GUILDFORD ENVIRONMENTAL FORUM
newsletter
SEPTEMBER 2009

Kingsnorth coal-fired power station in Kent. Demonstrators formed a 'Mili-band' around it in July, protesting against German owner E.oN's plans to rebuild it.

Controlling King Coal

by John Bannister

ROUGHLY 15% of the UK's carbon emissions result from the coal-fired power stations that produce electricity for our industry, commerce and homes. These also happen to be very inefficient electricity generators simply because a lot of energy in the fuel, typically 65%, ends up being wasted as heat rejected through cooling towers into the atmosphere, or into rivers or the sea. And coal is a dirty fuel, emitting 60% more carbon dioxide (CO_2) than natural gas as well as other unpleasant pollutants, including uranium and mercury. Given the emerging threat of catastrophic climate change, how we generate our electricity is clearly a priority if we are to change to a low carbon world within the next few decades.

You can of course choose to contract with companies supplying electricity from 100% zero-carbon renewable sources, mainly wind energy, such as that from Good Energy. But most of our electricity will continue to come from very large wasteful centralised coal-fired power stations and it is the UK Government's intention to build a new fleet of coal-fired power stations.

Many of our power stations are now old and a decision has to be made whether to replace them, which is why we are engaged in a debate in the UK about new nuclear and new coal-fired power stations. Nuclear has its supporters even within the environmental movement because it offers much lower CO_2 emissions. But the history of radioactivity leaked into our rivers, seas and the air, and the link with nuclear weapons, means there are many people opposed to the nuclear option. Thorium nuclear reactors, as used in India, seem to offer a much safer, cheaper alternative but are a little-used technology because they can't be used to make nuclear weapons – so much the better.

But let's get back to coal. Coal is abundant in many countries and the indications are quite clear that it will be exploited for power generation for decades to come. The biggest coal consumers today in absolute terms (not per capita) are China (by far), the US and India. Furthermore, in 2008 coal remained the fastest-growing fuel in the world for a sixth consecutive year and China accounted for 85% of the global growth. On a per capita basis China ranks sixth and the big boys are Australia,

marcvallee.co.uk

Demonstrators march to take up their positions around the perimeter of Kingsnorth power station, where they will form a human chain linked by their yellow 'Mili-bands'.

South Africa, the US, Poland and South Korea. India is a tiny consumer on a per capita basis, with a much lower ranking than Germany and the UK. Our worldwide coal use is a major cause of global warming and Britain needs to lead the world by example with any new coal-fired power stations built in this country. Let us not forget we started the industrial revolution, and in terms of cumulative emissions expressed as tons of CO_2 per person per year averaged over the period 1880 – 2004 the UK ranks as the second highest emitter in the world, a close second to the US. We have a lot of climate debt to repay.

For this reason a few stalwarts from GEF joined the 'Mili-band' on 4th July to link hands with other demonstrators around Kingsnorth coal-fired power station in Kent. This is a 1980 MW giant, that German owner E.oN wants to rebuild. We, together with other campaigners, believe that there should be no new coal-fired power stations built in the UK unless they are fitted with carbon capture and storage (CCS) to remove CO_2 from the entire exhaust gases. CCS technology, still not fully perfected and largely unproven, would capture most of the CO_2 emitted by a power station and pipe it to an underground storage site, such as a depleted North Sea oil or gas field in the case of Kingsnorth, but at the cost of a further loss in thermal efficiency. Not a very good deal.

However, if new coal is forced on us then it must be with complete CCS, and if this means delaying construction of new UK power stations then so be it. If we don't cough up and install CCS on dirty power stations how can we expect China and India to do so? We in the UK must demonstrate that we are prepared to invest in clean energy systems, and that includes not building dirty coal-fired power stations.

I am grateful for the helpful input of Rob and Clare Palgrave who also joined the Kingsnorth 'Mili-band' protest on 4th July. *John Bannister*

(References supporting this article are available on request.)

Richard Stephens

1933 - 2009

WITH THE DEATH OF Richard Stephens the community, both local and wider, has lost a person who devoted his energy and vision to understanding and interpreting what he found in the natural and the man-altered world around him; he then strove to live and encourage others to live in accordance with his careful conclusions. He was not a dramatic or self-publicising man nor did he force his long-held ideas about the environment upon others. His method was to live what he had come to understand and believe and to teach by example and patient explanation.

Newer members of the Environmental Forum may well have never seen him. Impediments to his good health induced him to resign his post of Membership Secretary and he was no more to be seen pedalling vigorously through the town. But he kept well in touch with the aid of his computer and the more essential organs of the media.

Way back in the days of Rachel Carson's *Silent Spring* and the Helsinki 'Blue Print' Richard was already Green with a capital G. His combination of scientific and engineering training (he studied engineering at Imperial College) enabled him better to analyse what he saw around him on this Planet and, more particularly, in his local environment and he increasingly gave his free time to publicising information and views which concerned soil, organic cultivation and what we would now label as Carbon Footprint concerns.

