting that shines outwards into homes (disturbing people's sleep), and upwards into the sky wasting money, and creating an orange "smog" in the sky.

The CfDS view...

Light should shine only where it is needed and wanted, and nowhere else. Doing so is both easy and cost-effective - and with significant health and safety benefits.

Unfortunately, massive amounts of light are wastefully shone into the sky, causing the orange smog that hangs over towns and cities at night.

This Light Pollution is a visible and needless waste of resources, which contributes to global warming.

Because astronomers are the most sensitive to the effect of light pollution, the CfDS is a sub-section of the British Astronomical Association, although our membership is made up of a wide range of people, from lighting engineers to astrophysicists.

How is VAS Helping?

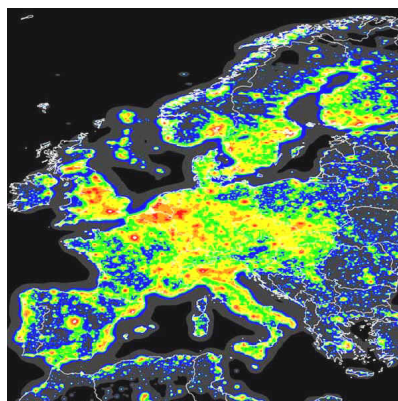
- We are working with the local CPRE and AONB to produce a definitive good lighting policy for the Isle of Wight.
- We are aiming to provide a lighting advice service to the public and local businesses.
- We are producing a definitive "Dark Sky" map for the whole Island.
- Installing fixed sky monitoring stations around the Island and providing an ongoing sky quality measurement service
- Increasing public awareness of the problem of light pollution and some of the solutions.
- Helping promote the Isle of Wight as a Dark Sky destination and providing outreach events.

Light Pollution - Effect on Astronomy

Astronomy, both amateur and professional, is very sensitive to light pollution. The night sky viewed from a city bears no resemblance to what can be seen from dark skies. Skyglow (the scattering of light in the atmosphere) reduces the contrast between stars and galaxies and the sky itself, making it much harder to see fainter objects. This is one factor that has caused newer telescopes to be built in increasingly remote areas. Some astronomers use narrow-band "nebula filters" which only allow specific wavelengths of light commonly seen in nebulae, or broad-band "light pollution filters" which are designed to reduce (but not eliminate) the effects of light pollution by filtering out spectral lines commonly emitted by sodium- and mercury-vapour lamps, thus enhancing contrast and improving the view of dim objects such as galaxies and nebulae.

No filter can match the effectiveness of a dark sky for visual or photographic purposes. Due to their low surface brightness, the visibility of diffuse sky objects such as nebulae and galaxies is affected by light pollution more than are stars. Most such objects are rendered invisible in heavily light polluted skies around major cities. A simple method for estimating the darkness of a location is to look for the Milky Way, which from truly dark skies appears bright enough to cast a shadow.

In addition to skyglow, light trespass can impact observations when artificial light directly enters the tube of the telescope and is reflected from non-optical surfaces until it eventually reaches the eyepiece. This direct form of light pollution causes a glow across the field of view which reduces contrast. Light trespass also makes it hard for a visual observer to become sufficiently dark adapted. The usual measures to reduce this glare, if reducing the light directly is not an option, include flocking the telescope tube and accessories to reduce reflection, and putting a light shield (also usable as a dew shield) on the telescope to reduce light entering from angles other than those near the target.



This article is licensed under the [GNU Free Documentation License](#).

