



The British Astronomical Association's Campaign for Dark Skies



STARRY, STARRY NIGHT

*winning back the wonders
of the night sky...*





Human beings have long looked up in awe, on cloudless nights, at the star-strewn heavens. What did our distant ancestors make of it all? They drew the stars into the framework of their lives by creating constellations, fitting them to their beliefs and myths. They marvelled at the ghostly river of light which is the Milky Way, our own galaxy of two hundred billion stars seen from within, arching across the sky. The stars, the moving planets, and ephemeral events such as aurorae, comets and meteors, all these have inspired religious beliefs, poetry, music and scientific enquiry. The mysterious and unreachable vault of the heavens has been a primary stimulus to the human faculties of wonder and discovery. For countless years, all this has been ours on every clear night. But during the

twentieth century, the glory of the night sky was quietly and gradually taken away from most of the world's people by wasted artificial light. This process continues unabated, and at a rapidly accelerating rate. Satellite images of the Earth at night show wasted light-energy from every town and city, along roads, and in rural areas. Even in the countryside, poorly aimed, overbright floodlights and security lamps have stolen the blessed night from humans, and countless other species which have evolved to the rhythm of light and darkness. The day-night cycles, behaviour, feeding and mating patterns of bats, birds, glow-worms, moths, and countless other species are disturbed, and millions are killed, by light going where it is not needed.

Ancient skies over
Stonehenge
Philip Perkins
www.astrocruise.com





What causes the skyglow which has erased our stars?

The light we see in the night sky is mostly direct spillage from lamps which have simply not been designed for the lighting task: their emissions trespass onto neighbouring areas, and into the sky. They will often be too bright, which adds to glare and skyglow. Light travelling upwards is scattered and reflected by ever-present tiny particles and water droplets in the air, even on the clearest nights. The result is a baleful glow in the night sky, now seen from nearly everywhere in the UK. The constellations, aurorae, meteors and the Zodiacal Light, the faint reflection from billions of dust particles in the plane of the Solar System, are now things of the past for many of us.

A sight lost to most of us: the aurora, photographed from southern England by *David Briggs*.





There is no doubt that the spread of public lighting since the mid-1800s has brought great benefits. The quality and efficiency of lamps are continually improved, but the 'poor relation' in lighting design is directionality. What the Victorians saw as a blessing has become an environmental blight. Glare, overlighting and skyglow have tainted the night. Light intrusion into others' premises is now a major cause of complaints to environmental health officers, and research suggests it is damaging to health. The Clean Neighbourhoods and Environment Act 2005 gives local authorities powers to address intrusive light nuisance: but the night sky itself still has no real protection in law. The stars continue to disappear behind the veil of wasted light, over great cities and smaller towns. Bedrooms are filled with light even with curtains closed. Aggressive 500W floodlights turn neighbour against neighbour in both town and countryside, ousting the traditional more modest and welcoming porch light. It is an interesting fact that Britain's brightest lighthouse, the Longstone on the Farne Islands, has a 1000W source, yet many of us, even those who pay lip service to protecting the environment, use half this amount to light our gardens and drives. Another interesting fact: a 100W bulb left on all night for one year releases a quarter of a tonne of carbon dioxide, the major greenhouse gas, from the burning of the fossil fuel used to power it.



Full cut-off lights on the M27 motorway
C. Baddley



Little protest is made about wasted light. Is light pollution merely the uncomfortable cost of progress? Unlike many other forms of pollution, light pollution is *reversible*. Lights can be shielded or replaced with more appropriate designs, and wattages can be adjusted appropriately. In the words of the Institution of Lighting Engineers: "Light pollution, whether it keeps you awake through a bedroom window or impedes your view of the night sky, is a form of pollution and could be substantially reduced without detriment to the lighting task." Can we regain our heritage above? Yes. Visit the websites listed at the end of this leaflet.

A wonder lost to those with light-polluted skies:
Comet Hale-Bopp 1997 over the Horton Tower in Dorset
Bob Mizon





Types of lighting

The earliest practical lights were incandescent tungsten bulbs, still used commonly for domestic purposes.

The next development in street lighting was mercury-vapour discharge lamps, which give a blue-white light, but are low efficiency and fairly short life.

Many of the glary, over-powered "security" lamps sold nowadays are of the tungsten-halogen type, very inefficient and short-lived.

Then came low-pressure sodium (SOX), the strong orange light beneath which colours are indistinguishable. It is the most energy-efficient lighting and the lamps have a long life.

High-pressure sodium (SON) started to replace SOX in the late 1970s. The SON lamps are much smaller than SOX, which can be nearly a metre long. SON can therefore be more easily enclosed in a reflector that directs the light where it is needed. SON energy efficiency is not as good as SOX but the life is even better.

Today there is a move towards smaller lamps and white light, with better colour rendition, though the lifetime may be shorter. Light-emitting diodes (LEDs) are beginning to appear above our streets.

Poorly directed car park lights shatter the rural night in Kent
Richard Murrin





Making a difference

- ★ Talk to people about the skyglow issue, stressing energy and money wasted. What would they think if water mains leaked every few metres?
- ★ The CfDS does not want to switch off any necessary light; its motto is "the right amount of light, directed where needed".
- ★ Are your local media up to date with the skyglow issue? Do they include skyglow in their environmental reporting?
- ★ Ask neighbours about lighting plans and tell them why you enjoy the night sky.
- ★ Politely approach owners of obtrusive lights: they may not know they are causing a problem. Experience shows that most offenders will take some remedial action.
- ★ Write to local councillors, council lighting/highway engineers, MPs, MEPs, sports clubs etc., to ask about their views and lighting policies.
- ★ If new, less glary lighting is perceived by some to be dimmer, make sure that they understand the efficiency of modern, better-directed lamps. Not seeing the glare is a good thing. Set a good example by not using over-bright and glary exterior lights on your own premises.
- ★ We are told that the climate and the environment in general are under threat from energy waste. Ensure that debate in your area recognises the contribution that light spillage makes to these problems. Remember that 100-Watt bulb on page 4?
- ★ If you or any group you belong to has a website, link to the Campaign for Dark Skies on www.dark-skies.org
- ★ Try to forestall poor lighting schemes by studying planning applications and making sure your council has lighting clauses in its planning and environmental strategies. Help CfDS directly by subscribing to its newsletter, donating to its fighting fund, becoming a local officer or distributing its literature.

Remember: 'broadsides', carping criticism and baldly accusing someone of being a polluter are counter-productive strategies.

We can reclaim the night sky through reasoned argument and strength in numbers.

Nothing positive comes from light pollution. Everyone wins if it is reduced.



The British Astronomical Association's Campaign for Dark Skies works to ensure star-quality lighting in the UK. Its network of local officers publicises the problem, praises good practice and strives to turn poor lighting schemes into more acceptable ones. For advice on how to support CfDS, see www.dark-skies.org

Other websites to consult:

www.darksky.org (International Dark-Sky Association)

www.cpre.org.uk (Campaign to Protect Rural England)

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