He treble-checked his information and though he was always a courteous and considerate gentleman he had sometimes to struggle with finding the necessary polite terms when conversing with those who were much less informed or much less careful than he in assessing situations and solutions, always the problem of a prophet in his own country!

By profession he was a technical writer (with specialism in avionics), something which, by its connections with certain VIPs led some of his young relations to suppose he must be a secret agent. But away from work he spent much time in the vegetable garden, honing his skills in producing viable compost – a process in which he became a reputable and accepted expert.

During his student days in London he kept up his church bell ringing which is how he met Mary Fuller, later to become his wife and the mother of their four children. They moved successively from Limpsfield Chart to Oxted and finally, to Guildford.

Richard Stephens was one of those gentle tributaries which feed a great river: such tributaries nourish the land through which they pass and afford beauty and satisfaction in their secret and quiet way, often hidden and overhung by the green world they nourish, so that those on the big roads see them only in glimpses and may never know their names. His favourite flower was the Hawkweed, a flower whose colour recalls the glow of a dying furnace.

Richard William Stephens (1/5/33–7/7/2009) received a Woodland Burial at Shamley Green near Guildford on 23rd July.

M.A.T.

Solar PV at Sandfield School exceeds expectations

by John Bannister

IN 2006, Guildford Environmental Forum organised the fundraising and provided the project management for a 5 kW solar PV (photovoltaic) system at Sandfield Primary School near the centre of Guildford. It took almost a year to complete the project simply because this Government puts so many difficulties in the way of micro-generation, (which is why, to our eternal discredit, the UK lags so far behind Germany and other EU countries and is virtually bottom of the European league for renewable energy). The system was fully commissioned a few days before Christmas that year.

For two and a half years I have tracked the performance of Sandfield's PV. It should be made clear that it is ideally situated on a south-facing pitched roof angled at about 30° **with no shading from trees or buildings**. The 130 watt peak Schuco solar panels are installed over the roof tiles and there are 39 of them. The system was installed expertly by CEL-F with two inverters, a main meter and a display in the school hall showing instant and cumulative electricity production and CO_2 saved.

We were told to expect 750 kWh of electrical output per kW Peak installed. In the first complete year, 2007, the Sandfield system generated 5200 kWh and in 2008 exactly 5000 kWh. This year we are on course to again generate in excess of 5000 kWh of electricity, or in excess of 1000 kWh per Kw peak installed. This output corresponds to about 25% of the school's electricity consumption. In fact the PV is grid-connected, so all the surplus pollution-free power is exported to the National Grid.

Sandfield School has been saving an estimated £250 per annum on its electricity bills by virtue of its own PV generation consumed on-site, and is enjoying an additional annual income of approximately £200 pa from the sale of ROC's (renewable energy certificates). There are limitations on which companies schools can purchase their electricity from, but Sandfield is hoping to switch its electricity supply to Southern Electricity later this year and start earning additional income from electricity sales to the grid.

On 15th July the Government announced details of the UK Feed-In Tariff for micro-generators due to start in April 2010 (Germany introduced theirs in 1999) and this will be 28 p/kWh for the entire output of PV systems over 4 kW, irrespective of whether it is used by the host or sold into the grid. Sandfield therefore will gain an additional income of £1,400 pa from April next year. It will lose the income from ROCs but this will be more than compensated for by its estimated grid sales.

We will report back further on what financial benefits we actually achieve from the PV system at Sandfield in early 2011.

Sandfield School now saves on its electricity bills and earns income from electricity generated.

Artificial fertiliser

For every tonne of nitrogen fertiliser, nearly seven tonnes of carbon dioxide are given off in the manufacturing process.
(Source: Independent, 1 Dec 07)

FACTS & FIGURES

Overprotected children – 1

Recent research with children has found that 86% of them prefer outdoor activities, including building dens and getting muddy, to playing computer games. Yet the charity Barnados reports that children spend more time watching TV than playing outside.
(Source: BBC Wildlife, Aug 08)

Overprotected children – 2

In 2006/07, 1,067 children were admitted to casualty departments after falling out of trees. Over the same period, 2,532 were admitted for falling out of bed.
(Source: Natural World, Spring 09)

No bees, no life

"If the bee disappeared off the globe, then man would only have four years of life left."
(Albert Einstein)

Carrot power

Actor Richard Briers grows vegetables on land earmarked for the third Heathrow runway. He is sending a 'runway' carrot once a year to every member of the Cabinet, in the hope of persuading them to drop the plans.
(Source: BBC Wildlife, Summer 09)

A NEW HOUSE

by Forum members David and Betty Moxon

Our first article, in the December 2007 newsletter, discussed the choice of energy-efficient appliances and lighting. This one is about the house itself.

2 – Making the house energy-efficient

IN 1972 WE BOUGHT a house near Elstead with the best part of an acre of land. It was very basic – mostly a wartime wooden hut that had all the architectural appeal of a scout hut. Over the years we added lots of insulation and made other improvements, then when we retired we decided to replace it.