It uses material from the Wikipedia article "Light Pollution"

CPRE and CfDS Lighting Nuisance Survey 2009/10 - Results

Where does light pollution come from? (multiple choice)			
Source	1	2	3
Transport facility	Road 88.9%	Other 8.8%	Railway 8.5%
Public service facility	Sports ground 52.9%	School or education 35.4%	Other 26%
Business	Other 56.3%	Supermarket 40.8%	Offices 29.5%
Private residence	Security lights 79.3%	Other 20.7%	
Street lighting	Lights > 5yrs old 77%	Lights < 5yrs old 23%	

Does the lighting come from a:		Are the lights:	
New development	14.8%	Along a road	47.2%
Older development with new lighting	20.1%	On the building perimeter	28.6%
Older development with older lighting	65.1%	Other	12.7%

When are the lights on?		What problem is the light causing?	
All night	81.8%	Affecting view of night sky from your property	83.4%
Intermittent	11.2%	Shining in bedroom window, hindering sleep	49.5%
Switched off at a certain time	7.1%	Affecting view of night sky from public areas	46.2%
		Shining across drive or garden	36.7%
		Affecting country views from your property	29.7%
		Shining in to another window in your property	29.6%

What have you done to deal with the light pollution?		Have you complained to your:	
Thicker curtains	67.9%	I have not complained	71%
Confronted person responsible	23.6%	Directly to the lighting owner	15.6%
Created a screen (fence or trees)	15.3%	Council planning department	12.6%
Other measure	15.3%	Environmental health department	11.5%
Sleep in another room	14.3%	MP	3.8%
Moved house	2.6%		

If you complained to your Council, have they been supportive		Do you think that wasted light should be addressed to help cut energy waste and carbon emissions	
Yes	27.2%	Yes	99.1%
No	72.8%	No	0.9%

IW Street lighting improvement programme

This information is taken from the Island Roads website islandroads.com and is provided for the benefit of members without internet access.

Work to enhance or replace the 12,068 street lights across the Island began in April 2013.

The lighting will be much brighter and will require less maintenance. We know that street lighting is very important to residents, businesses and visitors alike. Good reliable lighting not only makes it safer for road-users and pedestrians, but also supports crime detection and reducing the fear of crime.

What are the benefits?

Lighting is one of the greatest consumers of energy and the greatest emitters of carbon. To minimise this, Island Roads will be replacing all street lights within the first three years of the new contract, converting the lights to energy-saving, carbon efficient LED lamps. This will free up public service funds by reducing energy costs. Due to the efficient nature of LED lighting, they are also more reliable and require less maintenance once installed, meaning less lights out and disruption on your street.

Island Roads will operate a central management system which allows us to control the lighting levels and the times when lighting is on for individual streets. This will help us all to continue to improve energy consumption and curb carbon emissions, while also providing street lighting that meets the needs of individual towns and villages and respects the "Dark Skies" commitments in place to protect the Island's unique environment.

When will the lights in my road be replaced?

As you'll appreciate, this is a massive task. Some locations will be completed before others, so don't worry if you think a particular area has been missed out - we'll get to all areas within the first 2½ years of the contract.

Other lighting services

As well as enhancing or replacing 12,068 street lights with LED lights, we are also responsible for:

- Routine maintenance of street lights on public land.
- The maintenance of bollards, centre island lamp columns, flashing beacons at zebra crossings, school flashing lights and illuminated sign lights

International Dark Sky Places

To promote awareness about the issues, the IDA has an International Dark Sky Places program, to recognize locations showing "exceptional commitment to and success in implementing the ideals of dark sky preservation and restoration."

International Dark Sky Parks

- Natural Bridges National Monument, Utah, US
- Cherry Springs State Park, Pennsylvania, US
- Galloway Forest Park, Scotland, UK
- Zselic National Landscape Protection Area, Hungary
- Clayton Lake State Park, New Mexico, US
- Goldendale Observatory State Park, Washington, US
- Hortobagy National Park, Hungary
- The Headlands, Michigan, US
- Observatory Park, Ohio, US
- Big Bend National Park, Texas, US

International Dark Sky Reserves

- The Reserve at Mont-Mégantic, Quebec, Canada
- Exmoor National Park, England, United Kingdom
- NamibRand Nature Reserve, Namibia, Africa
- Aoraki Mackenzie International Dark Sky Reserve, South Island, New Zealand
- Brecon Beacons National Park, Wales, UK

International Dark Sky Communities

- Flagstaff, Arizona, US
- Borrego Springs, California, US
- Sark, Channel Islands, UK
- Homer Glen, Illinois, US

VAS hopes to achieve "Communities" status for the whole of the IW and hopefully better for selected areas.