Starting with a blank sheet of paper gave us the opportunity to build a house that would be both great to live in and highly efficient in its use of energy. In getting ideas together at the outset we visited building exhibitions, had sessions at the Centre for Alternative Energy with experts on the use of energy in buildings. We also joined the Association of Environment Conscious Builders (AECB) whose magazine and website is a rich source of information. The research paid off as it enabled us to deal knowledgeably with suppliers.

Complying with Building Regulations was not a problem as we were exceeding their requirements, though we sometimes felt that the rules were forcing us to put more materials into the build than were really necessary. Although the materials that go into a house affect the lifetime CO_2 emissions of the building, the running costs (in terms of emissions) are by far the major factor, so reducing those was our overriding priority. To this end the key issues when planning the house were:

- **The basic structure of the house**
- **Orientation and extent and positioning of windows**
- **Space heating and insulation**
- **Water heating**

Keeping the house at a comfortable temperature

We considered many types of construction: brick and block, timber and even straw bales. In the end we decided that the key priority was to achieve high thermal mass to enable the house to be cool in summer, warm in winter and to be able to cope with whatever climate change would throw at it over time. Longevity was also important to offset the high carbon cost of building. We decided on brick and block using fairly dense blocks, mainly for the way they help to even out temperature fluctuations by storing heat, whether from the sun or the heating system, and releasing it gradually. The floor, too, has high thermal mass which makes the most of the underfloor heating.

It is the type and thickness of the insulation you use, rather than the materials used for the structure, that determine heat loss. We have exceeded even the latest Building Regulations requirements, with a 185mm wall cavity that was totally filled and 300mm of insulation in the roof, the latter being a requirement for getting a grant towards a heat pump.

One regret is that we did not hold out against the use of stainless steel wall ties. There are basalt and glassfibre alternatives which could have made significant improvements to the overall efficiency of the walls by reducing thermal bridging. This simple measure would have improved the insulation of the walls by more than 10 per cent.

Orientation and windows

In a woodland clearing we were surrounded by trees which limited the winter sunlight in particular. So we shifted the house closer to the northern side of the plot and swivelled the orientation from N-S in the old house to NW-SE. The living areas face south-west and west, giving a sense of integration with the garden and avoiding too much direct sunlight in the summer but increasing winter light levels.

We wanted lots of daylight but there are always trade-offs: windows give light and warmth from the sun but, however well designed they are, heat loss through windows will always be much higher than through well-insulated walls. And in hot weather overheating can be a real problem. So it was important to have windows that would reduce heat loss in winter as well as avoiding too much gain in summer. The biggest windows face south-west, west and north-west and the result is light and airy living spaces.

The softwood high-spec windows came from the Green Building Store in Huddersfield. Designed by Chris Herring, a leading light in AECB, they are as good as any double-glazed units currently on the market in terms of thermal efficiency. The price was comparable with imported windows but they had a 10-year guarantee as compared with 5 years for others we considered. At the time we were buying, the extra cost of triple-glazing was disproportionately high and beyond our budget.

We brought daylight into darker areas by using sunpipes. We have four – two in the enclosed spaces of a cloakroom and inner lobby (pictured right) and two to bring more light into rooms. One is in a bedroom and can be darkened by bellows by means of a remote switch if you don't want to be woken too early.

The heating system

We are not on mains gas and did not want oil or LPG, so that just left electricity for our main heating. Electricity is not usually the best choice for space heating – less than 40 per cent of the energy used in generation is converted to electricity whereas the best gas boilers have an efficiency of around 90 per cent. However, using a heat pump completely changes the arithmetic. The electricity is used to pump a fluid round the ground and heat is transferred from the soil to this fluid: it works like a fridge in reverse. Each unit of electricity consumed by the heat pump is converted to about four units of heat at 35^0 c, which is sufficient for underfloor heating. If a heat pump is used for radiators or hot water (needing temperatures closer to 60 degrees) efficiency is around 25

per cent lower. Air source heat pumps are simpler but just when you need heat most – when the air temperature is very low – the system will be at its least efficient. By contrast, ground temperature changes little though it can eventually drop, which is a reason to rest the ground during the summer months rather than extract heat from it all year round.

Most heat pumps are imported but the UK does have one heat pump manufacturer, Kensa, based in Cornwall. We chose Kensa partly because they are staffed by engineers rather than sales people and are forthright and honest in their advice. As with our choice of windows, other things being equal we wanted to buy British. We decided we could hardly complain that the UK is failing to develop a manufacturing base that supports eco-building if we didn't support pioneering firms that are doing just that.

Our heat pump operates on the Economy 10 tariff from Southern Electric, and gives you three periods of low price electricity during 24 hours. This is what Kensa recommend assuming underfloor heating is used. (No other heat pump supplier we approached suggested using offpeak electricity although it looks to be much the best option.) In the longer term, Intelligent Metering systems are being developed that will enable electricity companies to switch equipment on remotely when there is spare capacity, with users who sign up for it able to buy electricity at lower prices. This will become increasingly important to keep supply and demand in step when more electricity is produced through renewables (where supply may fluctuate) or, conversely, through nuclear power where it takes days to close down or start up the reactor. The priority in this case is to maintain demand so that electricity does not go to waste.

We also installed a small woodstove (Charnwood Country 4 made on the Isle of Wight) which has an output of 4kW. Central heating systems are normally designed to cope with temperatures down to -1^{0}c, so extra heating can be needed in very cold weather unless you install an oversized system. In the past we have found a woodstove is particularly good at lifting the temperature on cool evenings in autumn and early spring when it is not worth putting on the central heating. We envisage that this will be particularly useful here: it is good that the house cools only very slowly when the heat is off, but conversely the house will warm up only slowly when the central heating heating is switched on.

Water heating

We went for a Navitron evacuated tube solar hot water panel of 2.25 square metres which is suitable for a 200 litre cylinder and a household of 3-4 people. Navitron claims that in the UK the heat from this panel will range from 0.85 kWh per day in December to 9 kWh per day in June. In our first three months, May to July, it provided virtually all our hot water. We considered having two panels, but in practice doubling the heat collected in winter would still not amount to very much. In June we already get more than twice as much hot water as we need. A second panel would be most helpful in spring and autumn but on balance we decided the extra cost was not quite worth it in our situation.

The Economy 10 tariff makes a lot of sense when using immersion heaters to top up the hot water. Most of our demand is in the evening. It is pointless to heat the water overnight so you start the day with a tankful of hot water just when the sun is rising. Topping up at the end of the day as necessary ensures efficient use of the solar heat.

We use an instant hot water system (pictured right) in the cloakroom. Getting hot water to the cloakroom from the hot water cylinder would mean drawing off more than four litres of cold water first, and because the instant heater has a spray tap water usage is also very low. A further benefit in our case was that it provided hot water for hand washing for the builders some five months before the main system was operational.

Ventilation

Houses must breathe by expelling stale air and drawing in fresh air. The problem in winter is that this usually means replacing warm air with cold air, which is not helpful to either the house or the planet. We opted for a mechanical ventilation and heat recovery (MVHR) system. Air is drawn out from areas such as the kitchen, bathrooms and utility room and fresh air is delivered to bedrooms and living rooms. When the temperature of the house is below a predetermined level, heat is transferred to the incoming air. So the air in the house is continually renewed but with a minimal loss of heat – Starkey Systems claim that the unit retains 96 per cent of the heat. For MVHR to work effectively the house needs to score well in the airtightness test. In our case the score was more than twice as good as Building Regulations require – a tribute to the attention to detail of our Project Manager, Colin Egan. The next battle will be to persuade those of our visitors who say they can't sleep without an open window that actually they can: what they need is fresh air, and they will not suffocate because the air comes through a vent in the ceiling rather than an open window.

The MVHR system runs continuously, which of course means it uses electricity all the time. But on its normal setting the consumption is only 11 watts and the air always feels fresh, bathrooms never steam up and clothes on the Sheila Maid in the utility room dry quickly. The cooker hood works in recirculation rather than extraction mode, which means that the filtered air is eventually removed via the MVHR system so heat from cooking is retained. As it happens, an extraction system may not be used in a space where there is a woodstove and given our open-plan layout an extraction system would have fallen foul of Building Regulations.

In conclusion

It will be a while before we can make a full assessment as to how well everything works in practice. This applies particularly to the heating system – it kept the builders from freezing last winter but the real test will come next winter. We are keen to see how well the heat pump, woodstove and MVHR system work together to keep the house at a comfortable temperature and at what cost. We will report back on this in a future newsletter.

If any member would like more details do get in touch – you would be welcome to take a look.

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Tel: 01252 703146

Fred Holmes

Painted Lady *(Vanessa cardui)*

A host of painted butterflies

by John Bannister

THE MAY BANK Holiday was remarkable this year for the fine weather we enjoyed, as it is so often a complete wash-out. It was also remarkable for an extraordinary natural phenomenon that only takes place every ten years or so. Everywhere you looked there were hundreds of butterflies . . . flying fast in a northerly direction and settling when they found a good source of nectar.

On that Monday I was sitting in my daughter's garden within sight of the South Downs, and they were pouring through helped by a southerly breeze. Whichever way you looked there was a fluttering mass of butterflies moving overhead and settling on the purple spikes of a large clump of catmint. These were Painted Ladies *(Vanessa cardui)*.

This species, like another gaudy *Vanessa*, the Red Admiral, has its breeding centre in Southern Europe and North Africa but regularly migrates northwards to all parts of Europe with, in most years, only a few reaching the British Isles. This year we witnessed a mass migration. Reports from the south coast were that papillons were streaming over in clouds.

Back in my own garden, which is given over entirely to butterflies and other wildlife, the flowers of choice were Valerian and clover. I counted over 35 Painted Ladies: it was like a moving carpet. The upperwings, 60mm across, have a salmon-pink background colour with patterns of black with white spots at the tips and trailing edges. When disturbed they fly off fast but nearly always return to the original spot.