THE BACK PAGE

LINKS, COMMENTS AND OBSERVATIONS

Astronomers spy on galaxies in the raw

Scientists have detected the gas fuelling the creation of the first stars in some of the most distant star-forming galaxies known.

By CSIRO, Sydney, Australia — Published: June 25, 2013

International teams of astronomers using the Commonwealth Scientific and Industrial Research Organization's (CSIRO) Australia Telescope Compact Array have detected the gas fuelling the creation of the first stars in some of the most distant star-forming galaxies known — ones that were assembling when the universe was a quarter of its current age.

The raw material for making stars is cold molecular hydrogen gas, H₂. It can't be detected directly, but its presence is revealed by a 'tracer' gas, carbon monoxide (CO), which emits radio waves of several different wavelengths.

"The Australia Telescope Compact Array complements ALMA [the Atacama Large Millimetre/submillimetre Array in Chile]," said Ron Ekers from CSIRO. "ALMA targets the higher frequencies from carbon monoxide, which trace warm, dense gas. The Compact Array studies the lowest frequencies from CO, which reveal the cooler, less dense gas and so give the best measure of how much gas there is in total."

More at: Astronomy.com

Three planets in habitable zone of nearby star: Gliese 667C re-examined

These planets are super-Earths lying in the zone around the star where liquid water could exist, making them candidates for the presence of life.

By ESO, Garching, Germany — Published: June 25, 2013

A team of astronomers has combined new observations of Gliese 667C with existing data from HARPS at the European Southern Observatory's (ESO) 3.6-meter telescope in Chile to reveal a system with at least six planets. A record-breaking three of these planets are super-Earths lying in the zone around the star where liquid water could exist, making them possible candidates for the presence of life. This is the first system found with a fully packed habitable zone.

Gliese 667C is a well-studied star. Just over one-third of the mass of the Sun, it is part of a triple star system known as Gliese 667 (GJ 667), which is 22 light-years away in the constellation Scorpius the Scorpion. This is quite close to us — within the Sun's neighbourhood — and much closer than the star systems investigated using telescopes such as the planet-hunting Kepler space telescope

More at: Astronomy.com

August 2013 AGM

Attached to this NZ is a nomination form for the 2013/14 VAS Committee.

Feel free to fill it in as we need your help and input.
You can even nominate yourself if you like!

Observatory

For your own safety, when visiting the VAS observatory, please bring a torch. Also, please make sure you close and lock the car park gate if you are the last to leave - if you need the combination to the lock, please contact a member of the committee.

Articles Needed

New Zenith needs letters, articles or pictures related to all aspects of astronomy. Contributions to the Editor please at the email or postal address on the front page.

"Before we invented civilization our ancestors lived mainly in the open out under the sky. Before we devised artificial lights and atmospheric pollution and modern forms of nocturnal entertainment we watched the stars. There were practical calendar reasons of course but there was more to it than that. Even today the most jaded city dweller can be unexpectedly moved upon encountering a clear night sky studded with thousands of twinkling stars. When it happens to me after all these years it still takes my breath away."

Carl Sagan

VAS Officers and Committee Nominations 2013/14

For those wishing to stand for election at the AGM of the Society to be held on Friday 23rd August 2012 at 7.00pm.

Name and Address of Nominee:

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Standing for

- Chairman
- Treasurer
- Secretary
- Observatory Director
- Membership Secretary
- Program Organiser
- Committee

Proposed by:

Seconded by:

Signature of Nominee:.....

Notes

1. No person can be elected to more than one position.
2. Only adult fully paid-up members may stand for election (or propose or second).
3. All completed nomination forms to be received by the Secretary in writing at least 7 days before the AGM.
4. The Committee consists of not less than six members.