Painted Ladies are continuously brooded but survive the winter here only in the extreme south. Eggs are laid singly on the upper surfaces of leaves in June and sometimes again in September. The caterpillars feed on thistles, mallow, burdock and nettle, and this year I have found them on hollyhock in my garden. They feed within the shelter of a leaf cage spun together with silk, leaving large black droppings, and become fully grown (up to 28mm) in about a month. Pupation takes place within spun leaves and the butterflies emerge after a fortnight.

No sooner had they arrived in their thousands, maybe millions, than they had gone. A spectacle like this is relatively rare, and we may have to wait another ten years for such a bounty of superb butterflies.

What to do with CO_2

A modest amount of biofuel – 250 litres – could be produced daily from recycling carbon dioxide exhaled at Liverpool John Lennon Airport, by passing it through algae-filled bioreactors.
(Source: BBC Focus, June 09)

Declining biodiversity

"Until a significant increase in [Government] funding is established, then the creation of new habitats, that will enable wildlife to thrive and to cope with climate change, remains a pipe dream. The current funding available to save species and re-create habitats probably wouldn't bail out the local branch of your bank."
(Matt Shardlow, Director, Buglife)

FACTS & FIGURES

Surrey landfill

Of the 600,000 tonnes of waste produced in Surrey in 2008, 397,263 tonnes were put into landfill (equivalent to about 33,000 full double-decker buses). Each person produced 542kg of waste (the national average is 520kg).
(Source: Surrey Advertiser, 20 Feb 09)

Ouch!

Dock leaves do not, after all, soothe nettle stings. The myth arose because of parents' desires to find something close by with which to placate their stung children.
(Source: BBC Focus, Mar 09)

"Recycle, refurbish, re-use"

GUILDFORD ACTION – FURNITURE PROJECT

Where a purchase benefits the environment, the disadvantaged and those seeking to return to work

Guildford Action – Furniture Project acts as a link between those disposing of their surplus furniture who are keen to recycle to avoid landfill, and individuals in the community who are in desperate need of affordable furniture.

by John Atkinson

THE FURNITURE PROJECT is a Charity that collects items of furniture, by arrangement, throughout Guildford Borough and transports them for refurbishment and re-sale at its Jacobs Yard warehouse. Members of the public are welcome to visit the showrooms and purchase goods at very reasonable prices.

These purchases help subsidise those in greatest need, as our Charity's main aim is to provide assistance to families moving from sheltered accommodation towards independent living. In many cases these people have literally no possessions and, through our Starter Packs and Home Furnishing Kits, we are able to provide instant home comfort, right from the basics of being able to prepare a meal through to providing a bed to sleep on overnight.

Concessionary prices are available to those in real need, which covers individuals receiving state support. Where families do not qualify for concessions but are experiencing genuine hardship, then we may be able to assist by organising applications to other charitable bodies.

How we operate

We collect furniture, by appointment, from people's homes using a team of volunteers and then display the items for sale. Where practical, damaged goods are repaired and cleaned, electrical items are safety checked and all furniture comes with a warranty offering a replacement from stock should it fail within the first three months of purchase. The Project carries an extensive range of household furniture, kitchen equipment, white goods, electrical appliances, computers and garden tools.

At the moment we operate a collection and delivery service twice a week, on a Monday and Tuesday, with donors or recipients of furniture being contacted on the morning of the scheduled appointment to make sure arrangements still hold. A donation of £15.00 is requested to offset some of the cost of the crew and vehicle – this is generally acceptable as it compares very favourably with the cost levied by Guildford Borough Council for its Bulky Waste disposal service, which only caters for landfill waste collected kerbside.

The warehouse is open between 10.00hrs and 16.00hrs Monday to Friday. Appointments to view are not necessary, but if clients are looking for something specific, it is always wise to ring in advance to check availability, as stock is continually changing.

Through our links with various local bodies, we offer a range of recycling opportunities:

COMPUTERS which cannot be salvaged and readily repackaged for use in this country are stripped of their essentials, rebuilt and shipped via St Peter's Church to Uganda for use by local schools.

ELECTRICALS are rigorously tested, and in the

event of failure we recover components, precious metals, plastic cases etc, for recycling.

Occasionally we find ourselves the beneficiary of more valuable items and these **ANTIQUES** are auctioned through the generosity of Ewbanks Clarke Gammon and Webber. The proceeds from such sales are used to subsidise people in the greatest need.

Our voluntary staff

Volunteers are an essential part of the Charity's work and service. Recruits come from all walks of life including the long-term unemployed, community service and private individuals. They serve in various capacities, as part of the collection team, or warehousemen, administrators and computer operators. For many, working with the project is a means back to full-time employment, with the opportunity to pick up a few life skills on the way. Volunteers are encouraged to help repair items, to show people around the warehouse and to undertake some of the administrative tasks such as pricing and stocktaking.

In any given year the Furniture Project assists over 600 individuals and families with several thousand items, and provides gainful employment for up to five volunteers a day.

If you would like to help, learn more, donate items, or if you're simply looking for a bargain, then please contact:

Guildford Action – Furniture Project, Jacobs Yard, Woodlands Road, Guildford, Surrey GU1 1RL
Telephone 01483 506504
Mobile 07917 148940
E-mail furnitureproject@guildfordaction.org.uk

Guildford Walkfest

by Stephen Rainbird

DUE TO CLIMATE CHANGE, habitat fragmentation, disease in the rabbit population and changes in farming practice, the UK has seen a dramatic decline in the numbers of butterflies.

The once grazed-short grasslands of the Downs in Southern England have now been overgrown with scrub; the once plentiful wild-flowers the butterflies depended upon for larvae food and nectar, such as Horseshoe Vetch, have been out-competed by, first, grass (with no sheep or rabbits to graze it) and then by scrub.

Highland cattle grazing the coarse vegetation on land near St Catherine's Lock. Rare Irish Moiled cattle graze in the wetter conditions of the water meadows.

Conservation work on Pewley Down, with scrub removal and then grazing by cattle, is now achieving an increase in both the numbers and varieties of butterflies.

Farming practices such as the ploughing of wildflower meadows and the use of herbicides have also affected the variety of wildlife on water meadows. There is work to reinstate former meadows, or simply to manage others which have seen the intrusion of scrub and then trees.

The two walks I organised for Friends of the Earth (the Guildford Walkfest) aimed to show local conservation of downland and water meadows.

The first walk looked at conservation grazing work on water meadows on the River Wey outside Guildford, where cattle that graze the downland spend the summer. Luke Gates from Merrist Wood College showed us around the site which runs from Millmead to St Catherine's Lock.

We were first introduced to Irish Moiled cattle – a breed rarer than giant pandas, but well suited to grazing wet water meadows. Because of this breed's limited numbers, the herd has to be kept separate to ensure survival from diseases such as foot and mouth. We went on to see the Highland cattle by St Catherine's Lock. These are hardier than the Irish, but less tolerant of wet and boggy ground, and are used on the coarser vegetation along the river in summer before being transferred to Pewley Down for winter grazing.

Our second walk looked at the conservation and grazing work on Pewley Down to encourage the return of wildflowers and butterflies. This was led by Peter Curnock, with help from Anne and Vanessa from the Pewley Down Conservation Volunteers.

In contrast to the warm, dry summer evening we experienced on the previous walk, the weather was very wet, which unfortunately limited the numbers of butterflies flying; however, we did see Chalkland Blue, Small Blue, Small Copper, Marbled White, Brimstone, Meadow Brown, Brown Argus, Painted Lady, Green-veined White and Essex Skipper. Also seen was the Six-spot Burnet moth and the fearsome Wasp Spider that was ferocious in despatching its prey.

I would like to thank Luke Gates, Peter Curnock, Anne and Vanessa for their help, and to the walkers for supporting both events.

Transport for Guildford

by John Bannister

THE ANNOUNCEMENT that £29 million has been allocated to make improvements to Guildford as a Transport Hub and a further £40 million to the Highways Agency for road improvements, all to be spent from 2013 to 2016, is a tremendous opportunity for our town.

At the Stakeholders Meeting on 15th June, Sue Sturgeon, Guildford Borough Council's Strategic Director and Chair of Transport for Guildford, created a really exciting sense that a transformational vision could emerge. She spoke of concepts that have benefited many towns and cities in Europe, creating high quality community-friendly streets, which could over time be introduced here. We commend her leadership and willingness to embrace such a vision.

Many European town and city centres were in the same situation 40 years ago as we are today, with streets completely dominated by the car. By adopting a clear vision backed up by well-resourced transport plans they have transformed themselves. The result is a much nicer place to live, greater reliance on walking and cycling, a healthier population, efficient low-cost public transport, space freed up that was previously occupied by cars and greater inward investment by companies wanting to relocate to such an environment.

Freiburg, our twin town

I believe that Sue could get valuable ideas and assistance from her counterparts and colleagues in Freiburg, a global leader in transportation. Guildford is twinned with Freiburg and those people from Guildford who have been there know what a superb transport system the city has.

On a recent environmental visit to Freiburg arranged by the Guildford Freiburg Association, a group of Forum and Association members heard a detailed talk from one of the city's transport experts about their system and how they transformed it from where it was 30 years ago to where it is now. They also heard a talk by the Head of Freiburg's Energy Department about the city's Climate Protection Policy. Freiburg City Council is prepared to work with Guildford to give the benefit of its experience, tailored to our needs.

Guildford is not Freiburg and never will be, but we are both historic places in beautiful settings and Freiburg is offering us the lessons it has learned, both good and bad. For example, it has a problem with cycling accidents and as we build up our cycling population we should learn from that experience. We need to make 'Transport for Guildford' an integral part of a long- term vision that will get us a 40% cut in emissions by 2020 and an 80% cut by 2050 from a 1990 baseline.

Finally, one crucial barrier to progress it seems to me we must address in Surrey is the administrative disconnect and distributed responsibilities between relatively small local authorities, the county council, regional government and central government, which prohibits the long-term planning and funding that transportation needs.

Examples worth discussing with Freiburg in a Guildford context:

- 30km/hour (ca 20mph) speed limits throughout residential areas.
- In "play streets" 5km/hour (ca 3mph).
- A culture of respect by car drivers for pedestrians and cyclists.
- Conversion of car-dominated street space to pedestrian, cyclist and public transport street space.
- Increase in public transport so that over 90% of residents are within 500m of public transport.
- High frequency public transport especially at peak times.
- The concept of a "city of short distances".
- Relocation of businesses selling heavy bulky items such as white goods, that require car pick-up, to locations outside the town centre.
- Limiting delivery vehicles in the town centre to 7 tonnes maximum.

Amtsblatt, Dec 2008

- "Shared Streets" or "Naked Streets" where pedestrians, cyclists, buses and cars share space with mutual respect.
- A large increase in well-surfaced cycle paths and lanes (Freiburg has 420km of cycle tracks).
- Bike and Ride in addition to Park and Ride.
- Subsidised regional travel passes.

The five pillars of Transport Planning used by Freiburg over 40 years of practical implementation are:

- Extension of the public transport network.
- Promoting cycle traffic.
- Traffic restraint.
- Channelling individual motorised vehicle traffic.
- Parking management.

Badgers and culls

by Dave Williams, Chairman, Badger Trust

Badger Trust

EVER SINCE A BADGER was found to be infected with bovine TB in 1971, some elements within the agricultural industry have waged an obsessive campaign to prove that badgers are the primary cause of the spread of bovine TB in cattle. Yet almost 40 years of intensive research has failed to provide any real proof.

Various types of badger control on farms where TB was found continued without success, until 1995, when the government decided to set up a research project to finally find out if killing badgers was the right thing to do.

The project began in 1997, and was called a Randomised Badger Culling Trial (RBCT) – see box below. It was designed and overseen by pre-eminent scientists in the Independent Scientific Group (ISG), and took place in the areas of England with the highest rates of TB in cattle. It was probably the biggest field trial ever carried out, taking ten years to complete at a cost of £50 million. During the trial about 11,000 badgers were trapped and shot.

The Welsh cull

Now, despite the RBCT's compelling conclusions, the Welsh Assembly's Rural Affairs Minister, Elin Jones, has announced a pilot study of badger culls in an intensive treatment area.

Wales is currently suffering from the highest rate of bovine TB in the UK. Why? In part it's due to what happened after the foot-and-mouth outbreak, when significant restocking took place in Wales from TB hotspots in England and the TB rate in Wales rose by more than 170%. And in part it's a direct result of increased testing. If you test more often, you find more disease. The payback comes later, as disease levels begin to fall and are eventually brought under control. In July Elin Jones herself reported that Health Check Wales, the Assembly's improved testing regime, had found, and removed, disease in 77 cattle herds that might otherwise not have been found until 2012 – disease, in other words, which would have festered and spread.

Badger Trust has long argued that better, more

THE RANDOMISED BADGER CULLING TRIAL 1997-2007

THE TRIAL METHOD

The trial was carried out in 30 areas of 100km^2. The areas were divided into ten sets of three, each of the three being:

a) where all badgers were killed every year (proactive culling)
b) where badgers were killed on or near farms with a recent outbreak of TB in cattle (reactive culling)
c) where no killing took place, only surveying (scientific control area)

THE TRIAL RESULTS

Proactive culling reduced cattle TB inside the proactive area but increased it on neighbouring land. Reactive culling was halted in 2003 because it caused an increase of around 20% in cattle TB.

Badger carcasses, both from the Trial and from road traffic deaths, were tested for the incidence of TB: in the proactively killed badgers it was 16.6% and in road-killed badgers it was 15%. It had been proposed that only severely lesioned badgers could be highly infectious, but the number of severely lesioned badgers was very low – less than 1.7%.

THE TRIAL CONCLUSIONS

The final report, issued in June 2007, reached two key conclusions.

Firstly, that although badgers were a source of cattle TB, ***"badger culling can make no meaningful contribution to cattle TB control in Britain. Indeed, some policies under consideration are likely to make matters worse rather than better."***

Secondly, ***"weaknesses in cattle testing regimes mean that cattle themselves contribute significantly to the persistence and spread of disease in all areas where TB occurs, and in some parts of Britain are likely to be the main source of infection. Scientific findings indicate that the rising incidence of disease can be reversed, and geographical spread contained, by the rigid application of cattle-based control measures alone."***

frequent testing would root out the previously hidden reservoir of disease in herds which was sustaining and fuelling the epidemic. It's not merely the frequency of testing, but the effectiveness of the test.[1] For decades the farming industry has been content to use a flawed test that has failed to detect and remove for slaughter infected cattle. New measures now in place, but long overdue, must be given time to work.

Badger Trust believes that the so-called pilot study is not justified, it will not work and it cannot yield any valid scientific results. The Welsh Assembly has no control systems in place, not even an examination of badger carcasses. The killing of badgers will take place alongside a raft of cattle measures, so if the bTB figures fall it will be impossible to decide which actions made the difference. This is bad science and shameful policy-making.

Common sense

Bovine TB is a highly infectious respiratory disease and it passes readily from cow to cow. Increasingly in modern farming cattle spend months overwintering and fattening up, side by side, nose to nose, in often poorly ventilated cattle sheds. At markets they are packed together, and for decades the very best of breeds have been taken to shows. Routinely every year tens of thousands are moved to new pastures and different farms and cattle movements can be counted in the millions.

This is a cattle management system designed to spread an infectious cattle disease, but it has taken Government directives in England to belatedly apply some sensible controls to root out previously undetected disease in herds and, at the same time, to insist on pre-movement testing, albeit not on a sufficiently all-embracing scale.[2]

The persistence of the *M. bovis* organism is known and is frightening. It will survive at least 315 days in slurry and two years in the environment, presenting a real risk of disease not only to cattle but also badgers that forage for worms in the infected ground.

TB is rarely fatal in badgers and, as the RBCT showed, even in TB hotspots fewer than two in ten are infected. Most badgers are healthy. And while blood tests on live badgers can usually detect TB, only post-mortem examination can provide absolute proof. False positives and false negatives remain an unfortunate feature of the current test for TB in badgers.

Pro-cull activists claim, without a shred of validated evidence, that the countryside is full of diseased badgers dying in agony. Some farmers claim that simply by looking at badgers they can determine whether or not they are infected. Common sense? Definitely not.

The remaining question

One major question mark remains about the alleged role of badgers in bTB – how do they infect cattle? The research carried out by the ISG concluded that cattle can infect badgers and that badgers can infect cattle, but no-one knows how. Badger Trust accepts the ISG's assertion, but awaits scientific proof. How it happens and how often could prove vital in determining the way this disease, which has a major impact on the farming community and imposes a huge cost on the taxpayer, is brought under control.

1 *The ISG advocates the use of dual testing: the current skin test plus the parallel use of the more sensitive gamma interferon test. The skin test used to identify reactors is unreliable and misses at least a quarter of infected cattle. These 'false negatives' have the capacity to contribute to the persistence and spread of this virulent and destructive organism.*

2 *If the picture looks unduly grim, it's worth bearing in mind that at the end of 2008 Defra's statistics showed that over 91% of cattle herds were disease-free.*

Are Guildford's badgers surviving?

There is a small population of badgers in parts of Guildford, mainly on the fringes where there are some woodland areas nearby. But the pressures of development on any spare land continue. Many badgers become isolated where urban development has encroached but still manage to survive by using domestic gardens to find food, and many are fed by friendly householders. However, sometimes they can cause havoc by tearing up lawns to feed on leatherjackets (larvae of the cranefly).

An unhappy footnote

"I think now the time has come that, irrespective of what scientists say, irrespective of what ministers say, in this part of the country let's at least try out a pilot cull."

This was Liberal Democrat leader Nick Clegg, speaking to farmers in the south-west recently about badgers and bovine TB.

Conservative leader David Cameron, visiting the Royal Bath and West Show, confirmed that he too would sanction a badger cull.

As Mark Carwardine comments, in *BBC Wildlife* magazine, "The reason is simple: when the General Election takes place, they want farmers to allow them to put up placards in roadside fields all over the country. No badger cull means no placards."

CALENDAR

All the Forum's Group meetings are open to the public

Saturday 5 – Thursday 10 September

British Science Festival at the University of Surrey and various Guildford and Surrey venues, in which the Forum is taking part. Go to www.britishsciencefestival.org for full programme.

Thursday 17 September

GEF Sustainable Energy Group in conjunction with Guildford Geographical Association. Chris Skrebowski, Consulting Editor of Petroleum Review and Peak Oil consultant: **"Peak Oil Supplies – Threat or Opportunity?"**. 1830. Auditorium, Royal Grammar School.

Wednesday 23 September

GEF Biodiversity Group. James Adler, Grazing Manager, Surrey Wildlife Trust: **"Grazing for Wildlife in Surrey"**. 1900. Council Chamber, GBC Millmead Offices. (Liquid refreshments from 1845)

Tuesday 29 September

GEF Sustainable Energy Group. Lesley Harding, Manager of Surrey County Council's Climate Change Team: **"The Emerging Strategy for a Low Carbon Surrey"**. 1900. Committee Room 1, GBC Millmead Offices. (Liquid refreshments from 1830)

Thursday 8 October

Guildford Geographical Association. Dr Simon Carr, Queen Mary College: **"Protecting our Existence. Climate Change and the Future for the Arctic"**. 1830. Auditorium, Royal Grammar School.

Thursday 12 November

Guildford Geographical Association. Dr Varyl Thornycroft, Royal Holloway College: **"Floods and Climate Change"**. 1830. Auditorium, Royal Grammar School.

Tuesday 17 November

Guildford Society. **"Open Forum on Transport"**. Details to follow on the Society's website, but will include status of Transport for Guildford funding proposals. 1430. Council Chamber, GBC Millmead Offices.

Monday 23 November

GEF Biodiversity Group. Damien Short, Senior Lecturer in Human Rights, Institute of Commonwealth Studies: **"The Ecological Crisis, Human Rights and Human Responsibility"**. 1900. Committee Room 1, GBC Millmead Offices. (Liquid refreshments from 1845)

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